

A. Committee and Public Meeting Summaries

MEETING SUMMARY

March 31, 2014

Meeting Attendees

Please see attached list of meeting attendees.

Summary

1 Welcome and Introductions

Dorraine Kirkmire (City of Rochester) opened the meeting with welcoming remarks, introduced the project team, provided an overview of the meeting's agenda and explained what a Harbor Management Plan is and how it relates to the LWRP. Ms. Kirkmire then introduced Kimberly Baptiste (Bergmann Associates), who delivered the presentation portion of the meeting (the meeting also included an Open House after the presentation).

2 Project Overview

Kimberly Baptiste provided an overview of the purpose and benefits of a Harbor Management Plan and described how it relates to the City's Local Waterfront Revitalization Program (LWRP) and Port Public Marina & Mixed Use Development Project. Ms. Baptiste then described the location of the project boundary and the process used to identify this boundary. The project boundary includes only waterfront parcels or those parcels with a direct use connection to the water (e.g., marinas, bars, etc) and extends 1,500 feet north from the Lake Ontario shoreline.

Ms. Baptiste followed the discussion of the project boundary by describing the composition of the Harbor Management Area (HMA) in terms of land area and water area, total number of parcels and the amount of land in the City of Rochester and the Town of Irondequoit. The next topic discussed was the overall project schedule, including the Project Team's progress on the inventory and analysis of existing conditions.

3 Key Findings – What We’ve Learned

Kimberly Baptiste presented an overview of the Key Findings, which were developed based on a review of available data and extensive stakeholder outreach efforts. The Key Findings were grouped into the following categories:

- Harbor Services & Amenities
- Management & Operations
- Harbor Infrastructure
- Dredging & Commercial Use
- Jurisdictions & Authorities
- Surface Water Use
- Water Quality/Lake Levels
- Education

Meeting attendees were requested to wait to provide comments and ask questions after the formal presentation and during the Open House portion of the meeting (see below). Ms. Kirkmire noted that the Key Findings will be available on the City’s website and that the comment period will be open until April 16, 2014.

4 Next Steps

Following the overview of the Key Findings, Ms. Baptiste discussed the next steps in the Harbor Management Plan process, which include:

- Reviewing comments from the public meeting;
- Reviewing comments from the public comment period;
- Developing draft Objectives and Implementation Techniques; and
- Preparing for and holding the second Public Meeting.

5 Open House Comments

Following the formal presentation, meeting attendees were asked to participate in an Open House, which allowed them to comment on the individual Key Findings and discuss project details with Project Team members. Below is a summary of the comments provided during the Open House portion of the meeting:

Jurisdictions & Enforcement

- The following comments were provided by various public safety officers that attended the meeting:
 - The City's fireboat should be able to address fire suppression, hazardous material spill management, water rescue, incident management, and emergency care and response.
 - A public safety facility at the port should be jointly used by the RPD, the RFD, US Border Patrol, US Customs, US Coast Guard, MCSO, Park Police and the NYSDEC. This facility would ideally include a meeting area, restroom, response boat dockage and/or storage, possible fueling station, first aid facilities, and act as a beacon for community interaction.
 - It would be beneficial if a secure, inside boat storage/maintenance facility was available for RPD/RFD boats, including lifts for extending the season and improving response vehicle availability. River-side dockage would also be useful. Both would make deployment easier and go more smoothly.
 - Increased signage is needed for the rules of the Harbor, fire safety on vessels, life vest information and general boater safety.
- There needs to be some discussion of the Public Trust Doctrine in relation to the shore.
- I want to see a more active, strong public collaboration between the IJC and other water-related agencies. The public needs to know the City's involvement since this always seems to be private. The City must take an active, public support of Louise Slaughter's work for Legislation to have Congress declare the St. Lawrence-Great Lakes Basin a national commercial waterway. Much of the economic and environmental issues will be easier to manage with his type of designation. It will be a national public statement and the City can reap monetary benefits.

Public Meeting 1 | March 31, 2014

Harbor Services & Amenities

- Don't underestimate shopping mall as a destination
- There is a pump-out available at Shumway Marina
- A fenced-in dog-running area would be useful for boaters as many bring their pets when they travel.

Harbor Infrastructure

- We need to improve water access and provide more launch facilities for all sizes of boats.
- How about a signature lighthouse at the end of the West Pier, something that says you're in Rochester.

Dredging & Commercial Use

- The City should lobby our federal representatives to free-up money from the Harbor Management Trust Fund.
- Developing a comprehensive dredging plan that includes the River, marinas and yacht clubs is very important.

Surface Water Use – Fishing

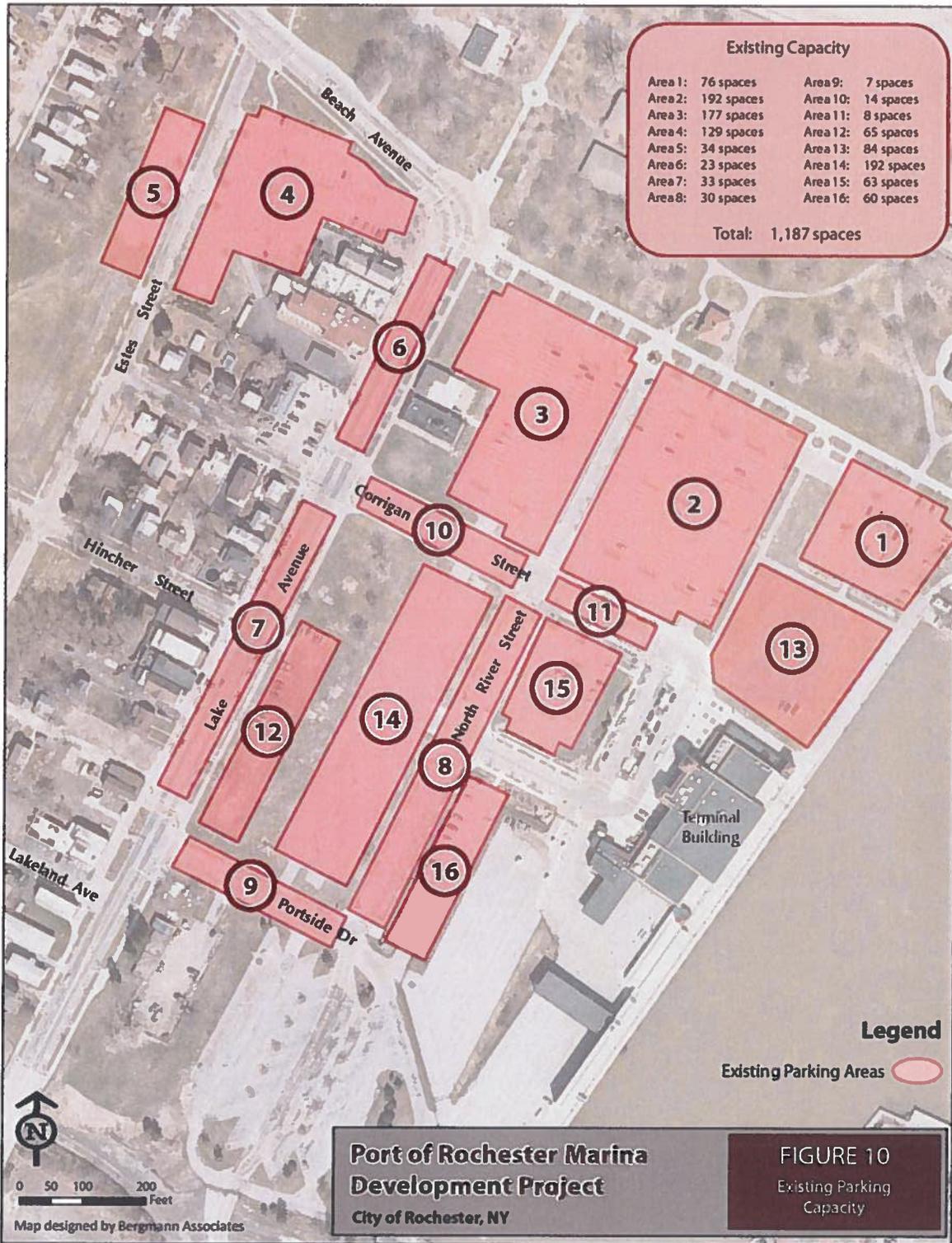
- This plan should also consider the USGS/NYSDEC sturgeon restoration efforts in the Genesee River.

Surface Water Use – Boating

- There is an 8-hour boater safety course required for all personal watercraft (new NYS law under Gov. Cuomo).
- Reach out to CSX to determine what its future plans are for the rail line located in the HMA.
- How did you determine the need for more docks when there are empty slips along the River?
- A water taxi to the area south of the Pioneer Cemetery would take advantage of the great views of the River
- Will the boat launch ramp and parking remain in its current location or move to somewhere not adjacent to the marina ingress/egress?

B. 2014 Updated Parking Analysis

Figure K-2 Existing Parking Capacity



Updated Port of Rochester Public Parking Space Comparison

Public Parking Area	2011 Corrected DEIS Capacity*	Capacity during Marina Construction	Capacity After Marina Construction	Capacity after marina & private development
1	76	76	76	76
2	192	192	192	192
3	177	177	177	177
4	129	129	129	129
5	34	34	34	34
6	23	23	23	23
7	33	33	33	33
8	30	0	12	12
9	7	0	7	7
10	14	0	8	8
11	8	0	14	14
12	65	65	65	0
13	0	142	142	142
14	192	0	0	0
15	63	0	0	0
16	60	0	0	0
New 17	0	0	39	39
New 18	0	0	51	51
Total Port Spaces*	1103	871	1002	937

*The Sept. 2011 Draft Environmental Impact Statement (Figure K-2) calculated that there were 1187 spaces which included 84 spaces in the gravel lot 13 that we not generally available to the public

Red figures indicate changes from previous phase

Parking spaces reserved for boaters using boat launch are excluded from this comparison

Area 13, the former gravel lot, was not available for public parking/142 additional spaces were added in 2012 by the City

Area 17 - New marina boater service parking added south of terminal bldg as part of the marina construction

Area 18 - Additional on-street parking on new River Street south of Portside Drive as part of the marina construction

C. Cruise Ships and Benefits to Navigation

Planning Guidance Letter #97-06

Cruise Ships and Benefits to Navigation

CECW-PD (7 July 1997)

MEMORANDUM FOR MAJOR SUBORDINATE COMMANDS AND DISTRICT COMMANDS

SUBJECT: Planning Guidance Letter No. 97-6, Cruise Ships and Benefits to Navigation

1. Purpose. This letter provides implementing guidance for Section 230 (Benefits to Navigation) of the Water Resources Development Act (WRDA) of 1996. This guidance will be incorporated into the revision of ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies.
2. Background. The WRDA of 1996 directs the U.S. Army Corps of Engineers to categorize all benefits generated by cruise ships as commercial navigation benefits. Benefits of navigation improvements affecting cruise ships arise from more efficient ship operations and increased tourism or enhanced tourism experience. Prior to the 1996 WRDA efficiency improvement was classified as commercial navigation and improved tourism was classified as recreation. Categorization of benefits matters because the Corps considers commercial navigation one of its high priority missions.
3. Guidance. Consistent with section 230, feasibility studies should consider economic benefits generated by cruise ships as commercial navigation benefits for project justification and cost sharing purposes.
4. Discussion. Cruise ships that operate out of existing Federal channels and harbors will receive equal consideration with other commercial navigation vessels for Federal harbor or channel improvements. Likewise, where new channels are required for cruise ships they will be treated like other new channel decisions for other commercial navigation vessels. That is, when new channels or harbors are constructed by non-Federal interests, Federal assumption of navigation maintenance may occur consistent with Section 204(f) of WRDA 1986 (as amended by Section 303(b)(1) of WRDA 1990), if approved by the Secretary of the Army for Federal assumption of maintenance prior to construction

FOR THE COMMANDER:

(Signed) RUSSELL L. FUHRMAN, Major General, USA, Director of Civil Works

D. USACOE 2014 Fact Sheet



Rochester Harbor, NY

Harbor Features

- Located on Lake Ontario in the city of Rochester, Monroe County, New York
- Authorization: River & Harbor Acts of 1829, 1882, 1910, 1935, 1945 and 1960
- Deep draft commercial harbor
- Authorized depths are 24 feet in the approach channel, 23 feet in the entrance channel and 21 feet in the Genesee River
- Five year average (2007-2011) tonnage of 99k tons of material shipped and received
- Ranked 60th among the Great Lakes Harbors based on five year average (2007-2011) tonnage
- Protective structures include the East and West Piers that total approximately 1.1 miles in length
- Lake Approach, Entrance, and Genesee River Federal channels total approximately 2.7 miles in length
- Major stakeholders include the Rochester-Monroe County Port Authority, Port of Rochester, U.S. Coast Guard, Essroc Cement Corporation and Shellet-Genesee Shipping Group

Project Requirements

- Approximately 220,000 cubic yards (CY) of material must be dredged every 2 years. The harbor was last dredged in 2009 when approximately 160,000 CY of material was removed.
- Sandy supplemental funding will be used for dredging of 100,000 CY of material from storm impacted harbor areas. Dredging is scheduled for 2014.
- An additional 200,000 CY of material must be dredged to maintain the functional harbor areas.
- Approximately 1000 ft of the East Pier is severely deteriorated and in need of repairs.



Consequences of Not Maintaining the Project

- Reduction of bulk commodities that pass through the harbor and generate \$1.2M annually in direct revenue while supporting 95 direct, indirect, and induced jobs that produce over \$6.2M per year in personal income.
- If the harbor was closed to commercial traffic, commodities would have to be transported by truck. This would increase annual emission rates by over 11,880 tons of harmful particulate matter (PM-10) and increase costs by \$1,579,000 due to increased trucking related accidents.
- Light loading; losses of between 2 and 3 feet of channel depth would result in increased transportation costs of between \$129,000 and \$297,000 annually.

Transportation Importance

- Receiving and shipping port on the Great Lakes; and a Critical Harbor of Refuge.
- Location of U.S. Coast Guard station.
- Cement is the major commodity shipped and received.

**U.S. Army Corps of Engineers Fiscal Year (FY) 2013, 2014 and 2015
Rochester Harbor, New York - Project Requirements and President's Budget (\$1,000)**

Work Package	FY13 Requirement	FY13 Allocation	FY14 Requirement	FY14 Appropriation	FY15 Requirement	FY15 President's Budget	Sandy Supplemental Requirement
Project Conditions Survey	55						
Maintenance Dredging – Primary	4,000		2,200	2,200			1,025
Constr., East Pier Repair			4,750		4,750		
Maintenance Dredging-Backlog			500				
Other Business Lines:							
Recreation	5	5					
TOTALS	4,060	5	7,450	2,200	4,750	0	1,025

Congressional Interests

- Representative Louise Slaughter D-NY-25
- Senator Kirsten Gillibrand D-NY
- Senator Charles Schumer D-NY

E. Rochester Dredging Preliminary Economic Impact Analysis 2012

Preliminary
Economic Impact Analysis

Re: Genesee River Dredging
Proposal

DRAFT REPORT
April 23, 2012

For the City of Rochester, NY

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1.0 PRELIMINARY ECONOMIC IMPACT ANALYSIS

1.1 Definition of Key Terms^{1, 2}

- IMPLAN - Software and data developed by the Minnesota IMPLAN Group for the purpose of economic impact analysis. IMPLAN is one of the tools most often utilized by professionals, Universities, and state and federal government entities
- Direct Effects - Represents the impacts to industries (e.g. change in employment) for the expenditures and/or production values specified as changes in demand
- Indirect Effects - Represents the impacts (e.g. change in employment) caused by the iteration of industries purchasing from industries resulting from changes in direct final demand. Represents the changes in inter-industry purchases as they respond to the new demands of the directly affected industries
- Induced Effects - Represents the impacts (e.g. change in employment) on all local industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes
- Labor Income - All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income
- Value Added - The difference between an industry or an establishment's total output and the cost of its intermediate inputs. It equals gross output (sales or receipts and other operating income, plus inventory change) minus intermediate inputs (consumption of goods and services purchased from other industries or imported). Value added consists of compensation of employees, taxes on production and imports less subsidies (formerly indirect business taxes and nontax payments), and gross operating surplus
- Output - Represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For Retail and wholesale trade, output = gross margin and not gross sales

¹ IMPLAN Pro™ User's Guide, Analysis Guide, Data Guide, V2

² <http://implan.com/v3/index.php>

- Tax Impacts - Reported values show the amount of revenue generated for State & Local governments from Employee Compensation, Proprietor Income, Indirect Business Taxes, Households, and Corporations based on the modeled impact. Tax impacts are derived from region wide averages across industries in New York. Federal tax impacts are not included in this report.
- Margin - The value of the wholesale and retail trade services provided in delivering commodities from producers\ establishments to purchasers. Margin is calculated as sales receipts less the cost of the goods sold. It consists of the trade margin plus sales taxes and excise taxes that are collected by the trade establishment

1.2 Method of Analysis

An economic impact analysis seeks to quantify the effect of a policy, program, project or event on the economy of a given area. The economic impact is typically measured in terms of changes in economic growth (output or value added) and associated changes in jobs (employment), income (wages) and taxes.

This analysis is intended to evaluate economic impacts associated with a potential failure to dredge the Genesee River. The model assumes that the Essroc wholesale cement distribution would cease in Monroe County. Further, the model assesses economic impacts of losing existing passenger cruise spending while in port in Rochester.

The first task was to develop the input assumptions to allow construction of an economic model. The input assumptions were developed as follows:

The input numbers for Essroc are derived from confidential sales revenue information reported by Essroc. Because the facility is a wholesale distribution center, rather than a manufacturing center, margins were applied to the revenue numbers in the model. The model was evaluated using two different margins – one representing the default model margins for the wholesale industry sector and one using a different margin perhaps more reflective of the particular wholesale cement industry. The second margin was derived based on given total sales revenue minus reported value of goods transported.

The input numbers for cruise passenger local spending activity were derived from two sources. The current activity was modeled as reported from the City, with passenger local spending patterns assumed by the modeler. Because no specific spending data was available at the time of this analysis, a range of values was assumed to reflect sensitivity of impacts to different levels of spending. The potential future developed cruise passenger volumes, trip frequency, and trip length were modeled as assumed and given by the City. Again, the same range of daily spending patterns was utilized for consistency. The City's assumptions regarding numbers of passengers, number of

cruise visits, and length of stay for current and future more developed cruise activity were based on the City's participation on the Great Lakes Cruising Coalition.

Once the input assumptions for the models were specified, Hanson used a well-known data and software package called Impact Analysis for Planning (IMPLAN) to build the models and calculate outputs from the three different development phases.

IMPLAN uses proprietary data and software to create complete, extremely detailed social accounting matrices and multiplier models of local economies. The IMPLAN database contains county, state, zip code, and federal economic statistics which are specialized by region, not estimated from national averages, and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity. IMPLAN data files are compiled from a wide variety of sources including the US Bureau of Economic Analysis, the US Bureau of Labor, and Census data.³

1.3 Additional Assumptions and Limitations

The following key assumptions and understanding of limitations are included in the analysis:

1. The economic impact model does not predict what development will occur – it analyzes the direct, indirect and induced impacts of *assumed* development (in this case, the assumed loss of business associated with not dredging the Genesee River).
2. At this preliminary stage, the only impacts modeled here include those attributable to potential loss of economic activity at the Essroc cement distribution facility and *some* of the impacts associated with loss of existing and assumed developable cruise tourism activity. These are two of the main activities identified as directly affected by a lack of dredging in the Genesee River. It is assumed that the results do not fully represent all of the actual loss or damage to economic activity associated with not dredging. Additional activity not evaluated in this model include: marinas and marine retail; and marine and industrial fabrication, maintenance, repair, and welding. The primary reason they are not included is the time frame associated with completing this preliminary study in addition to a lack of readily available information from which to create model inputs for these additional activities.
3. The model does *not* include specific evaluation of the very likely price increase impacts to cement, concrete, construction and all of the many other businesses that depend on cement, concrete, and construction activities. It has been reported to the City that “currently trucking to Rochester from Oswego or Buffalo is in the range \$17 per ton representing over 15% of the current cost of cement in Rochester. However, this additional transportation cost is not reflected [in] current market price.”⁴ Additionally, “as cement represents fully 25% of the input

³ <http://implan.com/v3> and modified

⁴ From supplemental information provided by Essroc to the City of Rochester, April 5, 2012

cost [of] concrete, it is apparent that an increase in the base cost of cement in Rochester would have a significantly detrimental impact on the building trades, development and cost of all projects that use large amounts of concrete.”⁴

4. There are fees paid on a per passenger basis for each cruise. The impact of the fees on the Monroe County economy was not modeled.
5. The assumptions regarding spending patterns of cruise passengers while in port in Monroe County are not based on known data, but rather on a range of possible patterns. The analysis could be recalculated based on actual cruise passenger behavior survey data if such data is made available.
6. The impact results are based on the demographics, types of businesses, and economic relationships that existed in Monroe County in 2010. 2010 is the most recent year for which data was available at the time the analysis was completed.
7. Monroe County is the only MSA county included in this model. Argument could be made to increase the size of the model by including all six of the MSA counties, which would certainly result in higher impact numbers. With most of the MSA’s economic activity and population occurring in Monroe County, the single county model was chosen to be intentionally conservative.

1.4 Preliminary Results

The following two tables represent economic impacts associated with potential loss of existing Essroc wholesale operations in Rochester. The first table shows the output of the model when the total revenue is margined at the default model margins for the generic wholesale industry sector. The second table is the same analysis done using a modified margin perhaps more reflective of the particular wholesale cement industry. The results are on an annual basis.

Loss of Essroc in Monroe County at Default Margin (Annual Impacts)

	Direct	Indirect	Induced	Total
Employment	9.2	2.7	5.6	17.4
Labor Income	\$749,077	\$139,990	\$231,168	\$1,120,235
Value Added	\$1,380,479	\$247,401	\$453,443	\$2,081,324
Output	\$1,665,890	\$382,085	\$717,548	\$2,765,523
State & Local Taxes	\$299,501	\$24,824	\$57,140	\$381,463

Loss of Essroc in Monroe County at Modified Margin (Annual Impacts)

	Direct	Indirect	Induced	Total
Employment	9.2	4.7	6.2	20
Labor Income	\$749,077	\$244,169	\$258,422	\$1,251,668
Value Added	\$1,380,479	\$431,514	\$506,905	\$2,318,898
Output	\$2,905,622	\$666,428	\$802,143	\$4,374,192
State & Local Taxes	\$299,501	\$43,295	\$63,878	\$406,675

These results differ somewhat from what was reported by the US Army Corps of Engineers in a recent study. Specifically, the Corps study found that the impact would include the loss of approximately 30 jobs. Two potential explanations for the difference include: the Corps model may have included multiple counties in the MSA, or the revenue numbers may not have been margined. Including more counties would very likely result in higher economic impacts. The modeling completed for this preliminary study replicated the Corps numbers by using the Corps reported sales revenue and not margining those sales (as if the Essroc facility in Rochester were a cement manufacturing facility, rather than a wholesale cement facility). Note that there are other potentially significant negative impacts of losing the only major cement supplier in the area, notably the presumed 15% increase in the cost of cement and its ripple effects to the local economy. Those impacts should be considered, but are not modeled in this preliminary study.

The following two tables represent economic impacts associated with potential loss of existing cruise passenger spending while in port in Monroe County. The first table represents the impacts of 300 total annual passengers each spending at a level of \$50 per passenger in Monroe County while off the boat. The second table represents the same 300 annual passengers each spending at a level of \$200 per passenger in Monroe County while off the boat. The total number of cruise visits is estimated at 6 boats per year, or a total of 6 days of annual spending.

Note that the impacts here are only associated with passenger spending while off the boat in Monroe County – having nothing to do with the revenue generated to the cruise line on the cruise itself.

**Annual Cruise Passenger Activity with Little or no Maintenance Dredging
(6 trips @ 50 passengers per boat & @ \$50/day spending, 1-day trip)**

	Direct	Indirect	Induced	Total
Employment	0.1	0	0	0.2
Labor Income	\$3,725	\$1,044	\$1,237	\$6,006
Value Added	\$5,667	\$1,973	\$2,426	\$10,065
Output	\$9,548	\$3,032	\$3,839	\$16,419

Annual State & Local Tax Implication - **\$1,500 plus approximately \$15,000 in passenger fees**

**Annual Cruise Passenger Activity with Little or no Maintenance Dredging
(6 trips @ 50 passengers per boat & @ \$200/day spending, 1-day trip)**

	Direct	Indirect	Induced	Total
Employment	0.6	0.1	0.1	0.8
Labor Income	\$14,901	\$4,175	\$4,948	\$24,024
Value Added	\$22,666	\$7,890	\$9,705	\$40,261
Output	\$38,190	\$12,128	\$15,357	\$65,676

Annual State & Local Tax Implication - **\$5,981 plus approximately \$15,000 in passenger fees**

With a total of approximately 6 trips per year, existing cruise passengers do not currently represent a large impact on the local economy. However, the opportunity cost of not having the ability to attract additional cruise activity should not be overlooked, and is addressed on the following pages.

The following two tables represent economic impacts associated with potential loss of additional cruise passenger spending that can occur with a more developed cruise industry in Rochester. The first table represents the impacts of 1,250 total annual passengers, each spending at a daily level of \$50 per passenger in Monroe County while off the boat. The second table represents the impacts of 3,750 total annual passengers, each spending at a daily level of \$50 per passenger in Monroe County while off the boat. The total number of cruise visits is estimated at 25 boats per year, each in port for 3 days, or a total of 75 days of annual spending.

Note that the impacts here are only associated with passenger spending while off the boat in Monroe County – having nothing to do with the revenue generated to the cruise line on the cruise itself.

**Further Developed Annual Cruise Passenger Activity
(25 trips @ 50 passengers per boat & \$50/day spending, 3-day trip)**

	Direct	Indirect	Induced	Total
Employment	1.8	0.3	0.4	2.4
Labor Income	\$45,586	\$12,748	\$15,130	\$73,464
Value Added	\$69,209	\$24,043	\$29,678	\$122,930
Output	\$116,344	\$36,955	\$46,965	\$200,263

Annual State & Local Tax Implication - **\$18,278 plus approximately \$62,500 in passenger fees**

**Further Developed Annual Cruise Passenger Activity
(25 trips @ 150 passengers per boat & \$50/day spending, 3-day trip)**

	Direct	Indirect	Induced	Total
Employment	5.5	0.8	1.1	7.4
Labor Income	\$139,697	\$39,143	\$46,384	\$225,224
Value Added	\$212,494	\$73,972	\$90,982	\$377,448
Output	\$358,031	\$113,703	\$143,977	\$615,712

Annual State & Local Tax Implication - **\$224,228 plus approximately \$187,500 in passenger fees**

The following two tables represent economic impacts associated with potential loss of additional cruise passenger spending that can occur with a more developed cruise industry in Rochester. The first table represents the impacts of 1,250 total annual passengers, each spending at a daily level of \$200 per passenger in Monroe County while off the boat. The second table represents the impacts of 3,750 total annual passengers, each spending at a daily level of \$200 per passenger in Monroe County while off the boat. The total number of cruise visits is estimated at 25 boats per year, each in port for 3 days, or a total of 75 days of annual spending.

Note that the impacts here are only associated with passenger spending while off the boat in Monroe County – having nothing to do with the revenue generated to the cruise line on the cruise itself.

**Further Developed Annual Cruise Passenger Activity
(25 trips @ 50 passengers per boat & \$200/day spending, 3-day trip)**

	Direct	Indirect	Induced	Total
Employment	7.3	1.1	1.5	9.8
Labor Income	\$186,263	\$52,190	\$61,845	\$300,299
Value Added	\$283,326	\$98,629	\$121,310	\$503,264
Output	\$477,375	\$151,604	\$191,970	\$820,949

Annual State & Local Tax Implication - **\$5,981 plus approximately \$62,500 in passenger fees**

**Further Developed Annual Cruise Passenger Activity
(25 trips @ 150 passengers per boat & \$200/day spending, 3-day trip)**

	Direct	Indirect	Induced	Total
Employment	21.9	3.2	4.5	29.5
Labor Income	\$558,790	\$156,571	\$185,536	\$900,897
Value Added	\$849,977	\$295,887	\$363,929	\$1,509,793
Output	\$1,432,125	\$454,811	\$575,910	\$2,462,846

Annual State & Local Tax Implication - **\$224,248 plus approximately \$187,500 in passenger fees**

Obviously, the analysis indicates the number of passengers and the actual spending patterns has a large affect on the modeled impacts. What seems clear from the model is that not having the ability to operate cruise boats on the Genesee River will be a potentially costly loss. Navigation difficulty caused by lack of dredging has already forced the cruise ships, including the Clelia II, that require deeper drafts (i.e. greater than 12 feet) to avoid entering the Port of Rochester.

1.5 Summary Points

1.5.1 Loss of the Existing Essroc Operation in Rochester

- Loss of at least 17-20 jobs in Monroe County alone.
- Loss of approximately \$3-4 Million in annual economic output in Monroe County alone.
- Loss of approximately \$400 Thousand in annual state and local tax revenue.

Note that these impacts do *not* include the additional potential severe consequence of losing the only major cement supplier in the area. It is reasonable to assume that such a loss would have a noticeable impact on the cost of cement and concrete. The resultant cement cost increase could be expected to exceed 15%. This would in turn be expected to increase the cost of construction and other dependant activities – resulting in additional job losses and attendant impacts in other sectors.

1.5.2 Loss of Existing and Potential Cruise Passenger Spending

- While existing cruise passenger spending does not appear to generate a significant economic activity for Rochester, the opportunity cost of losing the potential is considerable.
- The annual impacts of losing potential cruise passenger spending in Monroe County include:
 - Loss of up to 30 potential jobs in Monroe County
 - Loss of approximately \$2.5 Million in potential annual economic output in Monroe County.
 - Loss of over \$200 Thousand in potential annual state and local tax revenue.
 - Loss of up to \$187 Thousand in potential annual passenger fees at the current pricing structure.

1.5.3 Loss of Potential for other Potential Development on the Genesee River

The limited scope of this study did not examine or attempt to quantify the loss of potential for other business development requiring navigation on the Genesee River. Such a study could be expected to result in significant additional negative economic impacts to Rochester and Monroe County.

F. DEC Guidance on In-Water Management of Dredged Materials

New York State Department of Environmental Conservation

Division of Water

Bureau of Water Assessment & Management

625 Broadway, Albany, NY 12233-3502

Phone: (518) 402-8289 **Fax:** (518) 402-9029

Website: www.dec.state.ny.us/dow/bwam.html



Erin Crotty
Commissioner

Division of Water

Technical & Operational Guidance Series (TOGS) 5.1.9

In-Water and Riparian Management of Sediment and Dredged Material

November, 2004

New York State Department of Environmental Conservation

Division of Water

Bureau of Water Assessment & Management

625 Broadway, Albany, NY 12233-3502

Phone: (518) 402-8289 **Fax:** (518) 402-9029

Website: www.dec.state.ny.us/dow/bwam.html



Erin Crotty
Commissioner

***** NOTICE *****

This document has been developed to provide Department staff with guidance on how to ensure compliance with statutory and regulatory requirements, including case law interpretations, and to provide consistent treatment of similar situations. This document may also be used by the public to gain technical guidance and insight regarding how the department staff may analyze an issue and factors in their consideration of particular facts and circumstances. This guidance document is not a fixed rule under the State Administrative Procedure Act section 102(2)(a)(i). Furthermore, nothing set forth herein prevents staff from varying from this guidance as the specific facts and circumstances may dictate, provided staff's actions comply with applicable statutory and regulatory requirements. This document does not create any enforceable rights for the benefit of any party.

Date: November 29, 2004

TO: Regional Water Engineers, Division of Water Bureau Directors and Section Chiefs, Regional Habitat Managers, Regional Marine Habitat Protection Managers and Division of Fish, Wildlife and Marine Resource Bureau Directors and Section Chiefs

SUBJECT: Division of Water Technical and Operational Guidance Series (5.1.9)

In-water and Riparian Management of Sediment and Dredged Material

Originators: Frank Estabrooks, Karen Woodfield and Diane English

Purpose

To update and consolidate procedures for the in-water and riparian management of sediment and dredged material. The document outlines recommended procedures to be followed during dredging and dredged material management in riparian or in-water locations. This is a joint document developed by the Division of Water and the Division of Fish, Wildlife and Marine Resources. This document supersedes the NYSDEC Interim Guidance for Freshwater Navigational Dredging - 1994.

Discussion

This TOGS has been jointly produced by the NYSDEC Division of Water and the NYSDEC Division of Fish/Wildlife and Marine Resources (hereafter referred to as "Divisions"). The Divisions pursued the development of this TOGS in order to provide staff with guidance on the statutory and regulatory requirements for dredging activities and to promote uniformity in the certification and/or permitting of dredging projects throughout the state. This document applies to dredging and the in-water or riparian management of dredged material. For the purposes of this document the term dredging includes all in-water activities designed to move or remove sediment. Examples of such activities include but are not limited to mechanical and hydraulic dredging, mechanical plowing, trenching and jetting. Upland management of dredged material is not covered by this document. In regard to upland management, dredged material is considered a solid waste under 6 NYCRR Part 360, unless upland management/disposal is included under one of a number of specific permits as described in 6 NYCRR Part 360-1.2(a)(4)(ix). Beneficial use of dredged material as fill material, aggregate, or for other purposes may offer an alternative to in-water, riparian, or upland management of dredged material. NYSDEC Regional Solid Waste Engineers may be contacted concerning petitions for a beneficial use determination (BUD). Regulations covering BUD's in New York State appear under 6 NYCRR Part 360-1.15.

This TOGS is offered as an approach to environmental review of navigational dredging projects, dredging of channels and berths, dredging of ponds, trenching for pipelines and cables, and other incidental dredging in both marine and fresh waters of the state. This TOGS is not applicable to the review of dredging for industrial lagoons or dredging conducted for remediation or cleanup of sites managed by the Division of Environmental Remediation (DER) or Resource, Conservation, and Recovery Act (RCRA) corrective action sites. Sites managed by the DER include, but are not limited to, State Superfund sites, spills sites, environmental restoration program sites, brownfield cleanup program sites, and some RCRA corrective action sites. It should be noted that this TOGS is not intended to create any substantive or procedural rights, enforceable by any party in administrative or judicial litigation with the State of New York. While this TOGS contains numerical assessment criteria, it is not law or regulation. Discretion in applying the sediment quality parameters and the associated best management practices is expected and is defensible so long as human health and the environment are effectively protected. The Divisions also reserve the right, at anytime, to modify this TOGS subject to applicable laws, regulations and updated scientific information.

Sandra Allen, Director
Division of Water

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I. INTRODUCTION

A. Discussion

This TOGS has been produced by the NYSDEC Division of Water and Division of Fish/Wildlife and Marine Resources (hereafter referred to as “Divisions”) to provide staff with guidance on the statutory and regulatory requirements for dredging activities and to promote uniformity in the certification and/or permitting of dredging projects throughout the state. Dredging is an integral part of the maintenance of New York’s harbors, channels, fairways, canals, marinas, ports, terminals, and reservoirs. For this reason, a uniform and balanced approach to dredging projects is important.

This document applies to dredging and the in-water or riparian management of dredged material. **For the purposes of this document the term dredging includes all in-water activities designed to move or remove sediment. Examples of such activities include but are not limited to mechanical and hydraulic dredging, mechanical plowing, trenching and jetting. For the purpose of this TOGS, “riparian” is defined as the 100 year flood plain plus any adjacent wetland integral to the surface water.** Dredged material destined for upland management or dredged material to be managed outside of New York State would be subject to different procedures and may require a different set of analyses and approvals. In regard to upland management within New York State, dredged material is considered a solid waste under 6 NYCRR Part 360, unless upland management/disposal is included under a dredging or other permits as described in 6 NYCRR Part 360-1.2(a)(4)(ix). Beneficial use of dredged material as fill material, aggregate, or for other purposes may offer an alternative to in-water, riparian, or upland management of dredged material. NYSDEC Regional Solid Waste Engineers may be contacted concerning petitions for a beneficial use determination (BUD). Regulations covering BUD’s in New York State appear under 6 NYCRR Part 360-1.15.

To clarify the sampling, testing and certification and/or permitting process, this document provides an explanation of the requirements of state law that apply to dredging projects with a general overview of relevant federal requirements. This TOGS is offered as an approach to environmental review of navigational dredging projects, dredging of channels and berths, dredging of ponds, trenching for pipelines and cables, and other incidental dredging in both marine and fresh waters of the state. This TOGS is not applicable to the review of dredging for industrial lagoons or dredging conducted for remediation or cleanup of sites managed by the Division of Environmental Remediation (DER) or Resource, Conservation, and Recovery Act (RCRA) corrective action sites. Sites managed by the DER include, but are not limited to, State Superfund sites, spills sites, environmental restoration program sites, brownfield cleanup program sites, and some RCRA corrective action sites.

It should be noted, however, that this TOGS is not intended to create any substantive or procedural rights, enforceable by any party in administrative or judicial litigation with the State of New York. While this TOGS contains numerical assessment criteria, it is not law or regulation. Discretion in applying the sediment quality parameters and the associated best management practices is expected and is defensible so long as human health and the

environment are effectively protected. The Divisions also reserve the right to modify this TOGS subject to applicable laws, regulations and updated scientific information.

B. Required Approvals

There are a number of federal, state and local regulatory controls in place which apply to dredging projects. The applicability of these controls to each operation depends on the particular circumstances of each case, such as the sediment classification and the intended use or management of the material. However, the following descriptions can be used as an index of the current regulatory demands on projects which will result in either disposal or beneficial use of dredged material. Applicants are advised to contact NYSDEC or US Army Corps of Engineers (USACE) personnel for a case specific referral to applicable laws.

Some or all of the following State and Federal Permits may be required: Use and Protection of Waters Permit; Freshwater Wetlands Permit; Tidal Wetlands Permit; State Pollutant Discharge Elimination System Permit; Clean Water Act (CWA) § 401 Water Quality Certification; and CWA § 404 Permit and Rivers and Harbors Act § 10 Permits, issued by the USACE. An antidegradation review and Wild, Scenic and Recreational Rivers Program permits may also be required.

Use and Protection of Waters

Article 15 of the Environmental Conservation Law (ECL) and its implementing regulations found at 6 NYCRR Part 608 apply to most dredging projects. A Use and Protection of Waters permit is required by 6 NYCRR Part 608.2(a) whenever: there is to be a change, modification or disturbance of any protected stream; the bed or bank of a protected stream in the State will be disturbed; or sand, gravel or other material is to be removed. Part 608.5 also requires a permit for the excavation or placement of fill directly or indirectly in navigable waters. This includes marshes, estuaries, tidal marshes and wetlands that are adjacent to and contiguous at any point to any of the navigable waters of the State, and that are inundated at mean high water level or tide. Water Quality Certifications required by Section 401 of the federal Water Pollution Control Act are incorporated into the State regulations in Part 608.9.

Freshwater Wetlands Permits

Under the Freshwater Wetlands Act (ECL Article 24) and 6NYCRR Part 663, NYSDEC regulates activities in freshwater wetlands and in their regulated 100 feet wide adjacent areas. NYSDEC regulates such activities to prevent, or at least to minimize, impairment of wetland functions. Almost any activity which may adversely impact the natural values of the wetlands or their adjacent areas is regulated. Some activities requiring a permit include: dredging, construction of buildings, roadways, septic systems, bulkheads, dikes, or dams; placement of fill, excavation, or grading; modification, expansion, or extensive restoration of existing structures; drainage, except for agriculture; and application of pesticides in wetlands. In addition, a Freshwater Wetlands Permit pursuant to the Adirondack Park Agency (APA) Executive Law may be required from the APA for work on wetlands located within the Adirondack Park. A "Shoreline Clearing Variance" could also be required from the APA.

Within the Adirondack Park a permit would be required from the NYSDEC for work on State owned lands, or from the APA for work on private lands.

Tidal Wetlands Permits

Under the Tidal Wetlands Act (ECL Article 25) and 6NYCRR Part 661, NYSDEC administers a permit program regulating activities in tidal wetlands and their adjacent areas. In general, tidal wetlands consist of all the salt marshes, non-vegetated as well as vegetated flats, and shorelines subject to tides including areas now or formerly connected to tidal waters. The adjacent areas extend up to 300 feet inland from the wetland boundary (up to 150 feet inland within New York City). NYSDEC requires a permit for almost any activity which will alter wetlands or the adjacent areas.

State Pollutant Discharge Elimination System (SPDES) Permits

In certain instances a SPDES permit may be required. A discharge of a pollutant from a point source to the surface or ground waters of the state requires a SPDES permit. There is an exception from the SPDES permit requirement for “dredged or fill material discharged into navigable waters” in 6 NYCRR Part 751.3(a)(6). SPDES permits are required for discharges of dredged material effluent from point sources to groundwater, and permanent dredged material treatment facilities. Discharges that do not require a SPDES permit will be regulated under a 401 Water Quality Certificate.

Clean Water Act §401 Water Quality Certification.

Section 401 of the Federal Water Pollution Control Act requires that certain federal activities, including projects that require federal permits such as § 404 Permits and Federal Energy Regulatory Commission (FERC) hydroelectric permits, must obtain a 401 Water Quality Certification from the State. A Water Quality Certificate is a statement from the agency responsible for water quality indicating that the project will comply with State technology and water quality standards. Generally dredging projects require a Water Quality Certification from the State. The 401 Certification may contain conditions that will be enforced by the Federal Agency issuing approval (i.e., USACE).

Clean Water Act §404 Permit and Rivers and Harbors Act §10 Permit

Additional permits may be necessary from the USACE under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the federal Water Pollution Control Act. The USACE regulates the placement of fill or dredged material and the construction of certain structures in waterways and wetlands. The USACE jurisdiction has expanded beyond major waterways to include all waters of the United States. A Rivers and Harbors §10 Permit is required for any activity that may obstruct a navigable water and for the excavation or fill of navigable waters. This statute also applies to management activities such as in-place or ex situ capping, treatment, or subaqueous containment of sediments if the proposed activity will alter or modify the course, location, condition, or capacity of any navigable water of the United States.

Additionally, a CWA §404 permit is required when dredged material is discharged in U.S. waters.

Antidegradation Review

An antidegradation review may be required for Great Lakes Basin dredging projects. See NYSDEC Technical & Operational Guidance Series (TOGS) 1.3.9 for details.

Wild, Scenic and Recreational Rivers Program

The Wild Scenic and Recreational Rivers Program could potentially require permits for work on designated wild, scenic or recreational rivers. Within the Adirondack Park a permit would be required from the NYSDEC for work on State owned lands, or from the APA for work on private lands.

C. Jurisdictional Considerations

While it is generally acknowledged that certain types of dredged material may potentially exhibit 6 NYCRR Part 371 (Part 371) hazardous waste characteristics, most navigational dredging operations have not historically tested excavated sediments for hazardous waste characteristics.

On October 30, 1998, the United States Environmental Protection Agency (EPA) signed new rules for the management of contaminated media. The new rules contain a provision to clarify the relationship of the Resource Conservation and Recovery Act to dredged material. Specifically, the rules establish that “dredged material disposed of in accordance with a permit issued under section 404 of the Federal Pollution Control Act [33 U.S.C. S1344] or in accordance with a permit issued for the purpose of transporting material for ocean dumping under section 103 of the Marine, Protection, Research and Sanctuaries Act of 1972 [33 U.S.C. 1413] is not a hazardous waste” (RCRA) (40 CFR section 261.4[g]).

Other agencies that may have jurisdiction in dredging projects are the New York State Department of State and the New York State Office of General Services. The New York State Canal Corporation also has jurisdiction over dredging activities conducted on NYS owned lands under its jurisdiction.

D. Application Process

Primary responsibility for managing dredging permit applications rests with the Department’s Division of Environmental Permits. Applicants must apply for necessary dredging permits on a Joint Application for Permit form and submit this form to the NYSDEC Regional Permit Administrator, in the regional office serving the project location. This form and supporting documentation will suffice as an application to the Department for a Protection of Waters Permit, 401 Water Quality Certification, freshwater wetlands, tidal wetlands. A copy of the

Joint Application will be forwarded to the USACE, by the Department. The USACE will contact the applicant for additional information to complete their review. If a SPDES permit is required, the applicant should complete an Industrial Application Form NY-2C and submit this with the Joint Application to the Regional Permit Administrator.

An Environmental Assessment form must also be completed and submitted with the joint application. The Environmental Assessment form is used to help assess whether the proposed action may have a significant adverse impact on the environment and may require the preparation of an Environmental Impact Statement. This assessment is required by the State Environmental Quality Review Act (SEQR) and State Environmental Quality Review regulations (Part 617).

Applications for dredging permits are subject to the Uniform Procedures Act (ECL Article 70, UPA) and Uniform Procedures regulations (Part 621). These regulations identify required application information and specify deadlines by which applications and supporting documentation must be reviewed by the Department. The UPA regulations also require the simultaneous submission of all required applications, encourage public participation, and seek to ensure timely and thorough reviews of all regulated actions. Division of Environmental Permits staff will advise as to all the components necessary for a complete permit application. For information on the Division of Environmental Permits' project management role, see Commissioner Cahill's March 14, 2000 Memorandum: Permit Management System.

1. Description of Application Process and Technical Review

The following provides an outline of the basic steps for sediment assessment and management in dredging projects.

STEP 1 PRE-APPLICATION MEETING

! Hold pre-application meeting(s) with the applicant to explain how the project should be described, and all application and information needs. The applicant should contact Division of Environmental Permits staff to arrange a pre-application meeting. Environmental Permits staff will involve the appropriate Department technical staff. Other agencies having jurisdiction may also be invited to attend the pre-application meeting.

! The coordination of smaller dredging projects into one large project may have benefits both in disposal options available and in the reduction of sampling costs. If small dredging projects are in close proximity to each other and can be coordinated easily by the applicants, such coordination can be beneficial to all involved parties.

STEP 2 DETERMINE SAMPLING REQUIREMENTS

A sampling plan should be submitted to the Divisions prior to sampling to ensure proper characterization of the proposed dredged material. The sampling plan should specify the type, number, and location of samples as well as laboratory analyses and analytical methods.

! Screen for Exemptions (see Chapter II, Section B.1)

! Identify Numbers and Locations of Samples (see Chapter II, Section B.2) Based on:

- o site contamination history
- o sampling history
- o dredging history
- o site resources/sensitivity

! Identify chemical analytes including grain size, TOC and analytes from Table 1 with additional case-specific analytes as necessary. If upland management of dredged material is planned, contact Division of Solid and Hazardous Materials for additional testing requirements.

STEP 3 REQUIRE LABORATORY ANALYSIS OF SAMPLES

! Follow laboratory protocols (see Table 1)

! Use New York State Department of Health (NYSDOH ELAP: Environmental Laboratory Approval Program) approved laboratory

! Report results based on identified quantitation levels (see Table 1)

STEP 4 EVALUATE RESULTS

! Determine dredged material classification for intended riparian/in-water management as Class A, B or C (see Table 2 and Chapter III, Section B.)

! Determine need for possible further sampling/analysis if high level of contamination is indicated

STEP 5 DETERMINE APPROPRIATE DREDGING/MANAGEMENT OPTIONS

! Determine dredging technology to be used based on appropriate sediment class (A, B, C), (see Table 3)

! Determine riparian/in-water management options based on sediment class (see Table 3)

STEP 6 DEVELOP PERMIT CONDITIONS FOR DREDGING AND DREDGED MATERIAL MANAGEMENT (Chapter V, Section C)

STEP 7 MONITOR OPERATIONS, AS NEEDED (see Chapter V, Section D)

2. Applicant Requirements for Description of Dredging Projects

The applicant should describe the physical, chemical and biological characteristics of proposed dredging and management sites in enough detail for the Divisions to estimate impacts and determine appropriate conditions governing conduct of the project.

a. Dredge Area.

! Physical - Show limits of excavation for areas targeted for dredging on a location map with a scale of no greater than one-inch to 100 feet (1:1200). When in-water disposal is proposed or when dredging in a sensitive habitat, provide bottom contours and profiles at no greater than one foot intervals before and after the proposed dredging. Detail the proposed method of dredging and indicate specific methods of operating equipment to minimize resuspension and migration of sediments.

Include an estimation of dredged material volume and if possible, estimate the length of time needed to complete dredging and transport. If applicable, summarize prior dredging operations that have occurred in this area and include any sediment chemistry, and total organic carbon (TOC) data available.

! Chemical - Sediment core samples should be collected to a depth of at least one foot below maximum proposed dredge depth or to bedrock, whichever is less. Log and analyze cores for sediment quality parameters, grain size, TOC and Unified Soils Classification System (USCS) classification. Homogenize and analyze each individual core down to dredging depth. Do not composite single or multiple cores if the grain size, TOC, and likelihood of contamination history indicate that individual horizons may be significantly different in sediment contaminant characteristics. Instead, sample and analyze the horizons separately or contact the Division of Water for guidance. If appropriate (see Chapter II, Section B.2.a), separately analyze a sample segment representing the top six inches of the sediment to be exposed after dredging.

The number of core samples required of each project may vary according to site-specific information. Chapter II elaborates on the proposed sampling plan approval process.

Water quality analyses and hydrology may also help establish baseline conditions.

! Biological - Describe existing habitat and characterize its use by biota, including rare, threatened or endangered species of special concern. Identify specially protected or regulated habitat.

b. Placement area (In-water and Riparian).

! Physical - Indicate location of the placement area on a plan or map having a minimum scale of 1:24,000. This plan or map should show the surrounding topography, 100 year flood-plain

elevation contour, cultural features, wildlife habitats, wetlands, and known or suspected sources of contaminants, such as point-source discharges, landfills, nearby water supply intakes or wells, primary and principal aquifers and any other site-specific features that would be useful in defining this proposed placement area. Represent the placement site on a site plan at an appropriate scale. The site plan should contain pre- and post-placement elevations of the site at intervals of no greater than one foot. The Divisions may require the plan to describe bottom sediments according to the USCS, along with their relevant parameters, such as TOC and grain size. Describe the method of transporting dredged material to the placement area and the manner of placement.

! Chemical - For proposed in-water placement, characterize existing surface sediment, chemical quality of the water-column and hydrology using the same parameters employed in evaluating the dredge area. Indicate sampling locations on plan or map. For riparian placement onto previously dredged sediments, the intent is not to degrade the existing sites. The top two feet of the existing surface soils should be analyzed for contaminant loading to confirm that the contaminant level of the dredged material to be disposed of at the site does not exceed the contaminant level at the receiving site. Physical properties such as grain size and permeability should also be measured.

! Biological - Describe existing habitat and characterize its use by biota, including use by rare, threatened or species of special concern. Identify specially protected or regulated habitat. Describe post placement habitat conditions.

! Deed Restrictions - If Class C sediment is placed in a riparian area, and capped with Class A material, there may need to be provisions for deed restrictions, so that excavation beneath the Class A sediment cover would trigger management of the Class C sediments as a solid waste.

II. SEDIMENT QUALITY PARAMETERS AND SAMPLING REQUIREMENTS

Each dredging site and management area may have unique physical and chemical characteristics which will influence both the number of samples required to obtain a representative characterization of the sediment and the chemical analytes targeted in testing. Sediment testing is the most critical step in any dredging operation as proper or improper sediment characterization can have long lasting impacts on both the dredged area and the management site. Along with the physical, chemical and biological descriptions required in Chapter I, Section D.2., core sample collection and analysis will lead the applicant to more informed dredged material management decisions. The Divisions have selected a number of chemical analytes that may be tested for and these are identified in section A of this chapter. Section B describes the sampling and analysis requirements for sediment classification. If upland management of dredged material is a possible option, contact the Division of Solid and Hazardous Materials for additional testing requirements.

The TOGS relies on whole sediment chemistry analysis for determining the level of contamination and best management practices for the excavated dredged material. There are several reasons for relying on whole sediment chemistry analysis. Whole sediment chemistry is used in other Department guidance documents that predominantly rely on the Equilibrium Partitioning methodology. One such document is the Division of Fish, Wildlife, and Marine Resources, 1999, "Technical Guidance for Screening Contaminated Sediments". The whole sediment chemistry testing method is consistent with baseline values already measured in the Division of Water's sediment assessment and monitoring program and is used in scientific geochemical literature for soils and sediments.

The use of whole sediment chemistry in this TOGS is a consistent choice for sediment testing, and it has the added benefit of being simpler and less expensive than the extract concentrations used in the Toxicity Characteristic Leaching Procedure (TCLP) or the biotoxicity/bioaccumulation testing protocols.

The sampling required by the Divisions to determine whether to grant a dredge permit is not the same testing required by the USACE. It is acknowledged that for some dredging projects, or for in-water placement of dredged material at an EPA-designated site, the USACE may require applicants to conduct a suite of biological tests to support their permit application. If such test results are available, and considered sufficient to characterize the material to be dredged, and especially if open water placement is planned, the Divisions may elect to use this information (see Chapter III, Section B. 4) to make permit decisions in lieu of or in addition to whole sediment chemistry test results . When sediment contamination (Class B or C) is expected at the dredge site, the Divisions may still require whole sediment chemistry analysis in order to determine the appropriate best management practices to be implemented during the dredging or placement operations. Under USACE requirements, sampling would be required for open water placement according to the most recent version of "Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual" (USACE, Green Book) or "Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual Inland Testing Manual" (USACE Gold Book). The Divisions may also require mixing zone analyses (see Chapter V, Section C) based on the biological test results.

A. Chemical Selection

A key element to this TOGS is the selection of chemicals for analysis and the evaluation of dredging and management options. The Divisions, therefore, focused on chemicals known to be both toxic and persistent in the environment for the in-water/riparian protocol. The Divisions selected these chemicals as important to sediment evaluation. The list includes all chemicals for which there are fish flesh consumption advisories in New York State:

PCB
chlordan
DDT and its metabolites
mercury
dioxin
cadmium
mirex

Table 1 contains the suggested analytical methods for detection of selected chemicals and references the detection limits of those analytical methods.

In the aquatic environment, these chemicals can bioaccumulate to elevated levels. Fish consumption is the primary exposure path for humans and wildlife. Sediment quality threshold values (discussed in Chapter III and listed in Table 2) for all of the above, except DDT, are based on toxicity to aquatic benthic life. The DDT threshold value is based on the protection of wildlife. The threshold values are all lower than those that would be derived to assure that fish tissues do not exceed human health advisories. Table 1 contains the threshold values below which the sediment is considered to exhibit no appreciable contamination. Table 2.1 in Chapter III provides more details on the derivation of the threshold values. The substantial, dual threat from these chemicals to both human and aquatic life warrants their selection as sediment quality parameters.

Other substances selected for testing include:

BTEX, the sum of benzene, toluene and xylene concentrations, was selected as a general indicator of petroleum contamination (i.e., gasoline). BTEX can be a problem for aquatic life in areas associated with land-based petroleum or petroleum-use facilities, marinas, and/or spills.

Benzene is a known human carcinogen and deserves separate analysis from BTEX. Human exposure to benzene can occur from drinking contaminated surface or groundwater. However, the Screening Value for Benzene in Table 2 is derived for protection of benthic life.

Arsenic is widely distributed in the environment and forms a variety of organic and inorganic compounds, some of which are very toxic to aquatic organisms. Some arsenic compounds are readily absorbed by intestinal tract and muscle tissue.

Lead is a persistent bioaccumulative chemical of growing concern to public health managers. Evidence of bioaccumulation in aquatic life to levels of concern for human health is currently

sparse. The paths of lead to human exposure include contaminated soils and drinking water. Lead is also toxic to benthic life.

Copper is toxic to aquatic life, but is not known to be the source of widespread or severe damage to aquatic life in New York State waters. When copper contamination and adverse effects are known or suspected, the metal should be required for sample analysis.

Dieldrin was selected as a common indicator of pesticide use. It is bioaccumulative and the primary path of exposure to humans and wildlife is through the consumption of contaminated fish. Dieldrin is also toxic to benthic life, which is the basis for the Screening Value in Table 2.

Total Polycyclic Aromatic Hydrocarbons (PAH) generally show little tendency to biomagnify in food chains, although in some cases of high contamination, elevated PAH body burdens in fish and bivalves have occurred. Sediment concentrations of Total PAHs in sediments from as low as 4 ppm and certainly higher than 35 ppm are toxic to benthic life. Several compounds of the PAH family are known human carcinogens. PAH's are found in soils, air, surface waters and plant and animal tissues as a result of natural processes such as forest fires, microbial synthesis and volcanic activities. Anthropogenic sources of PAH's cause higher concentrations along transportation corridors, industrial sites and in urban soils resulting from the long term use of fossil fuels (i.e., coal and petroleum) and petroleum-derived products (i.e., asphalt pavement). Total PAH is an indicator of possible impact from the spectrum of PAH compounds.

NOTE: Copper, dioxin, chlordane, BTEX and mirex are case specific analytes. The analysis and evaluation of these case specific analytes is recommended for those waters known or suspected to have sediment contamination caused by those chemicals. In the case where known discharges or spills of other potentially harmful chemicals have occurred, in or near a dredge site, or in the case of potential water quality limiting substances (see appendix A) these other analytes should be included along with those listed in Tables 1 and 2. In the case where a marina is to be dredged, BTEX may be a parameter of concern due to past gasoline spillage into the water and possible accumulation into the sediments. These determinations are made at the discretion of Division staff.

Table 1 - revised 9/25/06

Method Detection Limits and Suggested Analytical Methods

Parameter Sediment/Soil	EPA Method CLP/RCRA	Required Method Detection Limits (mg/kg, ppm)	No Appreciable Contamination (Threshold Values (mg/kg, ppm)
Metals			
Arsenic	Metals - EPA 6010B	3.0	<14
Cadmium	Metals - EPA 6010B	1.0	< 1.2
Copper ⁺	Metals - EPA 6010B	5.0	< 33
Lead	Metals - EPA 6010B	2.0	< 33
Mercury *	Metals - EPA 6010B, 7470	0.2	< 0.17
PAH's and Petroleum-Related Compounds			
Benzene	EPA 8021, 8260B	0.0003	< 0.59
Total BTX ⁺	EPA 8021, 8260B	0.0008	< 0.96
Total PAH	EPA 8270	0.33	< 4
Pesticides			
Sum of DDT+DDE+DDD *	EPA 8081A	0.0033	< 0.003
Mirex **	EPA 8081A	0.189	< 0.0014
Chlordane ⁺	EPA 8081A	0.0017	< 0.003
Dieldrin	EPA 8081A	0.0033	< 0.11
Chlorinated Hydrocarbons			
PCBs (sum of aroclor)s)	EPA 8082	0.033	< 0.1
Dioxin (Toxic Equivalency Total) ⁺	EPA 1613B	0.000002	< 0.0000045
Physical Properties			
Grain Size	ASTM D41/D42		
Total Organic Carbon	EPA 9060A		

* Note: Threshold values lower than the Method Detection Limits are superseded by the Method Detection Limit.

⁺ Indicates case specific analytes.

B. Sampling and Analysis Requirements

Core samples should be collected and analyzed, at a laboratory certified by the New York State Department of Health (ELAP), to characterize the physical and chemical properties of the sediment in situ, prior to a dredging operation. Physical analysis should include grain size and TOC determinations. Chemical analysis should include appropriate chemical analytes and method detection limits from Table 1 with additional case-specific analytes as necessary. Evaluation of the analytical results of these samples will help determine the management and/or reuse options that can be considered, the types of dredging equipment that might be employed, and the environmental controls that may be necessary to reduce the potential impacts to fish and wildlife during dredging operations.

1. Sampling Exemptions

There are instances where sediment testing is not necessary and these exclusions are detailed below. If there are no recent spill incidents (within the past ten years) and there are no known present or historical contamination problems associated with the site or its environs, sampling and analysis of sediments for proposed dredging projects will generally not be required under the following circumstances:

a. The material to be dredged is at least 90% sand and gravel.

or

b. The entire project involves less than 1,500 cubic yards of dredged material.

or

c. The Divisions determine that the site has been appropriately sampled and analyzed within the last five years and that data reveals sediments with no appreciable contamination. The Division of Water's Sediment Assessment and Management Section maintains an extensive database of results of chemical analyses of sediment from locations throughout the state. Information from the database can be provided to applicants upon request.

Note: Sampling exemptions are not generally available for projects involving open water placement. Additional sampling waivers may be applicable on a case by case basis.

2. Collection of Samples to Characterize Sediment

A sampling plan should be submitted to the Divisions prior to sampling, indicating the type, number and location of samples to ensure proper characterization of the proposed dredged material.

- a. Type of Sample. Sediment core samples should represent the complete depth of the material to be dredged, plus an additional one foot of material that will represent the new sediment surface. Sampling procedures are described in Appendix C. Methods of underwater investigation using free-fall gravity corers, or other equipment, and of logging cores and mapping sediments are given in Hunt (1984), ASTM (1993) and similar publications.

Each core should be broken into two segments:

! A segment homogenized over the complete dredging depth should be analyzed to determine the physical and chemical properties of the sediment to be dredged. Do not homogenize the core if the grain size, TOC or likelihood of contamination based on core lithology or known contamination history indicates that individual horizons within the core may be significantly different in sediment quality. Instead, sample and analyze the horizons separately or contact the Divisions for guidance.

!

! A segment representing the top six inches of the sediment to be exposed after dredging should be archived for possible future analysis (see Table C-3 in Appendix C for holding times and storage requirements). If chemical analysis of the dredging depth segment reveals Class B or C (Table 2) sediments, then some or all of these substrate segments may need to be analyzed to determine the risk of increased contamination exposure after dredging.

- b. Number and Location of Samples. The applicant should propose how many samples will be collected, explain how this number was derived and why it is adequate to characterize the dredged material, including the detection of potential "hot spots" of highly contaminated sediments. The plan should also detail the locations of the sampling sites and state how they afford spatial representativeness while also providing coverage for areas likely to have been affected by specific contamination (i.e., a sampling bias should exist toward areas known to be affected by outfalls, tributaries, other industrial sources, historical spill areas, etc.). The number of samples should take into account project area, depth of dredging, potential heterogeneity of the sediments both horizontally and vertically and contaminant source locations. Projects that require dredging of relatively homogenous sediments will require fewer samples than those that require dredging of heterogeneous sediments. Sampling should preferably include no less than three sample locations for any given project. Examples of various methods for calculating how many samples would provide spatial representativeness in order to characterize a dredge site are presented in Appendix B.

- c. Cost Reduction Strategies. In the case of small projects, small marina operations, etc., strategies are available to manage the cost of the analyses. These strategies should yield a reasonably accurate representation of the spatial and vertical stratigraphy and contaminant distribution in the area to be dredged and take into account historical and current pollutant inputs. Divisions approval should be obtained before any of the sample size reduction strategies are used. Unless otherwise exempt from the sampling requirements, a minimum of three sediment samples should be analyzed to characterize any proposed dredging project.

Cost reduction strategies may include:

- i. Collect the required number of cores, then select those with the highest organic carbon levels and closest to known/potential contaminant sources for analysis. If the results of the initial analysis are valid, representative and indicate clean material, the other cores could be assumed likewise. More specifically, if the sediment with the highest silt and clay fraction reveals no appreciable contamination, then it is likely that relatively coarser textured samples would reveal similar or less contaminated results. If the results indicate contamination, however, then the other cores could be assumed similarly contaminated or they could be analyzed by the applicant.
 - ii. Collect the required number of cores and composite those with similar characteristics (e.g., grain size, TOC, color, etc.) for analysis. If this is done, a record of the cores that were composited, including their percentages of total organic carbon and USCS descriptions, as well as the post-compositing analytical results, should be submitted to the Divisions. Do not composite the cores if the grain size, TOC or likelihood of contamination based on core lithology or known contamination history indicates that individual horizons between the cores are appreciably different in sediment quality. Instead, sample and analyze the horizons separately or contact the Divisions for guidance.
 - iii. These strategies may also be used to reduce the number of substrate samples that need to be analyzed to characterize the sediment to be exposed as a result of the dredging operation. Analysis cost may also be reduced, for these samples, by limiting the analytical parameters to those found to be at Class B or C concentrations in the dredging depth segments.
- d. Quality Assurance and Quality Control! The goal of the sampling strategies presented in this TOGS is to provide sediment data which are accurate, representative and legally defensible. Therefore, the importance of Quality Assurance/Quality Control (QA/QC) measures in sampling sediments cannot be overlooked. Failure to use proper containers and appropriate methods of sample

collection and preservation, collect an adequate number and type of QC samples, provide strict sample identification and chain-of-custody documentation and employ correct laboratory procedures can limit data usability, or render sample results invalid.

The project-specific sampling and analysis plan for each dredging application should include a description of the project QA/QC program. The NYSDEC Analytical Services Protocol (ASP), dated June 2000, provides the in-laboratory QA/QC requirements and should be referenced and adhered to in the project QA/QC program. All data that might be subject to challenge, should be reported via ASP Category B deliverables. Otherwise, at least twenty-five percent of samples should be reported as ASP Category B deliverables. In-field QA/QC requirements should be specified in the project sampling and analysis plan. These requirements should include, but not necessarily be limited to: sample collection methods; decontamination of sampling equipment; sample container selection; sample preservation methods; number and type of QC samples (i.e. Matrix Spike/Matrix Spike Duplicate [MS/MSD], duplicates, etc.) to be collected; sample identification; and chain-of-custody procedures.

The Divisions' general guidelines for the number and type of QC samples to be collected is presented in Appendix C of this TOGS. These guidelines may be modified on a project-specific basis at the discretion of the Divisions. Also presented in Appendix C, are guidelines for the selection of sample containers and preservation methods, a sample chain-of-custody form, sampling procedures, and a glossary of selected QA/QC terminology and qualifiers.

III. EVALUATION OF RESULTS

After sediment sampling and analysis is complete, the proposed dredged material may be classified according to sediment type to allow the selection of an appropriate management option. This chapter provides the threshold values for in-water/riparian placement, in-water/riparian management options, and the methods employed for applying sampling results to the classification scheme. Chapters IV and V describe how sediment classification impacts dredging and in-water and riparian management of dredged material.

A. Sediment Quality Thresholds For In-water/Riparian Placement

The Divisions have carefully considered how sediment data should be structured and analyzed. This consideration has resulted in a classification system where sediment is placed in classes dependent upon its chemistry. The derivation of the sediment quality guidelines used in the classification system is consistent with the methodologies described in the Technical Guidance for Screening Contaminated Sediments (NYSDEC-DFWMR 1999). The Divisions have established three classes of sediment quality thresholds for dredged material proposed for in-water/riparian placement. Based on the concentration of contaminants identified during the chemical analyses, sediment to be dredged is classified as Class A, B or C (Table 2). Management options are identified in Table 3 for each class. This system differs from EPA's categorical system for in-water placement that is based on bioaccumulation and biotoxicity.

1. Class A - No Appreciable Contamination (No Toxicity to aquatic life).

If sediment chemistry is found to be at or below the chemical concentrations which define this class, dredging and in-water or riparian placement, at approved locations, can generally proceed.

2. Class B - Moderate Contamination (Chronic Toxicity to aquatic life).

Dredging and riparian placement may be conducted with several restrictions. These restrictions may be applied based upon site-specific concerns and knowledge coupled with sediment evaluation.

3. Class C - High Contamination (Acute Toxicity to aquatic life).

As defined in Table 2, Class C dredged material is expected to be acutely toxic to aquatic biota and therefore, dredging and disposal requirements may be stringent. When the contaminant levels exceed Class C, it is the responsibility of the applicant to ensure that the dredged material is not a regulated hazardous material as defined in 6NYCRR Part 371. This TOGS does not apply to dredged materials determined to be hazardous. Questions regarding hazardous waste, should be referred to the Department's Division of Environmental Remediation.

Table 2 Sediment Quality Threshold Values for Dredging, Riparian or In-water Placement

Threshold values are based on known and presumed impacts on aquatic organisms/ecosystem. Where fresh water and marine threshold values differ sufficiently, the marine value is presented in parentheses. All concentrations are in mg/kg dry weight.

Compound	Class A	Class B	Class C	Derivation Code
Metals (mg/kg)				
Arsenic	< 14 (8.2)	(8.2) 14 - 53	> 53	1
Cadmium	< 1.2	1.2 - 9.5	> 9.5	1
Copper*	< 33	33 - 207 (270)	> 207 (270)	1
Lead	< 33 (47)	33 (47) - 166 (218)	> 166 (218)	1
Mercury ⁺	< 0.17	0.17 - 1.6 (1.0)	> 1.6 (1.0)	1
PAHs and Petroleum-Related Compounds (mg/kg)				
Benzene	< 0.59	0.59 - 2.16	> 2.16	2
Total BTEX*	< 0.96	0.96 - 5.9	> 5.9	2
Total PAH ¹	< 4	4 - 35 (45)	> 35 (45)	1
Pesticides (mg/kg)				
Sum of DDT+DDD+DDE ⁺	< 0.003	0.003 - 0.03	> 0.03	2
Mirex**	< 0.0014	0.0014 - 0.014	> 0.014	2
Chlordane**	< 0.003	0.003 - 0.036	> 0.036	1
Dieldrin	< 0.11	0.11 - 0.48	> 0.48	2
Chlorinated Hydrocarbons (mg/kg)				
PCBs (sum of aroclors) ²	< 0.1	0.1 - 1	> 1	3
2,3,7,8-TCDD ³ (sum of toxic equivalency)	< 0.0000045	0.0000045 - 0.00005	> 0.00005	4

⁺ Threshold values lower than the Method Detection Limit are superseded by the Method Detection Limit. (See Table 1)

* Indicates case-specific parameter (see Chapter II, Section A) .

¹For Sum of PAH, see Appendix E

²For the sum of the 22 PCB congeners required by the USACE NYD or EPA Region 2, the sum must be multiplied by two to determine the total PCB concentration.

³TEQ calculation as per the NATO - 1988 method (see Appendix D)

Note: The proposed list of analytes can be augmented with additional site specific parameters of concern. Any additional analytes suggested will require Division approved sediment quality threshold values for the A, B and C classifications.

Table 2.1 Derivation Codes for Chemical Threshold Values

Derivation Code	Explanation
1	<p>Values are the geometric mean (GM) between Long & Morgan (1990) and Persaud (1992). Class A values are the GM of ER-L¹ and Lowest Effect Level. Class C values are the GM of the ER-M¹ and Severe Effect Levels. The resulting GMs were compared to marine water ER-L and ER-M values published by Long & Morgan (1992). When compared, the lowest of the two corresponding values was selected. When there was a large difference between a freshwater (Long & Morgan (1990) or Persaud (1992) GM) and a saltwater (Long & Morgan 1992) value, the marine value was recorded in parentheses, and is applicable to marine water dredging and management only. For total PAHs, Persaud (1992) had no toxicity values so only those of Long and Morgan (1990) were used. This approach is consistent with that described in the Technical Guidance for Screening Contaminated Sediments Document (DFW/DMR 1999). The Chlordane values were developed by NYSDEC generally following the Long and Morgan method.</p>
2	<p>NYSDEC water quality standards were used in conjunction with the U.S. EPA equilibrium partitioning methodology (see DFW/DMR 1993, pages 5-11) to calculate sediment quality threshold values for organic compounds assuming 2% organic carbon and equating K_{ow} to K_{OC}, consistent with the reality of contaminant uptake in biological organisms (Kenaga and Goring, 1980). Class A value is for the protection of benthic life from chronic toxicity. The Class C value is for the protection of benthic life from acute toxicity. If aquatic life standards were not available from 6NYCRR Part 703.5 to generate the sediment screening criterion, a guidance value was derived in accordance with 6 NYCRR Part 706.1. For total BTEX, the A and C values are the geometric means of the A and C values for benzene, xylene, ethylbenzene, and toluene. For DDT (sum of DDT, DDD, & DDE), the A value was based upon the 6 NYCRR 703.5 standard for the protection of wildlife. Because this value (0.00022 mg/l) was below the limit of analytical detection, the analytical detection limit of 0.003 mg/l was selected as a default value. The C value was the level at which significant mortality to <i>daphnia magna</i> has been documented (Long & Morgan, 1990). This approach is consistent with that described in the Technical Guidance for Screening Contaminated Sediments Document (DFW/DMR 1999).</p>
3	<p>Synthesis of Consensus Based Sediment Quality Assessment Values (D.D. MacDonald, et. al., Jan 2000), Marine and Estuarine Sediment Quality Values (E.R. Long, et. al., Nov 1993), PCB soil cleanup levels in NYSDEC Division of Environmental Remediation TAGM HWR-92-4046 and of sediment quality values from NYSDEC Division of Fish, Wildlife and Marine Resources Technical Guidance for Screening Contaminated Sediments, 1998.</p>
4	<p>A mean of the NYSDEC Fish and Wildlife bioaccumulation number, of the USEPA's low risk to mammals, the disposal of paper sludge in pasture land and the bioaccumulation protection of fish values, was calculated and rounded down to the nearest 0.5 ppt. This value is 0.0000045 ppm or 4.5 ppt. Additionally, the soil/sediment action level for 2,3,7,8 TCDD in the RCRA hazardous waste program (TAGM DHSR 3028, 1992) is 4.5 ppt. The on-land application limit of 50 ppt is used as the contaminated level from the USEPA - Paper Industry Agreement from Environment Reporter, 29 April 1994, pages 2222-3.</p>

¹ **Error! Main Document Only.** The ER-L values are the concentrations equivalent to the lower 10 percentile of the screened available data and indicated the low end of the range of concentrations in which effects were observed or predicted (concentrations above which adverse effects may begin). The ER-M values were the concentrations equivalent to the 50 percentile point in the screened available data (concentrations above which effects were frequently observed or predicted).

Table 3 RIPARIAN/IN-WATER Management Options

Activity	Class A	Class B	Class C
Dredging	Any means meeting generally accepted and approved practices	Closed bucket suggested or any means meeting environmental objectives	Closed bucket or other method minimizing loss of resuspended sediment ordinarily required
Riparian Placement	Any means meeting generally accepted and approved practices	Placement at riparian sites already containing more contaminated material. New riparian sites should be covered with Class A sediments to insure isolation of the dredged material. The depth of the cap will be determined on a site specific basis.	Riparian sites should be lined and capped with clay or other impermeable material and covered with Class A sediments to ensure long-term isolation of the dredged material from the environment. The depth of the cover material will be determined on a site specific basis.
In-water Placement	Any means meeting generally accepted and approved practices	In water placement discouraged. When applicable, sites should be capped with Class A sediment to insure isolation of the dredged material	In-water disposal ordinarily precluded.
Barge Overflow	Barge overflow may be allowed (site specific)	Usually, no barge overflow. May be allowed on site specific basis	No barge overflow
Post dredging Monitoring	May be required	See Chapter V	See Chapter V

NOTES:

1. Environmental Objectives for Dredging, Chapter IV, Section A applies to all classes.
2. Environmental Objectives for Dredged Material Management Placement at Riparian and/or In-water Sites, Chapter IV, Section B applies to all classes.
3. Riparian sites are adjacent to or within the 100-year flood plain of the surface waters in which dredging is proposed. These sites are typically diked with controlled outlets for retention of sediment and are typically regulated under Section 401 of the CWA. They do not constitute "on-land" placement.
4. Due to site specific circumstances, an applicant has full responsibility to justify all operations, including both those described above and any other selected alternatives.
5. Depending on conditions, hydraulic dredging to a confined disposal facility or excavation in the dry is the recommended method for PCB concentrations of greater than 10 ppm. Dredged material should be disposed of directly at final disposal sites. An applicant may justify another method of dredging and disposing of this material, as long as no net dumping of contaminated dredged material is proposed. If concentrations approach 50 ppm, Division of Environmental Remediation should be consulted.

B. Application of Sampling Results

1. Because these dredge and placement or disposal levels are based upon a limited number of screening parameters, one or more exceedances of a threshold in any level may be considered presumptive evidence that dredged material management should meet the restrictions of the more stringent level. However, judgment should be applied in interpreting the results. For example, failure of only one sample may be an analytical or sampling anomaly. Failure of two or three samples within a reasonable range of statistical, analytical variability may also not warrant special treatment. Biological testing may be used as an additional tool to evaluate the level of classification of the dredged material (See Section B.4). Consult with Division of Water and the Division of Fish, Wildlife, and Marine Resources staff in these cases before classifying material.

2. If one or more samples exceed Class C (high contamination, acute toxicity) thresholds for sediment quality, in-water disposal will likely be precluded. For riparian placement, the Division of Solid & Hazardous Materials staff and if necessary the Division of Environmental Remediation staff should be consulted to determine further site characterization needs and to assess dredging and disposal requirements (i.e., Part 373 site or other facility).

3. In the event that dredging may expose more highly contaminated sediments, as evidenced by the analysis of a sample segment representing the top six inches of the sediment to be exposed after dredging, prevent or limit exposure by one of the following options:

- dredge to a shallower depth than originally proposed;
- dredge to a greater depth until cleaner sediments are exposed; or
- dredge to a greater depth and then cap with available cleaner material.

4. Biological Testing of Dredged Material for Management Options.

Although the Divisions do not routinely require biological testing, the Army Corps of Engineers (USACE) may require applicants to conduct a suite of biological tests to support their federal dredging permit application. If such test results are available and considered sufficient to characterize the material to be dredged, and especially if open water placement is planned, the Divisions may elect to use this information in lieu of or in addition to whole sediment chemistry test results to make permit decisions for dredging and management of dredged material. When sediment contamination (Class B or C) is expected at the dredge site, the Divisions may still require whole sediment chemistry analysis in order to determine the appropriate best management practices to be implemented during dredging or placement operations.

Biological testing conducted to satisfy federal regulations and guidance usually consists of:

- ! 24-96 hour elutriate (suspended particulate and water) dilution series assays
- ! 10 day solid phase acute toxicity assays

! 28 day solid phase bioaccumulation assays.

If toxicity and bioaccumulation testing indicates a lower level of concern for acute and chronic effects than the corresponding sediment chemical results, then the Divisions, after evaluating project specifics (such as proximity of sensitive habitats and water use areas, the volume of material, the duration and seasonal window of the dredging, or the characteristics of the contaminant(s) of concern) would have the option of approving the management of the material at a lower classification level.

For more information on biological testing and the application of test results, see Appendix F.

IV. GENERAL GUIDELINES FOR DREDGING AND IN-WATER AND RIPARIAN MANAGEMENT OF DREDGED MATERIAL

This Chapter discusses management objectives for dredging and riparian and in-water placement of dredged material, design considerations for riparian placement facilities, and guidelines for monitoring activities during dredging and placement activities. These measures may help minimize any impacts incident to dredging and may ensure the long term protection of the dredged material placement area. The beneficial reuse of dredged material should be promoted when practical. It is important to keep the following objectives in mind so that aquatic habitats, wetland habitats, and riparian areas are protected.

A. General Dredging Guidelines

1. Environmental Objectives for Dredging

Dredging projects should comply with the specific provisions of all permits issued for the activity and should be planned, permitted and conducted toward achieving the following environmental objectives:

! Minimize the resuspension of silt, oil and grease and other fine particles or materials by careful equipment operation, floating booms, silt curtains or screens and other suitable means.

! Minimize the amount of material disturbed or returned to the water body. For mechanical dredging of sediments containing contaminant concentrations at levels of concern, the use of a closed, watertight bucket and the elimination of barge overflow may be required.

! Avoid damage to nearby wetlands and habitats from dredging activities.

! Avoid known historical or archaeological sites and minimize impacts if any previously unknown sites are discovered.

! Avoid dredging in particular water bodies during fish migration and spawning periods specified by the Division of Fish, Wildlife and Marine Resources for species of concern. Timing restrictions may be eased or lifted for small, closely monitored dredging projects, if the use of containment measures, such as silt curtains, adequately isolate the site during fish spawning and rearing periods.

! Avoid littoral zones and any adverse impacts to the littoral zone whenever possible.

! Avoid exposing benthic organisms to more highly contaminated underlying material.

2. Best Management Practices

Best Management Practices (BMP's) that meet the environmental objectives for dredging may include, but are not limited to, the following options. BMP's should be chosen with

consideration of site and project specific conditions and apply to all dredged material regardless of how it is to be managed.

Clamshell Dredge: When using a clamshell dredge, the amount of suspended solids dispersed during the dredging operation should be minimized by maximizing the size of the bucket used for dredging. This minimizes the number of “bites” needed to dredge a particular site. Bucket retrieval rates should be controlled to minimize turbidity. The spuds or anchors of the haul barge should be carefully placed outside the contaminated area to reduce resuspension of contaminated sediments. When off loading dredged material using a clamshell or backhoe, the bucket should not swing over open water.

Closed Clamshell: The closed clamshell bucket reduces the amount of suspended solids in the upper water column at the site of dredging. A closed clamshell bucket may be required when the sediments to be dredged contain contaminants at levels of concern as determined by the Divisions or if warranted by site specific conditions. Bucket retrieval rates should be controlled to minimize turbidity. The spuds or anchors of the haul barge should be carefully placed outside the contaminated area to reduce resuspension of contaminated sediments. When off loading dredged material using a clamshell or backhoe, the bucket should not swing over open water. The environmental bucket should have a sealing system to minimize the loss of material during transport through the water column. Excessive loss of water from the bucket should be investigated and repaired. An experienced bucket dredge operator with sufficient control over bucket depth, bucket closure and bucket hoist speed should be used.

Hydraulic Dredge: Hydraulic dredging, a vacuum-suction dredging process, is preferable when the placement site is within pumping distance of the dredge site. This type of dredge reduces the resuspension of suspended solids at the dredge site. However, large volumes of high percent water content material are created by this method and this water may require greater settling time and/or treatment prior to discharge.

Barge Overflow: No barge overflow should be allowed during transport of dredged material outside the dredged area. Barge overflow may be allowed during the dredging operation if the dredged material is determined to be Class A material. It should be avoided during the dredging operation if the dredged material is Class B or Class C (See Table 3) or if there are site specific reasons for not approving its use with Class A material.

Silt curtains: Silt curtains, can greatly reduce the long-term turbidity occurring during the dredging operation in water current flows of less than 1 foot per second (ft/sec). Silt curtains have been used to protect tidal creeks near the dredging area. Very poor silt curtain performance can be expected in flows of greater than 1 ft/sec. Controlling long term turbidity may also be accomplished using sheet pilings to cut off the disturbed area during work.

Shunting: Shunting, pumping via pipe of the free water in a barge to the bottom of the water column, may be permitted as an alternative to barge overflow as long as no disruption of in-place sediments occurs.

Tidal Periods: In certain semi-enclosed water bodies, dredging may only be allowed during the incoming tide. This practice may minimize the dispersal of contaminated sediments by allowing time for settling of suspended sediments.

Dredging Inspectors: In some cases, independent USACE certified dredging inspectors may be required to observe the dredging operation and report on compliance with permit requirements.

Coffer dam dewatering: Some dredging projects may include the construction of a coffer dam in the water column, with dewatering of the coffer dam prior to the dredging operation. Cofferdam dewatering should be conducted in a manner so as to preclude visible increases in turbidity or sheens in the waterbody. If the underlying sediments to be dredged are Class C, coffer dam dewatering effluent may need to be treated (settling, filtering, etc) prior to discharge back to the waterbody.

Flocculent addition: The proposed addition of a flocculent, during sediment dewatering operations, requires the submission of the Water Treatment Chemical (WTC) Usage Notification Requirements for SPDES Permittees form if the dewatering effluent is to be discharged to waters of the State. The permittee must demonstrate that any flocculent remaining in the effluent will not be toxic to organisms in the receiving water.

B. General Guidelines for In-Water and Riparian Management of Dredged Material

1. Environmental Objectives for Dredged Material Management at Riparian and/or In-water Sites

a. Riparian sites.

! New placement sites should not be located in wetlands or other specially protected or regulated habitats or in identified significant habitats.

! Placement within the 100 year flood-plain may be limited if the fill would cause an increase in the backwater elevation of a given flood event.

! Contaminated material should be covered with Class A sediments to a depth that ensures the long-term isolation of dredged material from the surrounding environment.

! Sites planned for use during multiple dredging seasons should be covered, with an interim cover that is equivalent to the final cover, if the period between use exceeds three years for Class B material and one year for Class C sediments. The need for an interim cover can be determined on a case-by case basis, depending on the bioaccumulative nature of the contaminants of concern. Alternatively, a dredging project that involves sediments with different levels of contamination may be dredged so that the most contaminated sediments are placed at the disposal site first and are then subsequently covered with cleaner sediments.

! Use of and maintenance of existing sites should minimize impacts to nearby wetlands. Any material re-excavated from riparian placement areas for other use should meet the sediment quality requirements for the other use.

! Placement sites should be maintained and operated to prevent the uncontrolled release of sediments beyond the boundary of the site or into surface waters.

b. Non-capped, In-water sites.

! In-water placement should be limited to dredged material that is homogeneous, consists of generally coarse grained material and shows no evidence of appreciable contamination. In water placement should only be used when practicable on-land or riparian management alternatives are not available.

! In-water placement of contaminated dredged material in any “clean” area viewed as an economic or environmental resource of New York State should be discouraged. As an example, such areas might support sand mining, commercial or sport fishing and/or be near public bathing beaches.

! In-water placement of dredged materials at EPA-designated sites will continue to be a viable option, since these sites have undergone environmental review, are authorized for such placement, and have established sediment criteria.

! The placement area should not be located in specially protected or regulated habitats or identified significant habitats.

! In-water placement activities must be approved by the Divisions and must minimize intrusion into littoral areas.

! The resuspension of fine-grained materials should be minimized for in-water placement areas by use of silt curtains, floating booms, the proper selection and careful operation of equipment and other suitable means.

! Characteristics of the dredged material should be similar to existing characteristics at the placement area to ensure that aquatic communities will reestablish themselves.

c. In-water capped sites.

These sites should be limited to moderately contaminated sediments (Class B) when no upland or riparian management sites are available.

In addition to the considerations in item b above, the following apply.

! Site-specific biological surveys, toxicity and bioaccumulation testing may be required for approval and for post-placement monitoring. These studies should

support the contention that biota exposed to the site after placement will not contain appreciably more body burdens of contaminants and will not experience acute or chronic toxicity.

! Existing depressions and old excavations (e.g., borrow pits) should be considered before any new excavations are created. Capping with Class A sediments and leveling to surrounding bottom contours will likely be required.

! Cap material should be deposited in a thickness that will provide long-term isolation of the dredged material from the overlying water. Capping material should have the same characteristics as the surrounding bottom sediments to prevent differential scouring and encourage re-establishment of benthic communities.

! Placement area should not be proposed for future dredging or mining; it must be recorded on USGS, NOAA or other appropriate maps, using Universal Transverse Mercator (UTM) or New York Transverse Mercator (NYTM) coordinates.

2. Design Consideration for Riparian Confined Disposal Facilities

For the purpose of this TOGS, “riparian” is defined as the 100 year flood plain plus any adjacent wetland integral to the surface water. Riparian confined disposal facilities are by this definition any facility located within the 100 year flood plain or adjacent wetland. Other names for a confined disposal facility may be upland disposal site or containment site. These sites are typically diked with controlled outlets for retention of sediment and are typically regulated under Section 401 of the CWA. They do not constitute “on-land” placement.

1. Riparian disposal facilities should be located, where possible, on soils with low permeability (i.e., Soil Conservation Service soil groups C and D).
2. The disposal facility should retain dredge water for the time required to meet discharge conditions (see Chapter V, Section A). The volume needed to provide this retention period should be in addition to the volume needed for solids storage. Disposal facilities designed to receive solids from more than one dredging cycle should use any excess volume to increase the retention period to the maximum practicable extent.
3. Inlet and outlet openings should not be placed directly in-line with each other unless baffles are in place to provide adequate settling time.
4. A minimum water depth of three feet should be provided for retention, using a controlled-outlet weir, in a disposal facility served by a hydraulic dredge. The weir overflow rate should be controlled in order to achieve an acceptable effluent concentration for suspended solids.

5. The length-to-width ratio of the disposal facility should be greater than two to one where the length is the distance between the inlet and the outlet.
6. A baffle could be constructed as part of the outfall structure to prevent the release of floating debris and oils.
7. The outlet should convey the discharge in an erosion-free manner, preferably to an existing stable channel.

NOTE: The prime objective of these design considerations is to enable reasonable capture of fine grain sediments, which contain most of the contaminants. Any number of engineered methods can increase fine grain capture. Design of confined disposal facilities for Class C sediments are site-specific and should ensure optimal fines (see glossary) capture to retain pollutants.

V. PERMIT CONDITIONS FOR DREDGING AND DREDGED MATERIAL MANAGEMENT

The dredging permit or Water Quality Certification may contain special conditions which will vary depending upon dredged material classification, where discharges are directed, or where sediment generated from dredging operations is placed.

When discharges associated with dredging operations are directed outside of the dredging area, the receiving water may experience loadings of new pollutants. These loadings should be reviewed in accordance with Division of Water’s TOGS 1.2.1 and TOGS 1.3.1. These TOGS should be followed for calculating the total maximum daily loading (TMDL) and to determine if any water quality based effluent limits are necessary. The dredging permit or 401 Certification would then be conditioned with any applicable water quality based limits, technology limits, requirements for best management practices, mixing zone limits, and monitoring requirements.

When discharges associated with dredging operations are directed back into the dredge area, and if no new pollutants are added to the dredged material, the discharge may not need to be reviewed to determine an allowable TMDL. The dredging permit or 401 Certification could then be conditioned with applicable technology limits or narrative water quality standards, BMPs, mixing zone limits, and monitoring requirements.

A. Water Quality Based Limits and Technology Limits

A mixing zone can be assigned at the site of dredging, at the site of in-water placement of dredged material and at the effluent discharge from on-water processing, on-land processing, and confined disposal facilities (see Section C, following). The narrative limits presented in Table 4 apply at the edge of any defined mixing zone and should be included as conditions in the 401 Certification or dredging permit. For water quality limiting substances (Appendix A) and parameters measured at levels higher than Class A threshold values in the dredged material, concentrations at the edge of the mixing zone should not exceed water quality standards or background conditions plus an allowance for analytic variability.

Table 4 Section 703.2 Narrative Water Quality Standards

<u>Parameter</u>	<u>Classes</u>	<u>Standard</u>
Turbidity	AA, A, B, C, D, SA SB, SC, I, SD	No increase that will cause a substantial visible contrast to natural conditions
Suspended, Colloidal, and Settleable Solids	AA, A, B, C, D, SA SB, SC, I, SD, A-special	None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages

For effluent from on-water or on-land processing and confined disposal facilities, an alternative to meeting water quality standards at the edge of an established mixing zone would be setting effluent limits at the point of discharge (e.g. at the weir). The following options would be available:

The applicant can suggest and justify a maximum limit for TSS and/or turbidity at the point of discharge (e.g. at the weir). This justification should demonstrate that the proposed limit will not cause detrimental effects to the environment or to human health. This case specific-number should be developed with attention to existing background concentrations of TSS in the receiving water, to any and all localized water quality limiting substances or chemicals of concern, and to the proximity of any critical water use areas or sensitive habitats. The Divisions will evaluate the justification of the proposed limit with the goal of ensuring environmental protection and that no exceedance of water quality standards are likely to occur.

-or-

The following default technology limits at the point of discharge (e.g. at the weir) may be used as dredging permit or 401 Certification conditions:

- ! total suspended solids - 200 ppm;

- ! settleable solids - monitor; (no limit)

- ! chlorides - none greater than 110 percent of the background concentration; and

- ! for water quality limiting substances and tested parameters at levels higher than Class A level - limits determined by procedures outlined in TOGS 1.2.1 and TOGS 1.3.1 for developing TMDL's.

B. Best Management Practices.

Best management practices (BMPs) during dredging and dredged material management operations should be included as conditions in the 401 Certification or dredging permit if appropriate. These practices should protect sensitive resources in the vicinity of dredging or dredged material management activities and may include:

- ! Operational controls, during dredging, such as the use of a closed bucket, a controlled bucket speed or cycle speed, and no barge overflow. These measures can all be instrumental in reducing the amount of solids resuspended and therefore the extent of the area impacted by dredging.

- ! Silt curtains to protect sensitive habitats from resuspended solids.

- ! Environmental windows which restrict dredging or placement during fish migration and spawning periods.

Lists of possible BMPs are included in Chapter IV, Sections A and B.

C. Mixing Zones

A mixing zone is an area in a water body, defined by DEC, within which the Division of Water will accept temporary exceedances of water quality standards resulting from short-term

disruptions to the water body caused by dredging or the management of dredged material. A mixing zone can be assigned at the site of dredging, at the site of in-water placement of dredged material, and at the effluent discharge from on-water processing, on-land processing, and confined disposal facilities. (See Section A, preceding, for water quality limits that apply at the edge of any defined mixing zone).

In the case of contaminated sediment resuspended during dredging or dredged material management, disruptions to beneficial uses of the water-body must be minimized. The size and shape of mixing zones should be limited to ensure that they do not impair the integrity of the water body as a whole and that there is no lethality to organisms passing through or enveloped by the mixing zone (EPA Water Quality Standards Handbook - 2nd Edition - August 94). In addition, mixing zones should be established to provide a continuous zone of passage and to prevent any impairment to critical resource areas (EPA 94). Shallow water shorelines of rivers, lakes and the coast line, wetlands and biologically active zones should receive the greatest protection when establishing the limits of mixing zones (EPA 76).

To ensure protection of aquatic life when defining the allowable extent of a mixing zone, the following should be considered:

- ! Along shorelines, acute toxicity thresholds for suspended sediments should not be exceeded beyond a distance of 500 feet along the shore.

- ! In rivers and river-like sections of estuaries, acute toxicity thresholds for suspended sediments should not be exceeded beyond a distance of one third the width of the waterway or a total width of 500 feet, whichever is less.

- ! In open water areas of estuaries and lakes, acute toxicity thresholds for suspended sediments should not be exceeded beyond a distance which corresponds to 10% of the cross-sectional area of the waterway or a total width of 1500 feet, whichever is less.

- ! Wetlands, tidal creeks and other critical resources (e.g., water use areas or areas with abundant early life stages of fish or shellfish) must be protected from levels of suspended sediments that cause chronic toxicity. Permit review staff should delineate the size and shape of the chronic toxicity mixing zone to protect these resources.

For dredged material that has undergone suspended phase toxicity testing:

- ! The threshold of acute toxicity is estimated to be the suspended sediment (SS) concentration associated with 0.1 x the LC50.

- ! The threshold of chronic toxicity is estimated to be the suspended sediment (SS) concentration associated with 0.05 x the LC50.

For dredged material that has not undergone suspended phase toxicity testing:

- ! The threshold of acute toxicity is considered to be any SS levels 100 ppm above ambient conditions.

- ! The threshold of chronic toxicity is considered to be any SS levels 50 ppm above ambient conditions.

The Divisions may assign a default mixing zone of 500 feet (unless there is a critical water use area or sensitive habitat located closer than 500 feet) or require the applicant to provide a mixing zone analysis when whole sediment chemistry test results identify the presence of water quality limiting substances (Appendix A) or analytes at concentrations higher than the Class A threshold values or when sediment toxicity test results warrant. The analysis shall characterize the extent of potentially toxic water quality conditions that may result from remobilization of contaminants during dredging or management activities. This determination shall be made by the Divisions on a case-by-case basis and shall include consideration of the following:

- ! The nature of sediment contamination
- ! Proximity of sensitive habitats or water use areas (beaches, water intakes, etc.)
- ! Proximity of sensitive life stages of important biological resources.

Information such as sediment chemical and physical characteristics may be used to assess the potential impacts at the dredging or management site. Qualitative assessments which compare the proposed project to similar projects, for which field monitoring results are available, may also be considered.

1. Mathematical Models.

In some cases, mathematical models can be used to calculate contaminant or suspended solids concentrations at the boundaries of a defined mixing zone. If, based on characterization of sediments or whole sediment chemistry or toxicity tests, it is determined that the sediments are or have the potential to be toxic to aquatic life, then the Divisions may require the applicant to study the proposed dredge activity with the use of an appropriate model. The model should be used to determine whether predicted water quality conditions at the edge of the allowable mixing zone will comply with conditions in the 401 Certification or dredging permit. The applicant may choose to use an existing model or may have a model developed for the particular location.

Most of the existing sediment dispersion models are designed for the specific situations of open water disposal in the ocean, barge overflow, or return water from an upland disposal facility. These models are complex and have limits on their applicability. USACE Automated Dredging and Disposal Alternatives Management System (ADDAMS) models are available on the USACE web page and can be downloaded onto a personal computer.

The following guidelines apply to the use of mathematical models:

- ! If one of the existing mixing zone models is used (e.g. ADDAMS, CORMIX), then all input parameters and model runs should be provided to the Division of Water for review. If a new mixing zone model is developed for a particular site, the model and all documentation (including input parameters, model runs and analysis) should be provided to the Division of Water for review prior to acceptance of the predicted results.

! Some available models will predict concentrations of chemicals at the edge of the defined mixing zone. These predicted concentrations should be compared to the water quality standards (6NYCRR Parts 700-706) to ensure standards are not exceeded outside this mixing zone.

! Some available models will predict acute or chronic toxicity at the edge of the defined mixing zone. The predicted results should be compared to existing standards for toxicity.

! The predicted conditions at the boundary of the mixing zone should be evaluated based on proximity to sensitive habitats or water use areas.

! The model should be verified as appropriate for use in the particular flow situation. Some mathematical calculations for mixing can be used for steady state or non-complex flow conditions. However, tidally influenced rivers and estuaries are, by definition, complex flow conditions.

! The results of the model should be reproducible. A model cannot be used to predict conditions at the boundary of a mixing zone until it has been adequately calibrated.

! Model predictions should be verified by real-time sampling.

D. Monitoring Requirements.

A permit or certification for dredging and dredged material management may contain a number of performance requirements. If water quality monitoring is required to ensure compliance with these requirements, then the applicant, in consultation with the Divisions, should propose appropriate monitoring locations (including background sample location), action levels, and contingency requirements (i.e. corrective actions to be taken if monitoring reveals exceedances of water quality limits) for dredging and management operations, with final approval by the Divisions. The frequency and location of sample collection and the scheduled reporting of analytical results will be included in the permit and will be decided on a case-by-case basis. Monitoring may be biased toward a more intense monitoring effort during the early phases of a project. After consistent, satisfactory performance has been demonstrated, the Divisions would have the option of decreasing monitoring frequency. Any required field measurements or observations, including turbidity, should be reported to the Divisions within 24 hours. Sample analysis shall be undertaken at an environmental laboratory approved by the New York State Department of Health (ELAP). All laboratory results of analyses shall be transmitted to the Divisions electronically or by fax or overnight mail within ten working days of sample collection and immediately followed by a mailed copy. When the sediments to be dredged are highly contaminated, the permit may be conditioned to require a shorter turn around time for the transmission of required water column and/or effluent analysis results. This turn-around time shall be decided on a case-by-case basis. The permittee should identify any exceedances of the limit for suspended solids or of any other required monitoring parameter. The permittee should also include a description of the exceedance, its cause, and identify the corrective actions that were taken at the time of the exceedance. Typical monitoring requirements are as follows:

1. Total Suspended Solids

Total suspended solids concentrations may be measured directly through laboratory analysis, or a correlation may be derived for suspended solids and NTU. NTU may be measured in the field using one of a variety of available meters or sensors. An appropriate number of samples must be collected to make a statistical correlation between these two parameters.

- For dredged material that has undergone suspended phase toxicity testing, applicants should be required to measure the TSS and turbidity (NTU) of the full strength suspended phase and all dilutions tested. These measurements can be used to determine the turbidity in NTU associated with the acute or chronic toxicity levels established for the limits of any mixing zones. Turbidity in NTU may then be monitored in the field during any dredging or management operations.
- For dredged material that has not undergone suspended phase toxicity testing, applicants may be expected to collect a suspended phase sample of the dredged material, measure the TSS and turbidity, and determine if there is a correlation between the two measurements following the method in Thackston and Palermo “Improved Methods for Correlating Turbidity and Suspended Solids for Dredging and Disposal Monitoring” -1998. In accordance with this method, the applicant may be expected to provide the turbidity in NTU that is associated with TSS levels of 50 and 100 ppm above background.

2. Dredging Area

- The dredging area may be monitored for water quality parameters of concern (e.g., water quality limiting substances (see Appendix A) or substances identified at concentrations greater than Class A threshold values), for total suspended solids (TSS) at locations approved by the Divisions, or to ensure compliance with mixing zone limits. If a mixing zone limit was set using a mathematical model, TSS or turbidity monitoring requirements may be waived after real-time sampling verifies model predictions.
- The dredging area should be routinely inspected for compliance with general and special permit conditions for protection and restoration of habitat.
- The post-dredging sediment surface may be sampled and analyzed for sediment quality parameters and other contaminants of concern to assure that their concentrations do not exceed pre-dredging levels. This may be required if initial sampling and analysis of the sample segment representing the top six inches of the sediment to be exposed after dredging (see Chapter II, Section B.2.a) indicates an increased risk of contaminant exposure. See Application of Sampling Results (Chapter III, Section B.3) for options to prevent or limit exposure.

3. In-water/Riparian Placement Area

- In-water placement should be monitored for total suspended solids (TSS), settleable solids and other water quality parameters of concern (e.g., water quality

limiting substances (see Appendix A) or substances identified at concentrations greater than Class A threshold values) at locations approved by the Divisions.

- For any capped in-water placement area, physical inspections that are supplemented, if necessary, by bathymetric surveys should be conducted periodically and after major storm events to detect loss of cap integrity.
- For riparian diked sites or confined disposal facilities, overflow should be routinely monitored at the point of discharge (e.g. at the weir) for turbidity, total suspended solids, settleable solids and other water quality parameters of concern, to assess effectiveness of retention time for prevention of sediment and associated contaminant transport back into surface waters.
- For riparian diked sites or confined disposal facilities, the effluent plume should be visually monitored daily with periodic verification of total suspended solids concentrations. If there is a visible plume outside the mixing zone, the permittee should take action to rectify the situation. If there are water quality limiting substances in the dredged sediment or levels in the sediment at higher concentrations than Class A threshold values, the permittee may be required to monitor for these parameters at the edge of the mixing zone at the frequency deemed appropriate by the Divisions. Samples should be collected until there is no longer a discharge of effluent from the site or until the site has been modified to prevent further discharge to the waterway. The analytical laboratory quantitation levels for monitored parameters must be low enough to allow a meaningful evaluation of the concentration of the analytes.

E. Violations

Exceedance of state water quality standards may subject the permittee to a monetary fine, corrective or mitigation action, or other enforcement action by the Department.

Permits or certifications containing conditions with emission, discharge or other monitoring limits (i.e., for turbidity) should state that exceedances of such limits require that corrective measures be implemented immediately and a report e-mailed, faxed or overnight mailed to the appropriate Department personnel within 24 hours. For subsequent exceedances, the Certificate should require the permittee to immediately stop the activity causing the exceedances, and e-mail, fax or overnight mail notification to appropriate Department personnel within 24 hours. Such notification should contain a plan for corrective measures.

APPENDICES

APPENDIX A POTENTIAL WATER QUALITY LIMITING SUBSTANCES

Potential Water Quality Limiting Substances are substances that cause Water Quality Limiting Segments for different water bodies throughout the State. The definition of Water Quality Limiting Segments is as follows: "A designated portion of a water body where water quality does not meet applicable standards, or is not expected to meet applicable standards, even after the application of technology based treatment requirements by industry and secondary treatment by municipalities." This definition can be found in TOGS 1.3.1 - Total Maximum Daily Loads and Water Quality Based Effluent Limits.

Potential Water Quality Limiting Substances as of July 2001

For the Upper Hudson, Mohawk and Lower Hudson Basins, the following are potential or actual water quality limiting substances: mercury, copper, cyanide, iron, lead and PCB

For the St. Lawrence River PCB's and PAH's are water quality limiting substances.

For the Grass River cadmium, copper, cyanide, fluoride, iron, lead, sulfide, surfactants, zinc and phenols are water quality limiting substances.

For the New York Harbor mercury is water quality limiting and there is a fish advisory for PCB's. Other chemicals of concern are dioxin/furan's, PAH's and chlordane.

For the Genesee River Basin phenolics, chlorinated phenolics, cobalt, cyanide, hydroquinone, lead, 1,1,1-trichloroethane, dichlorobenzene, cadmium, tetrachloroethylene and copper are water quality limiting substances.

For the Lake Ontario Basin 1,1-dichloroethylene, 1,2-dichloropropane, dimethylaniline, ethylene glycol, acrylonitrile, bis-(2ethylhexyl) ether, 2,4-dichlorophenol and 2,6-dinitrotoluene are water quality limiting substances.

For the Allegheny River Basin copper, phenol and nickel are water quality limiting substances.

For the Lake Erie-Niagara River basin chrysene, benz(a)anthracene, hexachlorocyclohexane, PCB's, endosulfan, heptachlor, DDT, hexachlorobenzene and phenolics are water quality limiting substances.

For the Susquehanna River Basin - copper, cyanide, and iron are water quality limiting substances. In addition:

- Cadmium, lead, selenium and phenols are water quality-limiting downstream of Cortland.
- Cadmium is also water quality-limiting downstream of the Amphenol Corp. discharge at Sidney.
- Mercury is water quality-limiting downstream of the Binghamton-Johnson City STP.
-

For the Chemung River Basin - antimony, cadmium, copper, cyanide, lead, iron, and thallium are water quality limiting substances. In addition:

- Nickel, silver, zinc and fluoride are water quality-limiting downstream of the Toshiba, Westinghouse, Cutler-Hammer complex.
- Mercury, nickel, silver and zinc are water quality-limiting downstream of the Facet Enterprises hazardous waste remediation site on Mays Creek.

For the Seneca-Oneida-Oswego River basins cyanide, mercury, iron, aldrin, PCB's, dichlorobenzenes, and phenols are water quality limiting substances. In addition:

- Cadmium is water quality-limiting in the Onondaga Lake sub-basin while lead and trichloroethylene are water quality-limiting in the Ley Creek sub-sub-basin.
- Lead is water quality-limiting in the Owasco Lake sub-basin and in the Skaneateles Creek sub-basin.

**APPENDIX B VARIOUS METHODS FOR
CALCULATING HOW MANY SAMPLES SHOULD BE
COLLECTED TO CHARACTERIZE A DREDGE SITE**

Balduck's Method

The method of gridded sampling proposed by Balduck, 1992 (in Keillor 1993) may be used for dredge site characterization with certain modifications based on site size, dredge history, environmental flags (e.g., fish advisory), and the presence or absence of potential pollutants in the drainage basin or local environment. The Balduck equation considers the area (not volume) to be dredged and is used only to determine the number of sediment cores to be collected to provide spatially representative sampling of the dredge site. Core sample depth and segmentation guidelines are described in Chapter II, Section B.2.

Balduck's equation, modified for English units, is:

$$N = (Df)(30)((W)(L)(\frac{1}{1.2 \times 10^6}))^{0.33}$$

where

N = the total number of coring (sampling) stations;

$\frac{1}{1.2 \times 10^6}$ = factor to convert square yards into square kilometers;

W = the width (in yards) of a single dredge area or the widest dredge area where there are multiple areas to be dredged;

L = the length (in yards) of a single dredge area or the sum of the lengths of the parts of a combined dredge area;

Df = a dredge factor consisting of a multiplier (unitless) from 1 to 3 based on the site's dredging, environmental or pollutant history and other case-specific factors discussed below.

**Table B-1: Balduck Method for Selection of Sample Size
Number of Samples for Analysis per Area (sq. yds.) to be Dredged**

Dredging Area (sq. yds.)	Balduck Method		
	Number of Samples	Number of Samples	Number of Samples
	Df = 1	DF = 2	Df = 3
5,000 - 10,000	5 - 6	10 - 12	15 - 18
10,000 - 20,000	6 - 7	12 - 14	18 - 21
20,000 - 30,000	8 - 9	16 - 18	24 - 27
30,000 - 50,000	9 - 10	18 - 20	27 - 30
50,000 - 65,000	11	22	33
65,000 - 85,000	12	24	36
85,000 - 100,000	13	26	39
100,000 - 130,000	14	28	42
130,000 - 160,000	15	30	45
160,000 - 200,000	16	32	48
200,000 - 230,000	17	34	51
230,000 - 280,000	18	36	54
280,000 - 330,000	19	38	57
330,000 - 380,000	20	40	60
380,000 - 440,000	21	42	63
440,000 - 500,000	22	44	66
500,000 - 580,000	23	46	69
580,000 - 650,000	24	48	72
650,000 - 750,000	25	50	75
750,000 - 830,000	26	52	78
830,000 - 930,000	27	54	81
930,000 - 1,030,000	28	56	84

Df equals 1 for sites:

! with no previous sediment data; and

! no suspected likelihood of appreciable contamination.

Df equals 2 for sites:

! with no previous sediment data; but

! where there is a likelihood of contamination based on history of surrounding land uses (e.g., heavy industry), spills, observed environmental stresses; and dredging has occurred within the last five years; or

! near particularly sensitive features, e.g., water supply intakes, unique habitats.

Df equals 3 for sites:

! with documented contamination from past sediment data; or

! in areas of established fish advisories or spills or site-specific contamination of concern (e.g., copper, mirex, dioxin, PCB's) in the drainage basin; or

! where there is a likelihood of contamination and dredging has not occurred in the last five years.

NOTE:

Df of 0.5 where:

! previous data show no contamination.

! there is no likelihood of contamination.

SORENSEN

A Dutch formula for estimating sample density for conventional maintenance dredging was proposed by Sorensen (1984). The formula is as follows:

$$N = 3 + \left[\frac{(A^{0.5} * d^{0.33})}{50} \right]$$

where

N = number of cores

A = area (sq. Meters)

d = depth (meters)

ENVIRONMENT CANADA

An Environment Canada method for selecting the number of samples was presented by MacKnight (1991). These guidelines call for calculating the dimensions of a sampling block (grid rectangle), using 1000 cubic meters as a sampling block volume. For larger areas, this method calls for more samples than the other two methods. For small dredge areas, fewer samples would be suggested. The Canadian method calls for a sample in the center of each 1000 cubic meter block and is less random than the other two methods.

For more information on this method see: Mudrock A + S.D. MacKnight, 1991. Handbook of Techniques for Aquatic Sediments Sampling. pp.210. CRC Press, Boca Raton, FL.

APPENDIX C SEDIMENT SAMPLING

Table C-1 QC SAMPLES FOR SEDIMENTS			
Sample Type	Purpose	Collection	Documentation
Duplicate	Check laboratory and field procedures	1 sample per week or 10% of all field samples, whichever is greater	Assign two separate sample numbers, submit blind to the lab
Equipment (Rinseate) Blank	Check field decontamination procedures	Collect when sampling equipment is decontaminated and reused in the field.	Assign separate sample number
Matrix Spike and Matrix Spike Duplicate (MS/MSD)*	Required by laboratory protocols.	1 sample per twenty sediment samples	Assign both samples the same sample number. Indicate MS/MSD on chain-of-custody form.

*This is not necessary with PCB congener method or high resolution pesticide method or dioxin/furan analyses.

Table C-2 SAMPLE CONTAINERS AND VOLUMES FOR SEDIMENT SAMPLES		
Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)
Purgeable (Volatile) Organics	2-oz. glass jar with Teflon lined cap	Two; fill completely
Extractable Organics, Dioxin/Furan Pesticides/PCBs	8-oz. amber glass jar with Teflon-lined cap	One; fill completely
Metals	8-oz. glass jar with Teflon-lined cap	One; fill half full

Table C-3 SAMPLE PRESERVATION AND HOLDING TIMES FOR SEDIMENT SAMPLES		
Parameter	Preservative	Maximum Holding Time¹
Volatiles	Cool to 4 C	7 days
PCBs/Pesticides	Cool to 4 C	Extract within 5 days, analyze within 40 days
Extractable organics	Cool to 4 C	Extract within 5 days, analyze within 40 days
Metals	Cool to 4 C	6 months
Mercury	Cool to 4 C	26 days
Dioxin/Furan	Cool to 4 C	Extract within 30 days, analyze within 1 year

¹ Holding times are based on verified time of sample receipt (VTSR). Source NYSDEC Analytical Services Protocol.

CHAIN OF CUSTODY RECORD

WORK ORDER #:
 CUSTODY No:
 PROJECT:
 SAMPLED BY:
 LOCATION:

SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	MATRIX	COMPOSITE OR GRAB	FIELD MEASUREMENT	No. OF CONTAINERS	ANALYSIS REQUIRED								REMARKS (PRESERVATION, ETC.)	
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)			RELINQUISHED by: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)						
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)			RELINQUISHED by: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)						
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)			SHIPPED / DELIVERED:					DATE:	TIME:				
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)			REMARKS:										
RELINQUISHED by: (Signature)		DATE: TIME:	TIME:	RECEIVED FOR LABORATORY BY: (Signature)													

Sampling Procedures

Core Samples

Sediment cores should be collected using a vibra-coring apparatus, or other appropriate coring device. Selected equipment is to be used in accordance with the manufacturer's instructions. Clean, decontaminated core tube liners must be used. The bottom of the coring tube liner should be immediately capped and taped upon removal of the coring apparatus from the water. The core tube liner should then be removed from the coring apparatus and its top immediately capped and taped.

The core tube liner and boat deck should then be rinsed with ambient water to reduce the risk of contaminated sediments becoming airborne as they dry.

A visual inspection of the sediment cores should then be performed. Individual horizons or strata within each core should be measured, along with the overall core length. These measurements and all significant features should be documented in a field notebook. The field notebook should also document the date, time, and location of each sample collected. Using a permanent marker, the date, time, and sample location should also be recorded on the sediment core tube liner. High resolution photographs of the cores may be taken.

The sediment core (or segment if appropriate) should be emptied into a clean tub and mixed with a clean spatula made of appropriate material. Generally sediment to be analyzed for trace metals should not come into contact with metals and sediment to be analyzed for organic compounds should not come into contact with plastics. When the sediment appears mixed to a uniform color and consistency, a clean scoop should be used to place the material into acid washed wide mouth glass jars with Teflon® lined screw lids. After a jar is capped and labeled, it should be immediately placed on ice in a cooler.

All sample containers should be labeled using a permanent marker to indicate the date, time, and sampling location. This information should then be recorded in a field log book and on a chain of custody form which will follow the samples. Sediment material not placed in sample bottles should be returned to the location from which it was collected. All sample bottles should be placed in coolers with ice and delivered to the laboratory via overnight delivery service.

Sediment Data Qualifiers

Qualifiers for Organics Analyses

Value	If the result is a value greater than or equal to the quantification limit, report the value.
U	Indicates compound was analyzed for, but not detected.
J	Indicates an estimated value.
N	Indicates presumptive evidence of a compound.
P	This flag is used for a pesticide/Aroclor target analyte where there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
C	This flag applies to pesticide results where the <u>identification</u> has been confirmed by GC/MS.
B	This flag is used when the analyte is found both in the associated blank and in the sample.
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.

NOTE: These qualifiers do not apply to the PCB congener method 1668, but are applicable to the recommended PCB method 8082.

Qualifiers for Metals Analyses

B	The reported value is less than the Contract Required Detection Limit but greater than the Instrument Detection Limit.
U	The Analyte was analyzed for but not detected, i.e., less than the Instrument Detection Limit.
E	The reported value is estimated because of the presence of an interference.

Glossary of Selected QA/QC Terms
(source: NYSDEC ASP, 10/95)

Analytical Services Protocol (ASP) - the collection of analytical methods and corresponding reporting and quality control procedures that has been adopted by the Division of Water.

Contract Required Quantitation Limit (CRQL) - minimum level of quantitation acceptable under the ASP.

Equipment Rinseate - a sample of analyte-free media which has been used to rinse the sampling equipment. It is collected after completion of decontamination and prior to sampling. This blank is useful in documenting adequate decontamination of sampling equipment.

Field Blank - any sample submitted to the laboratory identified as a blank prepared in the field. The purpose of the field blank is to document whether or not there was contamination introduced in the collection of the sample.

Field Duplicates - an additional sample taken from the same homogenized sample and sent to the analytical laboratory for identical analysis.

Holding Time - the elapsed time, expressed in days, from the date of receipt of the sample by the laboratory until the date of its preparation (digestion, distillation or extraction) and/or analysis.

Matrix - the predominant material, component, or substrate (e.g., sediment) of which the sample to be analyzed is composed. Matrix is not synonymous with phase (liquid or solid).

Matrix Spike (MS) - aliquot of a sample fortified (spiked) with known quantities of specific compounds (target analytes) and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery. The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Matrix Spike Duplicate (MSD) - a second aliquot of the same matrix as the MS that is spiked with identical concentrations of target analytes as the MS, in order to document the precision and bias of the method in a given sample matrix.

Method Detection Limit (MDL) - the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

Minimum Quantitation Limit - the minimum level that an analyte can be quantitated within a specified precision.

Percent Moisture - an approximation of the amount of water in a sediment sample made by drying an aliquot of the sample at 105 °C. The percent moisture determined in this manner

also includes contributions from all compounds that may volatilize at or below 105 °C, including water. Percent moisture may be determined from decanted samples and from samples that are not decanted.

Practical Quantitation Limit (PQL) - is the lowest level that can be measured within specified limits of precision during routine laboratory operations on most effluent matrices.

Project - single or multiple data collection activities that are related through the same planning sequence.

Replicate - independent samples which are collected as close as possible to the sample point in space and time. They are two separate samples taken from the same source, stored in separate containers, and analyzed independently at the same laboratory. These replicates are used to characterize sediment heterogeneity.

Semivolatile Compounds - compounds amenable to analysis by extraction of the sample with an organic solvent. Used synonymously with Base/Neutral/Acid (BNA) compounds.

Tentatively Identified Compounds (TICs) - compounds detected in samples that are not target compounds, internal standards or surrogate standards. Up to 30 peaks (those greater than 10% of peak areas or heights of nearest internal standards) are subjected to mass spectral library searches for tentative identification.

Time - when required to record time on any deliverable item, time shall be expressed as Military Time, i.e., a 24-hour clock.

Trip Blank - a sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. A trip blank is used to document contamination attributable to shipping and field handling procedures.

Validated Time of Sample Receipt (VTSR) - the date on which a sample is received at the laboratory facility, as recorded on the shipper's delivery receipt and chain-of-custody.

Volatile Compounds - compounds amenable to analysis by the purge and trap technique. Used synonymously with purgeable compounds.

Wet Weight - the weight of a sample aliquot including moisture (undried).

APPENDIX D TEQ CALCULATION FOR DIOXIN/FURAN

The 2,3,7,8-TCDD equivalent for a congener is obtained by multiplying the concentration of that congener by its Toxicity Equivalency Factor (TEF) from the table below. The TEQ is the sum of the products.

<u>CONGENER</u>	<u>TEF</u>
2,3,7,8 -Tetrachlorodibenzo-p-dioxin	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	0.01
Octachlorodibenzo-p-dioxin	0.001
2,3,7,8-Tetrachlorodibenzofuran	0.1
1,2,3,7,8-Pentachlorodibenzofuran	0.05
2,3,4,7,8-Pentachlorodibenzofuran	0.5
1,2,3,4,7,8-Hexachlorodibenzofuran	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran	0.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.01
Octachlorodibenzofuran	0.001

TEQ calculation as per: NATO.1988. International Toxicity Equivalency Factors (I-TEF) Method of Risk Assessment for Complex Mixtures of Dioxins and Related Compounds. North Atlantic Treaty Organization. Report Number 176.

Known standards and guidelines are based on the method outlined above. In 1998 an expert meeting of the WHO was held to derive consensus TEF's for dioxins/furans and dioxin-like PCB's. A new list of TEF's was recommended which included values for humans, mammals, fish and birds. A copy of these numbers is available in:

Environmental Health Perspectives, December 1998. Toxic Equivalency Factors (TEFs) for PCB's, PCDD's, PCDF's for Humans and Wildlife. Volume 106, Number 12.

APPENDIX E SUM OF PAH'S

PAH's in sum of PAH's

Acenaphthene
Acenaphthylene
Anthracene
Benz(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(g,h,i)perylene
Benzo(a)pyrene
2-Chloronaphthalene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-c,d)-pyrene
2-Methylnaphthalene
Naphthalene
Phenanthrene
Pyrene

The sum of the concentrations of these eighteen PAH analytes are used to calculate the sum of PAH for Table 2. If one or more analytes are missing from the list, sum the remaining analytes for the calculation of sum of PAH.

APPENDIX F BIOLOGICAL TESTING OF DREDGED MATERIAL

Although the Divisions do not routinely require biological testing, the Army Corps of Engineers (USACE) may require applicants to conduct a suite of biological tests to support their federal dredging permit application. If such test results are available and considered sufficient to characterize the material to be dredged, and especially if open water placement is planned, the Divisions may elect to use this information in lieu of or in addition to whole sediment chemistry analytical results to make permit decisions. The following sections describe biological testing and the application of test results.

A. Water Column (Suspended Phase) Evaluations

Federal dredging guidance requires preparation of a suspended particulate phase for bioassay testing with water column organisms. The suspended phase is the supernatant after 1 hour of settling following 30 minutes mixing of 1 part of sediment with 4 parts of dredging site water. Dilution series of 100, 50, 10 and 0% are prepared for the suspended phase toxicity tests to enable calculation of an LC-50 or EC-50 for three test organisms. The results of these toxicity tests can be used after applying mixing considerations and resource concerns at the dredging and placement sites. Water chemistry elutriate analyses are also conducted on a filtrate (0.45 um filter) of the suspended particulate phase to compare with water quality criteria. The results of both tests above are interpreted by USEPA/USACE using numerical modeling methods which simulate the hydrology and topography at the placement site. In federal determinations, the measured toxicity in the suspended phase has a 0.01 safety factor applied to calculate a Limiting Permissible Concentration (LPC), which is then applied in a mixing model to determine compliance with a 4 hour mixing zone at the placement site. For evaluations of dredging and placement operations, the LC/EC-50s and elutriate results can be applied by using a mixing zone analysis as described in Chapter V, Section C.

B. Benthic (Solid Phase) Evaluations

In federal dredging assessments, test results are compared to organisms exposed to a reference sediment for a designated placement site. Both the solid phase toxicity and bioaccumulation test results can be evaluated with regard to the potential for adverse impacts from newly exposed sediments at the dredge site, resettling of suspended solids at the dredge site, and at the in-water placement site.

i. Solid phase toxicity tests

When low reference survivorship is allowed to be used to evaluate the tests (a 20% difference from reference is allowed for amphipod test, and there is no established limit for reference survivorship), this should be considered in light of what would be an acceptable reference result for the dredging and placement sites. Significant toxicity in federal solid phase tests typically disqualifies dredged material from in-water placement. Disposal of such material within any State aquatic site would require positive placement, a comprehensive capping program and significant coordination. Any such project would be likely to require all available BMP permit conditions.

A lack of toxicity in solid phase tests does not itself automatically allow dredged material to be considered class A, as toxicity may still be demonstrated in the suspended phase or in the bioaccumulation portion of the solid phase tests. In addition, sediment quality thresholds may be exceeded to such an extent that the material cannot be confidently described as Class A.

The toxicity tests will be based on acute effects and follow EPA and ASTM standard methods. Using freshwater sediments, the test species should be *Hyalella azteca* and *Chironomus tentans* (ASTM Method E 1706). The endpoint for *Hyalella* is survival, while *Chironomus* is growth (weight) and survival. These species are recommended because they are widely used, easy to culture, and are highly tolerant to changes in grain size. The test should consist of five replicate samples for statistical comparison and be conducted in accordance with the standard methods. The results of the test should indicate whether the test sediments are statistically different from the reference sediment. ASTM (E 1383) provides ways to calculate these results.

For marine sediments, the acute toxicity bioassay test species should be the amphipod *Ampelisca abdita* (ASTM Method E 1367) and a polychaete *Neanthes arenaceodentata* (ASTM Method E 1611) or the mysid shrimp *Mysidopsis bahia*. Survival is the endpoint for these two species using the 10-day test. The results of these two tests should indicate whether the test sediments are statistically different from the reference sediment. ASTM (E 1383) provides ways to calculate these results. A solid phase chronic toxicity test using *Leptocheirus* has been developed by EPA. This test is outlined in "Methods for Assessing the Chronic Toxicity of Marine and Estuarine Sediment-associated Contaminants with the Amphipod *Leptocheirus plumulosus* EPA/600/R-01-020, March 2001." Since this test is relatively new, it may not be cost effective for the applicant. However, the applicant has the option to use this chronic test to support the results of other biological tests.

These biological testing protocols are further detailed in a NYSDEC Division of Water document "Biological Assessment of Sediments in New York State - 1998".

ii. Solid phase bioaccumulation assays

Federal bioaccumulation testing for dredged material typically includes an extensive list of bioaccumulative contaminants of concern. Effects-based (ecological or human health) limits derived from scientific literature, as well as exposure considerations, are used to develop tissue guidelines. Divisions will need to consider any available field background tissue concentrations and exposure considerations for the dredging and placement sites to evaluate potential bioaccumulation impacts. To independently evaluate the toxicological aspects, literature values should be selected from studies that compared effects to *tissue* concentrations, as opposed to *exposure water* concentrations. For some contaminants, data for organisms that are as close as possible to, but not necessarily the same as the species at risk, will need to be used.

APPENDIX G GLOSSARY

GLOSSARY

ambient conditions - the conditions present at a given site based on chemical, physical and biological assessments.

anaerobic - able to live, and grow in the absence of free oxygen.

baffle - a device (as a plate, wall or screen) to deflect, check, or regulate flow.

beneficial use - material being used beneficially pursuant to section 6 NYCRR Part 360-1.15 and removed from the definition of a solid waste, and therefore the jurisdiction of Part 360, as per 6 NYCRR Part 360 - 1.2(a)(4)(vii).

benthic - of, relating to, or occurring at the bottom of a water body; relating to sediments.

benthos - organisms that live on or in the bottom of a water body.

best management practices (BMPs) - methods and measures employed during dredging or dredged material management to minimize adverse environmental impacts.

bioaccumulation - the progressive increase in the amount of a chemical in an organism through any route including respiration, ingestion, or direct contact with sediment or water.

borrow pit - an excavated area where material has been dug for use at another location.

confined disposal facility - for the purposes of this TOGS, a diked area, either in-water or in a riparian area, used to contain dredged material.

containment area - any location or site used for the permanent or temporary placement of dredged material which may or may not have structures designed to prevent contact with water or terrestrial environment.

data qualifier - a word or symbol that limits or modifies the meaning of analytical results.

dewatering - the practice of removing water from a waste product or dredged material , which can be performed actively or passively.

dioxin - a toxic chlorinated hydrocarbon which occurs as an impurity in the herbicide 2,4,5-T.

dredging - for the purposes of this document the term dredging includes all in-water activities designed to move or remove sediment. Examples of such activities include but are not limited to mechanical and hydraulic dredging, mechanical plowing, trenching and jetting.

dredged material - the sediments under a body of water removed during a dredging operation and displaced or removed to a management location.

effluent - waste material discharged into the environment, especially when serving as a pollutant; applies to the water discharged over the weir of a confined disposal facility for dredged material or from a dredged material dewatering facility.

finer - sediment (silt and clay) that passes through the 200 U.S. standard sieve mesh or material with a grain size of 0.0625 mm or less.

guidelines - are published in TOGS and other internal documents but do not have the force and effect of a law.

guidance - refers to either national or regional implementation manuals developed to assist the evaluator in making technical decisions.

hazardous waste - any material meeting the definition of a hazardous waste as defined in 6NYCRR part 371.

homogenize (as in *sample homogenization*) - to make more uniform throughout in texture, mixture, quality, etc. by breaking down and blending the particles.

hydraulic dredging - removing sediment from the bottom of a water body or the sea with the use of suction equipment.

interstitial - referring to the interstices, or pore spaces in rock, soil, or other material subject to filling by water.

littoral - a coastal region; the shore zone between high and low watermarks.

loading - the quantity of a material or substance entering a system.

mixing zone - the area in a water body where a temporary exceedances of water quality standards resulting from short-term disruptions to the water body caused by dredging or the placement of dredged material will be accepted.

modeling - a system of postulates, data, and inferences presented as a mathematical description to both describe and predict a system which can not be easily observed.

navigable waters (of the State) - (NY State definition) means all lakes, rivers, streams and other bodies of water in the State that are navigable in fact or upon which vessels with a capacity of one or more persons can be operated notwithstanding interruptions to navigation by artificial structures, shallows, rapids or other obstructions, or by seasonal variations in capacity to support navigation. It does not include waters that are surrounded by land held in single private ownership at every point in their total area.

navigable waters - (EPA definition) means the waters of the United States, including the territorial seas.

outfall - the mouth of a drain or sewer.

parameter of concern - a substance that exceeds a threshold value for assessment.

persistent - refers to the transformation half life of a chemical in the environment (EPA defines as greater than 6 months in soils and sediment).

polychlorinated biphenyls (PCBs) - one of several aromatic compounds containing two benzene nuclei with two or more substituent chlorine atoms. They are colorless, toxic, viscous liquids. Because of their persistence and ecological damage from water pollution, their manufacture has been discontinued in the US (1976).

polycyclic aromatic hydrocarbons (PAHs) - hydrocarbons are an organic compound consisting exclusively of the elements hydrogen and carbon. Polycyclic hydrocarbons are made up of four or more ring structures. Aromatic refers to their strong and not unpleasant odor. PAH's are derived principally from petroleum and coal tar sources and some have demonstrated carcinogenic properties.

protected stream - means any stream or particular portion of a stream for which there has been adopted by the Department or any of its predecessors any of the following classifications or standards: AA, AA(t), A, A(t), B, B(t) or C(t). Streams designated (t)(trout) also include those more specifically designated (ts)(trout spawning).

riparian - land areas directly influenced by a body of water; usually pertains to the banks of a river, stream, or waterway that have visible vegetation or a physical characteristic showing influence by a water body. For the purpose of this TOGS is defined as the 100 year flood plain plus any adjacent wetland integral to the surface water (U.S. vs. Riverside Bayview Homes, Inc., 474 U.S. 121, 106 S. Ct. 455 (1985)).

riparian diked site - see confined disposal facility.

silt - loose sedimentary material with rock particles measuring 4 to 62.5 micrometers in diameter.

sediment quality criteria - numeric, effects-based concentrations that provide an interpretive tool to relate ambient sediment chemistry data to potential adverse biological impacts.

standard - form the legal basis for controls on the amount of pollutants entering the environment from various sources.

stratification (of sediments) - the formation of distinct layers of sediments having the same general composition (grain size, quality), arranged one on top of another.

substrate - the base on which an organism lives.

surfactant - a compound that reduces surface tension (as a detergent).

Toxicity Characteristic Leaching Procedure (TCLP) - A test that measures the mobility of organic and inorganic chemical contaminants in wastes (see - SW846 method 1311).

Total Organic Carbon (TOC) - the amount of carbon covalently bound in organic compounds.

upland - beyond the FEMA designated 100 year flood plain.

weir (controlled outlet weir) - structure which raises the water level or diverts water flow.

wetlands - under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

freshwater wetlands -(NYSDEC definition) - "Freshwater wetlands" or "wetlands" means lands and waters of the state which meet the definition provided in subdivision 24-0107(1) of the Freshwater Wetlands Act and have an area of at least 12.4 acres (approximately 5 hectares) or, if smaller, have unusual local importance as determined by the Commissioner pursuant to subdivision 24-0301(1) of the Freshwater Wetlands Act and 6NYCRR Part 664.

tidal wetlands -(NYSDEC definition) , Generally, tidal wetlands or wetland shall mean any lands delineated as tidal wetlands on an inventory map and shall comprise the following classifications as delineated on such map: Coastal fresh marsh; intertidal marsh; coastal shoals, bars and flats; littoral zone; high marsh or salt meadow; or formerly connected tidal wetlands. Tidal wetlands are more fully defined in ECL §25-0103(1) and its implementing regulations.

whole sediment chemistry - the analytical quantification of target analytes in sediments being dredged or proposed for dredging.

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G. Draft RDMP Report

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A. Introduction

This Regional Dredging Management Plan Update ('RDMP Update') has been prepared to provide a comprehensive approach to the on-going dredging needs for harbor access channels along the south shore of Lake Ontario. It provides an update and expansion of a plan originally developed in 2000, which dealt with only a portion of the Lake Ontario shoreline.

The RDMP Update has been developed under the direction of and in cooperation with the Counties of Orleans, Monroe, Niagara, Cayuga, Oswego and Wayne, the Town of Greece, the City of Oswego and the Division of Coastal Resources of the New York State Department of State. The County of Orleans administered the plan development with funding by the participating communities and the New York State Department of State.

This RDMP Update addresses the required maintenance dredging of nineteen harbor access channels, utilized primarily for recreational boating, along the south shore of Lake Ontario. The location of the harbors is shown in Figure 1.

As detailed in this report, dredging needs for the Lake Ontario recreational channels are either not being met or are being provided through private efforts, sometimes with sporadic support from local governments. Even the channels originally constructed by the US Army Corps of Engineers with Federal funds, which are supposed to be maintained by the Corps of Engineers, are not automatically or regularly maintained due to budget constraints. This situation will continue to worsen since Corps of Engineers funding for the dredging of recreational channels is not expected to be restored.

Despite the lack of maintenance, vessel operations were able to continue in the recreational channels since water levels on Lake Ontario were generally at or above average over the last two decades. However, the Lake experienced below average levels during the 2011 and 2012 boating seasons, underscoring the consequences of delayed maintenance. As a result,



Figure 1: Harbor Locations

charter boat captains reported shortened operating seasons, and there were several groundings in the Lake Ontario channels during 2012.

Given the widely recognized need and economic importance of regular and dependable maintenance dredging of the recreational channels, the local governments and State of New York have worked together to formulate this RDMP Update. The plan addresses several issues related to dredging and presents potential solutions. This includes the identification of dredging needs, the economic benefits of a regular dredging program; the costs and potential funding mechanism for dredging projects; the feasibility, nature and form of potential inter-municipal cooperation; dredging priorities and scheduling; the requirements for permitting; and alternatives for ownership, control and operation of dredging equipment.

Section B of this report details dredging needs in the participating counties and Section C details the economic benefits provided by the harbors covered by the study, which can only be maintained and expanded by a consistent, dependable dredging operation. It is found that the recreational harbors within the study area are all in need of dredging as of 2012, some with critical needs. This neglect of maintenance dredging threatens the recreational boating

and related tourism industry, which is so important to Lake Ontario south shore communities. The recreational boating activity in the study area harbors is estimated to generate approximately \$94 million annually in economic activity, support over 1,350 jobs, and generate sales tax revenues of almost \$3.8 million for the local counties and almost \$3.8 million for New York State. This is significant on a regional basis with recreational boating and associated tourism potentially representing a bright spot for further growth if the required infrastructure can be maintained. Unfortunately, as also discussed later in this report, the lack of such maintenance is already causing a curtailment in this sector of the economy.

Estimated costs for a regional dredging management program are detailed in Section D of this report. The final annual costs for the dredging program will vary depending upon how the program is structured. The least expensive option is for the dredging to be done directly with purchased equipment. Under this scenario, total annual costs are estimated from \$522,000 to \$776,000 with the total dependent upon whether or not the operation includes the Genesee River and Oswego Harbor, the largest, deepest and most complex to handle. A more expensive option is for private contracting of all dredging. Under the current range of prices, it is estimated that such an operation would cost between \$648,000 and \$3.2 million annually, again depending upon if the Genesee River and Oswego Harbor are included as well as the final unit price obtained under bidding. It is noted that bid prices for private dredging contracts could be reduced in the future if multi-year contracts are let, allowing contractors to confidently invest in newer, more efficient equipment.

Potential funding mechanisms for the program are discussed and evaluated in Section E. The focus is on local sources combined with contributions from the user community. On the basis of the evaluation, it is recommended that the local contribution be provided through the participating county governments while the user community contribution be provided through an increase in the NYS DMV boating registration surcharge. It is noted in this regard that the county contributions, which can be distributed among them in several ways, represents only 4–6% of the sales tax revenues to the counties that is generated annually by the recreational boating activities and that the registration surcharge represents a tiny fraction of the cost of ownership of boats.

Section F of this report evaluates potential forms of organization for a regional dredging management program. These range from operations under an existing county or town to the formation of a new public authority to the incorporation of a new not-for-profit corporation. The evaluation includes consideration of the ability of any structure to provide focus and responsibility for the dredging operations, the economies of scale that could be achieved with respect to the sharing of management functions, personnel and equipment, and the flexibility of any structure to allow for private contract dredging where feasible to help offset operating expenses. In addition, consideration is given to the ease with which structures can be implemented given potential political or public perception constraints. While all forms of organization are feasible, it is recommended that a new, not-for-profit local development corporation (LDC) be formed to implement and operate the regional dredging management program. One of the purposes of LDC's is to conduct public or quasi-public functions on behalf of multiple government jurisdictions, exactly what is being proposed under the regional dredging management program.

A potential implementation schedule is presented in Section G of this report. It is anticipated that spin-up to full funding and full operations would take two-three years, and may be longer if County or State legislative action is delayed. Funding for the first year is anticipated to be provided solely by the participating counties or through a one-time Federal or State grant. First year activities are anticipated to include formation of the LDC and its governing Board of Directors, the hiring of an executive director, and the contract dredging of several of the non-federal channels. With success in obtaining legislation for the remainder of the funding, year two would include the hiring of an engineer, evaluation of potential equipment to purchase and private contracting for the dredging of channels as funding permits. Year three would be the first under full operations.

The recommendations for funding sources and organizational structure for a regional dredging management program, as detailed in this report, will no doubt be modified as the program comes to life and evolves. In addition, the pace and form of implementation will depend on several factors, including the political will to solve the existing problem and the

ability to raise the required funding. Establishing the program will require much effort on the part of its organizers and supporters. Given the economic importance to the region, these efforts are worthy of the task and have the potential to result in decades of benefit to many.

B. Dredging Needs

It is clear from the experience during the 2012 boating season that dredging of the recreational harbors along the Lake Ontario shoreline of New York are is being neglected.

To demonstrate this, a spot survey of water depths at fifteen of the nineteen study channels and harbors was conducted during the 2012 boating season. At each site, spot measurements were made of the minimum water depth, which was then converted to bottom elevations using the water level on the date of the measurement. This existing bottom elevation was then compared to the bottom elevation desirable to support the recreational boating activity at that location. Table 1 contains the results of this survey.

Table 1: Existing Critical Bottom Elevations			
Channel/Water Body Designation	Critical Desired Bottom Elevation (ft - IGLD 85)	Existing Max Bottom Elevation (ft - IGLD 85)	deficit (feet)
Wilson	236	239.2	3.2
Olcott Harbor	236	239.2 near launch 238.2 channel	2.2
Oak Orchard Harbor	236	240.2	4.2
Sandy Creek	237	239.7	2.7
Irondequoit Bay	234.3	245	10.7
Bear Creek Harbor	239.8	241.4	1.6
Pultneyville	238.3	240.6	2.3
Great Sodus Bay	233.3	236.6	3.3
East Bay	239.3	241.6	2.3
Port Bay	236.8	240.6	3.8
Blind Sodus Bay	239.3	240.9	1.6
Little Sodus Bay	236	238.8	2.8
Mexico Point	239	240.4	1.4
Port Ontario	235.3	236.4 channel 240.9 harbor	1.1
Sandy Pond Inlet	236.3	241.4	5.1

As is evident from Table 1, the recreational harbors within the study area all are in need of dredging as of 2012. This neglect of maintenance dredging threatens the recreational boating and related tourism industry, which is so important to Lake Ontario south shore communities. As detailed later in this report, the recreational boating industry is estimated to generate over \$90 million annually in economic activity and support over 1,277 jobs. This is significant on a regional basis. Recreational boating and associated tourism represents a sector of the upstate New York economy that could represent a bright spot for further growth if the required infrastructure can be maintained. Unfortunately, as also discussed later in this report, the lack of such maintenance is already causing a curtailment in this sector of the economy.

The first step in the development of a regional maintenance dredging program is the identification of on-going dredging needs. In support of this, all harbor access channels to Lake Ontario in Niagara, Orleans, Monroe, Wayne, Cayuga and Oswego Counties have been identified and background information on each collected. The background information was derived from available published sources; site visits; interviews with public officials, marina operators, yacht clubs and marine contractors; review of selected Town and County files; and a review of NYS DEC and US Army Corps of Engineers regulatory permit files. Emphasis was placed upon those items of relevance in determining dredging needs and operational requirements. This includes the channel physical configuration and protection, the type and level of use, size of vessels, sediment physical characteristics and chemical quality, and past dredging experience including sponsoring entity, frequency, amounts, and disposal.

It is noted that internal channels within harbors, including those leading into feeder creeks and streams, are not included as part of the RDMP Update. This is due to the overwhelming number of such channels, the unique characteristics and needs of each, and the fact that dredging such channels would only benefit a small, identifiable number of private docks and/or individual marinas in most cases. In contrast, maintenance of the larger connecting channels to Lake Ontario is expected to provide benefits to a large number of private docks, public launches, yacht clubs and/or several marinas for each identified channel. Given these factors, the participating communities decided at project commencement to only plan for

dredging of the access channels leading from Lake Ontario into harbors that were included in the 2000 RDMP as well as the Oak Orchard Harbor in Orleans County, and the Olcott and Wilson Harbors in Niagara County. As discussed in a later section, the secondary internal channels may be dredged, with private or local public funding, by contract with the entity created to implement the Regional Plan, depending upon the exact organizational and institutional form adopted. Otherwise, the internal channels can be maintained with private or local government funding, as is done under the present circumstances.

A total of nineteen harbor access channels are included as part of this RDMP Update over the approximately 100 linear miles of Lake Ontario shoreline in the six counties (Niagara, Orleans, Monroe, Wayne, Cayuga and Oswego). These were each assigned a site number, commencing with number one for the western-most harbor and progressing eastward. Table One contains a listing of the nineteen channels.

Site	Channel / Waterbody Designation	Municipality	County
1	Wilson Harbor	Wilson (T)	Niagara
2	Olcott Harbor	Newfane (T), Olcott (V)	Niagara
3	Oak Orchard Harbor	Carlton (T), Point Breeze (Hamlet)	Orleans
4	Sandy Creek	Hamlin (T)	Monroe
5	Braddock Bay	Greece (T)	Monroe
6	Long Pond Inlet	Greece (T)	Monroe
7	Genesee River	Rochester (C)	Monroe
8	Irondequoit Bay	Irondequoit (T), Webster (T), Penfield (T)	Monroe
9	Bear Creek Harbor	Ontario (T)	Wayne
10	Pultneyville	Pultneyville (Hamlet), Williamson (T)	Wayne
11	Great Sodus Bay	Sodus Point (V), Sodus (T), Huron (T)	Wayne
12	East Bay	Huron (T)	Wayne
13	Port Bay	Huron (T), Wolcott (T)	Wayne
14	Blind Sodus Bay	Wolcott (T)	Wayne
15	Little Sodus Bay	Sterling (T), Fairhaven (V)	Cayuga
16	Oswego Harbor	Oswego (C)	Oswego
17	Mexico Pt. - Little Salmon River	Mexico (T)	Oswego
18	Salmon River - Port Ontario	Richland (T)	Oswego
19	Sandy Pond Inlet	Sandy Creek (T)	Oswego

Several additional channels connecting to Lake Ontario exist within the six counties, such as Eagle Creek Harbor in Orleans County and Fairbanks Point/Hugh's Marina in Wayne

County. However, these generally service a single private entity without general public access. Given this, it is reasonable that the single private entity assumes responsibility for dredging of the channel as part of the cost of doing business.

Relevant information for each channel included in the RDMP Update was organized into a database. The resulting inventory database is contained in Appendix A.

Utilizing the collected information, the channels were grouped into four classes based upon the degree of current channel stabilization, the type of sediment present, and whether utilized for commercial shipping or not. The four classes are defined as follows:

Class	Properties
I	Sands and some small stone; presumed clean based on location and past experience; should be suitable for adjacent shoreline beach nourishment or other beneficial uses.
II	Minimum stabilization consisting of partial jetties; sand and/or cobble substrate. Sediment should be clean with some beneficially utilized in the past for shoreline nourishment with others disposed or utilized beneficially at upland sites.
III	Sands with some fines and silts of variable quality. These sites will require at least Tier II sampling and testing. Expected that some of the sediment should be suitable for beach nourishment or similar beneficial use. Remainder probably suited for construction fill, landfill cover, or other similar use, which may not be economically feasible. Non-usable material will likely require open lake or upland disposal.
IV	Stabilized Federal Projects utilized for commercial shipping. Materials contain significant silts and clays with high nutrient/organic concentrations and traces of other contaminants. Past disposal has been at open lake disposal sites.

Critical to the establishment of a regular dredging maintenance program is the estimate of the amount and frequency of dredging for each of the channels. Unfortunately, it is difficult to estimate this with complete accuracy. The primary tool utilized to estimate dredging amounts and frequency in this effort is the past dredging history for each site, primarily derived from regulatory permit records. However, this is inexact since some channels have historically been better maintained than others due to available funding, local government or private entity involvement, and political pressures. In addition, the rate of sedimentation of each channel will depend upon weather and the resulting stream flow and lake water level conditions, as well as manmade or man influenced factors such as physical changes to the stream or river feeding the outlet channel and land use changes in its upstream watershed.

Given these diverse factors, it is expected that required dredging amounts and frequencies will vary not only channel to channel but also over time for each channel.

With an appreciation for the uncertainty involved, conservative estimates of the required amount and frequency of dredging for each channel were made. The estimates are based upon the available data, leavened with professional judgment, and reflect the on-going requirements of a sustained program. Initial dredging amounts may be higher since the channels have been neglected of late. This may impact the initial timing or frequency of dredging as the program spins up.

The estimated amounts and frequencies for an on-going dredging maintenance program are given in Table 3.

Site Number	Channel	Frequency (yr)	Quantity (cu yd)	Class
1	Wilson	5	15,000	III
2	Olcott Harbor	5	15,000	III *
3	Oak Orchard Harbor	5	15,000	III
4	Sandy Creek	5	1,200	II
5	Braddock Bay	1	5,000	I
6	Long Pond Outlet	1	200	I
7	Genesee River	2	150,000	IV
8	Irondequoit Bay	5	15,000	III
9	Bear Creek Harbor	10	6,000	II
10	Pultneyville	2	500	II
11	Great Sodus Bay	5	15,000	III
12	East Bay	1	500	II
13	Port Bay	1	1,000	II
14	Blind Sodus Bay	1	300	II
15	Little Sodus Bay	5	15,000	III
16	Oswego Harbor	5	75,000	IV
17	Mexico Point	?	?	II
18	Salmon River/Port Ontario	?	?	III
19	Sandy Pond Inlet	2	6,000	I

* Eighteen Mile Creek, including the entire Olcott Harbor and outlet, was classified as a hazardous waste disposal site by the US EPA in March 2012 and by the NYS DEC in October 2012. The sediments are potentially contaminated by PCB's and metals. As such, more stringent testing is likely to be required and disposal of the sediments could be significantly more costly than at other locations.

As indicated in Table 3, dredging amounts for both Mexico Point and Salmon River/Port Ontario could not be estimated. There are no records of either of these sites having been dredged since their construction. Despite this, the Army Corps of Engineers states only that the Port Ontario site needs sand bypassing to alleviate a buildup on the south side of the channel, however this is not presently impeding use of the channel for navigation.

This Regional Dredging Management Plan is intended to deal with all nineteen channels within the study area. However, the class IV channels, the Genesee River and the Oswego Harbor, deserve a separate discussion.

Until very recently, the class IV channels have been maintained by the Army Corps of Engineers since they both support commercial shipping operations. The Corps, however, has indicated that they can no longer maintain these low volume commercial harbors. In 2012, the Corps piloted a public-private partnership to dredge the Genesee River in which the single commercial shipper utilizing the port funded the bulk of the cost.

In contrast to the other channels and harbors, the two class IV harbors generate a large amount of spoil of low quality that is generally not suited for beneficial use. These waterways must be maintained to minimum depths of 21 to 27 feet, far in excess of that required for recreational use. In addition, dredging to the required depths and handling the large volumes of spoil requires the use of equipment for dredging operations that would be too large for use in many of the other RDMP channels. For these reasons, and the fact that there are commercial shipping operations that may be able to fund dredging of these two harbors, the Genesee River and Oswego harbors will be called out and treated separately in this planning effort.

The estimated dredging amounts and frequencies in Table 4 were combined to obtain annual average dredging amounts by class of sediment. These annual amounts will form the basis for the analysis of equipment needs, organizational structure and cost of the maintenance

dredging program. Table 5 contains a summary of the estimated annual dredging demand for an on-going, sustained program.

Class	Sites	Material/Disposal	Annual Amount (cu yd)
I	Braddock Bay, Sandy Pond, Long Pond Outlet	Sands; presumed clean and probably suited to beneficial uses.	~ 8,100/ year
II	Bear Creek Harbor, Blind Sodus Bay, East Bay, Port Bay, Pultneyville, Sandy Creek	Sands, gravels, some cobbles; and little silt. Portions should be suitable for beneficial uses.	~ 3,000/year
III	Wilson, Olcott, Oak Orchard, Irondequoit Bay, Great Sodus Bay, Little Sodus Bay, Mexico Point, Salmon River/Port Ontario	Sands with some fines and silts of variable quality. These sites will require at least Tier II sampling and testing. Some of the sediment should be suitable for beach nourishment or similar beneficial use. Remainder probably suited for construction fill, landfill cover, or other similar use if economically feasible. Non-usable materials will likely quality for open lake disposal.	~ 15,000 / year plus Port Ontario and Mexico Point (see text)
IV	Genesee River Oswego Harbor	If adequately maintained for commercial shipping, no further maintenance will be required for recreational uses. Materials contain significant silts and clays with high nutrient/organic concentrations and traces of other contaminants. Past disposal has been at open lake disposal sites.	~ 90,000 / year

On the basis of maintaining the class I, II and III channels, the total annual dredging amount is 26,100 cubic yards. The class IV channels will add approximately 90,000 cubic yards per year to the annual total.

In addition to the above amounts, representing the on-going dredge amounts for a sustained program, the neglect of the channels has created a backlog that will have to be addressed at the commencement of any program. The primary backlog is within the federally authorized projects within class III. The Corps of Engineers provided a November 2012 update of its estimate of the backlog amounts for six of the class III harbors listing in Table 4, excluding Mexico Point and the Salmon River/Port Ontario sites. These updated estimates are contained in Table 5.

Harbor	To Obtain Design Depth (cu. yd.)	One Foot Overdraft Amount (cu. yd.)	Total Backlog (cu. yd.)
Wilson	17,797	21,260	39,057
Olcott	5,755	4,988	10,743
Oak Orchard	13,357	9,596	22,953
Irondequoit	9,565	11,107	20,672
Great Sodus	1,002	5,019	6,021
Little Sodus	16,601	10,026	26,627
Totals	64,077	61,996	126,073

The RDMP is primarily intended to address the on-going, sustained maintenance dredging of the south shore harbor channels, but allowance in the analysis will be provided to first deal with these backlog dredging needs.

C. Economic Impacts

The economic benefits, direct and indirect, of dependable maintenance dredging and the incremental cost associated with the neglect of the channels are both difficult to estimate with any precision. However, studies of the economic impact of recreational boating on the Great Lakes have been completed that provide economic factors applicable to the Lake Ontario harbors. When applied to the Lake Ontario harbors, an estimate can be obtained of the economic impacts, direct and secondary, associated with the use of the harbors for recreational boating. As detailed in this section, the resulting analysis demonstrates the substantial economic activity associated with this sector of the regional economy and, hence, the value of maintaining the channels for safe use.

As part of this planning effort, available studies of the economic impact associated with recreational boating were reviewed¹. The most relevant and applicable such study was conducted by the US Army Corps of Engineers (COE) with the assistance of the Great Lakes Commission and published in 2008². It provides a comprehensive survey and compilation of the direct spending for recreational boating on the Great Lakes as well as modeling that provides estimates of the indirect economic activity resulting from the direct spending. Combining the findings of the COE study with local use data allows for a calculation of the economic impact resulting from recreational boating for each harbor and for the region as a whole.

¹ *Economic Impact of the Canadian Recreational Boating Industry: 2006*, Prepared by Genesis Public Opinion Research, Inc. and Smith Gunther Associates, September 2007.

Recreational Boating in New Jersey: An Economic Impact Analysis. Prepared by Marine Trades Association of New Jersey and HDR Associates, April 2008.

Recreational Boating in Maryland, an Economic Impact Study. Prepared by D. Kpton and S. Miller for the Marine Trades Association of Maryland and the Maryland Department of natural Resources. 1995.

Economic Statistics on Massachusetts Marine Trades. Massachusetts Marine Trades Association. http://www.boatma.com/boating_in_ma.html. November 2011.

² *Great Lakes Recreational Boating*. Prepared in response to Public Law 106-53, Water Resources Development Act of 1999, Section 455(c), John Glenn Great Lakes Basin Program. December 2008.

The economic impact analysis is based upon the number of wet slips, launch lanes and charter boats associated with each harbor. Table 7 contains a compilation of these elements by harbor in the study region.

Table 7: Slips, Launch Lanes and Charter Boats by Harbor				
Site Number	Channel/Water Body Designation	Boat Slips	Launch Lanes	Charter Boats
1	Wilson	476	2	15
2	Olcott Harbor	124	6	47
3	Oak Orchard Harbor	422	6	38
4	Sandy Creek	287	2	14
5	Braddock Bay	528	4	
6	Long Pond Outlet	20	0	
7	Genesee River	1034	5	26
8	Irondequoit Bay	1670	6	5
9	Bear Creek Harbor	4	3	
10	Pultneyville	170	1	10
11	Great Sodus Bay	802	4	45
12	East Bay	32	2	
13	Port Bay	382	4	10
14	Blind Sodus Bay	99	1	
15	Little Sodus Bay	550	8	12
16	Oswego Harbor	536	6	29
17	Mexico Point/Little Salmon River	322	7	17
18	Salmon River/Port Ontario	68	2	8
19	Sandy Pond Inlet	610	9	1
	Totals	8136	78	263

The COE economic analysis breaks recreational boater spending into craft and trip components and contains a separate analysis applicable to charter fishing boats. Craft spending includes items associated with the vessel ownership, upkeep and storage such as equipment, insurance, repairs, slip and storage fees. Trip spending consists of items utilized in the use of the vessels such as gas, oil, food and lodging. It was found that, on average, Great Lakes boaters expend \$1,400 per year in craft spending and \$2,200 per year in trip spending for a total \$3,600 total per year in direct spending

For the current analysis, this \$1,400 per year in direct craft spending and \$2,200 per year in direct trip spending was assumed on average for all vessels kept in wet slips within the Lake Ontario harbors within the study area. The total number of wet slips was determined for each of the harbors through a combination of satellite photos and direct counts.

In addition to vessels kept in wet slips, a significant number of boaters store vessels on trailers and utilize boat launches for use. To account for these vessels, the number of active, public boat launch lanes for each harbor was determined. Three years of data from the Irondequoit Bay public boat launch, considered typical for the region, indicated that, on average, 1,425 individual boat launches occur on an annual basis per launch lane. Applying this to the number of launch lanes allowed for an estimate of the number of day use trips associated with trailer launched boats.

To determine spending associated trailered boat use, an average of \$102 per day in direct trip spending was applied to the number of launched vessels. The \$102 spending figure was the average daily direct trip spending found by the COE for Great Lakes boaters for vessels sizes between 16 and 20 feet in length, which is typical for launched vessels.

It is noted that the use of only the direct daily trip spending for trailer-launched vessels is conservative since these vessels also incur direct craft expenses such as insurance, storage, repairs and costs associated with the trailers themselves. Thus, the estimates for this component of the economic impact may be under estimated.

The COE economic estimates for charter boat operations in the Great Lakes are based upon Sea Grant surveys, with the 2002-2003 Sea Grant effort forming the basis of the 2008 COE analysis. Despite being ten years old, this is the most recent analysis available for charter economics.

The direct economic impact related to charter boat operations stems from direct spending by the craft operators as well as direct spending by their clients. The COE found that charter

vessels generate, on average, \$11,093 in direct spending on operations while customer direct spending averages \$13,443 per vessel.

These direct spending factors have been applied to the inventory of slips, launch lanes and charter boats within each of the nineteen study harbors and the results are shown in Table 8.

Channel/Water Body Designation	Wet Slips	Launch Lanes	Charter Boats	Total Direct Spending
Wilson	\$1,713,600	\$290,598	\$368,040	\$2,372,238
Olcott Harbor	\$446,400	\$871,794	\$1,153,192	\$2,471,386
Oak Orchard Harbor	\$1,519,200	\$871,794	\$932,368	\$3,323,362
Sandy Creek	\$1,033,200	\$290,598	\$343,504	\$1,667,302
Braddock Bay	\$1,900,800	\$581,196	na	\$2,481,996
Long Pond Outlet	\$72,000	na	na	\$72,000
Genesee River	\$3,722,400	\$726,495	\$637,936	\$5,086,831
Irondequoit Bay	\$6,012,000	\$871,794	\$122,680	\$7,006,474
Bear Creek Harbor	\$14,400	\$435,897	na	\$450,297
Pultneyville	\$612,000	\$145,299	\$245,360	\$1,002,659
Great Sodus Bay	\$2,887,200	\$581,196	\$1,104,120	\$4,572,516
East Bay	\$115,200	\$290,598	na	\$405,798
Port Bay	\$1,375,200	\$290,598	\$245,360	\$1,911,158
Blind Sodus Bay	\$356,400	\$145,299	na	\$501,699
Little Sodus Bay	\$1,980,000	\$1,162,392	\$294,432	\$3,436,824
Oswego Harbor	\$1,929,600	\$871,794	\$711,544	\$3,512,938
Mexico Point/Little Salmon	\$1,159,200	\$1,017,093	\$417,112	\$2,593,405
Salmon River/Port Ontario	\$244,800	\$290,598	\$196,288	\$731,686
Sandy Pond Inlet	\$2,196,000	\$1,307,691	\$24,536	\$3,528,227
Totals	\$29,289,600	\$11,333,322	\$6,796,472	\$47,419,394

As indicated in Table 8, the Lake Ontario harbors generate over \$47 million in direct spending per year.

The direct spending on any activity generates secondary economic benefits. For example, dollars spent by a boater at a restaurant are then spent by the restaurant owner on employee salaries, supplies and maintenance. This economic activity is termed indirect economic impact and is sometimes quantified through the use of simple “multipliers”. A more precise

estimate can be derived through detailed modeling of economic activity and the generation of individual factors that can be applied to the individual categories of direct spending.

The 2008 COE analysis of Great Lakes boating includes estimates of the indirect activity resulting from direct spending by recreational boaters. This is based upon a detailed input/output economic model for the Great Lakes states. Of interest for this analysis are the results with respect to the total indirect spending as well as the number of jobs supported by both the direct and indirect spending.

As with direct spending, the indirect spending and its effects are calculated separately for craft spending and trip spending by individual boaters and by operational and customer spending for charter boats. Details of these calculations are provided in the spreadsheet outputs in Appendix B to this report.

By combining the direct and indirect economic activity, along with the jobs supported by both, we arrive at a total view of the economic impact of recreational boating in the region. Table 9 contains a summary of the total direct and indirect spending as well as the jobs generated by both.

As indicated by the results in Table 9, the indirect spending due to recreational boating accounts for an additional \$46.5 million in economic activity beyond the direct spending by users of the system. In addition, approximately 1363 jobs are supported by the recreational boating use of the Lake Ontario south shore harbors.

Combining the direct and secondary spending, the economic activity associated with recreational boating at the study area harbors totals approximately \$94 million and supports 1363 jobs. This significant economic activity is directly threatened by the lack of maintenance of the harbor infrastructure of the region including, most immediately, the dredging of the harbors so they can remain operational.

Site Number	Channel/Water Body Designation	Total Direct Spending	Total Indirect Spending	Direct + Indirect Spending	Jobs Supported
1	Wilson	\$2,372,238	\$2,348,060	\$4,720,298	69
2	Olcott Harbor	\$2,471,386	\$3,309,270	\$5,780,656	109
3	Oak Orchard Harbor	\$3,323,362	\$3,763,739	\$7,087,101	117
4	Sandy Creek	\$1,667,3028	\$1,746,474	\$3,413,776	53
5	Braddock Bay	\$2,481,996	\$2,049,952	\$4,531,948	54
6	Long Pond Outlet	\$72,000	\$58,717	\$130,717	2
7	Genesee River	\$5,086,831	\$4,874,967	\$9,961,798	141
8	Irondequoit Bay	\$7,006,474	\$5,886,158	\$12,892,632	158
9	Bear Creek Harbor	\$450,297	\$386,615	\$836,912	11
10	Pultneyville	\$1,002,659	\$1,091,174	\$2,093,833	33
11	Great Sodus Bay	\$4,572,516	\$4,956,430	\$9,528,946	152
12	East Bay	\$405,798	\$343,861	\$749,659	9
13	Port Bay	\$2,201,756	\$2,088,443	\$4,290,199	60
14	Blind Sodus Bay	\$501,699	\$415,605	\$917,304	11
15	Little Sodus Bay	\$3,436,824	\$3,174,918	\$6,611,742	90
16	Oswego Harbor	\$3,512,938	\$3,678,013	\$7,190,951	111
17	Mexico Point/Little Salmon River	\$2,593,405	\$2,614,151	\$5,207,556	77
18	Salmon River/Port Ontario	\$731,686	\$823,251	\$1,554,937	26
19	Sandy Pond Inlet	\$3,528,227	\$2,962,189	\$6,490,416	80
	Totals	\$47,419,394	\$46,571,986	\$93,991,380	1363

The economic activity associated with the recreational boating use of the Lake Ontario harbors supports property tax revenues and generates sales tax revenue for the host counties and the State. The sales tax portion of this fiscal support to government operations can be estimated from the projected direct and indirect spending figures. Each of the six counties that are part of the study region have a total sales tax rate of 8.0%, with 4.0% going to the local county and the remaining 4.0% going to the State. Table 10 shows the results by county of applying these sales tax rates to the direct and indirect spending activities estimated at each of the harbors. It is noted that the results in Table 10 are based upon the assumption that all direct and indirect spending from boating activities is subject to sales tax in the county in which the boating activity occurs,

County	local rate	State rate	total spending	County Sales Tax Amount	State Sales Tax Amount
Niagara	4%	4%	\$10,500,954	\$420,038	\$420,038
Orleans	4%	4%	\$7,087,101	\$283,484	\$283,484
Monroe	4%	4%	\$30,930,870	\$1,237,235	\$1,237,235
Wayne	4%	4%	\$18,416,854	\$736,674	\$736,674
Cayuga	4%	4%	\$6,611,742	\$264,470	\$264,470
Oswego	4%	4%	\$20,443,860	\$817,754	\$817,754
Total			\$93,991,380	\$3,759,655	\$3,759,655

The degree to which deferred maintenance dredging reduces the economic activity associated with recreational boating use is complex and cannot be estimated with any precision. It is expected that the impacts will occur in a step function resulting from the loss of use by different segments of the boater community. As dredging is neglected, available water depths are reduced. This will first curtail use by sailboats, which generally require the deepest water. As news of unacceptable depths spreads through the sailing community around Lake Ontario, tourism via sail will decrease along with local use. As depths decrease further, large power boats (> 24 feet) will also be precluded from use and this will effectively eliminate boating tourism and charter operations in the region. Further reductions in depth will finally preclude all use with the exception of kayaks and canoes.

The economic losses associated with this step function reduction in use will not be uniform. The COE documented that, on average, spending and the resulting secondary economic activity are much higher for the larger vessels in the fleet. For instance, direct craft spending averages \$20,000 per year for vessels greater than 41 feet, over fourteen times higher than the \$1,400 per year for the fleet average. Trip spending, which is especially relevant for the tourism sector, varies from \$275 per day for boats larger than 40 feet down to \$76 per day for those less than 16 feet in length. Thus, as the available water depths decrease, the highest spending portion of the vessel fleet will first be eliminated.

While predictions of the exact timing of the economic reductions due to deferred maintenance dredging is beyond the scope of this analysis, it is clear that effects were starting to be felt during the 2012 boating season. For example, a July 2012 report calling for the dredging of Wilson Harbor in Niagara County, a prime destination for Lake Ontario cruising vessels, stated the following:

“Negative trends are emerging. Boats are having increasing difficulty accessing launch areas, waste management and fuel access at the harbor is silting in. Boaters who would normally end their season in October or November have been forced to haul out in August and September due to low-water conditions. One marina owner reports a 20% loss of sailboats over the past two years. Canadian boats can no longer access major boat yard maintenance during the offseason, an estimated loss of \$100-200,000 per year for just one marina (as well as a significant source of tax revenue).”

These impacts were reported as of July 2012, even before the water level dropped in the fall of 2012 to the lowest it has been since the 1960’s.

Another example of the impact of neglected dredging and unreliable water access is provided by the experience at North and South Sandy Ponds in Oswego County. A draft comprehensive plan for the Town of Sandy Creek indicated that 53 charter boats were active in the Town as of 1989. As of 2012, this has dropped to only 1 charter boat operating out of the Sandy Ponds. While impossible to attribute all of this reduction to access issues, it is noted that access to the ponds is a continuing problem that has only recently been addressed by a local, voluntary effort with some Town funding. It is noted that the drop in charter boat activity from 53 to 1 represents an annual loss in local direct spending of \$1.28 million and in indirect spending of \$2.43 million for a total loss of \$3.70 million as well as the the loss of 87 jobs.

It is very clear from this analysis that recreational boating is an important economic activity in harbors along the south shore of Lake Ontario, generating approximately \$94 million in

spending and supporting 1,363 jobs, and that this sector of the economy is and will continue to be significantly impacted by the lack of infrastructure maintenance including regular dredging of the harbor channels to allow for their continued operation.

D. Dredging Technology, Costs and Material Disposal

Dredging Technology

There are two overall types of dredging technologies available for use on the subject harbors and channels. These are mechanical and hydraulic dredging.

Mechanical dredging is achieved through the use of a crane or an excavator mounted on a barge or, where feasible, on the land adjacent to the dredge area. The sediments are scooped out by the crane or excavator and placed on a barge, landside holding area, or on trucks for eventual disposal. Since similar mechanical equipment is used for dry land construction activities, there are many types of cranes and excavators that are available and suited for dredging work. “Clamshell” buckets are generally preferred for dredging work since they minimize the release and re-suspension of sediments during operation.

Mechanical dredging offers some advantages. The equipment is readily available, both for purchase and lease/contracting, relatively inexpensive and experienced operators are plentiful. Cranes and long reach shovel excavators can operate in deeper water than hydraulic dredges and mechanical excavators can handle large stones and easily break up hard-packed sediments.

The disadvantages of mechanical dredging include the need to have additional barges and push boats, with Coast Guard licensed operators, to position the equipment and to move the excavated sediment where the dredging cannot be done from the adjacent land. Mechanical dredging equipment needs relatively deeper water for access and for the supporting barges and generally cannot be launched from land areas without heavy lift facilities. Finally, since the mechanical dredges generally need barge support, they are not land transportable, which can add to the cost of using one set of equipment at multiple sites.

Hydraulic dredges generally consist of a large pump mounted on a platform or shallow-draft barge with a large suction pipe mounted to the front. The suction pipe usually is equipped with a rotary or horizontal cutterhead. The cutterhead breaks up and suspends the sediments with the resulting slurry sucked into the piping by the action of the pump. The output from the dredge is either spray discharged to the side or, more commonly, discharged through piping to a temporary or permanent disposal area or to a transport barge.

Hydraulic dredges come in a variety of sizes and pumping powers and are generally classified by the size of the input piping to the pump. Thus, an “eight inch” dredge would utilize eight inch diameter piping to pump the sediment. Common sizes are eight to twelve inches for dredging in ponds, lakes, sheltered channels and marinas. Larger models, with sizes in the forty-eight to sixty inch range are utilized for large harbor projects and, very commonly, for beach nourishment in coastal areas.

Hydraulic dredges have many advantages. Smaller units can work in shallow water and many are one truck transportable. Many models are self-propelled and do not require push boats or tugs while working and some are self-launching from a suitable ramp. Since the sediments are sucked up and contained within the machine piping, hydraulic dredging results in less turbidity in the waters they are working, resulting in less environmental impact. For the same reason, hydraulic dredges are very efficient at handling silty sediments, which are more difficult to scoop up by mechanical means. Where suitable disposal sites are within close proximity of the dredge site, generally within 3,000 to 4,000 feet, the sediment is transported by the dredge itself and no secondary barge or truck handling and transport is necessary. Finally, hydraulic dredging is generally very efficient on a production rate basis where conditions are suitable for it.

The disadvantages of hydraulic dredging include the specialized nature of the equipment, which increases the cost relative to mechanical equipment and makes shared use of it for other, upland work infeasible. Since it is specialized, some training and a dedicated crew is generally recommended to achieve maximum productivity and efficiency. The smaller hydraulic dredges (eight to twelve inch) cannot reach deep water sediments beyond a 20–25

foot range. However, this is not a significant drawback for the Lake Ontario harbors since desired depths are generally 12 feet or less for all the harbors in the program with the exception of the Genesee and Oswego harbors, with even these requiring less than 25 feet of depth.

The biggest disadvantage of hydraulic dredges comes with sediment that needs to be transported to off shore disposal sites or to upland sites due to sediment quality. Since the sediment is suspended in a slurry, transporting the sediment includes transporting a large volume of water. This can be alleviated through dewatering, however that process would add to the cost and can slow down the production rate. Finally, hydraulic dredges cannot handle large stones, although some specify that they will pass stones up to the 6 to 8 inch size.

A variant on the two major categories of dredge, mechanical and hydraulic, are hopper dredges. These are large open barges with mechanical or hydraulic dredges mounted directly on them. The pumped or scooped materials is put into the barge holding area, or hopper, and once full, the entire hopper dredge moves to the disposal area for dumping or off-loading. Since the hopper dredge needs to support both the dredging equipment and the sediment, the units are generally very large and require relatively deep water to work in. For this reason, hopper dredges are not considered as feasible alternatives for the Lake Ontario harbors with the exception of the Genesee River and Oswego Harbor.

Equipment Suitability by Harbor and Material Disposal Options

A review has been conducted of the type of equipment that could be utilized for the Lake Ontario harbors included in this study. This review is based upon the expected sediment quality/type, the channel access, and the likely disposal options for each of the harbors.

It should be recognized that the sediment quality and resulting disposal options for some of the harbors cannot be adequately resolved with the available information and will only be

finally determined after sediment sampling and analysis is conducted as part of the permitting process.

Given the above caveat, the results of the review are given below for the harbors, lumped together by the classification system outlined in Section B of this report.

Class I Harbors: Braddock Bay, Long Pond Outlet, Sandy Pond Inlet

These harbors have clean sands that are suitable and have been permitted for beneficial use as beach nourishment and/or for littoral zone placement in adjacent and nearby shoreline locations. As such, these sites are ideally suited to hydraulic dredging and two of them, Braddock Bay and Sandy Pond Inlet, have current permits for such dredging. The dredging at both of those sites is being conducted with hydraulic dredges and both are using 10 inch IMS models. The Sandy Pond Inlet dredging is being conducted by a volunteer organization with some funding by the Town. The volunteer organization owns the dredge and utilizes Town Highway Department personnel and volunteers to perform the work. The Braddock Bay dredging is being done by a private contractor with private funds. The contractor is under the same ownership as the entity leasing and operating the Braddock Bay marina under contract with the Town of Greece.

Class II Harbors: Sandy Creek, Bear Creek Harbor, Pultneyville, East Bay, Port Bay and Blind Sodus Bay

These harbors have generally clean sediments with some variation in consistency. Sandy Creek and Bear Creek Harbor have clean sands in the main channels. They are also quite shallow. Hydraulic dredging with an 8-12 inch dredge should be feasible at these locations with sediment disposal in the adjacent littoral zone. Bear Creek Harbor has been dredged by mechanical means in the past with disposal at an adjacent upland, Town owned site.

The Pultneyville site should have a mix of sediment types with clean sands at the outlet grading to more silty materials within the harbor. This has been dredged in the past, with private funding, by mechanical means with disposal at a nearby upland site. Given the mix of sediments, mechanical dredging with transport to an upland site may be the most efficient. However, hydraulic dredging could be utilized with portions placed on the adjacent beach/littoral zone and the rest dewatered on an adjacent upland area and then trucked to the upland disposal site.

East Bay, Port Bay and Blind Sodus Bay all have coarse sand and gravel sediments with some larger stones. They are presently dredged annually by mechanical means from the adjacent upland. The dredge spoil is placed on adjacent upland and littoral areas and, in the case of East Bay, placed back in the channel at the end of the boating season. The dredging is funded by a volunteer organization in each case. These three harbors are most efficiently dredged by mechanical means from the adjacent upland, as they are presently being done.

Class III Harbors: Wilson, Olcott, Oak Orchard, Irondequoit Bay, Great Sodus Bay, Little Sodus Bay, Mexico Point, and Port Ontario

These harbors generally have sands in the outer portions of the channels, generally between the protecting jetties and just beyond, grading to silt/clay and more organic sediments as one moves up the harbor. All of the channels with the exception of Mexico Point and Port Ontario have been previously dredged with disposal at the Corps of Engineers open lake disposal sites located off shore from each location. No records are available of previous dredging at Mexico Point and Port Ontario.

All of the Class III harbors are suitable for hydraulic or mechanical dredging or a combination of both. Combining both types of dredging would allow for the beneficial use of the sands in the outer portions of the channels through discharge to adjacent littoral

areas or beaches while providing for more efficient mechanical dredging and open lake disposal of the silt/clay and organic sediments found in the inner harbors. An alternative would provide for all hydraulic dredging with beneficial use of the sands and discharge to transport barges of the inner harbor sediments.

It is noted that there are some questions regarding whether the sediment quality in two of the harbors would result in a prohibition on open lake disposal for all or a portion of the sediments. The Corps of Engineers has stated that Wilson Harbor, where the main navigation channel extends a significant distance inland, may have sediments that will not meet open lake disposal standards. A proposed sediment testing plan has been developed to assess this situation and is awaiting funding.

The second, Olcott Harbor at the mouth of Eighteen Mile Creek, has recently had its sediments designated as potentially contaminated with PCB's and metals. The contamination is reported to extend approximately 15 miles upstream to an inactive hazardous waste site in the City of Lockport. Detailed sediment testing will be required to assess the level and extend of contamination of the harbor sediments and make a determination of the method of disposal that will be acceptable.

For both the Wilson Harbor and Olcott Harbor sites, the regional dredging management plan has to anticipate and be prepared to deal with upland disposal options, perhaps including transport of some portion of the sediments to a confined disposal site or secure landfill. Under such conditions, mechanical dredging would be preferred due to the complexities and cost of dewatering contaminated sediments before transport.

It is concluded that having both hydraulic and mechanical dredging capabilities would be best for dealing efficiently with the Class III harbors in the study area.

Class IV Harbors: Genesee River, Oswego Harbor

As noted in Section B of this report, the Genesee River and Oswego Harbor both support commercial shipping requiring depths in the 20 + foot range. In addition, they both have rather rapid sedimentation rates requiring a large volume of dredging on a frequent basis.

Sediments from both harbors have been found to be suitable for open lake disposal and this has been the practice for all past dredging activities at these sites, including the privately funded 2012-13 dredging of the Genesee.

While these harbors could be dredged with hydraulic equipment, the most efficient means is mechanical with a barge mounted crane and supporting, large capacity scows for transport of the sediment to the open lake disposal sites. Given the depths of these harbors, much larger and heavier equipment, drawing much larger depths, can be utilized to get the work done efficiently. Unfortunately, such equipment is not suitable for dredging of the smaller harbors making up the rest of the regional dredging management sites.

On the basis of the above review, it is concluded that all harbor dredging could be done with relatively small hydraulic or mechanical dredging equipment, with the exception of the Genesee and Oswego harbors. However, a more efficient program would employ a combination of both hydraulic and mechanical equipment.

Interviews with private marine contractors located in the regional dredging management area indicate the presence and availability of one ten inch hydraulic dredge, at least two barge mounted excavators with long reach shovels, and one barge mounted crane. Supporting these are several transport barges and scows with tugs and push boats suitable for open lake disposal of sediments. In addition to this private contractor equipment, one ten inch hydraulic dredge, owned by a volunteer organization at the Sandy Ponds in Oswego County, is in operation. Contractors interviewed as part of this effort have indicated the willingness

to purchase additional equipment, if needed, to accommodate an expanded dredging program if multi-year contracts are let.

Dredging Permit Restrictive Dates

A factor with important implications for dredging operations and costs for the Lake Ontario harbors are the restrictive dates included as conditions in dredging permits issued by the Army Corps of Engineers and the NYS Department of Environmental Conservation. These conditions restrict dredging to certain times of year in light of environmental conditions. It is understood that the restrictive dates are generally incorporated upon the recommendation of the NYS Department of State (DOS), which reviews coastal permit applications to assure consistency with the policies under the NYS Coastal Management Program.

As part of the DOS review, considerable weight is given to the recommendations regarding potential habitat impairment for areas designated as Significant Coastal Fish and Wildlife Habitats. All of the harbors included in this regional dredging management plan have been designated as containing Significant Coastal Fish and Wildlife Habitats and, hence, the recommendations regarding potential habitat impairment are applicable for each of their dredging permits.

The designation of an area as containing a Significant Coastal Fish and Wildlife Habitat is based upon a rating system and summarized in a Coastal Fish and Wildlife Rating Form. These forms are available on the NYS DOS web site.

As part of the regional dredging management plan, a review was conducted of all the Coastal Fish and Wildlife Rating Forms for the Lake Ontario harbors. The habitat ratings and significance designations were all completed in October of 1987 and have not been updated or re-evaluated since. They all contain similar, if not identical, statements to the effect that impacts due to activities such as dredging could be detrimental during fish spawning and nursery periods, listed as late February-July for warmwater species and steelhead, and

September-November for most salmonids. On the basis of these general statements, permits for dredging in the harbors are generally restricted to the period from late June or early July through August and from the end of November to the first of March. While some dredging can usually be achieved during December of each year, the remainder of the winter through the first of March is generally not feasible for dredging due to icing and rough seas on Lake Ontario. Thus, most dredging has to be conducted during the approximately ten week period from late June to the end of August. This, unfortunately, also coincides with the peak recreational boating season when the channels are heavily used.

It is clear that the general recommendations contained in the habitat rating sheets need to be revisited. In general, warm water fish species do not spawn until water temperatures reach the 55-60 degree range. This does not generally occur for the Lake Ontario outlet channels until mid to late April or early May. In addition, there are specific habitat requirements for fish spawning. For instance, Northern Pike spawn in wetland vegetative beds and Smallmouth Bass spawn on coarse, gravelly bottoms. Given this, it would appear appropriate to consider permit conditions that restrict dredging using a temperature threshold instead of fixed dates and that specific bottom habitat considerations be included in the recommendations regarding restrictive dates for specific areas of the channels.

As discussed in more detail later in this report, some minimal relaxation of the prevailing restrictive dates would have a significant impact on the operational costs for the regional dredging management program. Simply using a 50 degree water temperature threshold to implement the warm water fish spawning restriction could result in an additional ten to twelve weeks of dredging operations during the months of March and April, essentially doubling the dredging window for the year. The implications of such a modified approach are detailed as part of the operational plan options and resulting costs presented later in this report.

Costs

Costs for a regional dredging management program are estimated in two general ways, with several sub-options, for comparison purposes and to determine funding requirements. The first general approach is to have some new or existing entity, government or non-profit, purchase and operate the dredging equipment for all of the sites with little to no contracting out with private firms. In the second approach, it is assumed that some centralized entity, new or existing, funds the work but all of the dredging is performed by one or more private contractors hired through competitive bidding. Several variants combining both approaches are also possible with total costs generally falling between these two pure approaches.

The costs for all options are based upon data collected from current nonprofit dredging operations and from reported recent private contracts for dredging. Under the assumption of funding and operations by a new entity, the cost will depend upon the equipment used, the production rates that can be achieved and the available time for dredging within the restrictive dates.

In general, and depending upon weather conditions, operators and manufacturers report production rates of 125 – 250 cubic yards per hour for hydraulic dredging and 200 – 300 cubic yards per hour for mechanical dredging. These production rates will vary considerably depending upon local conditions. Hydraulic dredging rates are critically dependent upon the distance to the disposal area and the consistency of the material being dredged and the overall average production rate can be reduced considerably by set up time for the discharge piping. By contrast, mechanical dredging average production rates, with dependence on open water transport for mobilization, are dependent upon weather conditions. Finally, if open lake disposal with barge transport is utilized, both hydraulic and mechanical dredging are highly weather dependent.

For those operating plans involving private contracting for some or all of the work, current contract rates are for dredging on Lake Ontario ports are utilized. These costs vary from \$15 to \$25 per cubic yard with some variations in mobilization costs added on. While these same

contracting costs are utilized to get program cost estimates, it should be recognized that multi-port, multi-year dredging contracts, if possible, may result in lower unit costs.

The following unit cost assumptions are utilized to determine total program costs under a variety of operational plan options:

Table 11: Unit Cost Assumptions	
Capital Equipment*	
Hydraulic dredge and associated equipment	\$600,000
Transport truck	\$100,000
Crane/shovel plus barge & work boat	\$120,000
Scow (each)	\$75,000
*capital costs are annualized over 20 years @ 3%	
Labor (including benefits)	
foreman/equipment operator	\$42.05 / hr
crew	\$26.10 / hr
Central Operations:	
Director	\$100,000
Engineer	\$75,000
Sediment testing/permitting/surveys	\$40,000
With class IV included	\$90,000
Overhead	@ 40% of central salaries

For those operating plans involving private contracting for some or all of the work, current contract rates are for dredging on Lake Ontario ports are utilized. These costs vary from \$15 to \$25 per cubic yard with some variations in mobilization costs added on. While these same contracting costs are utilized to get program cost estimates, it should be recognized that multi-port, multi-year dredging contracts, if possible, may result in lower unit costs.

Total Program Cost Estimates

As noted above, there are several organizational options available for the dredging operations. These range from having a new entity, or new unit of an existing entity, own and operate the dredging equipment suitable for all the harbors to having a central entity handle the permitting and management of the program with all dredging work being let to private contractors under competitive bid. There are also combinations of these approaches that may be more suitable for getting the work done and several of these are also suggested and analyzed later in this report.

In this section, a brief description of several program options, labeled A through D, are each presented and cost estimates derived. A more thorough discussion of the advantages and disadvantages of each approach, and recommendations for implementation, are presented in Section F of this report. The purpose here is to come up with a range of costs for various program options so that potential funding mechanisms can be evaluated. The results for the funding evaluation are contained in Section E of this report.

The following is a description and total annual cost estimate for each of the potential operational plan options. The cost estimates are based upon the unit cost assumptions previously presented. Detailed cost estimates for each plan are contained in the spreadsheet output contained in Appendix C. It is noted that the cost for each of the potential plans includes the central administration of the program as well as assumed permitting costs, all as detailed in the unit cost breakdown previously given.

Potential Plan A

- A new or existing non-profit or authority manages, permits and operates the dredging equipment.
- Operations utilize both one hydraulic dredge plus one crane/excavator on a barge with two scows.

- Annual priority: 1 Class III harbor @ 15,000 cubic yards
1 Class I harbor @ 6,000 cubic yards
1 Class II harbor @ 1,200 cubic yards
3 small Class II – East Bay, Port Bay, Blind Sodus Bay
- The hydraulic dredge unit is used for the outer portions of each channel containing sands under the assumption that the sands can be pumped to adjacent littoral or beach areas for beneficial use. The hydraulic dredge is supplemented with the crane/excavator unit for upper harbor areas that require open lake or upland disposal. The crane/excavator would also do the 3 small Class II harbors annually from the adjacent upland while barge/scows are transported to the other sites scheduled for that season.
- It is noted that this plan excludes the Class IV harbors (Genesee and Oswego), but could be accomplished within the existing restrictive dates. (10-12 weeks of work including transport and setup.)

On the basis of this operating plan, the total annual cost is estimated at \$522,403 including capital equipment amortization costs and administration. This works out to \$21.59 per cubic yard of dredging done for the season.

Potential Plan B

- This is the same as Plan A, but includes dredging of the Genesee and Oswego harbors. In order to achieve the necessary dredging while respecting the existing restrictive dates it is necessary to add another crane/excavator plus barge and work boat plus two more scows and appropriate personnel. This second crane unit would work all season in either the Genesee or Oswego (rotating basis) and the second crane/excavator would join it once the other Plan A work for the crane is done.

On the basis of this operating plan, the total annual cost is estimated at \$776,143 including capital equipment amortization costs and administration. This works out to \$6.80 per cubic yard of dredging done for the season.

Potential Plan C

- This is the same amount of seasonal dredging as Plan B, including the Genesee and Oswego harbors. However, it is assumed that the State reduces the restrictive dates to give approximately three more months of work. With this, all seasonal dredging could be completed with the one hydraulic unit and one crane/excavator unit working a longer season.

On the basis of this operating plan, the total annual cost is estimated at \$673,931 including capital equipment amortization costs and administration. This works out to \$5.90 per cubic yard of dredging done for the season.

Potential Plan D

- Under this plan, a central entity manages permits and lets contracts to private firms for all the dredging operations. This approach results in the highest total annual cost under the assumed cost structure and provides an upper bound on the amount of funding that may be necessary. Two variants are presented. In the first, the Class IV harbors (Genesee and Oswego) are omitted and assumed funding through other sources. In the second, the Class IV harbors are also included. For each variant, costs are presented for a range based upon \$15 per cubic yard to \$25 per cubic yard for the contract work in order to bookend the potential funding requirements.

On the basis of this operating plan, the total annual cost is estimated at from \$648,000 to \$890,000 with the Class IV harbors excluded and from \$2,048,000 to \$3,190,000 with the Class IV harbors included.

The following table contains a summary of the above costs for the various plans. It is noted that there are several variants of these approaches, including having a new entity purchase

equipment and conduct a portion of the work with private contracting for the remainder. These hybrid approaches are discussed and evaluated in Section F of this report.

Plan	Annual Cost	Unit Cost (per cy)
Plan A(excludes Genesee and Oswego)	\$522,403	\$21.59
Plan B(includes Genesee and Oswego, respects existing restrictive dates)	\$776,143	\$6.80
Plan C(includes Genesee and Oswego, relief from restrictive dates)	\$673,931	\$5.90
Plan D (central entity contracts out all work) (wo Class IV)	\$648,000 @ \$15 \$890,000 @ \$25	
Plan D (central entity contracts out all work) (all harbors)	\$2,048,000 @ \$15 \$3,190,000 @ \$25	

These cost figures are utilized in the next section to evaluate the feasibility of various potential funding mechanisms.

E. Potential Funding Mechanisms

Funding is the single most difficult component of any dredging plan. This section discusses several approaches to funding and provides an evaluation of funding levels by source that would result under the approaches.

In keeping with the goal of providing a long term and sustainable program, sources of operating funds that are of a continuous nature are preferred over “one-shot” sources that cannot be reliability renewed year after year. In consideration of issues of equity and feasibility of implementation, funding linked to users of the system, or derived from revenues generated from such users, is preferred. Finally, sources of funding that are regional are preferred to assure local control and continuity of the program.

As noted earlier in this report, ten of the nineteen harbors included in the plan were constructed by the Federal government and the Federal government has explicitly recognized its responsibility to maintain them. This includes the financial responsibility for periodic dredging. As also noted, the Federal government has not provided adequate funding for the maintenance dredging of these harbors and there is little chance that funding for regular maintenance dredging will be provided in the future.

Given the above considerations, five different regional funding approaches have been examined as part of the development of this Regional Dredging Management Plan Update. In addition, a discussion is included of the Federal funding option as that is currently relied upon for the ten Federal channels and may be continued to be relied upon for the two large harbors that still support commercial shipping operations. The other regional funding options are as follows:

- Voluntary, Private Funding
- County Funding
- Town Funding Utilizing Harbor Improvement Districts

- User Fee through a Per Slip/Launch Lane Basis
- User Fee through an increase in the existing Boat Registration Surcharge

Each of the potential regional funding sources is discussed separately below following a brief description of the Federal funding option.

Federal Funding through the Army Corps of Engineers

The Army Corps of Engineers (COE) has had limited funding for harbor maintenance over the last decade. In light of this limited funding, the COE has prioritized the allocation of its dredging funds with the highest priority given to harbors supporting commercial vessel traffic. The Genesee River and Oswego River harbors are the only locations in the study area currently supporting commercial shipping operations. Even for these harbors, funding has been inadequate to maintain channel depths and the COE has resorted to partnering with the private commercial shippers in order to conduct the necessary dredging.

Given the shortfall in funding and the priority for the commercial harbors, COE dredging of the recreational harbors has and continues to be neglected. As a result, dredging of the recreational harbors only occurs when there is a critical need affecting safety and only when strong public and political pressure results in a special, targeted congressional appropriation.

In addition, even if at adequate levels, COE funding can only be utilized for maintenance dredging of ten recreational harbors in the study area that were constructed as Federal projects. This leaves the other nine recreational harbors included in the study area without the possibility of any dredging with Federal funding.

The advantage of COE funding is that it comes with no local or regional cost contribution. The primary disadvantages are that there is not enough funding to meet even the minimal needs of the Federal channels and COE funding cannot be used for dredging in the non-Federal recreational channels. In addition, the program is out of the control of local governments and the user community.

It is not recommended that Federal funding through the COE be relied upon for operations under the Regional Dredging Management Plan. However, Federal funds should be sought, perhaps in conjunction with New York State funds, for capital equipment necessary for program implementation. To the extent that such funding can be obtained, annual program funding allocated to capital equipment can be reduced or eliminated.

Voluntary Private Funding

Seven of the identified recreational access channels in the study area are maintained through voluntary, private funding. These consist of Sandy Creek in Monroe County, Bear Creek, Pultneyville Harbor, East Bay, Port Bay and Blind Sodus Bay in Wayne County, and Sandy Ponds Inlet in Oswego County. Bear Creek is periodically maintained by the Constellation Energy Group as needed to bring equipment to the area for its Ginna Nuclear Power Plant. In the absence of such need, the Town of Ontario has performed some maintenance dredging of the Bear Creek Harbor in support of the Town boat launch located there. Sandy Creek and Pultneyville Harbor are both maintained, as needed, by local yacht clubs located near the channel entrances, even though both channels support marinas and launches further upstream. In the case of Sandy Creek, this includes a large public launch, which would likely not be usable without the yacht club maintenance of the access channel to Lake Ontario. East Bay, Port Bay and Blind Sodus Bay are maintained on an annual basis by voluntary dues to private improvement associations. The Sandy Pond Inlet is maintained through a combination of voluntary dues and a contribution from the Town of Sandy Creek. The Sandy Pond Inlet situation is unique in that the voluntary organization, The Sandy Pond Improvement Association, purchased and operates a hydraulic dredge for its dredging.

The primary problem with private funding is that it is not adequate to meet the identified need for dredging in the entire study area. In addition, it is not equitable to the parties involved. Only seven of the nineteen channels identified for maintenance under this Plan have willing and able private dredging sponsors. In addition, dredging of these channels is at

the will and at the option of the sponsors, leaving the other users in the system vulnerable to conditions beyond their control.

County Funding

None of the counties in the study area are providing funding for dredging activities despite the fact that this public infrastructure generates over \$3.7 million in direct sales tax revenues to the county governments annually.

In recognition of the economic activity generated by recreational boating, and the economic development potential of area waterways, it is reasonable to request county funding for some of the dredging activity proposed as part of this Regional Dredging Management Plan Update. It is noted that dredging program funding solely by County governments is not recommended. This is due to the fact that, for equity, at least a portion of the project funding should be borne by system users and that at least a portion of the funding should be borne by the State and/or Federal governments. In addition, continuity and reliability of the program operation is important and should not be subject to short term changes in County funding which could result from a high dependence on this one source.

The proportion of the program costs to be borne by the counties, and the contribution of each of the four counties in the study area, would have to be determined. The following calculations can be utilized for discussion purposes.

It is noted that the following figures assume that the Class IV harbors will initially be left to Federal funding with the rest of the dredging conducted by a new entity operating its own equipment. As detailed in Section D, this results in the minimum program cost of \$440,400 for operations and an additional \$82,003 if capital equipment has to be amortized for an annual total of \$522,403.

It is not anticipated that the counties alone would completely fund the required dredging and it is assumed that a portion of the funding would come from other sources. As detailed later

in this section, it is not unreasonable to assume that approximately \$276,481 could be generated annually from an addition to the existing boat registration surcharge, leaving approximately \$163,919 (without capital equipment cost) or \$245,923 (with capital equipment cost) to be provided by the participating counties.

Assuming that the six counties in the study area will provide the remaining program funding, and that the \$163,919 to \$245,923 annual cost range is utilized, individual county contributions could be based upon an equal share, a share proportional to the amount of dredging required in the county, or a share proportional to the amount of county sales tax raised from recreational boating within each county. A summary of county funding for each of these options is contained in Table 13.

Table 13: County Funding Options

	w.o. capital cost	include capital cost
Every County Share (equal division)	\$27,319.90	\$40,987
County Share (proportional to annual dredge volume)		
Niagara	\$31,535	\$47,311
Orleans	\$15,768	\$23,655
Monroe	\$49,447	\$74,184
Wayne	\$32,481	\$48,730
Cayuga	\$15,768	\$23,655
Oswego	\$18,921	\$28,387
Total	\$163,919	\$245,923
County Share (proportional to sales tax generation)		
Niagara	\$18,313	\$27,475
Orleans	\$12,360	\$18,543
Monroe	\$53,943	\$80,929
Wayne	\$32,119	\$48,187
Cayuga	\$11,531	\$17,299
Oswego	\$35,654	\$53,490
Total	\$163,919	\$245,923
% of boating sales tax	4.4%	6.5%

As can be seen, individual county funding support for the Regional Dredging Plan will vary depending upon the cost allocation basis. However, in no case is the cost to any county large in comparison to the amount of money generated in direct sales tax revenue due to recreational boating activities. In fact, the cost to counties for dredging represents roughly 5% of the sales tax revenue generated by the recreational boating activity.

A specific recommendation for the level and allocation of county funding for the Regional Dredging Management Plan is contained in the section entitled Recommended Program Funding.

Town Funding Utilizing Section 190 Harbor Improvement Districts

Funding for channel dredging could also be requested from the individual Town governments along the shoreline. As noted in an earlier section, there are seventeen different Towns and two cities with channels and harbors identified as part of this study. One mechanism for obtaining funding for harbor dredging is through the creation of Harbor Improvement Districts pursuant to Section 190 of the NYS Town Law.

The creation and management of any Harbor Improvement District is governed by the same procedural and legal requirements as all other types of improvement district. This includes the need to obtain petitions from a majority of the land owners, the holding of a public hearing and the adoption of a local law creating the district and specifying costs and assessments.

As for the Counties, any Town funding of dredging would have to be allocated among the participating Towns. Funding could be on the basis of an equal share, on the number of docks and/or launch ramps served, or on the basis of the annual average amount of dredging done in support of the harbors in each Town/Village. An analysis of the amount of funding that would be necessary under these allocation scenarios was conducted as part of the 2000 Regional Dredging Management Plan. It was concluded that funding levels for individual

Towns, utilizing town wide districts, will vary and may be substantial (up to 11%) for some areas, depending upon the funding allocation basis chosen. This would make it politically difficult to establish town wide improvement districts to support the dredging. In addition, establishing and maintaining seventeen separate Harbor Improvement Districts would represent a formidable barrier to plan implementation. For these and other reasons, discussed below, direct funding from Towns is not being recommended for the Regional Dredging Management Plan and, hence, no further discussion of funding allocation is necessary.

One apparent advantage of direct Town funding of dredging is that the cost of dredging could be assessed only to those properties on the waterfront through the careful configuration of Harbor Improvement District boundaries. There are questions regarding the equity of doing so, given that open navigation benefits more than just direct waterfront properties. However, these questions are superseded by a more practical difficulty regarding the effect on waterfront property tax rates and the impact of this on being able to establish the districts.

An analysis of the impact on waterfront property tax rates that would be necessary for Town Harbor Improvement Districts containing only such properties to support the required dredging was conducted as part of the 2000 Regional Dredging Management Plan. It was shown that property tax rates for the waterfront properties would have to increase by over 100%, even for areas with relatively high property values. Such an increase would make it difficult to establish the Harbor Improvement Districts.

As noted earlier, the formation of Harbor Improvement Districts requires favorable petition of a majority of the land owners in the district and individual legislation in each of the seventeen Towns. Further, if even one Town does not participate, the entire dredging program is jeopardized. Given these factors, and the anticipated steep tax rate increases necessary to fund the program, it is concluded that funding of the Regional Dredging Management Plan through the formation of Town sponsored Harbor Improvement Districts is not fiscally or politically realistic and is not recommended.

User Fee Through a Per Slip/Launch Lane Charge

The idea of funding through a direct user fee is appealing since under such a scenario those that principally receive the benefit will pay for the service. One approach to this is to levy a per slip or per launch lane fee for all commercial marinas. The equity and potential pitfalls of this approach are discussed below.

An estimate was made for the 2000 Regional Dredging Management Program of the estimated annual per slip cost if commercial marina boat slips in the study area were each assessed an equal share fee. The resulting cost came to a per slip fee of approximately \$72 per year, which is believed to still be valid and provides a rough estimate for feasibility assessment purposes. The \$72 per year fee, estimated to be less than ten percent of the average annual rental for boat slips along the south shore of Lake Ontario, would seem to be a reasonable approach to funding the dredging program. Unfortunately, this approach is not practicable for other reasons.

The first problem has to do with the perception of equity. A commercial marina per slip or per launch lane fee would not be borne by residential properties with docks. In some areas, such property owners would be the major beneficiaries of improved dredging maintenance. In addition, a per slip or launch lane fee would not be borne by boaters utilizing trailers and publicly owned launches, many of which do not assess fees and have no means in place for collecting fees. Even if this can be overcome, the most significant problem remains; there is no existing means for assessing and collecting any such fee. Marinas are primarily governed by local land use laws and no county or state agency issues operating permits or any other form of continuing approval. Thus, the institution and collection of any such fee would most likely have to result from individual Town actions all along the shoreline, with the same potential for political problems as funding through the creation of Harbor Improvement Districts.

Given the above factors, a user fee in the form of a per slip or per launch lane fee is not recommended as part of the funding for the Regional Dredging Management Plan.

User Fee Through Boat Registration Surcharge

Another source of potential funding for the Regional Dredging Management Plan is a user fee for boaters implemented through an addition to the existing surcharge applied to boat registrations. At present, all boats powered by a motor and operated in New York State waterways are required to register with the New York State Department of Motor Vehicles (NYS DMV). Current registrations are for three years with fees of \$22.50 for boats up to 16 feet in length, \$45 for boats 16 feet to less than 26 feet, and \$75 for boats of 26 feet or larger. In addition, the state adds a surcharge for boat registrations of \$3.75 for boats up to 16 feet in length, \$12.50 for boats 16 feet to less than 26 feet, and \$18.75 for boats of 26 feet or larger.

According to the NYS DMV, at present the boat registration surcharge goes to “a dedicated fund which supports improvements of vessel access and transient marina facilities.” A majority of the surcharge funds, established under Section 2251 of the NY Vehicle and Traffic Law, are passed by the NYS DMV to the NYS Office of Parks and utilized pursuant to section 97-nn of the New York State Finance Law. The portion dedicated to marine facilities is currently utilized only for NYS Park marine facilities. It is noted that increases in the vessel surcharge, approximately 25%, instituted by the 2010 New York Vehicle and Traffic Law (section 2251) were directed to the dedicated state highway and bridge trust fund. It is understood that this amounts to approximately \$250,000 per year from the boat registration surcharge that is diverted to the dedicated highway and bridge fund. Future effort may be directed to the recapture of this funding for boating infrastructure, including dredging. For the present, it is assumed that the existing boat registration surcharge funds are fully committed and that only an increase in the surcharge amount can be utilized to support dredging of recreational harbors.

A model for directing registration add-on fees to direct infrastructure maintenance exists for snowmobiles. Snowmobiles operated in New York, even on a temporary basis, are required to obtain a NYS DMV registration. The current annual fee is \$45 for members of recognized snowmobile clubs and \$100 for non-club members. Most of this annual fee is placed in the

NYS Snowmobile Trail Development and Maintenance Fund, which is administered through the NYS Office of Parks. The Office of Parks distributes these funds through an annual grant program to counties, or to municipalities if the county does not wish to participate. The funds are then distributed by the counties to snowmobile clubs for trail establishment, improvements and maintenance.

A similar system could be established, through State legislation, for all or partial funding for the Regional Dredging Plan program with a similar add-on fee established as an add on to the current boat registration surcharge.

To assess the required level of such a fee, boat registration figures for the counties in the study area were compiled and analyzed. The results indicate that full funding of the dredging program solely through an increase in the boat registration surcharge would result in an increase in the registration surcharge of approximately 340% for the boats registered in the coastal counties, even assuming the lowest annual operating funding of \$440,400 is needed.

Full funding of the dredging program solely through an increase in the registration surcharge is not recommended for reasons of equity and practicality. At least a portion of the benefit provided by the program would flow to boaters not residing in counties in the study area. In addition, some boaters that do resident in the study area counties do not utilize Lake Ontario for boating. Finally, the economic benefits of increased use of the identified channels and harbors would flow to the community, regional and state economies and, therefore, funding should also be provided from this broader base. Finally, an increase of 340% may generate substantial political opposition that could result in the entire program not being implemented.

Given these factors, partial funding through a registration add-on fee is recommended. As is done under the current surcharge, the increase would be tied to the vessel size. Thus, the required portion of the program funding is allocated to vessels in the three registration size classes on the same percentage basis as the current surcharge. The calculations and results on this basis are summarized in Table 14.

Table 14: Boat Registration Surcharge Funding Amounts

County	Number < 16 ft	Number 16 - 26 ft	Number > 26 ft	Total Surcharge Collected
Cayuga	2,033	2,946	250	\$40,947
Monroe	10,972	14,542	1,867	\$214,939
Niagara	3,113	4,793	663	\$70,015
Orleans	938	1,086	117	\$16,072
Oswego	4,261	4,414	497	\$67,060
Wayne	2,776	3,552	390	\$51,769
Totals	24,093	31,333	3,784	\$460,801
additional amount collected over the current surcharge				\$276,481
Total Increased Surcharge (per year)	\$3.13	\$10.42	\$15.63	
Percent Increase in Surcharge	250%	250%	250%	

As shown, the annual surcharge would rise to \$3.13 to \$15.63 from its existing \$1.25 to \$6.25 range per year depending upon the vessel size in order to raise the amount of program funding needed over and above that recommended to be provided from the counties in the study area.

Recommended Program Funding

On the basis of the discussion and analysis in this section, a combination of county and user fee sources are recommended as the primary funding for the proposed Regional Dredging Management Plan, with the possibility of Federal and/or State funding utilized for capital equipment. The specific allocation recommended among these sources is based upon the following considerations:

- County funding should be utilized to support roughly one-half of the annual program costs, allocated among the participating counties on the basis of the amount of annual dredging anticipated to be necessary within each county.
- Federal/State contribution should be directed toward capital equipment procurement, which is more easily obtained through one-time grant funding and justified as start-up costs.

- An increase in the current boat registration surcharge fee should make up the difference needed for annual program operating costs.

Based upon the above, the recommended annual and one-time funding amounts are shown in Table 15.

Table 15: Recommended Funding By Source

	<u>Annual Without Capital Cost</u>	<u>Annual Including Capital Cost</u>
Niagara County	\$31,535	\$47,311
Orleans County	\$15,768	\$23,655
Monroe County	\$49,447	\$74,184
Wayne County	\$32,481	\$48,730
Cayuga County	\$15,768	\$23,655
Oswego County	\$18,921	\$28,387
Total Annual Funding from Counties	\$163,919	\$245,923
One Time Federal/State Contribution (Capital Equipment)	\$1,220,000.	\$0.00
Annual from Boat Registration Surcharge Increase	\$276,481	\$276,481
Annual Operating Totals	\$440,400	\$522,403

The amounts shown in Table 15 assume the lowest level of program funding, consisting of maintenance dredging of only the Class I – Class III harbors. In particular, it is assumed that the dredging for the Genesee River and Oswego Harbor will be conducted with Federal funding and not through the Regional Dredging Management Program. If these harbors are included, the total cost will rise substantially (as detailed in Section D of this report) and the amounts in Table 15 will have to be adjusted accordingly.

It is noted that additional program funding may be derived by contract dredging of non-covered areas with voluntary private or local government funding. This aspect will evolve over time and may be used for a capital equipment replacement fund or to reduce the operating costs contribution from the Counties or from the registration surcharge.

It is also recommended that if additional areas of the state choose to participate in this program, the incoming counties be assessed an equitable operating share cost, plus a one-time capital equipment entry fee if Federal/State capital equipment funding is not realized.

F. Organizational Structure

There are many different organizational and management structures that are feasible for the implementation and operation of the proposed regional dredging management plan. The advantages and disadvantages of the best approaches are discussed in this section followed by a recommendation for the organizational structure to be implemented.

The potential organizational structures discussed and evaluated in this section are:

- Inter-municipal agreement with one County or Town taking the lead
- An existing or new public authority
- A not-for-profit local development corporation
- A not-for-profit private corporation

The evaluation of each option focuses on several desirable attributes. These are the ability of the structure to provide focus and responsibility for the dredging operations, the economies of scale that could be achieved with respect to the sharing of management functions, personnel and equipment, and the flexibility of any structure to allow for private contract dredging where feasible to help offset operating expenses. In addition, some consideration is given to the degree to which some structures will be difficult to implement due to political or public perception problems.

Inter-municipal Agreement with one County or Town taking the lead

Under this organizational structure, one of the participating counties or towns would undertake the dredging operations or the external dredge contracting on behalf of the entire system. This would most likely be placed within an existing public works department, but could be given more autonomy through the creation of a new local operating unit under the county or town. Funding and operations would occur under an inter-municipal agreement entered into by the participating counties.

The chief advantage of this organizational structure is the potential for cost reduction through the shared use of management functions, the potential for shared use of existing personnel for the dredging operations, and the potential for the sharing of equipment with other units of the county or town government. Other advantages include the ability of the county or town government to issue tax exempt bonds for capital equipment and the ease of implementing the program since a new governmental or private entity will not need to be established. Finally, if contracting is used for the dredging operations, the existing county or town government will have experience with bidding and contract management.

The disadvantages of this approach include the possibility that the focus on the dredging operations will be diluted in the face of other obligations of the lead town or county government. Such mission leakage could also result in funding intended for use in dredging being partially utilized to subsidize other operations. In addition, whether real or perceived, such an organizational structure may lead to the charge that certain harbors are getting more or less attention than others in the program due to local bias. An additional concern would be for the stability of any program residing in one municipality under any changes in local leadership. The cost savings resulting from the use of an existing government unit may be diluted or lost completely due to the need to comply with government employment (civil service) regulations or, for the case where contract dredging is utilized, due to government mandated bidding procedures and labor costs. Finally, a government unit could not contract out for additional private dredging operations..

An existing or new public authority

Under this scenario, a new or existing public authority, established through State legislation, would manage the dredging operations, either doing the work itself or through contracts to private firms.

The chief advantages of such an approach are that an authority would function independently under a board of directors and that it could issue tax exempt bonds for startup or capital

equipment. If an existing authority is tasked with the dredging, the program may be able to realize cost savings through the sharing of management functions, equipment and personnel. The enabling legislation for the existing authority would also have to be broad enough to allow it to conduct the dredging for the entire region. If a new authority is created specifically for the dredging program, its focus would be just on the dredging and mission leakage is less likely. In its enabling legislation, the board of directors could be specified as consisting in whole or part of representatives of the participating counties to assure local control.

The primary challenge to this approach is the difficulty of establishing a new public authority. It would take State legislation, requiring time and effort at the outset. In addition, there appears to be a reluctance by the State to establish new authorities given past, highly publicized problems with some existing authorities. On the other hand, if an existing authority is utilized, such as the Oswego Port Authority or the now moribund Port of Rochester Authority, the participating counties would not have any control over the operations or costs.

A not-for-profit local development corporation

An alternative method for creating an independent operating or contracting entity is through the creation of a local development corporation (LDC) pursuant to Section 1411 of the NY Not-For-Profit Corporation Law. The LDC could be incorporated jointly by any combination of Towns and Counties with the express purpose of the retention of the boating and tourism industry in the region and to lessen the burden of government to perform the dredging. By law, the LDC would be considered a “Type C” corporation, intended to achieve a lawful public or quasi-public objective.

The chief advantage of an LDC is its independence and focus on the dredging program. As a not for profit corporation, an LDC would not be bound by the contracting or civil service rules by which government agencies must function. Such a structure would also allow for the issuance of bonds and would allow additional contract dredging outside the channel areas

when possible to help defray program costs. Finally, if incorporated by the participating counties and/or towns, the LDC would be under the direct control of a board representing those entities and could receive government funding directly from those and other government entities.

The only disadvantage of an LDC structure is the recent bad publicity surrounding the use of such corporations, which may make the formation of the LDC difficult politically. This was made worse by an April 2011 report from the NYS Office of the Comptroller in which the independence from government procurement and debt rules and lack of transparency of LDC's were cited as reasons for concluding that "The use of LDCs and similar organizations to finance local government operations and projects increases the risk of waste, fraud, or abuse of taxpayer dollars or assets."

A not-for-profit private corporation

The final alternative structure being considered is the formation of a private not-for-profit corporation pursuant to Section 201 of the New York Not-For-Profit Corporation Law.

If formed as a "Type C" corporation, the entity could conduct any lawful public or quasi-public function and could be completely independent of any government entity. This would allow for dredging of the regional harbor channels through any combination of direct operations or private contracting. It would also allow for additional dredge contracting to defray program costs.

The primary disadvantages of a private corporate structure are the lack of ability to issue bonds, the difficulty of any arrangements for the shared use of equipment and/or personnel with the local governments, and the fact that funding through the local governments may be subject to bidding and procurement regulations. Finally control of the operations of a private corporation will be much more difficult for the participating communities since they will only have input via the Board of Directors, which may or may not be representatives of the local governments.

Recommendation for Program Organization

In light of the factors discussed in this section, it is recommended that the participating counties in the regional dredging management plan form a Local Development Corporation (LDC) pursuant to Section 1411 of the NY Not-For-Profit Corporation Law. Such a structure would allow for a focus by the organization solely on the dredging program, would provide bonding capabilities, would allow some sharing and/or donation of equipment from the participating counties, would allow seamless funding by governments, and would allow for control of the program by the participating counties through combined incorporation and representation on the corporate Board of Directors.

It is also clear that the LDC laws were established to facilitate public operations across government jurisdictions, such as the proposed regional dredging management program. Given this, it should be possible to overcome any political reluctance to establish the LDC by the counties involved.

G. Plan Implementation

The timing of the start, pace of implementation and final details of the regional dredging management program will depend upon many factors, not the least of which are the political will of the participating counties and State government to solve the existing problem and the ability of the organizers to raise the required funds.

In this section, a potential implementation schedule with required tasks is presented. There is no doubt that this schedule will be modified, but it is hoped that it will at least provide a crude roadmap for the initial steps in implementation.

Year 1 of the Program:

It is assumed that year 1 of the program will be completely funded by the participating counties or through a one-time grant from the State for startup. For planning purposes it is assumed that this funding is equivalent to the annual operating contribution from the counties at approximately \$163,000. With this funding, and perhaps some in-kind legal support from the counties, the LDC can be formed and the Board of Directors appointed. The Board could then hire an Executive Director to assume the duties of the program. In year 1, the Executive Director could assume the transfer of all existing dredging permits by the LDC, pursue permit issues with the State over restrictive dates, pursue State legislation for the remaining program funding, pursue State/Federal funding for capital equipment (if desired) or startup costs, and contract with private firms to dredge the critical needs of non-federal channels in the program area as the available funds permit.

Year 2 of the Program:

It is assumed that full program funding will be in place for year 2. With this, the LDC can hire an engineer, continue with contract dredging for all harbors, and evaluate the feasibility and desirability of purchasing and operating its own equipment for all or a portion of the

dredging, perhaps utilizing Federal or State funds obtained through the efforts during year 1. In this year, the decision over in-house or contract dredging will be made, informed by the experience obtained with the private contract dredging in this and the previous year. In addition, decisions regarding whether to extend the program to the Genesee River and Oswego Harbor will be made, informed by the results of negotiations with the regulatory bodies over restrictive dates for dredging.

Year 3 of the Program:

Full operations are in place with either purchased equipment, contract dredging, or some combination of the two will start to take place on a regular basis as per the defined schedule.

Appendix A
Harbor Inventory Database

Appendix B
Economic Calculations

Appendix C
Program Cost Estimate Calculations

H. WRRDA 2014

One Hundred Thirteenth Congress
of the
United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Friday,
the third day of January, two thousand and fourteen*

An Act

To provide for improvements to the rivers and harbors of the United States, to provide for the conservation and development of water and related resources, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Water Resources Reform and Development Act of 2014”.

(b) TABLE OF CONTENTS.—

Sec. 1. Short title; table of contents.
Sec. 2. Definition of Secretary.

TITLE I—PROGRAM REFORMS AND STREAMLINING

Sec. 1001. Vertical integration and acceleration of studies.
Sec. 1002. Consolidation of studies.
Sec. 1003. Expedited completion of reports.
Sec. 1004. Removal of duplicative analyses.
Sec. 1005. Project acceleration.
Sec. 1006. Expediting the evaluation and processing of permits.
Sec. 1007. Expediting approval of modifications and alterations of projects by non-Federal interests.
Sec. 1008. Expediting hydropower at Corps of Engineers facilities.
Sec. 1009. Enhanced use of electronic commerce in Federal procurement.
Sec. 1010. Determination of project completion.
Sec. 1011. Prioritization.
Sec. 1012. Transparency in accounting and administrative expenses.
Sec. 1013. Evaluation of project Partnership Agreements.
Sec. 1014. Study and construction of water resources development projects by non-Federal interests.
Sec. 1015. Contributions by non-Federal interests.
Sec. 1016. Operation and maintenance of certain projects.
Sec. 1017. Acceptance of contributed funds to increase lock operations.
Sec. 1018. Credit for in-kind contributions.
Sec. 1019. Clarification of in-kind credit authority.
Sec. 1020. Transfer of excess credit.
Sec. 1021. Crediting authority for federally authorized navigation projects.
Sec. 1022. Credit in lieu of reimbursement.
Sec. 1023. Additional contributions by non-Federal interests.
Sec. 1024. Authority to accept and use materials and services.
Sec. 1025. Water resources projects on Federal land.
Sec. 1026. Clarification of impacts to other Federal facilities.
Sec. 1027. Clarification of munition disposal authorities.
Sec. 1028. Clarification of mitigation authority.
Sec. 1029. Clarification of interagency support authorities.
Sec. 1030. Continuing authority.
Sec. 1031. Tribal partnership program.
Sec. 1032. Territories of the United States.
Sec. 1033. Corrosion prevention.
Sec. 1034. Advanced modeling technologies.
Sec. 1035. Recreational access.
Sec. 1036. Non-Federal plans to provide additional flood risk reduction.

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- Sec. 1037. Hurricane and storm damage reduction.
- Sec. 1038. Reduction of Federal costs for hurricane and storm damage reduction projects.
- Sec. 1039. Invasive species.
- Sec. 1040. Fish and wildlife mitigation.
- Sec. 1041. Mitigation status report.
- Sec. 1042. Reports to Congress.
- Sec. 1043. Non-Federal implementation pilot program.
- Sec. 1044. Independent peer review.
- Sec. 1045. Report on surface elevations at drought affected lakes.
- Sec. 1046. Reservoir operations and water supply.
- Sec. 1047. Special use permits.
- Sec. 1048. America the Beautiful National Parks and Federal Recreational Lands Pass program.
- Sec. 1049. Applicability of spill prevention, control, and countermeasure rule.
- Sec. 1050. Namings.
- Sec. 1051. Interstate water agreements and compacts.
- Sec. 1052. Sense of Congress regarding water resources development bills.

TITLE II—NAVIGATION

Subtitle A—Inland Waterways

- Sec. 2001. Definitions.
- Sec. 2002. Project delivery process reforms.
- Sec. 2003. Efficiency of revenue collection.
- Sec. 2004. Inland waterways revenue studies.
- Sec. 2005. Inland waterways stakeholder roundtable.
- Sec. 2006. Preserving the Inland Waterway Trust Fund.
- Sec. 2007. Inland waterways oversight.
- Sec. 2008. Assessment of operation and maintenance needs of the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway.
- Sec. 2009. Inland waterways riverbank stabilization.
- Sec. 2010. Upper Mississippi River protection.
- Sec. 2011. Corps of Engineers lock and dam energy development.
- Sec. 2012. Restricted areas at Corps of Engineers dams.
- Sec. 2013. Operation and maintenance of fuel taxed inland waterways.

Subtitle B—Port and Harbor Maintenance

- Sec. 2101. Funding for harbor maintenance programs.
- Sec. 2102. Operation and maintenance of harbor projects.
- Sec. 2103. Consolidation of deep draft navigation expertise.
- Sec. 2104. Remote and subsistence harbors.
- Sec. 2105. Arctic deep draft port development partnerships.
- Sec. 2106. Additional measures at donor ports and energy transfer ports.
- Sec. 2107. Preserving United States harbors.

TITLE III—SAFETY IMPROVEMENTS AND ADDRESSING EXTREME WEATHER EVENTS

Subtitle A—Dam Safety

- Sec. 3001. Dam Safety.

Subtitle B—Levee Safety

- Sec. 3011. Systemwide improvement framework.
- Sec. 3012. Management of flood risk reduction projects.
- Sec. 3013. Vegetation management policy.
- Sec. 3014. Levee certifications.
- Sec. 3015. Planning assistance to States.
- Sec. 3016. Levee safety.
- Sec. 3017. Rehabilitation of existing levees.

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- Sec. 3021. Use of innovative materials.
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- Sec. 4001. River basin commissions.
- Sec. 4002. Mississippi River.
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- Sec. 5011. Watershed pilot projects.
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- Sec. 5032. Regulations.
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- Sec. 5034. Reports on pilot program implementation.
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TITLE VI—DEAUTHORIZATION AND BACKLOG PREVENTION

- Sec. 6001. Deauthorization of inactive projects.
- Sec. 6002. Review of Corps of Engineers assets.
- Sec. 6003. Backlog prevention.
- Sec. 6004. Deauthorizations.
- Sec. 6005. Land conveyances.

TITLE VII—WATER RESOURCES INFRASTRUCTURE

- Sec. 7001. Annual report to Congress.
- Sec. 7002. Authorization of final feasibility studies.
- Sec. 7003. Authorization of project modifications recommended by the Secretary.
- Sec. 7004. Expedited consideration in the House and Senate.

SEC. 2. DEFINITION OF SECRETARY.

In this Act, the term “Secretary” means the Secretary of the Army.

TITLE I—PROGRAM REFORMS AND STREAMLINING

SEC. 1001. VERTICAL INTEGRATION AND ACCELERATION OF STUDIES.

(a) **IN GENERAL.**—To the extent practicable, a feasibility study initiated by the Secretary, after the date of enactment of this Act, under section 905(a) of the Water Resources Development Act of 1986 (33 U.S.C. 2282(a)) shall—

(1) result in the completion of a final feasibility report not later than 3 years after the date of initiation;

(2) have a maximum Federal cost of \$3,000,000; and

(3) ensure that personnel from the district, division, and headquarters levels of the Corps of Engineers concurrently conduct the review required under that section.

(b) **EXTENSION.**—If the Secretary determines that a feasibility study described in subsection (a) will not be conducted in accordance with subsection (a), the Secretary, not later than 30 days after the date of making the determination, shall—

(1) prepare an updated feasibility study schedule and cost estimate;

(2) notify the non-Federal feasibility cost-sharing partner that the feasibility study has been delayed; and

(3) provide written notice to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives as to the reasons the requirements of subsection (a) are not attainable.

(c) **TERMINATION OF AUTHORIZATION.**—A feasibility study for which the Secretary has issued a determination under subsection (b) is not authorized after the last day of the 1-year period beginning on the date of the determination if the Secretary has not completed the study on or before such last day.

(d) **EXCEPTION.**—

(1) **IN GENERAL.**—Notwithstanding the requirements of subsection (c), the Secretary may extend the timeline of a study by a period not to exceed 3 years, if the Secretary determines that the feasibility study is too complex to comply with the requirements of subsections (a) and (c).

(2) **FACTORS.**—In making a determination that a study is too complex to comply with the requirements of subsections (a) and (c), the Secretary shall consider—

(A) the type, size, location, scope, and overall cost of the project;

(B) whether the project will use any innovative design or construction techniques;

(C) whether the project will require significant action by other Federal, State, or local agencies;

(D) whether there is significant public dispute as to the nature or effects of the project; and

(E) whether there is significant public dispute as to the economic or environmental costs or benefits of the project.

(3) **NOTIFICATION.**—Each time the Secretary makes a determination under this subsection, the Secretary shall provide written notice to the Committee on Environment and Public Works of the Senate and the Committee on Transportation

and Infrastructure of the House of Representatives as to the results of that determination, including an identification of the specific 1 or more factors used in making the determination that the project is complex.

(4) **LIMITATION.**—The Secretary shall not extend the timeline for a feasibility study for a period of more than 7 years, and any feasibility study that is not completed before that date shall no longer be authorized.

(e) **REVIEWS.**—Not later than 90 days after the date of the initiation of a study described in subsection (a) for a project, the Secretary shall—

(1) take all steps necessary to initiate the process for completing federally mandated reviews that the Secretary is required to complete as part of the study, including the environmental review process under section 1005;

(2) convene a meeting of all Federal, tribal, and State agencies identified under section 2045(e) of the Water Resources Development Act of 2007 (33 U.S.C. 2348(e)) that may be required by law to conduct or issue a review, analysis, or opinion on or to make a determination concerning a permit or license for the study; and

(3) take all steps necessary to provide information that will enable required reviews and analyses related to the project to be conducted by other agencies in a thorough and timely manner.

(f) **INTERIM REPORT.**—Not later than 18 months after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report that describes—

(1) the status of the implementation of the planning process under this section, including the number of participating projects;

(2) a review of project delivery schedules, including a description of any delays on those studies participating in the planning process under this section; and

(3) any recommendations for additional authority necessary to support efforts to expedite the feasibility study process for water resource projects.

(g) **FINAL REPORT.**—Not later than 4 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report that describes—

(1) the status of the implementation of this section, including a description of each feasibility study subject to the requirements of this section;

(2) the amount of time taken to complete each feasibility study; and

(3) any recommendations for additional authority necessary to support efforts to expedite the feasibility study process, including an analysis of whether the limitation established by subsection (a)(2) needs to be adjusted to address the impacts of inflation.

SEC. 1002. CONSOLIDATION OF STUDIES.

(a) **IN GENERAL.**—

(1) **REPEAL.**—Section 905(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2282(b)) is repealed.

(2) **CONFORMING AMENDMENT.**—Section 905(a)(1) of the Water Resources Development Act of 1986 (33 U.S.C. 2282(a)(1)) is amended by striking “perform a reconnaissance study and”.

(b) **CONTENTS OF FEASIBILITY REPORTS.**—Section 905(a)(2) of the Water Resources Development Act of 1986 (33 U.S.C. 2282(a)(2)) is amended by adding at the end the following: “A feasibility report shall include a preliminary analysis of the Federal interest and the costs, benefits, and environmental impacts of the project.”.

(c) **FEASIBILITY STUDIES.**—Section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282) is amended by adding at the end the following:

“(g) **DETAILED PROJECT SCHEDULE.**—

“(1) **IN GENERAL.**—Not later than 180 days after the date of enactment of this subsection, the Secretary shall determine a set of milestones needed for the completion of a feasibility study under this subsection, including all major actions, report submissions and responses, reviews, and comment periods.

“(2) **DETAILED PROJECT SCHEDULE MILESTONES.**—Each District Engineer shall, to the maximum extent practicable, establish a detailed project schedule, based on full funding capability, that lists all deadlines for milestones relating to feasibility studies in the District developed by the Secretary under paragraph (1).

“(3) **NON-FEDERAL INTEREST NOTIFICATION.**—Each District Engineer shall submit by certified mail the detailed project schedule under paragraph (2) to each relevant non-Federal interest—

“(A) for projects that have received funding from the General Investigations Account of the Corps of Engineers in the period beginning on October 1, 2009, and ending on the date of enactment of this subsection, not later than 180 days after the establishment of milestones under paragraph (1); and

“(B) for projects for which a feasibility cost-sharing agreement is executed after the establishment of milestones under paragraph (1), not later than 90 days after the date on which the agreement is executed.

“(4) **CONGRESSIONAL AND PUBLIC NOTIFICATION.**—Beginning in the first full fiscal year after the date of enactment of this subsection, the Secretary shall—

“(A) submit an annual report that lists all detailed project schedules under paragraph (2) and an explanation of any missed deadlines to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives; and

“(B) make publicly available, including on the Internet, a copy of the annual report described in subparagraph (A) not later than 14 days after date on which a report is submitted to Congress.

“(5) FAILURE TO ACT.—If a District Engineer fails to meet any of the deadlines in the project schedule under paragraph (2), the District Engineer shall—

“(A) not later than 30 days after each missed deadline, submit to the non-Federal interest a report detailing—

“(i) why the District Engineer failed to meet the deadline; and

“(ii) a revised project schedule reflecting amended deadlines for the feasibility study; and

“(B) not later than 30 days after each missed deadline, make publicly available, including on the Internet, a copy of the amended project schedule described in subparagraph (A)(ii).”

(d) APPLICABILITY.—The Secretary shall continue to carry out a study for which a reconnaissance level investigation has been initiated before the date of enactment of this Act as if this section, including the amendments made by this section, had not been enacted.

SEC. 1003. EXPEDITED COMPLETION OF REPORTS.

The Secretary shall—

(1) expedite the completion of any on-going feasibility study for a project initiated before the date of enactment of this Act; and

(2) if the Secretary determines that the project is justified in a completed report, proceed directly to preconstruction planning, engineering, and design of the project in accordance with section 910 of the Water Resources Development Act of 1986 (33 U.S.C. 2287).

SEC. 1004. REMOVAL OF DUPLICATIVE ANALYSES.

Section 911 of the Water Resources Development Act of 1986 (33 U.S.C. 2288) is repealed.

SEC. 1005. PROJECT ACCELERATION.

(a) PROJECT ACCELERATION.—

(1) AMENDMENT.—Section 2045 of the Water Resources Development Act of 2007 (33 U.S.C. 2348) is amended to read as follows:

“SEC. 2045. PROJECT ACCELERATION.

“(a) DEFINITIONS.—In this section:

“(1) ENVIRONMENTAL IMPACT STATEMENT.—The term ‘environmental impact statement’ means the detailed statement of environmental impacts of a project required to be prepared pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

“(2) ENVIRONMENTAL REVIEW PROCESS.—

“(A) IN GENERAL.—The term ‘environmental review process’ means the process of preparing an environmental impact statement, environmental assessment, categorical exclusion, or other document under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) for a project study.

“(B) INCLUSIONS.—The term ‘environmental review process’ includes the process for and completion of any environmental permit, approval, review, or study required for a project study under any Federal law other than the

National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

“(3) FEDERAL JURISDICTIONAL AGENCY.—The term ‘Federal jurisdictional agency’ means a Federal agency with jurisdiction delegated by law, regulation, order, or otherwise over a review, analysis, opinion, statement, permit, license, or other approval or decision required for a project study under applicable Federal laws (including regulations).

“(4) FEDERAL LEAD AGENCY.—The term ‘Federal lead agency’ means the Corps of Engineers.

“(5) PROJECT.—The term ‘project’ means a water resources development project to be carried out by the Secretary.

“(6) PROJECT SPONSOR.—The term ‘project sponsor’ has the meaning given the term ‘non-Federal interest’ in section 221(b) of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b(b)).

“(7) PROJECT STUDY.—The term ‘project study’ means a feasibility study for a project carried out pursuant to section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282).

“(b) APPLICABILITY.—

“(1) IN GENERAL.—This section—

“(A) shall apply to each project study that is initiated after the date of enactment of the Water Resources Reform and Development Act of 2014 and for which an environmental impact statement is prepared under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

“(B) may be applied, to the extent determined appropriate by the Secretary, to other project studies initiated after such date of enactment and for which an environmental review process document is prepared under that Act.

“(2) FLEXIBILITY.—Any authority granted under this section may be exercised, and any requirement established under this section may be satisfied, for the conduct of an environmental review process for a project study, a class of project studies, or a program of project studies.

“(3) LIST OF PROJECT STUDIES.—

“(A) IN GENERAL.—The Secretary shall annually prepare, and make publicly available, a separate list of each study that the Secretary has determined—

“(i) meets the standards described in paragraph (1); and

“(ii) does not have adequate funding to make substantial progress toward the completion of the project study.

“(B) INCLUSIONS.—The Secretary shall include for each project study on the list under subparagraph (A) a description of the estimated amounts necessary to make substantial progress on the project study.

“(c) PROJECT REVIEW PROCESS.—

“(1) IN GENERAL.—The Secretary shall develop and implement a coordinated environmental review process for the development of project studies.

“(2) COORDINATED REVIEW.—The coordinated environmental review process described in paragraph (1) shall require that any review, analysis, opinion, statement, permit, license,

or other approval or decision issued or made by a Federal, State, or local governmental agency or an Indian tribe for a project study described in subsection (b) be conducted, to the maximum extent practicable, concurrently with any other applicable governmental agency or Indian tribe.

“(3) TIMING.—The coordinated environmental review process under this subsection shall be completed not later than the date on which the Secretary, in consultation and concurrence with the agencies identified under subsection (e), establishes with respect to the project study.

“(d) LEAD AGENCIES.—

“(1) JOINT LEAD AGENCIES.—

“(A) IN GENERAL.—At the discretion of the Secretary and subject to the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and the requirements of section 1506.8 of title 40, Code of Federal Regulations (or successor regulations), including the concurrence of the proposed joint lead agency, a project sponsor may serve as the joint lead agency.

“(B) PROJECT SPONSOR AS JOINT LEAD AGENCY.—A project sponsor that is a State or local governmental entity may—

“(i) with the concurrence of the Secretary, serve as a joint lead agency with the Federal lead agency for purposes of preparing any environmental document under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

“(ii) prepare any environmental review process document under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) required in support of any action or approval by the Secretary if—

“(I) the Secretary provides guidance in the preparation process and independently evaluates that document;

“(II) the project sponsor complies with all requirements applicable to the Secretary under—

“(aa) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.);

“(bb) any regulation implementing that Act; and

“(cc) any other applicable Federal law; and

“(III) the Secretary approves and adopts the document before the Secretary takes any subsequent action or makes any approval based on that document, regardless of whether the action or approval of the Secretary results in Federal funding.

“(2) DUTIES.—The Secretary shall ensure that—

“(A) the project sponsor complies with all design and mitigation commitments made jointly by the Secretary and the project sponsor in any environmental document prepared by the project sponsor in accordance with this subsection; and

“(B) any environmental document prepared by the project sponsor is appropriately supplemented to address any changes to the project the Secretary determines are necessary.

“(3) ADOPTION AND USE OF DOCUMENTS.—Any environmental document prepared in accordance with this subsection shall be adopted and used by any Federal agency making any determination related to the project study to the same extent that the Federal agency could adopt or use a document prepared by another Federal agency under—

“(A) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

“(B) parts 1500 through 1508 of title 40, Code of Federal Regulations (or successor regulations).

“(4) ROLES AND RESPONSIBILITY OF LEAD AGENCY.—With respect to the environmental review process for any project study, the Federal lead agency shall have authority and responsibility—

“(A) to take such actions as are necessary and proper and within the authority of the Federal lead agency to facilitate the expeditious resolution of the environmental review process for the project study; and

“(B) to prepare or ensure that any required environmental impact statement or other environmental review document for a project study required to be completed under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) is completed in accordance with this section and applicable Federal law.

“(e) PARTICIPATING AND COOPERATING AGENCIES.—

“(1) IDENTIFICATION OF JURISDICTIONAL AGENCIES.—With respect to carrying out the environmental review process for a project study, the Secretary shall identify, as early as practicable in the environmental review process, all Federal, State, and local government agencies and Indian tribes that may—

“(A) have jurisdiction over the project;

“(B) be required by law to conduct or issue a review, analysis, opinion, or statement for the project study; or

“(C) be required to make a determination on issuing a permit, license, or other approval or decision for the project study.

“(2) STATE AUTHORITY.—If the environmental review process is being implemented by the Secretary for a project study within the boundaries of a State, the State, consistent with State law, may choose to participate in the process and to make subject to the process all State agencies that—

“(A) have jurisdiction over the project;

“(B) are required to conduct or issue a review, analysis, opinion, or statement for the project study; or

“(C) are required to make a determination on issuing a permit, license, or other approval or decision for the project study.

“(3) INVITATION.—

“(A) IN GENERAL.—The Federal lead agency shall invite, as early as practicable in the environmental review process, any agency identified under paragraph (1) to become a participating or cooperating agency, as applicable, in the environmental review process for the project study.

“(B) DEADLINE.—An invitation to participate issued under subparagraph (A) shall set a deadline by which a response to the invitation shall be submitted, which

may be extended by the Federal lead agency for good cause.

“(4) PROCEDURES.—Section 1501.6 of title 40, Code of Federal Regulations (as in effect on the date of enactment of the Water Resources Reform and Development Act of 2014) shall govern the identification and the participation of a cooperating agency.

“(5) FEDERAL COOPERATING AGENCIES.—Any Federal agency that is invited by the Federal lead agency to participate in the environmental review process for a project study shall be designated as a cooperating agency by the Federal lead agency unless the invited agency informs the Federal lead agency, in writing, by the deadline specified in the invitation that the invited agency—

“(A)(i)(I) has no jurisdiction or authority with respect to the project;

“(II) has no expertise or information relevant to the project; or

“(III) does not have adequate funds to participate in the project; and

“(ii) does not intend to submit comments on the project;

or

“(B) does not intend to submit comments on the project.

“(6) ADMINISTRATION.—A participating or cooperating agency shall comply with this section and any schedule established under this section.

“(7) EFFECT OF DESIGNATION.—Designation as a participating or cooperating agency under this subsection shall not imply that the participating or cooperating agency—

“(A) supports a proposed project; or

“(B) has any jurisdiction over, or special expertise with respect to evaluation of, the project.

“(8) CONCURRENT REVIEWS.—Each participating or cooperating agency shall—

“(A) carry out the obligations of that agency under other applicable law concurrently and in conjunction with the required environmental review process, unless doing so would prevent the participating or cooperating agency from conducting needed analysis or otherwise carrying out those obligations; and

“(B) formulate and implement administrative, policy, and procedural mechanisms to enable the agency to ensure completion of the environmental review process in a timely, coordinated, and environmentally responsible manner.

“(f) PROGRAMMATIC COMPLIANCE.—

“(1) IN GENERAL.—The Secretary shall issue guidance regarding the use of programmatic approaches to carry out the environmental review process that—

“(A) eliminates repetitive discussions of the same issues;

“(B) focuses on the actual issues ripe for analyses at each level of review;

“(C) establishes a formal process for coordinating with participating and cooperating agencies, including the creation of a list of all data that is needed to carry out an environmental review process; and

“(D) complies with—

“(i) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

“(ii) all other applicable laws.

“(2) REQUIREMENTS.—In carrying out paragraph (1), the Secretary shall—

“(A) as the first step in drafting guidance under that paragraph, consult with relevant Federal, State, and local governmental agencies, Indian tribes, and the public on the appropriate use and scope of the programmatic approaches;

“(B) emphasize the importance of collaboration among relevant Federal, State, and local governmental agencies, and Indian tribes in undertaking programmatic reviews, especially with respect to including reviews with a broad geographical scope;

“(C) ensure that the programmatic reviews—

“(i) promote transparency, including of the analyses and data used in the environmental review process, the treatment of any deferred issues raised by Federal, State, and local governmental agencies, Indian tribes, or the public, and the temporal and special scales to be used to analyze those issues;

“(ii) use accurate and timely information in the environmental review process, including—

“(I) criteria for determining the general duration of the usefulness of the review; and

“(II) the timeline for updating any out-of-date review;

“(iii) describe—

“(I) the relationship between programmatic analysis and future tiered analysis; and

“(II) the role of the public in the creation of future tiered analysis; and

“(iv) are available to other relevant Federal, State, and local governmental agencies, Indian tribes, and the public;

“(D) allow not fewer than 60 days of public notice and comment on any proposed guidance; and

“(E) address any comments received under subparagraph (D).

“(g) COORDINATED REVIEWS.—

“(1) COORDINATION PLAN.—

“(A) ESTABLISHMENT.—

“(i) IN GENERAL.—The Federal lead agency shall, after consultation with and with the concurrence of each participating and cooperating agency and the project sponsor or joint lead agency, as applicable, establish a plan for coordinating public and agency participation in, and comment on, the environmental review process for a project study or a category of project studies.

“(ii) INCORPORATION.—The plan established under clause (i) shall be incorporated into the project schedule milestones set under section 905(g)(2) of the Water Resources Development Act of 1986 (33 U.S.C. 2282(g)(2)).

“(B) SCHEDULE.—

“(i) IN GENERAL.—As soon as practicable but not later than 45 days after the close of the public comment period on a draft environmental impact statement, the Federal lead agency, after consultation with and the concurrence of each participating and cooperating agency and the project sponsor or joint lead agency, as applicable, shall establish, as part of the coordination plan established in subparagraph (A), a schedule for completion of the environmental review process for the project study.

“(ii) FACTORS FOR CONSIDERATION.—In establishing a schedule, the Secretary shall consider factors such as—

“(I) the responsibilities of participating and cooperating agencies under applicable laws;

“(II) the resources available to the project sponsor, joint lead agency, and other relevant Federal and State agencies, as applicable;

“(III) the overall size and complexity of the project;

“(IV) the overall schedule for and cost of the project; and

“(V) the sensitivity of the natural and historical resources that could be affected by the project.

“(iii) MODIFICATIONS.—The Secretary may—

“(I) lengthen a schedule established under clause (i) for good cause; and

“(II) shorten a schedule only with concurrence of the affected participating and cooperating agencies and the project sponsor or joint lead agency, as applicable.

“(iv) DISSEMINATION.—A copy of a schedule established under clause (i) shall be—

“(I) provided to each participating and cooperating agency and the project sponsor or joint lead agency, as applicable; and

“(II) made available to the public.

“(2) COMMENT DEADLINES.—The Federal lead agency shall establish the following deadlines for comment during the environmental review process for a project study:

“(A) DRAFT ENVIRONMENTAL IMPACT STATEMENTS.—For comments by Federal and States agencies and the public on a draft environmental impact statement, a period of not more than 60 days after publication in the Federal Register of notice of the date of public availability of the draft environmental impact statement, unless—

“(i) a different deadline is established by agreement of the Federal lead agency, the project sponsor or joint lead agency, as applicable, and all participating and cooperating agencies; or

“(ii) the deadline is extended by the Federal lead agency for good cause.

“(B) OTHER ENVIRONMENTAL REVIEW PROCESSES.—For all other comment periods established by the Federal lead agency for agency or public comments in the environmental review process, a period of not more than 30 days after

the date on which the materials on which comment is requested are made available, unless—

“(i) a different deadline is established by agreement of the Federal lead agency, the project sponsor, or joint lead agency, as applicable, and all participating and cooperating agencies; or

“(ii) the deadline is extended by the Federal lead agency for good cause.

“(3) DEADLINES FOR DECISIONS UNDER OTHER LAWS.—In any case in which a decision under any Federal law relating to a project study, including the issuance or denial of a permit or license, is required to be made by the date described in subsection (h)(5)(B)(ii), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives—

“(A) as soon as practicable after the 180-day period described in subsection (h)(5)(B)(ii), an initial notice of the failure of the Federal agency to make the decision; and

“(B) every 60 days thereafter until such date as all decisions of the Federal agency relating to the project study have been made by the Federal agency, an additional notice that describes the number of decisions of the Federal agency that remain outstanding as of the date of the additional notice.

“(4) INVOLVEMENT OF THE PUBLIC.—Nothing in this subsection reduces any time period provided for public comment in the environmental review process under applicable Federal law (including regulations).

“(5) TRANSPARENCY REPORTING.—

“(A) REPORTING REQUIREMENTS.—Not later than 1 year after the date of enactment of the Water Resources Reform and Development Act of 2014, the Secretary shall establish and maintain an electronic database and, in coordination with other Federal and State agencies, issue reporting requirements to make publicly available the status and progress with respect to compliance with applicable requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et. seq.) and any other Federal, State, or local approval or action required for a project study for which this section is applicable.

“(B) PROJECT STUDY TRANSPARENCY.—Consistent with the requirements established under subparagraph (A), the Secretary shall publish the status and progress of any Federal, State, or local decision, action, or approval required under applicable laws for each project study for which this section is applicable.

“(h) ISSUE IDENTIFICATION AND RESOLUTION.—

“(1) COOPERATION.—The Federal lead agency, the cooperating agencies, and any participating agencies shall work cooperatively in accordance with this section to identify and resolve issues that could delay completion of the environmental review process or result in the denial of any approval required for the project study under applicable laws.

“(2) FEDERAL LEAD AGENCY RESPONSIBILITIES.—

“(A) IN GENERAL.—The Federal lead agency shall make information available to the cooperating agencies and participating agencies as early as practicable in the environmental review process regarding the environmental and socioeconomic resources located within the project area and the general locations of the alternatives under consideration.

“(B) DATA SOURCES.—The information under subparagraph (A) may be based on existing data sources, including geographic information systems mapping.

“(3) COOPERATING AND PARTICIPATING AGENCY RESPONSIBILITIES.—Based on information received from the Federal lead agency, cooperating and participating agencies shall identify, as early as practicable, any issues of concern regarding the potential environmental or socioeconomic impacts of the project, including any issues that could substantially delay or prevent an agency from granting a permit or other approval that is needed for the project study.

“(4) ACCELERATED ISSUE RESOLUTION AND ELEVATION.—

“(A) IN GENERAL.—On the request of a participating or cooperating agency or project sponsor, the Secretary shall convene an issue resolution meeting with the relevant participating and cooperating agencies and the project sponsor or joint lead agency, as applicable, to resolve issues that may—

“(i) delay completion of the environmental review process; or

“(ii) result in denial of any approval required for the project study under applicable laws.

“(B) MEETING DATE.—A meeting requested under this paragraph shall be held not later than 21 days after the date on which the Secretary receives the request for the meeting, unless the Secretary determines that there is good cause to extend that deadline.

“(C) NOTIFICATION.—On receipt of a request for a meeting under this paragraph, the Secretary shall notify all relevant participating and cooperating agencies of the request, including the issue to be resolved and the date for the meeting.

“(D) ELEVATION OF ISSUE RESOLUTION.—If a resolution cannot be achieved within the 30 day-period beginning on the date of a meeting under this paragraph and a determination is made by the Secretary that all information necessary to resolve the issue has been obtained, the Secretary shall forward the dispute to the heads of the relevant agencies for resolution.

“(E) CONVENTION BY SECRETARY.—The Secretary may convene an issue resolution meeting under this paragraph at any time, at the discretion of the Secretary, regardless of whether a meeting is requested under subparagraph (A).

“(5) FINANCIAL PENALTY PROVISIONS.—

“(A) IN GENERAL.—A Federal jurisdictional agency shall complete any required approval or decision for the environmental review process on an expeditious basis using the shortest existing applicable process.

“(B) FAILURE TO DECIDE.—

“(i) IN GENERAL.—If a Federal jurisdictional agency fails to render a decision required under any Federal law relating to a project study that requires the preparation of an environmental impact statement or environmental assessment, including the issuance or denial of a permit, license, statement, opinion, or other approval by the date described in clause (ii), the amount of funds made available to support the office of the head of the Federal jurisdictional agency shall be reduced by an amount of funding equal to the amounts specified in subclause (I) or (II) and those funds shall be made available to the division of the Federal jurisdictional agency charged with rendering the decision by not later than 1 day after the applicable date under clause (ii), and once each week thereafter until a final decision is rendered, subject to subparagraph (C)—

“(I) \$20,000 for any project study requiring the preparation of an environmental assessment or environmental impact statement; or

“(II) \$10,000 for any project study requiring any type of review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) other than an environmental assessment or environmental impact statement.

“(ii) DESCRIPTION OF DATE.—The date referred to in clause (i) is the later of—

“(I) the date that is 180 days after the date on which an application for the permit, license, or approval is complete; and

“(II) the date that is 180 days after the date on which the Federal lead agency issues a decision on the project under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

“(C) LIMITATIONS.—

“(i) IN GENERAL.—No transfer of funds under subparagraph (B) relating to an individual project study shall exceed, in any fiscal year, an amount equal to 1 percent of the funds made available for the applicable agency office.

“(ii) FAILURE TO DECIDE.—The total amount transferred in a fiscal year as a result of a failure by an agency to make a decision by an applicable deadline shall not exceed an amount equal to 5 percent of the funds made available for the applicable agency office for that fiscal year.

“(iii) AGGREGATE.—Notwithstanding any other provision of law, for each fiscal year, the aggregate amount of financial penalties assessed against each applicable agency office under the Water Resources Reform and Development Act of 2014 and any other Federal law as a result of a failure of the agency to make a decision by an applicable deadline for environmental review, including the total amount transferred under this paragraph, shall not exceed an amount equal to 9.5 percent of the funds made available for the agency office for that fiscal year.

“(D) NO FAULT OF AGENCY.—

“(i) IN GENERAL.—A transfer of funds under this paragraph shall not be made if the applicable agency described in subparagraph (A) notifies, with a supporting explanation, the Federal lead agency, cooperating agencies, and project sponsor, as applicable, that—

“(I) the agency has not received necessary information or approvals from another entity in a manner that affects the ability of the agency to meet any requirements under Federal, State, or local law;

“(II) significant new information, including from public comments, or circumstances, including a major modification to an aspect of the project, requires additional analysis for the agency to make a decision on the project application; or

“(III) the agency lacks the financial resources to complete the review under the scheduled time frame, including a description of the number of full-time employees required to complete the review, the amount of funding required to complete the review, and a justification as to why not enough funding is available to complete the review by the deadline.

“(ii) LACK OF FINANCIAL RESOURCES.—If the agency provides notice under clause (i)(III), the Inspector General of the agency shall—

“(I) conduct a financial audit to review the notice; and

“(II) not later than 90 days after the date on which the review described in subclause (I) is completed, submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report on the notice.

“(E) LIMITATION.—The Federal agency from which funds are transferred pursuant to this paragraph shall not reprogram funds to the office of the head of the agency, or equivalent office, to reimburse that office for the loss of the funds.

“(F) EFFECT OF PARAGRAPH.—Nothing in this paragraph affects or limits the application of, or obligation to comply with, any Federal, State, local, or tribal law.

“(i) MEMORANDUM OF AGREEMENTS FOR EARLY COORDINATION.—

“(1) SENSE OF CONGRESS.—It is the sense of Congress that—

“(A) the Secretary and other Federal agencies with relevant jurisdiction in the environmental review process should cooperate with each other, State agencies, and Indian tribes on environmental review and project delivery activities at the earliest practicable time to avoid delays and duplication of effort later in the process, prevent potential conflicts, and ensure that planning and project development decisions reflect environmental values; and

“(B) the cooperation referred to in subparagraph (A) should include the development of policies and the designation of staff that advise planning agencies and project sponsors of studies or other information foreseeably required for later Federal action and early consultation with appropriate State and local agencies and Indian tribes.

“(2) TECHNICAL ASSISTANCE.—If requested at any time by a State or project sponsor, the Secretary and other Federal agencies with relevant jurisdiction in the environmental review process, shall, to the maximum extent practicable and appropriate, as determined by the agencies, provide technical assistance to the State or project sponsor in carrying out early coordination activities.

“(3) MEMORANDUM OF AGENCY AGREEMENT.—If requested at any time by a State or project sponsor, the Federal lead agency, in consultation with other Federal agencies with relevant jurisdiction in the environmental review process, may establish memoranda of agreement with the project sponsor, Indian tribe, State and local governments, and other appropriate entities to carry out the early coordination activities, including providing technical assistance in identifying potential impacts and mitigation issues in an integrated fashion.

“(j) LIMITATIONS.—Nothing in this section preempts or interferes with—

“(1) any obligation to comply with the provisions of any Federal law, including—

“(A) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); and

“(B) any other Federal environmental law;

“(2) the reviewability of any final Federal agency action in a court of the United States or in the court of any State;

“(3) any requirement for seeking, considering, or responding to public comment; or

“(4) any power, jurisdiction, responsibility, duty, or authority that a Federal, State, or local governmental agency, Indian tribe, or project sponsor has with respect to carrying out a project or any other provision of law applicable to projects.

“(k) TIMING OF CLAIMS.—

“(1) TIMING.—

“(A) IN GENERAL.—Notwithstanding any other provision of law, a claim arising under Federal law seeking judicial review of a permit, license, or other approval issued by a Federal agency for a project study shall be barred unless the claim is filed not later than 3 years after publication of a notice in the Federal Register announcing that the permit, license, or other approval is final pursuant to the law under which the agency action is taken, unless a shorter time is specified in the Federal law that allows judicial review.

“(B) APPLICABILITY.—Nothing in this subsection creates a right to judicial review or places any limit on filing a claim that a person has violated the terms of a permit, license, or other approval.

“(2) NEW INFORMATION.—

“(A) IN GENERAL.—The Secretary shall consider new information received after the close of a comment period

if the information satisfies the requirements for a supplemental environmental impact statement under title 40, Code of Federal Regulations (including successor regulations).

“(B) SEPARATE ACTION.—The preparation of a supplemental environmental impact statement or other environmental document, if required under this section, shall be considered a separate final agency action and the deadline for filing a claim for judicial review of the action shall be 3 years after the date of publication of a notice in the Federal Register announcing the action relating to such supplemental environmental impact statement or other environmental document.

“(1) CATEGORICAL EXCLUSIONS.—

“(1) IN GENERAL.—Not later than 180 days after the date of enactment of the Water Resources Reform and Development Act of 2014, the Secretary shall—

“(A) survey the use by the Corps of Engineers of categorical exclusions in projects since 2005;

“(B) publish a review of the survey that includes a description of—

“(i) the types of actions that were categorically excluded or could be the basis for developing a new categorical exclusion; and

“(ii) any requests previously received by the Secretary for new categorical exclusions; and

“(C) solicit requests from other Federal agencies and project sponsors for new categorical exclusions.

“(2) NEW CATEGORICAL EXCLUSIONS.—Not later than 1 year after the date of enactment of the Water Resources Reform and Development Act of 2014, if the Secretary has identified a category of activities that merit establishing a categorical exclusion that did not exist on the day before the date of enactment of the Water Resources Reform and Development Act of 2014 based on the review under paragraph (1), the Secretary shall publish a notice of proposed rulemaking to propose that new categorical exclusion, to the extent that the categorical exclusion meets the criteria for a categorical exclusion under section 1508.4 of title 40, Code of Federal Regulations (or successor regulation).

“(m) REVIEW OF PROJECT ACCELERATION REFORMS.—

“(1) IN GENERAL.—The Comptroller General of the United States shall—

“(A) assess the reforms carried out under this section; and

“(B) not later than 5 years and not later than 10 years after the date of enactment of the Water Resources Reform and Development Act of 2014, submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that describes the results of the assessment.

“(2) CONTENTS.—The reports under paragraph (1) shall include an evaluation of impacts of the reforms carried out under this section on—

“(A) project delivery;

“(B) compliance with environmental laws; and

“(C) the environmental impact of projects.

“(n) PERFORMANCE MEASUREMENT.—The Secretary shall establish a program to measure and report on progress made toward improving and expediting the planning and environmental review process.

“(o) IMPLEMENTATION GUIDANCE.—The Secretary shall prepare, in consultation with the Council on Environmental Quality and other Federal agencies with jurisdiction over actions or resources that may be impacted by a project, guidance documents that describe the coordinated environmental review processes that the Secretary intends to use to implement this section for the planning of projects, in accordance with the civil works program of the Corps of Engineers and all applicable law.”.

(2) CLERICAL AMENDMENT.—The table of contents contained in section 1(b) of the Water Resources Development Act of 2007 (121 Stat. 1042) is amended by striking the item relating to section 2045 and inserting the following:

“Sec. 2045. Project acceleration.”.

(b) CATEGORICAL EXCLUSIONS IN EMERGENCIES.—For the repair, reconstruction, or rehabilitation of a water resources project that is in operation or under construction when damaged by an event or incident that results in a declaration by the President of a major disaster or emergency pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.), the Secretary shall treat such repair, reconstruction, or rehabilitation activity as a class of action categorically excluded from the requirements relating to environmental assessments or environmental impact statements under section 1508.4 of title 40, Code of Federal Regulations (or successor regulations), if the repair or reconstruction activity is—

(1) in the same location with the same capacity, dimensions, and design as the original water resources project as before the declaration described in this section; and

(2) commenced within a 2-year period beginning on the date of a declaration described in this subsection.

SEC. 1006. EXPEDITING THE EVALUATION AND PROCESSING OF PERMITS.

Section 214 of the Water Resources Development Act of 2000 (Public Law 106–541; 33 U.S.C. 2201 note) is amended—

(1) in subsection (a)—

(A) by striking “(a) IN GENERAL.—The Secretary” and inserting the following:

“(a) FUNDING TO PROCESS PERMITS.—

“(1) DEFINITIONS.—In this subsection:

“(A) NATURAL GAS COMPANY.—The term ‘natural gas company’ has the meaning given the term in section 1262 of the Public Utility Holding Company Act of 2005 (42 U.S.C. 16451), except that the term also includes a person engaged in the transportation of natural gas in intrastate commerce.

“(B) PUBLIC-UTILITY COMPANY.—The term ‘public-utility company’ has the meaning given the term in section 1262 of the Public Utility Holding Company Act of 2005 (42 U.S.C. 16451).

“(2) PERMIT PROCESSING.—The Secretary”;

(B) in paragraph (2) (as so designated)—

(i) by inserting “or a public-utility company or natural gas company” after “non-Federal public entity”;

and

(ii) by inserting “or company” after “that entity”;

and

(C) by adding at the end the following:

“(3) LIMITATION FOR PUBLIC-UTILITY AND NATURAL GAS COMPANIES.—The authority provided under paragraph (2) to a public-utility company or natural gas company shall expire on the date that is 7 years after the date of enactment of this paragraph.

“(4) EFFECT ON OTHER ENTITIES.—To the maximum extent practicable, the Secretary shall ensure that expediting the evaluation of a permit through the use of funds accepted and expended under this section does not adversely affect the timeline for evaluation (in the Corps district in which the project or activity is located) of permits under the jurisdiction of the Department of the Army of other entities that have not contributed funds under this section.

“(5) GAO STUDY.—Not later than 4 years after the date of enactment of this paragraph, the Comptroller General of the United States shall carry out a study of the implementation by the Secretary of the authority provided under paragraph (2) to public-utility companies and natural gas companies.”;

and

(2) by striking subsections (d) and (e) and inserting the following:

“(d) PUBLIC AVAILABILITY.—

“(1) IN GENERAL.—The Secretary shall ensure that all final permit decisions carried out using funds authorized under this section are made available to the public in a common format, including on the Internet, and in a manner that distinguishes final permit decisions under this section from other final actions of the Secretary.

“(2) DECISION DOCUMENT.—The Secretary shall—

“(A) use a standard decision document for evaluating all permits using funds accepted under this section; and

“(B) make the standard decision document, along with all final permit decisions, available to the public, including on the Internet.

“(3) AGREEMENTS.—The Secretary shall make all active agreements to accept funds under this section available on a single public Internet site.

“(e) REPORTING.—

“(1) IN GENERAL.—The Secretary shall prepare an annual report on the implementation of this section, which, at a minimum, shall include for each district of the Corps of Engineers that accepts funds under this section—

“(A) a comprehensive list of any funds accepted under this section during the previous fiscal year;

“(B) a comprehensive list of the permits reviewed and approved using funds accepted under this section during the previous fiscal year, including a description of the size and type of resources impacted and the mitigation required for each permit; and

“(C) a description of the training offered in the previous fiscal year for employees that is funded in whole or in part with funds accepted under this section.

“(2) SUBMISSION.—Not later than 90 days after the end of each fiscal year, the Secretary shall—

“(A) submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives the annual report described in paragraph (1); and

“(B) make each report received under subparagraph (A) available on a single publicly accessible Internet site.”.

SEC. 1007. EXPEDITING APPROVAL OF MODIFICATIONS AND ALTERATIONS OF PROJECTS BY NON-FEDERAL INTERESTS.

(a) SECTION 14 APPLICATION DEFINED.—In this section, the term “section 14 application” means an application submitted by an applicant to the Secretary requesting permission for the temporary occupation or use of a public work, or the alteration or permanent occupation or use of a public work, under section 14 of the Act of March 3, 1899 (commonly known as the “Rivers and Harbors Appropriation Act of 1899”) (33 U.S.C. 408).

(b) REVIEW.—Not later than 1 year after the date of enactment of this Act, the Secretary, after providing notice and an opportunity for comment, shall establish a process for the review of section 14 applications in a timely and consistent manner.

(c) BENCHMARK GOALS.—

(1) ESTABLISHMENT OF BENCHMARK GOALS.—In carrying out subsection (b), the Secretary shall—

(A) establish benchmark goals for determining the amount of time it should take the Secretary to determine whether a section 14 application is complete;

(B) establish benchmark goals for determining the amount of time it should take the Secretary to approve or disapprove a section 14 application; and

(C) to the extent practicable, use such benchmark goals to make a decision on section 14 applications in a timely and consistent manner.

(2) BENCHMARK GOALS.—

(A) BENCHMARK GOALS FOR DETERMINING WHETHER SECTION 14 APPLICATIONS ARE COMPLETE.—To the extent practicable, the benchmark goals established under paragraph (1) shall provide that—

(i) the Secretary reach a decision on whether a section 14 application is complete not later than 15 days after the date of receipt of the application; and

(ii) if the Secretary determines that a section 14 application is not complete, the Secretary promptly notify the applicant of the specific information that is missing or the analysis that is needed to complete the application.

(B) BENCHMARK GOALS FOR REVIEWING COMPLETED APPLICATIONS.—To the extent practicable, the benchmark goals established under paragraph (1) shall provide that—

(i) the Secretary generally approve or disapprove a completed section 14 application not later than 45

days after the date of receipt of the completed application; and

(ii) in a case in which the Secretary determines that additional time is needed to review a completed section 14 application due to the type, size, cost, complexity, or impacts of the actions proposed in the application, the Secretary generally approve or disapprove the application not later than 180 days after the date of receipt of the completed application.

(3) NOTICE.—In any case in which the Secretary determines that it will take the Secretary more than 45 days to review a completed section 14 application, the Secretary shall—

(A) provide written notification to the applicant; and

(B) include in the written notice a best estimate of the Secretary as to the amount of time required for completion of the review.

(d) FAILURE TO ACHIEVE BENCHMARK GOALS.—In any case in which the Secretary fails to make a decision on a section 14 application in accordance with the process established under this section, the Secretary shall provide written notice to the applicant, including a detailed description of—

(1) why the Secretary failed to make a decision in accordance with such process;

(2) the additional actions required before the Secretary will issue a decision; and

(3) the amount of time the Secretary will require to issue a decision.

(e) NOTIFICATION.—

(1) SUBMISSION TO CONGRESS.—The Secretary shall provide a copy of any written notice provided under subsection (d) to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

(2) PUBLIC AVAILABILITY.—The Secretary shall maintain a publicly available database, including on the Internet, on—

(A) all section 14 applications received by the Secretary; and

(B) the current status of such applications.

SEC. 1008. EXPEDITING HYDROPOWER AT CORPS OF ENGINEERS FACILITIES.

(a) POLICY.—Congress declares that it is the policy of the United States that—

(1) the development of non-Federal hydroelectric power at Corps of Engineers civil works projects, including locks and dams, shall be given priority;

(2) Corps of Engineers approval of non-Federal hydroelectric power at Corps of Engineers civil works projects, including permitting required under section 14 of the Act of March 3, 1899 (33 U.S.C. 408), shall be completed by the Corps of Engineers in a timely and consistent manner; and

(3) approval of hydropower at Corps of Engineers civil works projects shall in no way diminish the other priorities and missions of the Corps of Engineers, including authorized project purposes and habitat and environmental protection.

(b) REPORT.—Not later than 2 years after the date of enactment of this Act and biennially thereafter, the Secretary shall submit

to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report that, at a minimum, shall include—

(1) a description of initiatives carried out by the Secretary to encourage the development of hydroelectric power by non-Federal entities at Corps of Engineers civil works projects;

(2) a list of all new hydroelectric power activities by non-Federal entities approved at Corps of Engineers civil works projects in that fiscal year, including the length of time the Secretary needed to approve those activities;

(3) a description of the status of each pending application from non-Federal entities for approval to develop hydroelectric power at Corps of Engineers civil works projects;

(4) a description of any benefits or impacts to the environment, recreation, or other uses associated with Corps of Engineers civil works projects at which non-Federal entities have developed hydroelectric power in the previous fiscal year; and

(5) the total annual amount of payments or other services provided to the Corps of Engineers, the Treasury, and any other Federal agency as a result of approved non-Federal hydro-power projects at Corps of Engineers civil works projects.

SEC. 1009. ENHANCED USE OF ELECTRONIC COMMERCE IN FEDERAL PROCUREMENT.

(a) **REPORT.**—Not later than 180 days after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report describing the actions of the Secretary in carrying out section 2301 of title 41, United States Code, regarding the use of electronic commerce in Federal procurement.

(b) **CONTENTS.**—The report submitted under subsection (a) shall include, with respect to the 2 fiscal years most recently ended before the fiscal year in which the report is submitted—

(1) an identification of the number, type, and dollar value of procurement solicitations with respect to which the public was permitted to respond to the solicitation electronically, which shall differentiate between solicitations that allowed full or partial electronic submission;

(2) an analysis of the information provided under paragraph (1) and actions that could be taken by the Secretary to refine and improve the use of electronic submission for procurement solicitation responses;

(3) an analysis of the potential benefits of and obstacles to full implementation of electronic submission for procurement solicitation responses, including with respect to cost savings, error reduction, paperwork reduction, increased bidder participation, and competition, and expanded use of electronic bid data collection for cost-effective contract management and timely reporting; and

(4) an analysis of the options and technologies available to facilitate expanded implementation of electronic submission for procurement solicitation responses and the suitability of each option and technology for contracts of various types and sizes.

SEC. 1010. DETERMINATION OF PROJECT COMPLETION.

(a) **IN GENERAL.**—The Secretary shall notify the applicable non-Federal interest when construction of a water resources project or a functional portion of the project is completed so the non-Federal interest may commence responsibilities, as applicable, for operating and maintaining the project.

(b) **NON-FEDERAL INTEREST APPEAL OF DETERMINATION.**—

(1) **IN GENERAL.**—Not later than 7 days after receiving a notification under subsection (a), the non-Federal interest may appeal the completion determination of the Secretary in writing with a detailed explanation of the basis for questioning the completeness of the project or functional portion of the project.

(2) **INDEPENDENT REVIEW.**—

(A) **IN GENERAL.**—On notification that a non-Federal interest has submitted an appeal under paragraph (1), the Secretary shall contract with 1 or more independent, non-Federal experts to evaluate whether the applicable water resources project or functional portion of the project is complete.

(B) **TIMELINE.**—An independent review carried out under subparagraph (A) shall be completed not later than 180 days after the date on which the Secretary receives an appeal from a non-Federal interest under paragraph (1).

SEC. 1011. PRIORITIZATION.

(a) **PRIORITIZATION OF HURRICANE AND STORM DAMAGE RISK REDUCTION EFFORTS.**—

(1) **PRIORITY.**—For authorized projects and ongoing feasibility studies with a primary purpose of hurricane and storm damage risk reduction, the Secretary shall give funding priority to projects and ongoing studies that—

(A) address an imminent threat to life and property;

(B) prevent storm surge from inundating populated areas;

(C) prevent the loss of coastal wetlands that help reduce the impact of storm surge;

(D) protect emergency hurricane evacuation routes or shelters;

(E) prevent adverse impacts to publicly owned or funded infrastructure and assets;

(F) minimize disaster relief costs to the Federal Government; and

(G) address hurricane and storm damage risk reduction in an area for which the President declared a major disaster in accordance with section 401 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170).

(2) **EXPEDITED CONSIDERATION OF CURRENTLY AUTHORIZED PROJECTS.**—Not later than 180 days after the date of enactment of this Act, the Secretary shall—

(A) submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a list of all—

(i) ongoing hurricane and storm damage reduction feasibility studies that have signed feasibility cost-share agreements and have received Federal funds since 2009; and

(ii) authorized hurricane and storm damage reduction projects that—

(I) have been authorized for more than 20 years but are less than 75 percent complete; or

(II) are undergoing a post-authorization change report, general reevaluation report, or limited reevaluation report;

(B) identify those projects on the list required under subparagraph (A) that meet the criteria described in paragraph (1); and

(C) provide a plan for expeditiously completing the projects identified under subparagraph (B), subject to available funding.

(b) **PRIORITIZATION OF ECOSYSTEM RESTORATION EFFORTS.**—For authorized projects with a primary purpose of ecosystem restoration, the Secretary shall give funding priority to projects—

(1) that—

(A) address an identified threat to public health, safety, or welfare;

(B) preserve or restore ecosystems of national significance; or

(C) preserve or restore habitats of importance for federally protected species, including migratory birds; and

(2) for which the restoration activities will contribute to other ongoing or planned Federal, State, or local restoration initiatives.

SEC. 1012. TRANSPARENCY IN ACCOUNTING AND ADMINISTRATIVE EXPENSES.

(a) **IN GENERAL.**—On the request of a non-Federal interest, the Secretary shall provide to the non-Federal interest a detailed accounting of the Federal expenses associated with a water resources project.

(b) **STUDY.**—

(1) **IN GENERAL.**—The Secretary shall contract with the National Academy of Public Administration to carry out a study on the efficiency of the Corps Engineers current staff salaries and administrative expense procedures as compared to using a separate administrative expense account.

(2) **CONTENTS.**—The study under paragraph (1) shall include any recommendations of the National Academy of Public Administration for improvements to the budgeting and administrative processes that will increase the efficiency of the Corps of Engineers project delivery.

SEC. 1013. EVALUATION OF PROJECT PARTNERSHIP AGREEMENTS.

(a) **IN GENERAL.**—The Secretary shall contract with the National Academy of Public Administration to carry out a comprehensive review of the process for preparing, negotiating, and approving Project Partnership Agreements and the Project Partnership Agreement template, which shall include—

(1) an evaluation of the process for preparing, negotiating, and approving Project Partnership Agreements, as in effect on the day before the date of enactment of this Act, including

suggested modifications to the process provided by non-Federal interests; and

(2) recommendations based on the evaluation under paragraph (1) to improve the Project Partnership Agreement template and the process for preparing, negotiating, and approving Project Partnership Agreements.

(b) SUBMISSION TO CONGRESS.—

(1) IN GENERAL.—The Secretary shall submit the findings of the National Academy of Public Administration to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

(2) REPORT.—Not later than 180 days after the date on which the findings are received under paragraph (1), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a detailed response, including any recommendations the Secretary plans to implement, on the process for preparing, negotiating, and approving Project Partnership Agreements and the Project Partnership Agreement template.

SEC. 1014. STUDY AND CONSTRUCTION OF WATER RESOURCES DEVELOPMENT PROJECTS BY NON-FEDERAL INTERESTS.

(a) STUDIES.—Section 203 of the Water Resources Development Act of 1986 (33 U.S.C. 2231) is amended to read as follows:

“SEC. 203. STUDY OF WATER RESOURCES DEVELOPMENT PROJECTS BY NON-FEDERAL INTERESTS.

“(a) SUBMISSION TO SECRETARY.—

“(1) IN GENERAL.—A non-Federal interest may undertake a feasibility study of a proposed water resources development project and submit the study to the Secretary.

“(2) GUIDELINES.—To assist non-Federal interests, the Secretary, as soon as practicable, shall issue guidelines for feasibility studies of water resources development projects to provide sufficient information for the formulation of the studies.

“(b) REVIEW BY SECRETARY.—The Secretary shall review each feasibility study received under subsection (a)(1) for the purpose of determining whether or not the study, and the process under which the study was developed, each comply with Federal laws and regulations applicable to feasibility studies of water resources development projects.

“(c) SUBMISSION TO CONGRESS.—Not later than 180 days after the date of receipt of a feasibility study of a project under subsection (a)(1), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that describes—

“(1) the results of the Secretary’s review of the study under subsection (b), including a determination of whether the project is feasible;

“(2) any recommendations the Secretary may have concerning the plan or design of the project; and

“(3) any conditions the Secretary may require for construction of the project.

“(d) CREDIT.—If a project for which a feasibility study has been submitted under subsection (a)(1) is authorized by a Federal

law enacted after the date of the submission to Congress under subsection (c), the Secretary shall credit toward the non-Federal share of the cost of construction of the project an amount equal to the portion of the cost of developing the study that would have been the responsibility of the United States if the study had been developed by the Secretary.”.

(b) CONSTRUCTION.—

(1) IN GENERAL.—Section 204 of the Water Resources Development Act of 1986 (33 U.S.C. 2232) is amended to read as follows:

“SEC. 204. CONSTRUCTION OF WATER RESOURCES DEVELOPMENT PROJECTS BY NON-FEDERAL INTERESTS.

“(a) WATER RESOURCES DEVELOPMENT PROJECT DEFINED.—In this section, the term ‘water resources development project’ means a project recommendation that results from—

“(1) a feasibility report, as such term is defined in section 7001(f) of the Water Resources Reform and Development Act of 2014;

“(2) a completed feasibility study developed under section 203; or

“(3) a final feasibility study for water resources development and conservation and other purposes that is specifically authorized by Congress to be carried out by the Secretary.

“(b) AUTHORITY.—

“(1) IN GENERAL.—A non-Federal interest may carry out a water resources development project, or separable element thereof—

“(A) in accordance with a plan approved by the Secretary for the project or separable element; and

“(B) subject to any conditions that the Secretary may require, including any conditions specified under section 203(c)(3).

“(2) CONDITIONS.—Before carrying out a water resources development project, or separable element thereof, under this section, a non-Federal interest shall—

“(A) obtain any permit or approval required in connection with the project or separable element under Federal or State law; and

“(B) ensure that a final environmental impact statement or environmental assessment, as appropriate, for the project or separable element has been filed.

“(c) STUDIES AND ENGINEERING.—When requested by an appropriate non-Federal interest, the Secretary may undertake all necessary studies and engineering for any construction to be undertaken under subsection (b), and provide technical assistance in obtaining all necessary permits for the construction, if the non-Federal interest contracts with the Secretary to furnish the United States funds for the studies, engineering, or technical assistance in the period during which the studies and engineering are being conducted.

“(d) CREDIT OR REIMBURSEMENT.—

“(1) GENERAL RULE.—Subject to paragraph (3), a project or separable element of a project carried out by a non-Federal interest under this section shall be eligible for credit or reimbursement for the Federal share of work carried out on a project or separable element of a project if—

“(A) before initiation of construction of the project or separable element—

“(i) the Secretary approves the plans for construction of the project or separable element of the project by the non-Federal interest;

“(ii) the Secretary determines, before approval of the plans, that the project or separable element of the project is feasible; and

“(iii) the non-Federal interest enters into a written agreement with the Secretary under section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b), including an agreement to pay the non-Federal share, if any, of the cost of operation and maintenance of the project; and

“(B) the Secretary determines that all Federal laws and regulations applicable to the construction of a water resources development project, and any conditions identified under subsection (b)(1)(B), were complied with by the non-Federal interest during construction of the project or separable element of the project.

“(2) APPLICATION OF CREDIT.—The Secretary may apply credit toward—

“(A) the non-Federal share of authorized separable elements of the same project; or

“(B) subject to the requirements of this section and section 1020 of the Water Resources Reform and Development Act of 2014, at the request of the non-Federal interest, the non-Federal share of a different water resources development project.

“(3) REQUIREMENTS.—The Secretary may only apply credit or provide reimbursement under paragraph (1) if—

“(A) Congress has authorized construction of the project or separable element of the project; and

“(B) the Secretary certifies that the project has been constructed in accordance with—

“(i) all applicable permits or approvals; and

“(ii) this section.

“(4) MONITORING.—The Secretary shall regularly monitor and audit any water resources development project, or separable element of a water resources development project, constructed by a non-Federal interest under this section to ensure that—

“(A) the construction is carried out in compliance with the requirements of this section; and

“(B) the costs of the construction are reasonable.

“(e) NOTIFICATION OF COMMITTEES.—If a non-Federal interest notifies the Secretary that the non-Federal interest intends to carry out a project, or separable element thereof, under this section, the Secretary shall provide written notice to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives concerning the intent of the non-Federal interest.

“(f) OPERATION AND MAINTENANCE.—Whenever a non-Federal interest carries out improvements to a federally authorized harbor or inland harbor, the Secretary shall be responsible for operation and maintenance in accordance with section 101(b) if—

“(1) before construction of the improvements—

“(A) the Secretary determines that the improvements are feasible and consistent with the purposes of this title; and

“(B) the Secretary and the non-Federal interest execute a written agreement relating to operation and maintenance of the improvements;

“(2) the Secretary certifies that the project or separable element of the project is constructed in accordance with applicable permits and appropriate engineering and design standards; and

“(3) the Secretary does not find that the project or separable element is no longer feasible.”.

(c) REPEALS.—The following provisions are repealed:

(1) Section 404 of the Water Resources Development Act of 1990 (33 U.S.C. 2232 note; 104 Stat. 4646) and the item relating to that section in the table of contents contained in section 1(b) of that Act.

(2) Section 206 of the Water Resources Development Act of 1992 (33 U.S.C. 426i–1) and the item relating to that section in the table of contents contained in section 1(b) of that Act.

(3) Section 211 of the Water Resources Development Act of 1996 (33 U.S.C. 701b–13) and the item relating to that section in the table of contents contained in section 1(b) of that Act.

(d) SAVINGS PROVISION.—Nothing in this section may be construed to affect an agreement in effect on the date of enactment of this Act, or an agreement that is finalized between the Corps of Engineers and a non-Federal interest on or before December 31, 2014, under any of the following sections (as such sections were in effect on the day before such date of enactment):

(1) Section 204 of the Water Resources Development Act of 1986 (33 U.S.C. 2232).

(2) Section 206 of the Water Resources Development Act of 1992 (33 U.S.C. 426i–1).

(3) Section 211 of the Water Resources Development Act of 1996 (33 U.S.C. 701b–13).

SEC. 1015. CONTRIBUTIONS BY NON-FEDERAL INTERESTS.

(a) IN GENERAL.—Section 5 of the Act of June 22, 1936 (33 U.S.C. 701h), is amended—

(1) by inserting “and other non-Federal interests” after “States and political subdivisions thereof” each place it appears;

(2) by inserting “, including a project for navigation on the inland waterways,” after “study or project”;

(3) by striking “*Provided, That when*” and inserting “*Provided, That the Secretary is authorized to receive and expend funds from a State or a political subdivision thereof, and other non-Federal interests or private entities, to operate a hurricane barrier project to support recreational activities at or in the vicinity of the project, at no cost to the Federal Government, if the Secretary determines that operation for such purpose is not inconsistent with the operation and maintenance of the project for the authorized purposes of the project: Provided further, That when*”; and

(4) by striking the period at the end and inserting the following: “: *Provided further, That the term ‘non-Federal*

interest' has the meaning given that term in section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b).”.

(b) **NOTIFICATION FOR CONTRIBUTED FUNDS.**—Prior to accepting funds contributed under section 5 of the Act of June 22, 1936 (33 U.S.C. 701h), the Secretary shall provide written notice of the funds to the Committee on Environment and Public Works and the Committee on Appropriations of the Senate and the Committee on Transportation and Infrastructure and the Committee on Appropriations of the House of Representatives.

(c) **TECHNICAL AMENDMENT.**—Section 111(b) of the Energy and Water Development and Related Agencies Appropriations Act, 2012 (125 Stat. 858) is repealed.

SEC. 1016. OPERATION AND MAINTENANCE OF CERTAIN PROJECTS.

The Secretary may assume responsibility for operation and maintenance in accordance with section 101(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2211(b)) (as amended by section 2102(b)) for improvements to a federally authorized harbor or inland harbor that are carried out by a non-Federal interest prior to December 31, 2014, if the Secretary determines that the requirements under paragraphs (2) and (3) of section 204(f) of the Water Resources Development Act of 1986 (33 U.S.C. 2232(f)) are met.

SEC. 1017. ACCEPTANCE OF CONTRIBUTED FUNDS TO INCREASE LOCK OPERATIONS.

(a) **IN GENERAL.**—The Secretary, after providing public notice, shall establish a pilot program for the acceptance and expenditure of funds contributed by non-Federal interests to increase the hours of operation of locks at water resources development projects.

(b) **APPLICABILITY.**—The establishment of the pilot program under this section shall not affect the periodic review and adjustment of hours of operation of locks based on increases in commercial traffic carried out by the Secretary.

(c) **PUBLIC COMMENT.**—Not later than 180 days before a proposed modification to the operation of a lock at a water resources development project will be carried out, the Secretary shall—

(1) publish the proposed modification in the Federal Register; and

(2) accept public comment on the proposed modification.

(d) **REPORTS.**—

(1) **IN GENERAL.**—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report that evaluates the cost-savings resulting from reduced lock hours and any economic impacts of modifying lock operations.

(2) **REVIEW OF PILOT PROGRAM.**—Not later than September 30, 2017, and each year thereafter, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that describes the effectiveness of the pilot program under this section.

(e) **ANNUAL REVIEW.**—The Secretary shall carry out an annual review of the commercial use of locks and make any necessary adjustments to lock operations based on that review.

(f) **TERMINATION.**—The authority to accept funds under this section shall terminate 5 years after the date of enactment of this Act.

SEC. 1018. CREDIT FOR IN-KIND CONTRIBUTIONS.

(a) **IN GENERAL.**—Section 221(a)(4) of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b(a)(4)) is amended—

(1) in subparagraph (A), in the matter preceding clause (i), by inserting “or a project under an environmental infrastructure assistance program” after “law”;

(2) in subparagraph (C) by striking “In any case” and all that follows through the period at the end and inserting the following:

“(i) **CONSTRUCTION.**—

“(I) **IN GENERAL.**—In any case in which the non-Federal interest is to receive credit under subparagraph (A) for the cost of construction carried out by the non-Federal interest before execution of a partnership agreement and that construction has not been carried out as of November 8, 2007, the Secretary and the non-Federal interest shall enter into an agreement under which the non-Federal interest shall carry out such work and shall do so prior to the non-Federal interest initiating construction or issuing a written notice to proceed for the construction.

“(II) **ELIGIBILITY.**—Construction that is carried out after the execution of an agreement to carry out work described in subclause (I) and any design activities that are required for that construction, even if the design activity is carried out prior to the execution of the agreement to carry out work, shall be eligible for credit.

“(ii) **PLANNING.**—

“(I) **IN GENERAL.**—In any case in which the non-Federal interest is to receive credit under subparagraph (A) for the cost of planning carried out by the non-Federal interest before execution of a feasibility cost-sharing agreement, the Secretary and the non-Federal interest shall enter into an agreement under which the non-Federal interest shall carry out such work and shall do so prior to the non-Federal interest initiating that planning.

“(II) **ELIGIBILITY.**—Planning that is carried out by the non-Federal interest after the execution of an agreement to carry out work described in subclause (I) shall be eligible for credit.”;

(3) in subparagraph (D)(iii) by striking “sections 101 and 103” and inserting “sections 101(a)(2) and 103(a)(1)(A) of the Water Resources Development Act of 1986 (33 U.S.C. 2211(a)(2); 33 U.S.C. 2213(a)(1)(A))”;

(4) by redesignating subparagraph (E) as subparagraph (H);

(5) by inserting after subparagraph (D) the following:

“(E) **ANALYSIS OF COSTS AND BENEFITS.**—In the evaluation of the costs and benefits of a project, the Secretary

shall not consider construction carried out by a non-Federal interest under this subsection as part of the future without project condition.

“(F) TRANSFER OF CREDIT BETWEEN SEPARABLE ELEMENTS OF A PROJECT.—Credit for in-kind contributions provided by a non-Federal interest that are in excess of the non-Federal cost share for an authorized separable element of a project may be applied toward the non-Federal cost share for a different authorized separable element of the same project.

“(G) APPLICATION OF CREDIT.—

“(i) IN GENERAL.—To the extent that credit for in-kind contributions, as limited by subparagraph (D), and credit for required land, easements, rights-of-way, dredged material disposal areas, and relocations provided by the non-Federal interest exceed the non-Federal share of the cost of construction of a project other than a navigation project, the Secretary, subject to the availability of funds, shall enter into a reimbursement agreement with the non-Federal interest, which shall be in addition to a partnership agreement under subparagraph (A), to reimburse the difference to the non-Federal interest.

“(ii) PRIORITY.—If appropriated funds are insufficient to cover the full cost of all requested reimbursement agreements under clause (i), the Secretary shall enter into reimbursement agreements in the order in which requests for such agreements are received.”; and

(6) in subparagraph (H) (as redesignated by paragraph (4))—

(A) in clause (i) by inserting “, and to water resources projects authorized prior to the date of enactment of the Water Resources Development Act of 1986 (Public Law 99-662), if correction of design deficiencies is necessary” before the period at the end; and

(B) by striking clause (ii) and inserting the following:

“(ii) AUTHORIZATION AS ADDITION TO OTHER AUTHORIZATIONS.—The authority of the Secretary to provide credit for in-kind contributions pursuant to this paragraph shall be in addition to any other authorization to provide credit for in-kind contributions and shall not be construed as a limitation on such other authorization. The Secretary shall apply the provisions of this paragraph, in lieu of provisions under other crediting authority, only if so requested by the non-Federal interest.”.

(b) APPLICABILITY.—Section 2003(e) of the Water Resources Development Act of 2007 (42 U.S.C. 1962d-5b note) is amended—

(1) by inserting “, or construction of design deficiency corrections on the project,” after “construction on the project”; and

(2) by inserting “, or under which construction of the project has not been completed and the work to be performed by

the non-Federal interests has not been carried out and is creditable only toward any remaining non-Federal cost share,” after “has not been initiated”.

(c) **EFFECTIVE DATE.**—The amendments made by subsections (a) and (b) take effect on November 8, 2007.

(d) **GUIDELINES.**—

(1) **IN GENERAL.**—Not later than 1 year after the date of enactment of this Act, the Secretary shall update any guidance or regulations for carrying out section 221(a)(4) of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b(a)(4)) (as amended by subsection (a)) that are in existence on the date of enactment of this Act or issue new guidelines, as determined to be appropriate by the Secretary.

(2) **INCLUSIONS.**—Any guidance, regulations, or guidelines updated or issued under paragraph (1) shall include, at a minimum—

(A) the milestone for executing an in-kind memorandum of understanding for construction by a non-Federal interest;

(B) criteria and procedures for evaluating a request to execute an in-kind memorandum of understanding for construction by a non-Federal interest that is earlier than the milestone under subparagraph (A) for that execution; and

(C) criteria and procedures for determining whether work carried out by a non-Federal interest is integral to a project.

(3) **PUBLIC AND STAKEHOLDER PARTICIPATION.**—Before issuing any new or revised guidance, regulations, or guidelines or any subsequent updates to those documents, the Secretary shall—

(A) consult with affected non-Federal interests;

(B) publish the proposed guidelines developed under this subsection in the Federal Register; and

(C) provide the public with an opportunity to comment on the proposed guidelines.

(e) **OTHER CREDIT.**—Nothing in section 221(a)(4) of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b(a)(4)) (as amended by subsection (a)) affects any eligibility for credit under section 104 of the Water Resources Development of 1986 (33 U.S.C. 2214) that was approved by the Secretary prior to the date of enactment of this Act.

SEC. 1019. CLARIFICATION OF IN-KIND CREDIT AUTHORITY.

(a) **NON-FEDERAL COST SHARE.**—Section 7007 of the Water Resources Development Act of 2007 (121 Stat. 1277) is amended—

(1) in subsection (a), by inserting “, on, or after” after “before”;

(2) by striking subsection (d) and inserting the following:

“(d) **TREATMENT OF CREDIT BETWEEN PROJECTS.**—The value of any land, easements, rights-of-way, relocations, and dredged material disposal areas and the costs of planning, design, and construction work provided by the non-Federal interest that exceed the non-Federal cost share for a study or project under this title may be applied toward the non-Federal cost share for any other study or project carried out under this title.”; and

(3) by adding at the end the following:

“(g) DEFINITION OF STUDY OR PROJECT.—In this section, the term ‘study or project’ includes any eligible activity that is—

“(1) carried out pursuant to the coastal Louisiana ecosystem science and technology program authorized under section 7006(a); and

“(2) in accordance with the restoration plan.”.

(b) IMPLEMENTATION.—Not later than 90 days after the date of enactment of this Act, the Secretary, in coordination with any relevant agencies of the State of Louisiana, shall establish a process by which to carry out the amendment made by subsection (a)(2).

(c) EFFECTIVE DATE.—The amendments made by subsection (a) take effect on November 8, 2007.

SEC. 1020. TRANSFER OF EXCESS CREDIT.

(a) IN GENERAL.—Subject to subsection (b), the Secretary may apply credit for in-kind contributions provided by a non-Federal interest that are in excess of the required non-Federal cost share for a water resources development study or project toward the required non-Federal cost share for a different water resources development study or project.

(b) RESTRICTIONS.—

(1) IN GENERAL.—Except for subsection (a)(4)(D)(i) of that section, the requirements of section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b) (as amended by section 1018(a)) shall apply to any credit under this section.

(2) CONDITIONS.—Credit in excess of the non-Federal share for a study or project may be approved under this section only if—

(A) the non-Federal interest submits a comprehensive plan to the Secretary that identifies—

(i) the studies and projects for which the non-Federal interest intends to provide in-kind contributions for credit that are in excess of the non-Federal cost share for the study or project; and

(ii) the authorized studies and projects to which that excess credit would be applied;

(B) the Secretary approves the comprehensive plan; and

(C) the total amount of credit does not exceed the total non-Federal share for the studies and projects in the approved comprehensive plan.

(c) ADDITIONAL CRITERIA.—In evaluating a request to apply credit in excess of the non-Federal share for a study or project toward a different study or project, the Secretary shall consider whether applying that credit will—

(1) help to expedite the completion of a project or group of projects;

(2) reduce costs to the Federal Government; and

(3) aid the completion of a project that provides significant flood risk reduction or environmental benefits.

(d) TERMINATION OF AUTHORITY.—The authority provided in this section shall terminate 10 years after the date of enactment of this Act.

(e) REPORT.—

(1) DEADLINES.—

(A) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, and once every 2 years

thereafter, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available an interim report on the use of the authority under this section.

(B) FINAL REPORT.—Not later than 10 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a final report on the use of the authority under this section.

(2) INCLUSIONS.—The reports described in paragraph (1) shall include—

(A) a description of the use of the authority under this section during the reporting period;

(B) an assessment of the impact of the authority under this section on the time required to complete projects; and

(C) an assessment of the impact of the authority under this section on other water resources projects.

SEC. 1021. CREDITING AUTHORITY FOR FEDERALLY AUTHORIZED NAVIGATION PROJECTS.

A non-Federal interest may carry out operation and maintenance activities for an authorized navigation project, subject to the condition that the non-Federal interest complies with all Federal laws and regulations applicable to such operation and maintenance activities, and may receive credit for the costs incurred by the non-Federal interest in carrying out such activities towards the share of construction costs of that non-Federal interest for another element of the same project or another authorized navigation project, except that in no instance may such credit exceed 20 percent of the total costs associated with construction of the general navigation features of the project for which such credit may be applied pursuant to this section.

SEC. 1022. CREDIT IN LIEU OF REIMBURSEMENT.

(a) REQUESTS FOR CREDITS.—With respect to an authorized flood damage reduction project, or separable element thereof, that has been constructed by a non-Federal interest under section 211 of the Water Resources Development Act of 1996 (33 U.S.C. 701b-13) before the date of enactment of this Act, the Secretary may provide to the non-Federal interest, at the request of the non-Federal interest, a credit in an amount equal to the estimated Federal share of the cost of the project or separable element, in lieu of providing to the non-Federal interest a reimbursement in that amount.

(b) APPLICATION OF CREDITS.—At the request of the non-Federal interest, the Secretary may apply such credit to the share of the cost of the non-Federal interest of carrying out other flood damage reduction projects or studies.

SEC. 1023. ADDITIONAL CONTRIBUTIONS BY NON-FEDERAL INTERESTS.

Section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280) is amended—

(1) by striking “In order to insure” and inserting “(a) IN GENERAL.—In order to insure”; and

(2) by adding at the end the following:

“(b) CONTRIBUTIONS BY NON-FEDERAL INTERESTS.—Notwithstanding subsection (a), in accordance with section 5 of the Act of June 22, 1936 (33 U.S.C. 701h), the Secretary may accept funds from a non-Federal interest for any authorized water resources development project that has exceeded its maximum cost under subsection (a), and use such funds to carry out such project, if the use of such funds does not increase the Federal share of the cost of such project.”.

SEC. 1024. AUTHORITY TO ACCEPT AND USE MATERIALS AND SERVICES.

(a) IN GENERAL.—Subject to subsection (b), the Secretary is authorized to accept and use materials and services contributed by a non-Federal public entity, a nonprofit entity, or a private entity for the purpose of repairing, restoring, or replacing a water resources development project that has been damaged or destroyed as a result of an emergency if the Secretary determines that the acceptance and use of such materials and services is in the public interest.

(b) LIMITATION.—Any entity that contributes materials or services under subsection (a) shall not be eligible for credit or reimbursement for the value of such materials or services.

(c) REPORT.—Not later than 60 days after initiating an activity under this section, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that includes—

(1) a description of the activities undertaken, including the costs associated with the activities; and

(2) a comprehensive description of how the activities are necessary for maintaining a safe and reliable water resources project.

SEC. 1025. WATER RESOURCES PROJECTS ON FEDERAL LAND.

(a) IN GENERAL.—Subject to subsection (b), the Secretary may carry out an authorized water resources development project on Federal land that is under the administrative jurisdiction of another Federal agency where the cost of the acquisition of such Federal land has been paid for by the non-Federal interest for the project.

(b) MOU REQUIRED.—The Secretary may carry out a project pursuant to subsection (a) only after the non-Federal interest has entered into a memorandum of understanding with the Federal agency that includes such terms and conditions as the Secretary determines to be necessary.

(c) APPLICABILITY.—Nothing in this section alters any non-Federal cost-sharing requirements for the project.

SEC. 1026. CLARIFICATION OF IMPACTS TO OTHER FEDERAL FACILITIES.

In any case where the modification or construction of a water resources development project carried out by the Secretary adversely impacts other Federal facilities, the Secretary may accept from other Federal agencies such funds as may be necessary to address the adverse impact, including by removing, relocating, or reconstructing those facilities.

SEC. 1027. CLARIFICATION OF MUNITION DISPOSAL AUTHORITIES.

(a) **IN GENERAL.**—The Secretary may implement any response action the Secretary determines to be necessary at a site where—

(1) the Secretary has carried out a project under civil works authority of the Secretary that includes placing sand on a beach; and

(2) as a result of the project described in paragraph (1), military munitions that were originally released as a result of Department of Defense activities are deposited on the beach, posing a threat to human health or the environment.

(b) **RESPONSE ACTION FUNDING.**—A response action described in subsection (a) shall be funded from amounts made available to the agency within the Department of Defense responsible for the original release of the munitions.

SEC. 1028. CLARIFICATION OF MITIGATION AUTHORITY.

(a) **IN GENERAL.**—The Secretary may carry out measures to improve fish species habitat within the boundaries and downstream of a water resources project constructed by the Secretary that includes a fish hatchery if the Secretary—

(1) has been explicitly authorized to compensate for fish losses associated with the project; and

(2) determines that the measures are—

(A) feasible;

(B) consistent with authorized project purposes and the fish hatchery; and

(C) in the public interest.

(b) **COST SHARING.**—

(1) **IN GENERAL.**—Subject to paragraph (2), the non-Federal interest shall contribute 35 percent of the total cost of carrying out activities under this section, including the costs relating to the provision or acquisition of required land, easements, rights-of-way, dredged material disposal areas, and relocations.

(2) **OPERATION AND MAINTENANCE.**—The non-Federal interest shall contribute 100 percent of the costs of operation, maintenance, replacement, repair, and rehabilitation of the measures carried out under this section.

SEC. 1029. CLARIFICATION OF INTERAGENCY SUPPORT AUTHORITIES.

Section 234 of the Water Resources Development Act of 1996 (33 U.S.C. 2323a) is amended—

(1) in subsection (a), by striking “other Federal agencies,” and inserting “Federal departments or agencies, nongovernmental organizations,”;

(2) in subsection (b), by inserting “or foreign governments” after “organizations”;

(3) in subsection (c), by inserting “and restoration” after “protection”; and

(4) in subsection (d)—

(A) in the first sentence, by striking “There is” and inserting “(1) **IN GENERAL.**—There is”; and

(B) in the second sentence—

(i) by striking “The Secretary” and inserting “(2) **ACCEPTANCE OF FUNDS.**—The Secretary”; and

(ii) by striking “other Federal agencies,” and inserting “Federal departments or agencies, nongovernmental organizations,”.

SEC. 1030. CONTINUING AUTHORITY.

(a) CONTINUING AUTHORITY PROGRAMS.—

(1) DEFINITION OF CONTINUING AUTHORITY PROGRAM PROJECT.—In this subsection, the term “continuing authority program” means 1 of the following authorities:

(A) Section 205 of the Flood Control Act of 1948 (33 U.S.C. 701s).

(B) Section 111 of the River and Harbor Act of 1968 (33 U.S.C. 426i).

(C) Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330).

(D) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(E) Section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577).

(F) Section 3 of the Act of August 13, 1946 (33 U.S.C. 426g).

(G) Section 14 of the Flood Control Act of 1946 (33 U.S.C. 701r).

(H) Section 103 of the River and Harbor Act of 1962 (Public Law 87–874; 76 Stat. 1178).

(I) Section 204(e) of the Water Resources Development Act of 1992 (33 U.S.C. 2326(e)).

(J) Section 208 of the Flood Control Act of 1958 (33 U.S.C. 701b–8a).

(K) Section 104(a) of the River and Harbor Act of 1958 (33 U.S.C. 610(a)).

(2) PRIORITIZATION.—Not later than 1 year after the date of enactment of this Act, the Secretary shall publish in the Federal Register and on a publicly available website, the criteria the Secretary uses for prioritizing annual funding for continuing authority program projects.

(3) ANNUAL REPORT.—Not later than 1 year after the date of enactment of this Act and each year thereafter, the Secretary shall publish in the Federal Register and on a publicly available website, a report on the status of each continuing authority program, which, at a minimum, shall include—

(A) the name and a short description of each active continuing authority program project;

(B) the cost estimate to complete each active project;

and

(C) the funding available in that fiscal year for each continuing authority program.

(4) CONGRESSIONAL NOTIFICATION.—On publication in the Federal Register under paragraphs (2) and (3), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a copy of all information published under those paragraphs.

(b) SMALL RIVER AND HARBOR IMPROVEMENT PROJECTS.—Section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577) is amended—

(1) in subsection (a), by striking “\$35,000,000” and inserting “\$50,000,000”; and

(2) in subsection (b), by striking “\$7,000,000” and inserting “\$10,000,000”.

(c) SHORE DAMAGE PREVENTION OR MITIGATION.—Section 111(c) of the River and Harbor Act of 1968 (33 U.S.C. 426i(c)) is amended by striking “\$5,000,000” and inserting “\$10,000,000”.

(d) REGIONAL SEDIMENT MANAGEMENT.—

(1) IN GENERAL.—Section 204 of the Water Resources Development Act of 1992 (33 U.S.C. 2326) is amended—

(A) in subsection (c)(1)(C), by striking “\$5,000,000” and inserting “\$10,000,000”; and

(B) in subsection (g), by striking “\$30,000,000” and inserting “\$50,000,000”.

(2) APPLICABILITY.—Section 2037 of the Water Resources Development Act of 2007 (121 Stat. 1094) is amended by adding at the end the following:

“(c) APPLICABILITY.—The amendment made by subsection (a) shall not apply to any project authorized under this Act if a report of the Chief of Engineers for the project was completed prior to the date of enactment of this Act.”.

(e) SMALL FLOOD CONTROL PROJECTS.—Section 205 of the Flood Control Act of 1948 (33 U.S.C. 701s) is amended in the third sentence by striking “\$7,000,000” and inserting “\$10,000,000”.

(f) PROJECT MODIFICATIONS FOR IMPROVEMENT OF ENVIRONMENT.—Section 1135(d) of the Water Resources Development Act of 1986 (33 U.S.C. 2309a(d)) is amended—

(1) in the second sentence, by striking “Not more than 80 percent of the non-Federal share may be” and inserting “The non-Federal share may be provided”; and

(2) in the third sentence, by striking “\$5,000,000” and inserting “\$10,000,000”.

(g) AQUATIC ECOSYSTEM RESTORATION.—Section 206(d) of the Water Resources Development Act of 1996 (33 U.S.C. 2330(d)) is amended by striking “\$5,000,000” and inserting “\$10,000,000”.

(h) FLOODPLAIN MANAGEMENT SERVICES.—Section 206(d) of the Flood Control Act of 1960 (33 U.S.C. 709a(d)) is amended by striking “\$15,000,000” and inserting “\$50,000,000”.

(i) EMERGENCY STREAMBANK AND SHORELINE PROTECTION.—Section 14 of the Flood Control Act of 1946 (33 U.S.C. 701r) is amended—

(1) by striking “\$15,000,000” and inserting “\$20,000,000”;

and

(2) by striking “\$1,500,000” and inserting “\$5,000,000”.

SEC. 1031. TRIBAL PARTNERSHIP PROGRAM.

(a) IN GENERAL.—Section 203 of the Water Resources Development Act of 2000 (33 U.S.C. 2269) is amended—

(1) in subsection (d)(1)(B)—

(A) by striking “The ability” and inserting the following:

“(i) IN GENERAL.—The ability”; and

(B) by adding at the end the following:

“(ii) DETERMINATION.—Not later than 180 days after the date of enactment of this clause, the Secretary shall issue guidance on the procedures described in clause (i).”; and

(2) by striking subsection (e) and inserting the following:

“(e) RESTRICTIONS.—The Secretary is authorized to carry out activities under this section for fiscal years 2015 through 2024.”.

(b) COOPERATIVE AGREEMENTS WITH INDIAN TRIBES.—The Secretary may enter into a cooperative agreement with an Indian tribe (or a designated representative of an Indian tribe) to carry out authorized activities of the Corps of Engineers to protect fish, wildlife, water quality, and cultural resources.

SEC. 1032. TERRITORIES OF THE UNITED STATES.

Section 1156 of the Water Resources Development Act of 1986 (33 U.S.C. 2310) is amended—

(1) by striking “The Secretary shall waive” and inserting “(a) IN GENERAL.—The Secretary shall waive”;

(2) in subsection (a) (as so designated), by inserting “Puerto Rico,” before “and the Trust Territory of the Pacific Islands”; and

(3) by adding at the end the following:

“(b) INFLATION ADJUSTMENT.—The Secretary shall adjust the dollar amount specified in subsection (a) for inflation for the period beginning on November 17, 1986, and ending on the date of enactment of this subsection.”.

SEC. 1033. CORROSION PREVENTION.

(a) IN GENERAL.—To the greatest extent practicable, the Secretary shall encourage and incorporate corrosion prevention activities at water resources development projects.

(b) ACTIVITIES.—In carrying out subsection (a), the Secretary, to the greatest extent practicable, shall ensure that contractors performing work for water resources development projects—

(1) use best practices to carry out corrosion prevention activities in the field;

(2) use industry-recognized standards and corrosion mitigation and prevention methods when—

(A) determining protective coatings;

(B) selecting materials; and

(C) determining methods of cathodic protection, design, and engineering for corrosion prevention;

(3) use certified coating application specialists and cathodic protection technicians and engineers;

(4) use best practices in environmental protection to prevent environmental degradation and to ensure careful handling of all hazardous materials;

(5) demonstrate a history of employing industry-certified inspectors to ensure adherence to best practices and standards; and

(6) demonstrate a history of compliance with applicable requirements of the Occupational Safety and Health Administration.

(c) CORROSION PREVENTION ACTIVITIES DEFINED.—In this section, the term “corrosion prevention activities” means—

(1) the application and inspection of protective coatings for complex work involving steel and cementitious structures, including structures that will be exposed in immersion;

(2) the installation, testing, and inspection of cathodic protection systems; and

(3) any other activities related to corrosion prevention the Secretary determines appropriate.

SEC. 1034. ADVANCED MODELING TECHNOLOGIES.

(a) **IN GENERAL.**—To the greatest extent practicable, the Secretary shall encourage and incorporate advanced modeling technologies, including 3-dimensional digital modeling, that can expedite project delivery or improve the evaluation of water resources development projects that receive Federal funding by—

- (1) accelerating and improving the environmental review process;
- (2) increasing effective public participation;
- (3) enhancing the detail and accuracy of project designs;
- (4) increasing safety;
- (5) accelerating construction and reducing construction costs; or
- (6) otherwise achieving the purposes described in paragraphs (1) through (5).

(b) **ACTIVITIES.**—In carrying out subsection (a), the Secretary, to the greatest extent practicable, shall—

- (1) compile information related to advanced modeling technologies, including industry best practices with respect to the use of the technologies;
- (2) disseminate to non-Federal interests the information described in paragraph (1); and
- (3) promote the use of advanced modeling technologies.

SEC. 1035. RECREATIONAL ACCESS.

(a) **DEFINITION OF FLOATING CABIN.**—In this section, the term “floating cabin” means a vessel (as defined in section 3 of title 1, United States Code) that has overnight accommodations.

(b) **RECREATIONAL ACCESS.**—The Secretary shall allow the use of a floating cabin on waters under the jurisdiction of the Secretary in the Cumberland River basin if—

- (1) the floating cabin—
 - (A) is in compliance with regulations for recreational vessels issued under chapter 43 of title 46, United States Code, and section 312 of the Federal Water Pollution Control Act (33 U.S.C. 1322);
 - (B) is located at a marina leased by the Corps of Engineers; and
 - (C) is maintained by the owner to required health and safety standards; and
- (2) the Secretary has authorized the use of recreational vessels on such waters.

SEC. 1036. NON-FEDERAL PLANS TO PROVIDE ADDITIONAL FLOOD RISK REDUCTION.

(a) **IN GENERAL.**—If requested by a non-Federal interest, the Secretary shall carry out a locally preferred plan that provides a higher level of protection than a flood risk management project authorized under this Act if the Secretary determines that—

- (1) the plan is technically feasible and environmentally acceptable; and
- (2) the benefits of the plan exceed the costs of the plan.

(b) **NON-FEDERAL COST SHARE.**—If the Secretary carries out a locally preferred plan under subsection (a), the Federal share of the cost of the project shall be not greater than the share as provided by law for elements of the national economic development plan.

SEC. 1037. HURRICANE AND STORM DAMAGE REDUCTION.

(a) **IN GENERAL.**—Section 156 of the Water Resources Development Act of 1976 (42 U.S.C. 1962d–5f) is amended—

(1) by striking “The Secretary” and inserting the following:

“(a) **IN GENERAL.**—The Secretary”; and

(2) by adding at the end the following:

“(b) **REVIEW.**—Notwithstanding subsection (a), the Secretary shall, at the request of the non-Federal interest, carry out a study to determine the feasibility of extending the period of nourishment described in subsection (a) for a period not to exceed 15 additional years beyond the maximum period described in subsection (a).

“(c) **PLAN FOR REDUCING RISK TO PEOPLE AND PROPERTY.**—

“(1) **IN GENERAL.**—As part of the review described in subsection (b), the non-Federal interest shall submit to the Secretary a plan for reducing risk to people and property during the life of the project.

“(2) **INCLUSION OF PLAN IN RECOMMENDATION TO CONGRESS.**—The Secretary shall include the plan described in subsection (a) in the recommendations to Congress described in subsection (d).

“(d) **REPORT TO CONGRESS.**—Upon completion of the review described in subsection (b), the Secretary shall—

“(1) submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives any recommendations of the Secretary related to the review; and

“(2) include in the subsequent annual report to Congress required under section 7001 of the Water Resources Reform and Development Act of 2014, any recommendations that require specific congressional authorization.

“(e) **SPECIAL RULE.**—Notwithstanding any other provision of this section, for any existing authorized water resources development project for which the maximum period for nourishment described in subsection (a) will expire within the 5 year-period beginning on the date of enactment of the Water Resources Reform and Development Act of 2014, that project shall remain eligible for nourishment for an additional 3 years after the expiration of such period.”.

(b) **REVIEW OF AUTHORIZED PERIODIC NOURISHMENT AUTHORITY.**—

(1) **IN GENERAL.**—Not later than 90 days after the date of enactment of this Act, the Secretary shall initiate a review of all authorized water resources development projects for which the Secretary is authorized to provide periodic nourishment under section 156 of the Water Resources Development Act of 1976 (42 U.S.C. 1962d–5f).

(2) **SCOPE OF REVIEW.**—In carrying out the review under paragraph (1), the Secretary shall assess the Federal costs associated with that nourishment authority and the projected benefits of each project.

(3) **REPORT TO CONGRESS.**—Upon completion of the review under paragraph (1), the Secretary shall issue to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report on the results of that review, including any proposed changes the Secretary may recommend to the nourishment authority.

SEC. 1038. REDUCTION OF FEDERAL COSTS FOR HURRICANE AND STORM DAMAGE REDUCTION PROJECTS.

Section 204 of the Water Resources Development Act of 1992 (33 U.S.C. 2326) (as amended by section 1030(d)(1)) is amended—

(1) in subsection (a)—

(A) in paragraph (1), by inserting “or used in” after “obtained through”;

(B) in paragraph (3)(C), by inserting “for the purposes of improving environmental conditions in marsh and littoral systems, stabilizing stream channels, enhancing shorelines, and supporting State and local risk management adaptation strategies” before the period at the end; and

(C) by adding at the end the following:

“(4) REDUCING COSTS.—To reduce or avoid Federal costs, the Secretary shall consider the beneficial use of dredged material in a manner that contributes to the maintenance of sediment resources in the nearby coastal system.”;

(2) in subsection (d)—

(A) by striking the subsection designation and heading and inserting the following:

“(d) SELECTION OF DREDGED MATERIAL DISPOSAL METHOD FOR PURPOSES RELATED TO ENVIRONMENTAL RESTORATION OR STORM DAMAGE AND FLOOD REDUCTION.—”; and

(B) in paragraph (1), by striking “in relation to” and all that follows through the period at the end and inserting “in relation to—

“(A) the environmental benefits, including the benefits to the aquatic environment to be derived from the creation of wetlands and control of shoreline erosion; or

“(B) the flood and storm damage and flood reduction benefits, including shoreline protection, protection against loss of life, and damage to improved property.”; and

(3) in subsection (e), by striking paragraph (1) and inserting the following:

“(1) cooperate with any State or group of States in the preparation of a comprehensive State or regional sediment management plan within the boundaries of the State or among States;”.

SEC. 1039. INVASIVE SPECIES.

(a) AQUATIC SPECIES REVIEW.—

(1) REVIEW OF AUTHORITIES.—The Secretary, in consultation with the Director of the United States Fish and Wildlife Service, the Chairman of the Tennessee Valley Authority, and other applicable heads of Federal agencies, shall—

(A) carry out a review of existing Federal authorities relating to responding to invasive species, including aquatic weeds, aquatic snails, and other aquatic invasive species, that have an impact on water resources; and

(B) based on the review under subparagraph (A), make any recommendations to Congress and applicable State agencies for improving Federal and State laws to more effectively respond to the threats posed by those invasive species.

(2) FEDERAL INVESTMENT.—

(A) ASSESSMENT.—The Comptroller General of the United States shall conduct an assessment of the Federal costs of, and spending on, aquatic invasive species.

(B) CONTENTS.—The assessment conducted under subparagraph (A) shall include—

(i) identification of current Federal spending on, and projected future Federal costs of, operation and maintenance related to mitigating the impacts of aquatic invasive species on federally owned or operated facilities;

(ii) identification of current Federal spending on aquatic invasive species prevention;

(iii) analysis of whether spending identified in clause (ii) is adequate for the maintenance and protection of services provided by federally owned or operated facilities, based on the current spending and projected future costs identified in clause (i); and

(iv) review of any other aspect of aquatic invasive species prevention or mitigation determined appropriate by the Comptroller General.

(C) FINDINGS.—Not later than 1 year after the date of enactment of this Act, the Comptroller General shall submit to the Committee on Environment and Public Works and the Committee on Energy and Natural Resources of the Senate and the Committee on Transportation and Infrastructure and the Committee on Natural Resources of the House of Representatives a report containing the findings of the assessment conducted under subparagraph (A).

(b) AQUATIC INVASIVE SPECIES PREVENTION.—

(1) MULTIAGENCY EFFORT TO SLOW THE SPREAD OF ASIAN CARP IN THE UPPER MISSISSIPPI AND OHIO RIVER BASINS AND TRIBUTARIES.—

(A) IN GENERAL.—The Director of the United States Fish and Wildlife Service, in coordination with the Secretary, the Director of the National Park Service, and the Director of the United States Geological Survey, shall lead a multiagency effort to slow the spread of Asian carp in the Upper Mississippi and Ohio River basins and tributaries by providing technical assistance, coordination, best practices, and support to State and local governments in carrying out activities designed to slow, and eventually eliminate, the threat posed by Asian carp.

(B) BEST PRACTICES.—To the maximum extent practicable, the multiagency effort shall apply lessons learned and best practices such as those described in the document prepared by the Asian Carp Working Group entitled “Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States” and dated November 2007, and the document prepared by the Asian Carp Regional Coordinating Committee entitled “FY 2012 Asian Carp Control Strategy Framework” and dated February 2012.

(2) REPORT TO CONGRESS.—

(A) IN GENERAL.—Not later than December 31 of each year, the Director of the United States Fish and Wildlife Service, in coordination with the Secretary, shall submit to the Committee on Appropriations and the Committee

on Environment and Public Works of the Senate and the Committee on Appropriations, the Committee on Natural Resources, and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report describing the coordinated strategies established and progress made toward the goals of controlling and eliminating Asian carp in the Upper Mississippi and Ohio River basins and tributaries.

(B) CONTENTS.—Each report submitted under subparagraph (A) shall include—

(i) any observed changes in the range of Asian carp in the Upper Mississippi and Ohio River basins and tributaries during the 2-year period preceding submission of the report;

(ii) a summary of Federal agency efforts, including cooperative efforts with non-Federal partners, to control the spread of Asian carp in the Upper Mississippi and Ohio River basins and tributaries;

(iii) any research that the Director determines could improve the ability to control the spread of Asian carp;

(iv) any quantitative measures that the Director intends to use to document progress in controlling the spread of Asian carp; and

(v) a cross-cut accounting of Federal and non-Federal expenditures to control the spread of Asian carp.

(c) PREVENTION, GREAT LAKES AND MISSISSIPPI RIVER BASIN.—

(1) IN GENERAL.—The Secretary is authorized to implement measures recommended in the efficacy study authorized under section 3061 of the Water Resources Development Act of 2007 (121 Stat. 1121) or in interim reports, with any modifications or any emergency measures that the Secretary determines to be appropriate to prevent aquatic nuisance species from dispersing into the Great Lakes by way of any hydrologic connection between the Great Lakes and the Mississippi River Basin.

(2) NOTIFICATIONS.—The Secretary shall notify the Committees on Environment and Public Works and Appropriations of the Senate and the Committees on Transportation and Infrastructure and Appropriations of the House of Representatives any emergency actions taken pursuant to this subsection.

(d) PREVENTION AND MANAGEMENT.—Section 104 of the River and Harbor Act of 1958 (33 U.S.C. 610) is amended—

(1) in subsection (a)—

(A) in the first sentence, by striking “There is” and inserting the following:

“(1) IN GENERAL.—There is”;

(B) in the second sentence, by striking “Local” and inserting the following:

“(2) LOCAL INTERESTS.—Local”;

(C) in the third sentence, by striking “Costs” and inserting the following:

“(3) FEDERAL COSTS.—Costs”; and

(D) in paragraph (1) (as designated by subparagraph (A))—

(i) by striking “control and progressive,” and inserting “prevention, control, and progressive”; and

- (ii) by inserting “and aquatic invasive species” after “noxious aquatic plant growths”;
- (2) in subsection (b), in the first sentence, by striking “\$15,000,000 annually” and inserting “\$40,000,000, of which \$20,000,000 shall be made available to implement subsection (d), annually”; and
- (3) by inserting after subsection (c) the following:
 - “(d) WATERCRAFT INSPECTION STATIONS.—
 - “(1) IN GENERAL.—In carrying out this section, the Secretary may establish watercraft inspection stations in the Columbia River Basin to be located in the States of Idaho, Montana, Oregon, and Washington at locations, as determined by the Secretary, with the highest likelihood of preventing the spread of aquatic invasive species at reservoirs operated and maintained by the Secretary.
 - “(2) COST SHARE.—The non-Federal share of the cost of constructing, operating, and maintaining watercraft inspection stations described in paragraph (1) (including personnel costs) shall be—
 - “(A) 50 percent; and
 - “(B) provided by the State or local governmental entity in which such inspection station is located.
 - “(3) COORDINATION.—In carrying out this subsection, the Secretary shall consult and coordinate with—
 - “(A) the States described in paragraph (1);
 - “(B) Indian tribes; and
 - “(C) other Federal agencies, including—
 - “(i) the Department of Agriculture;
 - “(ii) the Department of Energy;
 - “(iii) the Department of Homeland Security;
 - “(iv) the Department of Commerce; and
 - “(v) the Department of the Interior.
 - “(e) MONITORING AND CONTINGENCY PLANNING.—In carrying out this section, the Secretary may—
 - “(1) carry out risk assessments of water resources facilities;
 - “(2) monitor for aquatic invasive species;
 - “(3) establish watershed-wide plans for expedited response to an infestation of aquatic invasive species; and
 - “(4) monitor water quality, including sediment cores and fish tissue samples.”.

SEC. 1040. FISH AND WILDLIFE MITIGATION.

- (a) IN GENERAL.—Section 906 of the Water Resources Development Act of 1986 (33 U.S.C. 2283) is amended—
 - (1) in subsection (d)—
 - (A) in paragraph (1)—
 - (i) in the first sentence—
 - (I) by inserting “for damages to ecological resources, including terrestrial and aquatic resources, and” after “mitigate”;
 - (II) by inserting “ecological resources and” after “impact on”; and
 - (III) by inserting “without the implementation of mitigation measures” before the period; and
 - (ii) by inserting before the last sentence the following: “If the Secretary determines that mitigation to in-kind conditions is not possible, the Secretary shall

identify in the report the basis for that determination and the mitigation measures that will be implemented to meet the requirements of this section and the goals of section 307(a)(1) of the Water Resources Development Act of 1990 (33 U.S.C. 2317(a)(1)).”;

(B) in paragraph (2)—

(i) in the heading, by striking “DESIGN” and inserting “SELECTION AND DESIGN”;

(ii) by inserting “select and” after “shall”; and

(iii) by inserting “using a watershed approach” after “projects”; and

(C) in paragraph (3)—

(i) in subparagraph (A), by inserting “, at a minimum,” after “complies with”; and

(ii) in subparagraph (B)—

(I) by striking clause (iii);

(II) by redesignating clauses (iv) and (v) as clauses (v) and (vi), respectively; and

(III) by inserting after clause (ii) the following:

“(iii) for projects where mitigation will be carried out by the Secretary—

“(I) a description of the land and interest in land to be acquired for the mitigation plan;

“(II) the basis for a determination that the land and interests are available for acquisition; and

“(III) a determination that the proposed interest sought does not exceed the minimum interest in land necessary to meet the mitigation requirements for the project;

“(iv) for projects where mitigation will be carried out through a third party mitigation arrangement in accordance with subsection (i)—

“(I) a description of the third party mitigation instrument to be used; and

“(II) the basis for a determination that the mitigation instrument can meet the mitigation requirements for the project;”;

(2) by adding at the end the following:

“(h) PROGRAMMATIC MITIGATION PLANS.—

“(1) IN GENERAL.—The Secretary may develop programmatic mitigation plans to address the potential impacts to ecological resources, fish, and wildlife associated with existing or future Federal water resources development projects.

“(2) USE OF MITIGATION PLANS.—The Secretary shall, to the maximum extent practicable, use programmatic mitigation plans developed in accordance with this subsection to guide the development of a mitigation plan under subsection (d).

“(3) NON-FEDERAL PLANS.—The Secretary shall, to the maximum extent practicable and subject to all conditions of this subsection, use programmatic environmental plans developed by a State, a body politic of the State, which derives its powers from a State constitution, a government entity created by State legislation, or a local government, that meet the requirements of this subsection to address the potential environmental impacts of existing or future water resources development projects.

“(4) SCOPE.—A programmatic mitigation plan developed by the Secretary or an entity described in paragraph (3) to address potential impacts of existing or future water resources development projects shall, to the maximum extent practicable—

“(A) be developed on a regional, ecosystem, watershed, or statewide scale;

“(B) include specific goals for aquatic resource and fish and wildlife habitat restoration, establishment, enhancement, or preservation;

“(C) identify priority areas for aquatic resource and fish and wildlife habitat protection or restoration;

“(D) encompass multiple environmental resources within a defined geographical area or focus on a specific resource, such as aquatic resources or wildlife habitat; and

“(E) address impacts from all projects in a defined geographical area or focus on a specific type of project.

“(5) CONSULTATION.—The scope of the plan shall be determined by the Secretary or an entity described in paragraph (3), as appropriate, in consultation with the agency with jurisdiction over the resources being addressed in the environmental mitigation plan.

“(6) CONTENTS.—A programmatic environmental mitigation plan may include—

“(A) an assessment of the condition of environmental resources in the geographical area covered by the plan, including an assessment of recent trends and any potential threats to those resources;

“(B) an assessment of potential opportunities to improve the overall quality of environmental resources in the geographical area covered by the plan through strategic mitigation for impacts of water resources development projects;

“(C) standard measures for mitigating certain types of impacts;

“(D) parameters for determining appropriate mitigation for certain types of impacts, such as mitigation ratios or criteria for determining appropriate mitigation sites;

“(E) adaptive management procedures, such as protocols that involve monitoring predicted impacts over time and adjusting mitigation measures in response to information gathered through the monitoring;

“(F) acknowledgment of specific statutory or regulatory requirements that must be satisfied when determining appropriate mitigation for certain types of resources; and

“(G) any offsetting benefits of self-mitigating projects, such as ecosystem or resource restoration and protection.

“(7) PROCESS.—Before adopting a programmatic environmental mitigation plan for use under this subsection, the Secretary shall—

“(A) for a plan developed by the Secretary—

“(i) make a draft of the plan available for review and comment by applicable environmental resource agencies and the public; and

“(ii) consider any comments received from those agencies and the public on the draft plan; and

“(B) for a plan developed under paragraph (3), determine, not later than 180 days after receiving the plan, whether the plan meets the requirements of paragraphs (4) through (6) and was made available for public comment.

“(8) INTEGRATION WITH OTHER PLANS.—A programmatic environmental mitigation plan may be integrated with other plans, including watershed plans, ecosystem plans, species recovery plans, growth management plans, and land use plans.

“(9) CONSIDERATION IN PROJECT DEVELOPMENT AND PERMITTING.—If a programmatic environmental mitigation plan has been developed under this subsection, any Federal agency responsible for environmental reviews, permits, or approvals for a water resources development project may use the recommendations in that programmatic environmental mitigation plan when carrying out the responsibilities of the agency under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

“(10) PRESERVATION OF EXISTING AUTHORITIES.—Nothing in this subsection limits the use of programmatic approaches to reviews under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).

“(11) MITIGATION FOR EXISTING PROJECTS.—Nothing in this subsection requires the Secretary to undertake additional mitigation for existing projects for which mitigation has already been initiated.

“(i) THIRD-PARTY MITIGATION ARRANGEMENTS.—

“(1) ELIGIBLE ACTIVITIES.—In accordance with all applicable Federal laws (including regulations), mitigation efforts carried out under this section may include—

“(A) participation in mitigation banking or other third-party mitigation arrangements, such as—

“(i) the purchase of credits from commercial or State, regional, or local agency-sponsored mitigation banks; and

“(ii) the purchase of credits from in-lieu fee mitigation programs; and

“(B) contributions to statewide and regional efforts to conserve, restore, enhance, and create natural habitats and wetlands if the Secretary determines that the contributions will ensure that the mitigation requirements of this section and the goals of section 307(a)(1) of the Water Resources Development Act of 1990 (33 U.S.C. 2317(a)(1)) will be met.

“(2) INCLUSION OF OTHER ACTIVITIES.—The banks, programs, and efforts described in paragraph (1) include any banks, programs, and efforts developed in accordance with applicable law (including regulations).

“(3) TERMS AND CONDITIONS.—In carrying out natural habitat and wetlands mitigation efforts under this section, contributions to the mitigation effort may—

“(A) take place concurrent with, or in advance of, the commitment of funding to a project; and

“(B) occur in advance of project construction only if the efforts are consistent with all applicable requirements of Federal law (including regulations) and water resources development planning processes.

“(4) PREFERENCE.—At the request of the non-Federal project sponsor, preference may be given, to the maximum extent practicable, to mitigating an environmental impact through the use of a mitigation bank, in-lieu fee, or other third-party mitigation arrangement, if the use of credits from the mitigation bank or in-lieu fee, or the other third-party mitigation arrangement for the project has been approved by the applicable Federal agency.”.

(b) APPLICATION.—The amendments made by subsection (a) shall not apply to a project for which a mitigation plan has been completed as of the date of enactment of this Act.

(c) TECHNICAL ASSISTANCE.—

(1) IN GENERAL.—The Secretary may provide technical assistance to States and local governments to establish third-party mitigation instruments, including mitigation banks and in-lieu fee programs, that will help to target mitigation payments to high-priority ecosystem restoration actions.

(2) REQUIREMENTS.—In providing technical assistance under this subsection, the Secretary shall give priority to States and local governments that have developed State, regional, or watershed-based plans identifying priority restoration actions.

(3) MITIGATION INSTRUMENTS.—The Secretary shall seek to ensure any technical assistance provided under this subsection will support the establishment of mitigation instruments that will result in restoration of high-priority areas identified in the plans under paragraph (2).

SEC. 1041. MITIGATION STATUS REPORT.

Section 2036(b) of the Water Resources Development Act of 2007 (33 U.S.C. 2283a) is amended—

(1) by redesignating paragraph (3) as paragraph (4); and

(2) by inserting after paragraph (2) the following:

“(3) INFORMATION INCLUDED.—In reporting the status of all projects included in the report, the Secretary shall—

“(A) use a uniform methodology for determining the status of all projects included in the report;

“(B) use a methodology that describes both a qualitative and quantitative status for all projects in the report; and

“(C) provide specific dates for participation in the consultations required under section 906(d)(4)(B) of the Water Resources Development Act of 1986 (33 U.S.C. 2283(d)(4)(B)).”.

SEC. 1042. REPORTS TO CONGRESS.

(a) IN GENERAL.—Subject to the availability of appropriations, the Secretary shall complete and submit to Congress by the applicable date required the reports that address public safety and enhanced local participation in project delivery described in subsection (b).

(b) REPORTS.—The reports referred to in subsection (a) are the reports required under—

(1) subparagraphs (A) and (B) of section 1043(a)(5);

(2) section 1046(a)(2)(B);

(3) section 210(e)(3) of the Water Resources Development Act of 1986 (33 U.S.C. 2238(e)(3)) (as amended by section 2102(a)); and

(4) section 7001.

(c) FAILURE TO PROVIDE A COMPLETED REPORT.—

(1) IN GENERAL.—Subject to subsection (d), if the Secretary fails to provide a report listed under subsection (b) by the date that is 180 days after the applicable date required for that report, \$5,000 shall be reprogrammed from the General Expenses account of the civil works program of the Army Corps of Engineers into the account of the division of the Army Corps of Engineers with responsibility for completing that report.

(2) SUBSEQUENT REPROGRAMMING.—Subject to subsection (d), for each additional week after the date described in paragraph (1) in which a report described in that paragraph remains uncompleted and unsubmitted to Congress, \$5,000 shall be reprogrammed from the General Expenses account of the civil works program of the Army Corps of Engineers into the account of the division of the Secretary of the Army with responsibility for completing that report.

(d) LIMITATIONS.—

(1) IN GENERAL.—For each report, the total amounts reprogrammed under subsection (c) shall not exceed, in any fiscal year, \$50,000.

(2) AGGREGATE LIMITATION.—The total amount reprogrammed under subsection (c) in a fiscal year shall not exceed \$200,000.

(e) NO FAULT OF THE SECRETARY.—Amounts shall not be reprogrammed under subsection (c) if the Secretary certifies in a letter to the applicable committees of Congress that—

(1) a major modification has been made to the content of the report that requires additional analysis for the Secretary to make a final decision on the report;

(2) amounts have not been appropriated to the agency under this Act or any other Act to carry out the report; or

(3) additional information is required from an entity other than the Corps of Engineers and is not available in a timely manner to complete the report by the deadline.

(f) LIMITATION.—The Secretary shall not reprogram funds to the General Expenses account of the civil works program of the Corps of Engineers for the loss of the funds.

SEC. 1043. NON-FEDERAL IMPLEMENTATION PILOT PROGRAM.

(a) NON-FEDERAL IMPLEMENTATION OF FEASIBILITY STUDIES.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall establish and implement a pilot program to evaluate the cost-effectiveness and project delivery efficiency of allowing non-Federal interests to carry out feasibility studies for flood risk management, hurricane and storm damage reduction, aquatic ecosystem restoration, and coastal harbor and channel and inland navigation.

(2) PURPOSES.—The purposes of the pilot program are—

(A) to identify project delivery and cost-saving alternatives to the existing feasibility study process;

(B) to evaluate the technical, financial, and organizational efficiencies of a non-Federal interest carrying out a feasibility study of 1 or more projects; and

(C) to evaluate alternatives for the decentralization of the project planning, management, and operational decisionmaking process of the Corps of Engineers.

(3) ADMINISTRATION.—

(A) IN GENERAL.—On the request of a non-Federal interest, the Secretary may enter into an agreement with the non-Federal interest for the non-Federal interest to provide full project management control of a feasibility study for a project for—

- (i) flood risk management;
- (ii) hurricane and storm damage reduction, including levees, floodwalls, flood control channels, and water control structures;
- (iii) coastal harbor and channel and inland navigation; and
- (iv) aquatic ecosystem restoration.

(B) USE OF NON-FEDERAL FUNDS.—

(i) IN GENERAL.—A non-Federal interest that has entered into an agreement with the Secretary pursuant to subparagraph (A) may use non-Federal funds to carry out the feasibility study.

(ii) CREDIT.—The Secretary shall credit towards the non-Federal share of the cost of construction of a project for which a feasibility study is carried out under this subsection an amount equal to the portion of the cost of developing the study that would have been the responsibility of the Secretary, if the study were carried out by the Secretary, subject to the conditions that—

(I) non-Federal funds were used to carry out the activities that would have been the responsibility of the Secretary;

(II) the Secretary determines that the feasibility study complies with all applicable Federal laws and regulations; and

(III) the project is authorized by any provision of Federal law enacted after the date on which an agreement is entered into under subparagraph (A).

(C) TRANSFER OF FUNDS.—

(i) IN GENERAL.—After the date on which an agreement is executed pursuant to subparagraph (A), the Secretary may transfer to the non-Federal interest to carry out the feasibility study—

(I) if applicable, the balance of any unobligated amounts appropriated for the study, except that the Secretary shall retain sufficient amounts for the Corps of Engineers to carry out any responsibilities of the Corps of Engineers relating to the project and pilot program; and

(II) additional amounts, as determined by the Secretary, from amounts made available under paragraph (8), except that the total amount transferred to the non-Federal interest shall not exceed the updated estimate of the Federal share of the cost of the feasibility study.

(ii) ADMINISTRATION.—The Secretary shall include such provisions as the Secretary determines to be necessary in an agreement under subparagraph (A) to ensure that a non-Federal interest receiving Federal funds under this paragraph—

(I) has the necessary qualifications to administer those funds; and

(II) will comply with all applicable Federal laws (including regulations) relating to the use of those funds.

(D) NOTIFICATION.—The Secretary shall notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives on the initiation of each feasibility study under the pilot program.

(E) AUDITING.—The Secretary shall regularly monitor and audit each feasibility study carried out by a non-Federal interest under this section to ensure that the use of any funds transferred under subparagraph (C) are used in compliance with the agreement signed under subparagraph (A).

(F) TECHNICAL ASSISTANCE.—On the request of a non-Federal interest, the Secretary may provide technical assistance to the non-Federal interest relating to any aspect of the feasibility study, if the non-Federal interest contracts with the Secretary for the technical assistance and compensates the Secretary for the technical assistance.

(G) DETAILED PROJECT SCHEDULE.—Not later than 180 days after entering into an agreement under subparagraph (A), each non-Federal interest, to the maximum extent practicable, shall submit to the Secretary a detailed project schedule, based on full funding capability, that lists all deadlines for milestones relating to the feasibility study.

(4) COST SHARE.—Nothing in this subsection affects the cost-sharing requirement applicable on the day before the date of enactment of this Act to a feasibility study carried out under this subsection.

(5) REPORT.—

(A) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report detailing the results of the pilot program carried out under this section, including—

(i) a description of the progress of the non-Federal interests in meeting milestones in detailed project schedules developed pursuant to paragraph (3)(G); and

(ii) any recommendations of the Secretary concerning whether the program or any component of the program should be implemented on a national basis.

(B) UPDATE.—Not later than 5 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the

Senate and the Committee on Transportation and Infrastructure of the House of Representatives an update of the report described in subparagraph (A).

(C) FAILURE TO MEET DEADLINE.—If the Secretary fails to submit a report by the required deadline under this paragraph, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a detailed explanation of why the deadline was missed and a projected date for submission of the report.

(6) ADMINISTRATION.—All laws and regulations that would apply to the Secretary if the Secretary were carrying out the feasibility study shall apply to a non-Federal interest carrying out a feasibility study under this subsection.

(7) TERMINATION OF AUTHORITY.—The authority to commence a feasibility study under this subsection terminates on the date that is 5 years after the date of enactment of this Act.

(8) AUTHORIZATION OF APPROPRIATIONS.—In addition to any amounts appropriated for a specific project, there is authorized to be appropriated to the Secretary to carry out the pilot program under this subsection, including the costs of administration of the Secretary, \$25,000,000 for each of fiscal years 2015 through 2019.

(b) NON-FEDERAL PROJECT IMPLEMENTATION PILOT PROGRAM.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall establish and implement a pilot program to evaluate the cost-effectiveness and project delivery efficiency of allowing non-Federal interests to carry out flood risk management, hurricane and storm damage reduction, coastal harbor and channel inland navigation, and aquatic ecosystem restoration projects.

(2) PURPOSES.—The purposes of the pilot program are—

(A) to identify project delivery and cost-saving alternatives that reduce the backlog of authorized Corps of Engineers projects;

(B) to evaluate the technical, financial, and organizational efficiencies of a non-Federal interest carrying out the design, execution, management, and construction of 1 or more projects; and

(C) to evaluate alternatives for the decentralization of the project management, design, and construction for authorized Corps of Engineers water resources projects.

(3) ADMINISTRATION.—

(A) IN GENERAL.—In carrying out the pilot program, the Secretary shall—

(i) identify a total of not more than 15 projects for flood risk management, hurricane and storm damage reduction (including levees, floodwalls, flood control channels, and water control structures), coastal harbor and channels, inland navigation, and aquatic ecosystem restoration that have been authorized for construction prior to the date of enactment of this Act, including—

(I) not more than 12 projects that—

(aa)(AA) have received Federal funds prior to the date of enactment of this Act; or

(BB) for more than 2 consecutive fiscal years, have an unobligated funding balance for that project in the Corps of Engineers construction account; and

(bb) to the maximum extent practicable, are located in each of the divisions of the Corps of Engineers; and

(II) not more than 3 projects that have not received Federal funds in the period beginning on the date on which the project was authorized and ending on the date of enactment of this Act;

(ii) notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives on the identification of each project under the pilot program;

(iii) in collaboration with the non-Federal interest, develop a detailed project management plan for each identified project that outlines the scope, budget, design, and construction resource requirements necessary for the non-Federal interest to execute the project, or a separable element of the project;

(iv) on the request of the non-Federal interest, enter into a project partnership agreement with the non-Federal interest for the non-Federal interest to provide full project management control for construction of the project, or a separable element of the project, in accordance with plans approved by the Secretary;

(v) following execution of the project partnership agreement, transfer to the non-Federal interest to carry out construction of the project, or a separable element of the project—

(I) if applicable, the balance of the unobligated amounts appropriated for the project, except that the Secretary shall retain sufficient amounts for the Corps of Engineers to carry out any responsibilities of the Corps of Engineers relating to the project and pilot program; and

(II) additional amounts, as determined by the Secretary, from amounts made available under paragraph (8), except that the total amount transferred to the non-Federal interest shall not exceed the updated estimate of the Federal share of the cost of construction, including any required design; and

(vi) regularly monitor and audit each project being constructed by a non-Federal interest under this section to ensure that the construction activities are carried out in compliance with the plans approved by the Secretary and that the construction costs are reasonable.

(B) DETAILED PROJECT SCHEDULE.—Not later than 180 days after entering into an agreement under subparagraph (A)(iv), each non-Federal interest, to the maximum extent practicable, shall submit to the Secretary a detailed project

schedule, based on estimated funding levels, that lists all deadlines for each milestone in the construction of the project.

(C) TECHNICAL ASSISTANCE.—On the request of a non-Federal interest, the Secretary may provide technical assistance to the non-Federal interest, if the non-Federal interest contracts with and compensates the Secretary for the technical assistance relating to—

(i) any study, engineering activity, and design activity for construction carried out by the non-Federal interest under this subsection; and

(ii) expeditiously obtaining any permits necessary for the project.

(4) COST SHARE.—Nothing in this subsection affects the cost-sharing requirement applicable on the day before the date of enactment of this Act to a project carried out under this subsection.

(5) REPORT.—

(A) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report detailing the results of the pilot program carried out under this subsection, including—

(i) a description of the progress of non-Federal interests in meeting milestones in detailed project schedules developed pursuant to paragraph (2)(B); and

(ii) any recommendations of the Secretary concerning whether the program or any component of the program should be implemented on a national basis.

(B) UPDATE.—Not later than 5 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives an update of the report described in subparagraph (A).

(C) FAILURE TO MEET DEADLINE.—If the Secretary fails to submit a report by the required deadline under this paragraph, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a detailed explanation of why the deadline was missed and a projected date for submission of the report.

(6) ADMINISTRATION.—All laws and regulations that would apply to the Secretary if the Secretary were carrying out the project shall apply to a non-Federal interest carrying out a project under this subsection.

(7) TERMINATION OF AUTHORITY.—The authority to commence a project under this subsection terminates on the date that is 5 years after the date of enactment of this Act.

(8) AUTHORIZATION OF APPROPRIATIONS.—In addition to any amounts appropriated for a specific project, there is authorized

to be appropriated to the Secretary to carry out the pilot program under this subsection, including the costs of administration of the Secretary, \$25,000,000 for each of fiscal years 2015 through 2019.

SEC. 1044. INDEPENDENT PEER REVIEW.

(a) **MANDATORY PROJECT STUDIES SUBJECT TO PEER REVIEW.**—Section 2034(a)(3)(A)(i) of the Water Resources Development Act of 2007 (33 U.S.C. 2343(a)(3)(A)(i)) is amended by striking “\$45,000,000” and inserting “\$200,000,000”.

(b) **TIMING OF PEER REVIEW.**—Section 2034(b) of the Water Resources Development Act of 2007 (33 U.S.C. 2343(b)) is amended—

- (1) by redesignating paragraph (3) as paragraph (4); and
- (2) by inserting after paragraph (2) the following:

“(3) **REASONS FOR TIMING.**—If the Chief of Engineers does not initiate a peer review for a project study at a time described in paragraph (2), the Chief shall—

“(A) not later than 7 days after the date on which the Chief of Engineers determines not to initiate a peer review—

“(i) notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of that decision; and

“(ii) make publicly available, including on the Internet, the reasons for not conducting the review; and

“(B) include the reasons for not conducting the review in the decision document for the project study.”.

(c) **ESTABLISHMENT OF PANELS.**—Section 2034(c) of the Water Resources Development Act of 2007 (33 U.S.C. 2343(c)) is amended by striking paragraph (4) and inserting the following:

“(4) **CONGRESSIONAL AND PUBLIC NOTIFICATION.**—Following the identification of a project study for peer review under this section, but prior to initiation of the review by the panel of experts, the Chief of Engineers shall, not later than 7 days after the date on which the Chief of Engineers determines to conduct a review—

“(A) notify the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of the review conducted under this section; and

“(B) make publicly available, including on the Internet, information on—

“(i) the dates scheduled for beginning and ending the review;

“(ii) the entity that has the contract for the review; and

“(iii) the names and qualifications of the panel of experts.”.

(d) **RECOMMENDATIONS OF PANEL.**—Section 2034(f) of the Water Resources Development Act of 2007 (33 U.S.C. 2343(f)) is amended by striking paragraph (2) and inserting the following:

“(2) **PUBLIC AVAILABILITY AND SUBMISSION TO CONGRESS.**—After receiving a report on a project study from a panel of experts under this section, the Chief of Engineers shall make

available to the public, including on the Internet, and submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives—

“(A) a copy of the report not later than 7 days after the date on which the report is delivered to the Chief of Engineers; and

“(B) a copy of any written response of the Chief of Engineers on recommendations contained in the report not later than 3 days after the date on which the response is delivered to the Chief of Engineers.

“(3) INCLUSION IN PROJECT STUDY.—A report on a project study from a panel of experts under this section and the written response of the Chief of Engineers shall be included in the final decision document for the project study.”.

(e) APPLICABILITY.—Section 2034(h)(2) of the Water Resources Development Act of 2007 (33 U.S.C. 2343(h)(2)) is amended by striking “7 years” and inserting “12 years”.

SEC. 1045. REPORT ON SURFACE ELEVATIONS AT DROUGHT AFFECTED LAKES.

(a) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary, in coordination with the Federal Energy Regulatory Commission (referred to in this section as “FERC”), shall initiate an assessment of the effects of drought conditions on lakes managed by the Secretary that are affected by FERC-licensed reservoirs, which shall include an assessment of—

(1) lake levels and rule curves in areas of previous, current, and prolonged drought; and

(2) the effect the long-term FERC licenses have on the ability of the Secretary to manage lakes for hydropower generation, navigation, flood protection, water supply, fish and wildlife, and recreation.

(b) REPORT.—The Secretary, in coordination with the FERC, shall submit to Congress and make publicly available a report on the assessment carried out under subsection (a).

SEC. 1046. RESERVOIR OPERATIONS AND WATER SUPPLY.

(a) DAM OPTIMIZATION.—

(1) DEFINITION OF PROJECT.—In this subsection, the term “project” means a water resources development project that is operated and maintained by the Secretary.

(2) REPORTS.—

(A) ASSESSMENT OF WATER SUPPLY IN ARID REGIONS.—

(i) IN GENERAL.—The Secretary shall conduct an assessment of the management practices, priorities, and authorized purposes at Corps of Engineers reservoirs in arid regions to determine the effects of such practices, priorities, and purposes on water supply during periods of drought.

(ii) INCLUSIONS.—The assessment under clause (i) shall identify actions that can be carried out within the scope of existing authorities of the Secretary to increase project flexibility for the purpose of mitigating drought impacts.

(iii) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit

to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report on the results of the assessment.

(B) UPDATED REPORT.—

(i) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Secretary shall update and make publicly available the report entitled “Authorized and Operating Purposes of Corps of Engineers Reservoirs” and dated July 1992, which was produced pursuant to section 311 of the Water Resources Development Act of 1990 (104 Stat. 4639).

(ii) INCLUSIONS.—The updated report described in clause (i) shall—

(I) include—

(aa) the date on which the most recent review of project operations was conducted and any recommendations of the Secretary relating to that review the Secretary determines to be significant;

(bb) the activities carried out pursuant to each such review to improve the efficiency of operations and maintenance and to improve project benefits consistent with authorized purposes;

(cc) the degree to which reviews of project operations and subsequent activities pursuant to completed reviews complied with the policies and requirements of applicable law and regulations; and

(dd) a plan for reviewing the operations of individual projects, including a detailed schedule for future reviews of project operations, that—

(AA) complies with the policies and requirements of applicable law and regulations;

(BB) gives priority to reviews and activities carried out pursuant to such plan where the Secretary determines that there is support for carrying out those reviews and activities; and

(CC) ensures that reviews and activities are carried out pursuant to such plan;

(II) be coordinated with appropriate Federal, State, and local agencies and those public and private entities that the Secretary determines may be affected by those reviews or activities;

(III) not supersede or modify any written agreement between the Federal Government and a non-Federal interest that is in effect on the date of enactment of this Act;

(IV) not supersede or authorize any amendment to a multistate water control plan, including the Missouri River Master Water Control Manual (as in effect on the date of enactment of this Act);

(V) not affect any water right in existence on the date of enactment of this Act;

(VI) not preempt or affect any State water law or interstate compact governing water;

(VII) not affect any authority of a State, as in effect on the date of enactment of this Act, to manage water resources within that State; and

(VIII) comply with section 301 of the Water Supply Act of 1958 (43 U.S.C. 390b).

(3) GENERAL ACCOUNTABILITY OFFICE REPORT TO CONGRESS.—The Comptroller General shall—

(A) conduct an audit to determine—

(i) whether reviews of project operations carried out by the Secretary prior to the date of enactment of this Act complied with the policies and requirements of applicable law and regulations; and

(ii) whether the plan developed by the Secretary pursuant to paragraph (2)(B)(ii)(I)(dd) complies with this subsection and with the policies and requirements of applicable law and regulation; and

(B) not later than 2 years after the date of enactment of this Act, submit to Congress a report that—

(i) summarizes the results of the audit required by subparagraph (A);

(ii) includes an assessment of whether existing practices for managing and reviewing project operations could result in greater efficiencies that would enable the Corps of Engineers to better prepare for, contain, and respond to flood, storm, and drought conditions; and

(iii) includes recommendations for improving the review of project operations to improve the efficiency and effectiveness of such operations and to better achieve authorized purposes while enhancing overall project benefits.

(4) INTERAGENCY AND COOPERATIVE AGREEMENTS.—The Secretary may enter into interagency agreements with other Federal agencies and cooperative agreements with non-Federal entities to carry out this subsection and reviews of project operations or activities resulting from those reviews.

(5) FUNDING.—

(A) IN GENERAL.—The Secretary may use to carry out this subsection, including any reviews of project operations identified in the plan developed under paragraph (2)(B)(ii)(I)(dd), amounts made available to the Secretary.

(B) FUNDING FROM OTHER SOURCES.—The Secretary may accept and expend amounts from non-Federal entities and other Federal agencies to carry out this subsection and reviews of project operations or activities resulting from those reviews.

(6) EFFECT OF SUBSECTION.—

(A) IN GENERAL.—Nothing in this subsection changes the authorized purpose of any Corps of Engineers dam or reservoir.

(B) ADMINISTRATION.—The Secretary may carry out any recommendations and activities under this subsection pursuant to existing law.

(b) IMPROVING PLANNING AND ADMINISTRATION OF WATER SUPPLY STORAGE.—

(1) IN GENERAL.—For each water supply feature of a reservoir managed by the Secretary, the Secretary shall notify the applicable non-Federal interests before each fiscal year of the anticipated operation and maintenance activities for that fiscal year and each of the subsequent 4 fiscal years (including the cost of those activities) for which the non-Federal interests are required to contribute amounts.

(2) CLARIFICATION.—The information provided to a non-Federal interest under paragraph (1) shall—

(A) be an estimate which the non-Federal interest may use for planning purposes; and

(B) not be construed as or relied upon by the non-Federal interest as the actual amounts that the non-Federal interest will be required to contribute.

(c) SURPLUS WATER STORAGE.—

(1) IN GENERAL.—The Secretary shall not charge a fee for surplus water under a contract entered into pursuant to section 6 of the Act of December 22, 1944 (commonly known as the “Flood Control Act of 1944”) (33 U.S.C. 708) if the contract is for surplus water stored in the Upper Missouri Mainstem Reservoirs.

(2) OFFSET.—

(A) IN GENERAL.—Subject to subparagraph (B), of any amounts made available to the Secretary to carry out activities under the heading “OPERATION AND MAINTENANCE” under the heading “CORPS OF ENGINEERS—CIVIL” that remain unobligated as of the date of enactment of this Act, \$5,000,000 is rescinded.

(B) RESTRICTION.—No amounts that have been designated by Congress as being for emergency requirements pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985 (2 U.S.C. 901(b)(2)(A)(i)) shall be rescinded under subparagraph (A).

(3) LIMITATION.—The limitation provided under paragraph (1) shall expire on the date that is 10 years after the date of enactment of this Act.

(4) APPLICABILITY.—Nothing in this subsection—

(A) affects the authority of the Secretary under section 2695 of title 10, United States Code, to accept funds or to cover the administrative expenses relating to certain real property transactions; or

(B) affects the application of section 6 of the Act of December 22, 1944 (commonly known as the “Flood Control Act of 1944”) (33 U.S.C. 708) to surplus water stored outside of the Upper Missouri Mainstem Reservoirs.

(d) FUTURE WATER SUPPLY.—Section 301 of the Water Supply Act of 1958 (43 U.S.C. 390b) is amended—

(1) by redesignating subsections (c) and (d) as subsections (d) and (e), respectively; and

(2) by inserting after subsection (b) the following:

“(c) RELEASE OF FUTURE WATER STORAGE.—

“(1) ESTABLISHMENT OF 10-YEAR PLANS FOR THE UTILIZATION OF FUTURE STORAGE.—

“(A) IN GENERAL.—For the period beginning 180 days after the date of enactment of this paragraph and ending

on January 1, 2016, the Secretary may accept from a State or local interest a plan for the utilization of allocated water storage for future use under this Act.

“(B) CONTENTS.—A plan submitted under subparagraph (A) shall include—

“(i) a 10-year timetable for the conversion of future use storage to present use; and

“(ii) a schedule of actions that the State or local interest agrees to carry out over a 10-year period, in cooperation with the Secretary, to seek new and alternative users of future water storage that is contracted to the State or local interest on the date of enactment of this paragraph.

“(2) FUTURE WATER STORAGE.—For water resource development projects managed by the Secretary, a State or local interest that the Secretary determines has complied with paragraph (1) may request from the Secretary a release to the United States of any right of the State or local interest to future water storage under this Act that was allocated for future use water supply prior to November 17, 1986.

“(3) ADMINISTRATION.—

“(A) IN GENERAL.—Not later than 180 days after receiving a request under paragraph (2), the Secretary shall provide to the applicable State or local interest a written decision on whether the Secretary recommends releasing future water storage rights.

“(B) RECOMMENDATION.—If the Secretary recommends releasing future water storage rights, the Secretary shall include that recommendation in the annual plan submitted under section 7001 of the Water Resources Reform and Development Act of 2014.

“(4) SAVINGS CLAUSE.—Nothing in this subsection authorizes the Secretary to release a State or local interest from a contractual obligation unless specifically authorized by Congress.”.

SEC. 1047. SPECIAL USE PERMITS.

(a) SPECIAL USE PERMITS.—

(1) IN GENERAL.—The Secretary may issue special permits for uses such as group activities, recreation events, motorized recreation vehicles, and such other specialized recreation uses as the Secretary determines to be appropriate, subject to such terms and conditions as the Secretary determines to be in the best interest of the Federal Government.

(2) FEES.—

(A) IN GENERAL.—In carrying out this subsection, the Secretary may—

(i) establish and collect fees associated with the issuance of the permits described in paragraph (1);

or

(ii) accept in-kind services in lieu of those fees.

(B) OUTDOOR RECREATION EQUIPMENT.—The Secretary may establish and collect fees for the provision of outdoor recreation equipment and services for activities described in paragraph (1) at public recreation areas located at lakes and reservoirs operated by the Corps of Engineers.

(C) USE OF FEES.—Any fees generated pursuant to this subsection shall be—

- (i) retained at the site collected; and
- (ii) available for use, without further appropriation, solely for administering the special permits under this subsection and carrying out related operation and maintenance activities at the site at which the fees are collected.

(b) COOPERATIVE MANAGEMENT.—

(1) PROGRAM.—

(A) IN GENERAL.—Subject to subparagraph (B), the Secretary may enter into an agreement with a State or local government to provide for the cooperative management of a public recreation area if—

- (i) the public recreation area is located—
 - (I) at a lake or reservoir operated by the Corps of Engineers; and
 - (II) adjacent to or near a State or local park or recreation area; and
- (ii) the Secretary determines that cooperative management between the Corps of Engineers and a State or local government agency of a portion of the Corps of Engineers recreation area or State or local park or recreation area will allow for more effective and efficient management of those areas.

(B) RESTRICTION.—The Secretary may not transfer administration responsibilities for any public recreation area operated by the Corps of Engineers.

(2) ACQUISITION OF GOODS AND SERVICES.—The Secretary may acquire from or provide to a State or local government with which the Secretary has entered into a cooperative agreement under paragraph (1) goods and services to be used by the Secretary and the State or local government in the cooperative management of the areas covered by the agreement.

(3) ADMINISTRATION.—The Secretary may enter into 1 or more cooperative management agreements or such other arrangements as the Secretary determines to be appropriate, including leases or licenses, with non-Federal interests to share the costs of operation, maintenance, and management of recreation facilities and natural resources at recreation areas that are jointly managed and funded under this subsection.

(c) USE OF FUNDS.—

(1) IN GENERAL.—If the Secretary determines that it is in the public interest for purposes of enhancing recreation opportunities at Corps of Engineers water resources development projects, the Secretary may use funds made available to the Secretary to support activities carried out by State, local, and tribal governments and such other public or private nonprofit entities as the Secretary determines to be appropriate.

(2) COOPERATIVE AGREEMENTS.—Any use of funds pursuant to this subsection shall be carried out through the execution of a cooperative agreement, which shall contain such terms and conditions as the Secretary determines to be necessary in the public interest.

(d) SERVICES OF VOLUNTEERS.—Chapter IV of title I of Public Law 98–63 (33 U.S.C. 569c) is amended in the first sentence by inserting “, including expenses relating to uniforms, transportation,

lodging, and the subsistence of those volunteers,” after “incidental expenses”.

(e) TRAINING AND EDUCATIONAL ACTIVITIES.—Section 213(a) of the Water Resources Development Act of 2000 (33 U.S.C. 2339) is amended by striking “at” and inserting “about”.

SEC. 1048. AMERICA THE BEAUTIFUL NATIONAL PARKS AND FEDERAL RECREATIONAL LANDS PASS PROGRAM.

The Secretary may participate in the America the Beautiful National Parks and Federal Recreational Lands Pass program in the same manner as the National Park Service, the Bureau of Land Management, the United States Fish and Wildlife Service, the Forest Service, and the Bureau of Reclamation, including the provision of free annual passes to active duty military personnel and dependents.

SEC. 1049. APPLICABILITY OF SPILL PREVENTION, CONTROL, AND COUNTERMEASURE RULE.

(a) DEFINITIONS.—In this section:

(1) ADMINISTRATOR.—The term “Administrator” means the Administrator of the Environmental Protection Agency.

(2) FARM.—The term “farm” has the meaning given the term in section 112.2 of title 40, Code of Federal Regulations (or successor regulations).

(3) GALLON.—The term “gallon” means a United States gallon.

(4) OIL.—The term “oil” has the meaning given the term in section 112.2 of title 40, Code of Federal Regulations (or successor regulations).

(5) OIL DISCHARGE.—The term “oil discharge” has the meaning given the term “discharge” in section 112.2 of title 40, Code of Federal Regulations (or successor regulations).

(6) REPORTABLE OIL DISCHARGE HISTORY.—

(A) IN GENERAL.—Subject to subparagraph (B), the term “reportable oil discharge history” means a single oil discharge, as described in section 112.1(b) of title 40, Code of Federal Regulations (including successor regulations), that exceeds 1,000 gallons or 2 oil discharges, as described in section 112.1(b) of title 40, Code of Federal Regulations (including successor regulations), that each exceed 42 gallons within any 12-month period—

(i) in the 3 years prior to the certification date of the Spill Prevention, Control, and Countermeasure plan (as described in section 112.3 of title 40, Code of Federal Regulations (including successor regulations)); or

(ii) since becoming subject to part 112 of title 40, Code of Federal Regulations, if the facility has been in operation for less than 3 years.

(B) EXCLUSIONS.—The term “reportable oil discharge history” does not include an oil discharge, as described in section 112.1(b) of title 40, Code of Federal Regulations (including successor regulations), that is the result of a natural disaster, an act of war, or terrorism.

(7) SPILL PREVENTION, CONTROL, AND COUNTERMEASURE RULE.—The term “Spill Prevention, Control, and Countermeasure rule” means the regulation, including amendments,

promulgated by the Administrator under part 112 of title 40, Code of Federal Regulations (or successor regulations).

(b) CERTIFICATION.—In implementing the Spill Prevention, Control, and Countermeasure rule with respect to any farm, the Administrator shall—

(1) require certification by a professional engineer for a farm with—

(A) an individual tank with an aboveground storage capacity greater than 10,000 gallons;

(B) an aggregate aboveground storage capacity greater than or equal to 20,000 gallons; or

(C) a reportable oil discharge history; or

(2) allow certification by the owner or operator of the farm (via self-certification) for a farm with—

(A) an aggregate aboveground storage capacity less than 20,000 gallons and greater than the lesser of—

(i) 6,000 gallons; and

(ii) the adjustment quantity established under subsection (d)(2); and

(B) no reportable oil discharge history; and

(3) not require compliance with the rule by any farm—

(A) with an aggregate aboveground storage capacity greater than 2,500 gallons and less than the lesser of—

(i) 6,000 gallons; and

(ii) the adjustment quantity established under subsection (d)(2); and

(B) no reportable oil discharge history; and

(4) not require compliance with the rule by any farm with an aggregate aboveground storage capacity of less than 2,500 gallons.

(c) CALCULATION OF AGGREGATE ABOVEGROUND STORAGE CAPACITY.—For purposes of subsection (b), the aggregate aboveground storage capacity of a farm excludes—

(1) all containers on separate parcels that have a capacity that is 1,000 gallons or less; and

(2) all containers holding animal feed ingredients approved for use in livestock feed by the Commissioner of Food and Drugs.

(d) STUDY.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Administrator, in consultation with the Secretary of Agriculture, shall conduct a study to determine the appropriate exemption under paragraphs (2) and (3) of subsection (b), which shall be not more than 6,000 gallons and not less than 2,500 gallons, based on a significant risk of discharge to water.

(2) ADJUSTMENT.—Not later than 18 months after the date on which the study described in paragraph (1) is complete, the Administrator, in consultation with the Secretary of Agriculture, shall promulgate a rule to adjust the exemption levels described in paragraphs (2) and (3) of subsection (b) in accordance with the study.

SEC. 1050. NAMINGS.

(a) DONALD G. WALDON LOCK AND DAM.—It is the sense of Congress that, at an appropriate time and in accordance with

the rules of the Senate and the House of Representatives, to recognize the contributions of Donald G. Waldon, whose selfless determination and tireless work, while serving as administrator of the Tennessee-Tombigbee Waterway for 21 years, contributed greatly to the realization and success of the Tennessee-Tombigbee Waterway Development Compact, that the lock and dam located at mile 357.5 on the Tennessee-Tombigbee Waterway should be known and designated as the “Donald G. Waldon Lock and Dam”.

(b) REDESIGNATION OF LOWER MISSISSIPPI RIVER MUSEUM AND RIVERFRONT INTERPRETIVE SITE.—

(1) IN GENERAL.—Section 103(c)(1) of the Water Resources Development Act of 1992 (106 Stat. 4811) is amended by striking “Lower Mississippi River Museum and Riverfront Interpretive Site” and inserting “Jesse Brent Lower Mississippi River Museum and Riverfront Interpretive Site”.

(2) REFERENCES.—Any reference in a law, map, regulation, document, paper, or other record of the United States to the museum and interpretive site referred to in paragraph (1) shall be deemed to be a reference to the “Jesse Brent Lower Mississippi River Museum and Riverfront Interpretive Site”.

(c) JERRY F. COSTELLO LOCK AND DAM.—

(1) REDESIGNATION.—The lock and dam located in Modoc, Illinois, authorized by the Act of July 3, 1930 (46 Stat. 927), and commonly known as the Kaskaskia Lock and Dam, is redesignated as the “Jerry F. Costello Lock and Dam”.

(2) REFERENCES.—Any reference in a law, map, regulation, document, paper, or other record of the United States to the lock and dam referred to in section 1 shall be deemed to be a reference to the “Jerry F. Costello Lock and Dam”.

SEC. 1051. INTERSTATE WATER AGREEMENTS AND COMPACTS.

(a) WATER SUPPLY.—Section 301 of the Water Supply Act of 1958 (43 U.S.C. 390b) (as amended by section 1046(d)) is amended by adding at the end the following:

“(f) The Committees of jurisdiction are very concerned about the operation of projects in the Apalachicola-Chattahoochee-Flint River System and the Alabama-Coosa-Tallapoosa River System, and further, the Committees of jurisdiction recognize that this ongoing water resources dispute raises serious concerns related to the authority of the Secretary of the Army to allocate substantial storage at projects to provide local water supply pursuant to the Water Supply Act of 1958 absent congressional approval. Interstate water disputes of this nature are more properly addressed through interstate water agreements that take into consideration the concerns of all affected States including impacts to other authorized uses of the projects, water supply for communities and major cities in the region, water quality, freshwater flows to communities, rivers, lakes, estuaries, and bays located downstream of projects, agricultural uses, economic development, and other appropriate concerns. To that end, the Committees of jurisdiction strongly urge the Governors of the affected States to reach agreement on an interstate water compact as soon as possible, and we pledge our commitment to work with the affected States to ensure prompt consideration and approval of any such agreement. Absent such action, the Committees of jurisdiction should consider appropriate legislation to address these matters including any necessary clarifications to

the Water Supply Act of 1958 or other law. This subsection does not alter existing rights or obligations under law.”.

(b) SENSE OF CONGRESS REGARDING INTERSTATE WATER AGREEMENTS AND COMPACTS.—

(1) FINDINGS.—Congress finds the following:

(A) States and local interests have primary responsibility for developing water supplies for domestic, municipal, industrial, and other purposes.

(B) The Federal Government cooperates with States and local interests in developing water supplies through the construction, maintenance, and operation of Federal water resources development projects.

(C) Interstate water disputes are most properly addressed through interstate water agreements or compacts that take into consideration the concerns of all affected States.

(2) SENSE OF CONGRESS.—It is the sense of Congress that—

(A) Congress and the Secretary should urge States to reach agreement on interstate water agreements and compacts;

(B) at the request of the Governor of a State, the Secretary should facilitate and assist in the development of an interstate water agreement or compact;

(C) Congress should provide prompt consideration of interstate water agreements and compacts; and

(D) the Secretary should adopt policies and implement procedures for the operation of reservoirs of the Corps of Engineers that are consistent with interstate water agreements and compacts.

SEC. 1052. SENSE OF CONGRESS REGARDING WATER RESOURCES DEVELOPMENT BILLS.

It is the sense of Congress that, because the missions of the Corps of Engineers are unique and benefit all individuals in the United States and because water resources development projects are critical to maintaining economic prosperity, national security, and environmental protection, Congress should consider a water resources development bill not less than once every Congress.

TITLE II—NAVIGATION

Subtitle A—Inland Waterways

SEC. 2001. DEFINITIONS.

In this title:

(1) INLAND WATERWAYS TRUST FUND.—The term “Inland Waterways Trust Fund” means the Inland Waterways Trust Fund established by section 9506(a) of the Internal Revenue Code of 1986.

(2) QUALIFYING PROJECT.—The term “qualifying project” means any construction or major rehabilitation project for navigation infrastructure of the inland and intracoastal waterways that is—

(A) authorized before, on, or after the date of enactment of this Act;

(B) not completed on the date of enactment of this Act; and

(C) funded at least in part from the Inland Waterways Trust Fund.

SEC. 2002. PROJECT DELIVERY PROCESS REFORMS.

(a) **REQUIREMENTS FOR QUALIFYING PROJECTS.**—With respect to each qualifying project, the Secretary shall require—

(1) for each project manager, that—

(A) the project manager have formal project management training and certification; and

(B) the project manager be assigned from among personnel certified by the Chief of Engineers; and

(2) for an applicable cost estimation, that—

(A) the Secretary utilize a risk-based cost estimate with a confidence level of at least 80 percent; and

(B) the cost estimate be developed—

(i) for a qualifying project that requires an increase in the authorized amount in accordance with section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280), during the preparation of a post-authorization change report or other similar decision document;

(ii) for a qualifying project for which the first construction contract has not been awarded, prior to the award of the first construction contract;

(iii) for a qualifying project without a completed feasibility report in accordance with section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282), prior to the completion of such a report; and

(iv) for a qualifying project with a completed feasibility report in accordance with section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282) that has not yet been authorized, during design for the qualifying project.

(b) **ADDITIONAL PROJECT DELIVERY PROCESS REFORMS.**—Not later than 18 months after the date of enactment of this Act, the Secretary shall—

(1) establish a system to identify and apply on a continuing basis best management practices from prior or ongoing qualifying projects to improve the likelihood of on-time and on-budget completion of qualifying projects;

(2) evaluate early contractor involvement acquisition procedures to improve on-time and on-budget project delivery performance; and

(3) implement any additional measures that the Secretary determines will achieve the purposes of this subtitle, including—

(A) the implementation of applicable practices and procedures developed pursuant to management by the Secretary of an applicable military construction program;

(B) the development and use of a portfolio of standard designs for inland navigation locks, incorporating the use of a center of expertise for the design and review of qualifying projects;

(C) the use of full-funding contracts or formulation of a revised continuing contracts clause; and

(D) the establishment of procedures for recommending new project construction starts using a capital projects business model.

(c) PILOT PROJECTS.—

(1) IN GENERAL.—Subject to paragraph (2), the Secretary may carry out pilot projects to evaluate processes and procedures for the study, design, and construction of qualifying projects.

(2) INCLUSIONS.—At a minimum, the Secretary shall carry out pilot projects under this subsection to evaluate—

(A) early contractor involvement in the development of features and components;

(B) an appropriate use of continuing contracts for the construction of features and components; and

(C) applicable principles, procedures, and processes used for military construction projects.

(d) INLAND WATERWAYS USERS BOARD.—Section 302 of the Water Resources Development Act of 1986 (33 U.S.C. 2251) is amended—

(1) by striking subsection (b) and inserting the following:

“(b) DUTIES OF USERS BOARD.—

“(1) IN GENERAL.—The Users Board shall meet not less frequently than semiannually to develop and make recommendations to the Secretary and Congress regarding the inland waterways and inland harbors of the United States.

“(2) ADVICE AND RECOMMENDATIONS.—For commercial navigation features and components of the inland waterways and inland harbors of the United States, the Users Board shall provide—

“(A) prior to the development of the budget proposal of the President for a given fiscal year, advice and recommendations to the Secretary regarding construction and rehabilitation priorities and spending levels;

“(B) advice and recommendations to Congress regarding any feasibility report for a project on the inland waterway system that has been submitted to Congress pursuant to section 7001 of the Water Resources Reform and Development Act of 2014;

“(C) advice and recommendations to Congress regarding an increase in the authorized cost of those features and components;

“(D) not later than 60 days after the date of the submission of the budget proposal of the President to Congress, advice and recommendations to Congress regarding construction and rehabilitation priorities and spending levels; and

“(E) advice and recommendations on the development of a long-term capital investment program in accordance with subsection (d).

“(3) PROJECT DEVELOPMENT TEAMS.—The chairperson of the Users Board shall appoint a representative of the Users Board to serve as an advisor to the project development team for a qualifying project or the study or design of a commercial navigation feature or component of the inland waterways and inland harbors of the United States.

“(4) INDEPENDENT JUDGMENT.—Any advice or recommendation made by the Users Board to the Secretary shall reflect the independent judgment of the Users Board.”;

(2) by striking subsection (c) and inserting the following:

“(c) DUTIES OF SECRETARY.—The Secretary shall—

“(1) communicate not less frequently than once each quarter to the Users Board the status of the study, design, or construction of all commercial navigation features or components of the inland waterways or inland harbors of the United States; and

“(2) submit to the Users Board a courtesy copy of all completed feasibility reports relating to a commercial navigation feature or component of the inland waterways or inland harbors of the United States.

“(d) CAPITAL INVESTMENT PROGRAM.—

“(1) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, the Secretary, in coordination with the Users Board, shall develop and submit to Congress a report describing a 20-year program for making capital investments on the inland and intracoastal waterways based on the application of objective, national project selection prioritization criteria.

“(2) CONSIDERATION.—In developing the program under paragraph (1), the Secretary shall take into consideration the 20-year capital investment strategy contained in the Inland Marine Transportation System (IMTS) Capital Projects Business Model, Final Report published on April 13, 2010, as approved by the Users Board.

“(3) CRITERIA.—In developing the plan and prioritization criteria under paragraph (1), the Secretary shall ensure, to the maximum extent practicable, that investments made under the 20-year program described in paragraph (1)—

“(A) are made in all geographical areas of the inland waterways system; and

“(B) ensure efficient funding of inland waterways projects.

“(4) STRATEGIC REVIEW AND UPDATE.—Not later than 5 years after the date of enactment of this subsection, and not less frequently than once every 5 years thereafter, the Secretary, in coordination with the Users Board, shall—

“(A) submit to Congress and make publicly available a strategic review of the 20-year program in effect under this subsection, which shall identify and explain any changes to the project-specific recommendations contained in the previous 20-year program (including any changes to the prioritization criteria used to develop the updated recommendations); and

“(B) make revisions to the program, as appropriate.

“(e) PROJECT MANAGEMENT PLANS.—The chairperson of the Users Board and the project development team member appointed by the chairperson under subsection (b)(3) may sign the project management plan for the qualifying project or the study or design of a commercial navigation feature or component of the inland waterways and inland harbors of the United States.

“(f) ADMINISTRATION.—

“(1) IN GENERAL.—The Users Board shall be subject to the Federal Advisory Committee Act (5 U.S.C. App.), other

than section 14, and, with the consent of the appropriate agency head, the Users Board may use the facilities and services of any Federal agency.

“(2) MEMBERS NOT CONSIDERED SPECIAL GOVERNMENT EMPLOYEES.—For the purposes of complying with the Federal Advisory Committee Act (5 U.S.C. App.), the members of the Users Board shall not be considered special Government employees (as defined in section 202 of title 18, United States Code).

“(3) TRAVEL EXPENSES.—Non-Federal members of the Users Board while engaged in the performance of their duties away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code.”.

SEC. 2003. EFFICIENCY OF REVENUE COLLECTION.

Not later than 2 years after the date of enactment of this Act, the Comptroller General of the United States shall prepare a report on the efficiency of collecting the fuel tax for the Inland Waterways Trust Fund, which shall include—

- (1) an evaluation of whether current methods of collection of the fuel tax result in full compliance with requirements of the law;
- (2) whether alternative methods of collection would result in increased revenues into the Inland Waterways Trust Fund; and
- (3) an evaluation of alternative collection options.

SEC. 2004. INLAND WATERWAYS REVENUE STUDIES.

(a) INLAND WATERWAYS CONSTRUCTION BONDS STUDY.—

(1) STUDY.—The Secretary, in coordination with the heads of appropriate Federal agencies, shall conduct a study on the potential benefits and implications of authorizing the issuance of federally tax-exempt bonds secured against the available proceeds, including projected annual receipts, in the Inland Waterways Trust Fund established by section 9506(a) of the Internal Revenue Code of 1986.

(2) CONTENTS.—In carrying out the study, the Secretary shall examine the implications of issuing such bonds, including the potential revenues that could be generated and the projected net cost to the Treasury, including loss of potential revenue.

(3) CONSULTATION.—In carrying out the study, the Secretary, at a minimum, shall consult with—

(A) representatives of the Inland Waterway Users Board established by section 302 of the Water Resources Development Act of 1986 (33 U.S.C. 2251);

(B) representatives of the commodities and bulk cargos that are currently shipped for commercial purposes on the segments of the inland and intracoastal waterways listed in section 206 of the Inland Waterways Revenue Act of 1978 (33 U.S.C. 1804);

(C) representatives of other users of locks and dams on the inland and intracoastal waterways, including persons owning, operating, using, or otherwise benefitting from—

- (i) hydropower generation facilities;
- (ii) electric utilities that rely on the waterways for cooling of existing electricity generation facilities;

- (iii) municipal and industrial water supply;
- (iv) recreation;
- (v) irrigation water supply; or
- (vi) flood damage reduction; and

(D) other stakeholders associated with the inland and intracoastal waterways, as identified by the Secretary.

(4) REPORT TO CONGRESS.—

(A) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works, the Committee on Finance, and the Committee on the Budget of the Senate and the Committee on Transportation and Infrastructure, the Committee on Ways and Means, and the Committee on the Budget of the House of Representatives, and make publicly available, a report on the results of the study.

(B) IDENTIFICATION OF ISSUES.—As part of the report, the Secretary shall identify any potential benefits or other implications of the issuance of bonds described in subsection (a)(1), including any potential changes in Federal or State law that may be necessary to provide such benefits or to address such implications.

(b) POTENTIAL REVENUE SOURCES FOR INLAND AND INTRACOASTAL WATERWAYS INFRASTRUCTURE.—

(1) IN GENERAL.—The Secretary shall conduct a study and submit to Congress a report on potential revenue sources from which funds could be collected to generate additional revenues for the Inland Waterways Trust Fund established by section 9506(a) of the Internal Revenue Code of 1986.

(2) SCOPE OF STUDY.—

(A) IN GENERAL.—In carrying out the study, the Secretary shall evaluate an array of potential revenue sources from which funds could be collected in amounts that, when combined with funds generated by section 4042 of the Internal Revenue Code of 1986, are sufficient to support one-half of annual construction expenditure levels of \$380,000,000 for the authorized purposes of the Inland Waterways Trust Fund.

(B) POTENTIAL REVENUE SOURCES FOR STUDY.—In carrying out the study, the Secretary, at a minimum, shall—

- (i) evaluate potential revenue sources identified in and documented by known authorities of the Inland Waterways System; and
- (ii) review appropriate reports and associated literature related to revenue sources.

(3) CONDUCT OF STUDY.—In carrying out the study, the Secretary shall—

(A) take into consideration whether the potential revenues from other sources—

- (i) are equitably associated with the construction, operation, and maintenance of inland and intracoastal waterway infrastructure, including locks, dams, and navigation channels; and
- (ii) can be efficiently collected;

(B) consult with, at a minimum—

- (i) representatives of the Inland Waterways Users Board; and

(ii) representatives of other nonnavigation beneficiaries of inland and intracoastal waterway infrastructure, including persons benefitting from—

- (I) municipal water supply;
- (II) hydropower;
- (III) recreation;
- (IV) industrial water supply;
- (V) flood damage reduction;
- (VI) agricultural water supply;
- (VII) environmental restoration;
- (VIII) local and regional economic development; or
- (IX) local real estate interests; and

(iii) representatives of other interests, as identified by the Secretary; and

(C) provide the opportunity for public hearings in each of the geographic regions that contain segments of the inland and intracoastal waterways listed in section 206 of the Inland Waterways Revenue Act of 1978 (33 U.S.C. 1804).

(4) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works, the Committee on Finance, and the Committee on the Budget of the Senate and the Committee on Transportation and Infrastructure, the Committee on Ways and Means, and the Committee on the Budget of the House of Representatives, and make publicly available, a report on the results of the study.

SEC. 2005. INLAND WATERWAYS STAKEHOLDER ROUNDTABLE.

(a) IN GENERAL.—The Secretary shall conduct an inland waterways stakeholder roundtable to provide for a review and evaluation of issues related to financial management of the inland and intracoastal waterways.

(b) SELECTION OF PARTICIPANTS.—

(1) IN GENERAL.—Not later than 45 days after the date on which the Secretary submits to Congress the report required by section 2004(b), the Secretary, in consultation with the Inland Waterways Users Board, shall select individuals to be invited to participate in the stakeholder roundtable.

(2) COMPOSITION.—The individuals selected under paragraph (1) shall include—

(A) representatives of the primary users, shippers, and suppliers utilizing the inland and intracoastal waterways for commercial purposes;

(B) representatives of State and Federal agencies having a direct and substantial interest in the commercial use of the inland and intracoastal waterways;

(C) representatives of other nonnavigation beneficiaries of the inland and intracoastal waterways infrastructure, including individuals benefitting from—

- (i) municipal water supply;
- (ii) hydropower;
- (iii) recreation;
- (iv) industrial water supply;
- (v) flood damage reduction;
- (vi) agricultural water supply;

- (vii) environmental restoration;
 - (viii) local and regional economic development; or
 - (ix) local real estate interests; and
 - (D) other interested individuals with significant financial and engineering expertise and direct knowledge of the inland and coastal waterways.
- (c) **FRAMEWORK AND AGENDA.**—The Secretary shall work with a group of the individuals selected under subsection (b) to develop the framework and agenda for the stakeholder roundtable.
- (d) **CONDUCT OF STAKEHOLDER ROUNDTABLE.**—
- (1) **IN GENERAL.**—Not later than 120 days after the date on which the Secretary submits to Congress the report required by section 2004(b), the Secretary shall conduct the stakeholder roundtable.
 - (2) **ISSUES TO BE DISCUSSED.**—The stakeholder roundtable shall provide for the review and evaluation described in subsection (a) and shall include the following:
 - (A) An evaluation of any recommendations that have been developed to address funding options for the inland and coastal waterways, including any recommendations in the report required under section 2004(b).
 - (B) An evaluation of the funding status of the inland and coastal waterways.
 - (C) Identification and evaluation of the ongoing and projected water infrastructure needs of the inland and coastal waterways.
 - (D) Identification of a process for meeting such needs, with timeline for addressing the funding challenges for the Inland Waterways Trust Fund.
- (e) **REPORT TO CONGRESS.**—Not later than 180 days after the date on which the Secretary submits to Congress the report required by section 2004(b), the Secretary shall submit to Congress and make publicly available a report that contains—
- (1) a summary of the stakeholder roundtable, including areas of concurrence on funding approaches and areas of disagreement in meeting funding needs; and
 - (2) recommendations developed by the Secretary for next steps to address the issues discussed at the stakeholder roundtable.

SEC. 2006. PRESERVING THE INLAND WATERWAY TRUST FUND.

- (a) **OLMSTED PROJECT REFORM.**—
- (1) **DEFINITION OF OLMSTED PROJECT.**—In this subsection, the term “Olmsted Project” means the project for navigation, Lower Ohio River, Locks and Dams 52 and 53, Illinois and Kentucky, authorized by section 3(a)(6) of the Water Resources Development Act of 1988 (102 Stat. 4013).
 - (2) **OLMSTED PROJECT REFORM.**—Notwithstanding section 3(a)(6) of the Water Resources Development Act of 1988 (102 Stat. 4013), for each fiscal year beginning after September 30, 2014, 15 percent of the cost of construction for the Olmsted Project shall be paid from amounts appropriated from the Inland Waterways Trust Fund.
 - (3) **SENSE OF CONGRESS.**—It is the sense of Congress that the appropriation for the Olmsted Project should be not less than \$150,000,000 for each fiscal year until construction of the project is completed.

(4) REHABILITATION OF PROJECTS.—Section 205(1)(E)(ii) of the Water Resources Development Act of 1992 (33 U.S.C. 2327(1)(E)(ii)) is amended by striking “\$8,000,000” and inserting “\$20,000,000”.

SEC. 2007. INLAND WATERWAYS OVERSIGHT.

(a) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report regarding the lessons learned from the experience of planning and constructing the Olmsted Project and how such lessons might apply to future inland waterway studies and projects.

(b) ANNUAL FINANCIAL REVIEW.—For any inland waterways project that the Secretary carries out that has an estimated total cost of \$500,000,000 or more, the Secretary shall submit to the congressional committees referred to in subsection (a) an annual financial plan for the project. The plan shall be based on detailed annual estimates of the cost to complete the remaining elements of the project and on reasonable assumptions, as determined by the Secretary, of any future increases of the cost to complete the project.

(c) GOVERNMENT ACCOUNTABILITY OFFICE REPORT.—As soon as practicable after the date of enactment of this Act, the Comptroller General of the United States shall conduct, and submit to Congress a report describing the results of, a study to determine why, and to what extent, the project for navigation, Lower Ohio River, Locks and Dams 52 and 53, Illinois and Kentucky (commonly known as the “Olmsted Locks and Dam project”), authorized by section 3(a)(6) of the Water Resources Development Act of 1988 (102 Stat. 4013), has exceeded the budget for the project and the reasons why the project failed to be completed as scheduled, including an assessment of—

- (1) engineering methods used for the project;
- (2) the management of the project;
- (3) contracting for the project;
- (4) the cost to the United States of benefits foregone due to project delays; and
- (5) such other contributory factors as the Comptroller General determines to be appropriate.

SEC. 2008. ASSESSMENT OF OPERATION AND MAINTENANCE NEEDS OF THE ATLANTIC INTRACOASTAL WATERWAY AND THE GULF INTRACOASTAL WATERWAY.

(a) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Secretary shall assess the operation and maintenance needs of the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway.

(b) TYPES OF ACTIVITIES.—In carrying out subsection (a), the Secretary shall assess the operation and maintenance needs of the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway as used for the following purposes:

- (1) Commercial navigation.
- (2) Commercial fishing.

(3) Subsistence, including utilization by Indian tribes (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b)) for subsistence and ceremonial purposes.

(4) Use as ingress and egress to harbors of refuge.

(5) Transportation of persons.

(6) Purposes relating to domestic energy production, including fabrication, servicing, and supply of domestic offshore energy production facilities.

(7) Activities of the Secretary of the department in which the Coast Guard is operating.

(8) Public health and safety related equipment for responding to coastal and inland emergencies.

(9) Recreation purposes.

(10) Any other authorized purpose.

(c) REPORT TO CONGRESS.—For fiscal year 2015, and biennially thereafter, in conjunction with the annual budget submission by the President to Congress under section 1105(a) of title 31, United States Code, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report that, with respect to the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway—

(1) identifies the operation and maintenance costs required to achieve the authorized length, width, and depth;

(2) identifies the amount of funding requested in the President's budget for operation and maintenance costs; and

(3) identifies the unmet operation and maintenance needs of the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway.

SEC. 2009. INLAND WATERWAYS RIVERBANK STABILIZATION.

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, and biennially thereafter, the Secretary shall conduct a study to determine the feasibility of—

(1) carrying out projects for the inland and intracoastal waterways for purposes of—

(A) flood damage reduction;

(B) emergency streambank and shoreline protection;

and

(C) prevention and mitigation of shore damages attributable to navigation improvements; and

(2) modifying projects for the inland and intracoastal waterways for the purpose of improving the quality of the environment.

(b) RECOMMENDATIONS.—In conducting the study, the Secretary shall develop specific project recommendations and prioritize those recommendations based on—

(1) the extent of damage and land loss resulting from riverbank erosion;

(2) the rate of erosion;

(3) the significant threat of future flood risk to public property, public infrastructure, or public safety;

(4) the destruction of natural resources or habitats; and

(5) the potential cost savings for maintenance of the channel.

(c) DISPOSITION.—The Secretary may carry out any project identified in the study conducted pursuant to subsection (a) in accordance with the criteria for projects carried out under one of the following authorities:

(1) Section 14 of the Flood Control Act of 1946 (33 U.S.C. 701r).

(2) Section 205 of the Flood Control Act of 1948 (33 U.S.C. 701s).

(3) Section 111 of the River and Harbor Act of 1968 (33 U.S.C. 426i).

(4) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(d) ANNUAL REPORT.—For a project recommended pursuant to the study that cannot be carried out under any of the authorities specified in subsection (c), upon a determination by the Secretary of the feasibility of the project, the Secretary may include a recommendation concerning the project in the annual report submitted to Congress under section 7001.

SEC. 2010. UPPER MISSISSIPPI RIVER PROTECTION.

(a) DEFINITION OF UPPER ST. ANTHONY FALLS LOCK AND DAM.—In this section, the term “Upper St. Anthony Falls Lock and Dam” means the lock and dam located on Mississippi River Mile 853.9 in Minneapolis, Minnesota.

(b) MANDATORY CLOSURE.—Not later than 1 year after the date of enactment of this Act, the Secretary shall close the Upper St. Anthony Falls Lock and Dam.

(c) EMERGENCY OPERATIONS.—Nothing in this section prevents the Secretary from carrying out emergency lock operations necessary to mitigate flood damage.

SEC. 2011. CORPS OF ENGINEERS LOCK AND DAM ENERGY DEVELOPMENT.

Section 1117 of the Water Resources Development Act of 1986 (100 Stat. 4236) is amended to read as follows:

“SEC. 1117. W.D. MAYO LOCK AND DAM.

“(a) IN GENERAL.—The Cherokee Nation of Oklahoma may—

“(1) design and construct one or more hydroelectric generating facilities at the W.D. Mayo Lock and Dam on the Arkansas River, Oklahoma; and

“(2) market the electricity generated from any such facility.

“(b) PRECONSTRUCTION REQUIREMENTS.—

“(1) PERMITS.—Before the date on which construction of a hydroelectric generating facility begins under subsection (a), the Cherokee Nation shall obtain any permit required under Federal or State law, except that the Cherokee Nation shall be exempt from licensing requirements that may otherwise apply to construction, operation, or maintenance of the facility under the Federal Power Act (16 U.S.C. 791a et seq.).

“(2) REVIEW OF PLANS AND SPECIFICATIONS.—The Cherokee Nation may initiate the design or construction of a hydroelectric generating facility under subsection (a) only after the Secretary reviews and approves the plans and specifications for the design and construction.

“(c) PAYMENT OF DESIGN AND CONSTRUCTION COSTS.—

“(1) IN GENERAL.—The Secretary may accept funds offered by the Cherokee Nation and use such funds to carry out the

design and construction of a hydroelectric generating facility under subsection (a).

“(2) ALLOCATION OF COSTS.—The Cherokee Nation shall—

“(A) bear all costs associated with the design and construction of a hydroelectric generating facility under subsection (a); and

“(B) provide any funds necessary for the design and construction to the Secretary prior to the Secretary initiating any activities related to the design and construction.

“(d) ASSUMPTION OF LIABILITY.—The Cherokee Nation shall—

“(1) hold all title to a hydroelectric generating facility constructed under subsection (a) and may, subject to the approval of the Secretary, assign such title to a third party;

“(2) be solely responsible for—

“(A) the operation, maintenance, repair, replacement, and rehabilitation of the facility; and

“(B) the marketing of the electricity generated by the facility; and

“(3) release and indemnify the United States from any claims, causes of action, or liabilities that may arise out of any activity undertaken to carry out this section.

“(e) ASSISTANCE AVAILABLE.—The Secretary may provide technical and construction management assistance requested by the Cherokee Nation relating to the design and construction of a hydroelectric generating facility under subsection (a).

“(f) THIRD PARTY AGREEMENTS.—The Cherokee Nation may enter into agreements with the Secretary or a third party that the Cherokee Nation or the Secretary determines are necessary to carry out this section.”.

SEC. 2012. RESTRICTED AREAS AT CORPS OF ENGINEERS DAMS.

Section 2 of the Freedom to Fish Act (127 Stat. 449) is amended—

(1) in subsection (b)(1) by striking “2 years after the date of enactment of this Act” and inserting “4 years after the date of enactment of the Water Resources Reform and Development Act of 2014”;

(2) in the heading of subsection (c) by inserting “OR MODIFIED” after “NEW”; and

(3) in subsection (c)—

(A) in matter preceding paragraph (1) by inserting “new or modified” after “establishes any”; and

(B) in paragraph (3) by striking “2 years after the date of enactment of this Act” and inserting “4 years after the date of enactment of the Water Resources Reform and Development Act of 2014”.

SEC. 2013. OPERATION AND MAINTENANCE OF FUEL TAXED INLAND WATERWAYS.

Section 102 of the Water Resources Development Act of 1986 (33 U.S.C. 2212) is amended—

(1) by redesignating subsection (c) as subsection (d); and

(2) by inserting after subsection (b) the following:

“(c) FLOODGATES ON THE INLAND WATERWAYS.—

“(1) OPERATION AND MAINTENANCE CARRIED OUT BY THE SECRETARY.—Notwithstanding any other provision of law, the Secretary shall be responsible for the operation and maintenance, including repair, of any flood gate, as well as any

pumping station constructed within the channel as a single unit with that flood gate, that—

“(A) was constructed as of the date of enactment of the Water Resources Reform and Development Act of 2014 as a feature of an authorized hurricane and storm damage reduction project; and

“(B) crosses an inland or intracoastal waterway described in section 206 of the Inland Waterways Revenue Act of 1978 (33 U.S.C. 1804).

“(2) NON-FEDERAL COST SHARE.—The non-Federal share of the cost of operation, maintenance, repair, rehabilitation, and replacement of any structure under this subsection shall be 35 percent.”.

Subtitle B—Port and Harbor Maintenance

SEC. 2101. FUNDING FOR HARBOR MAINTENANCE PROGRAMS.

(a) DEFINITIONS.—In this section:

(1) TOTAL AMOUNT OF HARBOR MAINTENANCE TAXES RECEIVED.—The term “total amount of harbor maintenance taxes received” means, with respect to a fiscal year, the aggregate of amounts appropriated, transferred, or credited to the Harbor Maintenance Trust Fund under section 9505(a) of the Internal Revenue Code of 1986 for that fiscal year as set forth in the current year estimate provided in the President’s budget request for the subsequent fiscal year, submitted pursuant to section 1105 of title 31, United States Code.

(2) TOTAL BUDGET RESOURCES.—The term “total budget resources” means the total amount made available by appropriations Acts from the Harbor Maintenance Trust Fund for a fiscal year for making expenditures under section 9505(c) of the Internal Revenue Code of 1986.

(b) TARGET APPROPRIATIONS.—

(1) IN GENERAL.—The target total budget resources made available to the Secretary from the Harbor Maintenance Trust Fund for a fiscal year shall be not less than the following:

(A) For fiscal year 2015, 67 percent of the total amount of harbor maintenance taxes received in fiscal year 2014.

(B) For fiscal year 2016, 69 percent of the total amount of harbor maintenance taxes received in fiscal year 2015.

(C) For fiscal year 2017, 71 percent of the total amount of harbor maintenance taxes received in fiscal year 2016.

(D) For fiscal year 2018, 74 percent of the total amount of harbor maintenance taxes received in fiscal year 2017.

(E) For fiscal year 2019, 77 percent of the total amount of harbor maintenance taxes received in fiscal year 2018.

(F) For fiscal year 2020, 80 percent of the total amount of harbor maintenance taxes received in fiscal year 2019.

(G) For fiscal year 2021, 83 percent of the total amount of harbor maintenance taxes received in fiscal year 2020.

(H) For fiscal year 2022, 87 percent of the total amount of harbor maintenance taxes received in fiscal year 2021.

(I) For fiscal year 2023, 91 percent of the total amount of harbor maintenance taxes received in fiscal year 2022.

(J) For fiscal year 2024, 95 percent of the total amount of harbor maintenance taxes received in fiscal year 2023.

(K) For fiscal year 2025, and each fiscal year thereafter, 100 percent of the total amount of harbor maintenance taxes received in the previous fiscal year.

(2) USE OF AMOUNTS.—The total budget resources described in paragraph (1) may be used only for making expenditures under section 9505(c) of the Internal Revenue Code of 1986.

(c) IMPACT ON OTHER FUNDS.—

(1) SENSE OF CONGRESS.—It is the sense of Congress that any increase in funding for harbor maintenance programs under this section shall result from an overall increase in appropriations for the civil works program of the Corps of Engineers and not from reductions in the appropriations for other programs, projects, and activities carried out by the Corps of Engineers for other authorized purposes.

(2) APPLICATION.—The target total budget resources for a fiscal year specified in subsection (b)(1) shall only apply in a fiscal year for which the level of appropriations provided for the civil works program of the Corps of Engineers in that fiscal year is increased, as compared to the previous fiscal year, by a dollar amount that is at least equivalent to the dollar amount necessary to address such target total budget resources in that fiscal year.

SEC. 2102. OPERATION AND MAINTENANCE OF HARBOR PROJECTS.

(a) IN GENERAL.—Section 210 of the Water Resources Development Act of 1986 (33 U.S.C. 2238) is amended by adding at the end the following:

“(c) OPERATION AND MAINTENANCE OF HARBOR PROJECTS.—

“(1) IN GENERAL.—To the maximum extent practicable, the Secretary shall make expenditures to pay for operation and maintenance costs of the harbors and inland harbors referred to in subsection (a)(2), including expenditures of funds appropriated from the Harbor Maintenance Trust Fund, based on an equitable allocation of funds among all such harbors and inland harbors.

“(2) CRITERIA.—

“(A) IN GENERAL.—In determining an equitable allocation of funds under paragraph (1), the Secretary shall—

“(i) consider the information obtained in the assessment conducted under subsection (e);

“(ii) consider the national and regional significance of harbor operations and maintenance; and

“(iii) as appropriate, consider national security and military readiness needs.

“(B) LIMITATION.—The Secretary shall not allocate funds under paragraph (1) based solely on the tonnage transiting through a harbor.

“(3) EMERGING HARBOR PROJECTS.—Notwithstanding any other provision of this subsection, in making expenditures under paragraph (1) for each of fiscal years 2015 through 2022, the Secretary shall allocate for operation and maintenance costs of emerging harbor projects an amount that is not less than 10 percent of the funds made available under this section for fiscal year 2012 to pay the costs described in subsection (a)(2).

“(4) MANAGEMENT OF GREAT LAKES NAVIGATION SYSTEM.—To sustain effective and efficient operation and maintenance

of the Great Lakes Navigation System, including any navigation feature in the Great Lakes that is a Federal responsibility with respect to operation and maintenance, the Secretary shall manage all of the individually authorized projects in the Great Lakes Navigation System as components of a single, comprehensive system, recognizing the interdependence of the projects.

“(d) PRIORITIZATION.—

“(1) PRIORITY.—

“(A) IN GENERAL.—For each of fiscal years 2015 through 2024, if priority funds are available, the Secretary shall use the priority funds as follows:

“(i) 90 percent of the priority funds shall be used for high- and moderate-use harbor projects.

“(ii) 10 percent of the priority funds shall be used for emerging harbor projects.

“(B) ADDITIONAL CONSIDERATIONS.—For each of fiscal years 2015 through 2024, of the priority funds available, the Secretary shall use—

“(i) not less than 5 percent of such funds for underserved harbor projects; and

“(ii) not less than 10 percent of such funds for projects that are located within the Great Lakes Navigation System.

“(C) UNDERSERVED HARBORS.—In determining which underserved harbor projects shall receive funds under this paragraph, the Secretary shall consider—

“(i) the total quantity of commerce supported by the water body on which the project is located; and

“(ii) the minimum width and depth that—

“(I) would be necessary at the underserved harbor project to provide sufficient clearance for fully loaded commercial vessels using the underserved harbor project to maneuver safely; and

“(II) does not exceed the constructed width and depth of the authorized navigation project.

“(2) EXPANDED USES.—

“(A) DEFINITION OF ELIGIBLE HARBOR OR INLAND HARBOR DEFINED.—In this paragraph, the term ‘eligible harbor or inland harbor’ means a harbor or inland harbor at which the total amount of harbor maintenance taxes collected in the immediately preceding 3 fiscal years exceeds the value of the work carried out for the harbor or inland harbor using amounts from the Harbor Maintenance Trust Fund during those 3 fiscal years.

“(B) USE OF EXPANDED USES FUNDS.—

“(i) FISCAL YEARS 2015 THROUGH 2024.—For each of fiscal years 2015 through 2024, of the priority funds available, the Secretary shall use not less than 10 percent of such funds for expanded uses carried out at an eligible harbor or inland harbor.

“(ii) SUBSEQUENT FISCAL YEARS.—For fiscal year 2025 and each fiscal year thereafter, the Secretary shall use not less than 10 percent of the priority funds available for expanded uses carried out at an eligible harbor or inland harbor.

“(C) PRIORITIZATION.—In allocating funds under this paragraph, the Secretary shall give priority to projects at eligible harbors or inland harbors for which the difference, calculated in dollars, is greatest between—

“(i) the total amount of funding made available for projects at that eligible harbor or inland harbor from the Harbor Maintenance Trust Fund in the immediately preceding 3 fiscal years; and

“(ii) the total amount of harbor maintenance taxes collected at that harbor or inland harbor in the immediately preceding 3 fiscal years.

“(3) REMAINING FUNDS.—

“(A) IN GENERAL.—For each of fiscal years 2015 through 2024, if after fully funding all projects eligible for funding under paragraphs (1)(B) and (2)(B)(i), priority funds made available under those paragraphs remain unobligated, the Secretary shall use those remaining funds to pay for operation and maintenance costs of any harbor or inland harbor referred to in subsection (a)(2) based on an equitable allocation of those funds among the harbors and inland harbors.

“(B) CRITERIA.—In determining an equitable allocation of funds under subparagraph (A), the Secretary shall—

“(i) use the criteria specified in subsection (c)(2)(A);

and

“(ii) make amounts available in accordance with the requirements of paragraph (1)(A).

“(4) EMERGENCY EXPENDITURES.—Nothing in this subsection prohibits the Secretary from making an expenditure to pay for the operation and maintenance costs of a specific harbor or inland harbor, including the transfer of funding from the operation and maintenance of a separate project, if—

“(A) the Secretary determines that the action is necessary to address the navigation needs of a harbor or inland harbor where safe navigation has been severely restricted due to an unforeseen event; and

“(B) the Secretary provides within 90 days of the action notice and information on the need for the action to the Committee on Environment and Public Works and the Committee on Appropriations of the Senate and the Committee on Transportation and Infrastructure and the Committee on Appropriations of the House of Representatives.

“(e) ASSESSMENT OF HARBORS AND INLAND HARBORS.—

“(1) IN GENERAL.—Not later than 270 days after the date of enactment of this subsection, and biennially thereafter, the Secretary shall assess the operation and maintenance needs and uses of the harbors and inland harbors referred to in subsection (a)(2).

“(2) ASSESSMENT OF HARBOR NEEDS AND ACTIVITIES.—

“(A) TOTAL OPERATION AND MAINTENANCE NEEDS OF HARBORS.—In carrying out paragraph (1), the Secretary shall identify—

“(i) the total future costs required to achieve and maintain the constructed width and depth for the harbors and inland harbors referred to in subsection (a)(2); and

“(ii) the total expected costs for expanded uses at eligible harbors or inland harbors referred to in subsection (d)(2).

“(B) USES OF HARBORS AND INLAND HARBORS.—In carrying out paragraph (1), the Secretary shall identify current uses (and, to the extent practicable, assess the national, regional, and local benefits of such uses) of harbors and inland harbors referred to in subsection (a)(2), including the use of those harbors for—

“(i) commercial navigation, including the movement of goods;

“(ii) domestic trade;

“(iii) international trade;

“(iv) commercial fishing;

“(v) subsistence, including use by Indian tribes (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b)) for subsistence and ceremonial purposes;

“(vi) use as a harbor of refuge;

“(vii) transportation of persons;

“(viii) purposes relating to domestic energy production, including the fabrication, servicing, or supply of domestic offshore energy production facilities;

“(ix) activities of the Secretary of the department in which the Coast Guard is operating;

“(x) activities of the Secretary of the Navy;

“(xi) public health and safety related equipment for responding to coastal and inland emergencies;

“(xii) recreation purposes; and

“(xiii) other authorized purposes.

“(3) REPORT TO CONGRESS.—

“(A) IN GENERAL.—For fiscal year 2016, and biennially thereafter, in conjunction with the President’s annual budget submission to Congress under section 1105(a) of title 31, United States Code, the Secretary shall submit to the Committee on Environment and Public Works and the Committee on Appropriations of the Senate and the Committee on Transportation and Infrastructure and the Committee on Appropriations of the House of Representatives a report that, with respect to harbors and inland harbors referred to in subsection (a)(2)—

“(i) identifies the operation and maintenance costs associated with the harbors and inland harbors, including those costs required to achieve and maintain the constructed width and depth for the harbors and inland harbors and the costs for expanded uses at eligible harbors and inland harbors, on a project-by-project basis;

“(ii) identifies the amount of funding requested in the President’s budget for the operation and maintenance costs associated with the harbors and inland harbors, on a project-by-project basis;

“(iii) identifies the unmet operation and maintenance needs associated with the harbors and inland harbors, on a project-by-project basis; and

“(iv) identifies the harbors and inland harbors for which the President will allocate funding over the subsequent 5 fiscal years for operation and maintenance activities, on a project-by-project basis, including the amounts to be allocated for such purposes.

“(B) PUBLIC AVAILABILITY.—The Secretary shall make the report submitted under subparagraph (A) available to the public, including on the Internet.

“(f) DEFINITIONS.—In this section:

“(1) CONSTRUCTED WIDTH AND DEPTH.—The term ‘constructed width and depth’ means the width and depth to which a project has been constructed, which may not exceed the authorized width and depth of the project.

“(2) EMERGING HARBOR PROJECT.—The term ‘emerging harbor project’ means a project that is assigned to a harbor or inland harbor referred to in subsection (a)(2) that transits less than 1,000,000 tons of cargo annually.

“(3) EXPANDED USES.—The term ‘expanded uses’ means the following activities:

“(A) The maintenance dredging of a berth in a harbor that is accessible to a Federal navigation project and that benefits commercial navigation at the harbor.

“(B) The maintenance dredging and disposal of legacy-contaminated sediment, and sediment unsuitable for open water disposal, if—

“(i) such dredging and disposal benefits commercial navigation at the harbor; and

“(ii) such sediment is located in and affects the maintenance of a Federal navigation project or is located in a berth that is accessible to a Federal navigation project.

“(4) GREAT LAKES NAVIGATION SYSTEM.—The term ‘Great Lakes Navigation System’ includes—

“(A)(i) Lake Superior;

“(ii) Lake Huron;

“(iii) Lake Michigan;

“(iv) Lake Erie; and

“(v) Lake Ontario;

“(B) all connecting waters between the lakes referred to in subparagraph (A) used for commercial navigation;

“(C) any navigation features in the lakes referred to in subparagraph (A) or waters described in subparagraph (B) that are a Federal operation or maintenance responsibility; and

“(D) areas of the Saint Lawrence River that are operated or maintained by the Federal Government for commercial navigation.

“(5) HARBOR MAINTENANCE TAX.—The term ‘harbor maintenance tax’ means the amounts collected under section 4461 of the Internal Revenue Code of 1986.

“(6) HIGH-USE HARBOR PROJECT.—The term ‘high-use harbor project’ means a project that is assigned to a harbor or inland harbor referred to in subsection (a)(2) that transits not less than 10,000,000 tons of cargo annually.

“(7) MODERATE-USE HARBOR PROJECT.—The term ‘moderate-use harbor project’ means a project that is assigned to a harbor

or inland harbor referred to in subsection (a)(2) that transits annually—

“(A) more than 1,000,000 tons of cargo; but

“(B) less than 10,000,000 tons of cargo.

“(8) PRIORITY FUNDS.—The term ‘priority funds’ means the difference between—

“(A) the total funds that are made available under this section to pay the costs described in subsection (a)(2) for a fiscal year; and

“(B) the total funds made available under this section to pay the costs described in subsection (a)(2) in fiscal year 2012.

“(9) UNDERSERVED HARBOR PROJECT.—

“(A) IN GENERAL.—The term ‘underserved harbor project’ means a project that is assigned to a harbor or inland harbor referred to in subsection (a)(2)—

“(i) that is a moderate-use harbor project or an emerging harbor project;

“(ii) that has been maintained at less than the constructed width and depth of the project during each of the preceding 6 fiscal years; and

“(iii) for which State and local investments in infrastructure have been made at those projects during the preceding 6 fiscal years.

“(B) ADMINISTRATION.—For purposes of this paragraph, State and local investments in infrastructure shall include infrastructure investments made using amounts made available for activities under section 105(a)(9) of the Housing and Community Development Act of 1974 (42 U.S.C. 5305(a)(9)).”

(b) OPERATION AND MAINTENANCE.—Section 101(b)(1) of the Water Resources Development Act of 1986 (33 U.S.C. 2211(b)(1)) is amended by striking “45 feet” and inserting “50 feet”.

(c) CONFORMING AMENDMENT.—Section 9505(c)(1) of the Internal Revenue Code of 1986 is amended by striking “(as in effect on the date of the enactment of the Water Resources Development Act of 1996)”.

SEC. 2103. CONSOLIDATION OF DEEP DRAFT NAVIGATION EXPERTISE.

Section 2033(e) of the Water Resources Development Act of 2007 (33 U.S.C. 2282a(e)) is amended by adding at the end the following:

“(3) DEEP DRAFT NAVIGATION PLANNING CENTER OF EXPERTISE.—

“(A) IN GENERAL.—The Secretary shall consolidate deep draft navigation expertise within the Corps of Engineers into a deep draft navigation planning center of expertise.

“(B) LIST.—Not later than 60 days after the date of the consolidation required under subparagraph (A), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a list of the grade levels and expertise of each of the personnel assigned to the center described in subparagraph (A).”

SEC. 2104. REMOTE AND SUBSISTENCE HARBORS.

Section 2006 of the Water Resources Development Act of 2007 (33 U.S.C. 2242) is amended—

(1) in subsection (a)—

(A) in paragraph (1)(B) by inserting “or Alaska” after “Hawaii”; and

(B) in paragraph (2)—

(i) by striking “community” and inserting “region”; and

(ii) by inserting “, as determined by the Secretary, including consideration of information provided by the non-Federal interest” after “improvement”; and

(2) by adding at the end the following:

“(c) **PRIORITIZATION.**—Projects recommended by the Secretary under subsection (a) shall be given equivalent budget consideration and priority as projects recommended solely by national economic development benefits.

“(d) **DISPOSITION.**—

“(1) **IN GENERAL.**—The Secretary may carry out any project identified in the study carried out pursuant to subsection (a) in accordance with the criteria for projects carried out under the authority of the Secretary under section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577).

“(2) **NON-FEDERAL INTERESTS.**—In evaluating and implementing a project under this section, the Secretary shall allow a non-Federal interest to participate in the financing of a project in accordance with the criteria established for flood control projects under section 903(c) of the Water Resources Development Act of 1986 (Public Law 99-662; 100 Stat. 4184).

“(e) **ANNUAL REPORT.**—For a project that cannot be carried out under the authority specified in subsection (d), on a determination by the Secretary of the feasibility of the project under subsection (a), the Secretary may include a recommendation concerning the project in the annual report submitted to Congress under section 7001.”.

SEC. 2105. ARCTIC DEEP DRAFT PORT DEVELOPMENT PARTNERSHIPS.

(a) **IN GENERAL.**—The Secretary may provide technical assistance to non-Federal public entities, including Indian tribes (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b)), for the development, construction, operation, and maintenance of channels, harbors, and related infrastructure associated with deep draft ports for purposes of dealing with Arctic development and security needs.

(b) **ACCEPTANCE OF FUNDS.**—The Secretary is authorized to accept and expend funds provided by non-Federal public entities, including Indian tribes (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b)), to carry out the technical assistance activities described in subsection (a).

(c) **LIMITATION.**—No assistance may be provided under this section until after the date on which the entity to which that assistance is to be provided enters into a written agreement with the Secretary that includes such terms and conditions as the Secretary determines to be appropriate and in the public interest.

(d) **PRIORITIZATION.**—The Secretary shall prioritize technical assistance provided under this section for Arctic deep draft ports

identified by the Secretary, the Secretary of Homeland Security, and the Secretary of Defense as important for Arctic development and security.

SEC. 2106. ADDITIONAL MEASURES AT DONOR PORTS AND ENERGY TRANSFER PORTS.

(a) **DEFINITIONS.**—In this section:

(1) **CARGO CONTAINER.**—The term “cargo container” means a cargo container that is 1 Twenty-foot Equivalent Unit.

(2) **DONOR PORT.**—The term “donor port” means a port—

(A) that is subject to the harbor maintenance fee under section 24.24 of title 19, Code of Federal Regulations (or a successor regulation);

(B) at which the total amount of harbor maintenance taxes collected comprise not less than \$15,000,000 annually of the total funding of the Harbor Maintenance Trust Fund established under section 9505 of the Internal Revenue Code of 1986;

(C) that received less than 25 percent of the total amount of harbor maintenance taxes collected at that port in the previous 5 fiscal years; and

(D) that is located in a State in which more than 2,000,000 cargo containers were unloaded from or loaded on to vessels in fiscal year 2012.

(3) **ENERGY COMMODITY.**—The term “energy commodity” includes—

(A) petroleum products;

(B) natural gas;

(C) coal;

(D) wind and solar energy components; and

(E) biofuels.

(4) **ENERGY TRANSFER PORT.**—The term “energy transfer port” means a port—

(A) that is subject to the harbor maintenance fee under section 24.24 of title 19, Code of Federal Regulation (or any successor regulation); and

(B)(i) at which energy commodities comprised greater than 25 percent of all commercial activity by tonnage in fiscal year 2012; and

(ii) through which more than 40,000,000 tons of cargo were transported in fiscal year 2012.

(5) **EXPANDED USES.**—The term “expanded uses” has the meaning given the term in section 210(f) of the Water Resources Development Act of 1986 (33 U.S.C. 2238(f)).

(6) **HARBOR MAINTENANCE TAX.**—The term “harbor maintenance tax” has the meaning given the term in section 210(f) of the Water Resources Development Act of 1986 (33 U.S.C. 2238(f)).

(b) **AUTHORITY.**—

(1) **IN GENERAL.**—Subject to the availability of appropriations, the Secretary may provide to donor ports and energy transfer ports amounts in accordance with this section.

(2) **LIMITATIONS.**—Amounts provided under this section—

(A) for energy transfer ports shall be divided equally among all States with an energy transfer port; and

(B) shall be made available to a port as either a donor port or an energy transfer port and no port may receive

amounts as both a donor port and an energy transfer port.

(c) **USE OF FUNDS.**—Amounts provided under this section may be used by a donor port or an energy transfer port—

(1) to provide payments to importers entering cargo or shippers transporting cargo through that port, as calculated by U.S. Customs and Border Protection according to the amount of harbor maintenance taxes collected;

(2) for expanded uses; or

(3) for environmental remediation related to dredging berths and Federal navigation channels.

(d) **ADMINISTRATION OF PAYMENTS.**—If a donor port or an energy transfer port elects to provide payments to importers or shippers under subsection (c), the Secretary shall transfer the amount that would otherwise be provided to the port under this section that is equal to those payments to the Commissioner of U.S. Customs and Border Protection to provide the payments to the importers or shippers.

(e) **REPORT TO CONGRESS.**—

(1) **IN GENERAL.**—Not later than 18 months after the date of enactment of this section, the Secretary shall assess the impact of the authority provided by this section and submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report on the results of that assessment, including any recommendations for amending or reauthorizing the authority.

(2) **FACTORS.**—In carrying out the assessment under paragraph (1), the Secretary shall assess—

(A) the impact of the amounts provided and used under this section on those ports that received funds under this section; and

(B) any impact on domestic harbors and ports that did not receive funds under this section.

(f) **AUTHORIZATION OF APPROPRIATIONS.**—

(1) **IN GENERAL.**—There is authorized to be appropriated to carry out this section \$50,000,000 for each of fiscal years 2015 through 2018.

(2) **DIVISION BETWEEN DONOR PORTS AND ENERGY TRANSFER PORTS.**—For each fiscal year, amounts made available to carry out this section shall be provided in equal amounts to donor ports and energy transfer ports.

(3) **ADDITIONAL APPROPRIATIONS.**—If the target total budget resources under subparagraphs (A) through (D) of section 2101(b)(1) are met for each of fiscal years 2015 through 2018, there is authorized to be appropriated to carry out this section \$50,000,000 for each of fiscal years 2019 through 2022.

SEC. 2107. PRESERVING UNITED STATES HARBORS.

(a) **IN GENERAL.**—Upon a request from a non-Federal interest, the Secretary shall review a report developed by the non-Federal interest that provides an economic justification for Federal investment in the operation and maintenance of a federally authorized harbor or inland harbor (referred to in this section as a “federally authorized harbor”).

(b) **JUSTIFICATION OF INVESTMENT.**—A report submitted under subsection (a) may provide for an economic justification of Federal

investment in the operation and maintenance of a federally authorized harbor based on—

(1) the projected economic benefits, including transportation savings and job creation; and

(2) other factors, including navigation safety, national security, and sustainability of subsistence harbors.

(c) WRITTEN RESPONSE.—Not later than 180 days after the date on which the Secretary receives a report under subsection (a), the Secretary shall provide to the non-Federal interest a written response to the report, including an assessment of the information provided by the non-Federal interest.

(d) PRIORITIZATION.—As the Secretary determines to be appropriate, the Secretary may use the information provided in the report under subsection (a) to justify additional operation and maintenance funding for a federally authorized harbor in accordance with section 101(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2211(b)).

(e) LIMITATION ON STATUTORY CONSTRUCTION.—Nothing in this section may be construed to preclude the operation and maintenance of a federally authorized harbor under section 101(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2211(b)).

TITLE III—SAFETY IMPROVEMENTS AND ADDRESSING EXTREME WEATHER EVENTS

Subtitle A—Dam Safety

SEC. 3001. DAM SAFETY.

(a) ADMINISTRATOR.—

(1) IN GENERAL.—The National Dam Safety Program Act (33 U.S.C. 467 et seq.) is amended by striking “Director” each place it appears and inserting “Administrator”.

(2) CONFORMING AMENDMENT.—Section 2 of the National Dam Safety Program Act (33 U.S.C. 467) is amended—

(A) by striking paragraph (3);

(B) by redesignating paragraphs (1) and (2) as paragraphs (2) and (3), respectively; and

(C) by inserting before paragraph (2) (as redesignated by subparagraph (B)) the following:

“(1) ADMINISTRATOR.—The term ‘Administrator’ means the Administrator of the Federal Emergency Management Agency.”.

(b) INSPECTION OF DAMS.—Section 3(b)(1) of the National Dam Safety Program Act (33 U.S.C. 467a(b)(1)) is amended by striking “or maintenance” and inserting “maintenance, condition, or provisions for emergency operations”.

(c) NATIONAL DAM SAFETY PROGRAM.—

(1) OBJECTIVES.—Section 8(c) of the National Dam Safety Program Act (33 U.S.C. 467f(c)) is amended by striking paragraph (4) and inserting the following:

“(4) develop and implement a comprehensive dam safety hazard education and public awareness initiative to assist the public in preparing for, mitigating, responding to, and recovering from dam incidents;”.

(2) BOARD.—Section 8(f)(4) of the National Dam Safety Program Act (33 U.S.C. 467f(f)(4)) is amended by inserting “, representatives from nongovernmental organizations,” after “State agencies”.

(d) PUBLIC AWARENESS AND OUTREACH FOR DAM SAFETY.—The National Dam Safety Program Act (33 U.S.C. 467 et seq.) is amended—

(1) by redesignating sections 11, 12, and 13 as sections 12, 13, and 14, respectively; and

(2) by inserting after section 10 (33 U.S.C. 467g–1) the following:

“SEC. 11. PUBLIC AWARENESS AND OUTREACH FOR DAM SAFETY.

“The Administrator, in consultation with other Federal agencies, State and local governments, dam owners, the emergency management community, the private sector, nongovernmental organizations and associations, institutions of higher education, and any other appropriate entities shall, subject to the availability of appropriations, carry out a nationwide public awareness and outreach initiative to assist the public in preparing for, mitigating, responding to, and recovering from dam incidents.”.

(e) AUTHORIZATION OF APPROPRIATIONS.—

(1) NATIONAL DAM SAFETY PROGRAM.—

(A) ANNUAL AMOUNTS.—Section 14(a)(1) of the National Dam Safety Program Act (33 U.S.C. 467j(a)(1)) (as so redesignated) is amended by striking “\$6,500,000” and all that follows through “2011” and inserting “\$9,200,000 for each of fiscal years 2015 through 2019”.

(B) MAXIMUM AMOUNT OF ALLOCATION.—Section 14(a)(2)(B) of the National Dam Safety Program Act (33 U.S.C. 467j(a)(2)(B)) (as so redesignated) is amended—

(i) by striking “The amount” and inserting the following:

“(i) IN GENERAL.—The amount”; and

(ii) by adding at the end the following:

“(ii) FISCAL YEAR 2015 AND SUBSEQUENT FISCAL YEARS.—For fiscal year 2015 and each subsequent fiscal year, the amount of funds allocated to a State under this paragraph may not exceed the amount of funds committed by the State to implement dam safety activities.”.

(2) NATIONAL DAM INVENTORY.—Section 14(b) of the National Dam Safety Program Act (33 U.S.C. 467j(b)) (as so redesignated) is amended by striking “\$650,000” and all that follows through “2011” and inserting “\$500,000 for each of fiscal years 2015 through 2019”.

(3) PUBLIC AWARENESS.—Section 14 of the National Dam Safety Program Act (33 U.S.C. 467j) (as so redesignated) is amended—

(A) by redesignating subsections (c) through (f) as subsections (d) through (g), respectively; and

(B) by inserting after subsection (b) the following:

“(c) PUBLIC AWARENESS.—There is authorized to be appropriated to carry out section 11 \$1,000,000 for each of fiscal years 2015 through 2019.”.

(4) RESEARCH.—Section 14(d) of the National Dam Safety Program Act (as so redesignated) is amended by striking

“\$1,600,000” and all that follows through “2011” and inserting “\$1,450,000 for each of fiscal years 2015 through 2019”.

(5) DAM SAFETY TRAINING.—Section 14(e) of the National Dam Safety Program Act (as so redesignated) is amended by striking “\$550,000” and all that follows through “2011” and inserting “\$750,000 for each of fiscal years 2015 through 2019”.

(6) STAFF.—Section 14(f) of the National Dam Safety Program Act (as so redesignated) is amended by striking “\$700,000” and all that follows through “2011” and inserting “\$1,000,000 for each of fiscal years 2015 through 2019”.

(f) TECHNICAL AMENDMENT.—Section 14(a)(1) of the National Dam Safety Program Act (33 U.S.C. 467j(a)(1)) (as so redesignated) is amended by striking “sections 7, 8, and 11” and inserting “sections 7, 8, and 12”.

Subtitle B—Levee Safety

SEC. 3011. SYSTEMWIDE IMPROVEMENT FRAMEWORK.

A levee system shall remain eligible for rehabilitation assistance under the authority provided by section 5 of the Act of August 18, 1941 (33 U.S.C. 701n) as long as the levee system sponsor continues to make satisfactory progress, as determined by the Secretary, on an approved systemwide improvement framework or letter of intent.

SEC. 3012. MANAGEMENT OF FLOOD RISK REDUCTION PROJECTS.

(a) IN GENERAL.—If 2 or more flood control projects are located within the same geographic area, the Secretary shall, at the request of the non-Federal interests for the affected projects, consider those projects as a single program for budgetary or project management purposes, if the Secretary determines that doing so would not be incompatible with the authorized project purposes.

(b) COST SHARE.—

(1) IN GENERAL.—If any work on a project to which subsection (a) applies is required solely because of impacts to that project from a navigation project, the cost of carrying out that work shall be shared in accordance with the cost-sharing requirements for the navigation project.

(2) USE OF AMOUNTS.—Work described in paragraph (1) may be carried out using amounts made available under subsection (a).

SEC. 3013. VEGETATION MANAGEMENT POLICY.

(a) DEFINITION OF GUIDELINES.—In this section, the term “guidelines” means the Corps of Engineers policy guidelines for management of vegetation on levees, including—

(1) Engineering Technical Letter 1110–2–571 entitled “Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures” and adopted April 10, 2009; and

(2) the draft policy guidance letter entitled “Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls” (77 Fed. Reg. 9637 (Feb. 17, 2012)).

(b) REVIEW.—The Secretary shall carry out a comprehensive review of the guidelines in order to determine whether current Federal policy relating to levee vegetation is appropriate for all regions of the United States.

(c) FACTORS.—

(1) IN GENERAL.—In carrying out the review, the Secretary shall consider—

(A) the varied interests and responsibilities in managing flood risks, including the need—

(i) to provide the greatest benefits for public safety with limited resources; and

(ii) to ensure that levee safety investments minimize environmental impacts and provide corresponding public safety benefits;

(B) the levee safety benefits that can be provided by woody vegetation;

(C) the preservation, protection, and enhancement of natural resources, including—

(i) the benefit of vegetation on levees in providing habitat for species of concern, including endangered, threatened, and candidate species; and

(ii) the impact of removing levee vegetation on compliance with other regulatory requirements;

(D) protecting the rights of Indian tribes pursuant to treaties and statutes;

(E) determining how vegetation impacts the performance of a levee or levee system during a storm or flood event;

(F) the available science and the historical record regarding the link between vegetation on levees and flood risk;

(G) the avoidance of actions requiring significant economic costs and environmental impacts; and

(H) other factors relating to the factors described in subparagraphs (A) through (F) identified in public comments that the Secretary determines to be appropriate.

(2) VARIANCE CONSIDERATIONS.—

(A) IN GENERAL.—In carrying out the review, the Secretary shall specifically consider factors that promote and allow for consideration of variances from guidelines on a Statewide, tribal, regional, or watershed basis, including variances based on—

(i) regional or watershed soil conditions;

(ii) hydrologic factors;

(iii) vegetation patterns and characteristics;

(iv) environmental resources, including endangered, threatened, or candidate species and related regulatory requirements;

(v) levee performance history, including historical information on original construction and subsequent operation and maintenance activities;

(vi) any effects on water supply;

(vii) any scientific evidence on the link between levee vegetation and levee safety;

(viii) institutional considerations, including implementation challenges and conflicts with or violations of Federal or State environmental laws;

(ix) the availability of limited funds for levee construction and rehabilitation;

(x) the economic and environmental costs of removing woody vegetation on levees; and

(xi) other relevant factors identified in public comments that the Secretary determines to be appropriate.

(B) SCOPE.—The scope of a variance approved by the Secretary may include a complete exemption to guidelines, if appropriate.

(d) COOPERATION AND CONSULTATION; RECOMMENDATIONS.—

(1) IN GENERAL.—The Secretary shall carry out the review under this section in consultation with other applicable Federal agencies, representatives of State, regional, local, and tribal governments, appropriate nongovernmental organizations, and the public.

(2) RECOMMENDATIONS.—

(A) REGIONAL INTEGRATION TEAMS.—Corps of Engineers Regional Integration Teams, representing districts, divisions, and headquarters, in consultation with State and Federal resource agencies, and with participation by local agencies, shall submit to the Secretary any recommendations for vegetation management policies for levees that conform with Federal and State laws and other applicable requirements, including recommendations relating to the review of guidelines under subsection (b) and the consideration of variances under subsection (c)(2).

(B) STATE, TRIBAL, REGIONAL, AND LOCAL ENTITIES.—The Secretary shall consider and accept recommendations from any State, tribal, regional, or local entity for vegetation management policies for levees that conform with Federal and State laws and other applicable requirements, including recommendations relating to the review of guidelines under subsection (b) and the consideration of variances under subsection (c)(2).

(e) INDEPENDENT CONSULTATION.—

(1) IN GENERAL.—As part of the review, the Secretary shall solicit and consider the views of independent experts on the engineering, environmental, and institutional considerations underlying the guidelines, including the factors described in subsection (c) and any information obtained by the Secretary under subsection (d).

(2) AVAILABILITY OF VIEWS.—The views of the independent experts obtained under paragraph (1) shall be—

(A) made available to the public; and

(B) included in supporting materials issued in connection with the revised guidelines required under subsection (f).

(f) REVISION OF GUIDELINES.—

(1) IN GENERAL.—Not later than 18 months after the date of enactment of this Act, the Secretary shall—

(A) revise the guidelines based on the results of the review, including—

(i) recommendations received as part of the consultation described in subsection (d)(1); and

(ii) the views received under subsection (e);

(B) provide the public not less than 30 days to review and comment on draft guidelines before issuing final guidelines; and

(C) submit to Congress and make publicly available a report that contains a summary of the activities of the

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Secretary and a description of the findings of the Secretary under this section.

(2) **CONTENT; INCORPORATION INTO MANUAL.**—The revised guidelines shall—

(A) provide a practical, flexible process for approving Statewide, tribal, regional, or watershed variances from the guidelines that—

(i) reflect due consideration of the factors described in subsection (c); and

(ii) incorporate State, tribal, and regional vegetation management guidelines for specific areas that—

(I) are consistent with the guidelines; and

(II) have been adopted through a formal public process; and

(B) be incorporated into the manual proposed under section 5(c) of the Act of August 18, 1941 (33 U.S.C. 701n(c)).

(3) **FAILURE TO MEET DEADLINES.**—If the Secretary fails to submit a report by the required deadline under this subsection, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a detailed explanation of—

(A) why the deadline was missed;

(B) solutions needed to meet the deadline; and

(C) a projected date for submission of the report.

(g) **INTERIM ACTIONS.**—

(1) **IN GENERAL.**—Until the date on which revisions to the guidelines are adopted in accordance with subsection (f), the Secretary shall not require the removal of existing vegetation as a condition or requirement for any approval or funding of a project, or any other action, unless the specific vegetation has been demonstrated to present an unacceptable safety risk.

(2) **REVISIONS.**—Beginning on the date on which the revisions to the guidelines are adopted in accordance with subsection (f), the Secretary shall reconsider, on request of an affected entity, any previous action of the Corps of Engineers in which the outcome was affected by the former guidelines.

SEC. 3014. LEVEE CERTIFICATIONS.

(a) **IMPLEMENTATION OF FLOOD PROTECTION STRUCTURE ACCREDITATION TASK FORCE.**—In carrying out section 100226 of Public Law 112–141 (42 U.S.C. 4101 note; 126 Stat. 942), the Secretary shall—

(1) ensure that at least 1 program activity carried out under the inspection of completed works program of the Corps of Engineers provides adequate information to the Secretary to reach a levee accreditation decision under section 65.10 of title 44, Code of Federal Regulations (or successor regulation); and

(2) to the maximum extent practicable, carry out activities under the inspection of completed works program of the Corps of Engineers in alignment with the schedule established for the national flood insurance program established under chapter 1 of the National Flood Insurance Act of 1968 (42 U.S.C. 4011 et seq.).

(b) **ACCELERATED LEVEE SYSTEM EVALUATIONS.**—

(1) **IN GENERAL.**—On receipt of a request from a non-Federal interest, the Secretary may carry out a levee system evaluation of a federally authorized levee for purposes of the national flood insurance program established under chapter 1 of the National Flood Insurance Act of 1968 (42 U.S.C. 4011 et seq.) if the evaluation will be carried out earlier than such an evaluation would be carried out under subsection (a).

(2) **REQUIREMENTS.**—A levee system evaluation under paragraph (1) shall—

(A) at a minimum, comply with section 65.10 of title 44, Code of Federal Regulations (as in effect on the date of enactment of this Act); and

(B) be carried out in accordance with such procedures as the Secretary, in consultation with the Administrator of the Federal Emergency Management Agency, may establish.

(3) **FUNDING.**—

(A) **IN GENERAL.**—The Secretary may use amounts made available under section 22 of the Water Resources Development Act of 1974 (42 U.S.C. 1962d–16) to carry out this subsection.

(B) **COST SHARE.**—The Secretary shall apply the cost share under section 22(b) of the Water Resources Development Act of 1974 (42 U.S.C. 1962d–16(b)) to any activities carried out under this subsection.

SEC. 3015. PLANNING ASSISTANCE TO STATES.

Section 22 of the Water Resources Development Act of 1974 (42 U.S.C. 1962d–16) is amended—

(1) in subsection (a)—

(A) in paragraph (1)—

(i) by inserting “or other non-Federal interest working with a State” after “cooperate with any State”; and

(ii) by inserting “, including plans to comprehensively address water resources challenges,” after “of such State”; and

(B) in paragraph (2)(A), by striking “, at Federal expense,”;

(2) in subsection (b)—

(A) in paragraph (1), by striking “subsection (a)(1)” each place it appears and inserting “subsection (a)”;

(B) by redesignating paragraphs (2) and (3) as paragraphs (3) and (4), respectively; and

(C) by inserting after paragraph (1) the following:

“(2) **CONTRIBUTED FUNDS.**—The Secretary may accept and expend funds in excess of the fees established under paragraph (1) that are provided by a State or other non-Federal interest for assistance under this section.”; and

(3) in subsection (c)—

(A) in paragraph (1)—

(i) by striking “\$10,000,000” and inserting “\$30,000,000”; and

(ii) by striking “\$2,000,000” and inserting “\$5,000,000 in Federal funds”; and

(B) in paragraph (2), by striking “\$5,000,000” and inserting “\$15,000,000”.

SEC. 3016. LEVEE SAFETY.

(a) **PURPOSES.**—Section 9001 of the Water Resources Development Act of 2007 (33 U.S.C. 3301 note) is amended—

(1) in the section heading, by inserting “; **PURPOSES**” after “**TITLE**”;

(2) by striking “This title” and inserting the following:

“(a) **SHORT TITLE.**—This title”; and

(3) by adding at the end the following:

“(b) **PURPOSES.**—The purposes of this title are—

“(1) to ensure that human lives and property that are protected by new and existing levees are safe;

“(2) to encourage the use of appropriate engineering policies, procedures, and technical practices for levee site investigation, design, construction, operation and maintenance, inspection, assessment, and emergency preparedness;

“(3) to develop and support public education and awareness projects to increase public acceptance and support of levee safety programs and provide information;

“(4) to build public awareness of the residual risks associated with living in levee protected areas;

“(5) to develop technical assistance materials, seminars, and guidelines to improve the security of levees of the United States; and

“(6) to encourage the establishment of effective State and tribal levee safety programs.”

(b) **DEFINITIONS.**—Section 9002 of the Water Resources Development Act of 2007 (33 U.S.C. 3301) is amended—

(1) by redesignating paragraphs (1), (2), (3), (4), (5), and (6), as paragraphs (3), (6), (7), (14), (15), and (16), respectively;

(2) by inserting before paragraph (3) (as redesignated by paragraph (1)) the following:

“(1) **ADMINISTRATOR.**—The term ‘Administrator’ means the Administrator of the Federal Emergency Management Agency.

“(2) **CANAL STRUCTURE.**—

“(A) **IN GENERAL.**—The term ‘canal structure’ means an embankment, wall, or structure along a canal or man-made watercourse that—

“(i) constrains water flows;

“(ii) is subject to frequent water loading; and

“(iii) is an integral part of a flood risk reduction system that protects the leveed area from flood waters associated with hurricanes, precipitation events, seasonal high water, and other weather-related events.

“(B) **EXCLUSION.**—The term ‘canal structure’ does not include a barrier across a watercourse.”;

(3) by inserting after paragraph (3) (as redesignated by paragraph (1)) the following:

“(4) **FLOODPLAIN MANAGEMENT.**—The term ‘floodplain management’ means the operation of a community program of corrective and preventative measures for reducing flood damage.

“(5) **INDIAN TRIBE.**—The term ‘Indian tribe’ has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b).”; and

(4) by striking paragraph (7) (as redesignated by paragraph (1)) and inserting the following:

“(7) **LEVEE.**—

“(A) IN GENERAL.—The term ‘levee’ means a manmade barrier (such as an embankment, floodwall, or other structure)—

“(i) the primary purpose of which is to provide hurricane, storm, or flood protection relating to seasonal high water, storm surges, precipitation, or other weather events; and

“(ii) that is normally subject to water loading for only a few days or weeks during a calendar year.

“(B) INCLUSIONS.—The term ‘levee’ includes a levee system, including—

“(i) levees and canal structures that—

“(I) constrain water flows;

“(II) are subject to more frequent water loading; and

“(III) do not constitute a barrier across a watercourse; and

“(ii) roadway and railroad embankments, but only to the extent that the embankments are integral to the performance of a flood damage reduction system.

“(C) EXCLUSIONS.—The term ‘levee’ does not include—

“(i) a roadway or railroad embankment that is not integral to the performance of a flood damage reduction system;

“(ii) a canal constructed completely within natural ground without any manmade structure (such as an embankment or retaining wall to retain water or a case in which water is retained only by natural ground);

“(iii) a canal regulated by a Federal or State agency in a manner that ensures that applicable Federal safety criteria are met;

“(iv) a levee or canal structure—

“(I) that is not a part of a Federal flood damage reduction system;

“(II) that is not recognized under the National Flood Insurance Program as providing protection from the 1-percent-annual-chance or greater flood;

“(III) that is not greater than 3 feet high;

“(IV) the population in the leveed area of which is less than 50 individuals; and

“(V) the leveed area of which is less than 1,000 acres; or

“(v) any shoreline protection or river bank protection system (such as revetments or barrier islands).

“(8) LEVEE FEATURE.—The term ‘levee feature’ means a structure that is critical to the functioning of a levee, including—

“(A) an embankment section;

“(B) a floodwall section;

“(C) a closure structure;

“(D) a pumping station;

“(E) an interior drainage work; and

“(F) a flood damage reduction channel.

“(9) LEVEE SYSTEM.—The term ‘levee system’ means 1 or more levee segments, including all levee features that are interconnected and necessary to ensure protection of the associated leveed areas—

“(A) that collectively provide flood damage reduction to a defined area; and

“(B) the failure of 1 of which may result in the failure of the entire system.

“(10) NATIONAL LEVEE DATABASE.—The term ‘national levee database’ means the levee database established under section 9004.

“(11) PARTICIPATING PROGRAM.—The term ‘participating program’ means a levee safety program developed by a State or Indian tribe that includes the minimum components necessary for recognition by the Secretary.

“(12) REHABILITATION.—The term ‘rehabilitation’ means the repair, replacement, reconstruction, removal of a levee, or reconfiguration of a levee system, including a setback levee, that is carried out to reduce flood risk or meet national levee safety guidelines.

“(13) RISK.—The term ‘risk’ means a measure of the probability and severity of undesirable consequences.”.

(c) COMMITTEE ON LEVEE SAFETY.—Section 9003 of the Water Resources Development Act of 2007 (33 U.S.C. 3302) is amended—

(1) in subsection (b)—

(A) by striking paragraphs (1) and (2) and inserting the following:

“(1) NONVOTING MEMBERS.—The following 2 nonvoting members:

“(A) The Secretary (or a designee of the Secretary).

“(B) The Administrator (or a designee of the Administrator).”;

(B) by redesignating paragraph (3) as paragraph (2);

and

(C) in paragraph (2) (as redesignated by subparagraph

(B)) by inserting “voting” after “14”;

(2) by redesignating subsection (g) as subsection (h); and

(3) by striking subsections (c) through (f) and inserting

the following:

“(c) ADMINISTRATION.—

“(1) TERMS OF VOTING MEMBERS.—

“(A) IN GENERAL.—A voting member of the committee shall be appointed for a term of 3 years, except that, of the members first appointed—

“(i) 5 shall be appointed for a term of 1 year;

“(ii) 5 shall be appointed for a term of 2 years;

and

“(iii) 4 shall be appointed for a term of 3 years.

“(B) REAPPOINTMENT.—A voting member of the committee may be reappointed to the committee, as the Secretary determines to be appropriate.

“(C) VACANCIES.—A vacancy on the committee shall be filled in the same manner as the original appointment was made.

“(2) CHAIRPERSON.—

“(A) IN GENERAL.—The voting members of the committee shall appoint a chairperson from among the voting members of the committee.

“(B) TERM.—The chairperson shall serve a term of not more than 2 years.

“(d) STANDING COMMITTEES.—

“(1) IN GENERAL.—The committee may establish standing committees comprised of volunteers from all levels of government and the private sector, to advise the committee regarding specific levee safety issues, including participating programs, technical issues, public education and awareness, and safety and the environment.

“(2) MEMBERSHIP.—The committee shall recommend to the Secretary for approval individuals for membership on the standing committees.

“(e) DUTIES AND POWERS.—The committee—

“(1) shall submit to the Secretary and Congress an annual report regarding the effectiveness of the levee safety initiative in accordance with section 9006; and

“(2) may secure from other Federal agencies such services, and enter into such contracts, as the committee determines to be necessary to carry out this subsection.

“(f) TASK FORCE COORDINATION.—The committee shall, to the maximum extent practicable, coordinate the activities of the committee with the Federal Interagency Floodplain Management Task Force.

“(g) COMPENSATION.—

“(1) FEDERAL EMPLOYEES.—Each member of the committee who is an officer or employee of the United States—

“(A) shall serve without compensation in addition to compensation received for the services of the member as an officer or employee of the United States; but

“(B) shall be allowed a per diem allowance for travel expenses, at rates authorized for an employee of an agency under subchapter I of chapter 57 of title 5, United States Code, while away from the home or regular place of business of the member in the performance of the duties of the committee.

“(2) NON-FEDERAL EMPLOYEES.—To the extent amounts are made available to carry out this section in appropriations Acts, the Secretary shall provide to each member of the committee who is not an officer or employee of the United States a stipend and a per diem allowance for travel expenses, at rates authorized for an employee of an agency under subchapter I of chapter 57 of title 5, United States Code, while away from the home or regular place of business of the member in performance of services for the committee.

“(3) STANDING COMMITTEE MEMBERS.—Each member of a standing committee shall serve in a voluntary capacity.”

(d) INVENTORY OF LEVEES.—Section 9004 of the Water Resources Development Act of 2007 (33 U.S.C. 3303) is amended—

(1) in subsection (a)(2)(A) by striking “and, for non-Federal levees, such information on levee location as is provided to the Secretary by State and local governmental agencies” and inserting “and updated levee information provided by States, Indian tribes, Federal agencies, and other entities”; and

(2) by adding at the end the following:

“(c) LEVEE REVIEW.—

“(1) IN GENERAL.—The Secretary shall carry out a one-time inventory and review of all levees identified in the national levee database.

“(2) NO FEDERAL INTEREST.—The inventory and inspection under paragraph (1) does not create a Federal interest in the construction, operation, or maintenance of any levee that is included in the inventory or inspected under this subsection.

“(3) REVIEW CRITERIA.—In carrying out the inventory and review, the Secretary shall use the levee safety action classification criteria to determine whether a levee should be classified in the inventory as requiring a more comprehensive inspection.

“(4) STATE AND TRIBAL PARTICIPATION.—At the request of a State or Indian tribe with respect to any levee subject to review under this subsection, the Secretary shall—

“(A) allow an official of the State or Indian tribe to participate in the review of the levee; and

“(B) provide information to the State or Indian tribe relating to the location, construction, operation, or maintenance of the levee.

“(5) EXCEPTIONS.—In carrying out the inventory and review under this subsection, the Secretary shall not be required to review any levee that has been inspected by a State or Indian tribe using the same methodology described in paragraph (3) during the 1-year period immediately preceding the date of enactment of this subsection if the Governor of the State or chief executive of the tribal government, as applicable, requests an exemption from the review.”.

(e) LEVEE SAFETY INITIATIVE.—

(1) IN GENERAL.—Sections 9005 and 9006 of the Water Resources Development Act of 2007 (33 U.S.C. 3304, 3305) are redesignated as sections 9007 and 9008, respectively.

(2) LEVEE SAFETY INITIATIVE.—Title IX of the Water Resources Development Act of 2007 (33 U.S.C. 3301 et seq.) is amended by inserting after section 9004 the following:

“SEC. 9005. LEVEE SAFETY INITIATIVE.

“(a) ESTABLISHMENT.—The Secretary, in consultation with the Administrator, shall carry out a levee safety initiative.

“(b) MANAGEMENT.—The Secretary shall appoint—

“(1) an administrator of the levee safety initiative; and

“(2) such staff as are necessary to implement the initiative.

“(c) LEVEE SAFETY GUIDELINES.—

“(1) ESTABLISHMENT.—Not later than 1 year after the date of enactment of this subsection, the Secretary, in consultation with the Administrator and in coordination with State, local, and tribal governments and organizations with expertise in levee safety, shall establish a set of voluntary, comprehensive, national levee safety guidelines that—

“(A) are available for common, uniform use by all Federal, State, tribal, and local agencies;

“(B) incorporate policies, procedures, standards, and criteria for a range of levee types, canal structures, and related facilities and features; and

“(C) provide for adaptation to local, regional, or watershed conditions.

“(2) REQUIREMENT.—The policies, procedures, standards, and criteria under paragraph (1)(B) shall be developed taking into consideration the levee hazard potential classification system established under subsection (d).

“(3) INCORPORATION.—The guidelines shall address, to the maximum extent practicable—

“(A) the activities and practices carried out by State, local, and tribal governments, and the private sector to safely build, regulate, operate, and maintain levees; and

“(B) Federal activities that facilitate State efforts to develop and implement effective State programs for the safety of levees, including levee inspection, levee rehabilitation, locally developed floodplain management, and public education and training programs.

“(4) CONSIDERATION BY FEDERAL AGENCIES.—To the maximum extent practicable, all Federal agencies shall consider the levee safety guidelines in carrying out activities relating to the management of levees.

“(5) PUBLIC COMMENT.—Prior to finalizing the guidelines under this subsection, the Secretary shall—

“(A) issue draft guidelines for public comment, including comment by States, non-Federal interests, and other appropriate stakeholders; and

“(B) consider any comments received in the development of final guidelines.

“(d) HAZARD POTENTIAL CLASSIFICATION SYSTEM.—

“(1) ESTABLISHMENT.—The Secretary shall establish a hazard potential classification system for use under the levee safety initiative and participating programs.

“(2) REVISION.—The Secretary shall review and, as necessary, revise the hazard potential classification system not less frequently than once every 5 years.

“(3) CONSISTENCY.—The hazard potential classification system established pursuant to this subsection shall be consistent with and incorporated into the levee safety action classification tool developed by the Corps of Engineers.

“(e) TECHNICAL ASSISTANCE AND MATERIALS.—

“(1) ESTABLISHMENT.—The Secretary, in consultation with the Administrator, shall provide technical assistance and training to promote levee safety and assist States, communities, and levee owners in—

“(A) developing levee safety programs;

“(B) identifying and reducing flood risks associated with levees;

“(C) identifying local actions that may be carried out to reduce flood risks in leveed areas; and

“(D) rehabilitating, improving, replacing, reconfiguring, modifying, and removing levees and levee systems.

“(2) ELIGIBILITY.—To be eligible to receive technical assistance under this subsection, a State shall—

“(A) be in the process of establishing or have in effect a State levee safety program under which a State levee safety agency, in accordance with State law, carries out the guidelines established under subsection (c)(1); and

“(B) allocate sufficient funds in the budget of that State to carry out that State levee safety program.

“(3) WORK PLANS.—The Secretary shall enter into an agreement with each State receiving technical assistance under this subsection to develop a work plan necessary for the State levee safety program of that State to reach a level of program performance that meets the guidelines established under subsection (c)(1).

“(f) PUBLIC EDUCATION AND AWARENESS.—

“(1) IN GENERAL.—The Secretary, in coordination with the Administrator, shall carry out public education and awareness efforts relating to the levee safety initiative.

“(2) CONTENTS.—In carrying out the efforts under paragraph (1), the Secretary and the Administrator shall—

“(A) educate individuals living in leveed areas regarding the risks of living in those areas; and

“(B) promote consistency in the transmission of information regarding levees among Federal agencies and regarding risk communication at the State and local levels.

“(g) STATE AND TRIBAL LEEVE SAFETY PROGRAM.—

“(1) GUIDELINES.—

“(A) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, in consultation with the Administrator, the Secretary shall issue guidelines that establish the minimum components necessary for recognition of a State or tribal levee safety program as a participating program.

“(B) GUIDELINE CONTENTS.—The guidelines under subparagraph (A) shall include provisions and procedures requiring each participating State and Indian tribe to certify to the Secretary that the State or Indian tribe, as applicable—

“(i) has the authority to participate in the levee safety initiative;

“(ii) can receive funds under this title;

“(iii) has adopted any levee safety guidelines developed under this title;

“(iv) will carry out levee inspections;

“(v) will carry out, consistent with applicable requirements, flood risk management and any emergency action planning procedures the Secretary determines to be necessary relating to levees;

“(vi) will carry out public education and awareness activities consistent with the efforts carried out under subsection (f); and

“(vii) will collect and share information regarding the location and condition of levees, including for inclusion in the national levee database.

“(C) PUBLIC COMMENT.—Prior to finalizing the guidelines under this paragraph, the Secretary shall—

“(i) issue draft guidelines for public comment; and

“(ii) consider any comments received in the development of final guidelines.

“(2) ASSISTANCE TO STATES.—

“(A) ESTABLISHMENT.—The Administrator may provide assistance, subject to the availability of funding specified in appropriations Acts for Federal Emergency Management Agency activities pursuant to this title and subject to amounts available under subparagraph (E), to States and

Indian tribes in establishing participating programs, conducting levee inventories, and improving levee safety programs in accordance with subparagraph (B).

“(B) REQUIREMENTS.—To be eligible to receive assistance under this section, a State or Indian tribe shall—

“(i) meet the requirements of a participating program established by the guidelines issued under paragraph (1);

“(ii) use not less than 25 percent of any amounts received to identify and assess non-Federal levees within the State or on land of the Indian tribe;

“(iii) submit to the Secretary and Administrator any information collected by the State or Indian tribe in carrying out this subsection for inclusion in the national levee safety database; and

“(iv) identify actions to address hazard mitigation activities associated with levees and leveed areas identified in the hazard mitigation plan of the State approved by the Administrator of the Federal Emergency Management Agency under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

“(C) MEASURES TO ASSESS EFFECTIVENESS.—

“(i) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, the Administrator shall implement quantifiable performance measures and metrics to assess the effectiveness of the assistance provided in accordance with subparagraph (A).

“(ii) CONSIDERATIONS.—In assessing the effectiveness of assistance under clause (i), the Administrator shall consider the degree to which the State or tribal program—

“(I) ensures that human lives and property that are protected by new and existing levees are safe;

“(II) encourages the use of appropriate engineering policies, procedures, and technical practices for levee site investigation, design, construction, operation and maintenance, inspection, assessment, and emergency preparedness;

“(III) develops and supports public education and awareness projects to increase public acceptance and support of levee safety programs and provide information;

“(IV) builds public awareness of the residual risks associated with living in levee protected areas; and

“(V) develops technical assistance materials, seminars, and guidelines to improve the security of levees of the United States.

“(D) MAINTENANCE OF EFFORT.—Technical assistance or grants may not be provided to a State under this subsection during a fiscal year unless the State enters into an agreement with the Administrator to ensure that the State will maintain during that fiscal year aggregate expenditures for programs to ensure levee safety that equal or exceed the average annual level of such expenditures

for the State for the 2 fiscal years preceding that fiscal year.

“(E) AUTHORIZATION OF APPROPRIATIONS.—

“(i) IN GENERAL.—There is authorized to be appropriated to the Administrator to carry out this subsection \$25,000,000 for each of fiscal years 2015 through 2019.

“(ii) ALLOCATION.—For each fiscal year, amounts made available under this subparagraph shall be allocated among the States and Indian tribes as follows:

“(I) $\frac{1}{3}$ among States and Indian tribes that qualify for assistance under this subsection.

“(II) $\frac{2}{3}$ among States and Indian tribes that qualify for assistance under this subsection, to each such State or Indian tribe in the proportion that—

“(aa) the miles of levees in the State or on the land of the Indian tribe that are listed on the inventory of levees; bears to

“(bb) the miles of levees in all States and on the land of all Indian tribes that are in the national levee database.

“(iii) MAXIMUM AMOUNT OF ALLOCATION.—The amounts allocated to a State or Indian tribe under this subparagraph shall not exceed 50 percent of the reasonable cost of implementing the State or tribal levee safety program.

“(F) PROHIBITION.—No amounts made available to the Administrator under this title shall be used for levee construction, rehabilitation, repair, operations, or maintenance.

“(h) LEVEE REHABILITATION ASSISTANCE PROGRAM.—

“(1) ESTABLISHMENT.—The Secretary shall provide assistance to States, Indian tribes, and local governments relating to addressing flood mitigation activities that result in an overall reduction in flood risk.

“(2) REQUIREMENTS.—To be eligible to receive assistance under this subsection, a State, Indian tribe, or local government shall—

“(A) participate in, and comply with, all applicable Federal floodplain management and flood insurance programs;

“(B) have in place a hazard mitigation plan that—

“(i) includes all levee risks; and

“(ii) complies with the Disaster Mitigation Act of 2000 (Public Law 106–390; 114 Stat. 1552);

“(C) submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require;

“(D) commit to provide normal operation and maintenance of the project for the 50 year-period following completion of rehabilitation; and

“(E) comply with such minimum eligibility requirements as the Secretary, in consultation with the committee, may establish to ensure that each owner and operator of a levee under a participating State or tribal levee safety program—

“(i) acts in accordance with the guidelines developed under subsection (c); and

“(ii) carries out activities relating to the public in the leveed area in accordance with the hazard mitigation plan described in subparagraph (B).

“(3) FLOODPLAIN MANAGEMENT PLANS.—

“(A) IN GENERAL.—Not later than 1 year after the date of execution of a project agreement for assistance under this subsection, a State, Indian tribe, or local government shall prepare a floodplain management plan in accordance with the guidelines under subparagraph (D) to reduce the impacts of future flood events in each applicable leveed area.

“(B) INCLUSIONS.—A plan under subparagraph (A) shall address—

“(i) potential measures, practices, and policies to reduce loss of life, injuries, damage to property and facilities, public expenditures, and other adverse impacts of flooding in each applicable leveed area;

“(ii) plans for flood fighting and evacuation; and

“(iii) public education and awareness of flood risks.

“(C) IMPLEMENTATION.—Not later than 1 year after the date of completion of construction of the applicable project, a floodplain management plan prepared under subparagraph (A) shall be implemented.

“(D) GUIDELINES.—Not later than 180 days after the date of enactment of this subsection, the Secretary, in consultation with the Administrator, shall develop such guidelines for the preparation of floodplain management plans prepared under this paragraph as the Secretary determines to be appropriate.

“(E) TECHNICAL SUPPORT.—The Secretary may provide technical support for the development and implementation of floodplain management plans prepared under this paragraph.

“(4) USE OF FUNDS.—

“(A) IN GENERAL.—Assistance provided under this subsection may be used—

“(i) for any rehabilitation activity to maximize overall risk reduction associated with a levee under a participating State or tribal levee safety program; and

“(ii) only for a levee that is not federally operated and maintained.

“(B) PROHIBITION.—Assistance provided under this subsection shall not be used—

“(i) to perform routine operation or maintenance for a levee; or

“(ii) to make any modification to a levee that does not result in an improvement to public safety.

“(5) NO PROPRIETARY INTEREST.—A contract for assistance provided under this subsection shall not be considered to confer any proprietary interest on the United States.

“(6) COST SHARE.—The maximum Federal share of the cost of any assistance provided under this subsection shall be 65 percent.

“(7) PROJECT LIMIT.—The maximum amount of Federal assistance for a project under this subsection shall be \$10,000,000.

“(8) LIMITATION.—A project shall not receive Federal assistance under this subsection more than 1 time.

“(9) FEDERAL INTEREST.—For a project that is not a project eligible for rehabilitation assistance under section 5 of the Act of August 18, 1941 (33 U.S.C. 701n), the Secretary shall determine that the proposed rehabilitation is in the Federal interest prior to providing assistance for such rehabilitation.

“(10) OTHER LAWS.—Assistance provided under this subsection shall be subject to all applicable laws (including regulations) that apply to the construction of a civil works project of the Corps of Engineers.

“(i) EFFECT OF SECTION.—Nothing in this section—

“(1) affects the requirement under section 100226(b)(2) of Public Law 112–141 (42 U.S.C. 4101 note; 126 Stat. 942); or

“(2) confers any regulatory authority on—

“(A) the Secretary; or

“(B) the Administrator, including for the purpose of setting premium rates under the national flood insurance program established under chapter 1 of the National Flood Insurance Act of 1968 (42 U.S.C. 4011 et seq.).

“SEC. 9006. REPORTS.

“(a) STATE OF LEVEES.—

“(1) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, and biennially thereafter, the Secretary in coordination with the committee, shall submit to Congress and make publicly available a report describing the state of levees in the United States and the effectiveness of the levee safety initiative, including—

“(A) progress achieved in implementing the levee safety initiative;

“(B) State and tribal participation in the levee safety initiative;

“(C) recommendations to improve coordination of levee safety, floodplain management, and environmental protection concerns, including—

“(i) identifying and evaluating opportunities to coordinate public safety, floodplain management, and environmental protection activities relating to levees; and

“(ii) evaluating opportunities to coordinate environmental permitting processes for operation and maintenance activities at existing levee projects in compliance with all applicable laws; and

“(D) any recommendations for legislation and other congressional actions necessary to ensure national levee safety.

“(2) INCLUSION.—Each report under paragraph (1) shall include a report of the committee that describes the independent recommendations of the committee for the implementation of the levee safety initiative.

“(b) NATIONAL DAM AND LEVEE SAFETY PROGRAM.—Not later than 3 years after the date of enactment of this subsection, to

the maximum extent practicable, the Secretary and the Administrator, in coordination with the committee, shall submit to Congress and make publicly available a report that includes recommendations regarding the advisability and feasibility of, and potential approaches for, establishing a joint national dam and levee safety program.

“(c) ALIGNMENT OF FEDERAL PROGRAMS RELATING TO LEVEES.—Not later than 2 years after the date of enactment of this subsection, the Comptroller General of the United States shall submit to Congress a report on opportunities for alignment of Federal programs to provide incentives to State, tribal, and local governments and individuals and entities—

“(1) to promote shared responsibility for levee safety;

“(2) to encourage the development of strong State and tribal levee safety programs;

“(3) to better align the levee safety initiative with other Federal flood risk management programs; and

“(4) to promote increased levee safety through other Federal programs providing assistance to State and local governments.

“(d) LIABILITY FOR CERTAIN LEVEE ENGINEERING PROJECTS.—Not later than 1 year after the date of enactment of this subsection, the Secretary shall submit to Congress and make publicly available a report that includes recommendations that identify and address any legal liability associated with levee engineering projects that prevent—

“(1) levee owners from obtaining needed levee engineering services; or

“(2) development and implementation of a State or tribal levee safety program.”.

(f) AUTHORIZATION OF APPROPRIATIONS.—Section 9008 of the Water Resources Development Act of 2007 (as redesignated by subsection (e)(1)) is amended—

(1) by striking “are” and inserting “is”; and

(2) by striking “Secretary” and all that follows through the period at the end and inserting the following:

“Secretary—

“(1) to carry out sections 9003, 9005(c), 9005(d), 9005(e), and 9005(f), \$4,000,000 for each of fiscal years 2015 through 2019;

“(2) to carry out section 9004, \$20,000,000 for each of fiscal years 2015 through 2019; and

“(3) to carry out section 9005(h), \$30,000,000 for each of fiscal years 2015 through 2019.”.

SEC. 3017. REHABILITATION OF EXISTING LEVEES.

(a) IN GENERAL.—The Secretary shall carry out measures that address consolidation, settlement, subsidence, sea level rise, and new datum to restore federally authorized hurricane and storm damage reduction projects that were constructed as of the date of enactment of this Act to the authorized levels of protection of the projects if the Secretary determines the necessary work is technically feasible, environmentally acceptable, and economically justified.

(b) LIMITATION.—This section shall only apply to those projects for which the executed project partnership agreement provides that the non-Federal interest is not required to perform future measures to restore the project to the authorized level of protection of the

project to account for subsidence and sea-level rise as part of the operation, maintenance, repair, replacement, and rehabilitation responsibilities.

(c) **COST SHARE.**—

(1) **IN GENERAL.**—The non-Federal share of the cost of construction of a project carried out under this section shall be determined as provided in subsections (a) through (d) of section 103 of the Water Resources Development Act of 1986 (33 U.S.C. 2213).

(2) **CERTAIN ACTIVITIES.**—The non-Federal share of the cost of operations, maintenance, repair, replacement, and rehabilitation for a project carried out under this section shall be 100 percent.

(d) **REPORT TO CONGRESS.**—Not later than 5 years after the date of enactment of this Act, the Secretary shall include in the annual report developed under section 7001—

(1) any recommendations relating to the continued need for the authority provided under this section;

(2) a description of the measures carried out under this section;

(3) any lessons learned relating to the measures implemented under this section; and

(4) best practices for carrying out measures to restore hurricane and storm damage reduction projects.

(e) **TERMINATION OF AUTHORITY.**—The authority of the Secretary under this subsection terminates on the date that is 10 years after the date of enactment of this Act.

Subtitle C—Additional Safety Improvements and Risk Reduction Measures

SEC. 3021. USE OF INNOVATIVE MATERIALS.

Section 8(d) of the Water Resources Development Act of 1988 (33 U.S.C. 2314) is amended by striking “materials” and all that follows through the period at the end and inserting “methods, or materials, including roller compacted concrete, geosynthetic materials, and advanced composites, that the Secretary determines are appropriate to carry out this section.”.

SEC. 3022. DURABILITY, SUSTAINABILITY, AND RESILIENCE.

In carrying out the activities of the Corps of Engineers, the Secretary, to the maximum extent practicable, shall encourage the use of durable and sustainable materials and resilient construction techniques that—

(1) allow a water resources infrastructure project—

(A) to resist hazards due to a major disaster; and

(B) to continue to serve the primary function of the water resources infrastructure project following a major disaster;

(2) reduce the magnitude or duration of a disruptive event to a water resources infrastructure project; and

(3) have the absorptive capacity, adaptive capacity, and recoverability to withstand a potentially disruptive event.

SEC. 3023. STUDY ON RISK REDUCTION.

(a) **IN GENERAL.**—Not later than 18 months after the date of enactment of this Act, the Secretary, in coordination with the Secretary of the Interior and the Secretary of Commerce, shall enter into an arrangement with the National Academy of Sciences to carry out a study and make recommendations relating to infrastructure and coastal restoration options for reducing risk to human life and property from extreme weather events, such as hurricanes, coastal storms, and inland flooding.

(b) **CONSIDERATIONS.**—The study under subsection (a) shall include—

(1) an analysis of strategies and water resources projects, including authorized water resources projects that have not yet been constructed, and other projects implemented in the United States and worldwide to respond to risk associated with extreme weather events;

(2) an analysis of—

(A) historical extreme weather events;

(B) the ability of existing infrastructure to mitigate risks associated with extreme weather events; and

(C) the reduction in long-term costs and vulnerability to infrastructure through the use of resilient construction techniques;

(3) identification of proven, science-based approaches and mechanisms for ecosystem protection and identification of natural resources likely to have the greatest need for protection, restoration, and conservation so that the infrastructure and restoration projects can continue safeguarding the communities in, and sustaining the economy of, the United States;

(4) an estimation of the funding necessary to improve infrastructure in the United States to reduce risk associated with extreme weather events;

(5) an analysis of the adequacy of current funding sources and the identification of potential new funding sources to finance the necessary infrastructure improvements referred to in paragraph (3); and

(6) an analysis of the Federal, State, and local costs of natural disasters and the potential cost-savings associated with implementing mitigation measures.

(c) **COORDINATION.**—The National Academy of Sciences may cooperate with the National Academy of Public Administration to carry out 1 or more aspects of the study under subsection (a).

(d) **PUBLICATION.**—Not later than 30 days after completion of the study under subsection (a), the National Academy of Sciences shall—

(1) submit a copy of the study to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives; and

(2) make a copy of the study available on a publicly accessible Internet site.

SEC. 3024. MANAGEMENT OF FLOOD, DROUGHT, AND STORM DAMAGE.

(a) **IN GENERAL.**—Not later than 1 year after the date of enactment of this Act, the Comptroller General shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House

of Representatives a study of the strategies used by the Corps of Engineers for the comprehensive management of water resources in response to floods, storms, and droughts, including an historical review of the ability of the Corps of Engineers to manage and respond to historical drought, storm, and flood events.

(b) CONSIDERATIONS.—The study under subsection (a) shall address—

(1) the extent to which existing water management activities of the Corps of Engineers can better meet the goal of addressing future flooding, drought, and storm damage risks, which shall include analysis of all historical extreme weather events that have been recorded during the previous 5 centuries as well as in the geological record;

(2) whether existing water resources projects built or maintained by the Corps of Engineers, including dams, levees, floodwalls, flood gates, and other appurtenant infrastructure were designed to adequately address flood, storm, and drought impacts and the extent to which the water resources projects have been successful at addressing those impacts;

(3) any recommendations for approaches for repairing, rebuilding, or restoring infrastructure, land, and natural resources that consider the risks and vulnerabilities associated with past and future extreme weather events;

(4) whether a reevaluation of existing management approaches of the Corps of Engineers could result in greater efficiencies in water management and project delivery that would enable the Corps of Engineers to better prepare for, contain, and respond to flood, storm, and drought conditions;

(5) any recommendations for improving the planning processes of the Corps of Engineers to provide opportunities for comprehensive management of water resources that increases efficiency and improves response to flood, storm, and drought conditions;

(6) any recommendations on the use of resilient construction techniques to reduce future vulnerability from flood, storm, and drought conditions; and

(7) any recommendations for improving approaches to rebuilding or restoring infrastructure and natural resources that contribute to risk reduction, such as coastal wetlands, to prepare for flood and drought.

SEC. 3025. POST-DISASTER WATERSHED ASSESSMENTS.

(a) WATERSHED ASSESSMENTS.—

(1) IN GENERAL.—In an area that the President has declared a major disaster in accordance with section 401 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170), the Secretary may carry out a watershed assessment to identify, to the maximum extent practicable, specific flood risk reduction, hurricane and storm damage reduction, ecosystem restoration, or navigation project recommendations that will help to rehabilitate and improve the resiliency of damaged infrastructure and natural resources to reduce risks to human life and property from future natural disasters.

(2) EXISTING PROJECTS.—A watershed assessment carried out paragraph (1) may identify existing projects being carried

out under 1 or more of the authorities referred to in subsection (b)(1).

(3) **DUPPLICATE WATERSHED ASSESSMENTS.**—In carrying out a watershed assessment under paragraph (1), the Secretary shall use all existing watershed assessments and related information developed by the Secretary or other Federal, State, or local entities.

(b) **PROJECTS.**—

(1) **IN GENERAL.**—The Secretary may carry out projects identified under a watershed assessment under subsection (a) in accordance with the criteria for projects carried out under one of the following authorities:

(A) Section 205 of the Flood Control Act of 1948 (33 U.S.C. 701s).

(B) Section 111 of the River and Harbor Act of 1968 (33 U.S.C. 426i).

(C) Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330).

(D) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(E) Section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577).

(F) Section 3 of the Act of August 13, 1946 (33 U.S.C. 426g).

(2) **ANNUAL PLAN.**—For each project that does not meet the criteria under paragraph (1), the Secretary shall include a recommendation relating to the project in the annual report submitted to Congress by the Secretary in accordance with section 7001.

(3) **EXISTING PROJECTS.**—In carrying out a project under paragraph (1), the Secretary shall—

(A) to the maximum extent practicable, use all existing information and studies available for the project; and

(B) not require any element of a study completed for the project prior to the disaster to be repeated.

(c) **REQUIREMENTS.**—All requirements applicable to a project under the Acts described in subsection (b) shall apply to the project.

(d) **LIMITATIONS ON ASSESSMENTS.**—A watershed assessment under subsection (a) shall be initiated not later than 2 years after the date on which the major disaster declaration is issued.

SEC. 3026. HURRICANE AND STORM DAMAGE REDUCTION STUDY.

(a) **IN GENERAL.**—As part of the study for flood and storm damage reduction related to natural disasters to be carried out by the Secretary under title II of division A of the Disaster Relief Appropriations Act, 2013, under the heading “Department of the Army—Corps of Engineers—Civil—Investigations” (127 Stat. 5), the Secretary shall make specific project recommendations.

(b) **CONSULTATION.**—In making recommendations pursuant to this section, the Secretary may consult with key stakeholders, including State, county, and city governments, and, as applicable, State and local water districts, and in the case of recommendations concerning projects that substantially affect communities served by historically Black colleges and universities, Tribal Colleges and Universities, and other minority-serving institutions, the Secretary shall consult with those colleges, universities, and institutions.

(c) **REPORT.**—The Secretary shall include any recommendations of the Secretary under this section in the annual report submitted to Congress by the Secretary in accordance with section 7001.

SEC. 3027. EMERGENCY COMMUNICATION OF RISK.

(a) **DEFINITIONS.**—In this section:

(1) **AFFECTED GOVERNMENT.**—The term “affected government” means a State, local, or tribal government with jurisdiction over an area that will be affected by a flood.

(2) **ANNUAL OPERATING PLAN.**—The term “annual operating plan” means a plan prepared by the Secretary that describes potential water condition scenarios for a river basin for a year.

(b) **COMMUNICATION.**—In any river basin where the Secretary carries out flood risk management activities subject to an annual operating plan, the Secretary shall establish procedures for providing the public and affected governments, including Indian tribes, in the river basin with—

- (1) timely information regarding expected water levels;
- (2) advice regarding appropriate preparedness actions;
- (3) technical assistance; and
- (4) any other information or assistance determined appropriate by the Secretary.

(c) **PUBLIC AVAILABILITY OF INFORMATION.**—To the maximum extent practicable, the Secretary, in coordination with the Administrator of the Federal Emergency Management Agency, shall make the information required under subsection (b) available to the public through widely used and readily available means, including on the Internet.

(d) **PROCEDURES.**—The Secretary shall use the procedures established under subsection (b) only when precipitation or runoff exceeds those calculations considered as the lowest risk to life and property contemplated by the annual operating plan.

SEC. 3028. SAFETY ASSURANCE REVIEW.

Section 2035 of the Water Resources Development Act of 2007 (33 U.S.C. 2344) is amended by adding at the end the following:

“(g) **NONAPPLICABILITY OF FACCA.**—The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to a safety assurance review conducted under this section.”.

SEC. 3029. EMERGENCY RESPONSE TO NATURAL DISASTERS.

(a) **EMERGENCY RESPONSE TO NATURAL DISASTERS.**—Section 5(a)(1) of the Act of August 18, 1941 (33 U.S.C. 701n(a)(1)), is amended in the first sentence—

(1) by inserting “and subject to the condition that the Chief of Engineers may include modifications to the structure or project” after “work for flood control”; and

(2) by striking “structure damaged or destroyed by wind, wave, or water action of other than an ordinary nature when in the discretion of the Chief of Engineers such repair and restoration is warranted for the adequate functioning of the structure for hurricane or shore protection” and inserting “structure or project damaged or destroyed by wind, wave, or water action of other than an ordinary nature to the design level of protection when, in the discretion of the Chief of Engineers, such repair and restoration is warranted for the adequate functioning of the structure or project for hurricane or shore protection, subject to the condition that the Chief of Engineers

may include modifications to the structure or project to address major deficiencies or implement nonstructural alternatives to the repair or restoration of the structure if requested by the non-Federal sponsor”.

(b) REVIEW OF EMERGENCY RESPONSE AUTHORITIES.—

(1) IN GENERAL.—The Secretary shall undertake a review of implementation of section 5 of the Act of August 18, 1941 (33 U.S.C. 701n), to evaluate the alternatives available to the Secretary to ensure—

(A) the safety of affected communities to future flooding and storm events;

(B) the resiliency of water resources development projects to future flooding and storm events;

(C) the long-term cost-effectiveness of water resources development projects that provide flood control and hurricane and storm damage reduction benefits; and

(D) the policy goals and objectives that have been outlined by the President as a response to recent extreme weather events, including Hurricane Sandy, that relate to preparing for future floods are met.

(2) SCOPE OF REVIEW.—In carrying out the review, the Secretary shall—

(A) review the historical precedents and implementation of section 5 of that Act, including those actions undertaken by the Secretary, over time, under that section—

(i) to repair or restore a project; and

(ii) to increase the level of protection for a damaged project to address future conditions;

(B) evaluate the difference between adopting, as an appropriate standard under section 5 of that Act, the repair or restoration of a project to pre-flood or pre-storm levels and the repair or restoration of a project to a design level of protection, including an assessment for each standard of—

(i) the implications on populations at risk of flooding or damage;

(ii) the implications on probability of loss of life;

(iii) the implications on property values at risk of flooding or damage;

(iv) the implications on probability of increased property damage and associated costs;

(v) the implications on local and regional economies; and

(vi) the estimated total cost and estimated cost savings;

(C) review and evaluate the historic and potential uses, and economic feasibility for the life of the project, of nonstructural alternatives, including natural features such as dunes, coastal wetlands, floodplains, marshes, and mangroves, to reduce the damage caused by floods, storm surges, winds, and other aspects of extreme weather events, and to increase the resiliency and long-term cost-effectiveness of water resources development projects;

(D) incorporate the science on expected rates of sea-level rise and extreme weather events;

(E) incorporate the work completed by the Hurricane Sandy Rebuilding Task Force, established by Executive Order No. 13632 (77 Fed. Reg. 74341); and

(F) review the information obtained from the report developed under subsection (c)(1).

(c) REPORTS.—

(1) BIENNIAL REPORT TO CONGRESS.—

(A) IN GENERAL.—Not later than 2 years after the date of enactment of this Act and every 2 years thereafter, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report detailing the amounts expended in the previous 5 fiscal years to carry out Corps of Engineers projects under section 5 of the Act of August 18, 1941 (33 U.S.C. 701n).

(B) INCLUSIONS.—A report under subparagraph (A) shall, at a minimum, include a description of—

(i) each structure, feature, or project for which amounts are expended, including the type of structure, feature, or project and cost of the work; and

(ii) how the Secretary has repaired, restored, replaced, or modified each structure, feature, or project or intends to restore the structure, feature, or project to the design level of protection for the structure, feature, or project.

(2) REPORT ON REVIEW OF EMERGENCY RESPONSE AUTHORITIES.—Not later than 18 months after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report on the results of the review under subsection (b).

TITLE IV—RIVER BASINS AND COASTAL AREAS

SEC. 4001. RIVER BASIN COMMISSIONS.

Section 5019 of the Water Resources Development Act of 2007 (121 Stat. 1201) is amended by striking subsection (b) and inserting the following:

“(b) AUTHORIZATION TO ALLOCATE.—

“(1) IN GENERAL.—The Secretary shall allocate funds to the Susquehanna River Basin Commission, the Delaware River Basin Commission, and the Interstate Commission on the Potomac River Basin to fulfill the equitable funding requirements of the respective interstate compacts.

“(2) AMOUNTS.—For each fiscal year, the Secretary shall allocate to each Commission described in paragraph (1) an amount equal to the amount determined by the Commission in accordance with the respective interstate compact approved by Congress.

“(3) NOTIFICATION.—If the Secretary does not allocate funds for a given fiscal year in accordance with paragraph (2), the Secretary, in conjunction with the subsequent submission by the President of the budget to Congress under section 1105(a)

of title 31, United States Code, shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a notice that describes—

“(A) the reasons why the Secretary did not allocate funds in accordance with paragraph (2) for that fiscal year; and

“(B) the impact of that decision not to allocate funds on each area of jurisdiction of each Commission described in paragraph (1), including with respect to—

“(i) water supply allocation;

“(ii) water quality protection;

“(iii) regulatory review and permitting;

“(iv) water conservation;

“(v) watershed planning;

“(vi) drought management;

“(vii) flood loss reduction;

“(viii) recreation; and

“(ix) energy development.”.

SEC. 4002. MISSISSIPPI RIVER.

(a) MISSISSIPPI RIVER FORECASTING IMPROVEMENTS.—

(1) IN GENERAL.—The Secretary, in consultation with the Secretary of the department in which the Coast Guard is operating, the Director of the United States Geological Survey, the Administrator of the National Oceanic and Atmospheric Administration, and the Director of the National Weather Service, as applicable, shall improve forecasting on the Mississippi River by—

(A) updating forecasting technology deployed on the Mississippi River and its tributaries through—

(i) the construction of additional automated river gages;

(ii) the rehabilitation of existing automated and manual river gages; and

(iii) the replacement of manual river gages with automated gages, as the Secretary determines to be necessary;

(B) constructing additional sedimentation ranges on the Mississippi River and its tributaries; and

(C) deploying additional automatic identification system base stations at river gage sites.

(2) PRIORITIZATION.—In carrying out this subsection, the Secretary shall prioritize the sections of the Mississippi River on which additional and more reliable information would have the greatest impact on maintaining navigation on the Mississippi River.

(3) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to Congress and make publicly available a report on the activities carried out by the Secretary under this subsection.

(b) MIDDLE MISSISSIPPI RIVER PILOT PROGRAM.—

(1) IN GENERAL.—In accordance with the project for navigation, Mississippi River between the Ohio and Missouri Rivers (Regulating Works), Missouri and Illinois, authorized by the Act of June 25, 1910 (36 Stat. 631, chapter 382) (commonly known as the “River and Harbor Act of 1910”), the Act of

January 1, 1927 (44 Stat. 1010, chapter 47) (commonly known as the “River and Harbor Act of 1927”), and the Act of July 3, 1930 (46 Stat. 918, chapter 847), the Secretary may study improvements to navigation and aquatic ecosystem restoration in the middle Mississippi River.

(2) DISPOSITION.—

(A) IN GENERAL.—The Secretary may carry out any project identified pursuant to paragraph (1) in accordance with the criteria for projects carried out under one of the following authorities:

(i) Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330).

(ii) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(iii) Section 107 of the River and Harbor Act of 1960 (33 U.S.C. 577).

(iv) Section 104(a) of the River and Harbor Act of 1958 (33 U.S.C. 610(a)).

(B) REPORT.—For each project that does not meet the criteria under subparagraph (A), the Secretary shall include a recommendation relating to the project in the annual report submitted to Congress by the Secretary in accordance with section 7001.

(c) GREATER MISSISSIPPI RIVER BASIN SEVERE FLOODING AND DROUGHT MANAGEMENT STUDY.—

(1) DEFINITION OF GREATER MISSISSIPPI RIVER BASIN.—In this subsection, the term “greater Mississippi River Basin” means the area covered by hydrologic units 5, 6, 7, 8, 10, and 11, as identified by the United States Geological Survey as of the date of enactment of this Act.

(2) IN GENERAL.—The Secretary shall carry out a study of the greater Mississippi River Basin—

(A) to improve the coordinated and comprehensive management of water resource projects in the greater Mississippi River Basin relating to severe flooding and drought conditions; and

(B) to identify and evaluate—

(i) modifications to those water resource projects, consistent with the authorized purposes of those projects; and

(ii) the development of new water resource projects to improve the reliability of navigation and more effectively reduce flood risk.

(3) REPORT.—Not later than 3 years after the date of enactment of this Act, the Secretary shall submit to Congress and make publicly available a report on the study carried out under this subsection.

(4) SAVINGS CLAUSE.—Nothing in this subsection impacts the operations and maintenance of the Missouri River Mainstem System, as authorized by the Act of December 22, 1944 (commonly known as the “Flood Control Act of 1944”)(58 Stat. 897, chapter 665).

(d) FLEXIBILITY IN MAINTAINING NAVIGATION.—

(1) EXTREME LOW WATER EVENT DEFINED.—In this subsection, the term “extreme low water event” means an extended period of time during which low water threatens the safe

commercial use of the Mississippi River for navigation, including the use and availability of fleeting areas.

(2) REPORT ON AREAS FOR ACTION.—

(A) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Secretary, in consultation with the Secretary of the department in which the Coast Guard is operating, shall complete and make publicly available a report identifying areas that are unsafe and unreliable for commercial navigation during extreme low water events along the authorized Federal navigation channel on the Mississippi River and measures to address those restrictions.

(B) INCLUSIONS.—The report under subparagraph (A) shall—

(i) consider data from the most recent extreme low water events that impacted navigation along the authorized Federal navigation channel on the Mississippi River;

(ii) identify locations for potential modifications, including improvements outside the authorized navigation channel, that will alleviate hazards at areas that constrain navigation during extreme low water events along the authorized Federal navigation channel on the Mississippi River; and

(iii) include recommendations for possible actions to address constrained navigation during extreme low water events.

(3) AUTHORIZED ACTIVITIES.—If the Secretary, in consultation with the Secretary of the department in which the Coast Guard is operating, determines it to be critical to maintaining safe and reliable navigation within the authorized Federal navigation channel on the Mississippi River, the Secretary may carry out activities outside the authorized Federal navigation channel along the Mississippi River, including the construction and operation of maintenance of fleeting areas, that—

(A) are necessary for safe and reliable navigation in the Federal channel; and

(B) have been identified in the report under paragraph

(2).

(4) RESTRICTION.—The Secretary shall only carry out activities authorized under paragraph (3) for such period of time as is necessary to maintain reliable navigation during the extreme low water event.

(5) NOTIFICATION.—Not later than 60 days after initiating an activity under this subsection, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a notice that includes—

(A) a description of the activities undertaken, including the costs associated with the activities; and

(B) a comprehensive description of how the activities are necessary for maintaining safe and reliable navigation of the Federal channel.

SEC. 4003. MISSOURI RIVER.

(a) UPPER MISSOURI BASIN FLOOD AND DROUGHT MONITORING.—

(1) IN GENERAL.—The Secretary, in coordination with the Administrator of the National Oceanic and Atmospheric Administration, the Chief of the Natural Resources Conservation Service, the Director of the United States Geological Survey, and the Commissioner of the Bureau of Reclamation, shall carry out activities to improve and support management of Corps of Engineers water resources development projects, including—

(A) soil moisture and snowpack monitoring in the Upper Missouri River Basin to reduce flood risk and improve river and water resource management in the Upper Missouri River Basin, as outlined in the February 2013 report entitled “Upper Missouri Basin Monitoring Committee—Snow Sampling and Instrumentation Recommendations”;

(B) restoring and maintaining existing mid- and high-elevation snowpack monitoring sites operated under the SNOTEL program of the Natural Resources Conservation Service; and

(C) operating streamflow gages and related interpretive studies in the Upper Missouri River Basin under the cooperative water program and the national streamflow information program of the United States Geological Service.

(2) USE OF FUNDS.—Amounts made available to the Secretary to carry out activities under this subsection shall be used to supplement but not supplant other related activities of Federal agencies that are carried out within the Missouri River Basin.

(3) COOPERATIVE AGREEMENTS.—

(A) IN GENERAL.—The Secretary may enter into cooperative agreements with other Federal agencies to carry out this subsection.

(B) MAINTENANCE OF EFFORT.—The Secretary may only enter into a cooperative agreement with another Federal agency under this paragraph if such agreement specifies that the agency will maintain aggregate expenditures in the Missouri River Basin for existing programs that implement activities described in paragraph (1) at a level that is equal to or exceeds the aggregate expenditures for the fiscal year immediately preceding the fiscal year in which such agreement is signed.

(4) REPORT.—Not later than 1 year after the date of enactment of this Act, the Comptroller General of the United States, in consultation with the Secretary, shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that—

(A) identifies progress made by the Secretary and other Federal agencies in implementing the recommendations contained in the report described in paragraph (1)(A) with respect to enhancing soil moisture and snowpack monitoring in the Upper Missouri Basin;

(B) includes recommendations—

(i) to enhance soil moisture and snowpack monitoring in the Upper Missouri Basin that would enhance

water resources management, including managing flood risk, in that basin; and

(ii) on the most efficient manner of collecting and sharing data to assist Federal agencies with water resources management responsibilities;

(C) identifies the expected costs and timeline for implementing the recommendations described in subparagraph (B)(i); and

(D) identifies the role of States and other Federal agencies in gathering necessary soil moisture and snowpack monitoring data.

(b) MISSOURI RIVER BETWEEN FORT PECK DAM, MONTANA AND GAVINS POINT DAM, SOUTH DAKOTA AND NEBRASKA.—Section 9(f) of the Act of December 22, 1944 (commonly known as the “Flood Control Act of 1944”) (58 Stat. 891, chapter 665; 102 Stat. 4031) is amended in the second sentence by striking “\$3,000,000” and inserting “\$5,000,000”.

(c) MISSOURI RIVER RECOVERY IMPLEMENTATION COMMITTEE EXPENSES REIMBURSEMENT.—Section 5018(b)(5) of the Water Resources Development Act of 2007 (121 Stat. 1200) is amended by striking subparagraph (B) and inserting the following:

“(B) TRAVEL EXPENSES.—Subject to the availability of funds, the Secretary may reimburse a member of the Committee for travel expenses, including per diem in lieu of subsistence, at rates authorized for an employee of a Federal agency under subchapter I of chapter 57 of title 5, United States Code, while away from the home or regular place of business of the member in performance of services for the Committee.”.

(d) UPPER MISSOURI SHORELINE STABILIZATION.—

(1) IN GENERAL.—The Secretary shall conduct a study to determine the feasibility of carrying out projects to address shoreline erosion in the Upper Missouri River Basin (including the States of South Dakota, North Dakota, and Montana) resulting from the operation of a reservoir constructed under the Pick-Sloan Missouri River Basin Program (authorized by section 9 of the Act of December 22, 1944 (commonly known as the “Flood Control Act of 1944”) (58 Stat. 891, chapter 665)).

(2) CONTENTS.—The study carried out under paragraph (1) shall, to the maximum extent practicable—

(A) use previous assessments completed by the Corps of Engineers or other Federal agencies; and

(B) assess the infrastructure needed to—

(i) reduce shoreline erosion;

(ii) mitigate additional loss of land;

(iii) contribute to environmental and ecosystem improvement; and

(iv) protect existing community infrastructure, including roads and water and waste-water related infrastructure.

(3) DISPOSITION.—The Secretary may carry out projects identified in the study under paragraph (1) in accordance with the criteria for projects carried out under section 14 of the Flood Control Act of 1946 (33 U.S.C. 701r).

(4) ANNUAL REPORT.—For each project identified in the study under paragraph (1) that cannot be carried out under

any of the authorities specified in paragraph (3), upon determination by the Secretary of the feasibility of the project, the Secretary may include a recommendation relating to the project in the annual report submitted to Congress under section 7001.

(5) COORDINATION.—In carrying out this subsection, the Secretary shall consult and coordinate with the appropriate State or tribal agency for the area in which the project is located.

(6) PAYMENT OPTIONS.—The Secretary shall allow the full non-Federal contribution for a project under this subsection to be paid in accordance with section 103(k) of the Water Resources Development Act of 1986 (33 U.S.C. 2213(k)).

(e) MISSOURI RIVER FISH AND WILDLIFE MITIGATION.—The Secretary shall include in the first budget of the United States Government submitted by the President under section 1105 of title 31, United States Code, after the date of enactment of this Act, and biennially thereafter, a report that describes activities carried out by the Secretary relating to the project for mitigation of fish and wildlife losses, Missouri River Bank Stabilization and Navigation Project, Missouri, Kansas, Iowa, and Nebraska, authorized by section 601(a) of the Water Resources Development Act of 1986 (100 Stat. 4143), including—

(1) an inventory of all actions taken by the Secretary in furtherance of the project, including an inventory of land owned or acquired by the Secretary;

(2) a description, including a prioritization, of the specific actions proposed to be undertaken by the Secretary for the subsequent fiscal year in furtherance of the project;

(3) an assessment of the progress made in furtherance of the project, including—

(A) a description of how each of the actions identified under paragraph (1) have impacted the progress; and

(B) the status of implementation of any applicable requirements of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), including any applicable biological opinions; and

(4) an assessment of additional actions or authority necessary to achieve the results of the project.

(f) LOWER YELLOWSTONE.—Section 3109 of the Water Resources Development Act of 2007 (121 Stat. 1135) is amended—

(1) by striking “The Secretary may” and inserting the following:

“(a) IN GENERAL.—The Secretary may”; and

(2) by adding at the end the following:

“(b) LOCAL PARTICIPATION.—In carrying out subsection (a), the Secretary shall consult with, and consider the activities being carried out by—

“(1) other Federal agencies;

“(2) conservation districts;

“(3) the Yellowstone River Conservation District Council;

and

“(4) the State of Montana.”.

SEC. 4004. ARKANSAS RIVER.

(a) PROJECT GOAL.—The goal for operation of the McClellan-Kerr Arkansas River navigation system, Arkansas and Oklahoma,

shall be to maximize the use of the system in a balanced approach that incorporates advice from representatives from all project purposes to ensure that the full value of the system is realized by the United States.

(b) **MCCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM ADVISORY COMMITTEE.**—

(1) **IN GENERAL.**—In accordance with the Federal Advisory Committee Act (5 U.S.C. App.), the Secretary shall establish an advisory committee for the McClellan-Kerr Arkansas River navigation system, Arkansas and Oklahoma project authorized by the first section of the Act of July 24, 1946 (60 Stat. 635, chapter 595).

(2) **DUTIES.**—The advisory committee shall—

(A) serve in an advisory capacity only; and

(B) provide information and recommendations to the Corps of Engineers relating to the efficiency, reliability, and availability of the operations of the McClellan-Kerr Arkansas River navigation system.

(3) **SELECTION AND COMPOSITION.**—The advisory committee shall be—

(A) selected jointly by the Little Rock district engineer and the Tulsa district engineer; and

(B) composed of members that equally represent the McClellan-Kerr Arkansas River navigation system project purposes.

(4) **AGENCY RESOURCES.**—The Little Rock district and the Tulsa district of the Corps of Engineers, under the supervision of the southwestern division, shall jointly provide the advisory committee with adequate staff assistance, facilities, and resources.

(5) **TERMINATION.**—

(A) **IN GENERAL.**—Subject to subparagraph (B), the advisory committee shall terminate on the date on which the Secretary submits a report to Congress demonstrating increases in the efficiency, reliability, and availability of the McClellan-Kerr Arkansas River navigation system.

(B) **RESTRICTION.**—The advisory committee shall terminate not less than 2 calendar years after the date on which the advisory committee is established.

SEC. 4005. COLUMBIA BASIN.

Section 536(g) of the Water Resources Development Act of 2000 (114 Stat. 2661) is amended by striking “\$30,000,000” and inserting “\$50,000,000”.

SEC. 4006. RIO GRANDE.

Section 5056 of the Water Resources Development Act of 2007 (121 Stat. 1213) is amended—

(1) in subsection (b)(2)—

(A) in the matter preceding subparagraph (A), by striking “2008” and inserting “2014”; and

(B) in subparagraph (C), by inserting “and an assessment of needs for other related purposes in the Rio Grande Basin, including flood damage reduction” after “assessment”;

(2) in subsection (c)(2)—

(A) by striking “an interagency agreement with” and inserting “1 or more interagency agreements with the Secretary of State and”; and

(B) by inserting “or the U.S. Section of the International Boundary and Water Commission” after “the Department of the Interior”; and

(3) in subsection (f), by striking “2011” and inserting “2019”.

SEC. 4007. NORTHERN ROCKIES HEADWATERS.

(a) **IN GENERAL.**—The Secretary shall conduct a study to determine the feasibility of carrying out projects for aquatic ecosystem restoration and flood risk reduction that will mitigate the impacts of extreme weather events, including floods and droughts, on communities, water users, and fish and wildlife located in and along the headwaters of the Columbia, Missouri, and Yellowstone Rivers (including the tributaries of those rivers) in the States of Idaho and Montana.

(b) **INCLUSIONS.**—The study under subsection (a) shall, to the maximum extent practicable—

(1) emphasize the protection and enhancement of natural riverine processes; and

(2) assess the individual and cumulative needs associated with—

- (A) floodplain restoration and reconnection;
- (B) floodplain and riparian area protection through the use of conservation easements;
- (C) instream flow restoration projects;
- (D) fish passage improvements;
- (E) channel migration zone mapping; and
- (F) invasive weed management.

(c) **DISPOSITION.**—

(1) **IN GENERAL.**—The Secretary may carry out any project identified in the study pursuant to subsection (a) in accordance with the criteria for projects carried out under one of the following authorities:

(A) Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330).

(B) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(C) Section 104(a) of the River and Harbor Act of 1958 (33 U.S.C. 610(a)).

(D) Section 205 of the Flood Control Act of 1948 (33 U.S.C. 701s).

(2) **REPORT.**—For each project that does not meet the criteria under paragraph (1), the Secretary shall include a recommendation relating to the project in the annual report submitted to Congress by the Secretary in accordance with section 7001.

(d) **COORDINATION.**—In carrying out this section, the Secretary—

(1) shall consult and coordinate with the appropriate agency for each State and Indian tribe; and

(2) may enter into cooperative agreements with those State or tribal agencies described in paragraph (1).

(e) **LIMITATIONS.**—Nothing in this section invalidates, preempts, or creates any exception to State water law, State water rights, or Federal or State permitted activities or agreements in the States

of Idaho and Montana or any State containing tributaries to rivers in those States.

SEC. 4008. RURAL WESTERN WATER.

Section 595 of the Water Resources Development Act of 1999 (113 Stat. 383) is amended—

(1) by striking subsection (c) and inserting the following:

“(c) FORM OF ASSISTANCE.—Assistance under this section may be in the form of—

“(1) design and construction assistance for water-related environmental infrastructure and resource protection and development in Idaho, Montana, rural Nevada, New Mexico, rural Utah, and Wyoming, including projects for—

“(A) wastewater treatment and related facilities;

“(B) water supply and related facilities;

“(C) environmental restoration; and

“(D) surface water resource protection and development; and

“(2) technical assistance to small and rural communities for water planning and issues relating to access to water resources.”; and

(2) by striking subsection (h) and inserting the following:

“(h) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this section for the period beginning with fiscal year 2001, \$435,000,000, which shall—

“(1) be made available to the States and locales described in subsection (b) consistent with program priorities determined by the Secretary in accordance with criteria developed by the Secretary to establish the program priorities; and

“(2) remain available until expended.”.

SEC. 4009. NORTH ATLANTIC COASTAL REGION.

(a) IN GENERAL.—The Secretary shall conduct a study to determine the feasibility of carrying out projects to restore aquatic ecosystems within the coastal waters of the Northeastern United States from the State of Virginia to the State of Maine, including associated bays, estuaries, and critical riverine areas.

(b) STUDY.—In carrying out the study under subsection (a), the Secretary shall—

(1) as appropriate, coordinate with the heads of other appropriate Federal agencies, the Governors of the coastal States from Virginia to Maine, nonprofit organizations, and other interested parties;

(2) identify projects for aquatic ecosystem restoration based on an assessment of the need and opportunities for aquatic ecosystem restoration within the coastal waters of the Northeastern States described in subsection (a); and

(3) use, to the maximum extent practicable, any existing plans and data.

(c) DISPOSITION.—

(1) IN GENERAL.—The Secretary may carry out any project identified in the study pursuant to subsection (a) in accordance with the criteria for projects carried out under one of the following authorities:

(A) Section 206 of the Water Resources Development Act of 1996 (33 U.S.C. 2330).

(B) Section 1135 of the Water Resources Development Act of 1986 (33 U.S.C. 2309a).

(C) Section 3 of the Act of August 13, 1946 (33 U.S.C. 426g).

(D) Section 204 of the Water Resources Development Act of 1992 (33 U.S.C. 2326).

(2) REPORT.—For each project that does not meet the criteria under paragraph (1), the Secretary shall include a recommendation relating to the project in the annual report submitted to Congress by the Secretary in accordance with section 7001.

SEC. 4010. CHESAPEAKE BAY.

(a) IN GENERAL.—Section 510 of the Water Resources Development Act of 1996 (Public Law 104–303; 110 Stat. 3759; 121 Stat. 1202) is amended—

(1) in subsection (a)—

(A) in paragraph (1)—

(i) by striking “pilot program” and inserting “program”; and

(ii) by inserting “in the basin States described in subsection (f) and the District of Columbia” after “interests”; and

(B) by striking paragraph (2) and inserting the following:

“(2) FORM.—The assistance under paragraph (1) shall be in the form of design and construction assistance for water-related resource protection and restoration projects affecting the Chesapeake Bay estuary, based on the comprehensive plan under subsection (b), including projects for—

“(A) sediment and erosion control;

“(B) protection of eroding shorelines;

“(C) ecosystem restoration, including restoration of submerged aquatic vegetation;

“(D) protection of essential public works;

“(E) beneficial uses of dredged material; and

“(F) other related projects that may enhance the living resources of the estuary.”;

(2) by striking subsection (b) and inserting the following:

“(b) COMPREHENSIVE PLAN.—

“(1) IN GENERAL.—Not later than 2 years after the date of enactment of the Water Resources Reform and Development Act of 2014, the Secretary, in cooperation with State and local governmental officials and affected stakeholders, shall develop a comprehensive Chesapeake Bay restoration plan to guide the implementation of projects under subsection (a)(2).

“(2) COORDINATION.—The restoration plan described in paragraph (1) shall, to the maximum extent practicable, consider and avoid duplication of any ongoing or planned actions of other Federal, State, and local agencies and nongovernmental organizations.

“(3) PRIORITIZATION.—The restoration plan described in paragraph (1) shall give priority to projects eligible under subsection (a)(2) that will also improve water quality or quantity or use natural hydrological features and systems.”;

(3) in subsection (c)—

(A) in paragraph (1), by striking “to provide” and all that follows through the period at the end and inserting “for the design and construction of a project carried out

pursuant to the comprehensive Chesapeake Bay restoration plan described in subsection (b).”;

(B) in paragraph (2)(A), by striking “facilities or resource protection and development plan” and inserting “resource protection and restoration plan”; and

(C) by adding at the end the following:

“(3) PROJECTS ON FEDERAL LAND.—A project carried out pursuant to the comprehensive Chesapeake Bay restoration plan described in subsection (b) that is located on Federal land shall be carried out at the expense of the Federal agency that owns the land on which the project will be carried out.

“(4) NON-FEDERAL CONTRIBUTIONS.—A Federal agency carrying out a project described in paragraph (3) may accept contributions of funds from non-Federal entities to carry out that project.”;

(4) by striking subsection (e) and inserting the following:

“(e) COOPERATION.—In carrying out this section, the Secretary shall cooperate with—

“(1) the heads of appropriate Federal agencies, including—

“(A) the Administrator of the Environmental Protection Agency;

“(B) the Secretary of Commerce, acting through the Administrator of the National Oceanographic and Atmospheric Administration;

“(C) the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service; and

“(D) the heads of such other Federal agencies as the Secretary determines to be appropriate; and

“(2) agencies of a State or political subdivision of a State, including the Chesapeake Bay Commission.”;

(5) by striking subsection (f) and inserting the following:

“(f) PROJECTS.—The Secretary shall establish, to the maximum extent practicable, at least 1 project under this section in—

“(1) regions within the Chesapeake Bay watershed of each of the basin States of Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia; and

“(2) the District of Columbia.”;

(6) by striking subsection (h); and

(7) by redesignating subsection (i) as subsection (h).

(b) CHESAPEAKE BAY OYSTER RESTORATION.—Section 704(b) of Water Resources Development Act of 1986 (33 U.S.C. 2263(b)) is amended—

(1) in paragraph (1), by striking “\$50,000,000” and inserting “\$60,000,000”; and

(2) in paragraph (4), by striking subparagraph (B) and inserting the following:

“(B) FORM.—The non-Federal share may be provided through in-kind services, including—

“(i) the provision by the non-Federal interest of shell stock material that is determined by the Secretary to be suitable for use in carrying out the project; and

“(ii) in the case of a project carried out under paragraph (2)(D) after the date of enactment of this

clause, land conservation or restoration efforts undertaken by the non-Federal interest that the Secretary determines provide water quality benefits that—

“(I) enhance the viability of oyster restoration efforts;

“(II) are integral to the project; and

“(III) are cost effective.”.

SEC. 4011. LOUISIANA COASTAL AREA.

(a) **REVIEW OF COASTAL MASTER PLAN.**—Section 7002(c) of the Water Resources Development Act of 2007 (121 Stat. 1271) is amended by inserting “, or the plan entitled ‘Louisiana Comprehensive Master Plan for a Sustainable Coast’ prepared by the State of Louisiana and accepted by the Louisiana Coastal Protection and Restoration Authority (including any subsequent amendments or revisions)” before the period at the end.

(b) **INTERIM USE OF PLAN.**—

(1) **DEFINITIONS.**—In this subsection:

(A) **ANNUAL REPORT.**—The term “annual report” has the meaning given the term in section 7001(f).

(B) **FEASIBILITY REPORT; FEASIBILITY STUDY.**—The terms “feasibility report” and “feasibility study” have the meanings given those terms in section 7001(f).

(2) **REVIEW.**—The Secretary shall—

(A) review the plan entitled ‘Louisiana’s Comprehensive Master Plan for a Sustainable Coast’ prepared by the State of Louisiana and accepted by the Louisiana Coastal Protection and Restoration Authority Board (including any subsequent amendments or revisions); and

(B) in consultation with the State of Louisiana, identify and conduct feasibility studies for up to 10 projects included in the plan described in subparagraph (A).

(3) **RECOMMENDATIONS.**—The Secretary shall include in the subsequent annual report, in accordance with section 7001—

(A) any proposed feasibility study initiated under paragraph (2)(B); and

(B) any feasibility report for a project identified under paragraph (2)(B).

(4) **ADMINISTRATION.**—Section 7008 of the Water Resources Development Act of 2007 (121 Stat. 1278) shall not apply to any feasibility study carried out under this subsection.

(c) **SCIENCE AND TECHNOLOGY.**—Section 7006(a)(2) of the Water Resources Development Act of 2007 (121 Stat. 1274) is amended—

(1) by redesignating subparagraphs (C) and (D) as subparagraphs (D) and (E), respectively; and

(2) by inserting after subparagraph (B) the following:

“(C) to examine a systemwide approach to coastal sustainability;”.

SEC. 4012. RED RIVER BASIN.

(a) **IN GENERAL.**—In the case of a reservoir located within the Red River Basin for which the Department of the Army is authorized to provide for municipal and industrial water supply storage and irrigation storage, the Secretary may reassign unused irrigation storage to storage for municipal and industrial water supply for use by a State or local interest that has entered into an agreement with the Secretary for water supply storage at that reservoir prior to the date of enactment of this Act.

(b) ADMINISTRATION.—Any assignment under subsection (a) shall be subject to such terms and conditions as the Secretary determines to be appropriate and necessary in the public interest.

SEC. 4013. TECHNICAL CORRECTIONS.

(a) RARITAN RIVER.—Section 102 of the Energy and Water Development Appropriations Act, 1998 (Public Law 105–62; 111 Stat. 1327), is repealed.

(b) DES MOINES, BOONE, AND RACCOON RIVERS.—The boundaries for the project referred to as the Des Moines Recreational River and Greenbelt, Iowa, under the heading “CORPS OF ENGINEERS—CIVIL” under the heading “DEPARTMENT OF THE ARMY” under the heading “DEPARTMENT OF DEFENSE—CIVIL” in chapter IV of title I of the Supplemental Appropriations Act, 1985 (99 Stat. 313), are revised to include the entirety of sections 19 and 29, situated in T. 89 N., R. 28 W.

(c) SOUTH FLORIDA COASTAL AREA.—Section 109 of title I of division B of the Miscellaneous Appropriations Act, 2001 (114 Stat. 2763A–221; 121 Stat. 1217) is amended—

(1) in subsection (a), by inserting “and unincorporated communities” after “municipalities”;

(2) by redesignating subsection (f) as subsection (g); and

(3) by inserting after subsection (e) the following:

“(f) PRIORITY.—In providing assistance under this section, the Secretary shall give priority to projects sponsored by current non-Federal interests, incorporated communities in Monroe County, Monroe County, and the State of Florida.”

(d) TRINITY RIVER AND TRIBUTARIES.—Section 5141(a)(2) of the Water Resources Development Act of 2007 (121 Stat. 1253) is amended by inserting “and the Interior Levee Drainage Study Phase–II report, Dallas, Texas, dated January 2009,” after “September 2006,”

(e) CENTRAL AND SOUTHERN FLORIDA CANAL.—

(1) IN GENERAL.—The Secretary shall consider any amounts and associated program income provided prior to the date of enactment of this Act by the Secretary of the Interior to the non-Federal interest for the acquisition of areas identified in section 316(b)(2) of the Water Resources Development Act of 1996 (110 Stat. 3715)—

(A) as satisfying the requirements of that paragraph;

and

(B) as part of the Federal share of the cost of implementing the plan under that subsection.

(2) NON-FEDERAL COST SHARE.—The non-Federal interest shall receive credit for land, easements, rights-of-way, and relocations provided for the project as part of the non-Federal share of the cost of implementing the plan under section 316(b)(2) of the Water Resources Development Act of 1996 (110 Stat. 3715).

(3) CONFORMING AMENDMENT.—Section 316(b)(2) of the Water Resources Development Act of 1996 (110 Stat. 3715) is amended in the first sentence by striking “shall pay” and inserting “may pay up to”.

(f) SOUTH PLATTE RIVER WATERSHED.—Section 116 of the Energy and Water Development and Related Agencies Appropriations Act, 2009 (123 Stat. 608) is amended in the matter preceding

the proviso by inserting “(or a designee of the Department)” after “Colorado Department of Natural Resources”.

(g) POTOMAC RIVER.—Section 84(a) of the Water Resources Development Act of 1974 (88 Stat. 35) is amended by striking paragraph (1) and inserting the following:

“(1) A channel capacity sufficient to pass the 100-year flood event, as identified in the document entitled ‘Four Mile Run Watershed Feasibility Report’ and dated January 2014.”.

SEC. 4014. OCEAN AND COASTAL RESILIENCY.

(a) IN GENERAL.—The Secretary shall conduct studies to determine the feasibility of carrying out Corps of Engineers projects in coastal zones to enhance ocean and coastal ecosystem resiliency.

(b) STUDY.—In carrying out the study under subsection (a), the Secretary shall—

(1) as appropriate, coordinate with the heads of other appropriate Federal agencies, the Governors and other chief executive officers of the coastal states, nonprofit organizations, and other interested parties;

(2) identify Corps of Engineers projects in coastal zones for enhancing ocean and coastal ecosystem resiliency based on an assessment of the need and opportunities for, and feasibility of, the projects;

(3) to the maximum extent practicable, use any existing Corps of Engineers plans and data; and

(4) not later than 365 days after initial appropriations for this section, and every five years thereafter subject to the availability of appropriations, complete a study authorized under subsection (a).

(c) DISPOSITION.—

(1) IN GENERAL.—The Secretary may carry out a project identified in the study pursuant to subsection (a) in accordance with the criteria for projects carried out under one of the following authorities:

(A) Section 206(a)–(d) of the Water Resources Development Act of 1996 (33 U.S.C. 2330(a)–(d)).

(B) Section 1135(a)–(g) and (i) of the Water Resources Development Act of 1986 (33 U.S.C. 2309a(a)–(g) and (i)).

(C) Section 3(a)–(b), and (c)(1) of the Act of August, 13 1946 (33 U.S.C. 426g(a)–(b), and (c)(1)).

(D) Section 204(a)–(f) of the Water Resources Development Act of 1992 (33 U.S.C. 2326(a)–(f)).

(2) REPORT.—For each project that does not meet the criteria under paragraph (1), the Secretary shall include a recommendation relating to the project in the annual report submitted to Congress by the Secretary in accordance with section 7001.

(d) REQUESTS FOR PROJECTS.—The Secretary may carry out a project for a coastal state under this section only at the request of the Governor or chief executive officer of the coastal state, as appropriate.

(e) DEFINITION.—In this section, the terms “coastal zone” and “coastal state” have the meanings given such terms in section 304 of the Coastal Zone Management Act of 1972 (16 U.S.C. 1453), as in effect on the date of enactment of this Act.

TITLE V—WATER INFRASTRUCTURE FINANCING

Subtitle A—State Water Pollution Control Revolving Funds

SEC. 5001. GENERAL AUTHORITY FOR CAPITALIZATION GRANTS.

Section 601(a) of the Federal Water Pollution Control Act (33 U.S.C. 1381(a)) is amended by striking “for providing assistance” and all that follows through the period at the end and inserting the following: “to accomplish the objectives, goals, and policies of this Act by providing assistance for projects and activities identified in section 603(c).”.

SEC. 5002. CAPITALIZATION GRANT AGREEMENTS.

Section 602(b) of the Federal Water Pollution Control Act (33 U.S.C. 1382(b)) is amended—

(1) in paragraph (6)—

(A) by striking “section 603(c)(1) of”;

(B) by striking “before fiscal” and all that follows through “grants under this title and” and inserting “with assistance made available by a State water pollution control revolving fund authorized under this title, or”;

(C) by inserting “, or both,” after “205(m) of this Act”;

and

(D) by striking “201(b)” and all that follows through “511(c)(1),” and inserting “511(c)(1)”;

(2) in paragraph (9), by striking “standards; and” and inserting “standards, including standards relating to the reporting of infrastructure assets;”;

(3) in paragraph (10), by striking the period at the end and inserting a semicolon; and

(4) by adding at the end the following:

“(11) the State will establish, maintain, invest, and credit the fund with repayments, such that the fund balance will be available in perpetuity for activities under this Act;

“(12) any fees charged by the State to recipients of assistance that are considered program income will be used for the purpose of financing the cost of administering the fund or financing projects or activities eligible for assistance from the fund;

“(13) beginning in fiscal year 2016, the State will require as a condition of providing assistance to a municipality or intermunicipal, interstate, or State agency that the recipient of such assistance certify, in a manner determined by the Governor of the State, that the recipient—

“(A) has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is sought under this title; and

“(B) has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account—

“(i) the cost of constructing the project or activity;

“(ii) the cost of operating and maintaining the project or activity over the life of the project or activity; and
“(iii) the cost of replacing the project or activity; and

“(14) a contract to be carried out using funds directly made available by a capitalization grant under this title for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping, or architectural related services shall be negotiated in the same manner as a contract for architectural and engineering services is negotiated under chapter 11 of title 40, United States Code, or an equivalent State qualifications-based requirement (as determined by the Governor of the State).”.

SEC. 5003. WATER POLLUTION CONTROL REVOLVING LOAN FUNDS.

Section 603 of the Federal Water Pollution Control Act (33 U.S.C. 1383) is amended—

(1) by striking subsection (c) and inserting the following:

“(c) **PROJECTS AND ACTIVITIES ELIGIBLE FOR ASSISTANCE.**—The amounts of funds available to each State water pollution control revolving fund shall be used only for providing financial assistance—

“(1) to any municipality or intermunicipal, interstate, or State agency for construction of publicly owned treatment works (as defined in section 212);

“(2) for the implementation of a management program established under section 319;

“(3) for development and implementation of a conservation and management plan under section 320;

“(4) for the construction, repair, or replacement of decentralized wastewater treatment systems that treat municipal wastewater or domestic sewage;

“(5) for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water;

“(6) to any municipality or intermunicipal, interstate, or State agency for measures to reduce the demand for publicly owned treatment works capacity through water conservation, efficiency, or reuse;

“(7) for the development and implementation of watershed projects meeting the criteria set forth in section 122;

“(8) to any municipality or intermunicipal, interstate, or State agency for measures to reduce the energy consumption needs for publicly owned treatment works;

“(9) for reusing or recycling wastewater, stormwater, or subsurface drainage water;

“(10) for measures to increase the security of publicly owned treatment works; and

“(11) to any qualified nonprofit entity, as determined by the Administrator, to provide assistance to owners and operators of small and medium publicly owned treatment works—

“(A) to plan, develop, and obtain financing for eligible projects under this subsection, including planning, design, and associated preconstruction activities; and

“(B) to assist such treatment works in achieving compliance with this Act.”;

(2) in subsection (d)—

(A) in paragraph (1)—

(i) in subparagraph (A), by striking “20 years” and inserting “the lesser of 30 years and the projected useful life (as determined by the State) of the project to be financed with the proceeds of the loan”;

(ii) in subparagraph (B), by striking “not later than 20 years after project completion” and inserting “upon the expiration of the term of the loan”;

(iii) in subparagraph (C), by striking “and” at the end;

(iv) in subparagraph (D), by inserting “and” after the semicolon at the end; and

(v) by adding at the end the following:

“(E) for a treatment works proposed for repair, replacement, or expansion, and eligible for assistance under subsection (c)(1), the recipient of a loan shall—

“(i) develop and implement a fiscal sustainability plan that includes—

“(I) an inventory of critical assets that are a part of the treatment works;

“(II) an evaluation of the condition and performance of inventoried assets or asset groupings;

“(III) a certification that the recipient has evaluated and will be implementing water and energy conservation efforts as part of the plan; and

“(IV) a plan for maintaining, repairing, and, as necessary, replacing the treatment works and a plan for funding such activities; or

“(ii) certify that the recipient has developed and implemented a plan that meets the requirements under clause (i);”;

(B) in paragraph (7), by inserting “, \$400,000 per year, or 1/5 percent per year of the current valuation of the fund, whichever amount is greatest, plus the amount of any fees collected by the State for such purpose regardless of the source” before the period at the end; and

(3) by adding at the end the following:

“(i) ADDITIONAL SUBSIDIZATION.—

“(1) IN GENERAL.—In any case in which a State provides assistance to a municipality or intermunicipal, interstate, or State agency under subsection (d), the State may provide additional subsidization, including forgiveness of principal and negative interest loans—

“(A) to benefit a municipality that—

“(i) meets the affordability criteria of the State established under paragraph (2); or

“(ii) does not meet the affordability criteria of the State if the recipient—

“(I) seeks additional subsidization to benefit individual ratepayers in the residential user rate class;

“(II) demonstrates to the State that such ratepayers will experience a significant hardship from the increase in rates necessary to finance the

project or activity for which assistance is sought; and

“(III) ensures, as part of an assistance agreement between the State and the recipient, that the additional subsidization provided under this paragraph is directed through a user charge rate system (or other appropriate method) to such rate-payers; or

“(B) to implement a process, material, technique, or technology—

“(i) to address water-efficiency goals;

“(ii) to address energy-efficiency goals;

“(iii) to mitigate stormwater runoff; or

“(iv) to encourage sustainable project planning, design, and construction.

“(2) AFFORDABILITY CRITERIA.—

“(A) ESTABLISHMENT.—

“(i) IN GENERAL.—Not later than September 30, 2015, and after providing notice and an opportunity for public comment, a State shall establish affordability criteria to assist in identifying municipalities that would experience a significant hardship raising the revenue necessary to finance a project or activity eligible for assistance under subsection (c)(1) if additional subsidization is not provided.

“(ii) CONTENTS.—The criteria under clause (i) shall be based on income and unemployment data, population trends, and other data determined relevant by the State, including whether the project or activity is to be carried out in an economically distressed area, as described in section 301 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161).

“(B) EXISTING CRITERIA.—If a State has previously established, after providing notice and an opportunity for public comment, affordability criteria that meet the requirements of subparagraph (A)—

“(i) the State may use the criteria for the purposes of this subsection; and

“(ii) those criteria shall be treated as affordability criteria established under this paragraph.

“(C) INFORMATION TO ASSIST STATES.—The Administrator may publish information to assist States in establishing affordability criteria under subparagraph (A).

“(3) LIMITATIONS.—

“(A) IN GENERAL.—A State may provide additional subsidization in a fiscal year under this subsection only if the total amount appropriated for making capitalization grants to all States under this title for the fiscal year exceeds \$1,000,000,000.

“(B) ADDITIONAL LIMITATION.—

“(i) GENERAL RULE.—Subject to clause (ii), a State may use not more than 30 percent of the total amount received by the State in capitalization grants under this title for a fiscal year for providing additional subsidization under this subsection.

“(ii) EXCEPTION.—If, in a fiscal year, the amount appropriated for making capitalization grants to all

States under this title exceeds \$1,000,000,000 by a percentage that is less than 30 percent, clause (i) shall be applied by substituting that percentage for 30 percent.

“(C) APPLICABILITY.—The authority of a State to provide additional subsidization under this subsection shall apply to amounts received by the State in capitalization grants under this title for fiscal years beginning after September 30, 2014.

“(D) CONSIDERATION.—If the State provides additional subsidization to a municipality or intermunicipal, interstate, or State agency under this subsection that meets the criteria under paragraph (1)(A), the State shall take the criteria set forth in section 602(b)(5) into consideration.”.

SEC. 5004. REQUIREMENTS.

Title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) is amended by adding at the end the following:

“SEC. 608. REQUIREMENTS.

“(a) IN GENERAL.—Funds made available from a State water pollution control revolving fund established under this title may not be used for a project for the construction, alteration, maintenance, or repair of treatment works unless all of the iron and steel products used in the project are produced in the United States.

“(b) DEFINITION OF IRON AND STEEL PRODUCTS.—In this section, the term ‘iron and steel products’ means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, construction materials.

“(c) APPLICATION.—Subsection (a) shall not apply in any case or category of cases in which the Administrator finds that—

“(1) applying subsection (a) would be inconsistent with the public interest;

“(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

“(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

“(d) WAIVER.—If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public, on an informal basis, a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet site of the Environmental Protection Agency.

“(e) INTERNATIONAL AGREEMENTS.—This section shall be applied in a manner consistent with United States obligations under international agreements.

“(f) MANAGEMENT AND OVERSIGHT.—The Administrator may retain up to 0.25 percent of the funds appropriated for this title for management and oversight of the requirements of this section.

“(g) EFFECTIVE DATE.—This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency’s capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of enactment of the Water Resources Reform and Development Act of 2014.”.

SEC. 5005. REPORT ON THE ALLOTMENT OF FUNDS.

(a) REVIEW.—The Administrator of the Environmental Protection Agency shall conduct a review of the allotment formula in effect on the date of enactment of this Act for allocation of funds authorized under title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) to determine whether that formula adequately addresses the water quality needs of eligible States, territories, and Indian tribes, based on—

(1) the most recent survey of needs developed by the Administrator under section 516(b) of that Act (33 U.S.C. 1375(b)); and

(2) any other information the Administrator considers appropriate.

(b) REPORT.—Not later than 18 months after the date of enactment of this Act, the Administrator shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report on the results of the review under subsection (a), including any recommendations for changing the allotment formula.

SEC. 5006. EFFECTIVE DATE.

This subtitle, including any amendments made by the subtitle, shall take effect on October 1, 2014.

Subtitle B—General Provisions

SEC. 5011. WATERSHED PILOT PROJECTS.

Section 122 of the Federal Water Pollution Control Act (33 U.S.C. 1274) is amended—

(1) in the section heading, by striking “WET WEATHER”;

(2) in subsection (a)—

(A) in the matter preceding paragraph (1)—

(i) by striking “for treatment works” and inserting “to a municipality or municipal entity”; and

(ii) by striking “of wet weather discharge control”;

(B) in paragraph (2), by striking “in reducing such pollutants” and all that follows before the period at the end and inserting “to manage, reduce, treat, recapture, or reuse municipal stormwater, including techniques that utilize infiltration, evapotranspiration, and reuse of stormwater onsite”; and

(C) by adding at the end the following:

“(3) WATERSHED PARTNERSHIPS.—Efforts of municipalities and property owners to demonstrate cooperative ways to address nonpoint sources of pollution to reduce adverse impacts on water quality.

“(4) INTEGRATED WATER RESOURCE PLAN.—The development of an integrated water resource plan for the coordinated management and protection of surface water, ground water,

and stormwater resources on a watershed or subwatershed basis to meet the objectives, goals, and policies of this Act.

“(5) MUNICIPALITY-WIDE STORMWATER MANAGEMENT PLANNING.—The development of a municipality-wide plan that identifies the most effective placement of stormwater technologies and management approaches, to reduce water quality impairments from stormwater on a municipality-wide basis.

“(6) INCREASED RESILIENCE OF TREATMENT WORKS.—Efforts to assess future risks and vulnerabilities of publicly owned treatment works to manmade or natural disasters, including extreme weather events and sea-level rise, and to carry out measures, on a systemwide or area-wide basis, to increase the resiliency of publicly owned treatment works.”;

(3) by striking subsection (c);

(4) by redesignating subsection (d) as subsection (c); and

(5) in subsection (c) (as so redesignated) by striking “5 years after the date of enactment of this section,” and inserting “October 1, 2015,”.

SEC. 5012. DEFINITION OF TREATMENT WORKS.

(a) GRANTS FOR CONSTRUCTION OF TREATMENT WORKS.—Section 212(2)(A) of the Federal Water Pollution Control Act (33 U.S.C. 1292(2)(A)) is amended—

(1) by striking “any works, including site”;

(2) by striking “is used for ultimate” and inserting “will be used for ultimate”; and

(3) by inserting before the period at the end the following: “and acquisition of other land, and interests in land, that are necessary for construction”.

(b) DEFINITIONS.—Section 502 of the Federal Water Pollution Control Act (33 U.S.C. 1362) is amended by adding at the end the following:

“(26) TREATMENT WORKS.—The term ‘treatment works’ has the meaning given the term in section 212.”.

(c) EFFECTIVE DATE.—The amendments made by this section shall take effect on October 1, 2014.

SEC. 5013. FUNDING FOR INDIAN PROGRAMS.

Section 518(c) of the Federal Water Pollution Control Act (33 U.S.C. 1377(c)) is amended—

(1) by striking “The Administrator” and inserting the following:

“(1) FISCAL YEARS 1987–2014.—The Administrator”;

(2) in paragraph (1) (as so designated)—

(A) by striking “each fiscal year beginning after September 30, 1986,” and inserting “each of fiscal years 1987 through 2014.”; and

(B) by striking the second sentence; and

(3) by adding at the end the following:

“(2) FISCAL YEAR 2015 AND THEREAFTER.—For fiscal year 2015 and each fiscal year thereafter, the Administrator shall reserve, before allotments to the States under section 604(a), not less than 0.5 percent and not more than 2.0 percent of the funds made available to carry out title VI.

“(3) USE OF FUNDS.—Funds reserved under this subsection shall be available only for grants for projects and activities eligible for assistance under section 603(c) to serve—

“(A) Indian tribes (as defined in subsection (h));

“(B) former Indian reservations in Oklahoma (as determined by the Secretary of the Interior); and

“(C) Native villages (as defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602)).”.

SEC. 5014. WATER INFRASTRUCTURE PUBLIC-PRIVATE PARTNERSHIP PILOT PROGRAM.

(a) **IN GENERAL.**—The Secretary shall establish a pilot program to evaluate the cost effectiveness and project delivery efficiency of allowing non-Federal pilot applicants to carry out authorized water resources development projects for coastal harbor improvement, channel improvement, inland navigation, flood damage reduction, aquatic ecosystem restoration, and hurricane and storm damage reduction.

(b) **PURPOSES.**—The purposes of the pilot program established under subsection (a) are—

(1) to identify cost-saving project delivery alternatives that reduce the backlog of authorized Corps of Engineers projects; and

(2) to evaluate the technical, financial, and organizational benefits of allowing a non-Federal pilot applicant to carry out and manage the design or construction (or both) of 1 or more of such projects.

(c) **SUBSEQUENT APPROPRIATIONS.**—Any activity undertaken under this section is authorized only to the extent specifically provided for in subsequent appropriations Acts.

(d) **ADMINISTRATION.**—In carrying out the pilot program established under subsection (a), the Secretary shall—

(1) identify for inclusion in the program at least 15 projects that are authorized for construction for coastal harbor improvement, channel improvement, inland navigation, flood damage reduction, or hurricane and storm damage reduction;

(2) notify in writing the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives of each project identified under paragraph (1);

(3) in consultation with the non-Federal pilot applicant associated with each project identified under paragraph (1), develop a detailed project management plan for the project that outlines the scope, financing, budget, design, and construction resource requirements necessary for the non-Federal pilot applicant to execute the project, or a separable element of the project;

(4) at the request of the non-Federal pilot applicant associated with each project identified under paragraph (1), enter into a project partnership agreement with the non-Federal pilot applicant under which the non-Federal pilot applicant is provided full project management control for the financing, design, or construction (or any combination thereof) of the project, or a separable element of the project, in accordance with plans approved by the Secretary;

(5) following execution of a project partnership agreement under paragraph (4) and completion of all work under the agreement, issue payment, in accordance with subsection (g), to the relevant non-Federal pilot applicant for that work; and

(6) regularly monitor and audit each project carried out under the program to ensure that all activities related to the

project are carried out in compliance with plans approved by the Secretary and that construction costs are reasonable.

(e) SELECTION CRITERIA.—In identifying projects under subsection (d)(1), the Secretary shall consider the extent to which the project—

- (1) is significant to the economy of the United States;
- (2) leverages Federal investment by encouraging non-Federal contributions to the project;
- (3) employs innovative project delivery and cost-saving methods;
- (4) received Federal funds in the past and experienced delays or missed scheduled deadlines;
- (5) has unobligated Corps of Engineers funding balances; and
- (6) has not received Federal funding for recapitalization and modernization since the project was authorized.

(f) DETAILED PROJECT SCHEDULE.—Not later than 180 days after entering into a project partnership agreement under subsection (d)(4), a non-Federal pilot applicant, to the maximum extent practicable, shall submit to the Secretary a detailed project schedule for the relevant project, based on estimated funding levels, that specifies deadlines for each milestone with respect to the project.

(g) PAYMENT.—Payment to the non-Federal pilot applicant for work completed pursuant to a project partnership agreement under subsection (d)(4) may be made from—

- (1) if applicable, the balance of the unobligated amounts appropriated for the project; and
- (2) other amounts appropriated to the Corps of Engineers, subject to the condition that the total amount transferred to the non-Federal pilot applicant may not exceed the estimate of the Federal share of the cost of construction, including any required design.

(h) TECHNICAL ASSISTANCE.—At the request of a non-Federal pilot applicant participating in the pilot program established under subsection (a), the Secretary may provide to the non-Federal pilot applicant, if the non-Federal pilot applicant contracts with and compensates the Secretary, technical assistance with respect to—

- (1) a study, engineering activity, or design activity related to a project carried out by the non-Federal pilot applicant under the program; and
- (2) obtaining permits necessary for such a project.

(i) IDENTIFICATION OF IMPEDIMENTS.—

(1) IN GENERAL.—The Secretary shall—

(A) except as provided in paragraph (2), identify any procedural requirements under the authority of the Secretary that impede greater use of public-private partnerships and private investment in water resources development projects;

(B) develop and implement, on a project-by-project basis, procedures and approaches that—

- (i) address such impediments; and
- (ii) protect the public interest and any public investment in water resources development projects that involve public-private partnerships or private investment in water resources development projects; and

(C) not later than 1 year after the date of enactment of this section, issue rules to carry out the procedures and approaches developed under subparagraph (B).

(2) RULE OF CONSTRUCTION.—Nothing in this section allows the Secretary to waive any requirement under—

(A) sections 3141 through 3148 and sections 3701 through 3708 of title 40, United States Code;

(B) the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.); or

(C) any other provision of Federal law.

(j) PUBLIC BENEFIT STUDIES.—

(1) IN GENERAL.—Before entering into a project partnership agreement under subsection (d)(4), the Secretary shall conduct an assessment of whether, and provide justification in writing to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives that, the proposed agreement provides better public and financial benefits than a similar transaction using public funding or financing.

(2) REQUIREMENTS.—An assessment under paragraph (1) shall—

(A) be completed in a period of not more than 90 days;

(B) take into consideration any supporting materials and data submitted by the relevant non-Federal pilot applicant and other stakeholders; and

(C) determine whether the proposed project partnership agreement is in the public interest by determining whether the agreement will provide public and financial benefits, including expedited project delivery and savings for taxpayers.

(k) NON-FEDERAL FUNDING.—The non-Federal pilot applicant may finance the non-Federal share of a project carried out under the pilot program established under subsection (a).

(l) APPLICABILITY OF FEDERAL LAW.—Any provision of Federal law that would apply to the Secretary if the Secretary were carrying out a project shall apply to a non-Federal pilot applicant carrying out a project under this section.

(m) COST SHARE.—Nothing in this section affects a cost-sharing requirement under Federal law that is applicable to a project carried out under the pilot program established under subsection (a).

(n) REPORT.—Not later than 3 years after the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report describing the results of the pilot program established under subsection (a), including any recommendations of the Secretary concerning whether the program or any component of the program should be implemented on a national basis.

(o) NON-FEDERAL PILOT APPLICANT DEFINED.—In this section, the term “non-Federal pilot applicant” means—

(1) the non-Federal sponsor of the water resources development project;

(2) a non-Federal interest, as defined in section 221 of the Flood Control Act of 1970 (42 U.S.C. 1982d–5b); or

(3) a private entity with the consent of the local government in which the project is located or that is otherwise affected by the project.

Subtitle C—Innovative Financing Pilot Projects

SEC. 5021. SHORT TITLE.

This subtitle may be cited as the “Water Infrastructure Finance and Innovation Act of 2014”.

SEC. 5022. DEFINITIONS.

In this subtitle:

(1) **ADMINISTRATOR.**—The term “Administrator” means the Administrator of the Environmental Protection Agency.

(2) **COMMUNITY WATER SYSTEM.**—The term “community water system” has the meaning given the term in section 1401 of the Safe Drinking Water Act (42 U.S.C. 300f).

(3) **FEDERAL CREDIT INSTRUMENT.**—The term “Federal credit instrument” means a secured loan or loan guarantee authorized to be made available under this subtitle with respect to a project.

(4) **INVESTMENT-GRADE RATING.**—The term “investment-grade rating” means a rating of BBB minus, Baa3, bbb minus, BBB (low), or higher assigned by a rating agency to project obligations.

(5) **LENDER.**—

(A) **IN GENERAL.**—The term “lender” means any non-Federal qualified institutional buyer (as defined in section 230.144A(a) of title 17, Code of Federal Regulations (or a successor regulation), known as Rule 144A(a) of the Securities and Exchange Commission and issued under the Securities Act of 1933 (15 U.S.C. 77a et seq.)).

(B) **INCLUSIONS.**—The term “lender” includes—

(i) a qualified retirement plan (as defined in section 4974(c) of the Internal Revenue Code of 1986) that is a qualified institutional buyer; and

(ii) a governmental plan (as defined in section 414(d) of the Internal Revenue Code of 1986) that is a qualified institutional buyer.

(6) **LOAN GUARANTEE.**—The term “loan guarantee” means any guarantee or other pledge by the Secretary or the Administrator to pay all or part of the principal of, and interest on, a loan or other debt obligation issued by an obligor and funded by a lender.

(7) **OBLIGOR.**—The term “obligor” means an eligible entity that is primarily liable for payment of the principal of, or interest on, a Federal credit instrument.

(8) **PROJECT OBLIGATION.**—

(A) **IN GENERAL.**—The term “project obligation” means any note, bond, debenture, or other debt obligation issued by an obligor in connection with the financing of a project.

(B) **EXCLUSION.**—The term “project obligation” does not include a Federal credit instrument.

(9) **RATING AGENCY.**—The term “rating agency” means a credit rating agency registered with the Securities and

Exchange Commission as a nationally recognized statistical rating organization (as defined in section 3(a) of the Securities Exchange Act of 1934 (15 U.S.C. 78c(a))).

(10) SECURED LOAN.—The term “secured loan” means a direct loan or other debt obligation issued by an obligor and funded by the Secretary or Administrator, as applicable, in connection with the financing of a project under section 5029.

(11) STATE.—The term “State” means—

(A) a State;

(B) the District of Columbia;

(C) the Commonwealth of Puerto Rico; and

(D) any other territory or possession of the United States.

(12) STATE INFRASTRUCTURE FINANCING AUTHORITY.—The term “State infrastructure financing authority” means the State entity established or designated by the Governor of a State to receive a capitalization grant provided by, or otherwise carry out the requirements of, title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et. seq.) or section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12).

(13) SUBSIDY AMOUNT.—The term “subsidy amount” means the amount of budget authority sufficient to cover the estimated long-term cost to the Federal Government of a Federal credit instrument, as calculated on a net present value basis, excluding administrative costs and any incidental effects on governmental receipts or outlays in accordance with the Federal Credit Reform Act of 1990 (2 U.S.C. 661 et seq.).

(14) SUBSTANTIAL COMPLETION.—The term “substantial completion”, with respect to a project, means the earliest date on which a project is considered to perform the functions for which the project is designed.

(15) TREATMENT WORKS.—The term “treatment works” has the meaning given the term in section 212 of the Federal Water Pollution Control Act (33 U.S.C. 1292).

SEC. 5023. AUTHORITY TO PROVIDE ASSISTANCE.

(a) IN GENERAL.—The Secretary and the Administrator may provide financial assistance under this subtitle to carry out pilot projects, which shall be selected to ensure a diversity of project types and geographical locations.

(b) RESPONSIBILITY.—

(1) SECRETARY.—The Secretary shall carry out all pilot projects under this subtitle that are eligible projects under section 5026(1).

(2) ADMINISTRATOR.—The Administrator shall carry out all pilot projects under this subtitle that are eligible projects under paragraphs (2), (3), (4), (5), (6), and (8) of section 5026.

(3) OTHER PROJECTS.—The Secretary or the Administrator, as applicable, may carry out eligible projects under paragraph (7) or (9) of section 5026.

SEC. 5024. APPLICATIONS.

(a) IN GENERAL.—To receive assistance under this subtitle, an eligible entity shall submit to the Secretary or the Administrator, as applicable, an application at such time, in such manner, and containing such information as the Secretary or the Administrator may require.

(b) **COMBINED PROJECTS.**—In the case of an eligible project described in paragraph (8) or (9) of section 5026, the Secretary or the Administrator, as applicable, shall require the eligible entity to submit a single application for the combined group of projects.

SEC. 5025. ELIGIBLE ENTITIES.

The following entities are eligible to receive assistance under this subtitle:

- (1) A corporation.
- (2) A partnership.
- (3) A joint venture.
- (4) A trust.
- (5) A Federal, State, or local governmental entity, agency, or instrumentality.
- (6) A tribal government or consortium of tribal governments.
- (7) A State infrastructure financing authority.

SEC. 5026. PROJECTS ELIGIBLE FOR ASSISTANCE.

The following projects may be carried out with amounts made available under this subtitle:

(1) Any project for flood damage reduction, hurricane and storm damage reduction, environmental restoration, coastal or inland harbor navigation improvement, or inland and intra-coastal waterways navigation improvement that the Secretary determines is technically sound, economically justified, and environmentally acceptable, including—

- (A) a project to reduce flood damage;
- (B) a project to restore aquatic ecosystems;
- (C) a project to improve the inland and intracoastal waterways navigation system of the United States; and
- (D) a project to improve navigation of a coastal or inland harbor of the United States, including channel deepening and construction of associated general navigation features.

(2) 1 or more activities that are eligible for assistance under section 603(c) of the Federal Water Pollution Control Act (33 U.S.C. 1383(c)), notwithstanding the public ownership requirement under paragraph (1) of that subsection.

(3) 1 or more activities described in section 1452(a)(2) of the Safe Drinking Water Act (42 U.S.C. 300j-12(a)(2)).

(4) A project for enhanced energy efficiency in the operation of a public water system or a publicly owned treatment works.

(5) A project for repair, rehabilitation, or replacement of a treatment works, community water system, or aging water distribution or waste collection facility (including a facility that serves a population or community of an Indian reservation).

(6) A brackish or sea water desalination project, a managed aquifer recharge project, or a water recycling project.

(7) Acquisition of real property or an interest in real property—

(A) if the acquisition is integral to a project described in paragraphs (1) through (6); or

(B) pursuant to an existing plan that, in the judgment of the Administrator or the Secretary, as applicable, would mitigate the environmental impacts of water resources infrastructure projects otherwise eligible for assistance under this section.

(8) A combination of projects, each of which is eligible under paragraph (2) or (3), for which a State infrastructure financing authority submits to the Administrator a single application.

(9) A combination of projects secured by a common security pledge, each of which is eligible under paragraph (1), (2), (3), (4), (5), (6), or (7), for which an eligible entity, or a combination of eligible entities, submits a single application.

SEC. 5027. ACTIVITIES ELIGIBLE FOR ASSISTANCE.

For purposes of this subtitle, an eligible activity with respect to an eligible project includes the cost of—

(1) development-phase activities, including planning, feasibility analysis (including any related analysis necessary to carry out an eligible project), revenue forecasting, environmental review, permitting, preliminary engineering and design work, and other preconstruction activities;

(2) construction, reconstruction, rehabilitation, and replacement activities;

(3) the acquisition of real property or an interest in real property (including water rights, land relating to the project, and improvements to land), environmental mitigation (including acquisitions pursuant to section 5026(7)), construction contingencies, and acquisition of equipment; and

(4) capitalized interest necessary to meet market requirements, reasonably required reserve funds, capital issuance expenses, and other carrying costs during construction.

SEC. 5028. DETERMINATION OF ELIGIBILITY AND PROJECT SELECTION.

(a) **ELIGIBILITY REQUIREMENTS.**—To be eligible to receive financial assistance under this subtitle, a project shall meet the following criteria, as determined by the Secretary or Administrator, as applicable:

(1) **CREDITWORTHINESS.**—

(A) **IN GENERAL.**—The project and obligor shall be creditworthy, which shall be determined by the Secretary or the Administrator, as applicable.

(B) **CONSIDERATIONS.**—In determining the creditworthiness of a project and obligor, the Secretary or the Administrator, as applicable, shall take into consideration relevant factors, including—

(i) the terms, conditions, financial structure, and security features of the proposed financing;

(ii) the dedicated revenue sources that will secure or fund the project obligations;

(iii) the financial assumptions upon which the project is based; and

(iv) the financial soundness and credit history of the obligor.

(C) **SECURITY FEATURES.**—The Secretary or the Administrator, as applicable, shall ensure that any financing for the project has appropriate security features, such as a rate covenant, supporting the project obligations to ensure repayment.

(D) **RATING OPINION LETTERS.**—

(i) **PRELIMINARY RATING OPINION LETTER.**—The Secretary or the Administrator, as applicable, shall

require each project applicant to provide, at the time of application, a preliminary rating opinion letter from at least 1 rating agency indicating that the senior obligations of the project (which may be the Federal credit instrument) have the potential to achieve an investment-grade rating.

(ii) FINAL RATING OPINION LETTERS.—The Secretary or the Administrator, as applicable, shall require each project applicant to provide, prior to final acceptance and financing of the project, final rating opinion letters from at least 2 rating agencies indicating that the senior obligations of the project have an investment-grade rating.

(E) SPECIAL RULE FOR CERTAIN COMBINED PROJECTS.—The Administrator shall develop a credit evaluation process for a Federal credit instrument provided to a State infrastructure financing authority for a project under section 5026(8) or an entity for a project under section 5026(9), which may include requiring the provision of a final rating opinion letter from at least 2 rating agencies.

(2) ELIGIBLE PROJECT COSTS.—

(A) IN GENERAL.—Subject to subparagraph (B), the eligible project costs of a project shall be reasonably anticipated to be not less than \$20,000,000.

(B) SMALL COMMUNITY WATER INFRASTRUCTURE PROJECTS.—For a project described in paragraph (2) or (3) of section 5026 that serves a community of not more than 25,000 individuals, the eligible project costs of a project shall be reasonably anticipated to be not less than \$5,000,000.

(3) DEDICATED REVENUE SOURCES.—The Federal credit instrument for the project shall be repayable, in whole or in part, from dedicated revenue sources that also secure the project obligations.

(4) PUBLIC SPONSORSHIP OF PRIVATE ENTITIES.—

(A) IN GENERAL.—If an eligible project is carried out by an entity that is not a State or local government or an agency or instrumentality of a State or local government or a tribal government or consortium of tribal governments, the project shall be publicly sponsored.

(B) PUBLIC SPONSORSHIP.—For purposes of this subtitle, a project shall be considered to be publicly sponsored if the obligor can demonstrate, to the satisfaction of the Secretary or the Administrator, as appropriate, that the project applicant has consulted with the affected State, local, or tribal government in which the project is located, or is otherwise affected by the project, and that such government supports the proposed project.

(5) LIMITATION.—No project receiving Federal credit assistance under this subtitle may be financed (directly or indirectly), in whole or in part, with proceeds of any obligation—

(A) the interest on which is exempt from the tax imposed under chapter 1 of the Internal Revenue Code of 1986; or

(B) with respect to which credit is allowable under subpart I or J of part IV of subchapter A of chapter 1 of such Code.

(6) USE OF EXISTING FINANCING MECHANISMS.—

(A) NOTIFICATION.—For each eligible project for which the Administrator has authority under paragraph (2) or (3) of section 5023(b) and for which the Administrator has received an application for financial assistance under this subtitle, the Administrator shall notify, not later than 30 days after the date on which the Administrator receives a complete application, the applicable State infrastructure financing authority of the State in which the project is located that such application has been submitted.

(B) DETERMINATION.—If, not later than 60 days after the date of receipt of a notification under subparagraph (A), a State infrastructure financing authority notifies the Administrator that the State infrastructure financing authority intends to commit funds to the project in an amount that is equal to or greater than the amount requested under the application, the Administrator may not provide any financial assistance for that project under this subtitle unless—

(i) by the date that is 180 days after the date of receipt of a notification under subparagraph (A), the State infrastructure financing authority fails to enter into an assistance agreement to provide funds for the project; or

(ii) the financial assistance to be provided by the State infrastructure financing authority will be at rates and terms that are less favorable than the rates and terms for financial assistance provided under this subtitle.

(7) OPERATION AND MAINTENANCE PLAN.—

(A) IN GENERAL.—The Secretary or the Administrator, as applicable, shall determine whether an applicant for assistance under this subtitle has developed, and identified adequate revenues to implement, a plan for operating, maintaining, and repairing the project over the useful life of the project.

(B) SPECIAL RULE.—An eligible project described in section 5026(1) that has not been specifically authorized by Congress shall not be eligible for Federal assistance for operations and maintenance.

(b) SELECTION CRITERIA.—

(1) ESTABLISHMENT.—The Secretary or the Administrator, as applicable, shall establish criteria for the selection of projects that meet the eligibility requirements of subsection (a), in accordance with paragraph (2).

(2) CRITERIA.—The selection criteria shall include the following:

(A) The extent to which the project is nationally or regionally significant, with respect to the generation of economic and public benefits, such as—

(i) the reduction of flood risk;

(ii) the improvement of water quality and quantity, including aquifer recharge;

(iii) the protection of drinking water, including source water protection; and

(iv) the support of international commerce.

(B) The extent to which the project financing plan includes public or private financing in addition to assistance under this subtitle.

(C) The likelihood that assistance under this subtitle would enable the project to proceed at an earlier date than the project would otherwise be able to proceed.

(D) The extent to which the project uses new or innovative approaches.

(E) The amount of budget authority required to fund the Federal credit instrument made available under this subtitle.

(F) The extent to which the project—

(i) protects against extreme weather events, such as floods or hurricanes; or

(ii) helps maintain or protect the environment.

(G) The extent to which a project serves regions with significant energy exploration, development, or production areas.

(H) The extent to which a project serves regions with significant water resource challenges, including the need to address—

(i) water quality concerns in areas of regional, national, or international significance;

(ii) water quantity concerns related to groundwater, surface water, or other water sources;

(iii) significant flood risk;

(iv) water resource challenges identified in existing regional, State, or multistate agreements; or

(v) water resources with exceptional recreational value or ecological importance.

(I) The extent to which the project addresses identified municipal, State, or regional priorities.

(J) The readiness of the project to proceed toward development, including a demonstration by the obligor that there is a reasonable expectation that the contracting process for construction of the project can commence by not later than 90 days after the date on which a Federal credit instrument is obligated for the project under this subtitle.

(K) The extent to which assistance under this subtitle reduces the contribution of Federal assistance to the project.

(3) SPECIAL RULE FOR CERTAIN COMBINED PROJECTS.—For a project described in section 5026(8), the Administrator shall only consider the criteria described in subparagraphs (B) through (K) of paragraph (2).

(c) FEDERAL REQUIREMENTS.—Nothing in this section supersedes the applicability of other requirements of Federal law (including regulations).

SEC. 5029. SECURED LOANS.

(a) AGREEMENTS.—

(1) IN GENERAL.—Subject to paragraphs (2) and (3), the Secretary or the Administrator, as applicable, may enter into agreements with 1 or more obligors to make secured loans, the proceeds of which shall be used to finance eligible project costs of any project selected under section 5028.

(2) FINANCIAL RISK ASSESSMENT.—Before entering into an agreement under this subsection for a secured loan, the Secretary or the Administrator, as applicable, in consultation with the Director of the Office of Management and Budget and each rating agency providing a rating opinion letter under section 5028(a)(1)(D), shall determine an appropriate capital reserve subsidy amount for the secured loan, taking into account each such rating opinion letter.

(3) INVESTMENT-GRADE RATING REQUIREMENT.—The execution of a secured loan under this section shall be contingent on receipt by the senior obligations of the project of an investment-grade rating.

(b) TERMS AND LIMITATIONS.—

(1) IN GENERAL.—A secured loan provided for a project under this section shall be subject to such terms and conditions, and contain such covenants, representations, warranties, and requirements (including requirements for audits), as the Secretary or the Administrator, as applicable, determines to be appropriate.

(2) MAXIMUM AMOUNT.—The amount of a secured loan under this section shall not exceed the lesser of—

(A) an amount equal to 49 percent of the reasonably anticipated eligible project costs; and

(B) if the secured loan does not receive an investment-grade rating, the amount of the senior project obligations of the project.

(3) PAYMENT.—A secured loan under this section—

(A) shall be payable, in whole or in part, from State or local taxes, user fees, or other dedicated revenue sources that also secure the senior project obligations of the relevant project;

(B) shall include a rate covenant, coverage requirement, or similar security feature supporting the project obligations; and

(C) may have a lien on revenues described in subparagraph (A), subject to any lien securing project obligations.

(4) INTEREST RATE.—The interest rate on a secured loan under this section shall be not less than the yield on United States Treasury securities of a similar maturity to the maturity of the secured loan on the date of execution of the loan agreement.

(5) MATURITY DATE.—

(A) IN GENERAL.—The final maturity date of a secured loan under this section shall be the earlier of—

(i) the date that is 35 years after the date of substantial completion of the relevant project (as determined by the Secretary or the Administrator, as applicable); and

(ii) if the useful life of the project (as determined by the Secretary or Administrator, as applicable) is less than 35 years, the useful life the project.

(B) SPECIAL RULE FOR STATE INFRASTRUCTURE FINANCING AUTHORITIES.—The final maturity date of a secured loan to a State infrastructure financing authority under this section shall be not later than 35 years after the date on which amounts are first disbursed.

(6) NONSUBORDINATION.—A secured loan under this section shall not be subordinated to the claims of any holder of project obligations in the event of bankruptcy, insolvency, or liquidation of the obligor of the project.

(7) FEES.—The Secretary or the Administrator, as applicable, may establish fees at a level sufficient to cover all or a portion of the costs to the Federal Government of making a secured loan under this section.

(8) NON-FEDERAL SHARE.—The proceeds of a secured loan under this section may be used to pay any non-Federal share of project costs required if the loan is repayable from non-Federal funds.

(9) MAXIMUM FEDERAL INVOLVEMENT.—

(A) IN GENERAL.—Except as provided in subparagraph (B), for each project for which assistance is provided under this subtitle, the total amount of Federal assistance shall not exceed 80 percent of the total project cost.

(B) EXCEPTIONS.—Subparagraph (A) shall not apply to any rural water project—

(i) that is authorized to be carried out by the Secretary of the Interior;

(ii) that includes among its beneficiaries a federally recognized Indian tribe; and

(iii) for which the authorized Federal share of the total project costs is greater than the amount described in subparagraph (A).

(c) REPAYMENT.—

(1) SCHEDULE.—The Secretary or the Administrator, as applicable, shall establish a repayment schedule for each secured loan provided under this section, based on the projected cash flow from project revenues and other repayment sources.

(2) COMMENCEMENT.—

(A) IN GENERAL.—Scheduled loan repayments of principal or interest on a secured loan under this section shall commence not later than 5 years after the date of substantial completion of the project (as determined by the Secretary or Administrator, as applicable).

(B) SPECIAL RULE FOR STATE INFRASTRUCTURE FINANCING AUTHORITIES.—Scheduled loan repayments of principal or interest on a secured loan to a State infrastructure financing authority under this subtitle shall commence not later than 5 years after the date on which amounts are first disbursed.

(3) DEFERRED PAYMENTS.—

(A) AUTHORIZATION.—If, at any time after the date of substantial completion of a project for which a secured loan is provided under this section, the project is unable to generate sufficient revenues to pay the scheduled loan repayments of principal and interest on the secured loan, the Secretary or the Administrator, as applicable, subject to subparagraph (C), may allow the obligor to add unpaid principal and interest to the outstanding balance of the secured loan.

(B) INTEREST.—Any payment deferred under subparagraph (A) shall—

(i) continue to accrue interest in accordance with subsection (b)(4) until fully repaid; and

(ii) be scheduled to be amortized over the remaining term of the secured loan.

(C) CRITERIA.—

(i) IN GENERAL.—Any payment deferral under subparagraph (A) shall be contingent on the project meeting such criteria as the Secretary or the Administrator, as applicable, may establish.

(ii) REPAYMENT STANDARDS.—The criteria established under clause (i) shall include standards for reasonable assurance of repayment.

(4) PREPAYMENT.—

(A) USE OF EXCESS REVENUES.—Any excess revenues that remain after satisfying scheduled debt service requirements on the project obligations and secured loan and all deposit requirements under the terms of any trust agreement, bond resolution, or similar agreement securing project obligations may be applied annually to prepay a secured loan under this section without penalty.

(B) USE OF PROCEEDS OF REFINANCING.—A secured loan under this section may be prepaid at any time without penalty from the proceeds of refinancing from non-Federal funding sources.

(d) SALE OF SECURED LOANS.—

(1) IN GENERAL.—Subject to paragraph (2), as soon as practicable after the date of substantial completion of a project and after providing a notice to the obligor, the Secretary or the Administrator, as applicable, may sell to another entity or reoffer into the capital markets a secured loan for a project under this section, if the Secretary or the Administrator, as applicable, determines that the sale or reoffering can be made on favorable terms.

(2) CONSENT OF OBLIGOR.—In making a sale or reoffering under paragraph (1), the Secretary or the Administrator, as applicable, may not change the original terms and conditions of the secured loan without the written consent of the obligor.

(e) LOAN GUARANTEES.—

(1) IN GENERAL.—The Secretary or the Administrator, as applicable, may provide a loan guarantee to a lender in lieu of making a secured loan under this section, if the Secretary or the Administrator, as applicable, determines that the budgetary cost of the loan guarantee is substantially the same as that of a secured loan.

(2) TERMS.—The terms of a loan guarantee provided under this subsection shall be consistent with the terms established in this section for a secured loan, except that the rate on the guaranteed loan and any prepayment features shall be negotiated between the obligor and the lender, with the consent of the Secretary or the Administrator, as applicable.

SEC. 5030. PROGRAM ADMINISTRATION.

(a) REQUIREMENT.—The Secretary or the Administrator, as applicable, shall establish a uniform system to service the Federal credit instruments made available under this subtitle.

(b) FEES.—

(1) IN GENERAL.—The Secretary or the Administrator, as applicable, may collect and spend fees, contingent on authority

being provided in appropriations Acts, at a level that is sufficient to cover—

(A) the costs of services of expert firms retained pursuant to subsection (d); and

(B) all or a portion of the costs to the Federal Government of servicing the Federal credit instruments provided under this subtitle.

(c) **SERVICER.**—

(1) **IN GENERAL.**—The Secretary or the Administrator, as applicable, may appoint a financial entity to assist the Secretary or the Administrator in servicing the Federal credit instruments provided under this subtitle.

(2) **DUTIES.**—A servicer appointed under paragraph (1) shall act as the agent for the Secretary or the Administrator, as applicable.

(3) **FEE.**—A servicer appointed under paragraph (1) shall receive a servicing fee, subject to approval by the Secretary or the Administrator, as applicable.

(d) **ASSISTANCE FROM EXPERTS.**—The Secretary or the Administrator, as applicable, may retain the services, including counsel, of organizations and entities with expertise in the field of municipal and project finance to assist in the underwriting and servicing of Federal credit instruments provided under this subtitle.

(e) **APPLICABILITY OF OTHER LAWS.**—Section 513 of the Federal Water Pollution Control Act (33 U.S.C. 1372) applies to the construction of a project carried out, in whole or in part, with assistance made available through a Federal credit instrument under this subtitle in the same manner that section applies to a treatment works for which a grant is made available under that Act.

SEC. 5031. STATE, TRIBAL, AND LOCAL PERMITS.

The provision of financial assistance for a project under this subtitle shall not—

(1) relieve any recipient of the assistance of any obligation to obtain any required State, local, or tribal permit or approval with respect to the project;

(2) limit the right of any unit of State, local, or tribal government to approve or regulate any rate of return on private equity invested in the project; or

(3) otherwise supersede any State, local, or tribal law (including any regulation) applicable to the construction or operation of the project.

SEC. 5032. REGULATIONS.

The Secretary or the Administrator, as applicable, may promulgate such regulations as the Secretary or Administrator determines to be appropriate to carry out this subtitle.

SEC. 5033. FUNDING.

(a) **IN GENERAL.**—There is authorized to be appropriated to each of the Secretary and the Administrator to carry out this subtitle, to remain available until expended—

(1) \$20,000,000 for fiscal year 2015;

(2) \$25,000,000 for fiscal year 2016;

(3) \$35,000,000 for fiscal year 2017;

(4) \$45,000,000 for fiscal year 2018; and

(5) \$50,000,000 for fiscal year 2019.

(b) ADMINISTRATIVE COSTS.—Of the funds made available to carry out this subtitle, the Secretary or the Administrator, as applicable, may use for the administration of this subtitle, including for the provision of technical assistance to aid project sponsors in obtaining the necessary approvals for the project, not more than \$2,200,000 for each of fiscal years 2015 through 2019.

(c) SMALL COMMUNITY WATER INFRASTRUCTURE PROJECTS.—

(1) IN GENERAL.—For each fiscal year, the Secretary or the Administrator, as applicable, shall set aside not less than 15 percent of the amounts made available for that fiscal year under this section for small community water infrastructure projects described in section 5028(a)(2)(B).

(2) ADMINISTRATION.—Any amounts set aside under paragraph (1) that remain unobligated on June 1 of the fiscal year for which the amounts are set aside shall be available for obligation by the Secretary or the Administrator, as applicable, for projects other than small community water infrastructure projects.

(d) ADDITIONAL FUNDING.—Notwithstanding section 5029(b)(2), the Secretary or the Administrator, as applicable, may make available up to 25 percent of the amounts made available for each fiscal year under this section for loans in excess of 49 percent of the total project costs.

SEC. 5034. REPORTS ON PILOT PROGRAM IMPLEMENTATION.

(a) AGENCY REPORTING.—As soon as practicable after each fiscal year for which amounts are made available to carry out this subtitle, the Secretary and the Administrator shall publish on a dedicated, publicly accessible Internet site—

(1) each application received for assistance under this subtitle; and

(2) a list of the projects selected for assistance under this subtitle, including—

(A) a description of each project;

(B) the amount of financial assistance provided for each project; and

(C) the basis for the selection of each project with respect to the requirements of this subtitle.

(b) REPORTS TO CONGRESS.—

(1) IN GENERAL.—Not later than 4 years after the date of enactment of this Act, the Comptroller General of the United States shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report summarizing for the projects that are receiving, or have received, assistance under this subtitle—

(A) the applications received for assistance under this subtitle;

(B) the projects selected for assistance under this subtitle, including a description of the projects and the basis for the selection of those projects with respect to the requirements of this subtitle;

(C) the type and amount of financial assistance provided for each project selected for assistance under this subtitle;

(D) the financial performance of each project selected for assistance under this subtitle, including an evaluation of whether the objectives of this subtitle are being met;

(E) the benefits and impacts of implementation of this subtitle, including the public benefit provided by the projects selected for assistance under this subtitle, including, as applicable, water quality and water quantity improvement, the protection of drinking water, and the reduction of flood risk; and

(F) an evaluation of the feasibility of attracting non-Federal public or private financing for water infrastructure projects as a result of the implementation of this subtitle.

(2) RECOMMENDATIONS.—The report under paragraph (1) shall include—

(A) an evaluation of the impacts (if any) of the limitation under section 5028(a)(5) on the ability of eligible entities to finance water infrastructure projects under this subtitle;

(B) a recommendation as to whether the objectives of this subtitle would be best served—

(i) by continuing the authority of the Secretary or the Administrator, as applicable, to provide assistance under this subtitle;

(ii) by establishing a Government corporation or Government-sponsored enterprise to provide assistance in accordance with this subtitle; or

(iii) by terminating the authority of the Secretary and the Administrator under this subtitle and relying on the capital markets to fund the types of infrastructure investments assisted by this subtitle without Federal participation; and

(C) any proposed changes to improve the efficiency and effectiveness of this subtitle in providing financing for water infrastructure projects, taking into consideration the recommendations made under subparagraphs (A) and (B).

SEC. 5035. REQUIREMENTS.

(a) IN GENERAL.—Except as provided in subsection (c), none of the amounts made available under this subtitle may be used for the construction, alteration, maintenance, or repair of a project eligible for assistance under this subtitle unless all of the iron and steel products used in the project are produced in the United States.

(b) DEFINITION OF IRON AND STEEL PRODUCTS.—In this section, the term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(c) APPLICATION.—Subsection (a) shall not apply in any case or category of cases in which the Administrator finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(d) WAIVER.—If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public, on an informal basis, a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(e) INTERNATIONAL AGREEMENTS.—This section shall be applied in a manner consistent with United States obligations under international agreements.

TITLE VI—DEAUTHORIZATION AND BACKLOG PREVENTION

SEC. 6001. DEAUTHORIZATION OF INACTIVE PROJECTS.

(a) PURPOSES.—The purposes of this section are—

(1) to identify \$18,000,000,000 in water resources development projects authorized by Congress that are no longer viable for construction due to—

(A) a lack of local support;

(B) a lack of available Federal or non-Federal resources; or

(C) an authorizing purpose that is no longer relevant or feasible;

(2) to create an expedited and definitive process to deauthorize water resources development projects that are no longer viable for construction; and

(3) to allow the continued authorization of water resources development projects that are viable for construction.

(b) COMPREHENSIVE STATUS REPORTS.—Section 1001(b) of the Water Resources Development Act of 1986 (33 U.S.C. 579a(b)) is amended by adding at the end the following:

“(3) MINIMUM FUNDING LIST.—At the end of each fiscal year, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, and make available on a publicly accessible Internet site in a manner that is downloadable, searchable, and sortable, a list of—

“(A) projects or separable elements of projects authorized for construction for which funding has been obligated during the current fiscal year or any of the 6 preceding fiscal years;

“(B) the amount of funding obligated for each such project or separable element per fiscal year;

“(C) the current phase of each such project or separable element of a project; and

“(D) the amount required to complete the current phase of each such project or separable element.

“(4) COMPREHENSIVE BACKLOG REPORT.—

“(A) IN GENERAL.—The Secretary shall compile and publish a complete list of all projects and separable elements of projects of the Corps of Engineers that are authorized for construction but have not been completed.

“(B) REQUIRED INFORMATION.—The Secretary shall include on the list developed under subparagraph (A) for each project and separable element on that list—

“(i) the date of authorization of the project or separable element, including any subsequent modifications to the original authorization;

“(ii) the original budget authority for the project or separable element;

“(iii) a brief description of the project or separable element;

“(iv) the estimated date of completion of the project or separable element;

“(v) the estimated cost of completion of the project or separable element; and

“(vi) any amounts appropriated for the project or separable element that remain unobligated.

“(C) PUBLICATION.—

“(i) IN GENERAL.—Not later than 1 year after the date of enactment of this paragraph, the Secretary shall submit a copy of the list developed under subparagraph (A) to—

“(I) the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives; and

“(II) the Director of the Office of Management and Budget.

“(ii) PUBLIC AVAILABILITY.—Beginning on the date the Secretary submits the report to Congress under clause (i), the Secretary shall make a copy of the list available on a publicly accessible Internet site in a manner that is downloadable, searchable, and sortable.”.

(c) INTERIM DEAUTHORIZATION LIST.—

(1) IN GENERAL.—The Secretary shall develop an interim deauthorization list that identifies each water resources development project, or separable element of a project, authorized for construction before November 8, 2007, for which—

(A) construction was not initiated before the date of enactment of this Act; or

(B) construction was initiated before the date of enactment of this Act, but for which no funds, Federal or non-Federal, were obligated for construction of the project or separable element of the project during the current fiscal year or any of the 6 preceding fiscal years.

(2) SPECIAL RULE FOR PROJECTS RECEIVING FUNDS FOR POST-AUTHORIZATION STUDY.—A project or separable element of a project may not be identified on the interim deauthorization list, or the final deauthorization list developed under subsection (d), if the project or separable element received funding for a post-authorization study during the current fiscal year or any of the 6 preceding fiscal years.

(3) PUBLIC COMMENT AND CONSULTATION.—

(A) IN GENERAL.—The Secretary shall solicit comments from the public and the Governors of each applicable State on the interim deauthorization list developed under paragraph (1).

(B) COMMENT PERIOD.—The public comment period shall be 90 days.

(4) SUBMISSION TO CONGRESS; PUBLICATION.—Not later than 90 days after the date of submission of the list required by section 1001(b)(4)(A) of the Water Resources Development Act of 1986 (as added by subsection (b)), the Secretary shall—

(A) submit the interim deauthorization list to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives; and

(B) publish the interim deauthorization list in the Federal Register.

(d) FINAL DEAUTHORIZATION LIST.—

(1) IN GENERAL.—The Secretary shall develop a final deauthorization list of each water resources development project, or separable element of a project, described in subsection (c)(1) that is identified pursuant to this subsection.

(2) DEAUTHORIZATION AMOUNT.—

(A) IN GENERAL.—The Secretary shall include on the final deauthorization list projects and separable elements of projects that have, in the aggregate, an estimated Federal cost to complete that is at least \$18,000,000,000.

(B) DETERMINATION OF FEDERAL COST TO COMPLETE.—For purposes of subparagraph (A), the Federal cost to complete shall take into account any allowances authorized by section 902 of the Water Resources Development Act of 1986 (33 U.S.C. 2280), as applied to the most recent project schedule and cost estimate.

(3) IDENTIFICATION OF PROJECTS.—

(A) SEQUENCING OF PROJECTS.—

(i) IN GENERAL.—The Secretary shall identify projects and separable elements of projects for inclusion on the final deauthorization list according to the order in which the projects and separable elements of the projects were authorized, beginning with the earliest authorized projects and separable elements of projects and ending once the last project or separable element of a project necessary to meet the aggregate amount under paragraph (2) is identified.

(ii) FACTORS TO CONSIDER.—The Secretary may identify projects and separable elements of projects in an order other than that established by clause (i) if the Secretary determines, on a case-by-case basis, that a project or separable element of a project is critical for interests of the United States, based on the possible impact of the project or separable element of the project on public health and safety, the national economy, or the environment.

(iii) CONSIDERATION OF PUBLIC COMMENTS.—In making determinations under clause (ii), the Secretary shall consider any comments received under subsection (c)(3).

(B) APPENDIX.—The Secretary shall include as part of the final deauthorization list an appendix that—

(i) identifies each project or separable element of a project on the interim deauthorization list developed under subsection (c) that is not included on the final deauthorization list; and

(ii) describes the reasons why the project or separable element is not included.

(4) SUBMISSION TO CONGRESS; PUBLICATION.—Not later than 120 days after the date on which the public comment period under subsection (c)(3) expires, the Secretary shall—

(A) submit the final deauthorization list and the appendix to the final deauthorization list to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives; and

(B) publish the final deauthorization list and the appendix to the final deauthorization list in the Federal Register.

(e) DEAUTHORIZATION; CONGRESSIONAL REVIEW.—

(1) IN GENERAL.—After the expiration of the 180-day period beginning on the date of submission of the final deauthorization report under subsection (d), a project or separable element of a project identified in the report is hereby deauthorized, unless Congress passes a joint resolution disapproving the final deauthorization report prior to the end of such period.

(2) NON-FEDERAL CONTRIBUTIONS.—

(A) IN GENERAL.—A project or separable element of a project identified in the final deauthorization report under subsection (d) shall not be deauthorized under this subsection if, before the expiration of the 180-day period referred to in paragraph (1), the non-Federal interest for the project or separable element of the project provides sufficient funds to complete the project or separable element of the project.

(B) TREATMENT OF PROJECTS.—Notwithstanding subparagraph (A), each project and separable element of a project identified in the final deauthorization report shall be treated as deauthorized for purposes of the aggregate deauthorization amount specified in subsection (d)(2).

(f) GENERAL PROVISIONS.—

(1) DEFINITIONS.—In this section:

(A) POST-AUTHORIZATION STUDY.—The term “post-authorization study” means—

(i) a feasibility report developed under section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282);

(ii) a feasibility study, as defined in section 105(d) of the Water Resources Development Act of 1986 (33 U.S.C. 2215(d)); or

(iii) a review conducted under section 216 of the Flood Control Act of 1970 (33 U.S.C. 549a), including an initial appraisal that—

(I) demonstrates a Federal interest; and

(II) requires additional analysis for the project or separable element.

(B) WATER RESOURCES DEVELOPMENT PROJECT.—The term “water resources development project” includes an environmental infrastructure assistance project or program of the Corps of Engineers.

(2) TREATMENT OF PROJECT MODIFICATIONS.—For purposes of this section, if an authorized water resources development project or separable element of the project has been modified by an Act of Congress, the date of the authorization of the project or separable element shall be deemed to be the date of the most recent such modification.

SEC. 6002. REVIEW OF CORPS OF ENGINEERS ASSETS.

(a) ASSESSMENT AND INVENTORY.—Not later than 1 year after the date of enactment of this Act, the Secretary shall conduct an assessment of all properties under the control of the Corps of Engineers and develop an inventory of the properties that are not needed for the missions of the Corps of Engineers.

(b) CRITERIA.—In conducting the assessment and developing the inventory under subsection (a), the Secretary shall use the following criteria:

(1) The extent to which the property aligns with the current missions of the Corps of Engineers.

(2) The economic impact of the property on existing communities in the vicinity of the property.

(3) The extent to which the utilization rate for the property is being maximized and is consistent with nongovernmental industry standards for the given function or operation.

(4) The extent to which the reduction or elimination of the property could reduce operation and maintenance costs of the Corps of Engineers.

(5) The extent to which the reduction or elimination of the property could reduce energy consumption by the Corps of Engineers.

(c) NOTIFICATION.—As soon as practicable following completion of the inventory of properties under subsection (a), the Secretary shall provide the inventory to the Administrator of General Services.

(d) REPORT TO CONGRESS.—Not later than 30 days after the date of the notification under subsection (c), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives and make publicly available a report containing the findings of the Secretary with respect to the assessment and inventory required under subsection (a).

SEC. 6003. BACKLOG PREVENTION.

(a) PROJECT DEAUTHORIZATION.—

(1) IN GENERAL.—A water resources development project, or separable element of such a project, authorized for construction by this Act shall not be authorized after the last day of the 7-year period beginning on the date of enactment of this Act unless funds have been obligated for construction of such project during that period.

(2) IDENTIFICATION OF PROJECTS.—Not later than 60 days after the expiration of the 7-year period referred to in paragraph (1), the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee

on Transportation and Infrastructure of the House of Representatives a report that identifies the projects deauthorized under paragraph (1).

(b) REPORT TO CONGRESS.—Not later than 60 days after the expiration of the 12-year period beginning on the date of enactment of this Act, the Secretary shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives, and make available to the public, a report that contains—

(1) a list of any water resources development projects authorized by this Act for which construction has not been completed during that period;

(2) a description of the reasons the projects were not completed;

(3) a schedule for the completion of the projects based on expected levels of appropriations; and

(4) a 5-year and 10-year projection of construction backlog and any recommendations to Congress regarding how to mitigate current problems and the backlog.

SEC. 6004. DEAUTHORIZATIONS.

(a) IN GENERAL.—

(1) WALNUT CREEK (PACHECO CREEK), CALIFORNIA.—The portions of the project for flood protection on Walnut Creek, California, constructed under section 203 of the Flood Control Act of 1960 (Public Law 86–645; 74 Stat. 488), consisting of the Walnut Creek project from Sta 0+00 to Sta 142+00 and the upstream extent of the Walnut Creek project along Pacheco Creek from Sta 0+00 to Sta 73+50 are no longer authorized beginning on the date of enactment of this Act.

(2) WALNUT CREEK (SAN RAMON CREEK), CALIFORNIA.—The portion of the project for flood protection on Walnut Creek, California, constructed under section 203 of the Flood Control Act of 1960 (Public Law 86–645; 74 Stat. 488), consisting of the culvert constructed by the Department of the Army on San Ramon Creek from Sta 4+27 to Sta 14+27 is no longer authorized beginning on the date of enactment of this Act.

(3) EIGHTMILE RIVER, CONNECTICUT.—

(A) The portion of the project for navigation, Eightmile River, Connecticut, authorized by the first section of the Act of June 25, 1910 (36 Stat. 633, chapter 382) (commonly known as the “River and Harbor Act of 1910”), that begins at a point of the existing 8-foot channel limit with coordinates N701002.39, E1109247.73, thence running north 2 degrees 19 minutes 57.1 seconds east 265.09 feet to a point N701267.26, E1109258.52, thence running north 7 degrees 47 minutes 19.3 seconds east 322.32 feet to a point N701586.60, E1109302.20, thence running north 90 degrees 0 minutes 0 seconds east 65.61 feet to a point N701586.60, E1109367.80, thence running south 7 degrees 47 minutes 19.3 seconds west 328.11 feet to a point N701261.52, E1109323.34, thence running south 2 degrees 19 minutes 57.1 seconds west 305.49 feet to an end at a point N700956.28, E1109310.91 on the existing 8-foot channel limit, shall be reduced to a width of 65 feet and the channel realigned to follow the deepest available water.

(B) The project referred to in subparagraph (A) beginning at a point N701296.72, E1109262.55 and running north 45 degrees 4 minutes 2.8 seconds west 78.09 feet to a point N701341.18, E1109217.98, thence running north 5 degrees 8 minutes 34.6 seconds east 180.14 feet to a point N701520.59, E1109234.13, thence running north 54 degrees 5 minutes 50.1 seconds east 112.57 feet to a point N701568.04, E1109299.66, thence running south 7 degrees 47 minutes 18.4 seconds west 292.58 feet to the point of origin; and the remaining area north of the channel realignment beginning at a point N700956.28, E1109310.91 thence running north 2 degrees 19 minutes 57.1 seconds east 305.49 feet west to a point N701261.52, E1109323.34 north 7 degrees 47 minutes 18.4 seconds east 328.11 feet to a point N701586.60, E1109367.81 thence running north 90 degrees 0 minutes 0 seconds east 7.81 feet to a point N701586.60, E1109375.62 thence running south 5 degrees 8 minutes 34.6 seconds west 626.29 feet to a point N700962.83, E1109319.47 thence south 52 degrees 35 minutes 36.5 seconds 10.79 feet to the point of origin is no longer authorized beginning on the date of enactment of this Act.

(4) HILLSBOROUGH (HILLSBORO) BAY AND RIVER, FLORIDA.—The portions of the project for navigation, Hillsborough (Hillsboro) Bay and River, Florida, authorized by the Act of March 3, 1899 (30 Stat. 1126; chapter 425), that extend on either side of the Hillsborough River from the Kennedy Boulevard bridge to the mouth of the river that cause the existing channel to exceed 100 feet in width are no longer authorized beginning on the date of enactment of this Act.

(5) KAHULUI WASTEWATER RECLAMATION FACILITY, MAUI, HAWAII.—The project authorized pursuant to section 14 of the Flood Control Act of 1946 (33 U.S.C. 701r) to provide shoreline protection for the Kahului Wastewater Reclamation Facility, located on the Island of Maui in the State of Hawaii is no longer authorized beginning on the date of enactment of this Act.

(6) LUCAS-BERG PIT, ILLINOIS WATERWAY AND GRANT CALUMET RIVER, ILLINOIS.—The portion of the project for navigation, Illinois Waterway and Grand Calumet River, Illinois, authorized by the first section of the Act of July 24, 1946 (60 Stat. 636; chapter 595), that consists of the Lucas-Berg Pit confined disposal facility, Illinois is no longer authorized beginning on the date of enactment of this Act.

(7) PORT OF IBERIA, LOUISIANA.—Section 1001(25) of the Water Resources Development Act of 2007 (121 Stat. 1053) is amended by striking “; except that” and all that follows before the period at the end.

(8) ROCKLAND HARBOR, MAINE.—The project for navigation, Rockland Harbor, Maine, authorized by the Act of June 3, 1896 (29 Stat. 202; chapter 314), and described as follows is no longer authorized beginning on the date of enactment of this Act:

(A) Beginning at the point in the 14-foot turning basin limit with coordinates N162,927.61, E826,210.16.

(B) Thence running north 45 degrees 45 minutes 15.6 seconds east 287.45 feet to a point N163,128.18, E826,416.08.

(C) Thence running south 13 degrees 17 minutes 53.3 seconds east 129.11 feet to a point N163,002.53, E826,445.77.

(D) Thence running south 45 degrees 45 minutes 18.4 seconds west 221.05 feet to a point N162,848.30, E826,287.42.

(E) Thence running north 44 degrees 14 minutes 59.5 seconds west 110.73 feet to the point of origin.

(9) THOMASTON HARBOR, GEORGES RIVER, MAINE.—The portion of the project for navigation, Georges River, Maine (Thomaston Harbor), authorized by the first section of the Act of June 3, 1896 (29 Stat. 215, chapter 314), and modified by section 317 of the Water Resources Development Act of 2000 (Public Law 106–541; 114 Stat. 2604), that lies northwesterly of a line commencing at point N87,220.51, E321,065.80 thence running northeasterly about 125 feet to a point N87,338.71, E321,106.46 is no longer authorized beginning on the date of enactment of this Act.

(10) CORSICA RIVER, QUEEN ANNE'S COUNTY, MARYLAND.—The portion of the project for improving the Corsica River, Maryland, authorized by the first section of the Act of July 25, 1912 (37 Stat. 205; chapter 253), and described as follows is no longer authorized beginning on the date of enactment of this Act: Approximately 2,000 feet of the eastern section of the project channel extending from—

(A) centerline station 0+000 (coordinates N506350.60, E1575013.60); to

(B) station 2+000 (coordinates N508012.39, E1574720.18).

(11) GOOSE CREEK, SOMERSET COUNTY, MARYLAND.—The project for navigation, Goose Creek, Somerset County, Maryland, carried out pursuant to section 107 of the Rivers and Harbor Act of 1960 (33 U.S.C. 577), is realigned as follows: Beginning at Goose Creek Channel Geometry Centerline of the 60-foot-wide main navigational ship channel, Centerline Station No. 0+00, coordinates North 157851.80, East 1636954.70, as stated and depicted on the Condition Survey Goose Creek, Sheet 1 of 1, prepared by the United States Army Corps of Engineers, Baltimore District, July 2003; thence departing the aforementioned centerline traveling the following courses and distances: S. 64 degrees 49 minutes 06 seconds E., 1583.82 feet to a point, on the outline of said 60-foot-wide channel thence binding on said out-line the following four courses and distances: S. 63 degrees 26 minutes 06 seconds E., 1460.05 feet to a point, thence; N. 50 degrees 38 minutes 26 seconds E., 973.28 feet to a point, thence; N. 26 degrees 13 minutes 09 seconds W., 240.39 feet to a point on the Left Toe of the 60-foot-wide main navigational channel at computed Centerline Station No. 42+57.54, coordinates North 157357.84, East 1640340.23. Geometry Left Toe of the 60-foot-wide main navigational ship channel, Left Toe Station No. 0+00, coordinates North 157879.00, East 1636967.40, as stated and depicted on the Condition Survey Goose Creek, Sheet 1 of 1, prepared

by the United States Army Corps of Engineers, Baltimore District, August 2010; thence departing the aforementioned centerline traveling the following courses and distances: S. 64 degrees 49 minutes 12 seconds E., 1583.91 feet to a point, on the outline of said 60-foot-wide channel thence binding on said out-line the following eight courses and distances: S. 63 degrees 25 minutes 38 seconds E., 1366.25 feet to a point, thence; N. 83 degrees 36 minutes 24 seconds E., 125.85 feet to a point, thence; N. 50 degrees 38 minutes 26 seconds E., 805.19 feet to a point, thence; N. 12 degrees 12 minutes 29 seconds E., 78.33 feet to a point thence; N. 26 degrees 13 minutes 28 seconds W., 46.66 feet to a point thence; S. 63 degrees 45 minutes 41 seconds W., 54.96 feet to a point thence; N. 26 degrees 13 minutes 24 seconds W., 119.94 feet to a point on the Left Toe of the 60-foot-wide main navigational channel at computed Centerline Station No. 41+81.10, coordinates North 157320.30, East 1640264.00. Geometry Right Toe of the 60-foot-wide main navigational ship channel, Right Toe Station No. 0+00, coordinates North 157824.70, East 1636941.90, as stated and depicted on the Condition Survey Goose Creek, Sheet 1 of 1, prepared by the United States Army Corps of Engineers, Baltimore District, August 2010; thence departing the aforementioned centerline traveling the following courses and distances: S. 64 degrees 49 minutes 06 seconds E., 1583.82 feet to a point, on the outline of said 60-foot-wide channel thence binding on said out-line the following six courses and distances: S. 63 degrees 25 minutes 47 seconds E., 1478.79 feet to a point, thence; N. 50 degrees 38 minutes 26 seconds E., 1016.69 feet to a point, thence; N. 26 degrees 14 minutes 49 seconds W., 144.26 feet to a point, thence; N. 63 degrees 54 minutes 03 seconds E., 55.01 feet to a point thence; N. 26 degrees 12 minutes 08 seconds W., 120.03 feet to a point a point on the Right Toe of the 60-foot-wide main navigational channel at computed Centerline Station No. 43+98.61, coordinates North 157395.40, East 1640416.50.

(12) LOWER THOROUGHFARE, DEAL ISLAND, MARYLAND.—The portion of the project for navigation, Lower Thoroughfare, Maryland, authorized by the Act of June 25, 1910 (36 Stat. 639, chapter 382) (commonly known as the “River and Harbor Act of 1910”), that begins at Lower Thoroughfare Channel Geometry Centerline of the 60-foot-wide main navigational ship channel, Centerline Station No. 44+88, coordinates North 170435.62, East 1614588.93, as stated and depicted on the Condition Survey Lower Thoroughfare, Deal Island, Sheet 1 of 3, prepared by the United States Army Corps of Engineers, Baltimore District, August 2010; thence departing the aforementioned centerline traveling the following courses and distances: S. 42 degrees 20 minutes 44 seconds W., 30.00 feet to a point, on the outline of said 60-foot-wide channel thence binding on said out-line the following four courses and distances: N. 64 degrees 08 minutes 55 seconds W., 53.85 feet to a point, thence; N. 42 degrees 20 minutes 43 seconds W., 250.08 feet to a point, thence; N. 47 degrees 39 minutes 03 seconds E., 20.00 feet to a point, thence; S. 42 degrees 20 minutes 44 seconds E., 300.07 feet to a point binding on the Left Toe of the 60-foot-wide main navigational channel at computed Centerline Station No. 43+92.67, coordinates North 170415.41, 1614566.76;

thence; continuing with the aforementioned centerline the following courses and distances: S. 42 degrees 20 minutes 42 seconds W., 30.00 feet to a point, on the outline of said 60-foot-wide channel thence binding on said out-line the following four courses and distances: N. 20 degrees 32 minutes 06 seconds W., 53.85 feet to a point, thence; N. 42 degrees 20 minutes 49 seconds W., 250.08 feet to a point, thence; S. 47 degrees 39 minutes 03 seconds W., 20.00 feet to a point, thence; S. 42 degrees 20 minutes 46 seconds E., 300.08 feet to a point binding on the Left Toe of the 60-foot-wide main navigational channel at computed Centerline Station No. 43+92.67, coordinates North 170415.41, 1614566.76 is no longer authorized beginning on the date of enactment of this Act.

(13) GLOUCESTER HARBOR AND ANNISQUAM RIVER, MASSACHUSETTS.—The portions of the project for navigation, Gloucester Harbor and Annisquam River, Massachusetts, authorized by section 2 of the Act of March 2, 1945 (59 Stat. 12; chapter 19), consisting of an 8-foot anchorage area in Lobster Cove, and described as follows are no longer authorized beginning on the date of enactment of this Act:

(A) Beginning at a bend along the easterly limit of the existing project, N3063230.31, E878283.77, thence running northwesterly about 339 feet to a point, N3063478.86, E878053.83, thence running northwesterly about 281 feet to a bend on the easterly limit of the existing project, N3063731.88, E877932.54, thence running southeasterly about 612 feet along the easterly limit of the existing project to the point of origin.

(B) Beginning at a bend along the easterly limit of the existing project, N3064065.80, E878031.45, thence running northwesterly about 621 feet to a point, N3064687.05, E878031.13, thence running southwesterly about 122 feet to a point, N3064686.98, E877908.85, thence running southeasterly about 624 feet to a point, N3064063.31, E877909.17, thence running southwesterly about 512 feet to a point, N3063684.73, E877564.56, thence running about 741 feet to a point along the westerly limit of the existing project, N3063273.98, E876947.77, thence running northeasterly about 533 feet to a bend along the westerly limit of the existing project, N3063585.62, E877380.63, thence running about 147 feet northeasterly to a bend along the westerly limit of the project, N3063671.29, E877499.63, thence running northeasterly about 233 feet to a bend along the westerly limit of the existing project, N3063840.60, E877660.29, thence running about 339 feet northeasterly to a bend along the westerly limit of the existing project, N3064120.34, E877852.55, thence running about 573 feet to a bend along the westerly limit of the existing project, N3064692.98, E877865.04, thence running about 113 feet to a bend along the northerly limit of the existing project, N3064739.51, E877968.31, thence running 145 feet southeasterly to a bend along the northerly limit of the existing project, N3064711.19, E878110.69, thence running about 650 feet along the easterly limit of the existing project to the point of origin.

(14) CLATSOP COUNTY DIKING DISTRICT NO. 10, KARLSON ISLAND, OREGON.—The Diking District No. 10, Karlson Island

portion of the project for raising and improving existing levees in Clatsop County, Oregon, authorized by section 5 of the Act of June 22, 1936 (49 Stat. 1590) is no longer authorized beginning on the date of enactment of this Act.

(15) NUMBERG DIKE NO. 34 LEVEED AREA, CLATSOP COUNTY DIKING DISTRICT NO. 13, CLATSOP COUNTY, OREGON (WALLUSKI-YOUNGS).—The Numberg Dike No. 34 leveed area, Clatsop County Diking District, No. 13, Walluski River and Youngs River dikes, portion of the project for raising and improving existing levees in Clatsop County, Oregon, authorized by section 5 of the Act of June 22, 1936 (49 Stat. 1590) is no longer authorized beginning on the date of enactment of this Act.

(16) EAST FORK OF TRINITY RIVER, TEXAS.—The portion of the project for flood protection on the East Fork of the Trinity River, Texas, authorized by section 203 of the Flood Control Act of 1962 (76 Stat. 1185), that consists of the 2 levees identified as Kaufman County Levees K5E and K5W is no longer authorized beginning on the date of enactment of this Act.

(17) BURNHAM CANAL, WISCONSIN.—The portion of the project for navigation, Milwaukee Harbor Project, Milwaukee, Wisconsin, known as the Burnham Canal, authorized by the first section of the Act of March 3, 1843 (5 Stat. 619; chapter 85), and described as follows is no longer authorized beginning on the date of enactment of this Act:

(A) Beginning at channel point #415a N381768.648, E2524554.836, a distance of about 170.58 feet.

(B) Thence running south 53 degrees 43 minutes 41 seconds west to channel point #417 N381667.728, E2524417.311, a distance of about 35.01 feet.

(C) Thence running south 34 degrees 10 minutes 40 seconds west to channel point #501 N381638.761, E2524397.639, a distance of about 139.25 feet.

(D) Thence running south 34 degrees 10 minutes 48 seconds west to channel point #503 N381523.557, E2524319.406, a distance of about 235.98 feet.

(E) Thence running south 32 degrees 59 minutes 13 seconds west to channel point #505 N381325.615, E2524190.925, a distance of about 431.29 feet.

(F) Thence running south 32 degrees 36 minutes 05 seconds west to channel point #509 N380962.276, E2523958.547, a distance of about 614.52 feet.

(G) Thence running south 89 degrees 05 minutes 00 seconds west to channel point #511 N380952.445, E2523344.107, a distance of about 74.68 feet.

(H) Thence running north 89 degrees 04 minutes 59 seconds west to channel point #512 N381027.13, E2523342.91, a distance of about 533.84 feet.

(I) Thence running north 89 degrees 05 minutes 00 seconds east to channel point #510 N381035.67, E2523876.69, a distance of about 47.86 feet.

(J) Thence running north 61 degrees 02 minutes 07 seconds east to channel point #508 N381058.84, E2523918.56, a distance of about 308.55 feet.

(K) Thence running north 36 degrees 15 minutes 29 seconds east to channel point #506 N381307.65, E2524101.05, a distance of about 199.98 feet.

(L) Thence running north 32 degrees 59 minutes 12 seconds east to channel point #504 N381475.40, E2524209.93, a distance of about 195.14 feet.

(M) Thence running north 26 degrees 17 minutes 22 seconds east to channel point #502 N381650.36, E2524296.36, a distance of about 81.82 feet.

(N) Thence running north 88 degrees 51 minutes 05 seconds west to channel point #419 N381732.17, E2524294.72, a distance of about 262.65 feet.

(O) Thence running north 82 degrees 01 minutes 02 seconds east to channel point #415a, the point of origin.

(18) MANITOWOC HARBOR, WISCONSIN.—The portion of the project for navigation, Manitowoc River, Manitowoc, Wisconsin, authorized by the Act of August 30, 1852 (10 Stat. 58; chapter 104), and described as follows is no longer authorized beginning on the date of enactment of this Act: The triangular area bound by—

(A) 44.09893383N and 087.66854912W;

(B) 44.09900535N and 087.66864372W; and

(C) 44.09857884N and 087.66913123W.

(b) SEWARD WATERFRONT, SEWARD, ALASKA.—

(1) IN GENERAL.—Subject to paragraph (2), the portion of the project for navigation, Seward Harbor, Alaska, identified as Tract H, Seward Original Townsite, Waterfront Park Replat, Plat No 2012–4, Seward Recording District, shall not be subject to navigation servitude beginning on the date of enactment of this Act.

(2) ENTRY BY FEDERAL GOVERNMENT.—The Federal Government may enter upon the property referred to in paragraph (1) to carry out any required operation and maintenance of the general navigation features of the project referred to in paragraph (1).

(c) PORT OF HOOD RIVER, OREGON.—

(1) EXTINGUISHMENT OF PORTIONS OF EXISTING FLOWAGE EASEMENT.—With respect to the properties described in paragraph (2), beginning on the date of enactment of this Act, the flowage easement identified as Tract 1200E–6 on the Easement Deed recorded as Instrument No. 740320 is extinguished above elevation 79.39 feet (NGVD 29) the Ordinary High Water Line.

(2) AFFECTED PROPERTIES.—The properties referred to in paragraph (1), as recorded in Hood River County, Oregon, are as follows:

(A) Instrument Number 2010–1235.

(B) Instrument Number 2010–02366.

(C) Instrument Number 2010–02367.

(D) Parcel 2 of Partition Plat #2011–12P.

(E) Parcel 1 of Partition Plat 2005–26P.

(3) FEDERAL LIABILITIES; CULTURAL, ENVIRONMENTAL, AND OTHER REGULATORY REVIEWS.—

(A) FEDERAL LIABILITY.—The United States shall not be liable for any injury caused by the extinguishment of the easement under this subsection.

(B) CULTURAL AND ENVIRONMENTAL REGULATORY ACTIONS.—Nothing in this subsection establishes any cultural or environmental regulation relating to the properties described in paragraph (2).

(4) EFFECT ON OTHER RIGHTS.—Nothing in this subsection affects any remaining right or interest of the Corps of Engineers in the properties described in paragraph (2).

SEC. 6005. LAND CONVEYANCES.

(a) OAKLAND INNER HARBOR TIDAL CANAL, CALIFORNIA.—Section 3182(b)(1) of the Water Resources Development Act of 2007 (Public Law 110–114; 121 Stat. 1165) is amended—

(1) in subparagraph (A) by inserting “, or to a multicounty public entity that is eligible to hold title to real property” after “To the city of Oakland”; and

(2) in subparagraphs (B) and (C) by inserting “multicounty public entity or other” before “public entity”.

(b) ST. CHARLES COUNTY, MISSOURI, LAND EXCHANGE.—

(1) DEFINITIONS.—In this subsection:

(A) FEDERAL LAND.—The term “Federal land” means approximately 84 acres of land, as identified by the Secretary, that is a portion of the approximately 227 acres of land leased from the Corps of Engineers by Ameren Corporation for the Portage Des Sioux Power Plant in St. Charles County, Missouri (Lease No. DA-23-065–CIVENG–64–651, Pool 26).

(B) NON-FEDERAL LAND.—The term “non-Federal land” means the approximately 68 acres of land owned by Ameren Corporation in Jersey County, Illinois, contained within the north half of section 23, township 6 north, range 11 west of the third principal meridian.

(2) LAND EXCHANGE.—On conveyance by Ameren Corporation to the United States of all right, title, and interest in and to the non-Federal land, the Secretary shall convey to Ameren Corporation all right, title, and interest of the United States in and to the Federal land.

(3) SPECIFIC CONDITIONS.—

(A) DEEDS.—

(i) DEED TO NON-FEDERAL LAND.—The Secretary may only accept conveyance of the non-Federal land by warranty deed, as determined acceptable by the Secretary.

(ii) DEED TO FEDERAL LAND.—The Secretary shall convey the Federal land to Ameren Corporation by quitclaim deed.

(B) CASH PAYMENT.—If the appraised fair market value of the Federal land, as determined by the Secretary, exceeds the appraised fair market value of the non-Federal land, as determined by the Secretary, Ameren Corporation shall make a cash payment to the United States reflecting the difference in the appraised fair market values.

(c) TULSA PORT OF CATOOSA, ROGERS COUNTY, OKLAHOMA, LAND EXCHANGE.—

(1) DEFINITIONS.—In this subsection:

(A) FEDERAL LAND.—The term “Federal land” means the approximately 87 acres of land situated in Rogers County, Oklahoma, contained within United States Tracts 413 and 427 and acquired for the McClellan-Kerr Arkansas Navigation System.

(B) NON-FEDERAL LAND.—The term “non-Federal land” means the approximately 34 acres of land situated in

Rogers County, Oklahoma, and owned by the Tulsa Port of Catoosa that lie immediately south and east of the Federal land.

(2) LAND EXCHANGE.—On conveyance by the Tulsa Port of Catoosa to the United States of all right, title, and interest in and to the non-Federal land, the Secretary shall convey to the Tulsa Port of Catoosa all right, title, and interest of the United States in and to the Federal land.

(3) SPECIFIC CONDITIONS.—

(A) DEEDS.—

(i) DEED TO NON-FEDERAL LAND.—The Secretary may only accept conveyance of the non-Federal land by warranty deed, as determined acceptable by the Secretary.

(ii) DEED TO FEDERAL LAND.—The Secretary shall convey the Federal land to the Tulsa Port of Catoosa by quitclaim deed and subject to any reservations, terms, and conditions the Secretary determines necessary to allow the United States to operate and maintain the McClellan-Kerr Arkansas River Navigation System.

(iii) CASH PAYMENT.—If the appraised fair market value of the Federal land, as determined by the Secretary, exceeds the appraised fair market value of the non-Federal land, as determined by the Secretary, the Tulsa Port of Catoosa shall make a cash payment to the United States reflecting the difference in the appraised fair market values.

(d) HAMMOND BOAT BASIN, WARRENTON, OREGON.—

(1) DEFINITIONS.—In this subsection:

(A) CITY.—The term “City” means the city of Warrenton, located in Clatsop County, Oregon.

(B) MAP.—The term “map” means the map contained in Exhibit A of Department of the Army Lease No. DACW57-1-88-0033 (or a successor instrument).

(2) CONVEYANCE AUTHORITY.—Subject to the provisions of this subsection, the Secretary shall convey to the City by quitclaim deed, and without consideration, all right, title, and interest of the United States in and to the parcel of land described in paragraph (3).

(3) DESCRIPTION OF LAND.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the land referred to in paragraph (2) is the parcel totaling approximately 59 acres located in the City, together with any improvements thereon, including the Hammond Marina (as described in the map).

(B) EXCLUSION.—The land referred to in paragraph (2) shall not include the site provided for the fisheries research support facility of the National Marine Fisheries Service.

(C) AVAILABILITY OF MAP.—The map shall be on file in the Portland District Office of the Corps of Engineers.

(4) TERMS AND CONDITIONS.—As a condition of the conveyance under this subsection, the Secretary may impose a requirement that the City assume full responsibility for operating and maintaining the channel and the breakwater.

(5) REVERSION.—If the Secretary determines that the land conveyed under this subsection ceases to be owned by the public, all right, title, and interest in and to the land shall revert, at the discretion of the Secretary, to the United States.

(6) DEAUTHORIZATION.—After the land is conveyed under this subsection, the land shall no longer be a portion of the project for navigation, Hammond Small Boat Basin, Oregon, authorized by section 107 of the Rivers and Harbor Act of 1960 (33 U.S.C. 577).

(e) CRANEY ISLAND DREDGED MATERIAL MANAGEMENT AREA, PORTSMOUTH, VIRGINIA.—

(1) IN GENERAL.—Subject to the conditions described in this subsection, the Secretary may convey to the Commonwealth of Virginia, by quitclaim deed and without consideration, all right, title, and interest of the United States in and to 2 parcels of land situated within the project for navigation, Craney Island Eastward Expansion, Norfolk Harbor and Channels, Hampton Roads, Virginia, authorized by section 1001(45) of the Water Resources Development Act of 2007 (Public Law 110–114; 121 Stat. 1057), together with any improvements thereon.

(2) LANDS TO BE CONVEYED.—

(A) IN GENERAL.—The 2 parcels of land to be conveyed under this subsection include a parcel consisting of approximately 307.82 acres of land and a parcel consisting of approximately 13.33 acres of land, both located along the eastern side of the Craney Island Dredged Material Management Area in Portsmouth, Virginia.

(B) USE.—The 2 parcels of land described in subparagraph (A) may be used by the Commonwealth of Virginia exclusively for the purpose of port expansion, including the provision of road and rail access and the construction of a shipping container terminal.

(3) REVERSION.—If the Secretary determines that the land conveyed under this subsection ceases to be owned by the public or is used for any purpose that is inconsistent with paragraph (2), all right, title, and interest in and to the land shall revert, at the discretion of the Secretary, to the United States.

(f) CITY OF ASOTIN, WASHINGTON.—

(1) IN GENERAL.—The Secretary shall convey to the city of Asotin, Asotin County, Washington, without monetary consideration, all right, title, and interest of the United States in and to the land described in paragraph (3).

(2) REVERSION.—If the land transferred under this subsection ceases at any time to be used for a public purpose, the land shall revert to the United States.

(3) DESCRIPTION.—The land to be conveyed to the city of Asotin, Washington, under this subsection are—

(A) the public ball fields designated as Tracts 1503, 1605, 1607, 1609, 1611, 1613, 1615, 1620, 1623, 1624, 1625, 1626, and 1631; and

(B) other leased areas designated as Tracts 1506, 1522, 1523, 1524, 1525, 1526, 1527, 1529, 1530, 1531, and 1563.

(g) GENERALLY APPLICABLE PROVISIONS.—

(1) SURVEY TO OBTAIN LEGAL DESCRIPTION.—The exact acreage and the legal description of any real property to be conveyed

under this section shall be determined by a survey that is satisfactory to the Secretary.

(2) **APPLICABILITY OF PROPERTY SCREENING PROVISIONS.**—Section 2696 of title 10, United States Code, shall not apply to any conveyance under this section.

(3) **ADDITIONAL TERMS AND CONDITIONS.**—The Secretary may require that any conveyance under this section be subject to such additional terms and conditions as the Secretary considers necessary and appropriate to protect the interests of the United States.

(4) **COSTS OF CONVEYANCE.**—An entity to which a conveyance is made under this section shall be responsible for all reasonable and necessary costs, including real estate transaction and environmental documentation costs, associated with the conveyance.

(5) **LIABILITY.**—An entity to which a conveyance is made under this section shall hold the United States harmless from any liability with respect to activities carried out, on or after the date of the conveyance, on the real property conveyed. The United States shall remain responsible for any liability with respect to activities carried out, before such date, on the real property conveyed.

(h) **RELEASE OF USE RESTRICTIONS.**—Notwithstanding any other provision of law, the Tennessee Valley Authority shall, without monetary consideration, grant releases from real estate restrictions established pursuant to section 4(k)(b) of the Tennessee Valley Authority Act of 1933 (16 U.S.C. 831c(k)(b)) with respect to tracts of land identified in section 4(k)(b) of that Act, subject to the condition that such releases shall be granted in a manner consistent with applicable Tennessee Valley Authority policies.

TITLE VII—WATER RESOURCES INFRASTRUCTURE

SEC. 7001. ANNUAL REPORT TO CONGRESS.

(a) **IN GENERAL.**—Not later than February 1 of each year, the Secretary shall develop and submit to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives an annual report, to be entitled “Report to Congress on Future Water Resources Development”, that identifies the following:

(1) **FEASIBILITY REPORTS.**—Each feasibility report that meets the criteria established in subsection (c)(1)(A).

(2) **PROPOSED FEASIBILITY STUDIES.**—Any proposed feasibility study submitted to the Secretary by a non-Federal interest pursuant to subsection (b) that meets the criteria established in subsection (c)(1)(A).

(3) **PROPOSED MODIFICATIONS.**—Any proposed modification to an authorized water resources development project or feasibility study that meets the criteria established in subsection (c)(1)(A) that—

(A) is submitted to the Secretary by a non-Federal interest pursuant to subsection (b); or

(B) is identified by the Secretary for authorization.

(b) **REQUESTS FOR PROPOSALS.**—

(1) PUBLICATION.—Not later than May 1 of each year, the Secretary shall publish in the Federal Register a notice requesting proposals from non-Federal interests for proposed feasibility studies and proposed modifications to authorized water resources development projects and feasibility studies to be included in the annual report.

(2) DEADLINE FOR REQUESTS.—The Secretary shall include in each notice required by this subsection a requirement that non-Federal interests submit to the Secretary any proposals described in paragraph (1) by not later than 120 days after the date of publication of the notice in the Federal Register in order for the proposals to be considered for inclusion in the annual report.

(3) NOTIFICATION.—On the date of publication of each notice required by this subsection, the Secretary shall—

(A) make the notice publicly available, including on the Internet; and

(B) provide written notification of the publication to the Committee on Environment and Public Works of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.

(c) CONTENTS.—

(1) FEASIBILITY REPORTS, PROPOSED FEASIBILITY STUDIES, AND PROPOSED MODIFICATIONS.—

(A) CRITERIA FOR INCLUSION IN REPORT.—The Secretary shall include in the annual report only those feasibility reports, proposed feasibility studies, and proposed modifications to authorized water resources development projects and feasibility studies that—

(i) are related to the missions and authorities of the Corps of Engineers;

(ii) require specific congressional authorization, including by an Act of Congress;

(iii) have not been congressionally authorized;

(iv) have not been included in any previous annual report; and

(v) if authorized, could be carried out by the Corps of Engineers.

(B) DESCRIPTION OF BENEFITS.—

(i) DESCRIPTION.—The Secretary shall describe in the annual report, to the extent applicable and practicable, for each proposed feasibility study and proposed modification to an authorized water resources development project or feasibility study included in the annual report, the benefits, as described in clause (ii), of each such study or proposed modification (including the water resources development project that is the subject of the proposed feasibility study or the proposed modification to an authorized feasibility study).

(ii) BENEFITS.—The benefits (or expected benefits, in the case of a proposed feasibility study) described in this clause are benefits to—

(I) the protection of human life and property;

(II) improvement to transportation;

(III) the national economy;

(IV) the environment; or

(V) the national security interests of the United States.

(C) IDENTIFICATION OF OTHER FACTORS.—The Secretary shall identify in the annual report, to the extent practicable—

(i) for each proposed feasibility study included in the annual report, the non-Federal interest that submitted the proposed feasibility study pursuant to subsection (b); and

(ii) for each proposed feasibility study and proposed modification to an authorized water resources development project or feasibility study included in the annual report, whether the non-Federal interest has demonstrated—

(I) that local support exists for the proposed feasibility study or proposed modification to an authorized water resources development project or feasibility study (including the water resources development project that is the subject of the proposed feasibility study or the proposed modification to an authorized feasibility study); and

(II) the financial ability to provide the required non-Federal cost share.

(2) TRANSPARENCY.—The Secretary shall include in the annual report, for each feasibility report, proposed feasibility study, and proposed modification to an authorized water resources development project or feasibility study included under paragraph (1)(A)—

(A) the name of the associated non-Federal interest, including the name of any non-Federal interest that has contributed, or is expected to contribute, a non-Federal share of the cost of—

(i) the feasibility report;

(ii) the proposed feasibility study;

(iii) the authorized feasibility study for which the modification is proposed; or

(iv) construction of—

(I) the water resources development project that is the subject of—

(aa) the feasibility report;

(bb) the proposed feasibility study; or

(cc) the authorized feasibility study for which a modification is proposed; or

(II) the proposed modification to an authorized water resources development project;

(B) a letter or statement of support for the feasibility report, proposed feasibility study, or proposed modification to an authorized water resources development project or feasibility study from each associated non-Federal interest;

(C) the purpose of the feasibility report, proposed feasibility study, or proposed modification to an authorized water resources development project or feasibility study;

(D) an estimate, to the extent practicable, of the Federal, non-Federal, and total costs of—

(i) the proposed modification to an authorized feasibility study; and

(ii) construction of—

(I) the water resources development project that is the subject of—

(aa) the feasibility report; or

(bb) the authorized feasibility study for which a modification is proposed, with respect to the change in costs resulting from such modification; or

(II) the proposed modification to an authorized water resources development project; and

(E) an estimate, to the extent practicable, of the monetary and nonmonetary benefits of—

(i) the water resources development project that is the subject of—

(I) the feasibility report; or

(II) the authorized feasibility study for which a modification is proposed, with respect to the benefits of such modification; or

(ii) the proposed modification to an authorized water resources development project.

(3) CERTIFICATION.—The Secretary shall include in the annual report a certification stating that each feasibility report, proposed feasibility study, and proposed modification to an authorized water resources development project or feasibility study included in the annual report meets the criteria established in paragraph (1)(A).

(4) APPENDIX.—The Secretary shall include in the annual report an appendix listing the proposals submitted under subsection (b) that were not included in the annual report under paragraph (1)(A) and a description of why the Secretary determined that those proposals did not meet the criteria for inclusion under such paragraph.

(d) SPECIAL RULE FOR INITIAL ANNUAL REPORT.—Notwithstanding any other deadlines required by this section, the Secretary shall—

(1) not later than 60 days after the date of enactment of this Act, publish in the Federal Register a notice required by subsection (b)(1); and

(2) include in such notice a requirement that non-Federal interests submit to the Secretary any proposals described in subsection (b)(1) by not later than 120 days after the date of publication of such notice in the Federal Register in order for such proposals to be considered for inclusion in the first annual report developed by the Secretary under this section.

(e) PUBLICATION.—Upon submission of an annual report to Congress, the Secretary shall make the annual report publicly available, including through publication on the Internet.

(f) DEFINITIONS.—In this section:

(1) ANNUAL REPORT.—The term “annual report” means a report required by subsection (a).

(2) FEASIBILITY REPORT.—

(A) IN GENERAL.—The term “feasibility report” means a final feasibility report developed under section 905 of the Water Resources Development Act of 1986 (33 U.S.C. 2282).

(B) INCLUSIONS.—The term “feasibility report” includes—

(i) a report described in section 105(d)(2) of the Water Resources Development Act of 1986 (33 U.S.C. 2215(d)(2)); and

(ii) where applicable, any associated report of the Chief of Engineers.

(3) FEASIBILITY STUDY.—The term “feasibility study” has the meaning given that term in section 105 of the Water Resources Development Act of 1986 (33 U.S.C. 2215).

(4) NON-FEDERAL INTEREST.—The term “non-Federal interest” has the meaning given that term in section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d–5b).

SEC. 7002. AUTHORIZATION OF FINAL FEASIBILITY STUDIES.

The following final feasibility studies for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plan, and subject to the conditions, described in the respective reports designated in this section:

(1) NAVIGATION.—

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
1. TX, LA	Sabine Neches Waterway, Southeast Texas and Southwest Louisiana	July 22, 2011	Federal: \$748,070,000 Non-Federal: \$365,970,000 Total: \$1,114,040,000
2. FL	Jacksonville Harbor- Milepoint	Apr. 30, 2012	Federal: \$27,870,000 Non-Federal: \$9,290,000 Total: \$37,160,000
3. GA	Savannah Har- bor Expansion Project	Aug. 17, 2012	Federal: \$492,000,000 Non-Federal: \$214,000,000 Total: \$706,000,000
4. TX	Freeport Har- bor	Jan. 7, 2013	Federal: \$121,000,000 Non-Federal: \$118,300,000 Total: \$239,300,000

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A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
5. FL	Canaveral Harbor (Sect 203 Sponsor Re- port)	Feb. 25, 2013	Federal: \$29,240,000 Non-Federal: \$11,830,000 Total: \$41,070,000
6. MA	Boston Harbor	Sept. 30, 2013	Federal: \$216,470,000 Non-Federal: \$94,510,000 Total: \$310,980,000
7. FL	Lake Worth Inlet	Apr. 16, 2014	Federal: \$57,556,000 Non-Federal: \$30,975,000 Total: \$88,531,000
8. FL	Jacksonville Harbor	Apr. 16, 2014	Federal: \$362,000,000 Non-Federal: \$238,900,000 Total: \$600,900,000

(2) FLOOD RISK MANAGEMENT.—

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
1. KS	Topeka	Aug. 24, 2009	Federal: \$17,360,000 Non-Federal: \$9,350,000 Total: \$26,710,000

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
2. CA	American River Watershed, Common Features Project, Natomas Basin	Dec. 30, 2010	Federal: \$760,630,000 Non-Federal: \$386,650,000 Total: \$1,147,280,000
3. IA	Cedar River, Cedar Rapids	Jan. 27, 2011	Federal: \$73,130,000 Non-Federal: \$39,380,000 Total: \$112,510,000
4. MN, ND	Fargo-Moorhead Metro	Dec. 19, 2011	Federal: \$846,700,000 Non-Federal: \$1,077,600,000 Total: \$1,924,300,000
5. KY	Ohio River Shoreline, Paducah	May 16, 2012	Federal: \$13,170,000 Non-Federal: \$7,090,000 Total: \$20,260,000
6. MO	Jordan Creek, Springfield	Aug. 26, 2013	Federal: \$13,560,000 Non-Federal: \$7,300,000 Total: \$20,860,000
7. CA	Orestimba Creek, San Joaquin River Basin	Sept. 25, 2013	Federal: \$23,680,000 Non-Federal: \$21,650,000 Total: \$45,330,000
8. CA	Sutter Basin	Mar. 12, 2014	Federal: \$255,270,000 Non-Federal: \$433,660,000 Total: \$688,930,000
9. NV	Truckee Meadows	Apr. 11, 2014	Federal: \$181,652,000 Non-Federal: \$99,168,000 Total: \$280,820,000

(3) HURRICANE AND STORM DAMAGE RISK REDUCTION.—

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Initial Costs and Estimated Renourishment Costs
1. NC	West Onslow Beach and New River Inlet (Top-sail Beach)	Sept. 28, 2009	Initial Federal: \$29,900,000 Initial Non-Federal: \$16,450,000 Initial Total: \$46,350,000 Renourishment Federal: \$69,410,000 Renourishment Non-Federal: \$69,410,000 Renourishment Total: \$138,820,000
2. NC	Surf City and North Top-sail Beach	Dec. 30, 2010	Initial Federal: \$84,770,000 Initial Non-Federal: \$45,650,000 Initial Total: \$130,420,000 Renourishment Federal: \$122,220,000 Renourishment Non-Federal: \$122,220,000 Renourishment Total: \$244,440,000
3. CA	San Clemente Shoreline	Apr. 15, 2012	Initial Federal: \$7,420,000 Initial Non-Federal: \$3,990,000 Initial Total: \$11,410,000 Renourishment Federal: \$43,835,000 Renourishment Non-Federal: \$43,835,000 Renourishment Total: \$87,670,000

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Initial Costs and Estimated Renourishment Costs
4. FL	Walton County	July 16, 2013	Initial Federal: \$17,945,000 Initial Non-Federal: \$46,145,000 Initial Total: \$64,090,000 Renourishment Federal: \$24,740,000 Renourishment Non- Federal: \$82,820,000 Renourishment Total: \$107,560,000
5. LA	Morganza to the Gulf	July 8, 2013	Federal: \$6,695,400,000 Non-Federal: \$3,604,600,000 Total: \$10,300,000,000

(4) HURRICANE AND STORM DAMAGE RISK REDUCTION AND ENVIRONMENTAL RESTORATION.—

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
1. MS	Mississippi Coastal Im- provement Program (MSCIP) Hancock, Harrison, and Jackson Counties	Sept. 15, 2009	Federal: \$693,300,000 Non-Federal: \$373,320,000 Total: \$1,066,620,000

(5) ENVIRONMENTAL RESTORATION.—

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A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
1. MD	Mid-Chesa- peake Bay Island	Aug. 24, 2009	Federal: \$1,240,750,000 Non-Federal: \$668,100,000 Total: \$1,908,850,000
2. FL	Central and Southern Florida Project, Comprehen- sive Ever- glades Res- toration Plan, Caloosahatc- hee River (C-43) West Basin Stor- age Project, Hendry County	Mar. 11, 2010 and Jan. 6, 2011	Federal: \$313,300,000 Non-Federal: \$313,300,000 Total: \$626,600,000
3. LA	Louisiana Coastal Area	Dec. 30, 2010	Federal: \$1,026,000,000 Non-Federal: \$601,000,000 Total: \$1,627,000,000
4. MN	Marsh Lake	Dec. 30, 2011	Federal: \$6,760,000 Non-Federal: \$3,640,000 Total: \$10,400,000

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
5. FL	Central and Southern Florida Project, Comprehensive Everglades Restoration Plan, C-111 Spreader Canal Western Project	Jan. 30, 2012	Federal: \$87,280,000 Non-Federal: \$87,280,000 Total: \$174,560,000
6. FL	CERP Biscayne Bay Coastal Wetland, Florida	May 2, 2012	Federal: \$98,510,000 Non-Federal: \$98,510,000 Total: \$197,020,000
7. FL	Central and Southern Florida Project, Broward County Water Preserve Area	May 21, 2012	Federal: \$448,070,000 Non-Federal: \$448,070,000 Total: \$896,140,000
8. LA	Louisiana Coastal Area-Barataria Basin Barrier	June 22, 2012	Federal: \$321,750,000 Non-Federal: \$173,250,000 Total: \$495,000,000
9. NC	Neuse River Basin	Apr. 23, 2013	Federal: \$23,830,000 Non-Federal: \$12,830,000 Total: \$36,660,000

A. State	B. Name	C. Date of Report of Chief of Engi- neers	D. Estimated Costs
10. VA	Lynnhaven River	Mar. 27, 2014	Federal: \$22,821,500 Non-Federal: \$12,288,500 Total: \$35,110,000
11. OR	Willamette River Flood- plain Res- toration	Jan. 6, 2014	Federal: \$27,401,000 Non-Federal: \$14,754,000 Total: \$42,155,000

SEC. 7003. AUTHORIZATION OF PROJECT MODIFICATIONS RECOMMENDED BY THE SECRETARY.

The following project modifications for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the recommendations of the Secretary, as specified in the letters referred to in this section:

A. State	B. Name	C. Date of Sec- retary's Rec- ommen- dation Letter	D. Updated Authoriza- tion Project Costs
1. MN	Roseau River	Jan. 24, 2013	Estimated Federal: \$25,455,000 Estimated non-Federal: \$18,362,000 Total: \$43,817,000
2. IL	Wood River Levee Sys- tem Recon- struction	May 7, 2013	Estimated Federal: \$16,678,000 Estimated non-Federal: \$8,980,000 Total: \$25,658,000

A. State	B. Name	C. Date of Secretary's Rec- ommen- dation Letter	D. Updated Authoriza- tion Project Costs
3. TX	Corpus Christi Ship Chan- nel	Aug. 8, 2013	Estimated Federal: \$182,582,000 Estimated non-Federal: \$170,649,000 Total: \$353,231,000
4. IA	Des Moines River and Raccoon River Project	Feb. 12, 2014	Estimated Federal: \$14,990,300 Estimated non-Federal: \$8,254,700 Total: \$23,245,000
5. MD	Poplar Island	Feb. 26, 2014	Estimated Federal: \$868,272,000 Estimated non-Federal: \$365,639,000 Total: \$1,233,911,000
6. IL	Lake Michigan (Chicago Shoreline)	Mar. 18, 2014	Estimated Federal: \$185,441,000 Estimated non-Federal: \$355,105,000 Total: \$540,546,000
7. NE	Western Sarpy and Clear Creek	Mar. 20, 2014	Estimated Federal: \$28,128,800 Estimated non-Federal: \$15,146,300 Total: \$43,275,100
8. MO	Cape Girardeau	Apr. 14, 2014	Estimated Federal: \$17,687,000 Estimated non-Federal: \$746,000 Total: \$18,433,000

SEC. 7004. EXPEDITED CONSIDERATION IN THE HOUSE AND SENATE.

(a) CONSIDERATION IN THE HOUSE OF REPRESENTATIVES.—

(1) DEFINITION OF INTERIM AUTHORIZATION BILL.—In this subsection, the term “interim authorization bill” means a bill

of the 113th Congress introduced after the date of enactment of this Act in the House of Representatives by the chair of the Committee on Transportation and Infrastructure which—

(A) has the following title: “A bill to provide for the authorization of certain water resources development or conservation projects outside the regular authorization cycle.”; and

(B) only contains—

(i) authorization for 1 or more water resources development or conservation projects for which a final report of the Chief of Engineers has been completed; or

(ii) deauthorization for 1 or more water resources development or conservation projects.

(2) EXPEDITED CONSIDERATION.—If an interim authorization bill is not reported by a committee to which it is referred within 30 calendar days, the committee shall be discharged from its further consideration and the bill shall be referred to the appropriate calendar.

(b) CONSIDERATION IN THE SENATE.—

(1) POLICY.—The benefits of water resource projects designed and carried out in an economically justifiable, environmentally acceptable, and technically sound manner are important to the economy and environment of the United States and recommendations to Congress regarding those projects should be expedited for approval in a timely manner.

(2) APPLICABILITY.—The procedures under this subsection apply to projects for water resources development, conservation, and other purposes, subject to the conditions that—

(A) each project is carried out—

(i) substantially in accordance with the plan identified in the report of the Chief of Engineers for the project; and

(ii) subject to any conditions described in the report for the project; and

(B)(i) a report of the Chief of Engineers has been completed; and

(ii) after the date of enactment of this Act, the Assistant Secretary of the Army for Civil Works has submitted to Congress a recommendation to authorize construction of the project.

(3) EXPEDITED CONSIDERATION.—

(A) IN GENERAL.—A bill shall be eligible for expedited consideration in accordance with this subsection if the bill—

(i) authorizes a project that meets the requirements described in paragraph (2); and

(ii) is referred to the Committee on Environment and Public Works of the Senate.

(B) COMMITTEE CONSIDERATION.—

(i) IN GENERAL.—Not later than January 31st of the second session of each Congress, the Committee on Environment and Public Works of the Senate shall—

(I) report all bills that meet the requirements of subparagraph (A); or

(II) introduce and report a measure to authorize any project that meets the requirements described in paragraph (2).

(ii) FAILURE TO ACT.—Subject to clause (iii), if the committee fails to act on a bill that meets the requirements of subparagraph (A) by the date specified in clause (i), the bill shall be discharged from the committee and placed on the calendar of the Senate.

(iii) EXCEPTIONS.—Clause (ii) shall not apply if—

(I) in the 180-day period immediately preceding the date specified in clause (i), the full committee holds a legislative hearing on a bill to authorize all projects that meet the requirements described in paragraph (2);

(II)(aa) the committee favorably reports a bill to authorize all projects that meet the requirements described in paragraph (2); and

(bb) the bill described in item (aa) is placed on the calendar of the Senate; or

(III) a bill that meets the requirements of subparagraph (A) is referred to the committee not earlier than 30 days before the date specified in clause (i).

(4) TERMINATION.—The procedures for expedited consideration under this subsection terminate on December 31, 2018.

(c) RULES OF THE SENATE AND HOUSE OF REPRESENTATIVES.—

This section is enacted by Congress—

(1) as an exercise of the rulemaking power of the Senate and House of Representatives, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of a bill addressed by this section, and it supersedes other rules only to the extent that it is inconsistent with such rules; and

(2) with full recognition of the constitutional right of either House to change the rules (so far as relating to the procedure of that House) at any time, in the same manner, and to the same extent as in the case of any other rule of that House.

Speaker of the House of Representatives.

*Vice President of the United States and
President of the Senate.*

I. NOAA Navigation Chart

BookletChart™

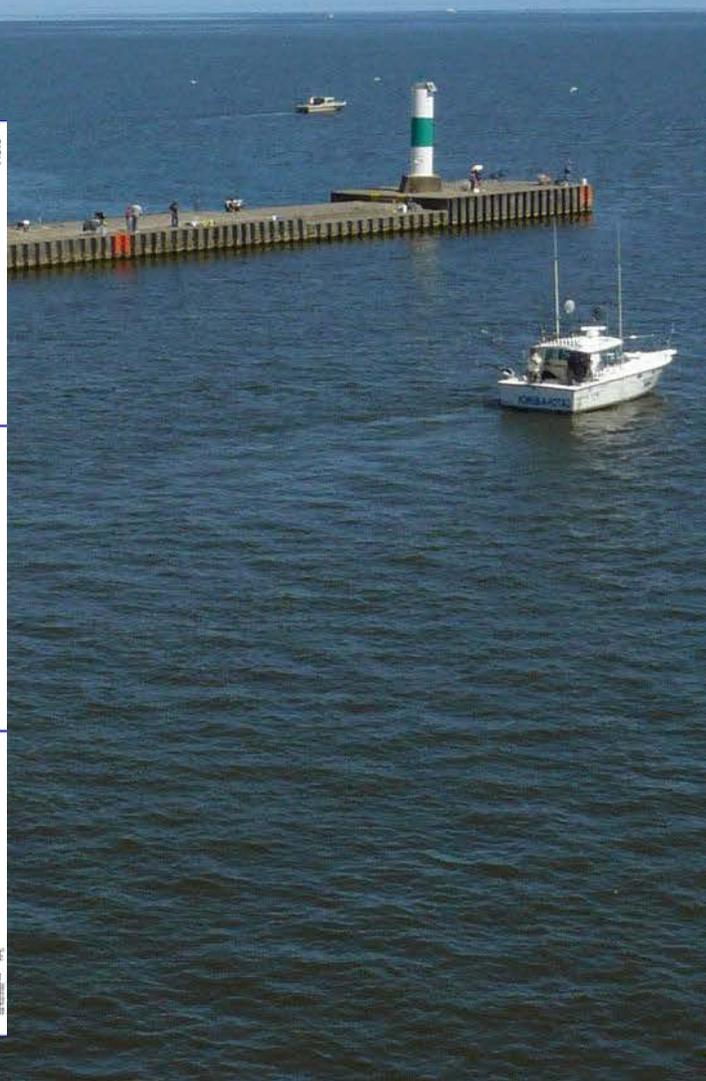
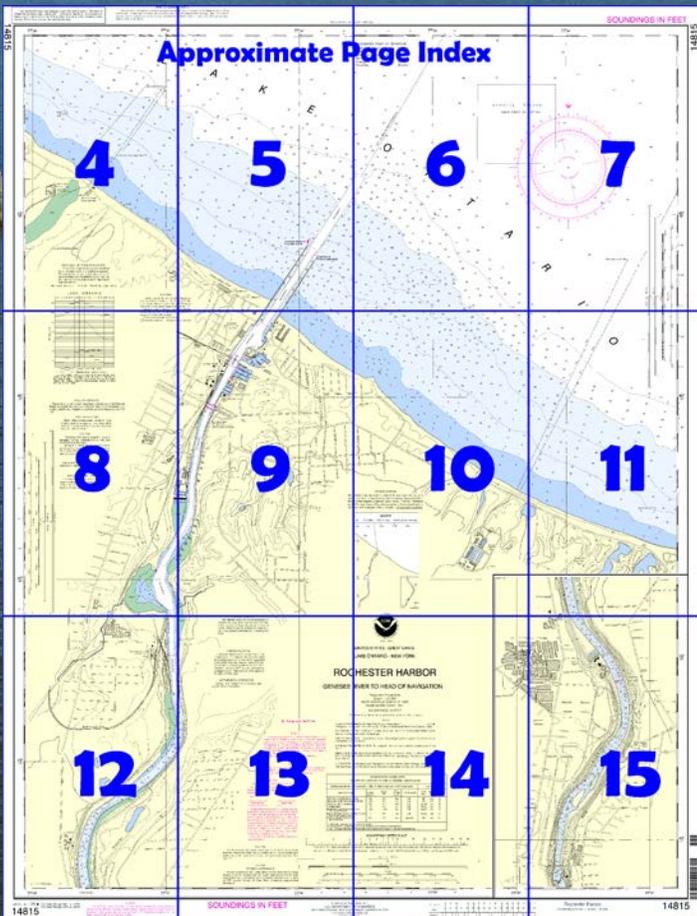
Rochester Harbor – Genesee River to Head of Navigation NOAA Chart 14815



*A reduced-scale NOAA nautical chart for small boaters
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888-990-NOAA**

What are Nautical Charts?

Nautical charts are a fundamental tool of marine navigation. They show water depths, obstructions, buoys, other aids to navigation, and much more. The information is shown in a way that promotes safe and efficient navigation. Chart carriage is mandatory on the commercial ships that carry America's commerce. They are also used on every Navy and Coast Guard ship, fishing and passenger vessels, and are widely carried by recreational boaters.

What is a BookletChart™ ?

This BookletChart is made to help recreational boaters locate themselves on the water. It has been reduced in scale for convenience, but otherwise contains all the information of the full-scale nautical chart. The bar scales have also been reduced, and are accurate when used to measure distances in this BookletChart. See the Note at the bottom of page 5 for the reduction in scale applied to this chart.

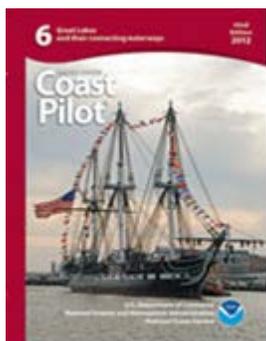
Whenever possible, use the official, full scale NOAA nautical chart for navigation. Nautical chart sales agents are listed on the Internet at <http://www.NauticalCharts.NOAA.gov>.

This BookletChart does NOT fulfill chart carriage requirements for regulated commercial vessels under Titles 33 and 44 of the Code of Federal Regulations.

Notice to Mariners Correction Status

This BookletChart has been updated for chart corrections published in the U.S. Coast Guard Local Notice to Mariners, the National Geospatial Intelligence Agency Weekly Notice to Mariners, and, where applicable, the Canadian Coast Guard Notice to Mariners. Additional chart corrections have been made by NOAA in advance of their publication in a Notice to Mariners. The last Notices to Mariners applied to this chart are listed in the Note at the bottom of page 7. Coast Pilot excerpts are not being corrected.

For latest Coast Pilot excerpt visit the Office of Coast Survey website at <http://www.nauticalcharts.noaa.gov/nsd/searchbychart.php?chart=14815>



(Selected Excerpts from Coast Pilot)

From Irondequoit Bay west-northwest for 3.8 miles to the mouth of the Genesee River, deep water is about 0.5 mile offshore. A rock covered ½ foot is close inshore about 0.7 mile southeast of the Genesee River entrance.

Rochester Harbor, at the mouth of the **Genesee River**, is 54 miles west of Oswego Harbor and about 7 miles north of the main business district of the city of **Rochester, NY**. The river is navigable for

about 5.5 miles above the mouth. The first of a group of dams is about 7 miles upstream from Lake Ontario. There is no navigable connection between the lower portion of the Genesee River and the New York State

Canal, which connects with the river about 11 miles upstream from the lake. The surface elevation of the river falls more than 260 feet between the Rochester Terminal of the New York State Canal System and the head of navigation of the lower portion of the river below the dams. An unmarked **dumping ground** with a least reported depth of 35 feet is about 1.8 miles northeast of the mouth of the Genesee River.

Prominent features.—The lighted stacks at the powerplant 1.6 miles west-northwest of the river mouth, the stacks at the sewage treatment plant 1.9 miles southeast of the river mouth, and the tall apartment building 1.1 miles southwest of the river mouth are the most prominent objects from offshore.

Rochester Harbor Light (43°15'48"N., 77°36'00"W.), 40 feet above the water, is shown from a white cylindrical tower with red band on the outer end of the west pier.

Channels.—From Lake Ontario, the river is entered through a dredged channel that leads between two piers, thence upstream for 2.6 miles above the mouth. There are two turning basins, one just inside the mouth and the other 2 miles above the mouth on the west side of the channel; the upper turning basin is no longer maintained. The outer ends of the entrance piers are marked by lights; mooring is only allowed on the lakeside of the piers. (See Notice to Mariners and latest edition of charts for controlling depths.)

Dangers.—It is reported that northeast winds sometimes create waves as high as 6 feet which reflect through the entrance channel between the piers, making navigation into the harbor difficult. River currents sometimes compound this problem. A dangerous sunken wreck is 0.8 mile east-northeast of Rochester Harbor Light.

Bridges.—Two bridges cross the dredged section of the Genesee River. The CSX Transportation Railroad bridge 0.9 mile above the pierheads has a swing span with a clearance of 10 feet. The O'Rorke bridge, 1.25 miles above the pierheads, has a bascule span with a clearance of 41 feet (45 feet at center). (See **33 CFR 117.1 through 117.59 and 117.785**, chapter 2, for drawbridge regulations.) Overhead power cables crossing the river 2.8 miles above the pierheads have a clearance of 141 feet. Above the limit of the Federal project, a pipeline bridge, about 5.1 miles above the pierheads, has a fixed span with a clearance of 86 feet. The Ridge Road (U.S. Route 104) bridge, about 5.5 miles above the pierheads, has a fixed span with a clearance of 160 feet. The Driving Park Avenue bridge, 6.4 miles above the pierheads, has fixed span with unknown clearance.

Supplies.—Some marine supplies, water, provisions, and diesel fuel can be obtained at Rochester.

Small-craft facilities.—Marinas at Rochester provide transient berths, gasoline, diesel fuel, water, ice, electricity, sewage pump-out, marine supplies, launching ramps, mobile lifts to 40 tons, and hull, engine, and electronic repairs. In 1977, depths of 2 to 12 feet were reported alongside the berths.

Communications.—Rochester is served by rail, air, and bus. Rochester-Monroe County Airport is about 10 miles south-southwest of the river entrance.

**U.S. Coast Guard Rescue Coordination Center
24 hour Regional Contact for Emergencies**

RCC Cleveland

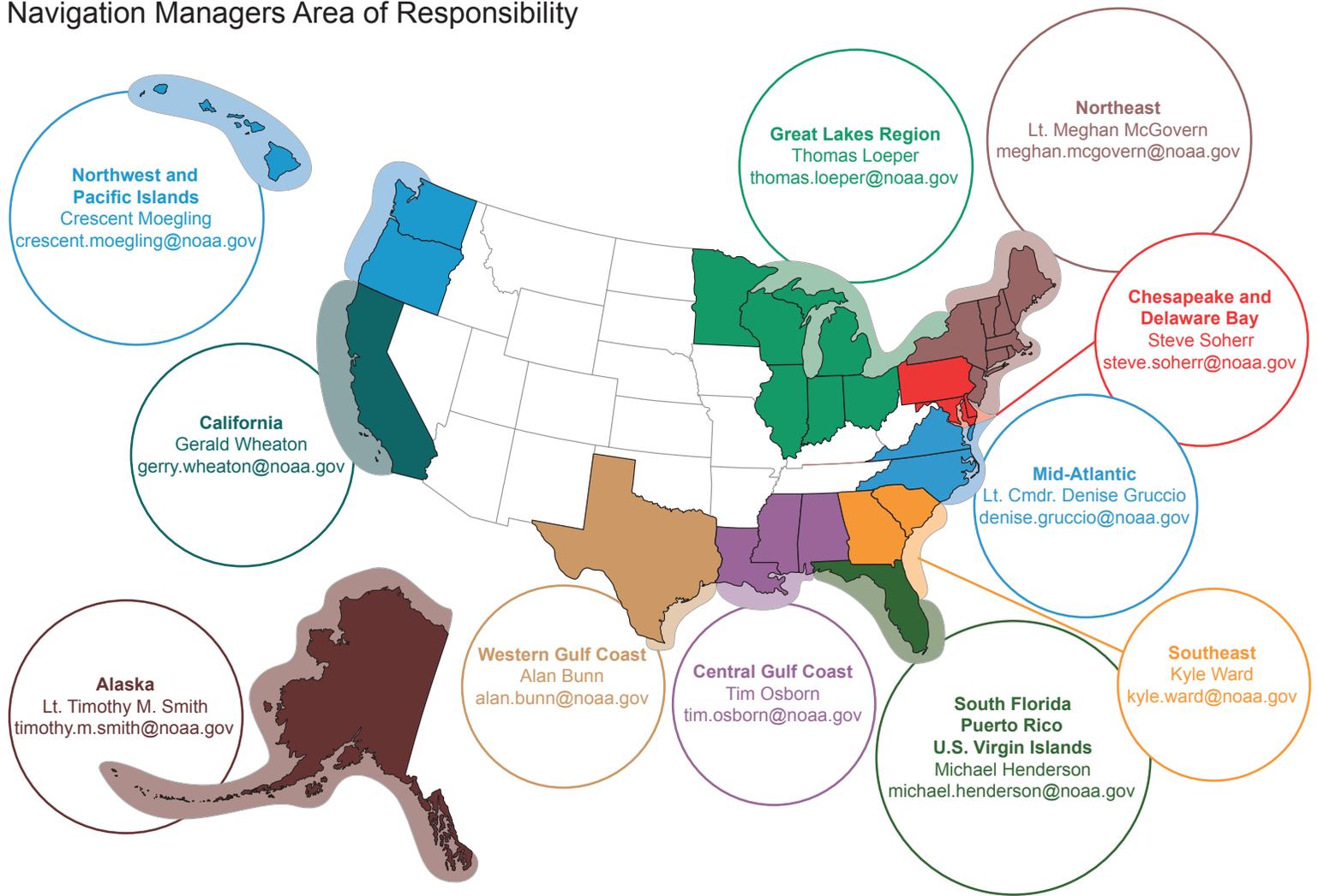
Commander

9th CG District

Cleveland, OH

(216) 902-6117

Navigation Managers Area of Responsibility



NOAA's navigation managers serve as ambassadors to the maritime community.

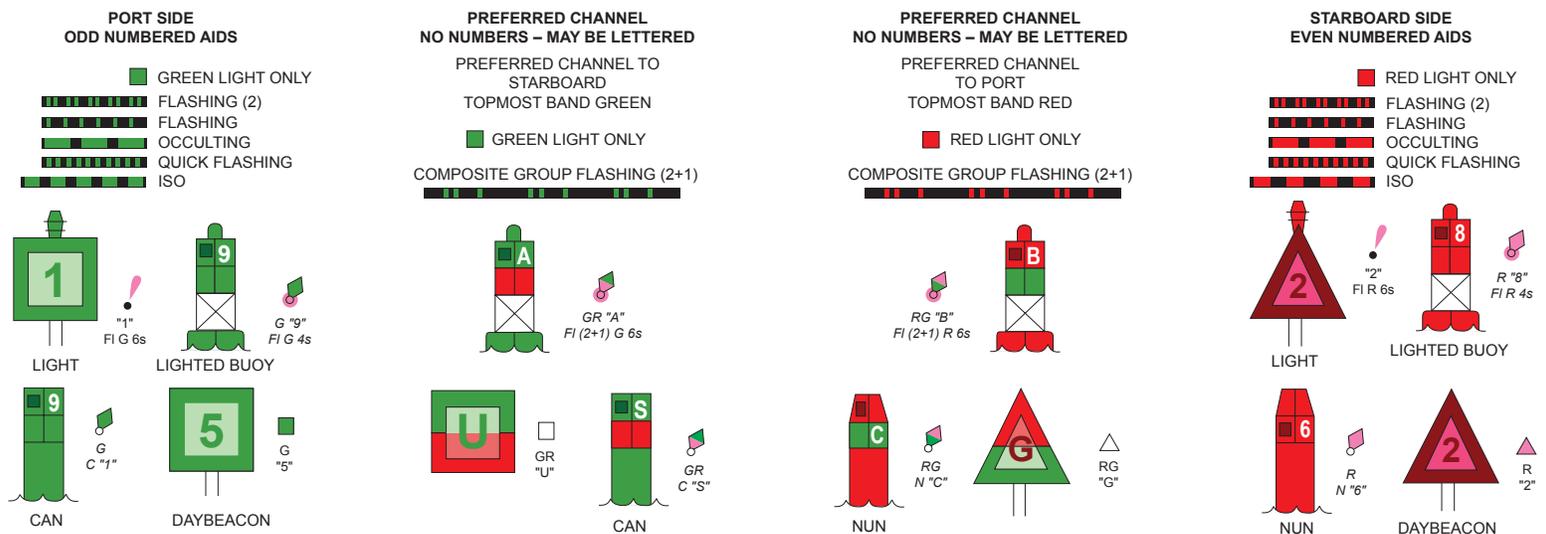
They help identify navigational challenges facing professional and recreational mariners, and provide NOAA resources and information for safe navigation. For additional information, please visit nauticalcharts.noaa.gov/service/navmanagers

To make suggestions or ask questions online, go to nauticalcharts.noaa.gov/inquiry.

To report a chart discrepancy, please use ocsdata.ncd.noaa.gov/idrs/discrepancy.aspx.

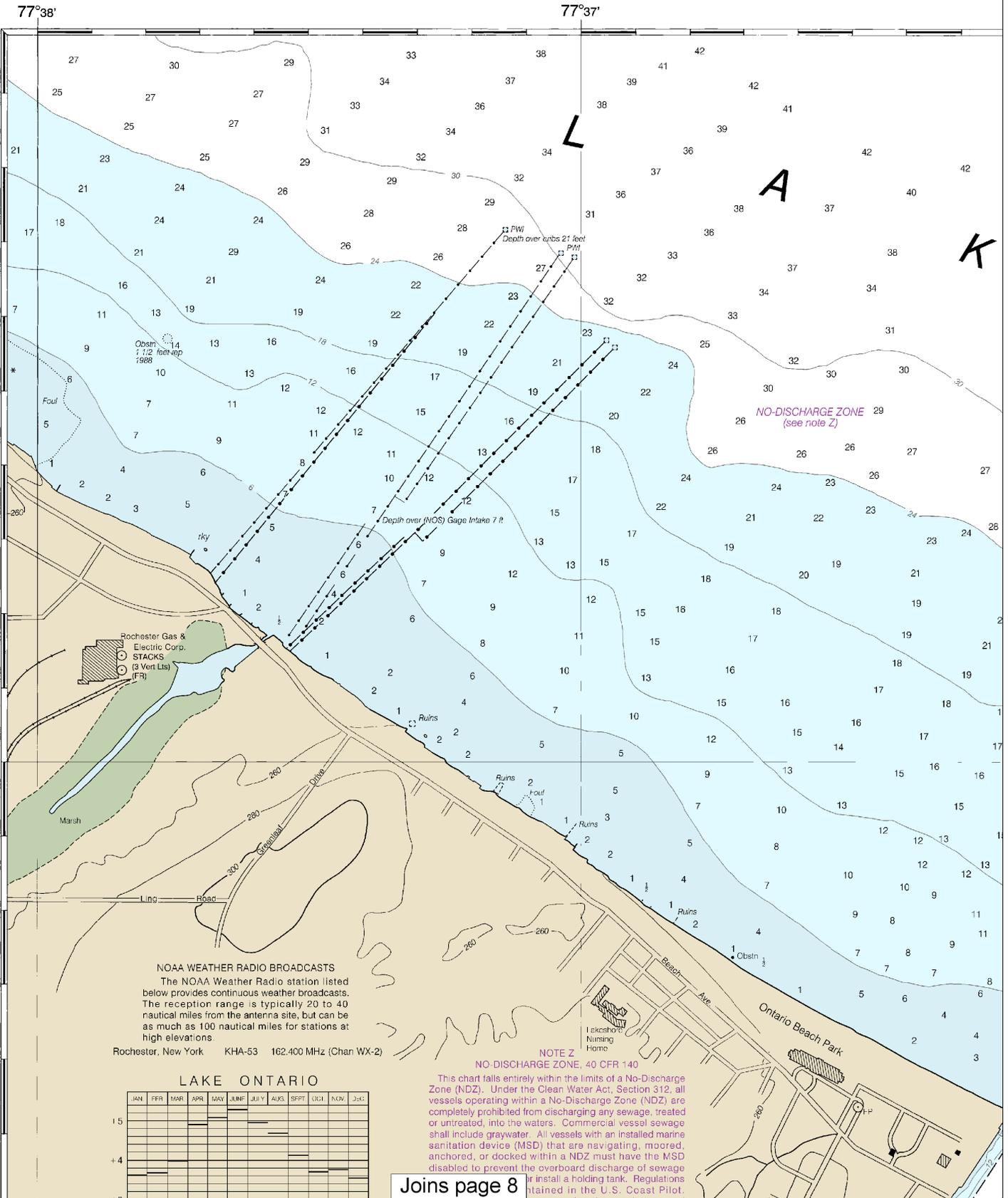
Lateral System As Seen Entering From Seaward

on navigable waters except Western Rivers



For more information on aids to navigation, including those on Western Rivers, please consult the latest USCG Light List for your area. These volumes are available online at <http://www.navcen.uscg.gov>

14815



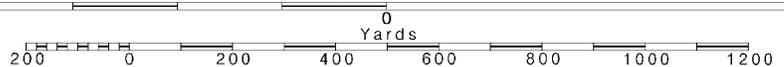
4

Note: Chart grid lines are aligned with true north.

Printed at reduced scale.

SCALE 1:10,000
 Nautical Miles

See Note on page 5.

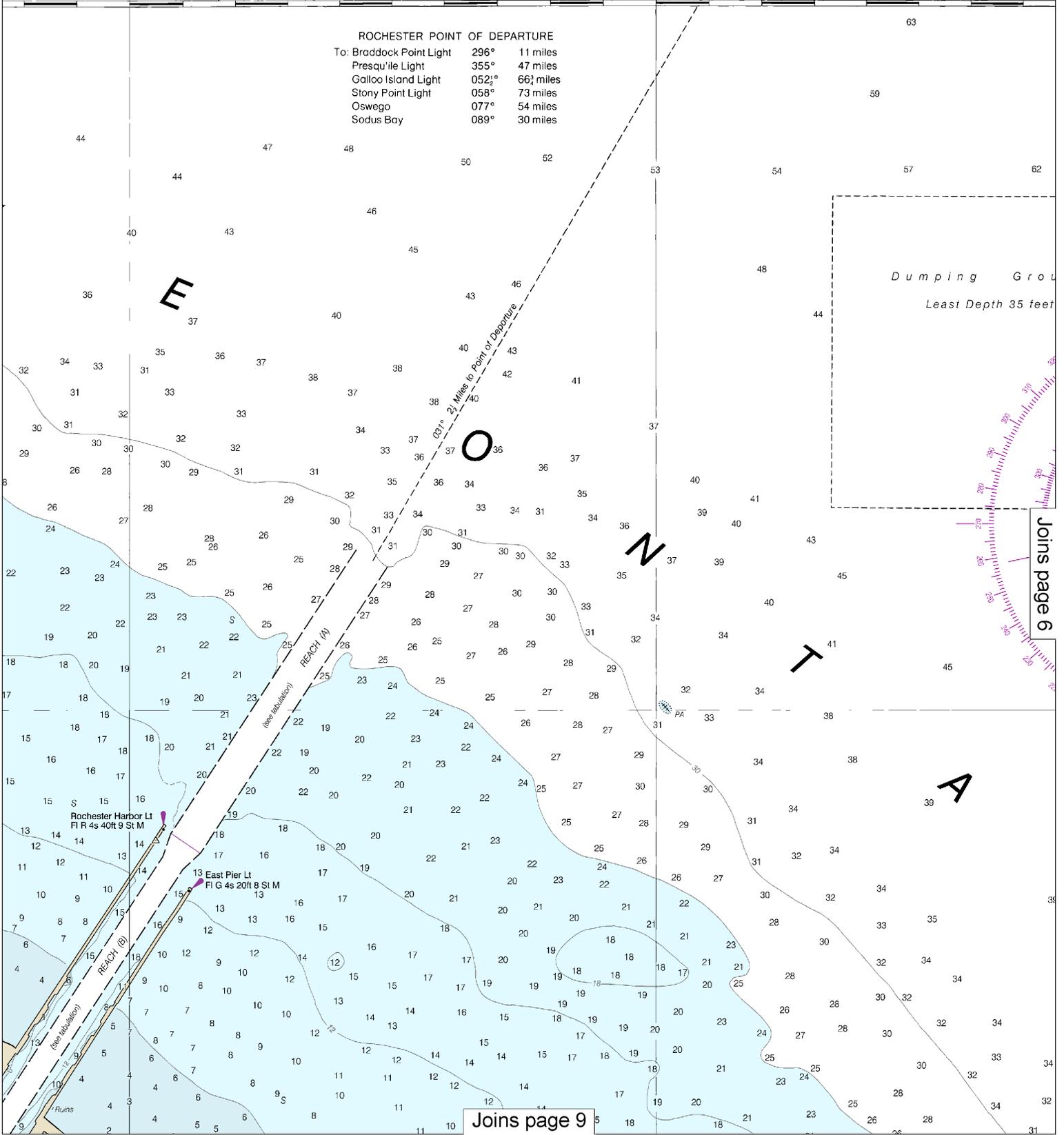


77°36'

77°35'

ROCHESTER POINT OF DEPARTURE

To: Braddock Point Light	296°	11 miles
Presqu'ile Light	355°	47 miles
Galloo Island Light	052½°	66½ miles
Stony Point Light	058°	73 miles
Oswego	077°	54 miles
Sodus Bay	089°	30 miles



Joins page 9

Joins page 6

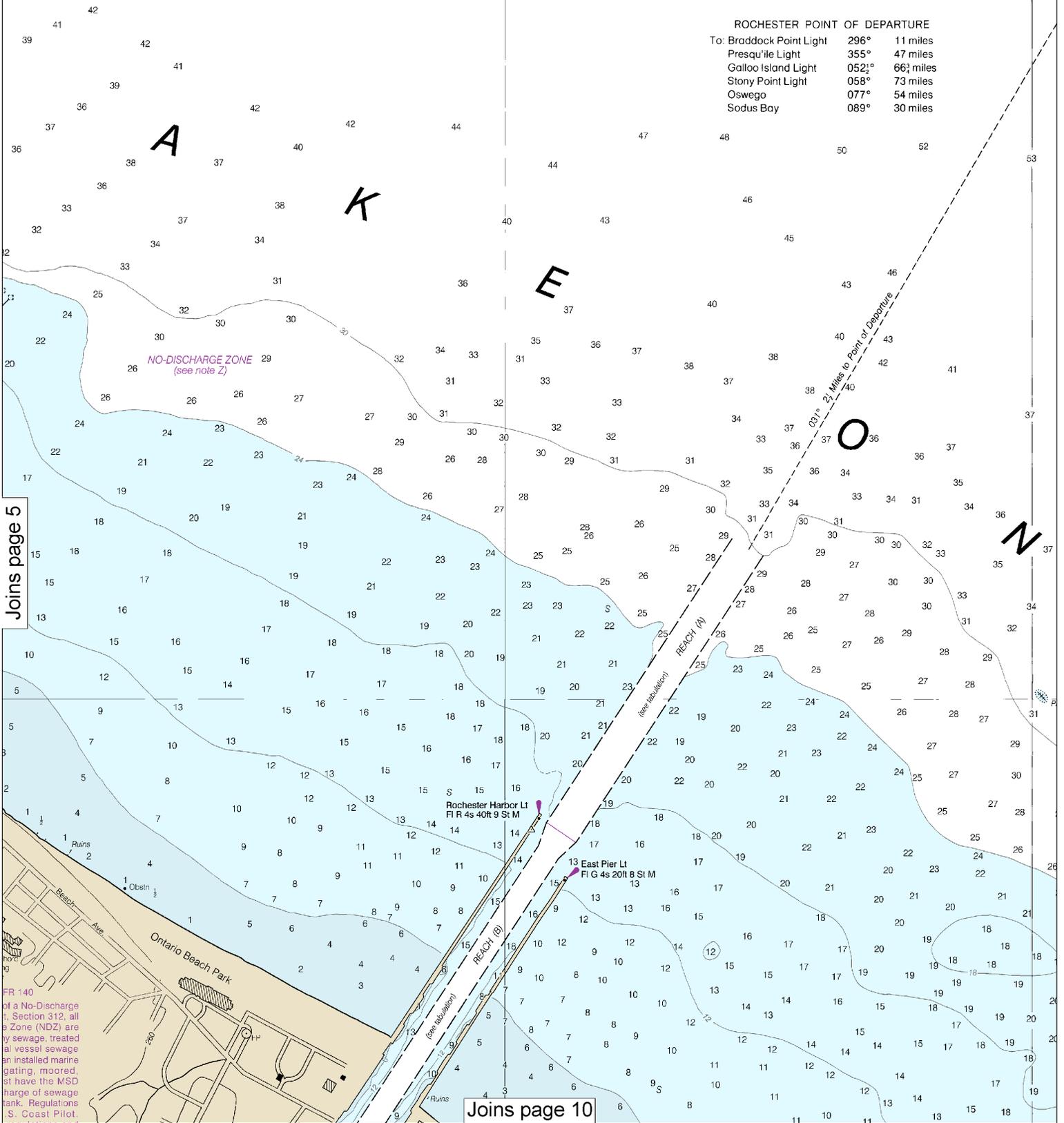
This BookletChart was reduced to 75% of the original chart scale.
 The new scale is 1:13333. Barscales have also been reduced and
 are accurate when used to measure distances in this BookletChart.



77°36'

77°35'

ROCHESTER POINT OF DEPARTURE		
To: Braddock Point Light	296°	11 miles
Presqu'ile Light	355°	47 miles
Galloo Island Light	052½°	66½ miles
Stony Point Light	058°	73 miles
Oswego	077°	54 miles
Sodus Bay	089°	30 miles



Joins page 5

Joins page 10

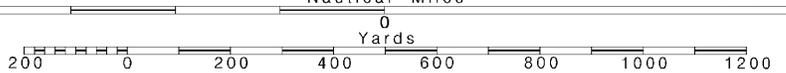


Note: Chart grid lines are aligned with true north.

Printed at reduced scale.

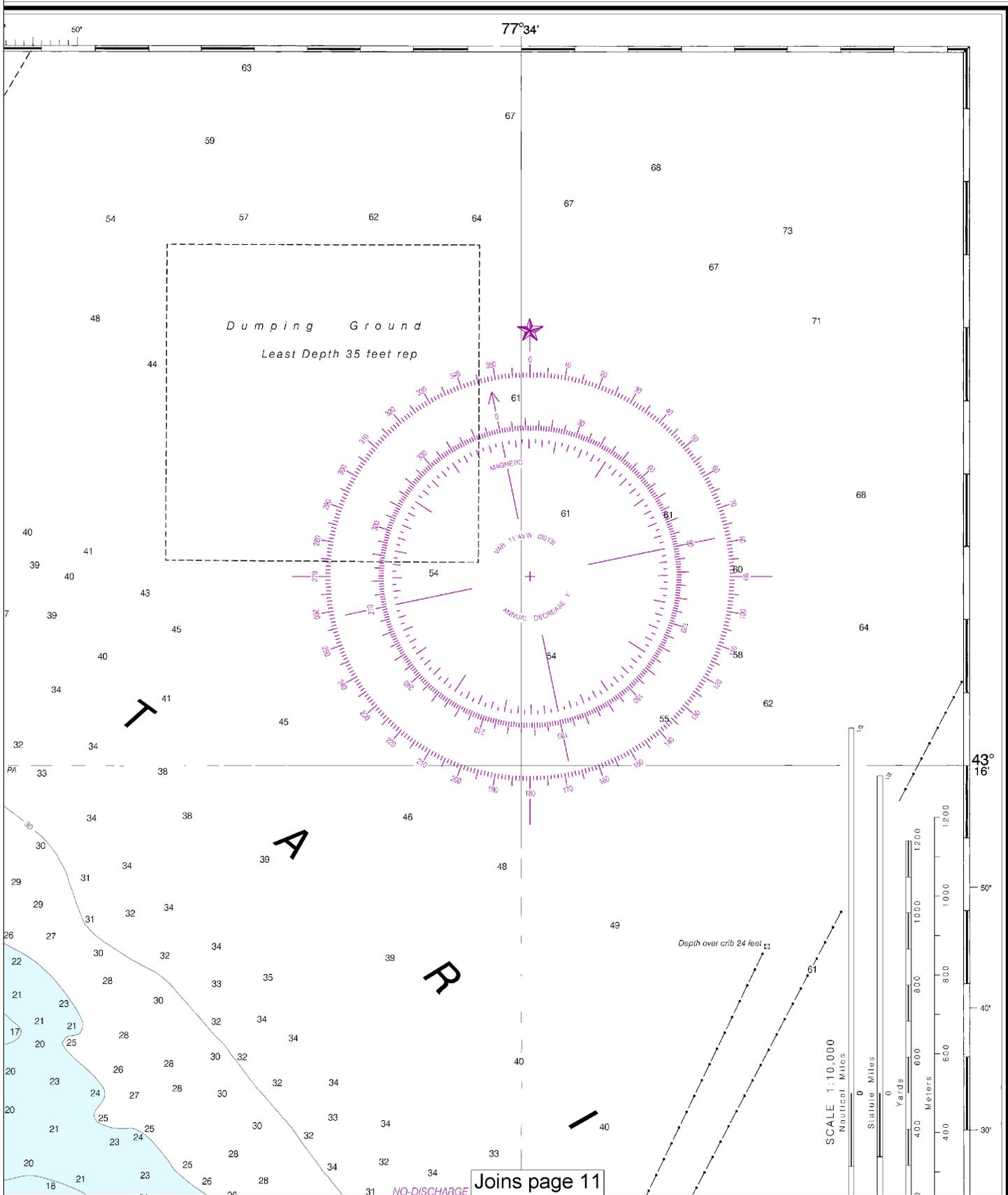
SCALE 1:10,000

See Note on page 5.



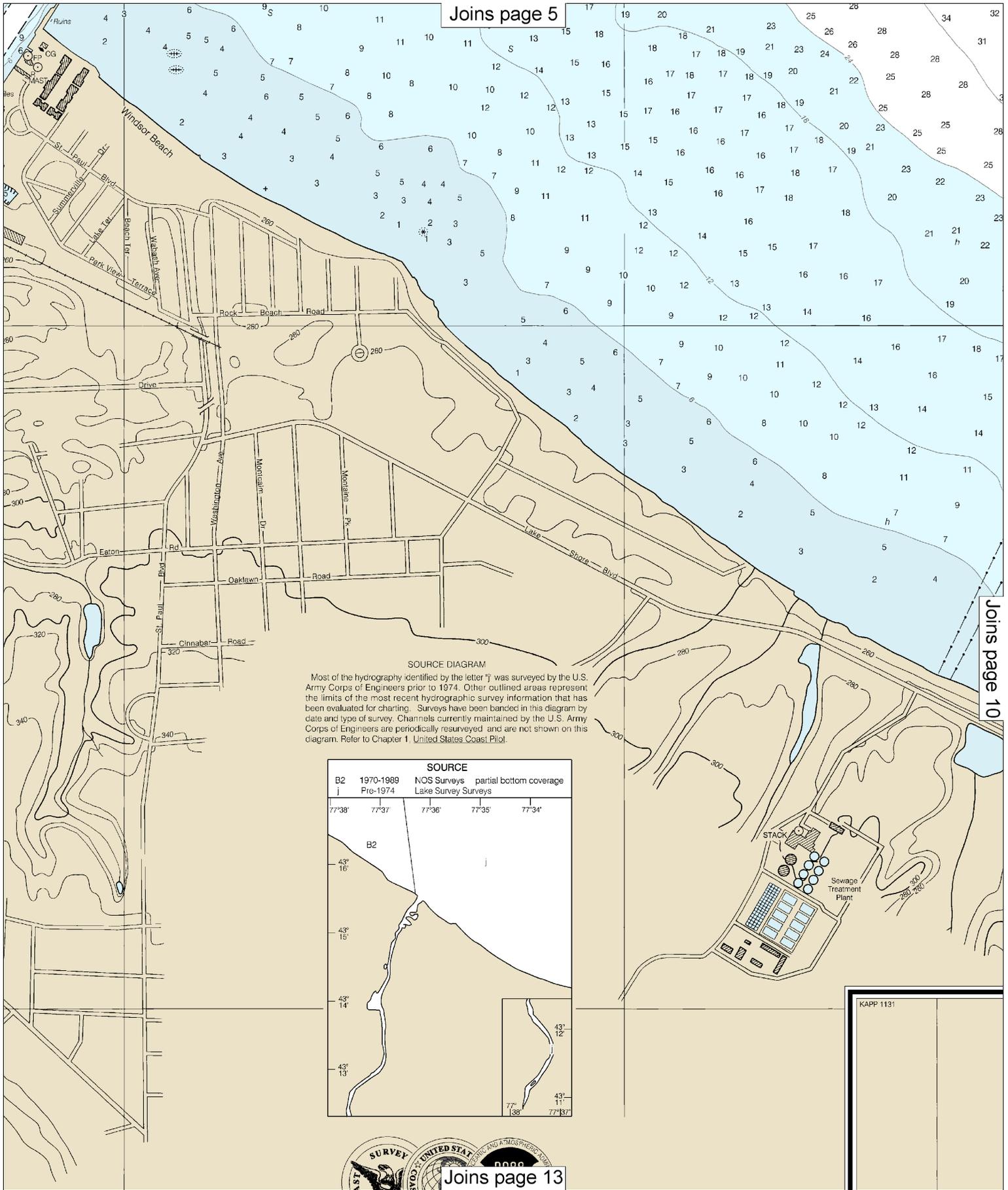
SOUNDINGS IN FEET

14815



Manners published after the dates shown in the lower left hand corner are available at
Last Correction: 7/21/2014. Cleared through:
LNM: 4414 (11/4/2014), NM: 4714 (11/22/2014), CHS: 0914 (9/26/2014)





SOURCE DIAGRAM
 Most of the hydrography identified by the letter "j" was surveyed by the U.S. Army Corps of Engineers prior to 1974. Other outlined areas represent the limits of the most recent hydrographic survey information that has been evaluated for charting. Surveys have been banded in this diagram by date and type of survey. Channels currently maintained by the U.S. Army Corps of Engineers are periodically resurveyed and are not shown on this diagram. Refer to Chapter 1, United States Coast Pilot.

SOURCE				
B2	1970-1969	NOS Surveys	partial bottom coverage	
j	Pre-1974	Lake Survey Surveys		
77°38'	77°37'	77°36'	77°35'	77°34'
B2				
43°16'				j
43°15'				
43°14'				
43°13'				
				43°12'
				43°11'
				77°33'

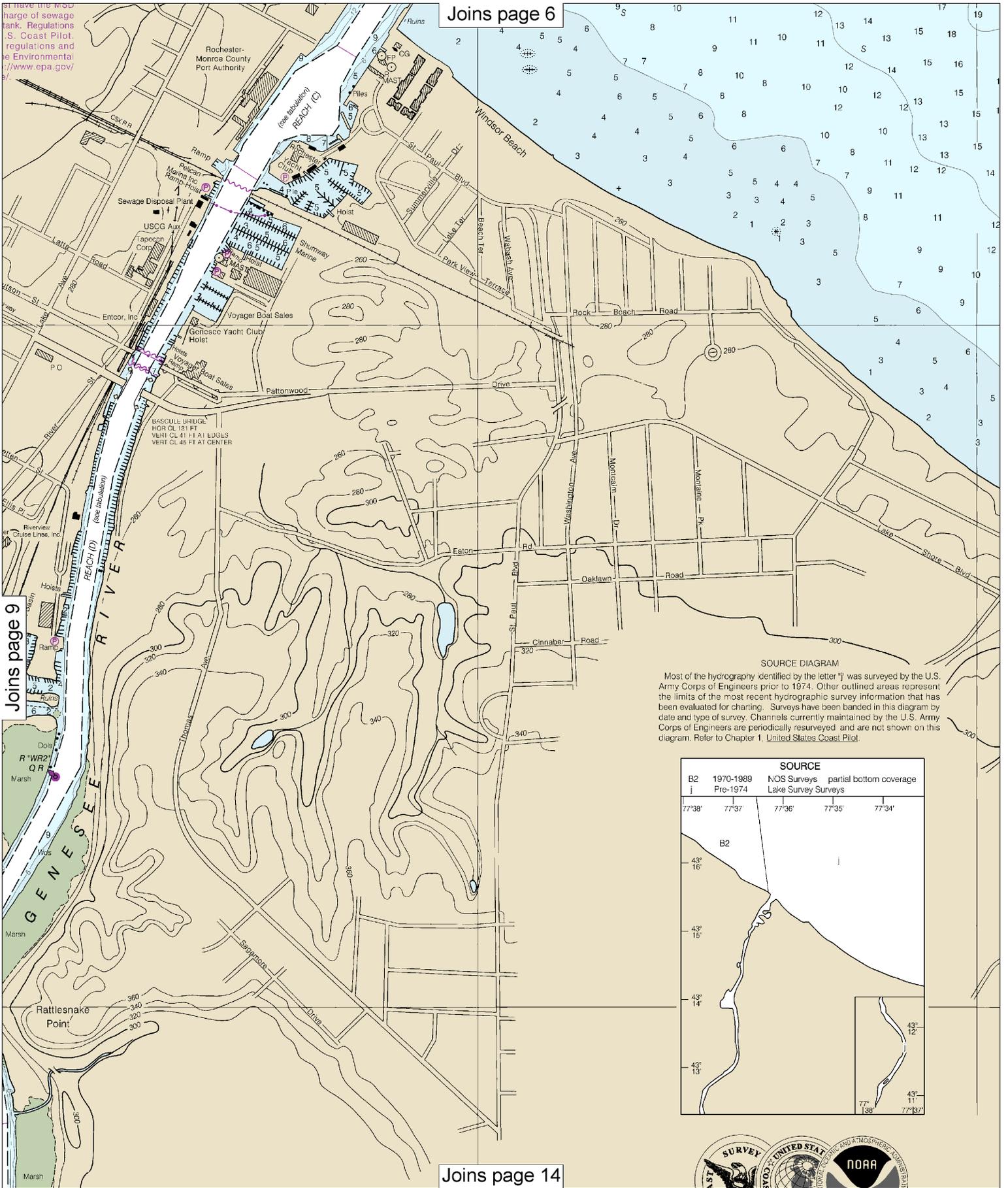


KAPP 1131	
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st have the WSD
 charge of sewage
 tank. Regulations
 S. Coast Pilot
 regulations and
 Environmental
 /www.epa.gov/
 /

Joins page 6

Joins page 9



Joins page 14

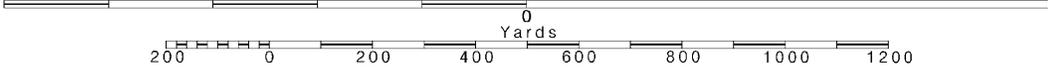


10

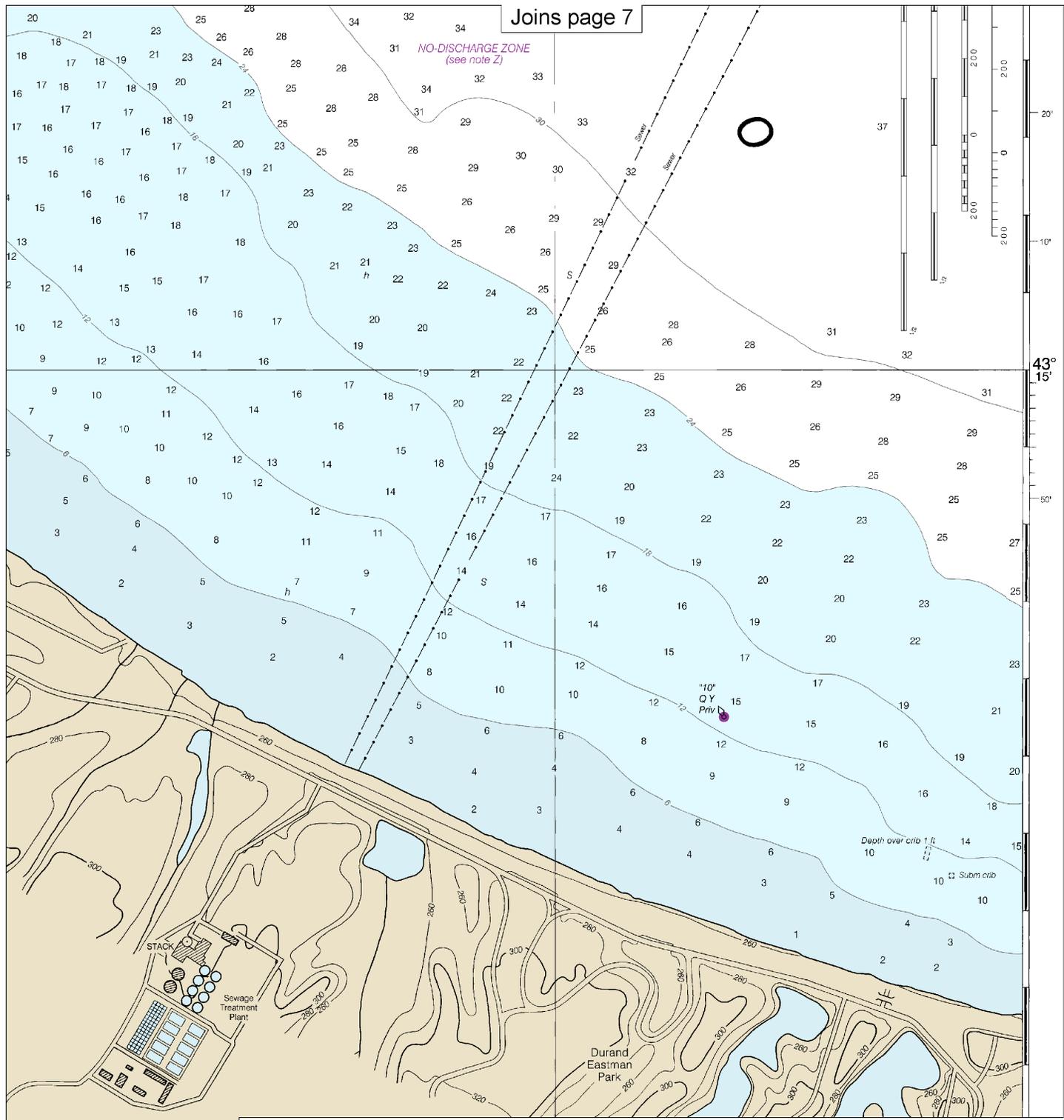
Note: Chart grid lines are aligned with true north.

Printed at reduced scale. SCALE 1:10,000

See Note on page 5.

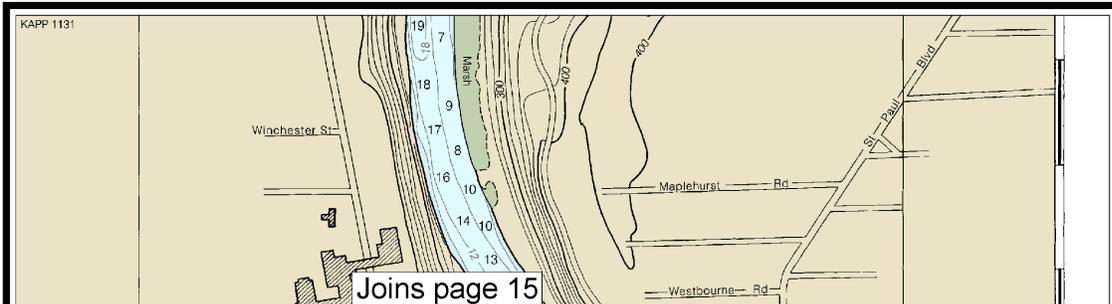
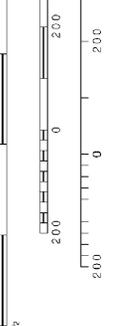


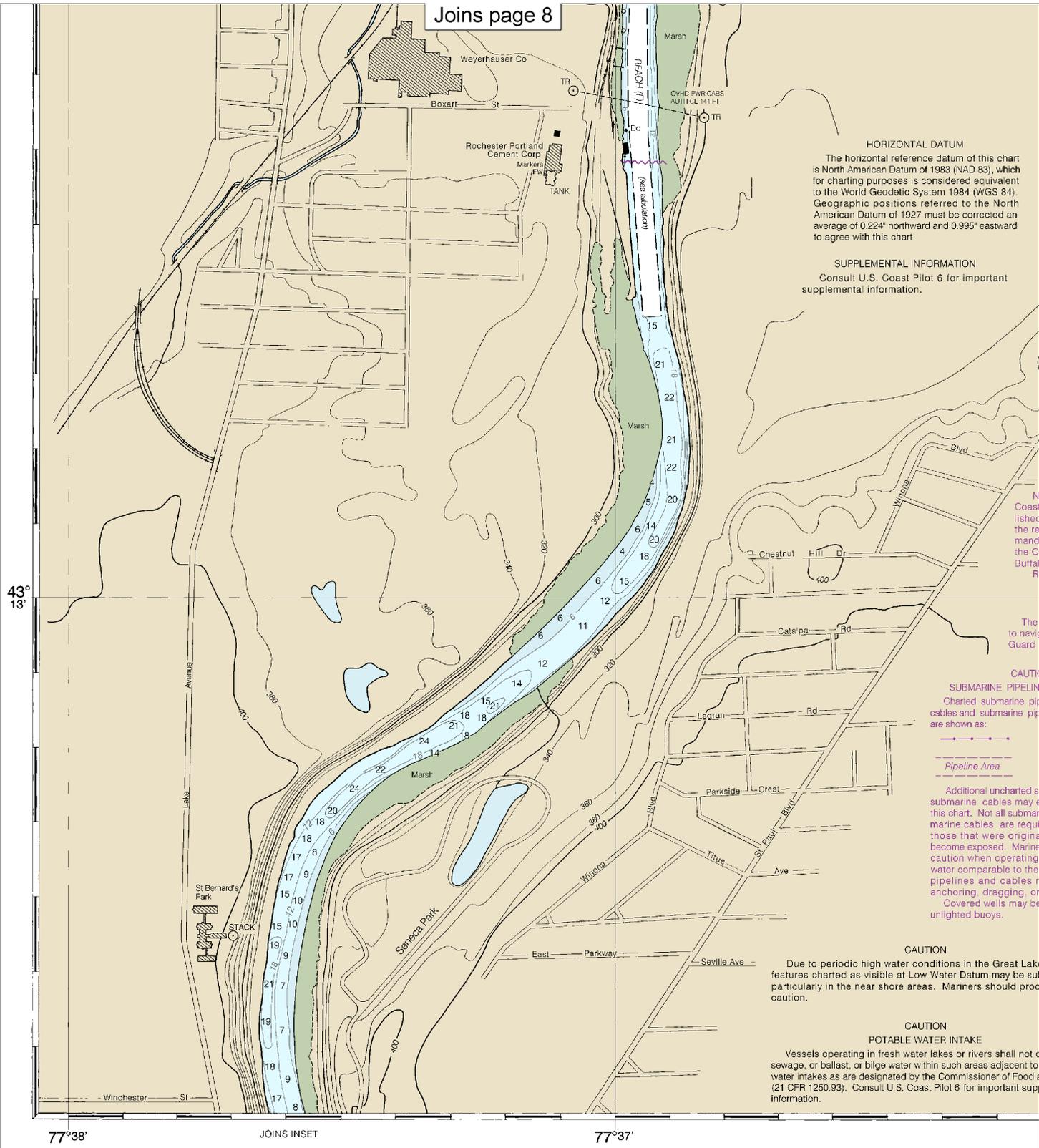
NO-DISCHARGE ZONE
(see note Z)



43° 15'

50'





43° 13'

77°38'

JOINS INSET

77°37'

24th Ed., Dec. / 13

14815

CAUTION
 This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner. Chart updates corrected from Notice to Mariners published after the dates shown in the lower left hand corner are available at

SOUNDINGS I

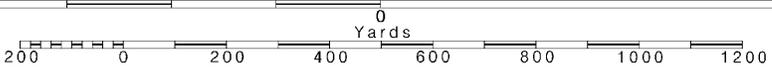
Last Correction: 7/21/2014. Cleared through:
 LNM: 4414 (11/4/2014), NM: 4714 (11/22/2014), CHS: 0914 (9/26/2014)

12

Note: Chart grid lines are aligned with true north.

Printed at reduced scale. SCALE 1:10,000 Nautical Miles

See Note on page 5.





THE NATION'S CHARTMAKER SINCE 1807

UNITED STATES - GREAT LAKES
LAKE ONTARIO - NEW YORK

ROCHESTER HARBOR

GENESEE RIVER TO HEAD OF NAVIGATION

Polyconic Projection
Scale 1:10,000
North American Datum of 1983
(World Geodetic System 1984)

SOUNDINGS IN FEET

Additional information can be obtained at nauticalcharts.noaa.gov.

NOTES

PLANE OF REFERENCE OF THIS CHART (Low Water Datum) 243.3ft.
Referred to mean water level at Rimouski, Quebec, International Great Lakes Datum (1985).

SAILING DIRECTIONS. Bearings of sailing courses are true and distances given thereon are in statute miles between points of departure.

AIDS TO NAVIGATION. Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.

SYMBOLS AND ABBREVIATIONS. For complete list of symbols and abbreviations see Chart No. 1

BRIDGE AND OVERHEAD CABLE CLEARANCES. When the water surface is above Low Water Datum, bridge and overhead clearances are reduced correspondingly. For clearances see U.S. Coast Pilot 6.

AUTHORITIES. Hydrography and Topography by the National Ocean Service, Coast Survey, with additional data from the Corps of Engineers, Geological Survey, and U.S. Coast Guard.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 6. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning regulations may be obtained at the Office of the Commander, 9th Coast Guard District in Cleveland, Ohio or at Office of the District Engineer, Corps of Engineers in Toledo, New York.

Refer to charted regulation section numbers.

WARNING

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast and Light List and U.S. Coast Pilot for details.

PIPELINES AND CABLES
Submarine pipelines and submarine pipelines and cable areas



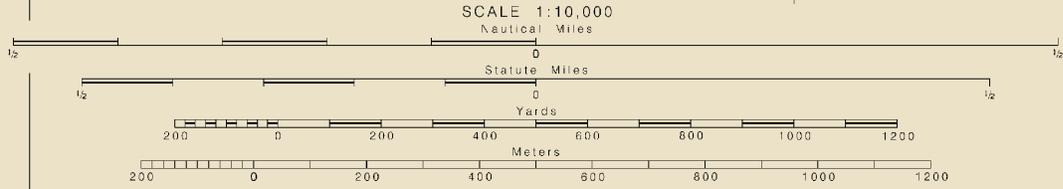
Submarine pipelines and cables exist within the area of the chart. Submarine pipelines and cables buried may have markers should use extreme care in depths of their draft in areas where they may exist, and when they are marked by lighted or unlighted buoys.

ROCHESTER HARBOR CHANNEL DEPTHS						
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - REPORT OF APR 2014 AND SURVEYS TO APR 2014						
CONTROLLING DEPTHS FROM SEAWARD IN FEET AT GREAT LAKES LOW WATER DATUM (LWD)					PROJECT DIMENSIONS	
NAME OF CHANNEL	LEFT OUTSIDE QUARTER	MIDDLE HALF	RIGHT OUTSIDE QUARTER	DATE OF SURVEY	WIDTH (FEET)	DEPTH LWD (FEET)
A. LAKE APPROACH CHANNEL	17.2	17.7	18.3	4-14	300	2800
B. ENTRANCE CHANNEL	9.5	15.6	12.4	4-14	200-600	4400
C. LOWER TURNING BASIN	4.3	5.5	8.3	4-14	200-600	4400
D. GENESEE RIVER	2.8	13.1	2.6	4-14	150-270	7500
E. UPPER TURNING BASIN	NOT SOUNDED				0-900	800
F. GENESEE RIVER, UPSTREAM TO DREDGING LIMIT	11.8	11.9	11.0	4-14	150-270	1580
G. GENESEE RIVER, UPSTREAM 1200 FEET OF NAVIGATION*	11.4	11.5	11.1	4-14	150	1200
H. UPPER TURNING BASIN	12.8	2.0	2.0	4-14	150-270	1600

* NOT MAINTAINED
NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION

Shoals, some submerged, proceed with caution.

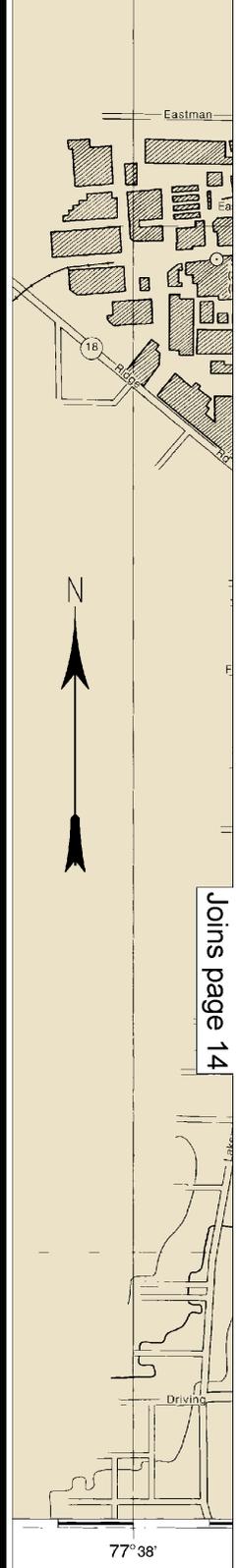
Do not discharge to domestic sewage and Drugs Supplemental



77°36'

77°35'

77°38'



IN FEET

Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
COAST SURVEY

FATHOMS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FEET	6	12	18	24	30	36	42	48	54	60	66	72	78	84
METERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14



THE NATION'S CHARTMAKER SINCE 1807

UNITED STATES - GREAT LAKES
LAKE ONTARIO - NEW YORK

ROCHESTER HARBOR

GENESEE RIVER TO HEAD OF NAVIGATION

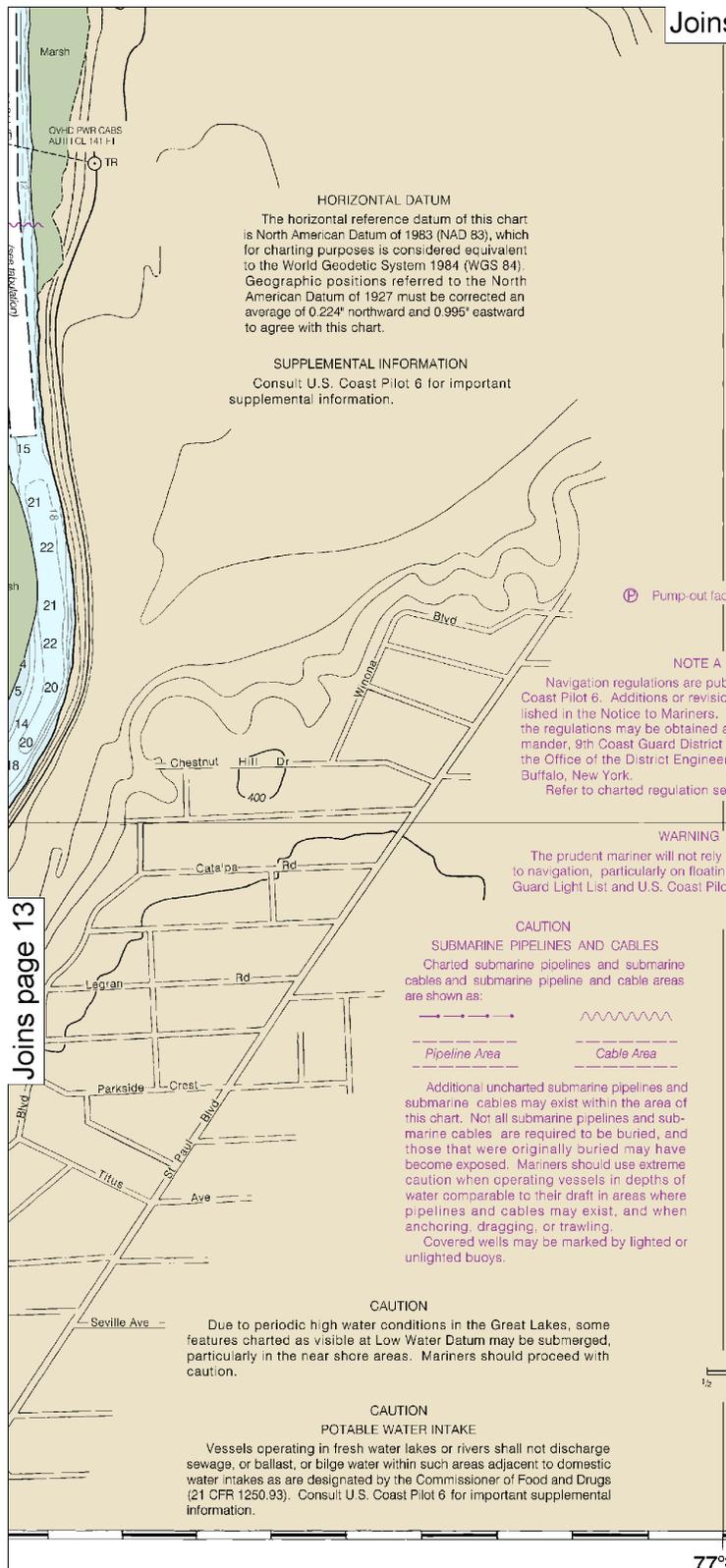
Polyconic Projection
Scale 1:10,000
North American Datum of 1983
(World Geodetic System 1984)

SOUNDINGS IN FEET

Additional information can be obtained at nauticalcharts.noaa.gov.

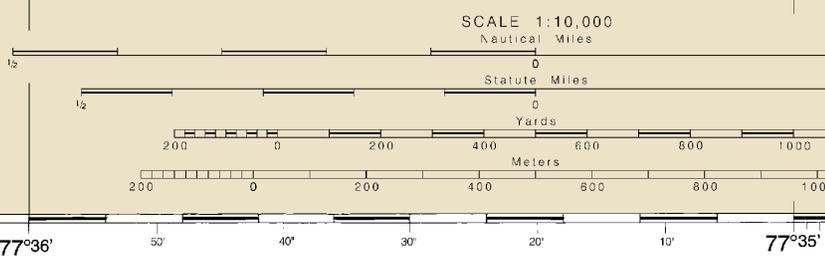
NOTES

- PLANE OF REFERENCE OF THIS CHART (Low Water Datum)..... 243.3ft. Referred to mean water level at Rimouski, Quebec, International Great Lakes Datum (1985).
- SAILING DIRECTIONS. Bearings of sailing courses are true and distances given thereon are in statute miles between points of departure.
- AIDS TO NAVIGATION. Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
- SYMBOLS AND ABBREVIATIONS. For complete list of symbols and abbreviations see Chart No. 1
- BRIDGE AND OVERHEAD CABLE CLEARANCES. When the water surface is above Low Water Datum, bridge and overhead clearances are reduced correspondingly. For clearances see U.S. Coast Pilot 6.
- AUTHORITIES. Hydrography and Topography by the National Ocean Service, Coast Survey, with additional data from the Corps of Engineers, Geological Survey, and U.S. Coast Guard.



ROCHESTER HARBOR CHANNEL DEPTHS						
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - REPORT OF APR 2014 AND SURVEYS TO APR 2014						
CONTROLLING DEPTHS FROM SEAWARD IN FEET AT GREAT LAKES LOW WATER DATUM (LWD)				PROJECT DIMENSIONS		
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* NOT MAINTAINED
NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION



SOUNDINGS IN FEET

Published at Washington, D.C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
COAST SURVEY

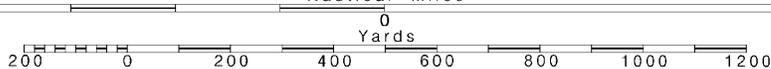
Published Notice to Mariners to be published in the Notice to Mariners available at

4)

14

Note: Chart grid lines are aligned with true north.

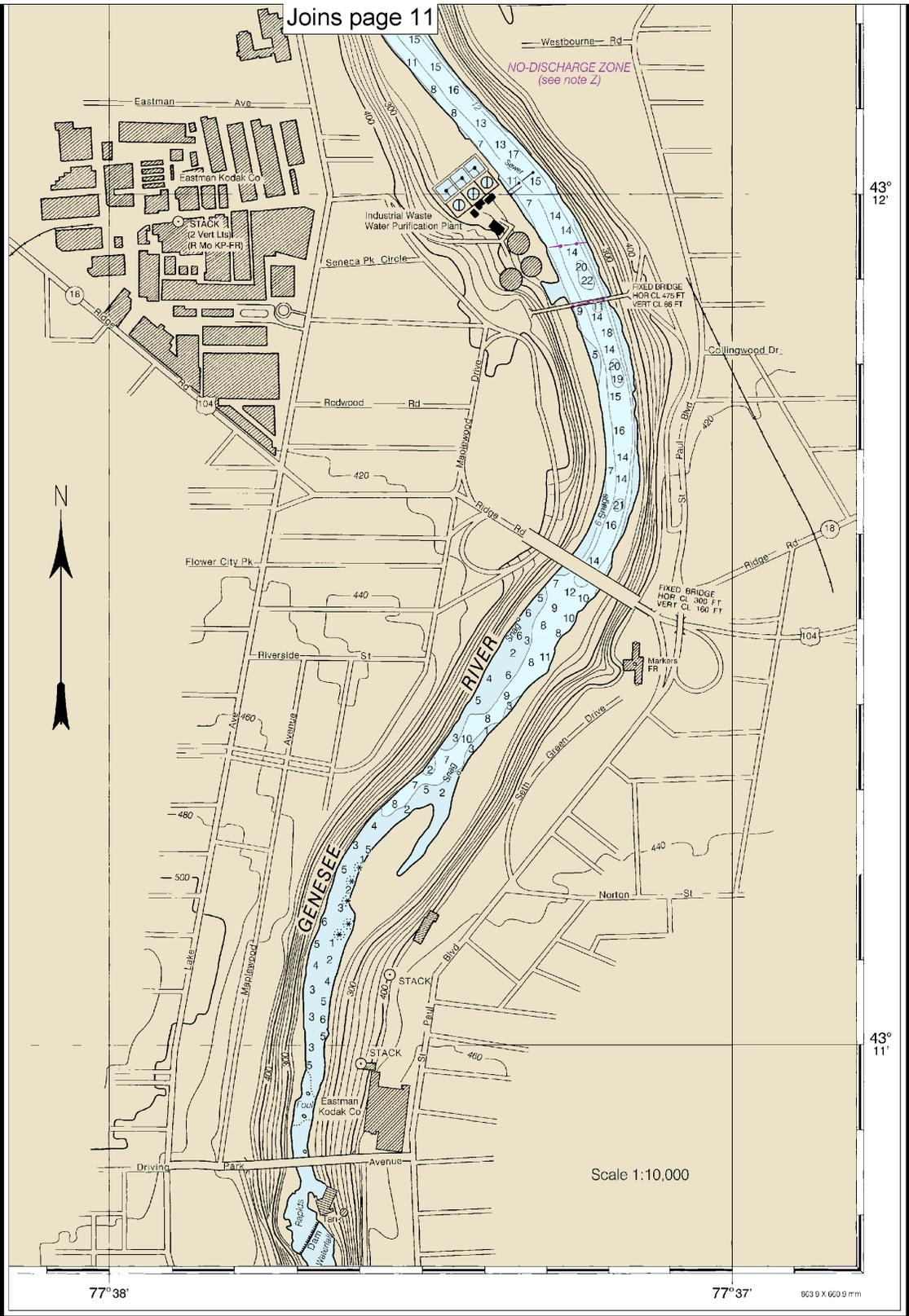
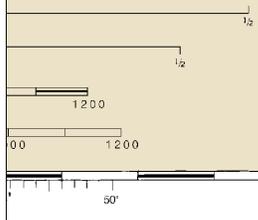
Printed at reduced scale. SCALE 1:10,000



See Note on page 5.

ION

SONS
DEPTH LWD (FEET)
22
21
21
+
21
+
21



43° 12'

43° 11'

77° 38'

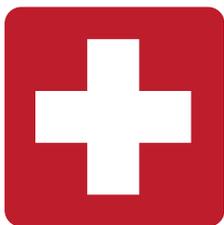
77° 37'

8639 X 6609 mm

FATHOMS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
FEET	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102
METERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Rochester Harbor
SOUNDINGS IN FEET - SCALE 1:10,000

14815



EMERGENCY INFORMATION

VHF Marine Radio channels for use on the waterways:

Channel 6 – Inter-ship safety communications.

Channel 9 – Communications between boats and ship-to-coast.

Channel 13 – Navigation purposes at bridges, locks, and harbors.

Channel 16 – Emergency, distress and safety calls to Coast Guard and others, and to initiate calls to other vessels. Contact the other vessel, agree to another channel, and then switch.

Channel 22A – Calls between the Coast Guard and the public. Severe weather warnings, hazards to navigation and safety warnings are broadcast here.

Channels 68, 69, 71, 72 and 78A – Recreational boat channels.

Getting and Giving Help — Signal other boaters using visual distress signals (flares, orange flag, lights, arm signals); whistles; horns; and on your VHF radio. You are required by law to help boaters in trouble. Respond to distress signals, but do not endanger yourself.

Distress Call Procedures

- Make sure radio is on.
- Select Channel 16.
- Press/Hold the transmit button.
- Clearly say: "MAYDAY, MAYDAY, MAYDAY."
- Also give: Vessel Name and/or Description; Position and/or Location; Nature of Emergency; Number of People on Board.
- Release transmit button.
- Wait for 10 seconds — If no response Repeat MAYDAY call.

HAVE ALL PERSONS PUT ON LIFE JACKETS!



NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week.

<http://www.nws.noaa.gov/nwr/>

Quick References

- Nautical chart related products and information — <http://www.nauticalcharts.noaa.gov>
- Interactive chart catalog — <http://www.charts.noaa.gov/InteractiveCatalog/nrnc.shtml>
- Report a chart discrepancy — <http://ocsddata.ncd.noaa.gov/idrs/discrepancy.aspx>
- Chart and chart related inquiries and comments — <http://ocsddata.ncd.noaa.gov/idrs/inquiry.aspx?frompage=ContactUs>
- Chart updates (LNM and NM corrections) — http://www.nauticalcharts.noaa.gov/mcd/updates/LNM_NM.html
- Coast Pilot online — <http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>
- Tides and Currents — <http://tidesandcurrents.noaa.gov>
- Marine Forecasts — <http://www.nws.noaa.gov/om/marine/home.htm>
- National Data Buoy Center — <http://www.ndbc.noaa.gov/>
- NowCoast web portal for coastal conditions — <http://www.nowcoast.noaa.gov/>
- National Weather Service — <http://www.weather.gov/>
- National Hurricane Center — <http://www.nhc.noaa.gov/>
- Pacific Tsunami Warning Center — <http://ptwc.weather.gov/>
- Contact Us — <http://www.nauticalcharts.noaa.gov/staff/contact.htm>



— For the latest news from Coast Survey, follow @NOAAcharts



This Booklet chart has been designed for duplex printing (printed on front and back of one sheet). If a duplex option is not available on your printer, you may print each sheet and arrange them back-to-back to allow for the proper layout when viewing.

J. GLRI Action Plan II



Great Lakes **RESTORATION**

Great Lakes Restoration Initiative Action Plan II

September 2014

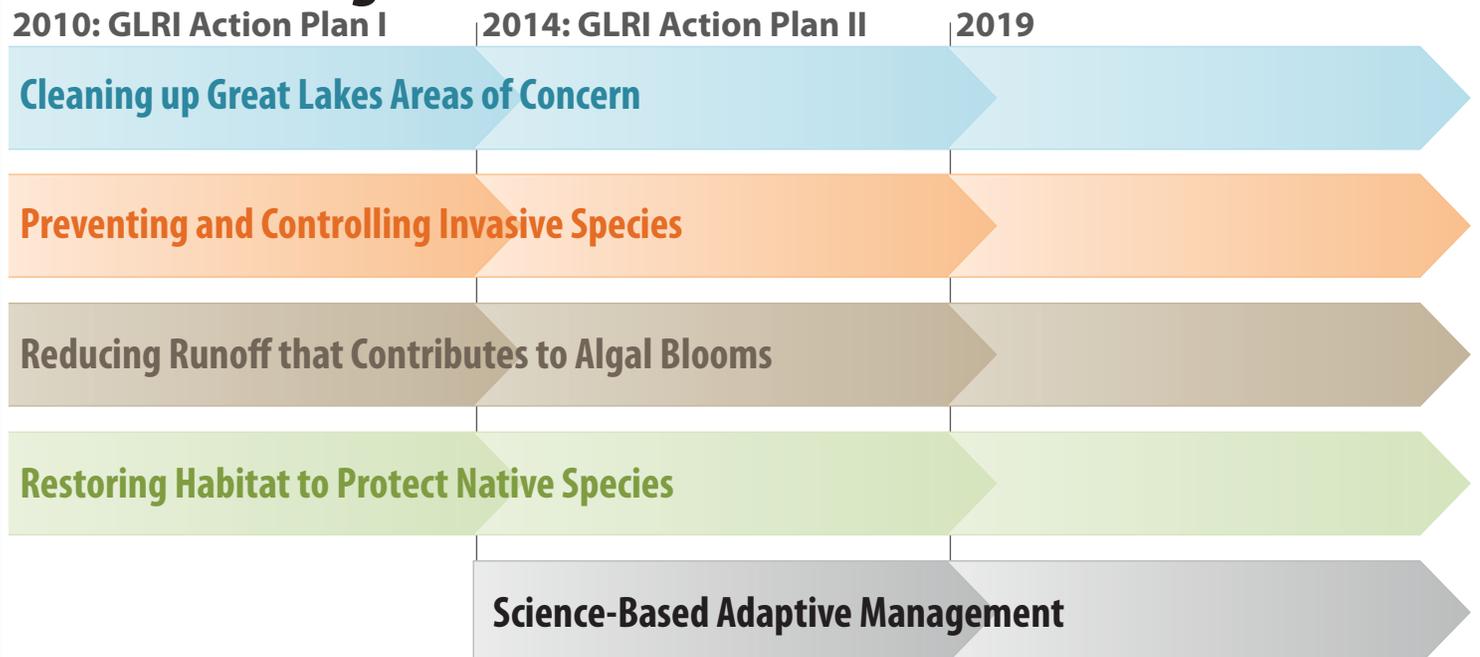


The Great Lakes Restoration Initiative was launched in 2010 to accelerate efforts to protect and restore the largest system of fresh surface water in the world — to provide additional resources to make progress toward the most critical long-term goals for this important ecosystem.

The Great Lakes Restoration Initiative has been a catalyst for unprecedented federal agency coordination — through the Interagency Task Force and the Regional Working Group, which are led by EPA. This coordination has produced unprecedented results. Great Lakes Restoration Initiative resources have supplemented agency base budgets to fund the cleanup actions required to delist five Great Lakes Areas of Concern and to formally delist the Presque Isle Bay Area of Concern — a major change from the 25 years before the Initiative, during which only one Area of Concern was cleaned up and delisted. Great Lakes Restoration Initiative resources have also been used to double the acreage enrolled in agricultural conservation programs in watersheds where phosphorus runoff contributes to harmful algal blooms in western Lake Erie, Saginaw Bay and Green Bay. So far, Great Lakes Restoration Initiative resources have been used to fund over 2,000 projects to improve water quality, to protect and restore native habitat and species, to prevent and control invasive species and to address other Great Lakes environmental problems.

During the next five years, federal agencies plan to continue to use Great Lakes Restoration Initiative resources to strategically target the biggest threats to the Great Lakes ecosystem and to accelerate progress toward long term goals — by combining Great Lakes Restoration Initiative resources with agency base budgets and by using these resources to work with nonfederal partners to implement protection and restoration projects. To guide this work, federal agencies have drafted GLRI Action Plan II, which summarizes the actions that federal agencies plan to implement during FY15-19 using Great Lakes Restoration Initiative funding. GLRI Action Plan II outlines the next phase of work on Great Lakes environmental problems and associated human health issues — many of which will take decades to resolve. GLRI Action Plan II lays out the necessary next steps to get us closer to the day when we will be able to achieve our long-term goals for the Great Lakes and our commitments under the U.S.-Canada Great Lakes Water Quality Agreement.

The Great Lakes Restoration Initiative is Accelerating Great Lakes Protection and Restoration



GLRI Action Plan II

GLRI Action Plan II summarizes the actions that federal agencies plan to implement during FY15-19 using Great Lakes Restoration Initiative funding — actions to protect and restore the largest fresh surface water system in the world. These actions will build on restoration and protection work carried out under the first GLRI Action Plan, with a major focus on:

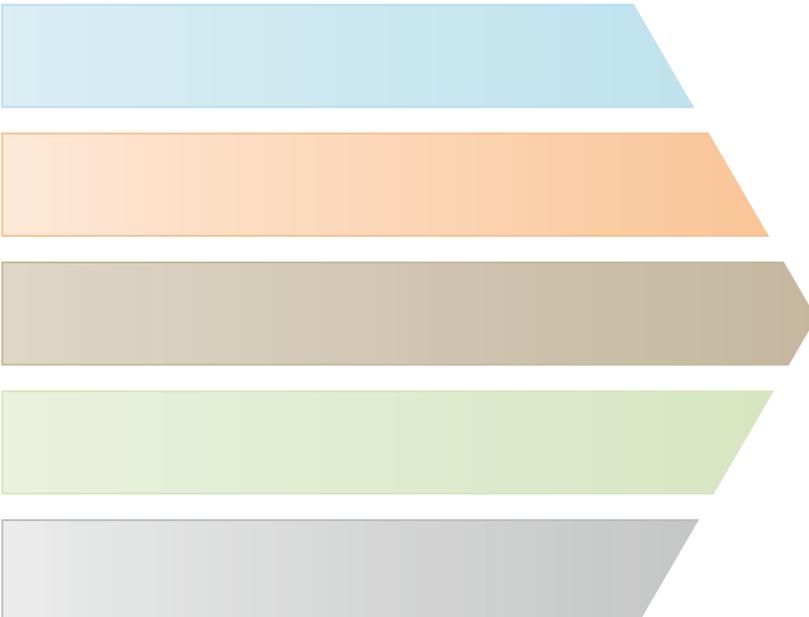
- Cleaning up Great Lakes Areas of Concern
- Preventing and controlling invasive species
- Reducing nutrient runoff that contributes to harmful/nuisance algal blooms
- Restoring habitat to protect native species

GLRI Action Plan II incorporates a science-based adaptive management framework that will be used to prioritize ecosystem problems to be targeted with GLRI resources, to select projects to address those problems and to assess the effectiveness of GLRI projects (see pages 28-29). Measures of Progress have been developed to track all actions implemented under GLRI Action Plan II. These Measures of Progress focus on outputs and/or outcomes that can be measured over the five year period covered by this Action Plan, rather than the longer term ecological benefits that will be produced by GLRI-funded projects and will take years to document in an ecosystem as large and complex as the Great Lakes. There are ten Measures of Progress with annual targets and other Measures of Progress that will be reported annually to track progress toward long term goals (see below) that will take more than five years to reach.

GLRI Action Plan II commits agencies to develop and incorporate climate resiliency criteria in project selection processes. Agencies will develop standard criteria to ensure climate resiliency of GLRI-funded projects (see pages 24-25).

GLRI Action Plan II includes many ideas developed during the first five years of the Great Lakes Restoration Initiative that were contributed by the Great Lakes Advisory Board, the U.S. EPA Science Advisory Board, the U.S. Government Accountability Office, the Congressional Research Service, states, tribes, municipalities and the general public. All of the federal agencies involved in the Great Lakes Restoration Initiative are grateful for these recommendations and will be actively seeking additional input as part of the science-based adaptive management cycle — as we implement and improve the Great Lakes Restoration Initiative and as we work with our many partners to protect and restore the Great Lakes.

Long Term Goals for the Great Lakes Ecosystem



Fish safe to eat

Water safe for recreation

Safe source of drinking water

All Areas of Concern delisted

Harmful/nuisance algal blooms eliminated

No new self-sustaining invasive species

Existing invasive species controlled

Native habitat protected and restored to sustain native species

FY15-19 Great Lakes Restoration Initiative Action Plan Summary*

Focus Areas	Objectives	Commitments
Toxic Substances and Areas of Concern	Remediate, restore and delist Areas of Concern	<ul style="list-style-type: none"> • Implement management actions necessary to remove Beneficial Use Impairments and delist Areas of Concern
	Increase knowledge about contaminants in Great Lakes fish and wildlife	<ul style="list-style-type: none"> • Reduce human exposure to contaminants from Great Lakes fish consumption • Identify emerging contaminants and assess impacts on Great Lakes fish and wildlife
Invasive Species	Prevent new introductions of invasive species	<ul style="list-style-type: none"> • Block pathways through which aquatic invasive species can be introduced to the Great Lakes ecosystem • Conduct early detection monitoring activities • Work with Great Lakes states to conduct rapid response actions or exercises
	Control established invasive species	<ul style="list-style-type: none"> • Implement control projects for GLRI-targeted invasive species
	Develop invasive species control technologies and refine management techniques	<ul style="list-style-type: none"> • Develop/enhance technologies and methods to prevent the introduction and to control the spread of invasive species • Develop/enhance invasive species specific collaboratives to support rapid responses and communicate the latest control and management techniques
Nonpoint Source Pollution Impacts on Nearshore Health	Reduce nutrient loads from agricultural watersheds	<ul style="list-style-type: none"> • Implement agricultural practices or other nutrient reduction practices in GLRI targeted watersheds.
	Reduce untreated runoff from urban watersheds	<ul style="list-style-type: none"> • Implement watershed management projects in urban areas that have adopted a watershed strategy
Habitats and Species	Protect, restore and enhance habitats to help sustain healthy populations of native species	<ul style="list-style-type: none"> • Remove or bypass barriers on Great Lakes tributaries to facilitate fish passage • Protect, restore and enhance Great Lakes coastal wetlands • Protect, restore and enhance GLRI-targeted habitats in the Great Lakes basin
	Maintain, restore and enhance populations of native species	<ul style="list-style-type: none"> • Promote the recovery of priority federally-listed endangered, threatened and candidate species • Promote self-sustaining populations of GLRI-targeted native non-threatened and non-endangered species
Foundations for Future Restoration Actions	Ensure climate resiliency of GLRI-funded projects	<ul style="list-style-type: none"> • Develop and incorporate climate resiliency criteria in project selection processes
	Educate the next generation about the Great Lakes ecosystem	<ul style="list-style-type: none"> • Promote Great Lakes-based ecosystem education and stewardship, with a focus on educator training
	Implement a science-based adaptive management approach for GLRI	<ul style="list-style-type: none"> • Evaluate the effectiveness of GLRI-funded projects • Assess the overall health of the Great Lakes ecosystem and identify the most significant remaining problems • Identify watersheds, habitats, and species to be targeted by the GLRI • Report on GLRI progress and Great Lakes ecosystem health

*Objectives and targets in this plan may be adjusted annually based on appropriations and performance.

Measures of Progress**

- Areas of Concern where all management actions necessary for delisting have been implemented
- Area of Concern Beneficial Use Impairments Removed

- Number of people provided information on the risks and benefits of Great Lakes fish consumption by GLRI-funded projects
- Number of GLRI-funded projects that identify and/or assess impacts of emerging contaminants on Great Lakes fish and wildlife

- Number of GLRI-funded projects that block pathways through which aquatic invasive species can be introduced to the Great Lakes ecosystem
- Number of GLRI-funded early detection monitoring activities conducted
- Number of GLRI-funded Great Lakes rapid responses or exercises conducted

- Number of acres controlled by GLRI-funded projects
- Number of tributary miles protected by GLRI-funded projects

- Number of technologies and methods field tested by GLRI-funded projects
- Number of collaboratives developed/enhanced with GLRI funding

- Number of GLRI-funded nutrient and sediment reduction projects in targeted watersheds (measured in acres)
- Projected phosphorus reductions from GLRI-funded projects in targeted watersheds (measured in pounds)
- Measured nutrient and sediment reductions from monitored GLRI-funded projects in targeted watersheds (measured in pounds)

- Number of GLRI-funded projects implemented to reduce the impacts of untreated urban runoff on the Great Lakes
- Projected volume of untreated urban runoff captured or treated by GLRI-funded projects
- Measured volume of untreated urban runoff captured or treated by monitored GLRI-funded projects

- Number of miles of Great Lakes tributaries reopened by GLRI-funded projects
- Number of miles of Great Lakes shoreline and riparian corridors protected, restored and enhanced by GLRI-funded projects
- Number of acres of Great Lakes coastal wetlands protected, restored and enhanced by GLRI-funded projects
- Number of acres of other habitats in the Great Lakes basin protected, restored and enhanced by GLRI-funded projects

- Number of GLRI-funded projects that promote recovery of federally-listed endangered, threatened, and candidate species
- Number of GLRI-funded projects that promote populations of native non-threatened and non-endangered species self-sustaining in the wild

- By 2016, a standardized set of climate resiliency criteria will be developed for GLRI-projects
- Starting in 2017, projects will include climate resiliency criteria in planning and implementation

- Number of educators trained through GLRI-funded projects
- Number of people educated on the Great Lakes ecosystem through GLRI-funded place-based experiential learning activities

- Project evaluations completed and used to prioritize GLRI funding decisions each year
- Annual Great Lakes monitoring conducted and used to prioritize GLRI funding decisions each year
- GLRI-targeted watersheds, habitats and species identified and used to prioritize GLRI funding decisions
- Issue annual GLRI Reports to Congress and the President
- Issue Great Lakes Water Quality Agreement Triennial Progress Reports of the Parties
- Issue triennial State of the Lakes reports
- Periodically update publicly available online information about the GLRI

**Most GLRI Action Plan II Measures of Progress track outputs and/or outcomes produced solely by GLRI-funded projects. AOC-related measures track results produced using GLRI funding and, in some cases, using other sources of funding, as well. Many GLRI-funded projects supplement other Great Lakes restoration activities that are funded by agency base budgets and are reported independently by agencies. Action Plan II Measures of Progress include: several Action Plan I Measures of Progress; several Action Plan I Measures of Progress that have been modified to accurately track actions funded by GLRI; and a number of new Measures of Progress.

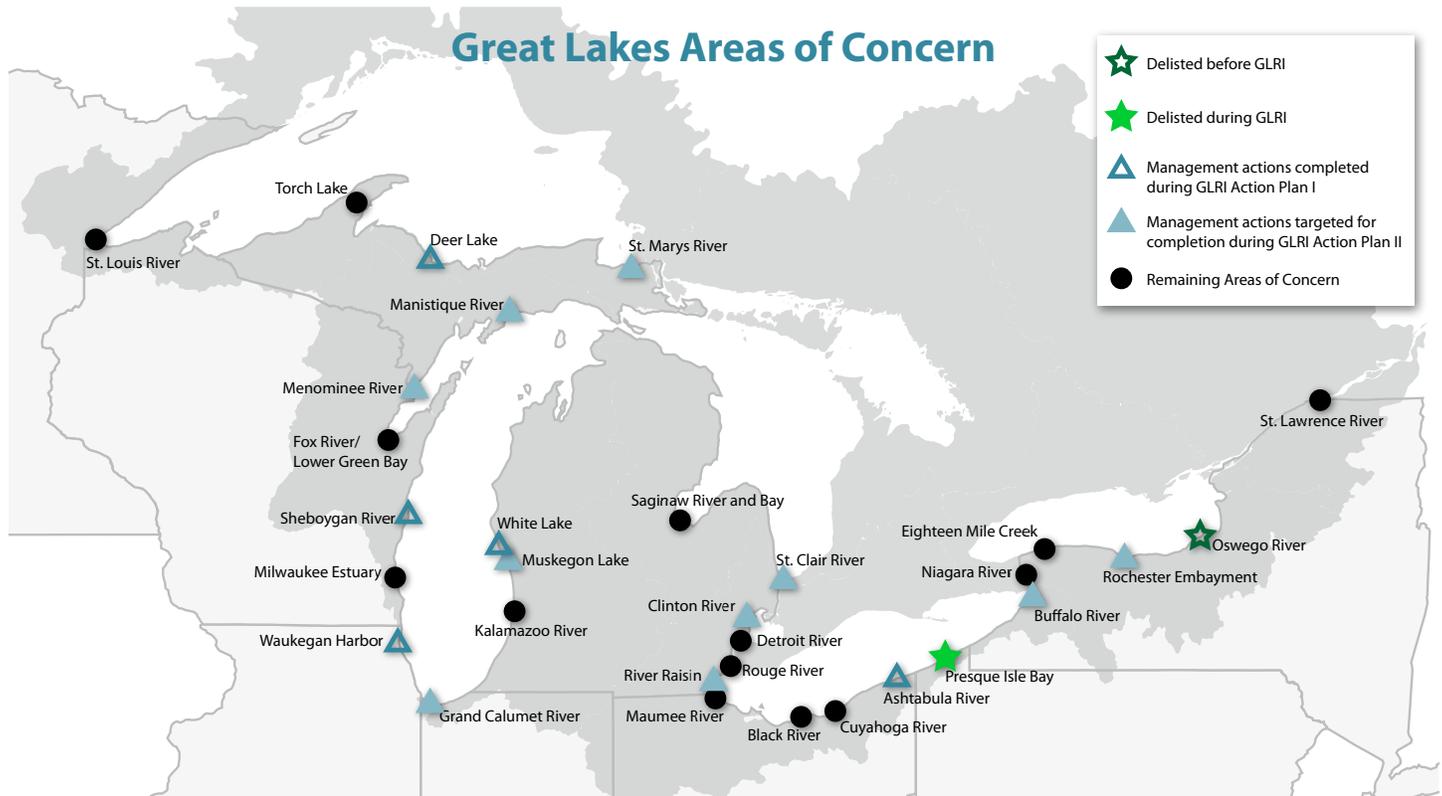
Toxic Substances and Areas of Concern

Objective

Remediate, restore and delist Areas of Concern

Commitment

• Implement management actions necessary to remove Beneficial Use Impairments and delist Areas of Concern



During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners completed all of the management actions required to remove five Areas of Concern from the list of areas designated as the most contaminated sites on the Great Lakes by the 1987 Great Lakes Water Quality Agreement:

- Ashtabula River
- Deer Lake
- Sheboygan River
- Waukegan Harbor
- White Lake

The Presque Isle Bay Area of Concern was also delisted in 2013 — only the second delisting on the U.S. side of the border since Areas of Concern were designated pursuant to the 1987 Great Lakes Water Quality Agreement.

Under GLRI Action Plan II, federal agencies and their partners will continue to remediate and restore Areas of Concern. Federal agencies will implement critical management actions in all of the remaining AOCs and will complete all management actions required to delist the following ten:

- Buffalo River
- Clinton River
- Grand Calumet River
- Manistique River
- Menominee River
- Muskegon Lake
- River Raisin
- Rochester Embayment
- St. Clair River
- St. Marys River

Remediation and restoration in these Areas of Concern will include dredging contaminated sediment and restoring habitat (e.g., improving fish passage, restoring wetlands and removing dams).

Great Lakes Restoration Initiative Action Plan II

Measures of Progress with Annual Targets*	Baseline/ Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
• Areas of Concern where all management actions necessary for delisting have been implemented (cumulative)	Baseline: 7 Universe: 31	8	9	11	12	17
• Area of Concern Beneficial Use Impairments Removed (cumulative)	Baseline: 52 Universe: 255	60	65	72	78	85

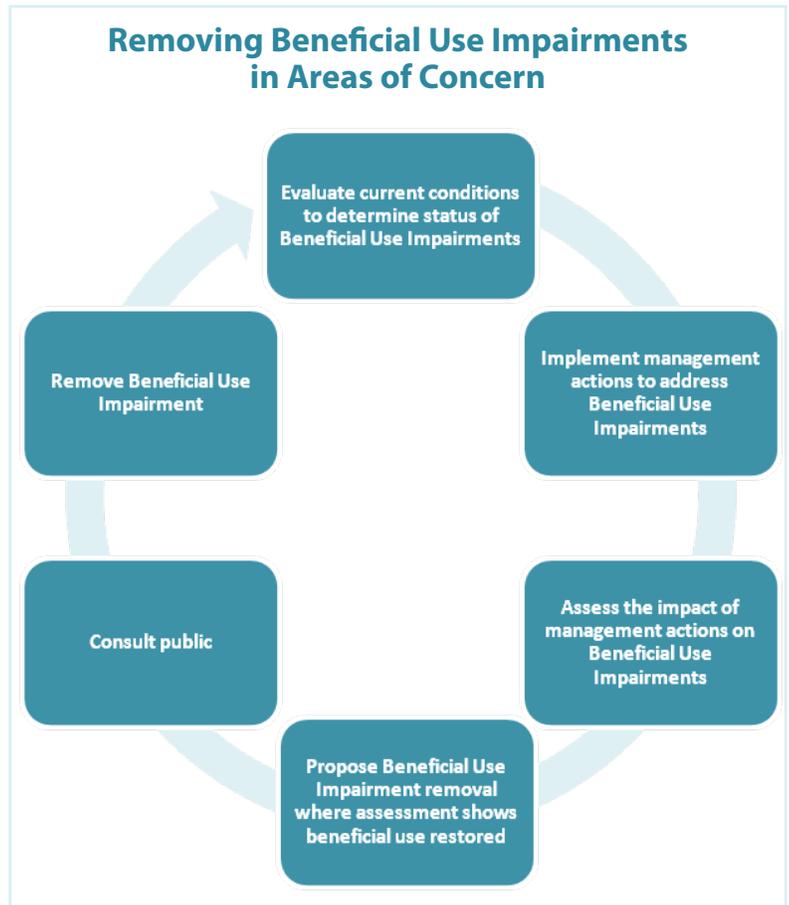
* AOC-related measures track results produced using GLRI funding and, in some cases, using other sources of funding, as well

During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners removed 42 Beneficial Use Impairments in 17 Areas of Concern — quadrupling the number of Beneficial Use Impairments removed in the preceding 22 years.

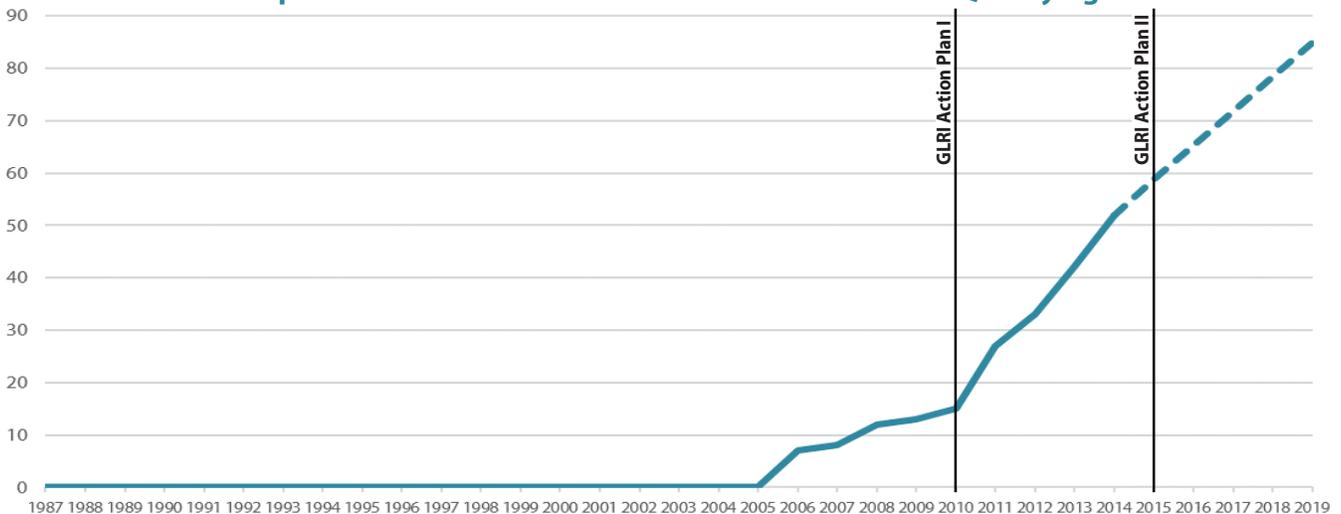
Under GLRI Action Plan II, federal agencies and their partners* will continue to remove 34 additional Beneficial Use Impairments in the remaining 29 Areas of Concern. These Beneficial Use Impairments include beach closings, restrictions on drinking water consumption, nuisance algal blooms, restrictions on dredging, fish and wildlife deformities, restrictions on fish and wildlife consumption, loss of fish and wildlife habitat.

The process for removing Beneficial Use Impairments and delisting Areas of Concern starts with a scientific assessment to determine the extent to which beneficial uses are impaired and the types of management actions required to remediate the Area of Concern. After management actions are implemented, a scientific assessment is conducted to determine whether beneficial uses have been restored. An Area of Concern is eligible to be delisted when all Beneficial Use Impairments have been removed.

*Including local Area of Concern advisory groups.



Beneficial Use Impairments Removed Since 1987 Great Lakes Water Quality Agreement



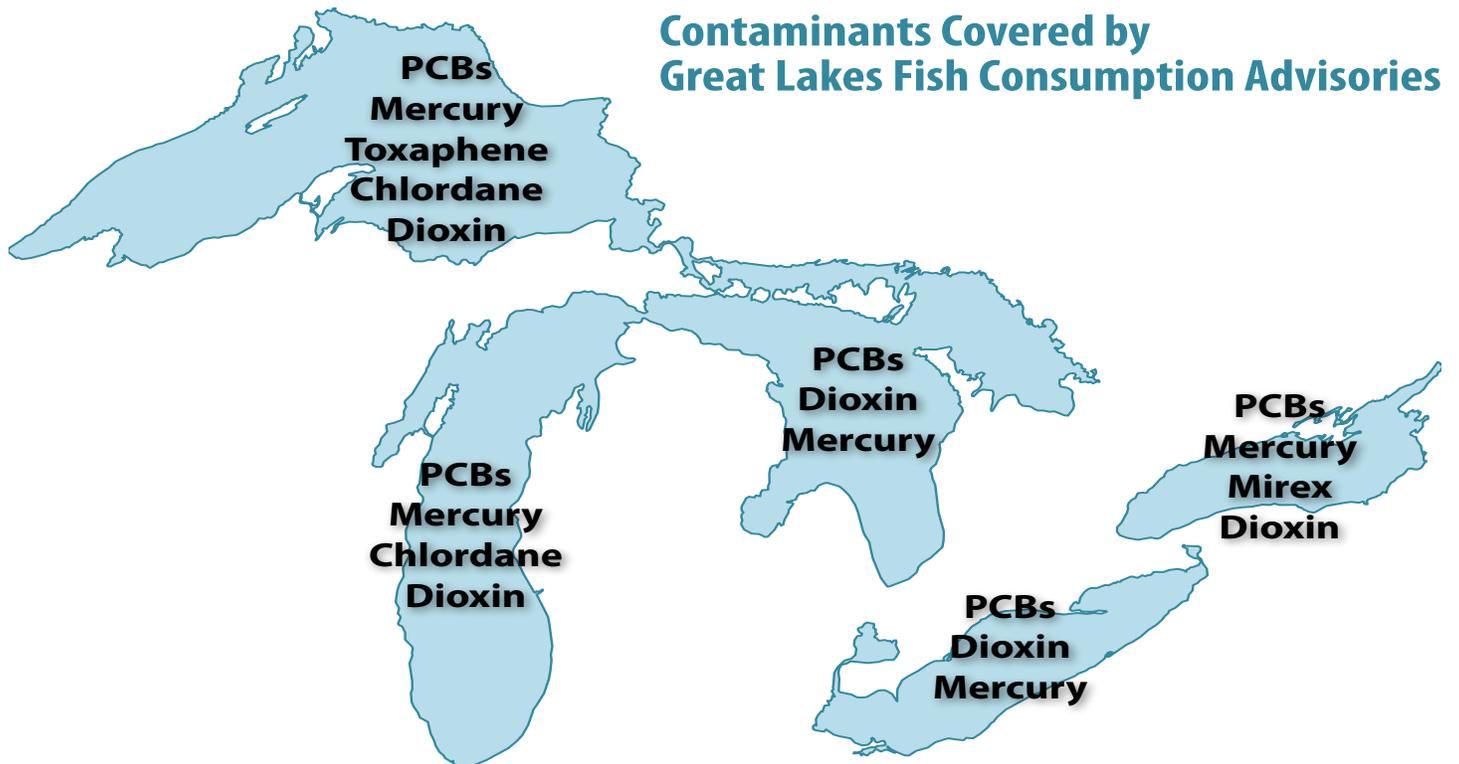
Toxic Substances and Areas of Concern

Objective

Increase knowledge about contaminants in Great Lakes fish and wildlife

Commitment

- Reduce human exposure to contaminants from Great Lakes fish consumption
- Identify emerging contaminants and assess impacts on Great Lakes fish and wildlife



During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners implemented projects to protect human health from contaminants in Great Lakes fish while clean up efforts continued. Federal agencies and their partners updated fish consumption advisories and provided improved public information on the health risks and benefits of Great Lakes fish consumption.

Federal agencies and their partners focused outreach on those populations with the highest risk of contaminant exposure, including:

- Women who may become pregnant
- Children
- Urban anglers
- Tribal communities, and
- People who rely heavily on Great Lakes fish in their diets.

Federally funded research documented elevated blood mercury levels in some newborns in the western Lake Superior basin. Additional GLRI funding was provided to train healthcare professionals to advise patients about safe fish consumption choices (e.g., testing the effectiveness of fish consumption advisories; working with health care providers to “screen” patients for fish consumption practices and blood contaminant levels).

Under the GLRI Action Plan II, federal agencies and their partners will continue to provide improved information on the health risks and benefits of Great Lakes fish consumption. Targeted outreach to high-risk fish consuming populations will be used to promote healthy fish consumption choices that minimize the risk of contaminant exposure. Outreach activities will incorporate culture, ethnicity, gender, age, and other factors to maximize the effectiveness of fish consumption advisories.

Measures of Progress

- Number of people provided information on the risks and benefits of Great Lakes fish consumption by GLRI-funded projects
- Number of GLRI-funded projects that identify and/or assess impacts of emerging contaminants on Great Lakes fish and wildlife

During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners characterized and assessed risks that emerging contaminants may pose to Great Lakes fish and wildlife. Agencies and their partners were able to gain a better understanding of the presence and distribution of emerging contaminants, potential routes of exposure and potential impacts on fish and wildlife.

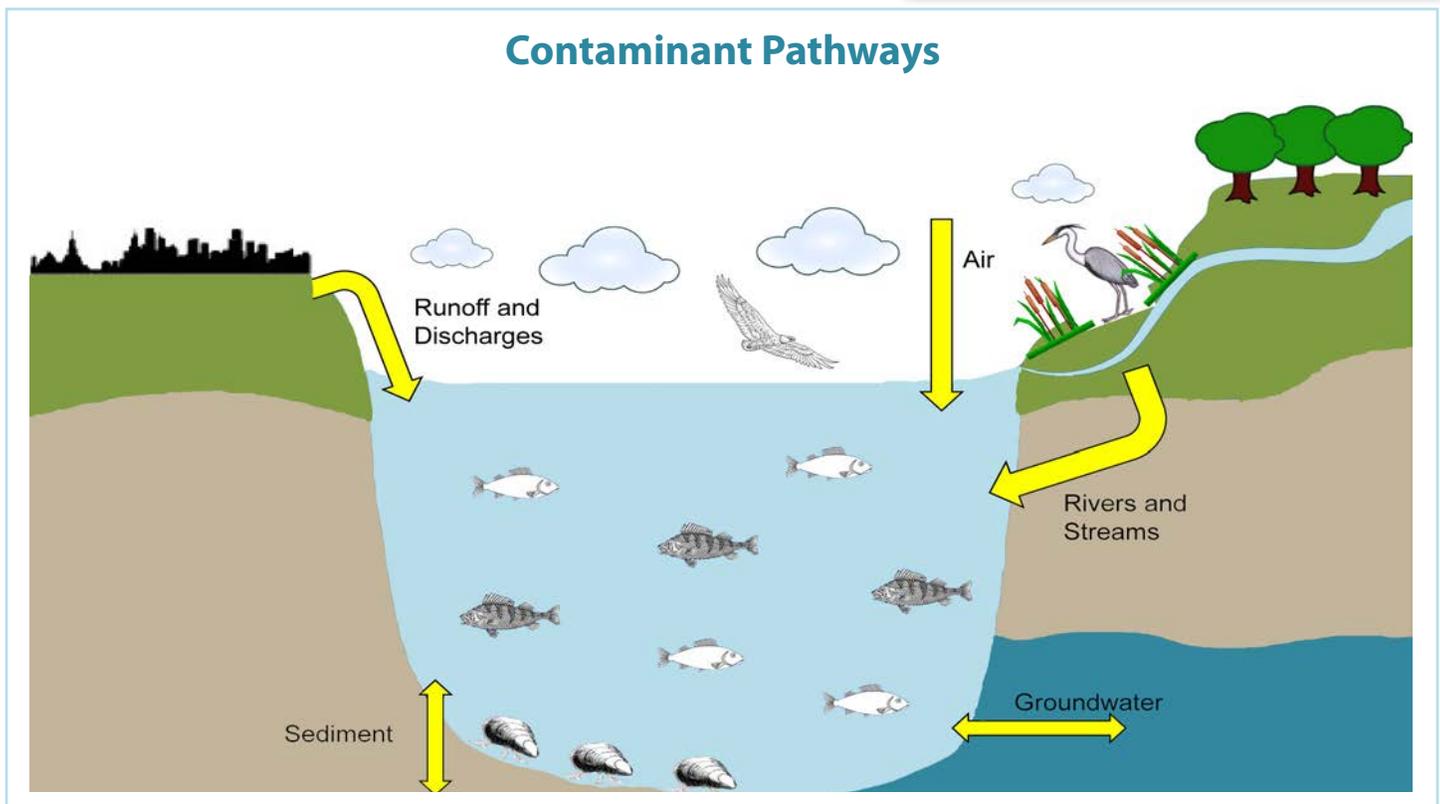
Under GLRI Action Plan II, federal agencies and their partners will continue to further evaluate emerging contaminants that have the greatest potential to adversely impact Great Lakes fish and wildlife – impacts which may also result in ecological, economic and recreational consequences. Federal agencies will assess the extent to which identified risks may impede environmental quality and resource management goals. Agencies and their partners will conduct laboratory and/or field studies to evaluate biological effects from chemical mixtures, evaluate long term exposure of fish to contaminants, conduct additional field sampling where effects are being observed and sample other high priority wildlife such as migratory birds, mussels and amphibians. These projects will be evaluated on an annual basis and the results will be used to prioritize the design and implementation of future laboratory and field studies.

Potential Impacts of Emerging Contaminants on Great Lakes Fish and Wildlife

- Increased feminization (vitellogenin) in male fish and decrease in overall size and ability to compete for mates
- Irregular courtship and nest guarding behavior
- Decrease in reaction time and predator escape response
- Decreased population genetic diversity
- Declines in prey species populations as well as sportfish populations



Contaminant Pathways



Invasive Species

Objective

Prevent new introductions of invasive species

Commitment

- Work with Great Lakes states to conduct rapid response actions or exercises
- Block pathways through which aquatic invasive species can be introduced to the Great Lakes ecosystem
- Conduct early detection monitoring activities

During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners engaged in an unprecedented level of activity to prevent new introductions of invasive species in the Great Lakes ecosystem. Agencies and their partners prevented bighead and silver carp from becoming established in the Great Lakes ecosystem. Surveillance programs formed the foundation for a multi-species early detection network. Partner agencies responded to several detections, including red swamp crayfish in Wisconsin, grass carp in Michigan, Hydrilla in New York and eDNA for silver and bighead carp in the Chicago Area Waterway System. Federal agencies and their state partners have reduced the risk of invasive species in ballast water discharges. No new introductions have occurred through the ballast water pathway since 2006. Federal agencies and their partners have conducted species risk assessments for organisms posing risks to the Great Lakes ecosystem. Public education efforts have helped boaters, anglers and other resource users prevent the spread of invasive species.

How Can Invasive Species Get into the Great Lakes?

- Canals and waterways
- Recreational boating
- Commercial shipping
- Illegal trade of banned species
- Release of aquarium species
- Release of live bait
- Spread of plant species purchased through nurseries, internet sales and water garden trade

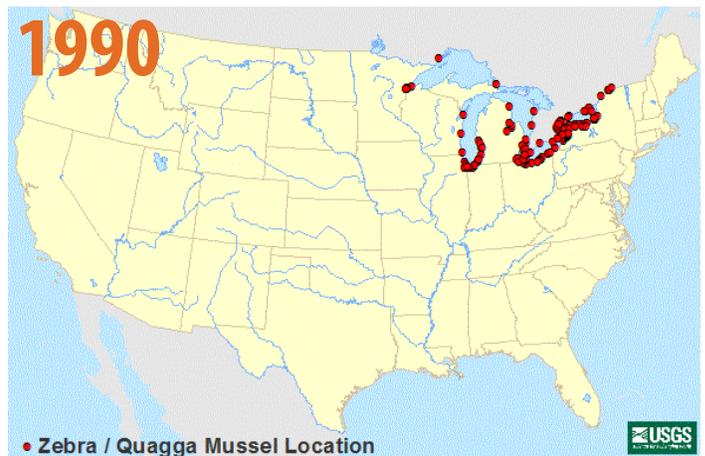
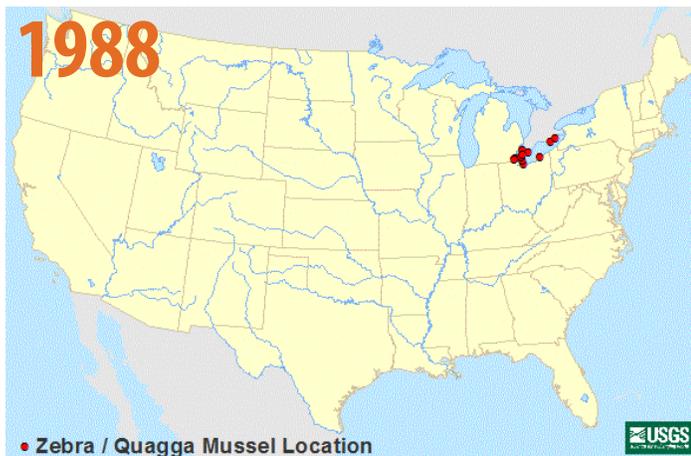


Protecting the Great Lakes from Asian Carp

The Great Lakes Restoration Initiative provides support to the Asian Carp Regional Coordinating Committee, which has implemented the Asian Carp Control Strategy Framework—including surveillance, response actions and testing of new control technologies. More information about the ACRCC is available at <http://www.asiancarp.us>.

Preventing the Introduction of Invasive Species into the Great Lakes Protects the Entire Nation

The rapid spread of invasive zebra and quagga mussels in the United States illustrates that invasive species can spread very quickly. Consequently, preventing the introduction of invasive species is critically important.



Measure of Progress with Annual Targets	Baseline/ Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
• Number of GLRI-funded Great Lakes rapid responses or exercises conducted*	Baseline: 0 Universe: N/A	8	8	8	8	8

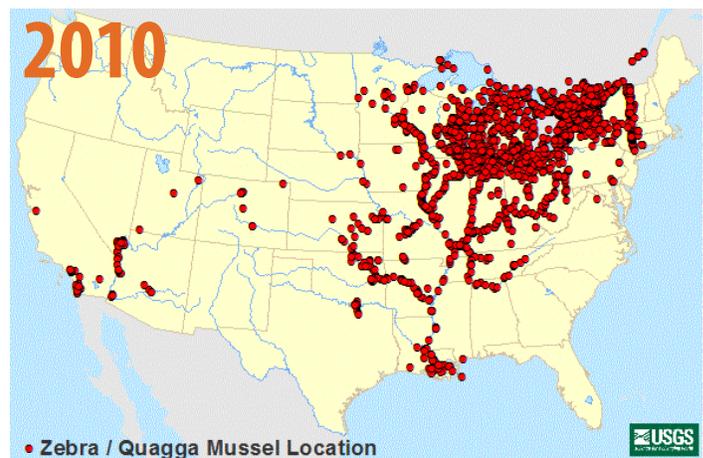
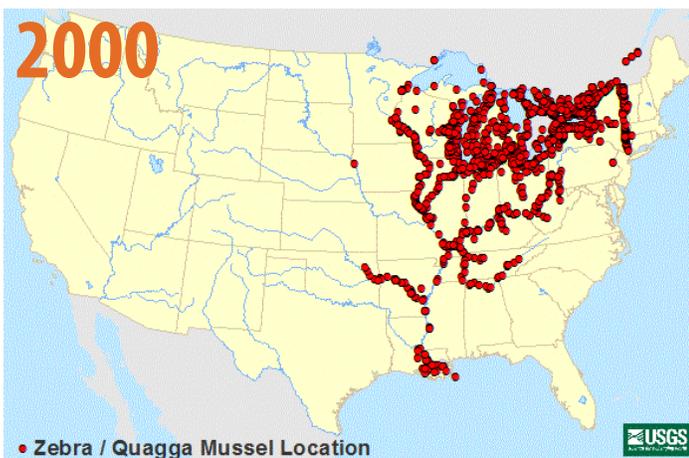
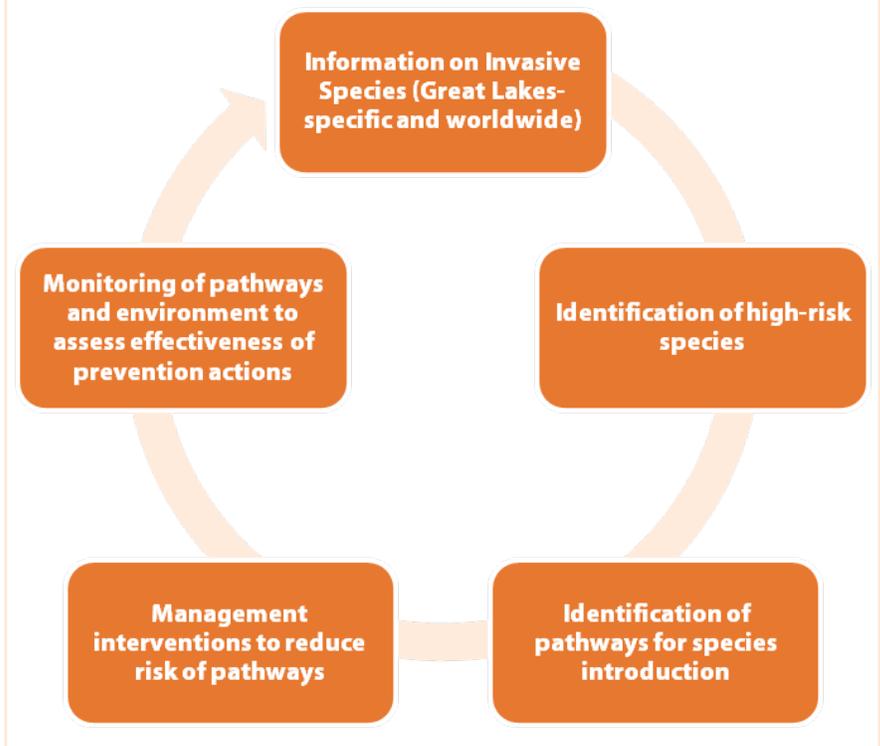
Additional Measures of Progress

- Number of GLRI-funded projects that block pathways through which aquatic invasive species can be introduced to the Great Lakes ecosystem
- Number of GLRI-funded early detection monitoring activities conducted

**This Measure of Progress is a modification of an Action Plan I Measure of Progress that has been modified to more accurately track actions funded by GLRI. The baseline is zero because the new Action Plan II Measure of Progress is not the same metric as the Action Plan I Measure of Progress.*

Under GLRI Action Plan II, federal agencies and their partners will continue to prevent new invasive species from establishing self-sustaining populations in the Great Lakes ecosystem. Federal agencies and their partners will work to increase the effectiveness of existing surveillance programs by establishing a coordinated, multi-species early detection network. Federal agencies will support state and tribal efforts to develop and implement Aquatic Nuisance Species Management Plans which will be used for annual “readiness exercises” and actual responses to new detections of invasive species. Competitive grant programs will continue to be used to fund new initiatives to block pathways through which invasive species can be introduced to the Great Lakes ecosystem. Risk assessments will continue to be refined to inform the targeting of species, pathways and sites for early detection monitoring. Because the Great Lakes can be a freshwater invasion pathway to the 31 states within the Mississippi River watershed and beyond, these prevention efforts will also benefit the entire Nation.

Assessing the Risk of Invasive Species



Invasive Species

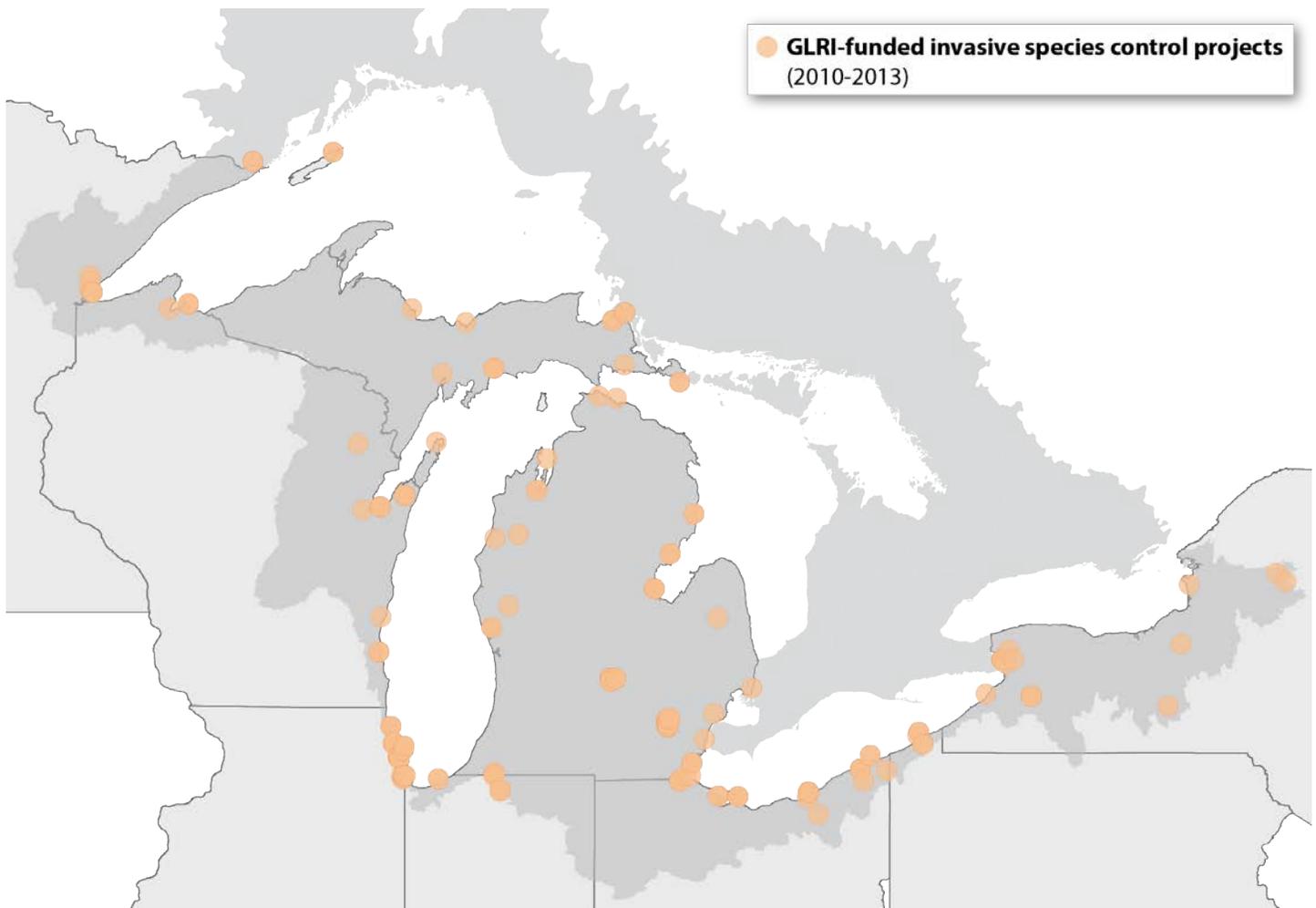
Objective

Control established invasive species

Commitment

• Implement control projects for GLRI-targeted invasive species

Controlling Invasive Species in the Great Lakes Basin



During the first five years of the **Great Lakes Restoration Initiative**, federal agencies and their partners controlled invasive species including:

- baby's breath
- bighead carp
- buckthorn
- emerald ash borer
- Eurasian watermilfoil
- garlic mustard
- grass carp
- Japanese barberry
- Japanese knotweed
- lyme grass
- invasive strains of Phragmites
- purple loosestrife
- silver carp
- sea lamprey
- wild parsnip

These control projects were done with partners who will continue maintenance and stewardship beyond the duration of the federally funded projects. Most projects will require additional, low-level maintenance as sites progress toward full recovery.

Measure of Progress with Annual Targets	Baseline/ Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
• Number of aquatic/terrestrial acres controlled by GLRI-funded projects	Baseline: 36,000 Universe: N/A	50,000	60,000	70,000	80,000	90,000

Additional Measure of Progress

- Number of tributary miles protected by GLRI-funded projects

Under GLRI Action Plan II, federal agencies and their partners will continue to restore sites degraded by aquatic, wetland and terrestrial invasive species. Federal agencies will implement control projects in national forests, parks and wildlife refuges where they have direct implementation responsibility. These federal land management agencies will also partner with states and neighboring communities to promote larger scale protection and restoration through the Midwest Invasive Plant Network and the Cooperative Weed Management Area control programs. The Great Lakes Sea Lamprey Control Program will expand the strategic use of tributary barriers and traps as an alternative to chemical control methods. The location of these barriers will be determined by considering both the benefits of additional sea lamprey control and habitat connectivity concerns. Invasive species control projects will be evaluated on an annual basis and the results of these evaluations will be used to prioritize the design, location and implementation of future invasive species control projects.



Supporting Sustainable Invasive Species Control through Community Projects

The GLRI is actively building the capability of Great Lakes communities to manage invasive species through funding on-the-ground and in-the-water control projects by supporting step 3 of this process.



Invasive Species

Objective

Develop invasive species control technologies and refine management techniques

Commitment

- Develop/enhance technologies and methods to prevent the introduction and to control the spread of invasive species
- Develop/enhance invasive species specific collaboratives to support rapid responses and communicate the latest control and management techniques

The Importance of Developing Invasive Species Control Technologies

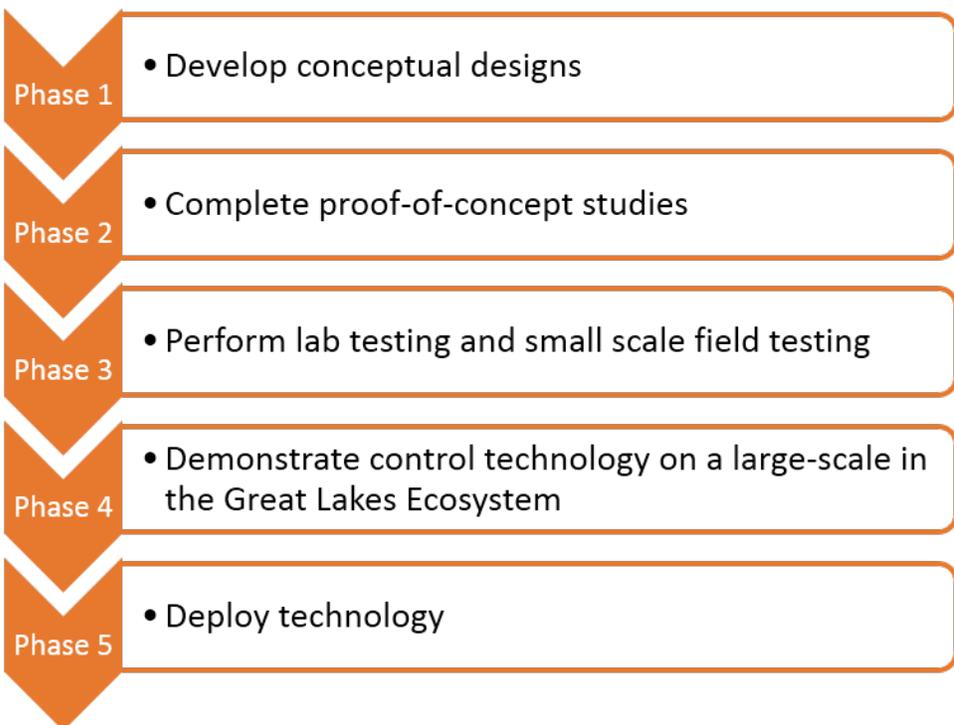
A number of effective control technologies have been developed to control invasive species in the Great Lakes. One of the longest-running and most effective invasive control technology programs is the sea lamprey control program. Its success is largely due to a multi-year effort to test almost 6,000 chemical compounds to identify the compound that most effectively controls sea lampreys without harming other species. The Great Lakes Restoration Initiative is working to further refine sea lamprey control techniques and is working to develop targeted control methods for other invasive species impacting the Great Lakes ecosystem.



Developing Invasive Species Control Technology for the Great Lakes Ecosystem

Focus of GLRI Support

GLRI provides support for invasive species control technologies with proven potential that require additional testing.



Measures of Progress

- Number of technologies and methods field tested by GLRI-funded projects
- Number of collaboratives developed/enhanced with GLRI funding

During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners worked to develop and enhance several invasive species control technologies. Researchers worked to develop Asian carp control techniques that target Asian carp without harming other fish species and worked to develop techniques to detect, attract and remove Asian carp to improve the effectiveness of control methods. For example, seismic pressure (aka, “waterguns”) and carbon dioxide have been demonstrated to act as barriers that prevent the movement of Asian carp and may also be used to herd invasive fish to increase the effectiveness of other control technologies. Sea lamprey pheromones were synthesized and field-tested to assess whether pheromones can be used to improve trapping efficiency. New procedures were developed and refined for testing the efficacy of ballast water treatment systems in the Great Lakes and several promising ballast water management systems were performance tested. Researchers also investigated the use of a common soil bacterium to limit the spread of zebra mussels in a manner that has minimal impacts on native mussels and other organisms. Researchers also tested “gene silencing” technology to control the spread of invasive Phragmites.

A Model for Great Lakes Invasive Species Specific Collaboration



Under GLRI Action Plan II, federal agencies and their partners will continue to develop and enhance technologies to control Great Lakes invasive species. Federal agencies will also develop and enhance invasive species “collaboratives” to support rapid responses and to communicate the latest control and management techniques. The Great Lakes Phragmites Collaborative is a model for this work (<http://greatlakesphragmites.net/>). This collaborative facilitates communication across the region and serves as a resource center for information on Phragmites biology, management and academic research. Species-specific collaborations will be established or enhanced for Phragmites, monocious Hydrilla and grass carp, as well as other invasive species.

Nonpoint Source Pollution Impacts on Nearshore Health

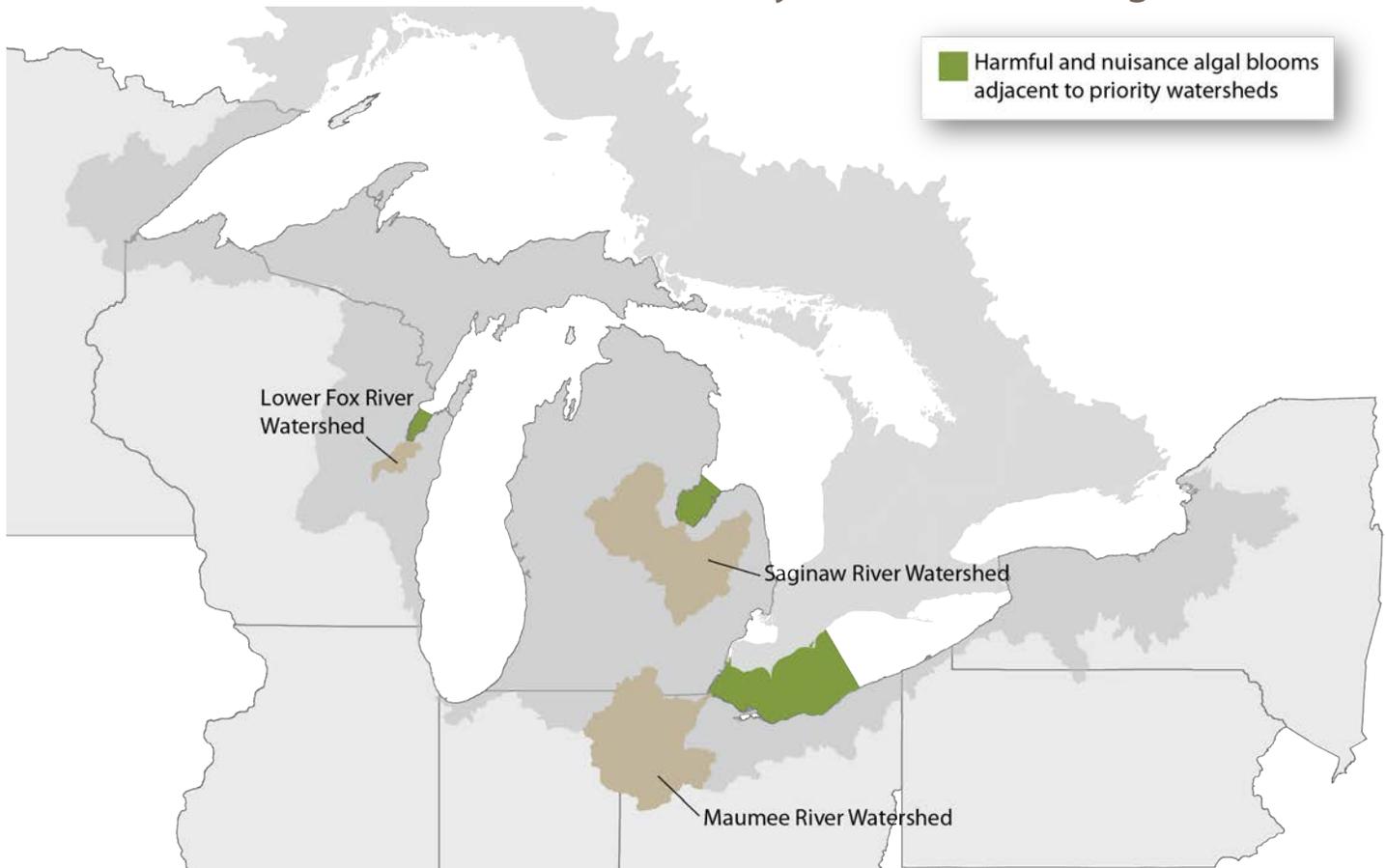
Objective

Reduce nutrient loads from agricultural watersheds

Commitment

• Implement agricultural practices or other nutrient reduction practices in GLRI targeted watersheds.

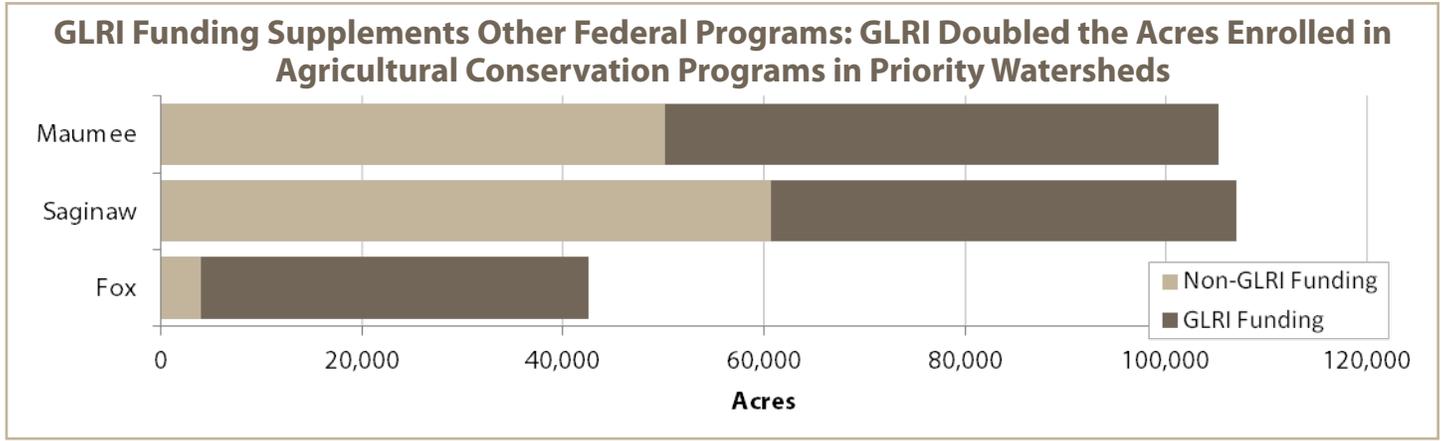
Great Lakes Restoration Initiative Priority Watersheds During 2010-2014



During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners targeted activities to reduce the largest nonpoint source of phosphorus inputs to Great Lakes nearshore areas: nutrient runoff from agricultural lands. Excess phosphorus loadings threaten the Great Lakes ecosystem by contributing to harmful algal blooms that can cause human health effects, drinking water impairments, beach closures, exacerbate dead zones and result in loss of recreational opportunities. Under GLRI Action Plan I, federal agencies and their partners provided farmers with financial and technical resources to implement conservation systems to reduce nutrient runoff and to control soil erosion. Federal agencies used GLRI support to more than double the number of acres of farmland enrolled in agricultural conservation programs in GLRI priority watersheds. These programs help producers reduce phosphorus in runoff that impacts the Great Lakes nearshore waters, contributing to nuisance and harmful algal blooms and hypoxia. GLRI partners conducted edge-of-field monitoring to evaluate the impact of various agricultural conservation measures on water quality. Water quality baseline data was collected downstream of fields to be used in later studies to gauge long-term changes in water quality associated with nutrient reduction activities.

Measure of Progress with Annual Targets	Baseline/ Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
• Projected phosphorus reductions from GLRI-funded projects in targeted watersheds (measured in pounds)	Baseline: 0 Universe: N/A	130,000	310,000	525,000	795,000	1,070,000

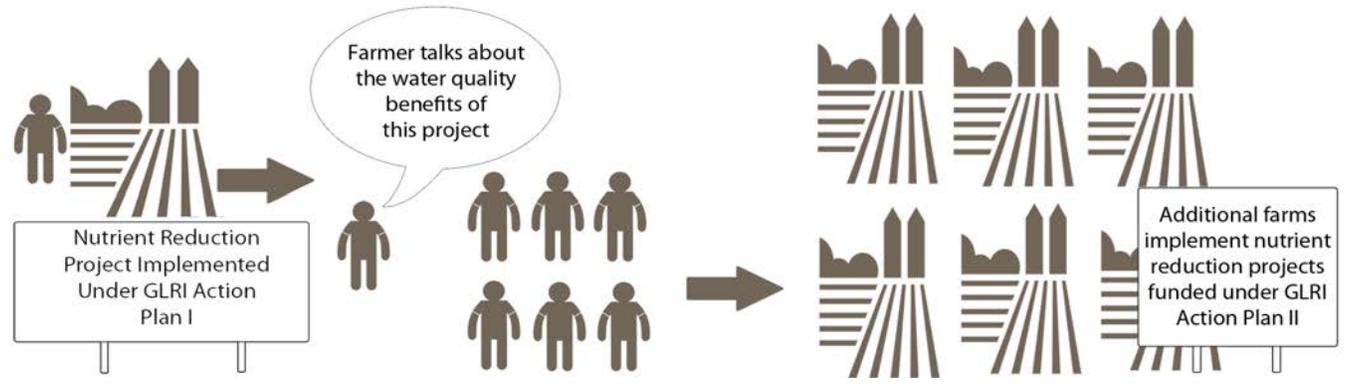
- Additional Measures of Progress**
- Number of GLRI-funded nutrient and sediment reduction projects in targeted watersheds (measured in acres)
 - Measured nutrient and sediment reductions from monitored GLRI-funded projects in targeted watersheds (measured in pounds)



Under **GLRI Action Plan II**, federal agencies and their partners will continue to reduce nutrient runoff in watersheds targeted through the GLRI science-based adaptive management process. The work will:

- Advance drinking water source protection.
- Increase voluntary agricultural conservation practices to achieve downstream water quality improvements.
- Track nutrient and sediment reductions achieved through conservation practices.
- Use voluntary, incentive-based and existing regulatory approaches to reduce nutrient losses.
- Encourage producers and agribusinesses to adopt innovative technologies and approaches to reduce nutrient runoff and soil losses.
- Educate agricultural producers about the links between long-term productivity, nutrient conservation and water quality.

GLRI nutrient runoff reduction projects will be evaluated on an annual basis to prioritize the type, location and longevity of future nutrient reduction work. In addition, GLRI partners will assess the extent to which harmful algal blooms are impacted by phosphorus loading, in-lake mixing, climate change and invasive species. The relationship between algal blooms and hypoxia will also be assessed.



Nonpoint Source Pollution Impacts on Nearshore Health

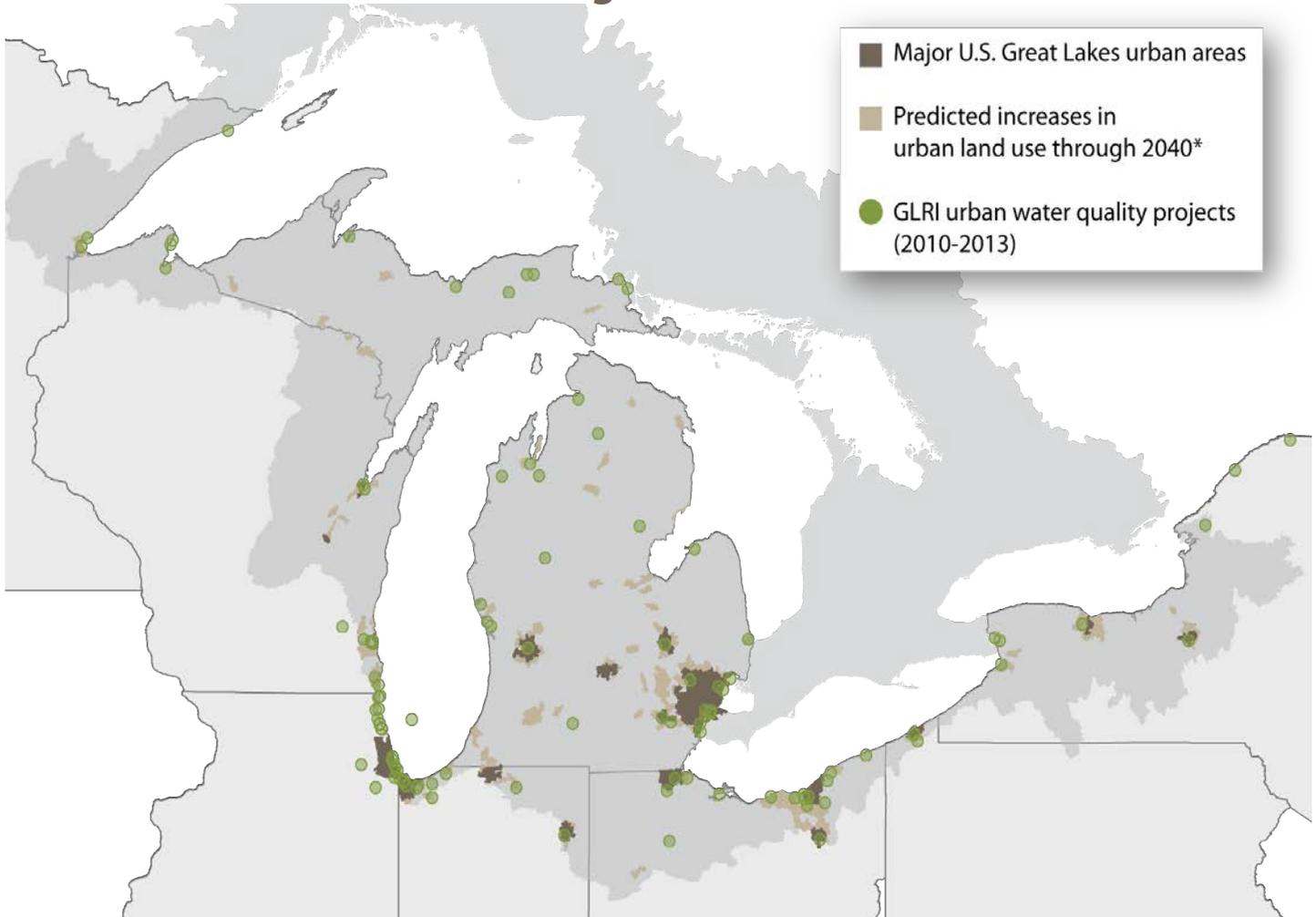
Objective

Reduce untreated runoff from urban watersheds

Commitment

• Implement watershed management projects in urban areas that have adopted a watershed strategy

Reducing Urban Runoff



GLRI Action Plan I projects in urban areas reduced polluted runoff to Great Lakes tributaries and nearshore waters. GLRI Action Plan II projects implemented under this principal initiative will focus on major urban areas and on areas where urbanization is expected to increase in the near future.

During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners implemented projects in urban areas to reduce sediment, nutrient, toxic contaminant and pathogen loadings to Great Lakes tributaries and nearshore waters. The GLRI funded green infrastructure projects in Great Lakes shoreline cities to reduce untreated stormwater runoff and to improve nearshore water quality. These green infrastructure projects reduce flooding, increase greenspace in urban areas and return vacant properties to productive use. Watershed management projects were also implemented to stabilize stream banks, increase forest cover, restore wetlands and improve water quality at beaches in urban areas.

**Urban land use predictions generated through the USGS Climate Change Impacts Program and provided by Dr. Bryan C. Pijanowski, Purdue University (<http://ltm.agriculture.purdue.edu/>)*

Measure of Progress with Annual Targets

- Projected volume of untreated urban runoff captured or treated by GLRI-funded projects (measured in millions of gallons)

Baseline/ Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
Baseline: 0 Universe: N/A	30	70	120	185	250

Additional Measures of Progress

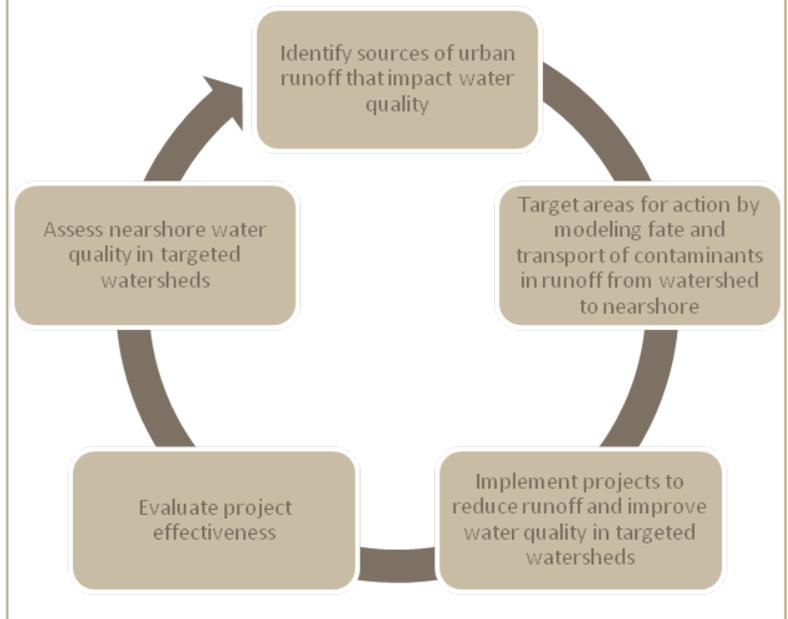
- Number of GLRI-funded projects implemented to reduce the impacts of untreated urban runoff on the Great Lakes
- Measured volume of untreated urban runoff captured or treated by monitored GLRI-funded projects

Under GLRI Action Plan II, federal agencies and their partners will continue to implement watershed management and green infrastructure projects to reduce the impacts of polluted urban runoff on nearshore water quality at beaches and in other coastal areas. These projects will capture or slow the flow of untreated runoff and filter out sediment, nutrients, toxic contaminants, pathogens and other pollutants prior to entering Great Lakes tributaries and nearshore waters.

Federal agencies and their partners will build green infrastructure, install tributary buffers, restore coastal wetlands, and re-vegetate and re-forest areas near Great Lakes coasts and tributaries.

These and other actions to reduce untreated runoff will be implemented in urban areas that have adopted watershed management strategies. Urban runoff reduction projects will be evaluated to determine their effectiveness. This information along with the assessment of water quality will be used to target future actions.

Reducing Runoff and Improving Nearshore Health in Urban Watersheds



Green Infrastructure Captures and Filters Urban Runoff



Image courtesy of Chicago Department of Transportation

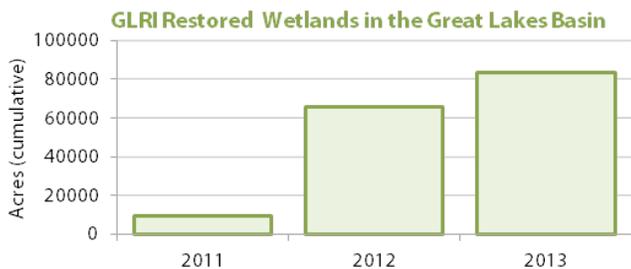
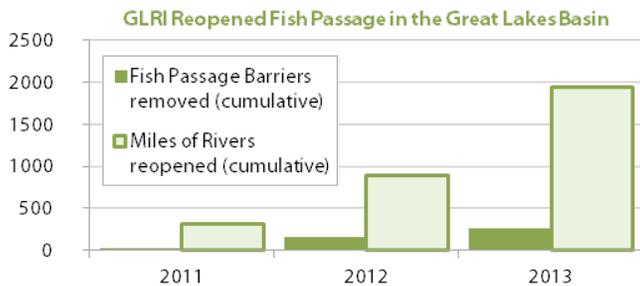
Habitats and Species

Objective

Protect, restore and enhance habitats to help sustain healthy populations of native species

Commitment

- Remove or bypass barriers on Great Lakes tributaries to facilitate fish passage
- Protect, restore and enhance Great Lakes coastal wetlands
- Protect, restore and enhance GLRI-targeted habitats in the Great Lakes basin



During the first five years of the Great Lakes Restoration Initiative, federal agencies and their partners, including states and tribes, worked to protect, restore and enhance habitat in the Great Lakes basin. Projects were implemented to maintain healthy populations of native species in aquatic and terrestrial habitats. More than 600 habitat protection, restoration, and enhancement projects were implemented throughout the Great Lakes basin by federal agencies and their partners. More than 80,000 acres of wetlands and 33,000 acres of coastal, upland, and island habitat were protected, restored and enhanced. Over 250 barriers were removed or bypassed in Great Lakes tributaries, enabling access by fish and other aquatic organisms to over 1,900 additional miles of river. Data was also collected to document baseline conditions for fish, amphibian, invertebrate, bird, plant and water quality for all coastal wetlands in order to inform protection and restoration decisions.

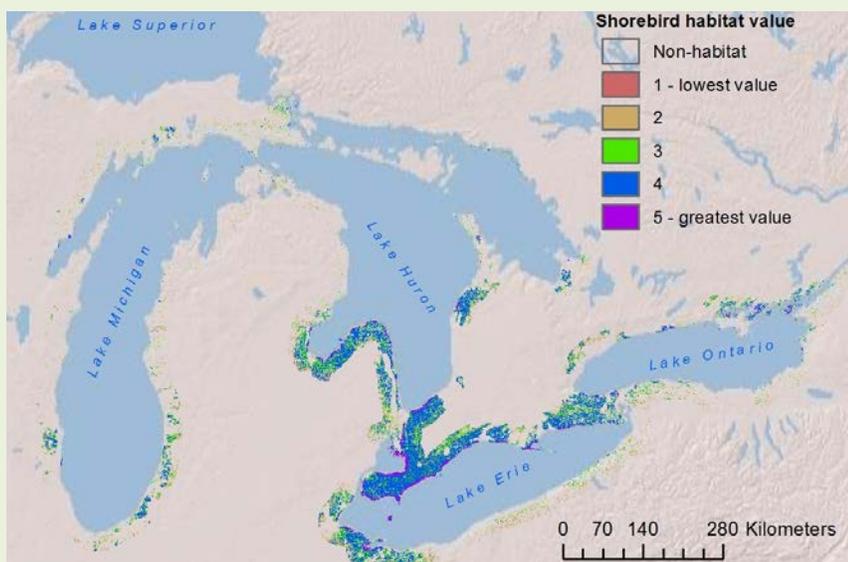
Measures of Progress with Annual Targets	Baseline/Universe	2015 Target	2016 Target	2017 Target	2018 Target	2019 Target
• Number of miles of Great Lakes tributaries reopened by GLRI-funded projects	Baseline: 1,900 Universe: N/A	2,200	2,500	2,800	3,100	3,400
• Number of miles of Great Lakes shoreline and riparian corridors protected, restored and enhanced by GLRI-funded projects*	Baseline: 0 Universe: N/A	75	100	175	225	300
• Number of acres of Great Lakes coastal wetlands protected, restored and enhanced by GLRI-funded projects*	Baseline: 0 Universe: 260,000	7,000	15,000	30,000	52,000	60,000
• Number of acres of other habitats in the Great Lakes basin protected, restored and enhanced by GLRI-funded projects	Baseline: 117,000 Universe: 1,290,000	127,000	147,000	167,000	187,000	207,000

*This Measure of Progress is a modification of an Action Plan I Measure of Progress that has been modified to more accurately track actions funded by GLRI. The baseline is zero because the new Action Plan II Measure of Progress is not the same metric as the Action Plan I Measure of Progress.

Under GLRI Action Plan II, federal agencies and their partners will implement protection, restoration and enhancement projects focused on open water, nearshore, connecting channels, coastal wetland and other habitats in the Great Lakes basin. Projects will include:

- Removing dams and replacing culverts to create fish habitat and reconnect migratory species to Great Lakes tributaries
- Restoring riparian and in-stream habitat to prevent erosion and to create sufficient habitat for aquatic species
- Protecting and restoring coastal wetlands
- Restoring habitat necessary to sustain populations of migratory native species
- Implementing offshore reef rehabilitation projects to promote natural fish spawning, and
- Protecting, restoring, and managing existing wetlands and high-quality upland areas to sustain diverse, complex, and interconnected habitats for species reproduction, growth, and seasonal refuge.

The process for protecting, restoring and enhancing habitats will begin with identifying projects based on priorities in the Lake Biodiversity Conservation Strategies and other regional-scale conservation strategies. Projects will contribute to the complexity of habitat types necessary to sustain populations of native species. A range of habitat assessment and evaluation activities will inform the prioritization, execution, and measurement of GLRI actions. The activities will also provide information on ecosystem processes, stressors and changing conditions due to emerging problem such as urban growth and climate change.



Great Lakes Migratory Bird Stopover Habitat

Migratory stopover sites are places where migrating birds stop to rest, refuel and seek shelter en route between breeding and wintering areas. The map shows the best sites on the Great Lakes shoreline (in blue and purple) that can shelter and provide food for these birds. GLRI is protecting, restoring and enhancing the sites most suitable for migratory birds.

Ewert et. al., On a Wing and a GIS Layer: Prioritizing Migratory Bird Stopover Habitat along Great Lakes Shorelines, November 2012

Habitats and Species

Objective

Maintain, restore and enhance populations of native species

Commitment

- Promote the recovery of priority federally-listed endangered, threatened and candidate species
- Promote self-sustaining populations of GLRI-targeted native, non-threatened and non-endangered species

During the first five years of the Great Lakes Restoration Initiative

, federal agencies and their partners worked to maintain, restore and enhance populations of native fish and wildlife species. The following actions were taken to conserve native species that were once broadly distributed across the lakes:

- Assisting with the delisting of the federally endangered Lake Erie water snake;
- Improving conditions for the following endangered and threatened species: bog turtle, Canada lynx, copperbelly water snake, Eastern Massasauga rattlesnake, Hines emerald dragonfly, Karner blue butterfly, Kirtland's warbler, lakeside daisy, Mitchell's satyr butterfly, piping plover, and Pitchers thistle; and,
- Implementing projects that led to 48 populations of native aquatic non-threatened and non-endangered species becoming self-sustaining in the wild.



The Great Lakes Restoration Initiative is supporting projects to protect endangered populations of **piping plover** in the Great Lakes region. At Wilderness State Park in Michigan, recovery efforts were implemented to support 3-6 pairs of piping plover. At Sleeping Bear Dunes National Lakeshore, federal agencies and their partners are protecting and monitoring the largest concentration of breeding piping plover in the Great Lakes region.



Lake sturgeon declined dramatically in the late 1800s due to overfishing, pollution and habitat loss. Though many populations were wiped out long ago, lake sturgeon still persist in ten rivers around Lake Michigan at a small fraction of their historic abundance. GLRI is supporting stream-side rearing units around the Lake to reintroduce or supplement juvenile lake sturgeon in Lake Michigan rivers.

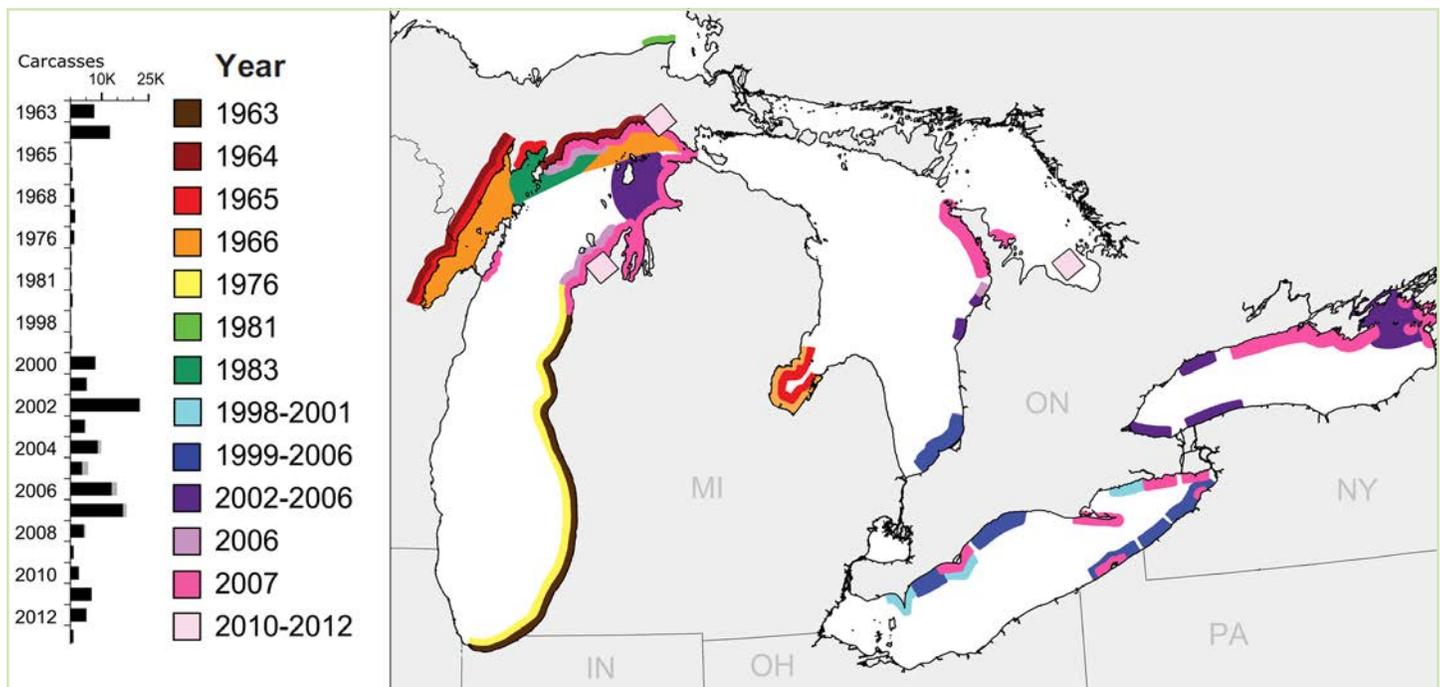
Measures of Progress

- Number of GLRI-funded projects that promote recovery of federally-listed endangered, threatened, and candidate species
- Number of GLRI-funded projects that promote populations of native non-threatened and non-endangered species self-sustaining in the wild

Under GLRI Action Plan II, federal agencies and their partners will work to maintain, restore and enhance populations of native fish and wildlife species. Projects will:

- Protect and restore species diversity
- Reintroduce populations of native species to restored habitats and evaluate their survival
- Protect or restore species that are culturally significant to tribes in the Great Lakes region
- Manage invasive species that inhibit the sustainability of native species
- Pioneer species propagation and relocation techniques, and
- Implement other activities necessary for the eventual recovery of federal and state threatened and endangered species

These GLRI-funded species protection, restoration and enhancement projects will be targeted based on Great Lakes restoration and conservation plans. These projects will often be conducted in tandem with GLRI-funded habitat projects. Federal agencies and their partners will evaluate population dynamics, biological complexity, and within-species diversity to aid in successfully maintaining fish and wildlife communities. These projects will be evaluated on an annual basis and the results of these evaluations will be used to prioritize the locations and species to be targeted in the future.



Botulism outbreaks cause extensive mortality of fish and fish-eating birds in the Great Lakes. Although periodic outbreaks have occurred in the Great Lakes since the 1960s, outbreaks have become more common and widespread since 1999 — particularly in Lakes Michigan, Erie, and Ontario. Botulism has been responsible for over 80,000 bird deaths on the Great Lakes since 1999. GLRI projects are identifying the causes of and potential solutions to this problem. (Redrawn from Zuccarino-Crowe 2009. Bird carcass data from USGS, Michigan Department of Natural Resources, Canadian Wildlife Health Center and the Canadian Wildlife Health Service.)

Foundations for Future Restoration Actions

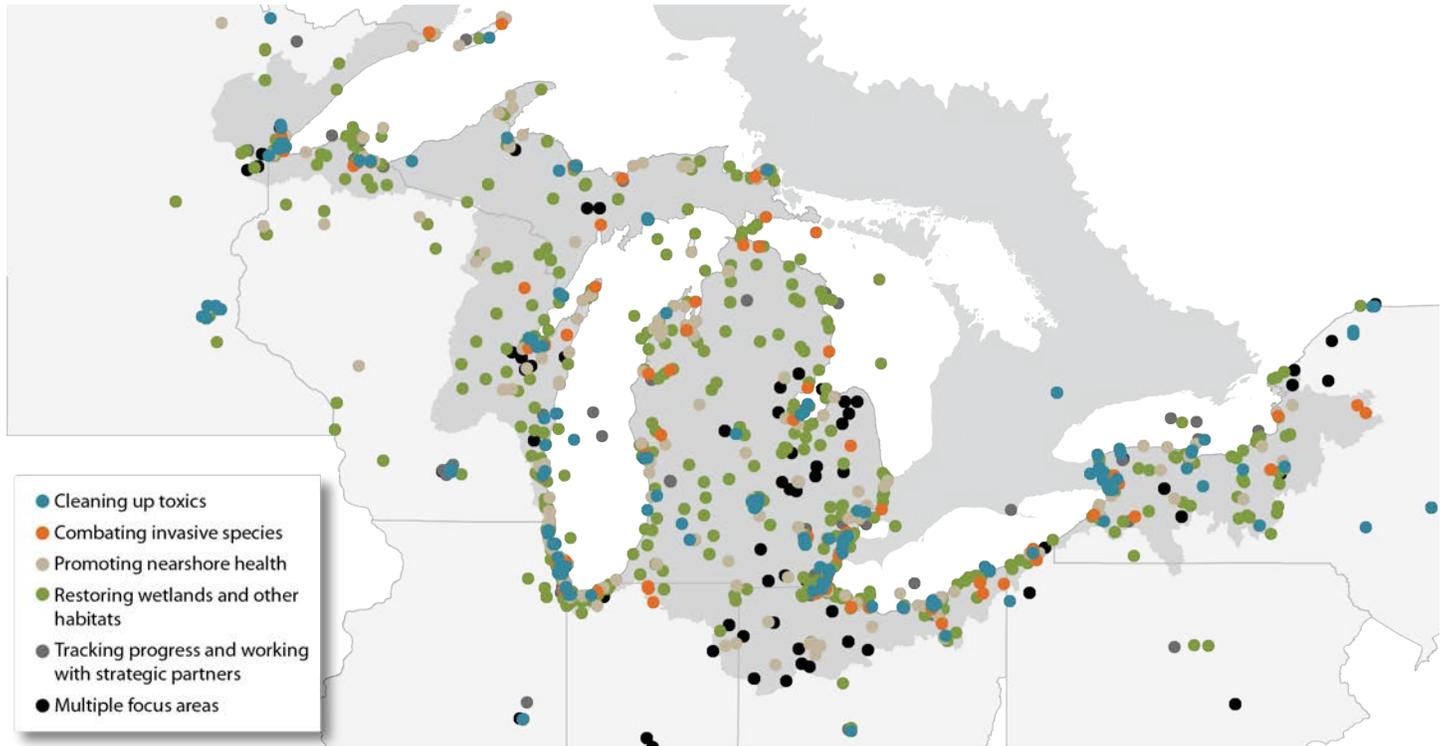
Objective

Ensure climate resiliency of GLRI-funded projects

Commitment

• Incorporate climate resiliency criteria in project selection processes

Great Lakes Restoration Initiative Projects Funded During 2010 - 2013



During the first five years of the Great Lakes Restoration Initiative, federal agencies funded over 2,000 projects across the Great Lakes basin. These projects address the most urgent issues in the Great Lakes: cleaning up toxics and areas of concern, combating invasive species, promoting nearshore health by protecting watersheds from polluted runoff and restoring wetlands and other habitats.

The Government Accountability Office and the EPA Science Advisory Board recommend that federal agencies consider the potential impacts of climate change on the restoration and protection work funded by GLRI. The Great Lakes Advisory Board recommends that the GLRI Action Plan:

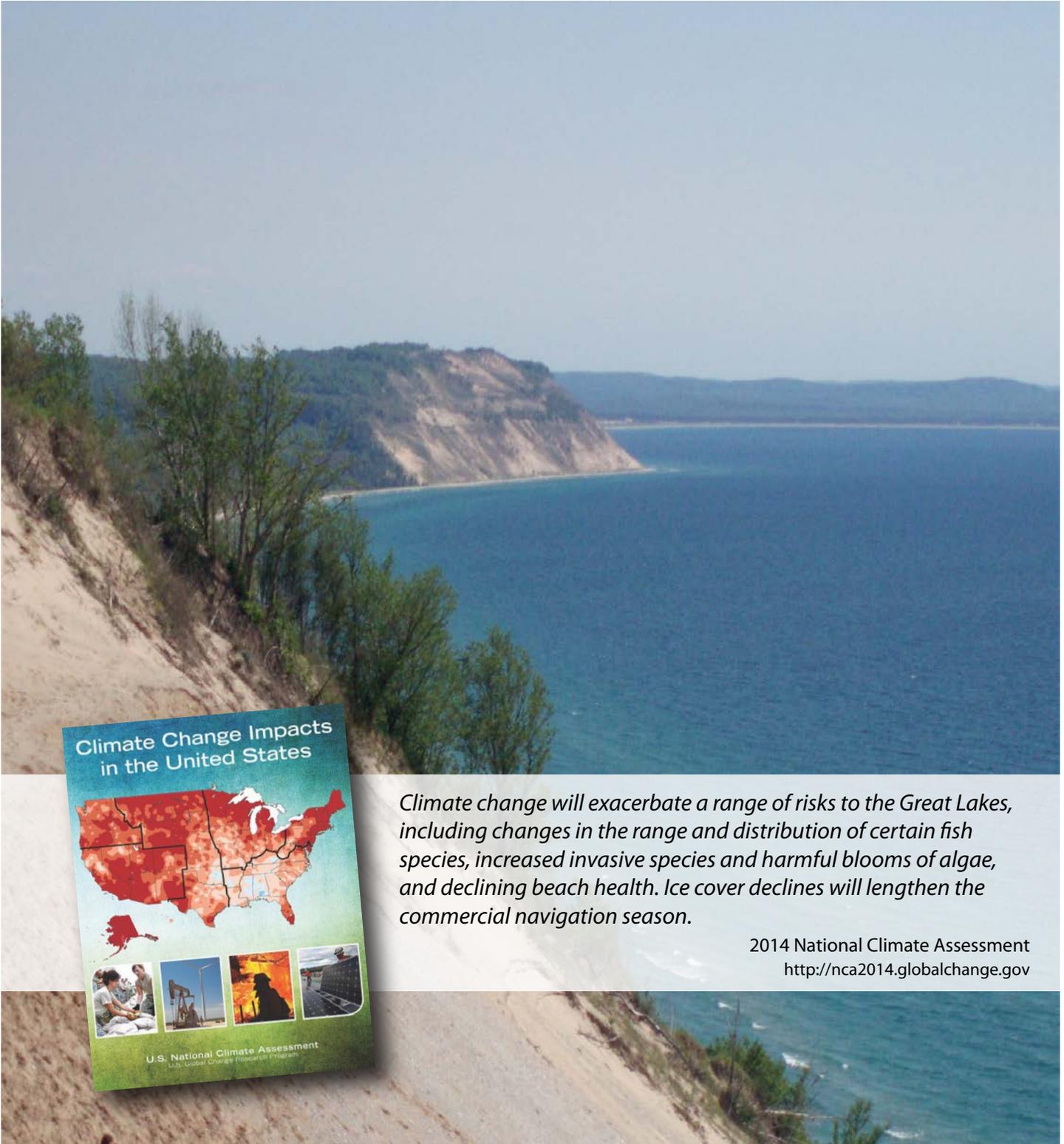
...acknowledge that climate change, and the resulting changes to local meteorology, can compromise the long-term effectiveness of the restoration work being done through the GLRI. To ensure the long-term viability of any specific restoration project, the GLRI awarding agency should consider how each proposed project may be affected by any impacts of climate change. This is best done during the project selection process.

Under GLRI Action Plan II, federal agencies will develop standardized climate resiliency criteria that will be used to design and select GLRI projects. The standardized criteria will be developed using lessons learned from previous and ongoing GLRI-projects and will also draw on federal agencies' climate adaptation plans and other project assessment tools that measure resiliency. These criteria will ensure, for example, that GLRI restoration projects incorporate plant and tree species that are suitable for current and projected future climatic conditions. Similarly, these criteria will be used to design watershed restoration projects to take into account potential impacts of more frequent or intense storms on water flow, erosion and runoff. Information about the climate resiliency criteria will be distributed to GLRI partners so that climate change resiliency can be incorporated into the early stages of the GLRI project development process. The federal agencies will review the standardized climate resiliency criteria on an annual basis and incorporate updated climate change information.

Great Lakes Restoration Initiative Action Plan II

Measures of Progress

- By 2016, a standardized set of climate resiliency criteria will be developed for GLRI-projects
- Starting in 2017, projects will include climate resiliency criteria in planning and implementation



Climate change will exacerbate a range of risks to the Great Lakes, including changes in the range and distribution of certain fish species, increased invasive species and harmful blooms of algae, and declining beach health. Ice cover declines will lengthen the commercial navigation season.

2014 National Climate Assessment
<http://nca2014.globalchange.gov>

Foundations for Future Restoration Actions

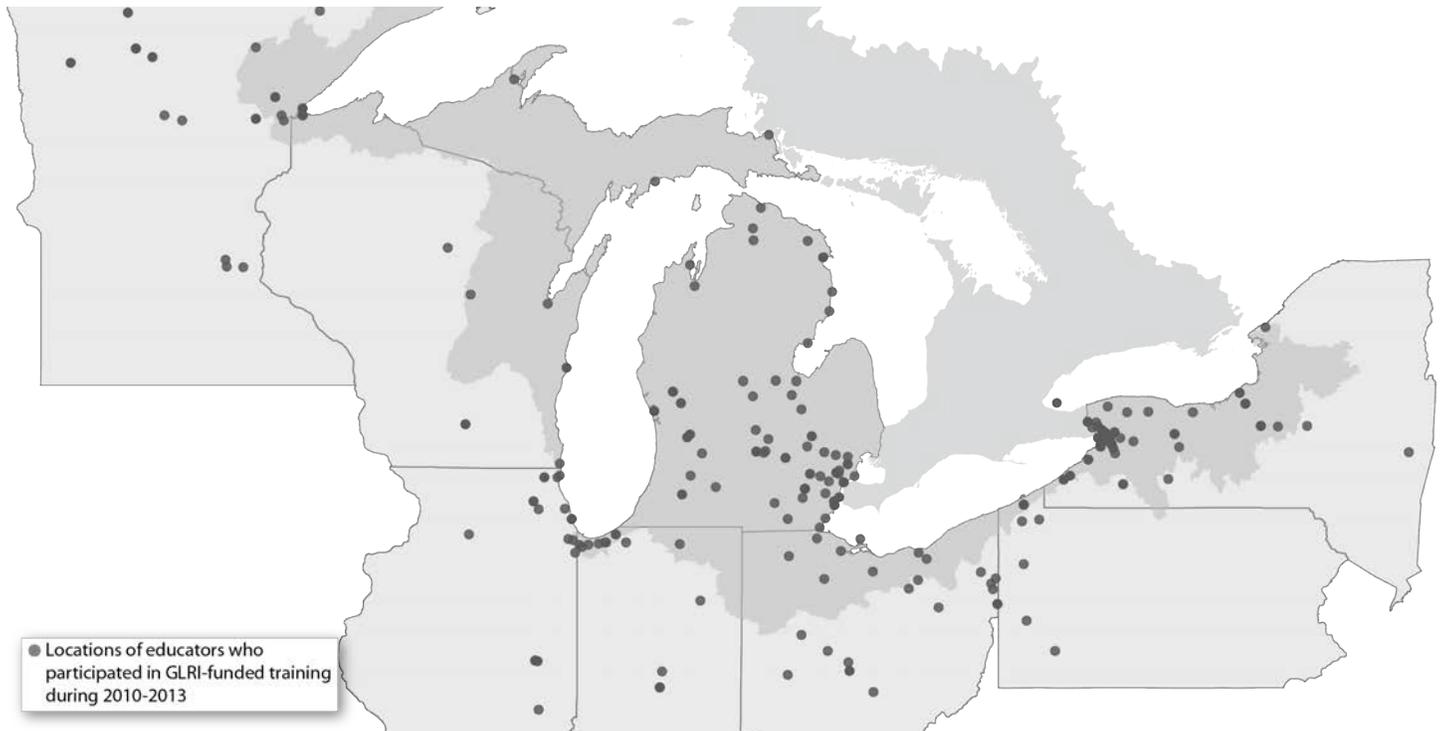
Objective

Educate the next generation about the Great Lakes ecosystem

Commitment

• Promote Great Lakes-based ecosystem education and stewardship, with a focus on educator training

Great Lakes Restoration Initiative Trains Educators Across the Great Lakes Region



During the first five years of the **Great Lakes Restoration Initiative**, federal agencies and their partners implemented a number of efforts to promote Great Lakes-based environmental education and stewardship, including:

- The Center for Great Lakes Literacy (CGLL) was established by the Great Lakes Sea Grant Network to develop a community of Great Lakes-literate educators, students, scientists, environmental professionals and citizen volunteers dedicated to improved Great Lakes stewardship.
- The Great Lakes Bay Watershed Education and Training Program (B-WET) was created to promote hands-on environmental activities that are aligned with academic learning standards.

Collectively, CGLL, B-WET and other education projects have resulted in over 850 educational institutions incorporating Great Lakes specific material into their broader environmental education curricula. It is estimated that more than 115,000 students have participated in these classes.



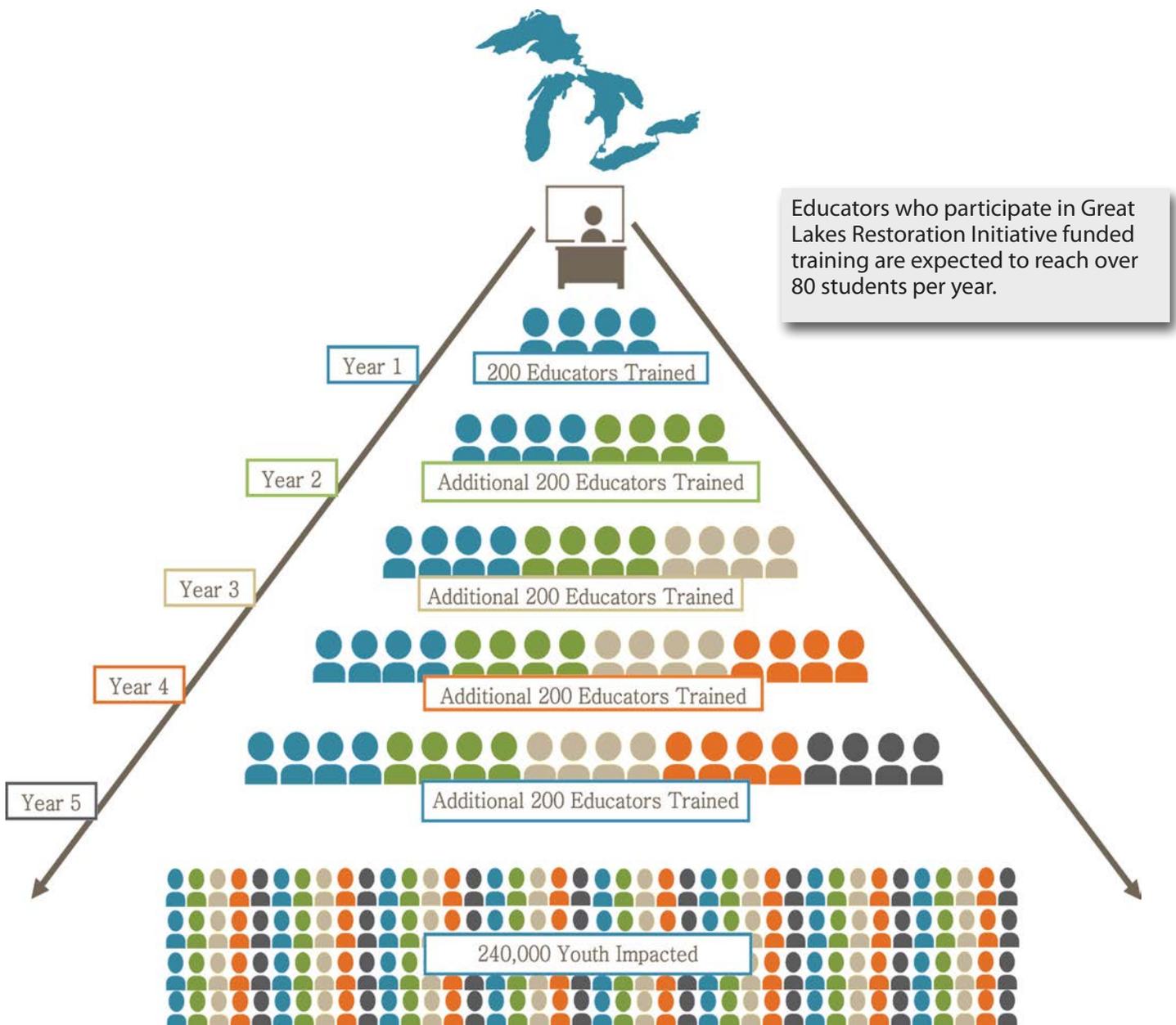
The Great Lakes Restoration Initiative Funds Great Lakes Sea Grant "Teach the Teachers" Projects

During the summer of 2013, elementary and high-school teachers from five states participated in a seven day Shipboard and Shore line Science workshop on Lake Ontario aboard the Lake Guardian, a U.S. Environmental Protection Agency (EPA) research vessel. The teachers assisted with collecting water and bottom sediment samples at numerous nearshore and offshore field stations including sites near Toronto, Rochester, Oswego, Clayton and the Thousand Islands Biological Station. This workshop was one of several courses for environmental educators funded through the Great Lakes Restoration Initiative.

Measures of Progress

- Number of educators trained through GLRI-funded projects
- Number of people educated on the Great Lakes ecosystem through GLRI-funded place-based experiential learning activities

Under GLRI Action Plan II, federal agencies and their partners will continue to promote Great Lakes-based ecosystem education and stewardship for K-12 school students and other interested audiences (e.g., courses at parks, nature centers, museums and zoos). GLRI partners will work with existing environmental education programs, foster the growth of new programs, and align new and/or existing curricula with the Great Lakes Literacy Principles as well as state and national academic learning standards. There will be an emphasis on training educators in order to maximize the number of students engaged over time. Federal agencies that are stewards of lands and waters important to the Great Lakes ecosystem will also provide place-based experiential learning to the public. GLRI projects will include an evaluation component to ensure that the education programs directed towards educators are ultimately implemented in the classroom.



Foundations for Future Restoration Actions

Objective

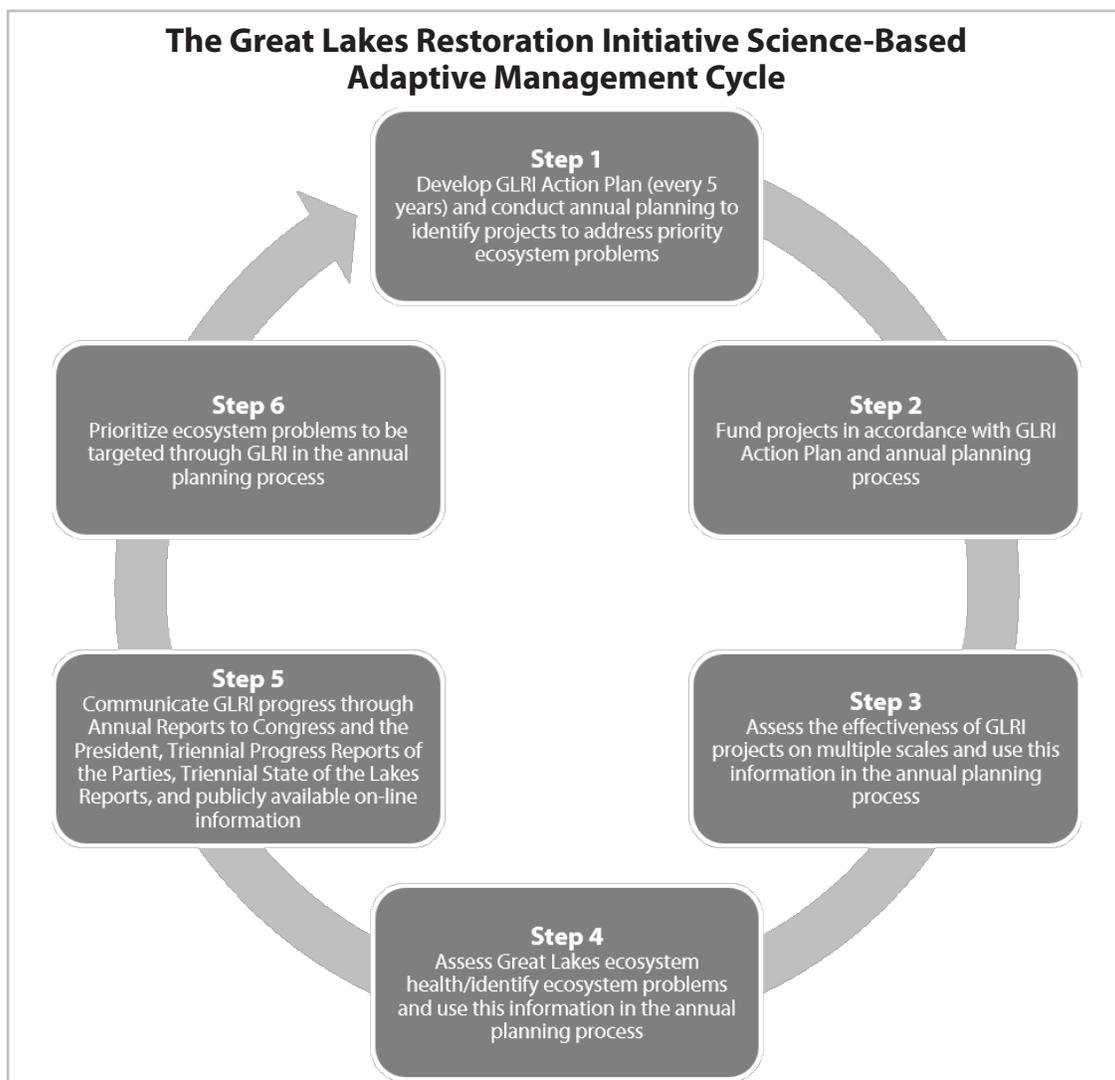
Implement a science-based adaptive management approach for GLRI

Commitments

- Evaluate the effectiveness of GLRI-funded projects
- Assess the overall health of the Great Lakes ecosystem and identify the most significant remaining problems
- Identify watersheds, habitats, and species to be targeted by the GLRI
- Report on GLRI progress and Great Lakes ecosystem health

The GLRI science-based adaptive management process is intended to guide restoration and protection actions by using the best available science and applying lessons learned from past and ongoing GLRI projects and programs. Federal agencies involved in the GLRI will use this science-based adaptive management cycle to identify the most critical environmental problems in the Great Lakes ecosystem and to select projects that will most effectively address those problems. As part of this process, federal agencies will consult with their state and tribal partners and will seek input from the Great Lakes Advisory Board, the scientific community, Lakewide Action and Management Plan partnerships and the general public.

The cycle consists of two science-based planning processes — one that occurs every five years and one that is implemented annually. Every five years, federal agencies develop a GLRI Action Plan to establish principal initiatives, commitments, metrics and long-term goals. Federal agencies also conduct annual planning to identify specific projects and programs to target the highest priority problems in the Great Lakes ecosystem.





Measures of Progress

- Project evaluations completed and used to prioritize GLRI funding decisions each year
- Annual Great Lakes monitoring conducted and used to prioritize GLRI funding decisions each year
- GLRI-targeted watersheds, habitats and species identified and used to prioritize GLRI funding decisions
- Issue annual GLRI Reports to Congress and the President
- Issue Great Lakes Water Quality Agreement Triennial Progress Reports of the Parties
- Issue triennial State of the Lakes reports
- Periodically update publicly available online information about the GLRI

Step 1: Conduct annual planning to identify projects to address priority ecosystem problems consistent with the GLRI Action Plan.

Federal agencies prepare a GLRI Action Plan that establishes long-term goals, objectives, commitments and measures of progress. Federal agencies also conduct an annual planning process to prioritize restoration and protection work to address the most critical Great Lakes ecosystem problems. The annual planning process identifies specific projects and programs to target priority Great Lakes ecosystem problems. The annual planning process relies on the best available scientific information on the current state of Great Lakes ecosystem health and an assessment of the effectiveness of past GLRI projects.

Step 2: Fund projects in accordance with the GLRI Action Plan and annual planning process.

Federal agencies fund individual restoration and protection projects in accordance with the GLRI Action Plan and the annual planning process. Individual agencies use grants, contracts, cooperative agreements and direct implementation to fund projects within each agency's area of expertise. For example, the Fish and Wildlife Service focuses on habitat restoration and species protection work and the Natural Resources Conservation Service focuses on soil and water conservation projects that reduce nutrient loading in the Great Lakes basin. In addition, agencies often use GLRI funds to leverage projects funded by their base budgets and vice versa.

Step 3: Assess effectiveness of GLRI projects on multiple scales.

Every project is evaluated upon completion to ensure that it was implemented as proposed. Select projects are assessed to determine project effectiveness so that future GLRI investments are maximized taking into account "lessons learned." Project assessments can occur on an individual project basis or, where feasible, on an "aggregation of projects" basis. Information from these assessments will be used in the annual planning process.

Step 4: Assess Great Lakes ecosystem health and identify ecosystem problems.

Federal agencies and partners assess ecosystem health on a periodic basis in order to measure progress towards the long-term goals identified at the beginning of this action plan and to continually identify the most significant ongoing and emerging problems in the Great Lakes ecosystem. Federal agencies conduct monitoring activities (e.g., water quality monitoring, fish monitoring, air monitoring, human health monitoring) that produce information used in these assessments. This information will be used in the annual planning process.

Step 5: Communicate GLRI progress through Annual Reports to Congress and the President, Triennial Progress Reports of the Parties, Triennial State of the Lakes Reports, and publicly available on-line information.

Because of the tremendous interest in the health of the Great Lakes, federal agencies periodically produce a variety of reports on GLRI activities and ecological indicators of the overall health of the Great Lakes ecosystem. Agencies also frequently update publicly available on-line information about the Great Lakes and the GLRI.

Step 6: Prioritize ecosystem problems to be targeted through GLRI.

Every year, federal agencies restart the adaptive management cycle by modifying priorities, as appropriate, based on knowledge gained by assessing completed GLRI projects and by assessing the health of the Great Lakes ecosystem and the long-term goals identified at the beginning of this action plan.

Great Lakes Interagency Task Force



**K. NYSDOS Coastal Fish & Wildlife Habitat Rating Form
for the Genesee River**

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Genesee River**

Designated: **October 15, 1987**

County: **Monroe**

Town(s): **Rochester**

7½' Quadrangle(s): **Rochester East, NY; Rochester West, NY**

<u>Score</u>	<u>Criterion</u>
20	Ecosystem Rarity (ER) One of 4 major New York tributaries of Lake Ontario; unusual in the Great Lakes Plain ecological region, but rarity is reduced by human disturbances. Geometric mean: $(16 \times 25)^{\frac{1}{2}}$
0	Species Vulnerability (SV) Spotted salamander (SC) and spotted turtle (SC) have been observed but the extent of use not well documented.
16	Human Use (HU) A major recreational fishing area on Lake Ontario, attracting anglers from throughout New York State and beyond. Locally important for birdwatching and informal nature study.
9	Population Level (PL) Concentrations of spawning salmonids are among the largest occurring in New York's Great Lakes tributaries; unusual in the ecological region.
1.2	Replaceability (R) Irreplaceable

SIGNIFICANCE VALUE = [(ER + SV + HU + PL) X R]

= **54**

DESIGNATED HABITAT: GENESSEE RIVER

LOCATION AND DESCRIPTION OF HABITAT:

The Genesee River is a major tributary of Lake Ontario, located in the City of Rochester, Monroe County (7.5' Quadrangles: Rochester West, N.Y.; and Rochester East, N.Y.). The fish and wildlife habitat is an approximate six and one-half mile segment of the river, extending from Lake Ontario to "Lower Falls" (located just above Driving Park Avenue), which is a natural impassable barrier to fish. The Genesee River is a large, warmwater river, with a drainage area of nearly 2,500 square miles, and an average annual discharge of approximately 2,800 cubic feet per second. Maximum water depths of up to 25 feet occur near the river mouth, and a navigation channel has been dredged upstream approximately two and one-half miles. Much of this lower segment is bordered by dense commercial, industrial, and residential development, accompanied by extensive bulkheading. Above this area, the Genesee River flows through a relatively undeveloped wooded gorge, and has a fringe of emergent wetland vegetation along much of its shoreline. This portion of the river is relatively shallow, with a rocky bottom. The only significant development within the gorge is an industrial wastewater treatment facility. However, the river has been subject to considerable water pollution problems, including discharges of sewage and chemical contaminants. Above Lower Falls, the Genesee River has been dammed for hydroelectric power development, resulting in some alteration of river flows downstream.

FISH AND WILDLIFE VALUES:

The Genesee River is one of 4 major New York tributaries of Lake Ontario. The large size of this river, and the fact that much of the river corridor is essentially undisturbed, makes this one of the most important potential fish and wildlife habitats in the Great Lakes Plain ecological region of New York State. However, water pollution, and extensive alteration of the lower river channel, have reduced the environmental quality of this area.

The Genesee River is a highly productive warmwater fisheries habitat, supporting concentrations of many resident and Lake Ontario based fish species. Among the more common resident species are smallmouth bass, brown bullhead, northern pike, channel catfish, walleye, carp, and white sucker. Lake-run species found in the Genesee River include white bass, yellow perch, white perch, smelt, bowfin, sheepshead, rock bass, and American eel. These fish populations are supplemented by seasonal influxes of large numbers of trout and salmon. In the spring (late February - April), steelhead (lake-run rainbow trout) run up the river, and lake trout occur at the mouth. In fall (September - November, primarily), concentrations of coho and chinook salmon, brown trout, and steelhead, are found throughout the river during their spawning runs. The salmonid concentrations in the Genesee River are among the largest occurring in tributaries of Lake Ontario, and are largely the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking. In 1985, approximately 20,000 steelhead and 300,000 chinook salmon were released in the river. The Genesee River provides an important recreational fishery, attracting anglers from throughout New York State and beyond. Its location within the city results in very heavy fishing pressure from residents of the Rochester metropolitan area, concentrated primarily at the river mouth, and between Seth Green Island and Lower Falls. Although the seasonal salmonid runs attract the greatest number of fishermen to the area, the river also supports an active warmwater fishery.

Wildlife use of the Genesee River is not well documented, but appears to be limited to those species that can inhabit a relatively narrow riparian corridor, and are somewhat tolerant of human activities in adjacent areas. Possible or confirmed breeding bird species include mallard, wood duck, great horned owl, red-tailed hawk, spotted sandpiper, belted kingfisher, red-winged blackbird, swamp sparrow, and various woodpeckers and woodland passerine birds. Several beaver colonies inhabit the lower Genesee in the vicinity of Turning Point Park and Rattlesnake Point. Spotted salamander (SC) and spotted turtle (SC) have been observed in the

Lower Genesee River Gorge but the extent of use by these species is not well documented. Other wildlife species occurring in the area probably include raccoon, muskrat, northern water snake, and painted turtle. The wildlife resources of the Genesee River and its adjacent woodlands are locally important for birdwatching, and informal nature study.

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,

3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed below to assist in applying the habitat impairment test to a proposed activity.

Any activity that substantially degrades water quality, increases temperature or turbidity, reduces flows, or increases water level fluctuations in the Genesee River, would affect the biological productivity of this area. Important species of fish and wildlife would be adversely affected by water pollution, such as chemical contamination (including food chain effects), oil spills, excessive turbidity, and waste disposal. Continued efforts should be made to improve water quality in the river, which is primarily dependent upon controlling discharges from combined sewer overflows, industrial point sources, ships, and agricultural lands in the watershed.

The existing navigation channel should be dredged between mid-May and mid-August or between mid-November and early April in order to avoid impacts on the habitat use by migrating salmonids. Activities that would affect the habitat above the navigation channel should not be conducted during the period from March through July in order to protect warmwater fish habitat values. New dredging (outside the existing navigation channel) would likely result in the direct removal of warmwater fish habitat values and should not be permitted. Contaminated dredge spoils should be deposited in upland containment areas.

Barriers to fish migration, whether physical or chemical, would have significant effects on fish populations within the river, and in adjacent Lake Ontario waters. Installation and operation of water intakes could have a significant impact on fish concentrations, through impingement of juveniles and adults, or entrainment of eggs and larval stages. Elimination of wetland habitats (including submergent aquatic beds), and further human encroachment into the river channel, would severely reduce its value to fish and wildlife. Existing areas of natural vegetation bordering the river should be maintained for their value as cover, perching sites, and buffer zones.

L. DEC Rare and Endangered Species Assessment

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov



Joe Martens
Commissioner

December 3, 2014

Jason Babcock-Stiner
Bergmann Associates
28 East Main Street, 200 First Federal Plaza
Rochester, NY 14614

Dear Mr. Babcock-Stiner:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the Port of Rochester-Genesee River Harbor Management Plan in the City of Rochester and Town of Irondequoit, Monroe County.

We have no recent records of rare or state-listed animals or plants, or of significant natural communities, at this site or in its immediate vicinity.

Our database does have a historical record of a rare plant in the area of the project site: in 1921, **handsome sedge** (*Carex formosa*, listed by NYS as Threatened) was collected from a "border of rich, sandy woods" on the east side of the Genesee River near Rochester. We do not know the precise location where this plant was collected, we have no recent information on this population, and there is uncertainty regarding its continued presence. We provide this information for your general reference. While its current status is not known, if suitable habitat for this plant is present at the project site, it is possible that it may still be found there. We recommend that any field surveys to the site include a search for this species, particularly in areas that are currently undeveloped and may still contain suitable habitat. If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about handsome sedge in New York, including habitat, biology, identification, conservation, and management, is available online in Natural Heritage's Conservation Guide at <http://www.guides.nynhp.org/guide.php?id=9481>.

For most sites, comprehensive field surveys have not been conducted; the above information only includes records from our databases. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities.

Sincerely,

Nicholas Conrad
Information Resource Coordinator

M. City of Rochester Port Docking Application

PORT OF ROCHESTER (NY)

Section 1: 2014 Docking Permit Application

Note: Permits required for stays 24 hours or more and for all commercial vessels

Vessel Information

Name of Vessel: _____ Length: _____ ft Draft: _____ ft Beam: _____ ft
Registration Number: _____ Nation of Registry: _____
Registered Owner: _____ Telephone: _____
Address: _____ E-mail: _____
Captain Name: _____ Number at Port: _____
Number of Passengers: _____ Prior Port of Call: _____
Insurance Company: _____ Policy #: _____
Address: _____ Telephone # _____
Amount General Liability Coverage \$ _____ Fax #: _____

Docking Dates

Date and Estimated Time of Arrival: Date: _____ Time: _____ am/pm
Date and Estimated Time of Departure: Date: _____ Time: _____ am/pm

If seasonal, indicate dates and hours vessel will be at dock: _____

Services Required: *(additional charges apply – see section II)*

Water hookup ___Yes ___No If yes, estimated quantity _____ gal.
Trash removal ___Yes ___No If yes, estimated volume _____ cu. yds.
Line Handlers ___Yes ___No
Other (please specify): _____ Fuel delivery _____ Pump out/waste removal _____ Crane service

Comments: _____

PORT OF ROCHESTER (NY)

Section II: Docking Rates & Fees

FEET	2010 Fee *	Number of Days	Total Cost
30	\$30.00/day	X _____	= \$
31-100	\$50.00/day	X _____	= \$
101-199	\$200.00/day	X _____	= \$
200-299	\$250.00/day	X _____	= \$
300+	\$300.00/day	X _____	= \$
		Sub-Total	= \$
Permit Application Fee			= \$ 20.00
		Number of People	
Passenger Usage Fee	\$ 10.00/person	X _____	= \$
		Total	\$

* Fee waived for government owned vessels and those visiting for special events and public tours

**Please complete application and send along with payment to:
 City of Rochester/Department of Recreation & Youth Services
 400 Dewey Ave.
 Rochester, NY 14613
 Tel: 585.428.6755
 Fax: 585.428.6021**

Please make checks payable to: City of Rochester/City Treasurer

Additional Services:

(Contact City of Rochester Call Center @ 311 for assistance):

Water: \$1.76/1000 gallons *(Advanced notice required. To be billed based on actual amount used)*
 Electric: \$25.00/24-hour period *(Advanced notice required. To be billed based on actual amount used)*

Special Events and Conference Room:

RENTS	Rate	Hr
Waterside Room up to 250 people	\$600.00*	Flat
Waterside Room 250 – 500 people	\$800.00*	Flat
Conference Room	\$250.00**	8

For rentals and pricing information on Special Events/Conferences, please contact:
 David Carpenter at the Rochester Riverside Convention Center (RRCC) @ 585.232.7200 x1405

- *Rates cut in half if food and beverage provided by RRCC
- **\$25 for each additional hour includes table and chairs

PORT OF ROCHESTER (NY)

Section III: Supplies and Services

PORT REGULATIONS:	City Regulations and Policy
PORT OPERATIONS CONTACT:	Paul Scuderi City of Rochester Asst. Director or Real Estate Tel: 585.428.7527 Fax: 585.428.6137 Email: scuderip@cityofrochester.gov
U.S. COAST GUARD:	Chief Stephen L. Engle, Officer in Charge USCG Station Rochester 5500 St. Paul Blvd. Rochester, NY Tel: 585.342.4149 Non-emergency Tel: 585.342.4140 Emergency Marine Channel VHF 16 Chart location: 167 Boat Call Signs: 47285 & 25693
CUSTOMS/IMMIGRATION:	Charles Giunta, Officer in Charge US Customs and Border Protection 1200 Brooks Avenue (Rochester Airport) Rochester NY 14624 Tel: 585.263.6293 Email: charles.a.giunta@cbp.dhs.gov
MOORING:	
LOCATION:	Adjacent to and north of Port Terminal . West Side Genesee River @ Southern Terminus of Piers
LENGTH:	900 Linear Feet
DEPTH-CHANNEL:	Dredged to 6 - 21 ft. depth
DOCKSIDE:	12–14 ft. below average low water datum at 6 ft. off of dock wall
PIER FACE:	Smooth concrete wall
PIER HEIGHT:	7 – 9 ft. above average water level
MOORING FITTINGS:	Steel bollards
TIDAL RANGE:	Zero

PORT SERVICES:

ELECTRICITY:	Available on special request.
PORTABLE WATER:	Yes – standard ¾ hose connection. 1 ¾ inch outlet fitting available upon request. Note: backflow device required
SEWAGE:	No pump out on site. Pumps available at: Shumway Marine 585.342.3030 Marine VHF CH. 16 Chart Location: 164 Pelican Marine Chart location: 155 Available by tank truck at dock: Chamberlain Septic @ 585.265.0277 Monroe county septic @ 585.247.5508
TELEPHONE:	Public payphone inside Terminal Building. Special telephone hookup available through: Frontier Telephone @ 585.777.1234
TRASH REMOVAL:	Limited amount available on site. Arrangements can be made for dumpster service at: BFI Waste Systems @ 585.254.2060 Waste Management @ 585.254.3500
PIER LIGHTING:	Yes
BROW AVAILABLE:	No
LINE HANDLERS:	No
SECURITY:	Routine patrol by Rochester Police and Monroe county sheriff. On-site Security (located inside Terminal Building). 24-hour security can be arranged for additional fee.
BULK FUEL LOADING:	Available by tank truck/USCG licensed supplier only: Suburban Propane 3325 Chili Ave. Rochester, NY 14624 585.436.4000 Samson Fuel 2285 Ridgeway Ave. Rochester, NY 14626 585.254.6010

CRANE SERVICES:

Not available on site. Service available by special arrangement through:

Gottry Corp. 585.235.7400

SHIP REPAIRS & SUPPLIES

(Primarily Recreation Vessels):

Shumway Marine
Chart Location 164
585.342.3030
Marine VHF CH. 16

West Marine
Stutson Plaza
585.266.0200

ON-SHORE FACILITIES:

PHYSICIAN:

Rochester Medical Society (referrals)
Monday-Saturday @ 585.743.7573

DENTIST:

Rochester General Hospital
Dental Emergency @ 585.922.2000

HOSPITAL:
(7 days)

Rochester General Hospital
Medical Emergency @ 585.922.4000

AMBULANCE:

Rural/Metro Ambulance 911

ROCHESTER FIRE:

911 / MARINE VHF CH 19
USCG Station
585.342.4149

ROCHESTER POLICE:

Rochester Police Dept. @ 911

SHERIFFS' MARINE PATROL:

911 / MARINE VHF CH16
585.342.4149

BANK:

Chase
3917 Lake Ave
Rochester, NY
800.935.9935

ATM:

Inside Terminal Building

POST OFFICE:

Charlotte Station
4455 Lake Ave
8:30 a.m. until 5 p.m. weekdays
9 a.m. until 12 p.m. Saturdays
585.663.5755

DRUG STORE:

Rite Aid Drugs - 1.2 miles from dock

Stutson Plaza
Chart location D
9:30 a.m. until 9:30 p.m.
585.544.5720

GROCERY STORE:

Herrema's Food Market
125 Pattonwood Drive
6:30 a.m. until 10 p.m. daily
585.342.4240
Delivery Available

CONVENIENCE STORE:

Wilson Farms - .5 miles from dock
Lake Ave
7 a.m. until 12 midnight daily

COIN LAUNDRY:

Stutson Plaza - 1.2 miles from dock
Chart Location D

Important:

- Please note that the Genesee Channel is subject to significant surge conditions which are most prevalent during sustained periods of North to North East winds. The surge may increase with little or no warning. Please be prepared for rapidly changing water levels.
- The City of Rochester is not responsible for any damage sustained to your vessel while docked at the Port of Rochester. Permittee assumes all liabilities and risks while docked at the Port.
- Permittee is responsible for compliance with all applicable City of Rochester rules and regulations in place while docked at the Port. All rules and regulations are subject to change without advanced notice.

Thank You....and enjoy your visit!

N. Excerpt of WRDA 2007

[110th Congress Public Law 114]
 [From the U.S. Government Printing Office]

[DOCID: f:publ114.110]

[[Page 121 STAT. 1041]]

Public Law 110-114
 110th Congress

An Act

To provide for the conservation and development of water and related resources, to authorize the Secretary of the Army to construct various projects for improvements to rivers and harbors of the United States, and for other purposes. <<NOTE: Nov. 8, 2007 - [H.R. 1495]>>

Be it enacted by the Senate and House of Representatives of the United States of America in Congress <<NOTE: Water Resources Development Act of 2007. Inter-governmental relations. 33 USC 2201 note.>> assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) Short Title.--This Act may be cited as the ``Water Resources Development Act of 2007''.

(b) Table of Contents.--The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.

Sec. 2. Definition of Secretary.

TITLE I--WATER RESOURCES PROJECTS

Sec. 1001. Project authorizations.

Sec. 1002. Small projects for flood damage reduction.

Sec. 1003. Small projects for emergency streambank protection.

Sec. 1004. Small projects for navigation.

Sec. 1005. Small projects for improvement of the quality of the environment.

Sec. 1006. Small projects for aquatic ecosystem restoration.

Sec. 1007. Small projects for shoreline protection.

Sec. 1008. Small projects for snagging and sediment removal.

Sec. 1009. Small projects to prevent or mitigate damage caused by navigation projects.

Sec. 1010. Small projects for aquatic plant control.

TITLE II--GENERAL PROVISIONS

Sec. 2001. Non-Federal contributions.

Sec. 2002. Funding to process permits.

Sec. 2003. Written agreement for water resources projects.

Sec. 2004. Compilation of laws.

Sec. 2005. Dredged material disposal.

Sec. 2006. Remote and subsistence harbors.

Sec. 2007. Use of other Federal funds.

Sec. 2008. Revision of project partnership agreement; cost sharing.

Sec. 2009. Expedited actions for emergency flood damage reduction.

TITLE V--MISCELLANEOUS

- Sec. 5001. Maintenance of navigation channels.
 - Sec. 5002. Watershed management.
 - Sec. 5003. Dam safety.
 - Sec. 5004. Structural integrity evaluations.
 - Sec. 5005. Flood mitigation priority areas.
 - Sec. 5006. Additional assistance for authorized projects.
 - Sec. 5007. Expedited completion of reports and construction for certain projects.
 - Sec. 5008. Expedited completion of reports for certain projects.
 - Sec. 5009. Southeastern water resources assessment.
 - Sec. 5010. Missouri and Middle Mississippi Rivers enhancement project.
 - Sec. 5011. Great Lakes fishery and ecosystem restoration program.
 - Sec. 5012. Great Lakes remedial action plans and sediment remediation.
 - Sec. 5013. Great Lakes tributary models.
 - Sec. 5014. Great Lakes navigation and protection.
 - Sec. 5015. Saint Lawrence Seaway.
 - Sec. 5016. Upper Mississippi River dispersal barrier project.
 - Sec. 5017. Estuary restoration.
 - Sec. 5018. Missouri River and tributaries, mitigation, recovery, and restoration, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming.
 - Sec. 5019. Susquehanna, Delaware, and Potomac River basins, Delaware, Maryland, Pennsylvania, and Virginia.
 - Sec. 5020. Chesapeake Bay environmental restoration and protection program.
 - Sec. 5021. Chesapeake Bay oyster restoration, Virginia and Maryland.
 - Sec. 5022. Hypoxia assessment.
 - Sec. 5023. Potomac River watershed assessment and tributary strategy evaluation and monitoring program.
 - Sec. 5024. Lock and dam security.
 - Sec. 5025. Research and development program for Columbia and Snake River salmon survival.
 - Sec. 5026. Wage surveys.
- [[Page 121 STAT. 1047]]
- Sec. 5027. Rehabilitation.
 - Sec. 5028. Auburn, Alabama.
 - Sec. 5029. Pinhook Creek, Huntsville, Alabama.
 - Sec. 5030. Alaska.
 - Sec. 5031. Barrow, Alaska.
 - Sec. 5032. Lowell Creek Tunnel, Seward, Alaska.
 - Sec. 5033. St. Herman and St. Paul Harbors, Kodiak, Alaska.
 - Sec. 5034. Tanana River, Alaska.
 - Sec. 5035. Wrangell Harbor, Alaska.
 - Sec. 5036. Augusta and Clarendon, Arkansas.
 - Sec. 5037. Des Arc levee protection, Arkansas.
 - Sec. 5038. Loomis Landing, Arkansas.
 - Sec. 5039. California.
 - Sec. 5040. Calaveras River and Littlejohn Creek and tributaries, Stockton, California.
 - Sec. 5041. Cambria, California.
 - Sec. 5042. Contra Costa Canal, Oakley and Knightsen, California; Mallard Slough, Pittsburg, California.
 - Sec. 5043. Dana Point Harbor, California.
 - Sec. 5044. East San Joaquin County, California.
 - Sec. 5045. Eastern Santa Clara basin, California.
 - Sec. 5046. LA-3 dredged material ocean disposal site designation,

- California.
- Sec. 5047. Lancaster, California.
 - Sec. 5048. Los Osos, California.
 - Sec. 5049. Pine Flat Dam fish and wildlife habitat, California.
 - Sec. 5050. Raymond Basin, Six Basins, Chino Basin, and San Gabriel Basin, California.
 - Sec. 5051. San Francisco, California.
 - Sec. 5052. San Francisco, California, waterfront area.
 - Sec. 5053. San Pablo Bay, California, watershed and Suisun Marsh ecosystem restoration.
 - Sec. 5054. St. Helena, California.
 - Sec. 5055. Upper Calaveras River, Stockton, California.
 - Sec. 5056. Rio Grande environmental management program, Colorado, New Mexico, and Texas.
 - Sec. 5057. Charles Hervey Townshend Breakwater, New Haven Harbor, Connecticut.
 - Sec. 5058. Stamford, Connecticut.
 - Sec. 5059. Delmarva conservation corridor, Delaware, Maryland, and Virginia.
 - Sec. 5060. Anacostia River, District of Columbia and Maryland.
 - Sec. 5061. East Central and Northeast Florida.
 - Sec. 5062. Florida Keys water quality improvements.
 - Sec. 5063. Lake Worth, Florida.
 - Sec. 5064. Big Creek, Georgia, watershed management and restoration program.
 - Sec. 5065. Metropolitan North Georgia Water Planning District.
 - Sec. 5066. Savannah, Georgia.
 - Sec. 5067. Idaho, Montana, rural Nevada, New Mexico, rural Utah, and Wyoming.
 - Sec. 5068. Riley Creek Recreation Area, Idaho.
 - Sec. 5069. Floodplain mapping, Little Calumet River, Chicago, Illinois.
 - Sec. 5070. Reconstruction of Illinois and Missouri flood protection projects.
 - Sec. 5071. Illinois River basin restoration.
 - Sec. 5072. Promontory Point third-party review, Chicago shoreline, Chicago, Illinois.
 - Sec. 5073. Kaskaskia River basin, Illinois, restoration.
 - Sec. 5074. Southwest Illinois.
 - Sec. 5075. Calumet region, Indiana.
 - Sec. 5076. Floodplain mapping, Missouri River, Iowa.
 - Sec. 5077. Paducah, Kentucky.
 - Sec. 5078. Southern and eastern Kentucky.
 - Sec. 5079. Winchester, Kentucky.
 - Sec. 5080. Baton Rouge, Louisiana.
 - Sec. 5081. Calcasieu Ship Channel, Louisiana.
 - Sec. 5082. East Atchafalaya basin and Amite River basin region, Louisiana.
 - Sec. 5083. Inner Harbor Navigation Canal Lock project, Louisiana.
 - Sec. 5084. Lake Pontchartrain, Louisiana.
 - Sec. 5085. Southeast Louisiana region, Louisiana.
 - Sec. 5086. West Baton Rouge Parish, Louisiana.
 - Sec. 5087. Charlestown, Maryland.
 - Sec. 5088. St. Mary's River, Maryland.
 - Sec. 5089. Massachusetts dredged material disposal sites.
 - Sec. 5090. Ontonagon Harbor, Michigan.
 - Sec. 5091. Crookston, Minnesota.

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- Sec. 5092. Garrison and Kathio Township, Minnesota.

- Sec. 5093. Itasca County, Minnesota.
- Sec. 5094. Minneapolis, Minnesota.
- Sec. 5095. Northeastern Minnesota.
- Sec. 5096. Wild Rice River, Minnesota.
- Sec. 5097. Mississippi.
- Sec. 5098. Harrison, Hancock, and Jackson Counties, Mississippi.
- Sec. 5099. Mississippi River, Missouri and Illinois.
- Sec. 5100. St. Louis, Missouri.
- Sec. 5101. St. Louis Regional Greenways, St. Louis, Missouri.
- Sec. 5102. Missoula, Montana.
- Sec. 5103. St. Mary project, Glacier County, Montana.
- Sec. 5104. Lower Platte River watershed restoration, Nebraska.
- Sec. 5105. Hackensack Meadowlands area, New Jersey.
- Sec. 5106. Atlantic Coast of New York.
- Sec. 5107. College Point, New York City, New York.
- Sec. 5108. Flushing Bay and Creek, New York City, New York.
- Sec. 5109. Hudson River, New York.
- Sec. 5110. Mount Morris Dam, New York.
- Sec. 5111. North Hempstead and Glen Cove North Shore watershed restoration, New York.
- Sec. 5112. Rochester, New York.

SEC. 5112. ROCHESTER, NEW YORK.

(a) In General.--The Secretary may participate in the ecosystem restoration, navigation, flood damage reduction, and recreation components of the Port of Rochester waterfront revitalization project, Rochester, New York.

(b) Authorization of Appropriations.--There is authorized to be appropriated \$10,000,000 to carry out this section.

SEC. 5113. NORTH CAROLINA.

(a) Establishment of Program.--The Secretary shall establish a program to provide environmental assistance to non-Federal interests in the State of North Carolina.

(b) Form of Assistance.--Assistance provided under this section may be in the form of design and construction assistance for environmental infrastructure and resource protection and development projects in North Carolina, including projects for--

- (1) wastewater treatment and related facilities;
- (2) combined sewer overflow, water supply, storage, treatment, and related facilities;
- (3) drinking water infrastructure including treatment and related facilities;
- (4) environmental restoration;
- (5) stormwater infrastructure; and
- (6) surface water resource protection and development.

(c) Ownership Requirement.--The Secretary may provide assistance for a project under this section only if the project is publicly owned.

(d) Partnership Agreements.--

(1) In general.--Before providing assistance under this section, the Secretary shall enter into a partnership agreement with a non-Federal interest to provide for design and construction of the project to be carried out with the assistance.

(2) Requirements.--Each partnership agreement for a project entered into under this subsection shall provide for the following:

(A) Plan.--Development by the Secretary, in consultation with appropriate Federal and State officials, of a facilities development plan or resource protection plan, including appropriate plans and specifications.

(B) Legal and institutional structures.--Establishment of such legal and institutional structures as are necessary to ensure the effective long-term operation of the project by the non-Federal interest.

(3) Cost sharing.--

(A) In general.--The Federal share of the cost of a project under this section--

(i) shall be 75 percent; and

[[Page 121 STAT. 1238]]

(ii) may be provided in the form of grants or reimbursements of project costs.

(B) Credit for work.--The Secretary shall credit, in accordance with section 221 of the Flood Control Act of 1970 (42 U.S.C. 1962d-5b), toward the non-Federal share of the cost of the project, in an amount not to exceed 6 percent of the total construction costs of the project,

Page:United States Statutes at Large Volume 121.djvu/1258

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This page needs to be proofread.

[121 STAT. 1237] PUBLIC [121 STAT. 1237]
LAW 110-000—MMMM. DD, 2007

PUBLIC LAW 110-114—NOV. 8, 2007

121 STAT. 1237

SEC. 5111. NORTH HEMPSTEAD AND GLEN COVE NORTH SHORE WATERSHED RESTORATION, NEW YORK.

(a) IN GENERAL.—The Secretary may participate in the ecosystem restoration, navigation, flood damage reduction, and recreation components of the North Hempstead and Glen Cove North Shore watershed restoration, New York. (b) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated \$10,000,000 to carry out this section. SEC. 5112. ROCHESTER, NEW YORK.

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(a) ESTABLISHMENT OF PROGRAM.—The Secretary shall establish a program to provide environmental assistance to non-Federal interests in the State of North Carolina. (b) FORM OF ASSISTANCE.—Assistance provided under this section may be in the form of design and construction assistance for environmental infrastructure and resource protection and

PUBLIC LAW 110-114—NOV. 8, 2007

121 STAT. 1237

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SEC. 5113. NORTH CAROLINA.

(a) ESTABLISHMENT OF PROGRAM.—The Secretary shall establish a program to provide environmental assistance to non-Federal interests in the State of North Carolina.

(b) FORM OF ASSISTANCE.—Assistance provided under this section may be in the form of design and construction assistance for environmental infrastructure and resource protection and development projects in North Carolina, including projects for—
(1) wastewater treatment and related facilities;

(2) combined sewer overflow, water supply, storage, treatment, and related facilities;

(3) drinking water infrastructure including treatment and related facilities;

(4) non-point-source restoration;

(5) stormwater infrastructure; and

(6) surface water resource protection and development.

(c) PARTNERSHIP AGREEMENT.—The Secretary may provide assistance for a project under this section only if the project is publicly owned.

(d) PARTNERSHIP AGREEMENTS.—

(1) IN GENERAL.—Before providing assistance under this section, the Secretary shall enter into a partnership agreement with a non-Federal interest to provide for design and construction of the project to be carried out with the assistance.

(2) REQUIREMENTS.—Each partnership agreement for a project entered into under this subsection shall provide for the following:

(A) PLAN.—Development by the Secretary, in consultation with appropriate Federal and State officials, of a facility development plan or resource protection plan, including appropriate plans and specifications.

(B) LEGAL AND INSTITUTIONAL STRUCTURE.—Establishment of such legal and institutional structures as are necessary to ensure the effective long-term operation of the project by the non-Federal interest.

(3) COST SHARING.—

(A) IN GENERAL.—The Federal share of the cost of a project under this section—

(i) shall be 75 percent, and

0. USACOE Great Lakes Programs



Great Lakes Fishery & Ecosystem Restoration (GLFER)

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Action: Great Lakes Fishery and Ecosystem Restoration, or GLFER, is a program of the U.S. Army Corps of Engineers (USACE) for implementing on-the-ground projects for restoration of aquatic habitat in the Great Lakes watershed. Ongoing and planned projects are restoring rivers and lakes that provide places for Americans to experience the great outdoors. GLFER is also helping states and local communities eliminate beneficial use impairments in order to delist Areas of Concern (AOCs).

Authority: Authorized under Section 506 of the Water Resources Development Act of 2000, as amended, GLFER is a full-service program to plan, design, and construct projects that restore ecosystems across the large landscape of the Great Lakes watershed. A wide range of projects are executed under this program, including restoration of wetlands and aquatic habitat on public lands, parks, and preserves, dam removal to re-establish free flowing rivers, fish passages over existing structures, improving spawning and nursery habitat, and restoration of coastal habitat along the Great Lakes shorelines. A partial listing of active GLFER projects is provided on the attached table and other projects are being proposed by non-federal partners on an ongoing basis.

Partnerships: The GLFER program is implemented in partnership with the Great Lakes Fishery Commission, who coordinates the review of project proposals by state, tribal, and federal partners. Individual projects require a non-Federal partner(s) to provide 35% of project costs (including all lands, easements, rights-of-way, relocations) and to operate and maintain the completed projects. State, tribal, and local agencies, as well as non-profits and private interests are eligible to sponsor GLFER projects.

Funding: The USACE' base funding for GLFER is through the annual Energy & Water Appropriations. Recent funding from this source includes \$2.5 million in FY10, \$0 in FY11, and \$2.0 million in FY12. Over \$14 million of funding has been provided for GLFER projects through the Great Lakes Restoration Initiative. Optimal funding for GLFER projects would be \$10 million in FY 2013 and \$25 million in FY 2014.

Status: Eight GLFER restoration projects are under construction or completed. Another three restoration projects are scheduled for construction in FY 2013.

Points of Contact: Contact the following USACE POCs for GLFER projects in these states:

New York, PA and Ohio

Mike Greer

Buffalo District

716-879-4229

michael.i.greer@usace.army.mil

Michigan, MN and WI

Carl Platz

Detroit District

616-402-8110 x25521

carl.a.platz@usace.army.mil

Illinois and Indiana

Gene Fleming

Chicago District

312-846-5585

eugene.j.fleming@usace.army.mil

For more information:

www.glfcr.int/glfer/about.htm

Great Lakes Fishery & Ecosystem Restoration (GLFER)
Selected¹ Restoration Projects Under Planning, Design and Construction

Project Location	State	Construction Status	Project Benefits
63 rd Street Dune and Beach, Chicago	IL	Completed	Restore 21 acres of coastal, dune, beach, and fish habitat in urban park along Lake Michigan shoreline
Red Mill Pond, LaPorte County	IN	Completed	Protect and restore 160 acres of wetlands and stream habitat in association with dam removal
Chautauqua Creek, Chautauqua County	NY	Completed	Remove two dams to restore fishery passage on Lake Erie tributary
Burnham Prairie, Burnham	IL	Under construction	Restore 93 acres of marsh, sedge meadow, savanna, and wet prairie habitat in an urban area
Orland Perimeter, Cook County	IL	Under construction	Restore 275 acres of aquatic habitat and oak savannah habitat in urban forest preserve
Calumet/Ivanhoe, Lake County	IN	Under construction	Restore over 194 acres of rare wet sand prairie savanna and wetlands in an Area of Concern
Little Calumet Riparian, Porter County	IN	Under construction	Restore 43 acres of floodplain forest in an urban corridor in northwest Indiana
Northerly Island, Chicago	IL	Under construction	Restore 40 acres of savanna, wet prairie, marsh and lake habitat along the Lake Michigan shoreline
Rosewood Park, Highland Park	IL	2013	Restore beach, dune, and ravine habitat along Lake Michigan shoreline
Frankenmuth Dam, Cass River	MI	2013	Restore fishery access to 73 miles of river and spawning habitat in Saginaw Bay tributary
Lake County Ravine 8, Lake County	IL	2013	Restore and protect rare ravine and near-shore habitat along Lake Michigan shoreline
Menominee River and Park Dams	WI-MI	2014	Restore passage around two dams for endangered species (sturgeon) in Area of Concern
Lye Creek, Hancock County	OH	2014	Restore natural stream function and habitat and reduce loadings of nutrients and sediments to Maumee River
Underwood Creek, Milwaukee	WI	2014	Restore river habitat and function in one mile of concrete-lined channel adjacent to Area of Concern
Elkhart River and Christiana Creek	IN	2014	Restore fishery access to 30 miles of river habitat by removal of two dams
Muskegon River Sea Lamprey Trap	MI	2014	Construct trap to control sea lamprey populations on this River which is tributary to Area of Concern
Powderhorn Lake & Prairie, Chicago	IL	2014	Restore 192 acres of rare ridge and swale habitat in an urban area
Ft. Sheridan Coastal, Lake County	IL	2014	Restore 100 acres of coastal, beach and bluff habitat along Lake Michigan shoreline
Harpersfield Dam Sea Lamprey Barrier	OH	2014	Create barrier to prevent migration and spawning of sea lamprey in state designated wild & scenic river
Boardman River Dams, Traverse City	MI	2015	Restore fishery access to 160 miles of River habitat through removal/modification of 3 dams

¹ Twenty-five additional restoration projects (not listed) are in planning.



Great Lakes Remedial Action Plans

U.S. ARMY CORPS OF ENGINEERS

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Issue: There are thirty Areas of Concern (AOCs) in the U.S. portion of the Great Lakes where a legacy of pollution has impaired the beneficial use of water resources. Cleaning up these AOCs is one of the highest priorities in the Administration's Great Lakes Restoration Initiative (GLRI). State and local governments are leading efforts to develop and implement Remedial Action Plans (RAPs) which identify actions required to address the remaining sources of pollution, contaminated sediments, and degraded fish and wildlife habitat.

Authority: Under the authority of Section 401(a) of the Water Resources Development Act of 1990, as amended, the U.S. Army Corps of Engineers (USACE) is providing technical support to states and local organizations in the development and implementation of RAPs at Great Lakes AOCs. This cost-shared support (35% non-federal match as cash or in-kind services) has been used to plan and design projects for sediment cleanup, source control, and habitat restoration. Many of the restoration plans and designs developed under this program have been implemented under other federal or non-federal funding programs, including the Great Lakes Legacy Act. To date, GLRAP technical support has been provided to 23 AOCs. A partial list of GLRAP support provided and additional support that has been requested is provided on the attached table.

Funding: The USACE' base funding for the GLRAP program is through the annual Energy & Water Appropriations. Recent funding from this source included \$3.4 million in FY 2010, \$0.4 million in FY 2011, and none in FY 2012. In addition, about \$1 million of funding has been provided for GLRAP projects through the Great Lakes Restoration Initiative. The optimal funding level to continue this critical support to AOC restoration and delisting is \$3.0 million in FY 2013 and \$3.5 million in FY 2014.

Status: USACE Districts are currently providing support to the RAPs at the following AOCs: St. Louis River, MN/WI; Niagara River, NY; Clinton River, MI; Muskegon Lake, MI; Saginaw River/Bay, MI; Maumee River, OH, and Milwaukee Estuary, WI.

Points of Contact: Contact the following USACE POCs for RAP support at Areas of Concern in these states:

New York, PA and Ohio

Bryan Hinterberger

Buffalo District

716-879-4409

bryan.a.hinterberger@usace.army.mil

Michigan, MN and WI

Martin Kuhn

Detroit District

313-226-2283

martin.t.kuhn@usace.army.mil

Illinois and Indiana

Kirston Buczak

Chicago District

312-846-5552

kirston.a.buczak@usace.army.mil

More Information on this program is available at: www.glc.org/corpsrap/

Partial Summary of Great Lakes RAP Support Provided and Additional Support Requested

Area of Concern	Previous RAP Support Provided	Additional RAP Support Requested
Waukegan Harbor, IL	Sediment cleanup planning and design	Monitoring recovery of BUIs
Grand Calumet River, IN	Sediment cleanup planning and design, TMDL modeling	Habitat restoration planning and design
Clinton River, MI	Mapping and planning for stream restoration (ongoing)	Stream restoration design
Deer Lake /Carp River, MI		
Detroit River, MI	Design of sediment cleanup (implemented by Legacy Act)	Habitat restoration planning and design
Kalamazoo River, MI		
Manistique River, MI	Sediment monitoring	
Muskegon Lake, MI	Groundwater remediation pilot study (ongoing)	Design of bioremediation plant
River Raisin, MI	Stream restoration planning	Sediment remediation planning and design
Rouge River, MI	Habitat restoration planning and design	
Saginaw River/Bay, MI	Public outreach related to BUI delisting	
St. Clair River, MI	Water and sediment quality evaluations	Sediment evaluation/habitat restoration plan and design
St. Mary's River, MI		Habitat restoration planning and design
Torch Lake, MI		
White Lake, MI	Sediment cleanup design (implemented by Legacy Act)	Habitat restoration planning and design
St. Louis River, MN/WI	Sediment cleanup planning and design (ongoing)	Zephyr site remediation pilot study
Buffalo River, NY	Sediment cleanup and habitat restoration planning	Habitat restoration planning and design
Eighteen Mile Creek, NY	Trophic trace food web model	
Niagara River, NY	Habitat restoration planning and design (ongoing)	Habitat restoration design
Rochester Embayment, NY	Algae removal demonstration project (ongoing)	
St. Lawrence River, NY		Algae mitigation
Ashtabula River, OH	Sediment cleanup planning (implemented by Legacy Act)	
Black River, OH	Nonpoint source pollution evaluation	Investigate nonpoint source pollution and mitigation
Cuyahoga River, OH	Habitat restoration planning	Gorge dam removal planning and design
Maumee River, OH	Habitat restoration planning and design (ongoing)	Habitat restoration design
Presque Isle Bay, PA		
Fox River/Green Bay, WI		Habitat restoration planning
Menominee River, MI/WI		Habitat restoration planning/sediment quality evaluation
Milwaukee Estuary, WI	Sediment cleanup design (implemented by Legacy Act)	Habitat restoration planning and design
Sheboygan River, WI	Sediment cleanup design (implemented by GLRI)	

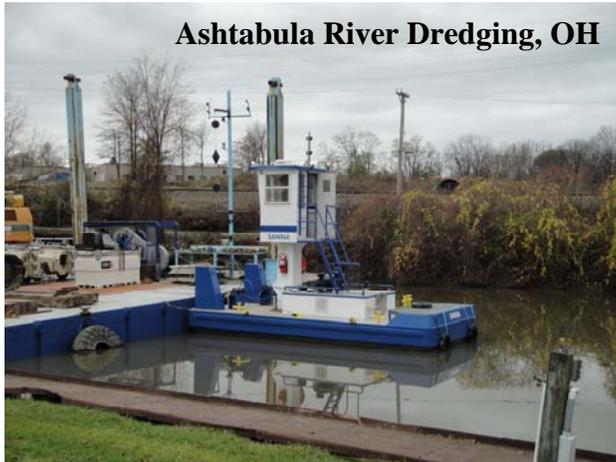


Great Lakes Restoration Initiative (GLRI)

U.S. ARMY CORPS OF ENGINEERS

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Overview: The U.S. Army Corps of Engineers (USACE) is one of 16 Federal agencies that are supporting the Great Lakes Restoration Initiative (GLRI). Ten restoration projects have been completed or are under construction with funding from this Administration's initiative for the restoration of the Great Lakes ecosystem. This fact sheet will briefly describe the restoration projects



Ashtabula River Dredging, OH

that the USACE is building in collaboration with states and local partners and those planned for construction with future GLRI funding. Projects are presented under the Focus Areas identified in the GLRI Action Plan.

Toxic Substance and Areas of Concern:

The USACE has worked closely with the EPA to remove contaminated sediments from Areas of Concern (AOCs) through a combination of navigation dredging and EPA's Legacy Act authority. The USACE has already removed over 800,000 cubic yards of contaminated sediments from the River

Raisin, Buffalo River, and Ashtabula River (shown above) AOCs with navigation and GLRI funding. The USACE is also preparing to remove an additional 100,000 cubic yards of contaminated sediments at the Waukegan Harbor AOC.

The USACE is also helping state and local agencies plan and design restoration projects at Great Lakes Areas under the Corps' Remedial Action Plan support program with a combination of GLRI and base funding. Technical assistance is currently being provided to eight AOCs.

Habitat and Wildlife Protection and Restoration

The USACE has completed or started construction of six projects with GLRI funds that are restoring over 560 acres of habitat and 8,000 feet of shoreline. These projects are constructed under the Corps' Great Lakes Fishery & Ecosystem Restoration (GLFER) authority. Several of these projects are restoring aquatic habitat in or near urban areas, like the project on the Lake Michigan shoreline at 63rd Street in Chicago (shown on right).

The USACE is scheduled to start construction on three additional habitat restoration projects in 2013 with GLRI funding, including a fishery passage around a dam on the Grand River in Michigan. A dozen more habitat restoration projects will be ready for construction in 2014, if funding is available.



63rd Street Beach, Chicago

Invasive Species: The first project constructed with GLRI funding was a 13-mile long physical barrier (right) in between the Chicago Sanitary and Ship Canal and the DesPlaines River in Illinois to prevent Asian carp and other invasive species from bypassing the electric barriers during flooding conditions.



In 2013, the USACE will start construction of the first of several projects in the battle against another aquatic invader, the sea lamprey. A barrier to prevent the sea lamprey from migrating upstream and spawning will be constructed on the Manistique River in Michigan. Ten other sea lamprey control projects are being planned and designed.

In 2012, the USACE started construction of a project in Buffalo, NY to demonstrate and compare different approaches for eradicating a highly invasive aquatic plant, called Phragmites.



Green Bay/Cat Island, WI

Nearshore Health and Nonpoint Source Pollution: The largest GLRI-funded project the USACE is constructing is at the Fox River/Green Bay AOC in Wisconsin. The Cat Island project (left) will re-create a series of barrier islands that restore and protect over 1,200 acres of coastal wetlands and provide a facility for disposal of 2 million cubic yards of contaminated sediments. Additional projects for restoring nearshore and coastal ecosystems are being readied for construction in 2014-15.

GLRI is supplementing the USACE base funding for the Great Lakes Tributary Model program which is developing watershed models and other tools to help state and local agencies compare the effectiveness of options for soil conservation and nonpoint source pollution prevention in Great Lakes tributaries. These tools are also being used to measure the progress being made by GLRI funding.

Accountability, Education, Monitoring, Evaluation, Communication and Partnerships: The USACE is working in collaboration with the International St. Lawrence River Board and Lake Ontario LaMP to develop monitoring systems and models to support real-time water management decisions that can restore and enhance wetlands in Lake Ontario.

Summary: The USACE is constructing 18 projects for restoring the Great Lakes with the first three years of GLRI funding. These funds were also used to plan and design dozens of other restoration projects that will be ready for construction in 2014-2015. More than 70 percent of GLRI funds received by the USACE are going to contracts with private companies that create jobs.

Point of Contact: Jan Miller, USACE Great Lakes & Ohio River Division, 312-353-6354, jan.a.miller@usace.army.mil



Great Lakes Tributary Model

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Issue: Soil erosion and nonpoint pollution are among the priority issues facing the Great Lakes and a focus area of the Administration's Great Lakes Restoration Initiative. Loadings of eroded soils and diffuse pollution have adverse environmental and economic impacts. As a major source of nutrients, it is increasing algae blooms and dead zones in the Lakes. As the major source of sediments, it is reducing water depths in harbors and shipping channels, causing groundings and unsafe conditions, and increasing the need for dredging and the costs to navigation users.

Authority: The Great Lakes Tributary Model (GLTM) program was established through Section 516(e) of the Water Resources Development Act of 1996. This authority enables the U.S. Army Corps of Engineers (USACE) to develop sediment transport models to assist state and local agencies with the planning and implementation of measures for soil conservation and nonpoint source pollution prevention. Models can be developed at all tributaries to the Great Lakes that discharge to federal navigation channels or Areas of Concern (AOCs). The ultimate goal of this program is to reduce the loading of sediments and pollutants to tributaries in order to enhance Great Lakes water quality, delist Great Lakes AOCs, and reduce the need for navigation dredging.

Funding: The USACE' base funding for the GLTM program is through the annual Energy & Water Appropriations. Recent funding from this source included \$1.08 million in FY 2012. The President's Budget request for FY 2013 includes \$1.08 million for this program. The optimal funding for this program would be \$1.5 million in FY 2013 and FY 2014.

Coordination: This program is being implemented in close coordination with the Great Lakes states through cooperation with the Great Lakes Commission. Tributary models are developed in partnership with representatives of agencies and organizations from the watershed, including Soil and Water Conservation Districts, Remedial Action Plans committees, municipal and regional planning agencies, navigation interests, state and federal resource agencies. These partnerships guide the scope and focus for the model to meet individual watershed needs.

Accomplishments: Models have already been completed at more than 30 tributaries and are being used by local, state and federal agencies for watershed and ecosystem planning, forestry management, navigation maintenance planning, and water quality compliance evaluations. State and county agencies are also using models to identify the most effective locations for buffer strips or wetland restoration projects and assess impacts of urban sprawl on sedimentation. A partial list of ongoing models with a few examples of completed models is provided on the attached table.

Points of Contact: Contact the following USACE POCs for models at tributaries in these states:

New York, PA and Ohio

Brent Laspada
Buffalo District
716-879-4409
brent.r.laspada@usace.army.mil

Michigan, MN and WI

Martin Kuhn
Detroit District
313-226-2283
martin.t.kuhn@usace.army.mil

Illinois and Indiana

David Bucaro
Chicago District
312-846-5552
david.f.bucaro@usace.army.mil

For More Information: Information on tributary models and reports are available online at:
www.glc.org/tributary/

Partial List of Projects under the Great Lakes Tributary Model Program

State	Tributary	Status	Uses of Model
Illinois	Waukegan River	Completed	Reduce bank erosion and plan options for restoration of urban river
	Calumet River	Under development	Evaluate options for reducing urban nonpoint loadings
Indiana	Burns Ditch/Trail Creek	Completed	Land-use planning and conservation to reduce nonpoint pollution
Michigan	Clinton River	Completed	Urban stormwater management and bank erosion options in AOC
	Ontonagon River	Completed	Sediment budget to evaluate impacts of forestry BMPs
	River Raisin	Under development	Intensive training for local stakeholders on use of web-based tools
	Jordan River	Under development	Sediment budget to evaluate impacts of agricultural BMPs/water withdrawals
Minnesota	Knife River	Completed	Guide reforestation efforts to reduce hydrologic response
	Nemadji River	Completed	Compare impacts of forestry practices on bank erosion
	Knowlton Creek	Under development	Evaluate sources of sediments to AOC
New York	Buffalo River	Completed	Planning pollution prevention and sediment cleanup options in AOC
	Cattaraugus Creek	Completed	Reduce impacts of urban development on erosion/nonpoint pollution
	Canaseraga Creek	Completed	Evaluate sources of sediments and effectiveness of BMPs
	Grasse River	Under development	Evaluate impacts of agricultural BMPs
Ohio	Auglaize River	Completed	Prioritizing sites for buffer strips and other conservation measures
	Blanchard River	Completed	Prioritize agricultural BMPs and wetlands restoration options
	Tiffin River	Under development	Evaluate agricultural BMPs
	Maumee River	Under development	Estimate sedimentation rates in navigation channel under various scenarios
Pennsylvania	Mill and Cascade Creeks	Completed	Reducing nonpoint loadings to AOC
Wisconsin	Fox River	Under development	Evaluate effectiveness of agricultural BMPs in AOC
	Manitowoc River	Completed	Compare and prioritize agricultural BMPs
	Upper East River	Under development	Intensive training for local stakeholders on use of web-based tools

P. USACOE Planning Guidance Notebook ER1105-2-100

CECW-P Engineer Regulation 1105-2-100	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1105-2-100 22 April 2000
	Planning PLANNING GUIDANCE NOTEBOOK	
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CECW-P

Regulation
No. 1105-2-100

22 April 2000

Planning
PLANNING GUIDANCE NOTEBOOK

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CHAPTER 1

Introduction

1-1. Background. The U.S. Army Corps of Engineers is authorized to carry out Civil Works water resources projects for navigation, flood damage reduction and ecosystem restoration, as well as for storm damage prevention, hydroelectric power, recreation, and water supply. Planning for Federal water resources projects constructed by the Corps of Engineers, along with those of the Bureau of Reclamation, Natural Resource Conservation Service, and the Tennessee Valley Authority, is based on the Principles and Guidelines (P&G) adopted by the Water Resources Council. The P&G are comprised of two parts: The Economic and Environmental *Principles* for Water and Related Land Resources Implementation Studies and The Economic and Environmental *Guidelines* for Water and Related Land Resources Implementation Studies. The first part, commonly referred to as the principles, is reproduced in Figure 1-1. The second part, commonly referred to as the guidelines, expands on the concepts introduced in the principles and provides additional information and requirements to conduct water resources planning studies. Together both parts provide the framework for Corps of Engineers water resources planning studies. Within this framework, the Corps seeks to balance economic development and environmental needs as it addresses water resources problems. The planning process shall address the Nation's water resources needs in a systems context and explore a full range of alternatives in developing solutions. Innovative solutions and the application of the full range of the Corps programs and authorities are integral to the planning process.

1-2. Purpose. This regulation provides the overall direction by which Corps of Engineers Civil Works projects are formulated, evaluated and selected for implementation. It contains a description of the Corps of Engineers planning process, Corps of Engineers missions and programs, specific policies applicable to each mission and program, and analytical requirements. Its fundamental purpose is to describe the planning process in a straightforward, plain-language manner. While that is not always possible in a technical policy document, every effort will be made to make this process understandable not only to planners but to the entire project delivery team, project partners, and the general public. Just as the planning process must reflect reason and common sense; this regulation also shall reflect that same approach.

1-3. Applicability. This engineer regulation applies to all HQUSACE elements, and all USACE commands having Civil Works responsibilities.

1-4. Distribution Statement. Approved for public release, distribution is unlimited.

Economic and Environmental Principles for Water and Related Land Resources Implementation Studies

These Principles are established pursuant to the Water Resources Planning Act of 1965 (Pub. L. 89-80), as amended (42 U.S.C. 1962a-2 and d-1). These Principles supersede the Principles established in connection with promulgation of principles, standards, and procedures at 18 CFR, Parts 711, 713, 714, and 716.

1. Purpose and Scope

These principles are intended to ensure proper and consistent planning by Federal agencies in the formulation and evaluation of water and related land resources implementation studies.

Implementation studies of the following agency activities are covered by these principles:

- (a) Corps of Engineers (Civil Works) water resources project plans;
- (b) Bureau of Reclamation water resources project plans;
- (c) Tennessee Valley Authority water resources project plans;
- (d) Soil Conservation Service water resources project plans.

Implementation studies are pre- or postauthorization project formulation or evaluation studies undertaken by Federal agencies.

2. Federal Objective

The Federal objective of water and related land resources project planning is to contribute to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

- (a) Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities in ways that contribute to this objective.
- (b) Contributions to national economic development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the Nation. Contributions to NED include increases in the net value of those goods and services that are marketed, and also of those that may not be

marketed.

3. State and Local Concerns

Federal water resources planning is to be responsive to State and local concerns. Accordingly, State and local participation is to be encouraged in all aspects of water resources planning. Federal agencies are to contact Governors or designated State agencies for each affected State before initiating Studies, and to provide appropriate opportunities for State participation. It is recognized, however, that water projects which are local, regional, statewide, or even interstate in scope do not necessarily require a major role for the Federal Government; non-Federal, voluntary arrangements between affected jurisdictions may often be adequate. States and localities are free to initiate planning and implementation of water projects.

4. International Concerns

Federal water resources planning is to take into account international implications, including treaty obligations. Timely consultations with the relevant foreign government should be undertaken when a Federal water project is likely to have a significant impact on any land or water resources within its territorial boundaries.

5. Alternative Plans

Various alternative plans are to be formulated in a systematic manner to ensure that all reasonable alternatives are evaluated.

- (a) A plan that reasonably maximizes net national economic development benefits, consistent with the Federal objective, is to be formulated. This plan is to be identified as the NED plan.
- (b) Other plans which reduce net NED benefits in order to further address other Federal, State, local, and international concerns not fully addressed by the NED plan should also be formulated.
- (c) Plans may be formulated which require changes in existing statutes, administrative regulations, and established common law; such required changes are to be identified.
- (d) Each alternative plan is to be formulated in consideration of four criteria: completeness, effectiveness, efficiency, and acceptability. Appropriate mitigation of adverse effects is to be an integral part of each alternative plan.

(e) Existing water and related land resources plans, such as State water resources plans, are to be considered as alternative plans if within the scope of the planning effort.

6. Plan Selection

A plan recommending Federal action is to be the alternative plan with the greatest net economic benefit consistent with protecting the Nation's environment (the NED plan), unless the Secretary of the department or head of an independent agency grants an exception to this rule. Exceptions may be made when there are overriding reasons for recommending another plan, based on other Federal, State, local and international concerns.

7. Accounts

Four accounts are established to facilitate evaluation and display of effects of alternative plans. The national economic development account is required. Other information that is required by law or that will have a material bearing on the decision-making process should be included in the other accounts, or in some other appropriate format used to organize information on effects.

(a) The national economic development (NED) account displays changes in the economic value of the national output of goods and services.

(b) The environmental quality (EQ) account displays non-monetary effects on significant natural and cultural resources.

(c) The regional economic development (RED) account registers changes in the distribution of regional economic activity that result from each alternative plan. Evaluations of regional effects are to be carried out using nationally consistent projections of income, employment, output and population.

(d) The other social effects (OSE) account registers plan effects from perspectives that are relevant to the planning process, but are not reflected in the other three accounts.

8. Discount Rate

Discounting is to be used to convert future monetary values to present values.

9. Period of Analysis

The period of analysis to be the same for each alternative plan.

10. Risk and Uncertainty

Planners shall identify areas of risk and uncertainty in their analysis and describe them clearly, so that decisions can be made with knowledge of the degree of reliability of the estimated benefits and costs and of the effectiveness of alternative plans.

11. Cost Allocation

For allocating total project financial costs among the purposes served by a plan, separable costs will be assigned to their respective purposes, and all joint costs will be allocated to purposes for which the plan was formulated. (Cost sharing policies for water projects will be addressed separately.)

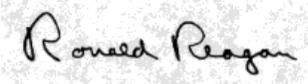
12. Planning Guidance

In order to ensure consistency of Federal agency planning necessary for purposes of budget and policy decisions and to aid States and the public in evaluation of project alternatives, the Water Resources Council (WRC), in cooperation with the Cabinet Council on Natural Resources and Environment, shall issue standards and procedures, in the form of guidelines, implementing these Principles. The head of each Federal agency subject to this order will be responsible for consistent application of the guidelines. An agency may propose agency guidelines which differ from the guidelines issued by WRC. Such agency guidelines and suggestions for improvements in the WRC guidelines are to be submitted to WRC for review and approval. The WRC will forward all agency proposed guidelines which represent changes in established policy in the Cabinet Council on Natural Resources and Environment for its consideration.

13. Effective Date

These Principles shall apply to implementation studies completed more than 120 days after issuance of the standards and procedures referenced in Section 12, and concomitant repeal of 18 CFR, Parts 711, 713, 714, and 716.

These economic and environmental Principles are hereby approved.



February 3, 1983

(Note: Text retyped for clarity. Signature scanned from original document.)

Figure 1-1 (continued)

1-5. References. Relevant published references indicated in the text of each chapter of this engineer regulation are listed in Appendix A.

1-6. Use of this Engineer Regulation. This engineer regulation provides the requirements for conducting planning studies within the U. S. Army Corps of Engineers Civil Works program. This engineer regulation will also be useful in orienting and familiarizing newly assigned personnel, military and civilian, study /project cost-sharing partners and other interested publics with essential requirements regarding the conduct of Corps of Engineers Civil Works activities.

1-7. Availability. This regulation is available at the following web site: <http://www.usace.army.mil/inet/usace-docs/er/er1105-2-100/toc.htm>. When this regulation is viewed on this site, active hyperlinks are provided to other sections and appendices within this document and to other related regulations and documents. If this document is printed, the hyperlinked references will have to be printed separately. The version of this regulation on the web site is the official and current version. Every effort will be made to notify users when this regulation is updated.

1-8. Organization. This regulation consists of a main regulation and eight appendices. Appendix B provides the requirements for public involvement, collaboration and coordination in Civil Works planning studies. Appendix C addresses the integration of environmental evaluation and compliance requirements into the planning of Civil Works projects. Appendix D covers economic and social considerations, other than procedures for estimating NED benefits, in water resources planning studies. Appendix E provides policy and planning guidance for each Civil Works mission of the Corps of Engineers. Appendix F provides general program principles, policies and planning guidance for the nine legislative authorities under the Continuing Authorities Program (CAP). Appendix G provides guidance and procedures for the management and conduct of planning studies, activities and programs. Appendix H provides review and approval procedures for decision documents.

CHAPTER 2

Planning Principles

2-1. Introduction. The Corps of Engineers planning process is grounded in the economic and environmental [Principles and Guidelines](#) (P&G) promulgated in 1983 and set forth in different parts of this document. It is also grounded in the laws which apply to the Civil Works Program and to the Corps of Engineers missions. The P&G were set forth to provide for the formulation of reasonable plans responsive to National, State and local concerns. Likewise, the plans recommended for implementation, in general, are to reasonably maximize net national benefits. The Corps of Engineers planning process shall place specific emphasis on sound judgment; planners and other team members shall be guided by common sense in applying the policies and procedures contained herein. It also shall reflect a systematic and comprehensive treatment of watershed resources, including urban watershed resources. With regard to site-specific project studies, every effort should be made to assure that both economic and environmental value is added to watershed resources.

2-2. The Federal Objective

a. The Federal Objective. [Principles and Guidelines](#) state that the Federal objective of water and related land resources planning is to contribute to national economic development (NED) consistent with protecting the Nation's environment, in accordance with national environmental statutes, applicable executive orders, and other Federal planning requirements. The P&G use of the term objective should be distinguished from study planning objectives, which are more specific in terms of expected or desired outputs. The P&G's objective (Federal objective) may be considered more of a National goal. Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities in ways that contribute to study planning objectives and, consequently, to the Federal objective. Contributions to national economic development (NED outputs) are increases in the net value of the national output of goods and services, expressed in monetary units, and are the direct net benefits that accrue in the planning area and the rest of the Nation. Contributions to NED include increases in the net value of those goods and services that are marketed and also of those that may not be marketed. Protection of the Nation's environment is achieved when damage to the environment is eliminated or avoided and important cultural and natural aspects of our nation's heritage are preserved. Various environmental statutes and executive orders assist in ensuring that water resources planning is consistent with protection. The objectives and requirements of applicable laws and executive orders are considered throughout the planning process in order to meet the Federal objective.

b. Ecosystem Restoration. Ecosystem restoration is one of the primary missions of the Corps of Engineers Civil Works program. The Corps objective in ecosystem restoration planning is to contribute to national ecosystem restoration (NER). Contributions to national ecosystem restoration (NER outputs) are increases in the net quantity and/or quality of desired ecosystem resources. Measurement of NER is based on changes in ecological resource quality

22 Apr 2000

as a function of improvement in habitat quality and/or quantity and expressed quantitatively in physical units or indexes (but not monetary units). These net changes are measured in the planning area and in the rest of the Nation. Single purpose ecosystem restoration plans shall be formulated and evaluated in terms of their net contributions to increases in ecosystem value (NER outputs), expressed in non-monetary units. Multipurpose plans that include ecosystem restoration shall contribute to both NED outputs and NER outputs. In this latter case, a plan that trades off NED and NER benefits to maximize the sum of net contributions to NED and NER is usually recommended.

2-3. The Planning Process. The Corps planning process follows the six-step process defined in the P&G. This process is a structured approach to problem solving which provides a rational framework for sound decision making. The six-step process shall be used for all planning studies conducted by the Corps of Engineers. The process is also applicable for many other types of studies and its wide use is encouraged. The six steps are:

- Step 1 - Identifying problems and opportunities
- Step 2 - Inventorying and forecasting conditions
- Step 3 - Formulating alternative plans
- Step 4 - Evaluating alternative plans
- Step 5 - Comparing alternative plans
- Step 6 - Selecting a plan

A detailed description of each step is presented in subsequent paragraphs. Corps decision making is generally based on the accomplishment and documentation of all of these steps. It is important to stress the iterative nature of this process. As more information is acquired and developed, it may be necessary to reiterate some of the previous steps. The six steps, though presented and discussed in a sequential manner for ease of understanding, usually occur iteratively and sometimes concurrently. Iterations of steps are conducted as necessary to formulate efficient, effective, complete and acceptable plans.

a. Step 1 - Identifying Problems and Opportunities.

(1) Problems and opportunities statements will be framed in terms of the Federal objective and the specific study planning objectives. Problems and opportunities should be defined in a manner that does not preclude the consideration of all potential alternatives to solve the problems and achieve the opportunities. Problems and opportunities statements will encompass current as well as future conditions and are dynamic in nature. Thus, they can be, and usually are, re-evaluated and modified in subsequent steps and iterations of the planning process.

(2) Properly defined, statements of problems and opportunities will reflect the priorities and preferences of the Federal Government, the non-Federal sponsors and other groups participating in the study process; thus active participation of all stakeholders in this process is strongly recommended. Proper identification of problems and opportunities is the foundation for

scoping the planning process. This problem identification step, and/or “scoping”, should begin as soon as practicable after the decision to initiate a planning study.

(3) The National Environmental Policy Act regulations (40 CFR Parts 1500-1508) require all Federal agencies involved in water resources planning to conduct a process termed "scoping". (See [ER 200-2-2](#) for implementation guidance.) The NEPA scoping process determines the scope of issues to be addressed and identifies the significant issues related to a proposed action. Although NEPA scoping has traditionally been associated solely with identifying the concerns associated with proposed actions, it is possible to combine the NEPA scoping process with step 1 of the planning process. The information on problems and opportunities gathered in step 1 will help to identify primary issues that need to be addressed in subsequent steps of the planning process. Opportunities for combining step 1 of the planning process and the scoping process will vary from study to study, but the opportunity should be explored to minimize duplication of efforts at various stages of the planning process.

(4) Once the problems and opportunities are properly defined, the next task is to define the study planning objectives and the constraints that will guide efforts to solve these problems and achieve these opportunities. Planning objectives are statements that describe the desired results of the planning process by solving the problems and taking advantage of the opportunities identified. The planning objectives must be directly related to the problems and opportunities identified for the study and will be used for the formulation and evaluation of plans. Objectives must be clearly defined and provide information on the effect desired (quantified, if possible), the subject of the objective (what will be changed by accomplishing the objective), the location where the expected result will occur, the timing of the effect (when would the effect occur) and the duration of the effect.

(5) Constraints are restrictions that limit the planning process. Constraints, like objectives, are unique to each planning study. Some general types of constraints that need to be considered are resource constraints and legal and policy constraints. Resource constraints are those associated with limits on knowledge, expertise, experience, ability, data, information, money and time. Legal and policy constraints are those defined by law, Corps policy and guidance. These constraints are discussed in subsequent chapters of this regulation and its appendices. Plans should be formulated to meet the study objectives and to avoid violating the constraints. Thus, a clear definition of objectives and constraints is essential to the success of the planning process.

b. Step 2 – Inventory and Forecast. The second step of the planning process is to develop an inventory and forecast of critical resources (physical, demographic, economic, social, etc.) relevant to the problems and opportunities under consideration in the planning area. This information is used to further define and characterize the problems and opportunities. A quantitative and qualitative description of these resources is made, for both current and future conditions, and is used to define existing and future without-project conditions. Existing conditions are those at the time the study is conducted. The forecast of the future without-project condition reflects the conditions expected during the period of analysis (See paragraph 2-4j for definition of period of analysis). The future without-project condition provides the basis from which alternative plans are formulated and impacts are assessed. Since impact assessment is the

basis for plan evaluation, comparison and selection, clear definition and full documentation of the without-project condition are essential. Gathering information about historic and existing conditions requires an inventory. Gathering information about potential future conditions requires forecasts, which should be made for selected years over the period of analysis to indicate how changes in economic and other conditions are likely to have an impact on problems and opportunities. Information gathering and forecasts will most likely continue throughout the planning process.

c. Step 3 - Formulation of Alternative Plans.

(1) Alternative plans shall be formulated to identify specific ways to achieve planning objectives within constraints, so as to solve the problems and realize the opportunities that were identified in step 1. An alternative plan consists of a system of structural and/or nonstructural measures, strategies, or programs formulated to meet, fully or partially, the identified study planning objectives subject to the planning constraints. A management measure is a feature or an activity that can be implemented at a specific geographic site to address one or more planning objectives. Management measures are the building blocks of alternative plans and are categorized as structural and nonstructural. Equal consideration must be given to these two categories of measures during the planning process. An alternative plan is a set of one or more management measures functioning together to address one or more objectives. A range of alternative plans shall be identified at the beginning of the planning process and screened and refined in subsequent iterations throughout the planning process. However, additional alternative plans may be identified at any time during the process. Plans should be in compliance with existing statutes, administrative regulations, and common law or include proposals for changes as appropriate. Alternative plans shall not be limited to those the Corps of Engineers could implement directly under current authorities. Plans that could be implemented under the authorities of other Federal agencies, State and local entities and non-government interest should also be considered.

(2) The first phase in the plan formulation process is the identification of management measures that could be implemented, giving equal consideration to structural and non-structural measures. The second phase is the formulation of alternative plans by combining the management measures as appropriate. Alternative plans should be significantly differentiated from each other. As a general rule projects must be formulated to reasonably maximize benefits to the national economy, to the environment or to the sum of both. Each alternative plan shall be formulated in consideration of four criteria described in the P&G: completeness, efficiency, effectiveness, and acceptability. Completeness is the extent to which the alternative plans provide and account for all necessary investments or other actions to ensure the realization of the planning objectives, including actions by other Federal and non-Federal entities. Effectiveness is the extent to which the alternative plans contribute to achieve the planning objectives. Efficiency is the extent to which an alternative plan is the most cost effective means of achieving the objectives. Acceptability is the extent to which the alternative plans are acceptable in terms of applicable laws, regulations and public policies. Appropriate mitigation of adverse effects shall be an integral component of each alternative plan.

(3) In formulating alternative plans, it is essential that planners understand and fully visualize the problems of the planning area and how their plans will address these problems. Planners must maintain focus on the larger, complete plan(s) even while carrying out specific, individual tasks. While these individual tasks are necessary, their value is subordinate to successfully creating plans that work and function as visualized by those participating in the planning process. In that regard, vision rather than accountancy shall provide the foundation for sound planning and plan formulation.

(4) Section 904 of the Water Resources Development Act of 1986 (WRDA of 1986) requires the Corps to address the following matters in the formulation and evaluation of alternative plans:

- Enhancing national economic development (including benefits to particular regions that are not transfers from other regions).
- Protecting and restoring the quality of the total environment.
- The well-being of the people of the United States.
- The prevention of loss of life.
- The preservation of cultural and historical values.

(5) Non-structural measures shall be considered as means for addressing problems and opportunities. Non-structural measures may be combined with structural measures to produce a plan or considered as an alternative to structural measures. Non-structural measures shall receive equal consideration in the planning process to structural measures. Management of demand should be considered as a non-structural alternative. Examples are inland waterway congestion fees and changes in water pricing or drought contingency plans. Such measures can delay optimal project on-line dates of structural measures and increase total project net benefits over plans not including the non-structural measures.

(6) Protection of the Nation's environment from adverse effects of each alternative plan, in missions other than ecosystem restoration, is to be provided by mitigation (as defined in 40 CFR 1508.20) of those effects. Each alternative plan shall include mitigation as determined appropriate. Mitigation to address effects on fish and wildlife and their habitat should be determined in consultation with the Federal and State fish and wildlife agencies in accordance with the Fish and Wildlife Coordination Act of 1958. Mitigation to address other adverse effects should be determined in accordance with applicable laws, regulations and Executive Orders. (See Appendix C). Mitigation measures determined to be appropriate should be planned for concurrent implementation with other major project features, where practical. Cost of mitigation measures are part of total project costs and are included in the benefit-cost analysis of alternative plans.

d. Step 4 – Evaluating Alternative Plans.

(1) The evaluation of effects is a comparison of the with-project and without-project conditions for each alternative. The evaluation will be conducted by assessing or measuring the differences between each with- and without-project condition and by appraising or weighting those differences.

(2) Evaluation consists of four general tasks. The first task is to forecast the most likely with-project condition expected under each alternative plan. Each with-project condition will describe the same critical variables included in the without-project condition developed in step 2. Criteria to evaluate the alternative plans include all significant resources, outputs and plan effects. They also include contributions to the Federal objective, the study planning objectives, compliance with environmental protection requirements, the P&G's four evaluation criteria (completeness, effectiveness, efficiency and acceptability) and other criteria deemed significant by participating stakeholders. The second task is to compare each with-project condition to the without-project condition and document the differences between the two. The third task is to characterize the beneficial and adverse effects by magnitude, location, timing and duration. The fourth task is to identify the plans that will be further considered in the planning process, based on a comparison of the adverse and beneficial effects and the evaluation criteria.

(3) Four accounts are established in the P&G to facilitate the evaluation and display of effects of alternative plans.

(a) The national economic development account displays changes in the economic value of the national output of goods and services.

(b) The environmental quality account displays non-monetary effects on ecological, cultural, and aesthetic resources including the positive and adverse effects of ecosystem restoration plans.

(c) The regional economic development account displays changes in the distribution of regional economic activity (e.g., income and employment).

(d) The other social effects account displays plan effects on social aspects such as community impacts, health and safety, displacement, energy conservation and others.

(4) Display of the national economic development and environmental quality accounts is required. Display of the regional economic development and other social effects accounts is discretionary. Evaluation of the beneficial and adverse effects of the alternatives will provide a basis to determine which plans should be considered further, dropped or reformulated. Procedures to evaluate national economic development benefits for each project purpose (i.e., navigation, flood damage reduction, recreation, etc.) are provided in Chapter 3. Additional procedures and requirements are provided in Appendix E.

(6) Steps in the procedures may be abbreviated by reducing the extent of the analysis and amount of data collected where greater accuracy or detail is clearly not justified by the cost of

the plan components being analyzed. The steps abbreviated and the reason for abbreviation shall be documented in the planning reports. Planners can pursue the use of alternative procedures when these would provide a more accurate estimate of benefits. The use of alternative procedures and the consideration of new benefit categories, including the procedures to be used to estimate them, require advance approval from HQUSACE (CECW-P).

e. Step 5 - Comparing Alternative Plans. In this step, plans (including the no action plan) are compared against each other, with emphasis on the outputs and effects that will have the most influence in the decision making process. A comparison of the outputs of the various plans must be made. Beneficial and adverse effects of each plan must be compared. These include monetary and non-monetary benefits and costs. Identification and documentation of tradeoffs will be required to support the final recommendation. The effects include those identified during the evaluation phase and any other significant effects identified in step 5. The comparison step can be defined as a reiteration of the evaluation step, with the exception that in this step each plan (including the no action plan) is compared against each other and not against the without-project condition. The output of the comparison step shall be a ranking of plans.

f. Step 6 - Selecting a Plan. A single alternative plan will be selected for recommendation from among all those that have been considered. The recommended plan must be shown to be preferable to taking no action (if no action is not recommended) or implementing any of the other alternatives considered during the planning process. The culmination of the planning process is the selection of the recommended plan or the decision to take no action. The criteria for selecting the recommended plan differ, depending on the type of plan and whether project outputs are NED, NER, or a combination of both.

(1) The National Economic Development (NED) Plan. For all project purposes except ecosystem restoration, the alternative plan that reasonably maximizes net economic benefits consistent with protecting the Nation's environment, the NED plan, shall be selected. The Assistant Secretary of the Army for Civil Works (ASA (CW)) may grant an exception when there are overriding reasons for selecting another plan based upon other Federal, State, local and international concerns. (See paragraph 2-3g(4))

(2) The National Ecosystem Restoration (NER) Plan. For ecosystem restoration projects, a plan that reasonably maximizes ecosystem restoration benefits compared to costs, consistent with the Federal objective, shall be selected. The selected plan must be shown to be cost-effective and justified to achieve the desired level of output. This plan shall be identified as the National Ecosystem Restoration (NER) Plan.

(3) The Combined NED/NER Plan. Projects which produce both National Economic Development (NED) benefits and National Ecosystem Restoration (NER) benefits will result in a "best" recommended plan so that no alternative plan or scale has a higher excess of NED benefits plus NER benefits over total project costs. This plan shall attempt to maximize the sum of net NED and NER benefits, and to offer the best balance between two Federal objectives. Recommendations for multipurpose projects will be based on a combination of NED benefit-cost analysis, and NER benefits analysis, including cost effectiveness and incremental cost analysis.

(4) The Locally Preferred Plan. Projects may deviate from the National Economic Development Plan and/or the National Ecosystem Restoration Plan if requested by the non-Federal sponsor and approved by ASA(CW). In some instances, a non-Federal sponsor may not be able to afford or otherwise support the NED, NER or Combined NED/NER Plan. Plans requested by the non-Federal sponsor that deviate from these plans shall be identified as the Locally Preferred Plan (LPP). When the LPP is clearly of less scope and cost and meets the Administration's policies for high-priority outputs, an exception for deviation is usually granted by ASA(CW). In making a decision to recommend a LPP smaller in scope and costs than the NED, NER or Combined NED/NER plans, the district should assist the sponsor in identifying and assessing the financial capability of other potential non-Federal interests who may be willing and able to participate in plan development and implementation. In all cases, the LPP must have greater net benefits than smaller scale plans, and enough alternatives must be analyzed during the formulation and evaluation process to insure that net benefits do not maximize at a smaller scale than the sponsor's preferred plan. Paragraphs 4-3b(2)(a) and (b) describe the documentation required to support recommendation of a LPP. Categorical exemptions specifically applicable to flood control and navigation are discussed in paragraphs 3-3b(11) and 3-2b(10). If the sponsor prefers a plan more costly than the NED plan, the NER Plan or the combined NED/NER Plan, and the increased scope of the plan is not sufficient to warrant full Federal participation, ASA(CW) may grant an exception as long as the sponsor pays the difference in cost between those plans and the locally preferred plan. The LPP, in this case, must have outputs similar in-kind, and equal to or greater than the outputs of the Federal plan. It may also have other outputs. The incremental benefits and costs of the locally preferred plan, beyond the Federal plan, must be analyzed and documented in feasibility reports (see paragraph 4-3b(2)(b)).

(5) Agency Decision Making. Decision making for the selection of a recommended plan begins at the district level and continues at the Headquarters level through subsequent reviews and approval. In the case of continuing authorities projects, the review and approval occurs at the Division level. For congressionally authorized projects, the final agency decision maker is the Secretary of the Army through the Assistant Secretary of the Army for Civil Works.

2-4. Principles of Analysis. The principles of analyses that follow are fundamental to the planning process and are to be followed in conducting planning studies.

a. System Analysis. All Corps study initiatives shall consider broad system aspects of problems and solutions. In some instances these system considerations will be addressed throughout the planning process, such as in watershed or navigation systems studies. In other instances, such as with more limited project-oriented studies, systems considerations should be included in a reasonable and cost-effective manner as part of the initial phase of the planning process.

b. With and Without-Project Analysis.

(1) The without-project condition is the most likely condition expected to exist in the future in the absence of a proposed water resources project. Proper definition and forecast of the future without-project condition are critical to the success of the planning process. The future without-project condition constitutes the benchmark against which plans are evaluated. Forecasts of future without-project conditions shall consider all other actions, plans and

programs that would be implemented in the future to address the problems and opportunities in the study area in the absence of a Corps project. Forecasts should extend from the base year (the year when the proposed project is expected to be operational) to the end of the period of analysis.

(2) The with-project condition is the most likely condition expected to exist in the future with the implementation of a particular water resources development project. Comparison of conditions with the project to conditions without the project will be performed to identify the beneficial and adverse effects of the proposed plans. These with and without-project comparisons provide the framework for the evaluation of alternative plans.

(3) Forecasts of with- and without-project conditions should be based on consideration of national and regional forecasts of socio-economic parameters (i.e., income, employment, populations, etc) and other aggregate projections such as exports, land use trends and demand for goods and services. National projections used in planning shall be based on a full employment economy. Other plans that have been adopted for the planning area and other current planning efforts with high potential for implementation or adoption shall be considered as part of the forecasted without-project condition.

(4) Expected environmental conditions, especially trends in ecosystem change, shall be considered in forecasting with- and without-project conditions. Forecasted environmental conditions can be based on a variety of different sources of information available from Federal, State and other natural resource management agencies and private conservation entities. National and State environmental and health standards and regulations shall be recognized and appropriately considered. Standards and regulations concerning water quality, air quality, public health, wetlands protection, and floodplain management should be given specific consideration in forecasting the with- and without-project conditions.

c. Benefit-Cost Analysis and Cost Effectiveness Analysis.

(1) Benefit-Cost analysis is a conceptual framework useful in evaluating government (and private) investments. In principle it is uncomplicated: all pertinent costs and effects (beneficial and detrimental) of an action are systematically tallied. The results can then be tested against investment criteria, such as benefits greater than costs and maximum net benefits which is the criterion used for identification of the NED Plan in accordance with the Federal objective.

(2) All of a project's monetized benefits, which occur through time, are accumulated, and using a process called discounting are expressed as a single total benefit figure. Costs also occur through time, and the same accumulating and discounting process is conducted, so the costs are also expressed as a single figure. Benefit and cost time streams are directly comparable only as converted to single figures. If the benefits exceed the costs the project may be said to be worthwhile.

(3) Planners may consider plans with different sizes, locations, outputs and costs of implementation in the same study. In effect, different plans are different projects, but the benefits and costs of each may be summarized; and all projects may be compared in a relatively straightforward way by consistent application of benefit-cost principles.

(4) There are similarities between benefit-cost analysis and financial appraisals, but the two are not the same. Caution is required against too easily transferring financial appraisal practices to benefit-cost analysis. For example, all benefits and costs must be accounted: thus (1) donated land (with no financial cost) has a cost in benefit to cost analysis, (2) benefits are counted wherever they accrue (even outside the study area; third party gains would not count in a financial appraisal).

(5) When there is no monetary measure of benefits but project outcomes can be described and quantified in some dimension, cost effectiveness analysis can be used to assist on the decision making process. Cost effectiveness analysis seeks to answer the question: given an adequately described objective, what is the least-costly way of attaining the objective? The ability to identify the least costly among several alternatives having the same outcome is very useful. However, cost effectiveness analysis cannot establish that any project is worthwhile. Cost effectiveness can also aid choice among projects that differ in their outcomes, but in the absence of monetized benefit estimates cannot remove all ambiguity.

d. Net Benefits (optimization). The best project may be defined as the plan that returns the greatest excess of benefits over costs, i.e., it is not possible to improve upon a plan producing maximum net benefits (total benefits less total costs). Benefits can be monetary or nonmonetary, as in the case of ecosystem restoration projects. The process of optimizing net benefits should be reasonable and practical in seeking to maximize net benefits.

e. Incremental Analysis. Incremental analysis is a process used in plan formulation to help identify plans that deserve further consideration in an efficient manner. The analysis consists of examining increments of plans or project features to determine their incremental costs and incremental benefits. Increments of plans continue to be added and evaluated as long as the incremental benefits exceed the incremental costs. When the incremental costs exceed the incremental benefits no further increments are added. For example, fifteen levees, each of a different height, could be designed to find the one with greatest net benefits. This is trial and error. An alternate approach is to start with a levee of low height, then add height in steps or increments (say one foot). For each increment of height the added (incremental) costs and added (incremental) benefits are estimated. As long as the incremental benefits exceed the incremental costs it makes sense to add the foot of height, because the extra foot adds more to benefits than to costs. When incremental costs exceed incremental benefits, no further increments of height are added. This process is more efficient than trial and error, and is thus used in formulating and evaluating most Corps projects.

f. Trade-off Analysis. In planning for multipurpose or multiobjective projects, the Corps needs to strike a balance between financial resources and the commodities that can be produced ("purchased") by the project. Trade-off analysis is the procedure used by the Corps to identify the potential gains and losses associated with producing a larger or lesser amount of a given output or outputs. The results of trade-off analysis are used in the formulation, evaluation, comparison and selection of the recommended plan. For example, consider a trade-off common in Corps planning: river flows are set by nature and cannot be augmented. In a reservoir, therefore, each cubic foot of water sent through generators for hydropower means less retained

behind a dam for recreation. Having more recreation water and more electricity generation is not possible (for a fixed amount of water). It is possible to express the relationship between electricity gains and recreation losses over a range (maybe a wide range) of gains and losses. Assessing these types of trade-offs is common in Corps project planning. Appendix E provides additional information on trade-off analysis.

g. Risk and Uncertainty. The P&G state that planners shall characterize, to the extent possible, the different degrees of risk and uncertainty inherent in water resources planning and to describe them clearly so decisions can be based on the best available information. Risk-based analysis is defined as an approach to evaluation and decision making that explicitly, and to the extent practical, analytically incorporates considerations of risk and uncertainty. Risk-based analysis shall be used to compare plans in terms of the likelihood and variability of their physical performance, economic success and residual risks. A risk-based approach to water resources planning captures and quantifies the extent of risk and uncertainty in the various planning and design components of an investment project. The total effect of risk and uncertainty on the project's design and viability can be examined and conscious decisions made reflecting an explicit trade-off between risk and costs. Specific applications of the risk-based approach are discussed in Chapter 3 for each Civil Works mission.

h. Planning Area. The planning area is a geographic space with an identified boundary that includes the area identified in the study authorizing document and the locations of alternative plans which are often called project areas. The locations of resources that would be directly, indirectly, or cumulatively affected by alternative plans are often called the affected area.

i. Prices. The general level of prices for inputs and outputs prevailing during or immediately preceding the period of planning shall be used for the entire period of analysis. Project benefits and costs must be compared at a common point in time and both must be updated periodically. Discounting shall be used to convert future monetary values to present values. Present values, at the base year of analysis, shall be calculated using the discount rate established annually for the formulation and economic evaluation of plans for water and related land resources (published by HQUSACE as an Economic Guidance Memorandum).

j. Period of Analysis. The period of analysis shall be the same for each alternative plan. The period of analysis shall be the time required for implementation plus the lesser of: (1) the period of time over which any alternative plan would have significant beneficial or adverse effects, (2) a period not to exceed 50-years except for major multiple purpose reservoir projects, or, (3) a period not to exceed 100 years for major multiple purpose reservoir projects. Appropriate consideration should be given to environmental factors that may extend beyond the period of analysis.

k. NED costs.

(1) Project measures, whether structural or nonstructural, require the use of various resources. NED costs are used for the economic analysis of alternative projects and reflect the opportunity costs of direct or indirect resources consumed by project implementation. From an economic perspective, the real measure of cost is opportunity cost, i.e., the value of that which is foregone

when a choice of a particular plan or measure is made. In order to capture the opportunity costs of proposed plans, NED costs include three types of costs: implementation costs, other direct costs and associated costs.

(2) Implementation costs are explicit costs of implementing a project. They include the post authorization planning and design costs, construction costs, construction contingency costs, and operations, maintenance, repair, rehabilitation and replacement costs (OMRR&R). These also include costs for all fish and wildlife habitat mitigation, historic and archaeological mitigation and data recovery, lands, easements, relocations, rights-of-way, disposal/borrow areas and water and mineral rights, which are necessary to implement the project.

(3) Other direct costs are the costs of resources directly required for a project or a plan but for which no implementation outlays are made. Examples of these costs are interest during construction, value of donated land, uncompensated NED losses and other negative externalities.

(4) Associated costs are those costs necessary for production of project outputs for which no project expenditure is made. An example would be the cost of transmission lines provided by the private sector necessary for using energy provided by a hydropower improvement.

(5) Typically, opportunity costs are equal to the market prices of goods and services in competitive markets. However, market prices can be often distorted by monopoly power, price controls, taxes or subsidies. In cases where market prices do not reflect the opportunity cost of resource use, other means are used to develop NED costs. Surrogate values are often used which reflect the opportunity costs from a similar situation. For example, water rates in a community that provides subsidized pricing for disadvantaged may not represent the true value of the water. The true value may be better estimated using the price of water in a neighboring community where competitive markets exist.

l. Environmental and Social Impact Assessment. A number of Federal laws, such as the National Environmental Policy Act of 1969, the Clean Water Act of 1977, as amended and Section 122 of the 1970 River and Harbor and Flood Control Act require consideration of a wide range of effects in planning and decision making. In practice, this has been accomplished through a process commonly called impact assessment. While impact assessment covers the full range of effects, it has traditionally focused on non-monetary effects often called environmental and social impacts. These effects may be either adverse or beneficial, intended or unintended. The impact assessment process is synonymous with step 4 of the planning process (Evaluate Effects of Alternative Plans) previously described.

m. Significant Resources and Significant Effects.

(1) The consideration of significant resources and significant effects is central to plan formulation and evaluation for any type of water resources development project. In step 2 of the planning process, significant resources are identified as important to be considered during the study. In step 4, significant effects are identified for consideration in alternative comparison and selection. Significance of resources and effects will be derived from institutional, public or technical recognition. Institutional recognition of a resource or effect means its importance is

recognized and acknowledged in the laws, plans and policies of government and private groups. Technical recognition of a resource or an effect is based upon scientific or other technical criteria that establishes its significance. Public recognition means some segment of the general public considers the resource or effect to be important. Public recognition may be manifest in controversy, support or opposition expressed in any number of formal or informal ways.

(2) In ecosystem restoration planning, the concept of significance of outputs plays an especially important role because of the challenge of dealing with non-monetary outputs. The three sources of significance described in paragraph 2-4m(1) and documentation on the relative scarcity of the resources helps determine the significance of the resources to be restored. This information is used to help establish a Federal interest in the project. The significance of expected restoration outputs is used in conjunction with information from cost effectiveness and incremental cost analyses to help determine whether an alternative should be recommended. Information on effectiveness, acceptability, efficiency and completeness of ecosystem restoration plans also contributes to this determination.

n. Regulatory considerations. In the course of planning studies, consideration of Department of the Army regulatory programs (especially Section 10 of the River and Harbor Act of 1899, Section 404 of the Clean Water Act of 1972 and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972) will be incorporated into the planning process. This is performed to facilitate the permitting of activities essential to a successful project. (See Appendix C for more details on regulatory considerations.)

o. Project Implementation Timing. Alternative plans can differ in their implementation timing, that is, not all plans or features have to be in place at the beginning of the period of analysis. As project on-line dates are varied, annual benefits and costs will often vary. In general, the more the benefits vary through time and the longer the time to implementation from the base year (first year of period of analysis), the stronger this effect will be. The best schedule for implementing project features shall be considered as an element in the formulation and evaluation of alternative plans.

p. Hazardous, Toxic and Radioactive Wastes (HTRW). Consistent with the guidance in [ER 1165-2-132](#), the Corps will not participate in clean up of materials regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or by the Resource Conservation and Recovery Act (RCRA). Assessments during the feasibility phase to determine the nature and extent of such materials within the project area shall be cost shared. The cost of clean up of materials not covered by CERCLA and RCRA will be considered when determining if the proposed project is justified. While measures to improve water quality parameters may be included in projects with an ecosystem restoration component, the ecosystem restoration portion of these projects should not principally result in treating or otherwise abating pollution or other compliance responsibility.

q. Brownfields. Brownfields are abandoned or under-utilized properties that are perceived to be or, at worst, are lightly contaminated. Brownfields may be included in the preliminary planning phase of projects where they are integral to solving water resources problems related to Corps mission areas and authorities. If the assessment determines that there

are non-CERCLA types of materials or small, easily and cost effectively managed amounts of CERCLA controlled materials, then these sites may be included in project formulation and any remediation costs would be shared as project costs. If the assessment determines a CERCLA level clean-up is required, then the site will be removed from plan formulation for processing under CERCLA procedures. It is important that no unnecessary Federal liability be incurred when working within a Brownfield site.

r. Congressional Adds. The planning principles described in this chapter apply to Congressionally added studies unless specific instructions otherwise are provided through the budget process.

2-5. Partnerships and Teamwork. The success of the planning process depends to a great extent on establishing a successful partnership with the project sponsors and other stakeholders. A project sponsor for a Corps study may be a State, a political subpart of a State or group of states, a Native American (Indian) Nation, quasi-public organizations chartered under State laws (e.g., a port authority, flood control district, water management district or conservation district), an interstate agency and, for a limited number of authorities, a non-profit organization. Except for non-profit organizations, non-Federal entities must meet the requirements of Section 221 of the Flood Control Act of 1970 as amended, in order to be a sponsor for a Corps study. Project sponsors must be afforded the opportunity to help define the water resource problems and opportunities. They should help define the scope of the study and specific study tasks, cost estimates and schedules. Partnerships facilitate making decisions about the type and mix of study objectives as well as formulation, evaluation and selection of alternative plans. They contribute to project design, including environmental and aesthetic features and ensure that, to the extent possible, other factors that affect sponsoring communities are addressed during the planning process.

a. Cooperation with Other Agencies.

(1) Corps efforts should complement and be complemented by the various authorities of other Federal and State agencies, Native American (Indian) Nations and private groups. The Corps may also be requested, or request other agencies, to participate as a cooperating agency during the NEPA process (see 40 CFR 1501.6). While the Corps is the lead agency for studies specifically assigned to it, the Corps may also be a cooperating agency in water resources studies led by other Federal agencies. As a cooperating agency, the Corps can provide its special expertise in navigation, flood damage reduction, ecosystem restoration and other mission areas as part of integrated interagency and multipurpose planning to the U.S. Environmental Protection Agency, the Bureau of Reclamation, the Natural Resources Conservation Service, and other Federal Agencies. Under approved circumstances, participation as a cooperating agency may be funded through existing Corps studies and projects in the study area, or pursued as a separate item in the General Investigations program.

(2) Corps planners and planning team members should develop partnerships with Federal and State agencies, Native American (Indian) Nations and non-government organizations in the accomplishment of Corps studies and financing. Cooperative efforts may include, for example, information and data base sharing, cooperative planning efforts, as well as collaborative and shared construction, operation and maintenance, and monitoring activities. Cooperative efforts,

which effectively combine Federal investments, can achieve greater economic, social, and environmental benefits than individual agencies acting alone.

b. Public Involvement, Collaboration and Coordination.

1) The goal of public involvement, collaboration and coordination is to open and maintain channels of communication with the public in order to give full consideration of public views and information in the planning process. The objective of public involvement is to ensure that Corps projects and programs are responsive to the needs and concerns of the public. Elements critical to a good public involvement and coordination process are disseminating information about proposed activities, understanding the public's desires, needs and concerns, providing for consultation with the public before decisions are reached, and taking into account the public's views. All this must occur, however, with the awareness that the Corps can not relinquish its legislated decision making responsibility.

(2) All Corps planning studies are required to incorporate public involvement, collaboration and coordination with their Federal and non-Federal partners and the public. This should be initiated during step 1 of the planning process, Identifying Problems and Opportunities, and continue throughout the planning process. Involvement at the initial stage of the planning process not only helps to identify the problems and opportunities, but also extends an invitation to the public for continued involvement and a voice in the planning and decision making process.

(3) The team will determine, in the early phases of the planning process, the extent of public involvement required and will establish an appropriate strategy for integrating public involvement into the planning process. It is important to develop a strategy that creates relevant, quality public involvement opportunities for those who have, or may have, an interest in the study. The components of a good public involvement strategy are discussed in Appendix B. The strategy shall reflect the scope and complexity of each particular study.

(4) Major public involvement activities conducted during the planning process are announcing the initiation of the study, identifying the public, and, the scoping process. These activities are described in detail in Appendix B.

c. International Consultations. When a Federal water project is likely to have a significant impact on any land or resources situated in a foreign country or to affect treaty obligations, the Corps, through the Department of State, must enter into consultations with the government of the affected country.

d. Interdisciplinary Planning.

(1) Because planning problems are complex, using an interdisciplinary team is generally the best approach to the wide range of technical issues encountered in most studies. Planning results are usually better when they have been developed from a variety of perspectives, including the knowledge, skills and insights of professionals from many of the natural, social, engineering and environmental sciences.

(2) The disciplines should be integrated so that each member of the team communicates their various viewpoints and works together to fashion plans that truly reflect a diversity of perspectives on the problems and opportunities that confront the planning area. An effective plan formulation process requires that the interdisciplinary team be involved in the planning process from the very beginning. While the mix of disciplines required for a planning team varies from study to study, Corps teams may include the following types of experts: archaeologists, attorneys, biologists, chemists, civil engineers, ecologists, economists, geographers, geologists, hydraulic engineers, hydrologists, landscape architects, planners, real estate specialists and sociologists. This list is not intended to exclude any discipline but rather express the diversity that might be included.

2-6. A Watershed Perspective. Civil works planning should incorporate a watershed perspective, whether that planning involves a project feasibility study or a more comprehensive watershed study. Such planning should be accomplished within the context of an understanding and appreciation of the impacts of considered actions on other natural and human resources in the watershed. In carrying out planning activities, we should encourage the active participation of all interested groups and use of the full spectrum of technical disciplines in activities and decision-making. We also should take into account: the interconnectedness of water and land resources (a systems approach); the dynamic nature of the economy and the environment; and the variability of social interests over time. Specifically, civil works planning should consider the sustainability of future watershed resources, specifically taking into account environmental quality, economic development and social well-being.

2-7. Environmental Compliance. Civil Works studies and projects should be in compliance with all applicable Federal environmental statutes and regulations and with applicable State laws and regulations where the Federal government has clearly waived sovereign immunity. The National Environmental Policy Act (NEPA) requires Federal agencies, including the Corps, to comply with a process that includes the inventory and assessment of the environmental resources within the study area. NEPA also requires the evaluation and comparison of alternatives to determine the impacts to those ecological, cultural, and aesthetic resources identified and investigated. Involvement by resource agencies and the general public during the study process is also required. Corps NEPA guidance can be found in [ER 200-2-2](#). The NEPA process will be integrated with the Corps six step planning process. This should also include all measures required for compliance with other applicable environmental statutes, such as the Endangered Species Act, the Clean Air Act, the Clean Water Act, the Fish and Wildlife Coordination Act, and the Historic Preservation Act, among others. (See Appendix C for compliance requirements.) This integration is intended to reduce process overlap and duplication. The integrated process will help assure that well-defined study conditions and well-researched, thorough assessments of the environmental, social, and economic resources affected by the proposed activity are incorporated into planning decisions.

2-8. Cost Sharing.

a. General. The costs of water resources studies and projects developed by the Corps are shared between Federal and non-Federal entities as defined in laws and administrative provisions. The WRDA of 1986, established new cost sharing rules for all studies and projects

conducted by the Corps. The cost sharing provisions of the WRDA of 1986 place greater financial responsibilities on non-Federal sponsors of Corps projects. The amount of the non-Federal share varies depending upon the project purpose and the general and specific laws that apply to each project.

b. Local Sponsor Financing. The non-Federal share of a Corps study or project usually consists of some combination of the following components: in kind services, a cash contribution and real estate interests. Sponsors are also responsible for operation, maintenance, repair, replacement and rehabilitation costs as defined for each civil works mission. Sponsors may provide their cash share of project or study costs to the Corps by one of the following means: a check, a deposit in an escrow or similar account with interest accruing to the sponsor, an irrevocable letter of credit or an Electronic Funds Transfer. See [ER 1165-2-131](#) for further information.

c. Study Cost Sharing. Corps of Engineers specifically authorized planning studies are conducted in two phases: Reconnaissance Phase and Feasibility Phase. (See Appendix F for process applicable to the Continuing Authorities Program (CAP).) Cost sharing policies for each of these phases are as follows:

(1) The entire reconnaissance phase, as described in paragraph 4-3a and Appendix G, is conducted at full Federal expense, exclusive of any costs incurred by non-Federal entities in volunteered work or services during this phase. Costs incurred by non-Federal entities during the reconnaissance phase are not creditable toward the non-Federal sponsor's share of the feasibility phase.

(2) The cost of the feasibility phase, as described in paragraph 4-3b and Appendix G, will be shared equally during the study between the Federal government and the non-Federal sponsors. At least 50 percent of a non-Federal sponsor's share (25 percent of the total feasibility phase cost) shall be in cash. The remainder of the non-Federal sponsor share, up to 25 percent of the total feasibility phase cost, may be in-kind products and services. If a cost shared feasibility study is terminated prior to completion, the non-Federal share may be less than 50 percent in cash if the value of the in-kind services is more than one-half of the non-Federal sponsors investment at the time of termination. No credit may be given to the non-Federal sponsor for work prior to the start of the feasibility phase or after its completion (Sec 105 of WRDA of 1986). Guidance on cost sharing for studies conducted under Section 729 of WRDA of 1986 will be provided separately.

(3) Cost sharing is not applicable to single purpose inland navigation studies on the nations inland waterways system. For studies where inland navigation is the primary purpose and there are other purposes being considered, request additional guidance from CECW-P for feasibility phase cost sharing procedures.

(4) Cost sharing exceptions. Exceptions to cost sharing rules include projects specified in Section 103(e)(2) of the WRDA of 1986, waivers for territories as stated in Section 1156 of the WRDA of 1986, and, ability to pay provisions stated in Section 103(m) of the WRDA of 1986, as amended. (See Appendix E for additional details on these exceptions.)

(5) Section 203 of the WRDA of 1996 allows a non-Federal sponsor to defer its cost contribution for excess study costs that are not attributable to changes in Federal law or changes in scope requested by the sponsor, until the execution of a Project Cooperation Agreement. If the project is not authorized, payment of excess costs is due within 5 years after the date of the Chief of Engineer's report. If the study is terminated, payment is due within 2 years of its termination.

d. Preconstruction, engineering and design (PED). Preparation of design documentation reports and plans and specifications during the preconstruction, engineering and design phase will be cost shared in accordance with the cost sharing required for project construction. Under Corps policy, the non-Federal sponsor should provide 25 percent of the cost of PED during this phase. Adjustments, if necessary, shall be made after initiation of the construction phase. (See [ER 1110-2-1150](#)).

e. Project Cost Sharing. Appendix E provides project cost sharing requirements by project purpose.

CHAPTER 3

Corps Civil Works Missions

3-1. Purpose and Authorities. Federal interest in water resources development is established by law. Within the larger Federal interest in water resource development, the Corps of Engineers is authorized to carry out projects in seven mission areas: navigation, flood damage reduction, ecosystem restoration, hurricane and storm damage reduction, water supply, hydroelectric power generation and recreation. Navigation projects include both inland and deepwater projects. Ecosystem restoration projects improve ecosystem structure and function. Wherever possible and subject to budgetary policy, projects shall combine these purposes to formulate multiple purpose projects. For example, flood damage reduction projects could include ecosystem restoration and recreation; navigation projects could include hydroelectric power generation and ecosystem restoration. In carrying out studies to address problems and take advantage of opportunities within these mission areas, every effort should be made to formulate alternative plans that reasonably maximize the economic and environmental value of watershed resources, including urban watershed resources. In addition, every effort shall be made to be responsive to National, State and local concerns by considering the full range of programs available to provide solutions in a timely and cost-effective manner. Such programs may include Congressionally authorized projects, continuing authorities projects, planning assistance to states, flood plain management services and emergency authorities. [For a brief history of Corps involvement in water resources planning refer to “The US Army Corps of Engineers, A Brief History”, by Martin Reuss and Charles Hendricks to be published on the Corps web site.]

3-2. Navigation. The role of the U. S. Army Corps of Engineers with respect to navigation is to provide safe, reliable, and efficient waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation. The Corps accomplishes this mission through a combination of capital improvements and the operation and maintenance of existing projects. Capital improvement activities include the planning, design, and construction of new navigation projects. These activities are performed for the navigation of shallow draft (equal to or less than 14-foot draft) and deep draft (greater than 14-foot draft) vessels on both inland waterways and harbors, and coastal and lake ports, harbors and channels. With the exception of projects implemented pursuant to a continuing authority, Congress specifically authorizes harbor and waterway projects. Financial responsibility for project components is specified in the WRDA of 1986, as amended.

a. **Types of Improvements.** General navigation features of harbor or waterway projects are channels, jetties or breakwaters, locks and dams, basins or water areas for vessel maneuvering, turning, passing, mooring or anchoring incidental to transit of the channels and locks. Also included are dredged material disposal areas (except those for the inland navigation system, the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway) and sediment basins. Special Navigation Programs include removal of wrecks and obstructions, snagging and clearing for navigation, drift and debris removal, bridge replacement or modification, and

mitigation of project-induced damage. These programs are described in more detail in paragraph 3-2a(2).

(1) Harbor and Waterway Projects. Harbors and waterways are treated differently for cost-sharing purposes. Harbors are places that offer vessels shelter from weather. A harbor is also a port if it provides facilities for the loading or unloading of cargo or passengers. Waterways are routes used by vessels. Their primary function is to facilitate the movement of vessels and they may simply connect bodies of deep or shallow water or they may be parts of riverine or coastal waterway systems. (See Table E-60, Appendix E for cost sharing requirements.)

(2) Special Navigation Programs. These navigation improvements are for specific purposes, and may be projects, elements of projects, or simply Corps activities. They are initiated and implemented on congressional authority (specific or continuing). They are usually subject to program or project expenditure limits, with cost sharing as specified in the original authority or as amended.

(a) Removal of Wrecks and Obstructions (Section 19, River and Harbor Act of 3 March 1899). The Corps may remove sunken vessels and similar objects if they are determined to be obstructions to navigation.

(b) Snagging and Clearing for Navigation (Section 3, River and Harbor Act of 1945). The Corps may remove trees, brush and other debris that may be determined to be obstructions to navigation or that may promote flooding.

(c) Drift and Debris Removal (Section 202, Water Resources Development Act Of 1976). The Corps has continuing authority to study and undertake projects to remove and dispose of derelict objects such as sunken vessels, waterfront debris and derelict structures, and other sources of drift that may damage vessels or threaten public health, recreation, or the environment at publicly maintained commercial boat harbors. The harbor need not be, but usually is a Corps project. Congressional authorization is required for projects with Federal costs of \$400,000 or more.

(3) Aids to Navigation. These are buoys, lights, ranges, markers, and other devices and systems required for safe navigation or to achieve the project benefits. Aids to navigation are usually provided by the Coast Guard.

b. Specific Policies.

(1) Shoreline Changes. Pursuant to Section 5 of the River and Harbor Act of 1935, each investigation on navigation improvements potentially affecting adjacent shoreline will include analysis of the probable effects on shoreline configurations. A distance of not less than ten miles along the shore on either side of the improvement should be analyzed.

(2) Charter Fishing Craft, Head Boats, and Similar Recreation-Oriented Commercial Activities. Evaluation of benefits to charter fishing and other similar type craft is based on a

change in net income to the owners or operators of all vessels that would be using harbor facilities in the future without-project condition. Benefits to vessel operations that will be induced by the construction of a navigation project are also evaluated as the change in net income that would occur between the with- and without-project condition. Consideration should be given to those vessels that transfer from other areas, so that the proper change in National net income is estimated. Section 230 of the Water Resource Development Act of 1996 states that benefits to cruise ships will also be estimated as commercial benefits for the purpose of evaluating navigation projects.

(3) Subsistence Fishing. This is the activity of individuals who fish primarily for personal or family consumption and whose incomes are normally at or below the minimum subsistence level established by the Department of Commerce. For cost allocation purposes, subsistence fishing is considered commercial fishing.

(4) Coast Guard Coordination. The U.S. Coast Guard is responsible for Federal aids to navigation and enforcement of navigation regulations. Corps districts should confer directly with the Coast Guard concerning establishment or alteration of aids to navigation, and the regulation of ligherage areas (docking and loading areas used to off-load heavy cargo from larger ships to smaller vessels and vice versa), anchorage and channels.

(5) Permit Coordination. During the formulation of navigation projects, a determination must be made whether associated or ancillary sponsor activities (or project user activities) are required to achieve project benefits, and whether Department of the Army (DA) permits are necessary. Examples are provision of mooring and berthing areas and land based infrastructure. Once activities are identified, a preliminary determination of whether they require DA permits, and of what types (i.e., an individual permit, a letter of permission, an existing general permit or a nationwide permit), will be made by the district regulatory office.

(6) Placement of Dredged Materials on Beaches. Construction and maintenance dredging of Federal navigation projects shall be accomplished in the least costly manner possible. When placement of dredged material (beach quality sand) on a beach is the least costly acceptable means for disposal, then such placement is considered integral to the project and cost shared accordingly. When placement of dredged material on a beach costs more than the least costly alternative, the Corps may participate in the additional placement costs under the authority of Section 145 of the WRDA of 1976, as amended. The additional cost of placement may be shared on a 65 percent Federal and 35 percent non-Federal basis if: (1) requested by the State, (2) the Secretary of the Army considers it in the public interest, (3) the added cost of disposal is justified by hurricane and storm damage reduction benefits and (4) the shoreline on which the material is placed is open to public use.

(7) Use of Dredged Material for Ecosystem Restoration. When determining an acceptable method of disposal of dredged material, districts are encouraged to consider options that provide opportunities for aquatic ecosystem restoration. Where environmentally beneficial use of dredged material is the least cost, environmentally acceptable method of disposal, it is cost shared as a navigation cost. Section 204 of the WRDA of 1992, as amended, provides programmatic authority for selection of a disposal method for authorized projects, that provides

aquatic restoration or environmental shoreline erosion benefits when that is not the least costly method of disposal. The incremental cost of the disposal for ecosystem restoration purposes over the least cost method of disposal is cost shared, with a non-Federal sponsor responsible for 25 percent of the costs. Smaller projects typically will be pursued within the programmatic limits of Section 204, as amended. Section 207 of the WRDA of 1996 amended this authority. Section 207 will primarily be used with new navigation projects or in conjunction with maintenance dredging when the incremental cost is large. Projects pursued under Section 207 authority are separately budgeted and will not count towards the Section 204 programmatic limit. (See Appendix E for more information related to Section 207 and Appendix F for additional information regarding Section 204).

(8). Dredged Material Management Plans. Dredged material management planning for all Federal harbor projects is conducted by the Corps to ensure that maintenance dredging activities are performed in an environmentally acceptable manner, use sound engineering techniques, are economically warranted, and that sufficient confined disposal facilities are available for at least the next 20 years. These plans address dredging needs, disposal capabilities, capacities of disposal areas, environmental compliance requirements, potential for beneficial usage of dredged material and indicators of continued economic justification. The Dredged Material Management Plans shall be updated periodically to identify any potentially changed conditions.

(9) Local Service Facilities are the responsibility of non-Federal entities and shall be required as part of the cooperation agreements if they are necessary for project benefits to accrue.

(10) Categorical Exemption to NED Plan. For harbor and channel deepening studies where the non-Federal sponsor has identified constraints on channel depths it is not required to analyze project plans greater (deeper) than the plan desired by the sponsor. For example, if a sponsor only desires to deepen a channel to -40 feet and it is determined that the -40 foot channel is economically justified and has higher net benefits than a -39 foot or -38 foot channel, etc., then the -40 foot channel can be recommended without having to analyze deeper channel plans to identify the NED Plan. The recommended plan must have greater net benefits than smaller scale plans, and a sufficient number of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the recommended plan. If the plan proposed to be recommended contains uneconomical increments an exception from the ASA(CW) must be obtained. An essential element of the analysis of the recommended plan is the identification of trade-offs and opportunities foregone as a result of implementation of the smaller scope plan. The analysis of alternatives must be comprehensive enough to meet the requirements of NEPA.

(11) Other guidance related to navigation projects include [ER 1165-2-27](#), [ER 1165-2-123](#) and [ER 1165-2-124](#).

c. Evaluation Framework. The measurement standard and conceptual basis for benefits is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. The evaluation of navigation projects shall be conducted following the process described in paragraph 2-3e of this regulation. The procedures described in the following paragraphs apply to the estimation of benefits used in the economic

evaluation of navigation projects and are only a summary of requirements and procedures. Appendix E provides additional guidance on these procedures and requirements.

(1) National Economic Development Benefits. The base economic benefit of a navigation project is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as follows:

(a) Cost reduction benefits for commodities for the same origin and destination and the same mode of transit thus increasing the efficiency of current users. This reduction represents a NED gain because resources will be released for productive use elsewhere in the economy. Examples for inland navigation are reductions in costs incurred from trip delays (e.g. reduction in lock congestions), reduction in costs associated with the use of larger or longer tows, and reduction in costs due to more efficient use of barges. Examples for deep draft navigation are reductions in costs associated with the use of larger vessels, with more efficient use of existing vessels, with more efficient use of larger vessels, with reductions in transit time, with lower cargo handling and tug assistance costs, and with reduced interest and storage costs.

(b) Shift of mode benefits for commodities for the same origin and destination providing efficiency in waterway or harbor traversed. In this case, benefits are the difference in costs of mode transport between the without-project condition (when rails, trucks or different waterways or ports are used) and the with-project condition (improved locks, waterways or channels). The economic benefit to the national economy is the savings in resources from not having to use a more costly mode or point of transport.

(c) Shift in origin and destinations that would provide benefits by either reducing the cost of transport, if a new origin is used or by increasing net revenue of the producer, if a change in destination is realized. This benefit cannot exceed the reduction in transportation costs achieved by the project.

(d) New movement benefits are claimed when there are additional movements in a commodity or there are new commodities transported due to decreased transportation costs. The new movement benefit is defined as the increase in producer and consumer surplus, thus the estimate is limited to increases in production and consumption due to lower transportation costs. Increases in shipments resulting from a shift in origin or destination are not included in the new movement benefits. This benefit cannot exceed the reduction in transportation costs achieved by the project.

(e) Induced movement benefits are the value of a delivered commodity less production and transportation costs when a commodity or additional quantities of a commodity are produced and consumed due to lower transportation costs. The benefit, in this case, is measured as the difference between the cost of transportation with the project and the maximum cost the shipper would be willing to pay.

(2) Without-Project Condition. The following specific assumptions are part of the projected without-project condition.

(a) All reasonably expected nonstructural practices within the discretion of the operating agency, port agencies, other public agencies and the transportation industry are implemented at the appropriate time.

(b) For deep draft navigation studies, alternative harbor and channel improvements available over the planning period (in place and under construction) and authorized projects are assumed to be in place. For inland navigation, only waterway investments currently in place or under construction are assumed to be in place over the period of analysis.

(c) Normal operation and maintenance practices are assumed to be performed over the period of analysis.

(d) In projecting commodity movements involving intermodal movements and in projecting traffic movements on other modes, sufficient capacity of the hinterland transportation and related facilities and the alternative modes is normally assumed.

(e) For inland navigation, user charges and/or taxes required by law are part of the without-project condition.

(f) Advances in technology affecting the transportation industry over the period of analysis should be considered, within reason.

(3) With-Project Condition. The with-project condition is the most likely condition expected to exist in the future if a project is undertaken. The same assumptions as for the without-project condition underlie the with-project condition.

(4) Evaluation Procedure for Inland Navigation. The following ten steps are used to estimate benefits associated with improvements of the inland navigation system. The level of effort on each step depends on the nature of the proposed improvement, the state of the art for accurately estimating the benefits and the sensitivity of project formulation and justification to further refinement. Appendix E provides additional guidance for each of these steps.

(a) Step 1 - Identify the Commodity Types. The types of commodities susceptible to movement on the waterway segment under consideration are identified for new waterways and existing waterways, as applicable. For new waterways, commodity types are identified by interviews of shippers and by resources studies. For existing waterways, commodity types are identified by analysis of data on existing use of the waterway segment.

(b) Step 2 - Identify the Study Area. The study area is the area within which significant project impacts occur. The origins and destinations of products likely to use the waterway are normally included in the study area.

(c) Step 3 - Determine Current Commodity Flow. This step identifies the total tonnage that could benefit from using the waterway. This information is primarily obtained by interviews of shippers. Potential commodities that might use the waterway in response to reduced transportation costs are also identified.

(d) Step 4 - Determine Current Cost of Waterway Use. Current cost of waterway use is determined for all commodities that could potentially benefit from the waterway improvement. This cost includes the full origin-to-destination costs, including handling, transfer, demurrage and prior and subsequent hauls for the tonnages identified in the prior step. Costs are estimated for the without-project and with-project conditions. The difference between the with and without-project costs represents the reduction in current delays and gains in efficiencies with the project in place.

(e) Step 5 - Determine Current Cost of Alternative Movement. The current cost of alternative movement is estimated for all commodities under consideration. This cost includes full origin-to-destination costs, including costs of handling, transfer, demurrage and prior and subsequent hauls. The product of this step, combined with the products from the two previous steps, generates a first approximation of the demand schedule for waterway transportation. In the case of rail movements, the prevailing rate actually charged for moving the traffic shall be used to estimate the alternative movement cost. A “competitive” rate may be used if there is no prevailing rate. Appendix E provides a definition and guidance on how to compute “competitive” rates.

(f) Step 6 - Forecast Potential Waterway Traffic by Commodity. Projections of potential traffic are developed for selected years from the time of the study until the end of the period of analysis, for time intervals not to exceed 10 years. Normally, independent studies are undertaken to develop these projections. Available secondary data supplemented by interviews of relevant shippers, carriers and port officials, opinions of commodity consultants and experts and historical flow patterns are used to develop these projections.

(g) Step 7 – Determine Future Cost of Alternative Mode. The future cost of alternative mode per unit of each commodity will normally be the same as the current cost.

(h) Step 8 – Determine Future Cost of Waterway Use. The potential changes in cost of the waterway mode for future years for individual origin-destination commodity combinations are estimated in this step. Also, an analysis of the relationship between waterway traffic volume and system delays is conducted. This analysis generates data on the relationships between total traffic volume and the cost of transportation on the waterway.

(i) Step 9 – Determine Waterway Use, With and Without-Project. The data developed in previous steps is used to determine waterway use over time with and without the project. This determination is made based upon a comparison of costs for movements by the waterway and by the alternative mode and of any changes in the cost functions and demand schedules. The “phasing in” and “phasing out” of shifts from one mode to another are also considered in this analysis.

(j) Step 10 – Compute NED Benefits. The information produced in previous steps is used to compute total NED benefits for each category described in Paragraph 3-2c(1), as applicable. Total NED benefits are annualized and discounted using the applicable discount rate (published annually by HQUSACE).

(5) Evaluation Procedures for Deep Draft Navigation. The following nine steps are used to estimate deep draft navigation benefits. As in the case of inland navigation benefits, the effort expended on each step will depend on the scope and nature of the proposed improvement, the state of the art to accurately develop the estimates and the sensitivity of project formulation and evaluation to further refinement. Appendix E provides additional guidance for each step.

(a) Step 1 – Determine the Economic Study Area. In this step, the economic study area is delineated. This step includes an assessment of the transportation network that is functionally related to the harbor considered for improvement. Foreign origins and destinations are also included in this assessment. The economic study area is likely to vary for different commodities. In the final delineation of the economic study area, the trade area relative to adjacent ports and any commonality that might exist with the area under study must be considered.

(b) Step 2 – Identify Types and Volumes of Commodity Flow. An analysis of commerce that flows into and out of the economic study area is performed to estimate the types and volumes of commodities that now move on the existing project or that may be attracted as a result of the proposed improvement. This analysis provides an estimate of gross potential cargo tonnage which is used to estimate the prospective commerce that may use the harbor during the period of analysis. Current volumes of prospective commerce are developed using available statistics on waterborne commerce. After determining the types and volumes of commodities currently moving or expected to move in the economic study area, data on origins, destinations and vessel itineraries are used to identify the commodity types and volumes that could benefit from the project. Commodities that are now moving without the project but would shift origins or destinations with the project, as well as induced movements, are segregated for additional analysis.

(c) Step 3 – Project Waterborne Commerce. Projections of the potential use of the harbor or waterway under study are developed for selected years from the time of the study until the end of the period of analysis. The commodities included in the projections should be identified, if possible, according to waterborne modes (e.g., containerized, liquid bulk, dry bulk, etc.) and by imports, exports, domestic shipments, domestic receipts and internal trade. Usually, independent studies are undertaken to develop these projections considering secondary data, data from interviews to shippers, carriers and port officials, opinions of consultants and experts and historical flow patterns. A sensitivity analysis of the projections is performed to account for uncertainties in the estimates.

(d) Step 4 – Determine Vessel Fleet Composition and Cost. The vessel fleet composition is determined by analyzing past trends in vessel size and fleet composition and trends in the domestic and world fleet. The vessel fleet composition is determined for both with- and without-project conditions. Changes in fleet composition may vary by trade route, type of commodity and volume of traffic. Canal restrictions, foreign port depths and lengths of haul also affect the vessel fleet composition. Vessel operating costs, by category of waterborne mode and size, are provided annually by HQUSACE. These costs may be modified to meet the needs of specific studies.

(e) Step 5 – Determine Current Cost of Commodity Movements. Transportation costs prevailing at the time of the study are determined in this step for all tonnage identified in step 2 that could benefit from the project. These costs include full origin-to-destination costs plus handling, transfer, and storage costs, and other accessory charges. Transportation costs are developed for both the with- and without-project conditions. For with-project conditions, these costs reflect efficiencies that can be reasonably expected, such as use of larger vessels, increased loads and reduction in transit time and delays (tides).

(f) Step 6 – Determine Current Cost of Alternative Movement. Alternative movement is the movement of commodities through other competitive harbors, and through other operational means such as lightering, lightening and topping-off operations, off-shore port facilities, transshipment terminals, traffic management, pilotage regulations and other modes of transportation. Transportation costs for these alternative modes of movement, as applicable, are estimated for the with- and without-project condition. These costs are used in the analysis of potential diversion of traffic. Factors to be considered in this analysis, in addition to transportation costs, are handling and transfer charges, available service and schedules, carrier connections, institutional arrangements, and other related factors.

(g) Step 7 – Determine Future Cost of Commodity Movements. Relevant shipping costs are estimated for with- and without-project conditions considering changes in the fleet composition, port delays and port capacity. Future transportation costs are based on the vessel operating costs prevailing at the time of the study.

(h) Step 8 – Determine Use of Harbor and Channel With- and Without-Project. To estimate the proposed harbor use over time, for with- and without-project conditions, the costs for movements via each proposed plan and via each alternative mode are compared. Changes in the cost functions and demand schedules in the current and future without-project condition and the current and future with-project condition are analyzed. The impact of uncertainty in the use of the harbor, the level of service provided and existing and future inventories of vessels are also considered.

(i) Step 9 – Compute NED Benefits. The tonnage moving with and without a project and the cost of movement via the harbor and via each alternative are used to compute total NED benefits for each category of benefits described in paragraph 3-2c(1).

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including navigation. Specific cost sharing requirements for this purpose are discussed in Appendix E of this regulation.

(1) Special Cases. Special cases that require a determination of Federal responsibility or cost sharing include, but are not limited to access channels not directly adjacent to primary channels, barge fleeting areas, and an initial single user with potential for future multiple users.

(2) Land Creation or Enhancement at Inland Harbors. Federal participation in inland waterway harbor improvements under the Civil Works program is not warranted when: (1) resale or lease of lands used for disposal of excavated material can recover the cost of the

improvements, or (2) the acquisition of land outside the navigation servitude is necessary for construction of the improvements and would permit local entities to control access to the project. The latter case is assumed to exist where the proposed improvement consists of a new channel cut into land.

(3) Land Creation at Harbors (other than inland harbors). The NED Plan for harbor projects that include land creation benefits shall be formulated using navigation benefits exclusively; thus, land creation benefits shall not be considered in the identification of the NED Plan. Special cost sharing will be required for land creation benefits associated with the NED Plan in proportion to the magnitude of these benefits to the total benefits. The procedure to estimate the cost sharing in this case is described in Appendix E. Non-Federal requests for exceptions to the NED Plan, to include land creation benefits, may be allowed provided all additional implementation costs are non-Federal and the incremental navigation benefits equal or exceed the incremental operation and maintenance costs for the general navigation features. No additional cost sharing will be required for the land creation benefits associated with the project modifications beyond the NED Plan which are requested and paid for by the non-Federal sponsor.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

3-3. Flood Damage Reduction. Section 1 of the Flood Control Act of 1936 declared flood control to be a proper Federal activity since improvements for flood control purposes are in the interest of the general welfare of the public. The Act also stipulated that for Federal involvement to be justified, “. . . the benefits to whomsoever they may accrue (must be) in excess of the estimated costs, and . . . the lives and social security of people (must be) otherwise adversely affected.”

a. Types of Improvements.

(1) Structural Measures: Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. Structural measures include: dams with reservoirs, dry dams, channelization measures, levees, walls, diversion channels, pumps, ice-control structures, and bridge modifications.

(2) Nonstructural Measures. Section 73 of the Water Resources Development Act of 1974 requires consideration of nonstructural alternatives in flood damage reduction studies. They can be considered independently or in combination with structural measures. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. Damage reduction from nonstructural measures is accomplished by changing the use made of the floodplains, or by accommodating existing uses to the flood hazard. Examples are flood proofing, relocation of structures, flood warning and preparedness systems (including associated emergency measures), and regulation of floodplain uses.

(3) Major Drainage. Drainage projects are usually undertaken in rural areas to increase agricultural outputs. Some portions of drainage improvements may be considered flood damage reduction measures in accordance with Section 2 of the Flood Control Act of 1944. The typical

drainage system consists of drainage ditches, dikes, and related work. An outlet structure is provided at the downstream end where the system empties into a larger channel. The Federal interest in these projects is normally limited to the outlet works. Drainage in urban areas can also qualify under the 1944 Act if the major outlet works do not substitute for works that are a local responsibility, such as municipal storm sewer improvements.

(4) Groundwater. Section 403 of the WRDA of 1986 expands the definition of flood control to include flood prevention improvements for protection from groundwater induced damages.

b. Specific Policies.

(1) Flood Plain Management, Executive Order 11988. Executive Order 11988 (E.O. 11988) was issued in 1977 with the intent to avoid floodplain development, reduce hazards and risk associated with floods, and restore and preserve natural floodplain values (See [ER 1165-2-26](#) for Corps policy on this directive). In the event there is no alternative to construction in the floodplain, the Corps is required to minimize the adverse impacts induced by construction of the project. In considering adverse impacts, planners should address induced new development in the floodplain or induced improvements to existing development in the floodplain that would increase potential flood damages; and, the detrimental effect of induced activities on natural floodplain values.

(2) Project Performance and Risk Framework.

(a) Flood damage reduction studies are conducted using a risk-based analytical framework. The risk framework captures and quantifies the extent of the risk and uncertainty and enables quantified tradeoffs between risk and cost. Decision making considers explicitly what is gained and what is lost. (See [ER 1105-2-101](#) and [EM 1110-2-1619](#) for details.)

(b) Projects are analyzed and described in terms of their expected performance, not in terms of levels of protection. Contingencies are acknowledged and residual risk is not routinely reduced by overbuilding or by inclusions of freeboard. The regulation identifies key variables that must be explicitly incorporated into the risk-based analysis. At a minimum, the stage-damage function for economic studies (with special emphasis on first floor elevation, and content and structure values for urban studies), discharge associated with exceedence frequency for hydrologic studies, and conveyance roughness and cross-section geometry for hydraulic studies must be incorporated in the risk-based analysis. [ER 1105-2-101](#) further requires a probabilistic display of benefits and eliminates freeboard to account for hydraulic uncertainty.

(c) There is no minimum level of performance or protection or size required for Corps projects. The smaller in size or the lower the level of performance however, the higher the residual risk. Residual risk must therefore be carefully analyzed, documented and communicated. Departures from the NED plan may be considered options to manage this risk. In addition, explicit risk management alternatives may be formulated.

(3) Existing Levees/Dams. Proposals to modify existing levees must be evaluated using a risk based approach as described in [ER 1105-2-101](#). Downstream consequences of dams on flood risk are also analyzed in a risk-based framework. Evaluation of dam reliability and safety is based on engineering design criteria found in [ER 1110-2-1155](#).

(4) Residual Damages. The analysis of any proposed flood damage reduction project shall include an estimate of the residual expected annual damages that would occur with the project in place.

(5) Induced Flooding. When a project results in induced damages, mitigation should be investigated and recommended if appropriate. Mitigation is appropriate when economically justified or there are overriding reasons of safety, economic or social concerns, or a determination of a real estate taking (flowage easement, etc.) has been made. Remaining induced damages are to be accounted for in the economic analysis and the impacts should be displayed and discussed in the report.

(6) Minimum Flows, Minimum Drainage Area and Urban Drainage. In urban and urbanizing areas provision of a basic drainage system to collect and convey local runoff is a non-Federal responsibility. Water damage problems may be addressed, under flood damage reduction authorities, downstream from the point where the flood discharge is greater than 800 cubic feet per second for the 10 percent flood (one chance in ten of being equaled or exceeded in any given year) under conditions expected to prevail during the period of analysis. Drainage areas which lie entirely within the urban area and which are less than 1.5 square miles in area, are assumed to lack sufficient discharge to meet the above hydrologic criterion. Urban streams and waterways that receive runoff from land outside the urban area shall not be evaluated using this 1.5 square mile drainage area criterion. Exceptions may be granted in areas of hydrologic disparity, that is areas producing limited discharge for the ten percent event but in excess of 1800 cubic feet per second for the one percent event (See [ER 1165-2-21](#)).

(7) Single Properties. The Corps will not participate in structural flood damage reduction for a single private property. Nor will it participate in nonstructural flood damage reduction measures, unless single property protection is part of a larger plan for structural or nonstructural measures benefiting multiple owners collectively. The Corps may consider participation in structural and nonstructural flood damage reduction measures protecting a single, non-Federal, public property. Work to provide protection to a single Federal property is accomplished only on a reimbursable basis, upon request from the Federal agency. In the event such properties are within the study area, Civil Works funds may be used for their protection.

(8) Recreation at Non-Lake Flood Damage Reduction Projects. The Corps participates in recreation facilities at non-lake flood damage reduction projects if the recreation activities have a strong, direct relationship to the proposed flood damage reduction measures, such as trails along the channel or levee right-of-way. Corps participation in these projects is limited by policy as discussed in Appendix E.

(9) Agricultural Flood Protection. The Corps flood damage reduction programs apply to agricultural as well as urban flood damages. Usually the NED plan for agricultural areas provides only a low degree of flood prevention.

(10) Land Development and Floodplain Management. The following general policy principles apply to land development benefits at structural flood damage reduction projects.

(a) Communities participating in a flood damage reduction project with the Corps of Engineers are required to participate in FEMA's National Flood Insurance Program (NFIP) and to comply with the land use requirements of that program.

(b) Communities participating in a flood damage reduction project with the Corps must also prepare a flood plain management plan designed to reduce the impact of future flood events in the project area. This plan must be adopted within one year after signing a project cooperation agreement and the plan must be implemented not more than one year after the construction of a project. Although costs for the preparation of the flood plain management plan are sponsor costs, data collected during the planning process may be used in development of the plan.

(c) Projects or separable increments producing primarily land development opportunities do not reduce actual flood damages and therefore have low budget priority. Federal participation in these projects will not be recommended.

(d) Flood damage reduction projects can greatly impact what is required of a local community for participation in the NFIP. In addressing these impacts, the following should be considered:

- In coordination with the non-Federal sponsor and FEMA, consideration should be given to developing flood maps and flood profiles depicting post-project conditions. The information should be in a form useful to FEMA in revising flood insurance rate maps.
- The appropriate FEMA Regional office will be notified of proposed flood protection works or of changes to established flood protection works.

(11) Categorical Exemption to NED Plan. For flood damage reduction studies, where the non-Federal sponsor has identified a desired maximum level of protection, where the with-project residual risk is not unreasonably high, and where the plan desired by the sponsor has greater net benefits than smaller scale plans, it is not required to analyze project plans providing higher levels of protection than the plan desired by the sponsor. For example, if a sponsor desires a levee of sufficient height to meet FEMA's flood insurance requirements and it is determined that the levee to accomplish this has higher net benefits than smaller levees, then the levee desired by the sponsor can be recommended without having to analyze larger levees to identify the NED Plan. The recommended plan must have greater net benefits than smaller scale plans, and a sufficient number of alternatives must be analyzed to insure that net benefits do not maximize at a scale smaller than the recommended plan. If the plan proposed to be recommended contains uneconomical increments an exception from the ASA(CW) must be

obtained. An essential element of the analysis of the recommended plan is the identification of residual risk for the sponsor and the flood plain occupants, including residual damages and potential for loss of life, due to exceedence of design capacity. The analysis of alternatives must be comprehensive enough to meet the requirements of NEPA.

(12) Exception to NED Plan for Urban Areas. When the NED Plan has less than 90 percent reliability of protecting against the 1 percent chance annual flood event, an exception to the NED Plan may be recommended. The conditions and requirements stated in Appendix E must be met in order to grant this exception.

(13) Use Of Lands Cleared Under The FEMA Hazard Mitigation Grant Program.
(Guidance is under development)

c. Evaluation Framework. The measurement standard and conceptual basis for benefits associated with flood damage reduction projects is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. The evaluation of flood damage reduction projects shall be conducted following the process described in paragraph 2-3e of this regulation. The procedures described in the following paragraphs apply to the estimation of benefits used in the economic evaluation of flood damage reduction projects, and summarize requirements and procedures. Appendix E provides additional guidance on these requirements and procedures.

(1) National Economic Development Benefits. Benefits from plans for reducing flood hazards accrue primarily through the reduction in actual or potential damages to affected land uses. There are three primary benefit categories, reflecting three different responses to a flood hazard reduction plan. Inundation reduction benefits are the increases in net income generated by the affected land uses when the same land use pattern and intensity of use is assumed for with- and without-project conditions. Intensification benefits are increases in net income generated by intensified floodplain activities when the floodplain use is the same with and without the project but an activity (or activities) is more intense with the project. The third category of benefits is location benefits. If an activity is added to the floodplain because of a plan, the location benefit is the difference between aggregate net incomes (including economic rent) in the economically affected area with and without the project. The magnitude of location benefits that can be claimed is limited by policy. In general, the NED Plan will be formulated to protect existing development and vacant property that is interspersed with existing development. Location benefits can be claimed for vacant property that is not interspersed with existing development only if it is demonstrated that the vacant property would be developed without the project and the benefits are based on savings in future flood proofing costs.

(2) Types of Flood Damage. Flood damages are classified as physical damages and nonphysical damages. Each activity affected by a flood can experience loss in one or both of these classes.

(a) Physical damages. Physical damages occur to residential, commercial, industrial, institutional, and public property. Damages occur to buildings, contents, automobiles, and outside property and landscaping. Physical damages include the costs to repair roads, bridges,

sewers, power lines, and other infrastructure components. Physical damages also include the direct costs and the value of uncompensated hours for cleanup after the flood.

(b) Nonphysical flood losses. Nonphysical flood losses include income losses and emergency costs. Income losses are the loss of wages or net profits to business over and above physical flood damages that usually result from a disruption of normal activities. Estimates of these losses must be derived from specific independent economic data for the interests and properties affected. Prevention of income losses result in a contribution to national economic development only to the extent that the losses cannot be compensated for by postponement of an activity or transfer of the activity to other establishments. Emergency costs include those expenses resulting from a flood that would not otherwise be incurred. For example, the costs of evacuation and reoccupation, flood fighting, and administrative costs of disaster relief; increased costs of normal operations during the flood; and increased costs of police, fire, or military patrol. Emergency costs should be determined by specific survey or research and should not be estimated by applying arbitrary percentages to the physical damage estimates.

(3) Without-Project Condition. The without-project condition is the land use and related conditions expected to occur during the period of analysis in the absence of the proposed project. The following assumptions are part of the projected without-project condition:

(a) Existing flood hazard reduction plans are considered to be in place, considering the actual remaining economic life of existing structures. If there is a high likelihood of construction of a flood hazard reduction plan authorized for implementation but not yet constructed, the authorized plan is assumed to be in place.

(b) The adoption and enforcement of land use regulations pursuant to the Flood Disaster Protection Act of 1973 is assumed.

(c) For planning purposes, the Corps shall assume that communities in the floodplain belong to the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA).

(d) Compliance with E.O. 11988 (described in paragraph 3-3b(1)), Floodplain Management and E.O. 11990, Protection of Wetlands, is assumed.

(4) With-project Condition. The same assumptions that underlie the without-project condition apply to the with-project condition.

(5) Evaluation Procedure. The steps required to evaluate benefits for flood damage reduction projects are described in the following paragraphs. These steps are designed to determine land uses and relate these uses to the flood hazard from an NED perspective. The level of effort expended on each step will depend on the scope and nature of the proposed improvement, the state of the art to accurately develop the estimates and the sensitivity of project formulation and evaluation to further refinement. Appendix E provides additional guidance for each step. The first five steps result in a determination of future land use with emphasis on

evaluating the overall reasonableness of local land use plans with respect to State, County or other projections of a larger area encompassing the study area.

(a) Step 1- Delineate the Affected Area. The area affected by a proposed plan consists of the floodplain plus all other nearby areas likely to serve as alternative sites for any major type of activity that might use the floodplain if it were protected. All areas impacted by the proposed plan shall be included in the affected area.

(b) Step 2 – Determine Floodplain Characteristics. An inventory of the floodplain is undertaken to determine those characteristics that make it attractive or unattractive for particular uses as identified in the land use demand analysis. The floodplain is characterized in terms of flooding, including the designation of high hazard areas, natural storage capabilities and constraints, natural and beneficial values and potential for water-oriented transportation. Other attributes, such as physical characteristics, available services and existing activities are also included in the floodplain characterization.

(c) Step 3 – Project Activities in Affected Area. Economic and demographic projections are developed, as needed, on the basis of current unbiased economic growth indices. Whenever possible, the growth indices should be independent estimates.

(d) Step 4 – Estimate Potential Land Use. Demographic projections are converted to land use needs using conversion factors from published secondary sources, from other studies or from empirical data.

(e) Step 5 – Project land Use – Land use demand is allocated to floodplain and non-floodplain lands for the without-project condition and for each alternative floodplain management plan.

(f) Step 6 – Determine Existing Flood Damages. Existing flood damages are the potential average annual dollar damages to activities affected by flooding at the time of the study. Existing damages are those expressed for a given magnitude of flooding or computed in the damage frequency process. The basis for the determination of existing damages is losses actually sustained in historical floods supplemented by appraisals, application of depth-damage curves and an inventory of capital investment within the floodplain. (Further guidance on the use of generic depth-damage curves is provided in Appendix E.) Average annual damages are computed using standard damage-frequency integration techniques and computer programs that relate hydrologic and hydraulic flood variables such as discharge and stage to damages and to the probability of occurrence of such variables. These estimates are developed using a risk-based analytical framework as described in paragraph 3-3b(2) of this regulation.

(g) Step 7 – Project Future Flood Damages. Future flood damages are those damages to activities identified in Step 3 that might use the floodplain in the future with- and without-project conditions. Hydrologic and economic changes are considered in developing these estimates. Procedures described in step 6 are used to estimate future flood damages. Participation in the NFIP requires communities to preclude new development in the regulatory floodway, as defined by the community. It also requires that new development in the NFIP

regulatory floodplain outside of the floodway be constructed at or above the median probability 100-year discharge regardless of whether or not that discharge is expected to increase in the future during the period of analysis. Estimates of future flood damages are constrained by these requirements.

(h) Step 8 – Determine Other Costs of Using the Floodplain. The impact of flooding on existing and potential future occupants of the floodplain, in addition to flood losses, include increased flood proofing costs, increased costs of administration of the NFIP and less efficient use of existing structures. The increased cost of administration of the NFIP can be claimed as a benefit of flood damage reduction projects. HQUSACE annually publishes data on administration cost per policy to use in estimating this benefit. Increased flood proofing costs are used as a measurement of potential location benefits.

(i) Step 9 – Collect Land Market Value and Related Data. If land use is different with and without the project, the difference in income for the land is computed using flood proofing costs as a proxy of the market value of land. If land use is the same with and without the project but the use is more intense, the increased income is determined on the basis of direct computation of costs and revenues. Projects or separable increments of projects that achieve only land development benefits (protection of vacant lands) are not recommended for implementation.

(j) Step 10 – Compute NED Benefits. To the extent that step 5 indicates that the land use is the same with and without the project, inundation reduction benefits are computed as the difference in flood damages with and without the project. In the evaluation of relocation and evacuation projects considerable attention is paid to the with-project use of the land to be evacuated, as the benefit associated with such use may be crucial for project feasibility. NED benefits also include estimates of savings in administration costs of the NFIP, intensification benefits, location benefits and benefits associated with the use of unemployed or underemployed resources. Detailed procedures for computing NED benefits are provided in Appendix E.

(k) Section 219 of the WRDA of 1999 directs the Secretary of the Army to calculate benefits for nonstructural flood damage reduction projects using methods similar to those used in calculating the benefits of structural projects and further directs the Secretary to avoid double-counting of benefits in these projects. Guidance for the implementation of this Section will be included in Appendix E when finalized.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including flood damage reduction. Specific cost sharing requirements for flood damage reduction are discussed in Appendix E.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

f. Other Related Programs. Flood Plain Management Services (FPMS)

(1) The FPMS Program was established to carry out Section 206 of the Flood Control Act of 1960 as amended. Its objective is to encourage prudent use of the Nation's flood plains for the benefit of the national economy and general welfare by supporting comprehensive flood plain management planning at all appropriate governmental levels. The Corps may provide flood plain information and planning assistance to State, county and city governments, Native American (Indian) Nations, as well as to other Federal agencies. Flood and flood plain information is also provided to private citizens, corporations, and groups.

(2) Assistance can be provided in the form of technical services, planning guidance and assistance on floods and flood plain issues. The Corps also provides support to the National Flood Insurance Program (NFIP) by conducting flood insurance studies and related technical work. Funding for the FPMS Program is obtained through appropriations for non-reimbursable FPMS items and through cost recovery for reimbursable services. Reimbursements for support to the NFIP are obtained from FEMA. Upon request, program services are provided to State, regional, and local governments, Native American (Indian) Nations, and other non-Federal public agencies without charge. Program services also are offered to other Federal agencies and to the private sector on a 100 percent cost recovery basis.

(3) Coordination. Program activities shall be coordinated with State and local agencies and field offices of Federal agencies concerned with flood problems to ensure that they are informed of the Corps FPMS Program, that the Corps is apprised of related activities of other agencies, and that there is no overlap of effort.

3-4. Hurricane and Storm Damage Reduction. Congress has authorized Federal participation in the cost of restoring and protecting the shores of the United States, its territories and possessions. Under current policy, shore protection projects are designed to reduce damages caused by wind-generated and tide-generated waves and currents along the Nation's ocean coasts, Gulf of Mexico, Great Lakes, and estuary shores. Hurricane protection was added to the erosion control mission in 1956 when Congress authorized cost-shared Federal participation in shore protection and restoration of publicly owned shore areas. Protection of private property is permitted only if such protection is incidental to the protection of public areas, or if the protection of private property would result in public benefits. Federal assistance for periodic nourishment was also authorized on the same basis as new construction, for a period to be specified for each project, when it is determined that it is the most suitable and economical remedial measure.

a. Types of Improvements. The improvements are usually structural measures including such features as beachfill, groins, seawalls, revetment, breakwaters, and bulkheads. Nonstructural measures, such as property acquisition, shall also be considered.

b. Specific Policies.

(1) Geographic Applicability. The shore protection authority is applicable to the shores of the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, estuaries, and bays

directly connected therewith of each of the states, the Commonwealth of Puerto Rico, the US Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. The authority extends only that distance up streams where the dominant causes of damage are coastal storms or ocean tidal action (or Great Lakes water motion) and wind-generated waves. The program does not address damages caused by stream flows or vessels.

(2) Erosion Control Measures. In the past, particularly prior to passage of the WRDA of 1986, beach fill or beach restoration was frequently considered an erosion control measure, and erosion control was treated as a project output or project purpose. As a result of enactment of the law, however, erosion control has no separate status as a project purpose or as a project output. Thus, erosion control measures (e.g., beach fill) shall be treated as means to the ends of hurricane and storm damage reduction, ecosystem restoration, or recreation; similar to breakwaters or revetments.

(3) Historic Shoreline. Existing authority provides for restoration and protection of beaches. It provides for extending a beach beyond its historic shoreline only when the extension is desirable for engineering reasons, is environmentally acceptable, and is an economically justified means to prevent or reduce storm damage behind the historic shoreline. In the case of multi-purpose projects that include ecosystem restoration as a project purpose, extending a beach beyond its historic shoreline is acceptable if it is environmentally justified.

(4) Formulation and Establishing Corps Participation. Single purpose shore protection projects are formulated to provide hurricane and storm damage reduction. Highest priority is for reducing damages to existing development. Reducing flooding on, or erosion to, undeveloped lands is not a high priority; and Federal participation in protection of privately owned, undeveloped shores, will not be pursued. Recreation is an incidental output.

(a) The Corps participates in single purpose projects formulated exclusively for hurricane and storm damage reduction, with economic benefits equal to or exceeding the costs, based solely on damage reduction benefits, or a combination of damage reduction benefits and recreation benefits. Under current policy, recreation must be incidental in the formulation process and may not be more than fifty percent of the total benefits required for justification. If the criterion for participation is met, then all recreation benefits are included in the benefit to cost analysis. Costs incurred for other than the damage reduction purpose, i.e. to satisfy recreation demand, are a 100 percent non-Federal responsibility.

(b) The Corps also participates in multiple purpose projects formulated for hurricane and storm damage reduction. For multi-purpose projects that include ecosystem restoration as a project purpose, the combined NED/NER Plan will be formulated in accordance with the guidance in paragraph 2-3g(3) and Appendix E of this regulation.

(5) Public Use and its Relation to Federal Participation. Federal involvement in shore protection has developed historically in relation to beaches, generally with efforts to stabilize, create or restore beaches. It is intended that beaches receiving public aid should not provide exclusively private benefits; and therefore, whenever a hurricane and storm damage reduction

project involves beach improvements, public ownership and use of the beach is required. Items related to public use are discussed below.

(a) User Fees. Reasonable beach recreation use fees are allowable when used to offset the non-Federal sponsor share of project costs.

(b) Parking. Lack of parking may constitute a restriction on public access and use. Therefore, eligibility for Federal participation is precluded in areas where there is a lack of sufficient parking facilities provided for the general public (including nonresident users) reasonably near and accessible to the project beaches. In some instances non-Federal plans may encourage or direct substitution of public transportation access for private automobile access.

(c) Access. Corps participation is conditioned on provision of reasonable public access rights-of-way, consistent with attendance used in benefit evaluation and in accordance with local recreational use objectives.

(d) Beach Use by Private Organizations. Federal aid to private shores owned by beach clubs and hotels which limit beach use to members or guests, is contrary to the intent of Public Law 826 of 1956.

(e) Public Shores with Limitations. Publicly owned beaches which limit use to residents of the community or a group of communities are not considered to be open to the general public and are treated as private beaches.

(6) Shore Lines Owned by Federal Agencies.

(a) Work to provide shore protection to lands under the jurisdiction of another Federal agency shall be accomplished on a reimbursable basis, upon request from the agency. In the event protection has not been requested and such lands are within the study area, Civil Works funds may be used if including them in a project is more cost effective than excluding them.

(b) Protection of (non-Civil Works) Department of the Army lands shall be accomplished with military funds, not civil works funds. If the lands are a minor part within the study area, Civil Works funds may be used if including them in a project is more cost effective than excluding them.

(7) Periodic Nourishment. In accordance with Public Law 826 of 1956 (Beach Nourishment), when the Chief of Engineers determines that the most suitable and economical remedial measures would be provided by a periodic nourishment project, the Chief may consider the periodic nourishment as continuing construction for the length of time that the Chief specifies. Classifying the periodic nourishment as continuing construction establishes the Federal interest in cost sharing renourishments, usually for the economic life of the project. If the NED plan for a shore protection project includes a combination of structures and periodic nourishment, the renourishments may be considered continuing construction while future costs needed to operate, maintain, repair, rehabilitate or replace the structural components are considered operation and maintenance which is a non-Federal responsibility.

(a) New Projects. Federal participation in periodic nourishment may be recommended to continue for the lesser of: (1) project economic life, (2) physical life of structural features required for the project, (3) fifty years.

(b) Existing Projects. Per authority in Section 934 of the WRDA of 1986, when the authorized period of Federal participation in periodic nourishment at existing projects expires, it may be extended without further Congressional action for a period not to exceed 50 years after the date of initial construction. Reevaluation using current evaluation guidelines and policies is necessary. Prior to the expiration of the existing periodic nourishment period the sponsor must request the extension and express a willingness to cost share in accordance with the provisions of WRDA of 1986. This Section 934 authority does not apply to projects using sand bypassing plants.

(8) Outer Continental Shelf Mineral Resources. If mineral resources from the outer continental shelf are proposed for use in Civil Works projects, the Corps and Minerals Management Service (MMS) (U.S. Department of Interior) must enter into a memorandum of agreement. The sponsor must also negotiate a noncompetitive lease with the MMS. Section 215(b) of the WRDA of 1999 amended Section 8(k)(2)(B) of the Outer Continental Shelf Lands Act to exempt state and local government agencies, in addition to Federal agencies, from the assessment of fees for the use of Outer Continental Shelf sand, gravel, and shell resources in a shore protection, beach restoration, or coastal wetlands project or program, or in any other construction project funded or authorized by the Federal Government.

(9) Specific policies for hurricane and storm damage reduction are presented in more detail in [ER 1165-2-130](#).

c. Evaluation Framework. The measurement standard and conceptual basis for benefits is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. The evaluation of hurricane and storm damage reduction projects shall be conducted following the process described in paragraph 2-3e of this regulation. The procedures described in the following paragraphs apply to the estimation of benefits used in the economic evaluation of hurricane and storm damage reduction projects and summarize requirements and procedures. Appendix E provides additional guidance on these requirements and procedures.

(1) National Economic Development Benefits. For hurricane and storm damage reduction projects estimated benefits are principally reductions in actual or potential damages to affected land uses. Damages are most frequently due directly to storms or to the resultant shoreline erosion. Storm damage reduction benefits are categorized as wave damage reduction benefits, inundation reduction benefits and other benefits. Erosion protection benefits include loss of land, structural damage prevention, reduced emergency costs, reduced maintenance of existing structures and incidental benefits. The primary benefit to be claimed in hurricane and storm damage reduction projects is reduction of damages to existing structures. Recreation

benefits are incidental and are measured in accordance with the guidance provided in paragraph 3-7 of this regulation and in Appendix E.

(2) With- and Without-Project Conditions. The assumptions described in paragraph 3-3c(3) are also applicable to hurricane and storm damage reduction studies. In addition, whenever a hurricane and storm damage reduction project involves beach improvements, public ownership and use of the beach is required, as described in paragraph 3-4b(5) of this regulation.

(3) Evaluation Procedure. The steps to evaluate benefits for hurricane and storm damage prevention projects are described in the following paragraphs. The level of effort expended on each step will depend on the scope and nature of the proposed improvement, the state of the art to accurately develop the estimates and the sensitivity of project formulation and evaluation to further refinement.

(a) Step 1 – Delineate the Study Area. The study area is that area affected by storms and erosion problems and by proposed alternatives. It includes areas indirectly affected by the problems and projects such as downdrift areas and navigation and other projects outside the immediate project site.

(b) Step 2 – Define the Problem. In this step, existing storm damage and erosion problems are identified and described. The description of existing conditions should include a history of the economic and social effects of storm damage and erosion problems in the area, a history of storms and erosion trends and historical floods and wave attack problems. A determination of the degree of protection afforded by existing structures is also made as part of this step. This includes an assessment of the level of protection actually provided by the structure, its structural integrity, the remaining useful life and operation and maintenance requirements.

(c) Step 3 – Select Planning Shoreline Reaches. Reaches are the primary economic sub-unit of analysis. Geomorphic conditions, land uses and type or level of existing protection are criteria used in the designation of reaches.

(d) Step 4 – Establish Frequency Relationships. Two types of frequency relationship are developed for the analysis. These are elevation-frequency relationship and erosion-frequency relationship. The first one shows the relationship between wave and water level and frequency of occurrence and is used to derive expected annual inundation damages. The second one shows the relationship between periodic erosion (or accretion) and frequency of occurrence and is used to estimate erosion-induced damages.

(e) Step 5 – Inventory Existing Conditions. An inventory of affected properties, including land, is performed to estimate potential damages. The inventory is done by land use activities (i.e., residential, commercial, industrial, etc.) and includes variables such as value, use, ground elevation, distance from the water, construction materials, area, and number of stories. Areas likely to be developed in the future or where land use changes could occur are also identified.

(f) Step 6 – Develop Damage Relationships. Damage relationships describe the expected value of structural or contents damages caused by various factors, such as depth of flooding, duration of flooding, sediment load, wave heights, amount of shoreline recession and warning time. Generalized or site-specific damage relationships can be used depending on the scope of the study and the availability of applicable generalized relationships. Generalized damage relationships are those developed for other geographic areas with similar characteristics to the study area. Site-specific damage relationships are usually required to estimate wave attack and erosion damages. These damage relationships are developed using actual damage data from past storm events. Estimates of losses for buildings, roads, protective works, and other features are developed at current price levels for existing development. Damage relationships are developed for each land use category. Anticipated damages from land loss due to erosion are computed as the market value of the average annual area expected to be lost. Nearshore land values are used to estimate the value of land lost. A risk-based analytical framework should be used to develop the damage relationships.

(g) Step 7 – Develop Damage-Frequency Relationships. The damage-frequency relationships represent how the damage associated with a given event (i.e., storm, wave, erosion) is related to the frequency of that event (probability of occurrence). The damage relationships developed in step 7 are combined with the frequency curves (developed by the hydraulic and hydrologic engineers) to estimate the damage-frequency relationships. Damage-frequency relationships (curves) are developed for each of the applicable damage mechanisms, i.e., long-term erosion, recession, inundation and wave attack and for each land use category. These relationships should be developed using a risk-based analytical framework.

(h) Step 8 – Calculate Expected Annual Damages and Benefits. The expected annual damage is the expected value of erosion losses and storm damages in any given year. Expected annual damages are calculated by computing the area under the damage-frequency curve using a life-cycle approach. Expected annual damages are calculated for the with- and without-project conditions. The difference between the with- and without-project expected annual damages represents the benefit associated with the project.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including hurricane and storm damage prevention. Specific cost sharing requirements for this purpose are discussed in Appendix E.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

3-5. Ecosystem Restoration. The Corps of Engineers incorporated ecosystem restoration as a project purpose within the Civil Works program in response to the increasing National emphasis on environmental restoration and preservation. Historically, Corps involvement in environmental issues focused on compliance with NEPA requirements related to flood protection, navigation, and other project purposes. The ecosystem restoration purpose shall be carried out in addition to activities related to NEPA compliance as discussed in Appendix C. Ecosystem restoration features shall be considered as single purpose projects or as a part of multiple purpose projects along with navigation, flood protection and other purposes, wherever those restoration features

improve the value and function of the ecosystem. Ecosystem restoration projects should be formulated in a systems context to improve the potential for long-term survival of aquatic, wetland, and terrestrial complexes as self-regulating, functioning systems. Similar to other project purposes, the value of ecosystem restoration outputs shall equal or exceed their cost.

a. Types of Improvements. A wide range of improvements to ecosystem functions is possible including, but not limited to, use of dredged material to restore wetlands, restoring floodplain function by reconnection of oxbows to the main channel, providing for more natural channel conditions including restoration of riparian vegetation, pools and riffles and adding structure, modification of obstructions to fish passage including dam removal, modifications to dams to improve dissolved oxygen levels or temperature downstream, removal of drainage structures and or levees to restore wetland hydrology, and restoring conditions conducive to native aquatic and riparian vegetation.

b. Specific Policies.

(1) The objective of ecosystem restoration is to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. Restored ecosystems should mimic, as closely as possible, conditions which would occur in the area in the absence of human changes to the landscape and hydrology. Indicators of success would include the presence of a large variety of native plants and animals, the ability of the area to sustain larger numbers of certain indicator species or more biologically desirable species, and the ability of the restored area to continue to function and produce the desired outputs with a minimum of continuing human intervention. Those restoration opportunities that are associated with wetlands, riparian and other floodplain and aquatic systems are most appropriate for Corps involvement. A more detailed discussion of Corps ecosystem restoration policy is found in [ER 1165-2-501](#) and Appendix E of this regulation.

(2) Purposes. Projects implemented under this guidance should address the restoration of ecosystems and not restoration of cultural or historic resources, aesthetic resources, or clean up of hazardous and toxic wastes.

(3) Mitigation. Ecosystem restoration projects should be designed to avoid the need for fish and wildlife mitigation. Projects implemented using restoration authorities may not be used as wetland banks or mitigation credit for the non-Federal sponsor.

(4) Public interest. For projects where the land on which the majority of the physical ecosystem restoration will occur is in the ownership of a single firm, individual, club, or association with restrictive membership requirements, it must be demonstrated clearly that the restoration benefits are in the overall public interest and that the benefits do not accrue primarily to the property owner.

(5) Land acquisition. Land acquisition in ecosystem restoration plans must be kept to a minimum. Project proposals that consist primarily of land acquisition are not appropriate. As a target, land value should not exceed 25 percent of total project costs. Projects with land costs exceeding this target level are not likely to be given a high priority for budgetary purposes.

(6) Recreational features. Limited recreational features compatible with the ecosystem outputs for which the project is designed are permissible. Recreational features must be justified and appropriately cost-shared, and should not increase the Federal cost of the ecosystem restoration project by more than 10 percent without prior approval of the ASA(CW). (See Appendix E for additional information.)

(7) Water Quality. Water quality is an important component of ecosystem structure and water quality improvement can be considered as an output of an ecosystem restoration project. However, projects or features that would result in treating or otherwise abating pollution problems caused by other parties where those parties have, or are likely to have a legal responsibility for remediation or other compliance responsibility shall not be recommended for implementation.

(8) Monitoring and adaptive management. Monitoring may be necessary to determine if the predicted outputs are being achieved and to provide feed back for future projects. Cost shared post-implementation monitoring will rarely be required. If cost shared post-implementation monitoring is being considered, it must be clearly defined, justified and the period of cost shared monitoring shall not exceed five years following completion of construction. The cost of monitoring included in the total project cost and cost shared with the non-Federal sponsor shall not exceed one percent of the total first cost of ecosystem restoration features. For complex specifically authorized projects that have high levels of risk and uncertainty of obtaining the proposed outputs, adaptive management may be recommended. The cost of the adaptive management action, if needed, will be limited to 3 percent of the total project cost excluding monitoring costs. Appendix F contains guidance for the CAP.

(9) Real Estate. Requirements specified in paragraph 4-3c(4) apply to ecosystem restoration studies. Generally, fee title is required for ecosystem restoration projects.

c. Evaluation Framework. While the planning process for single purpose ecosystem restoration projects is the same as for any other purpose, the evaluation process is different in that it focuses on quantitative and qualitative restoration outputs and monetary benefits are usually incidental. (See Appendix E for more information on the evaluation process.)

(1) Ecosystem restoration outputs must be clearly identified and quantified in appropriate units. Although it is possible to evaluate various physical, chemical, and/or biological parameters that can be modified by management measures which would result in an increase in ecosystem quantity and quality in the project area, the use of units that measure an increase in "ecosystem" value and productivity are preferred. Some examples of possible metrics which may be used include habitat units, acres of increased spawning habitat for anadromous fish, stream miles restored to provide fish habitat, increases in number of breeding birds, increases in target species and diversity indices. Alternate measures of ecosystem value and productivity may be used upon approval by CECW-P. Monetary gains (e.g., incidental recreation or flood damage reduction) and losses (e.g., flood damage reduction or hydropower) associated with the project shall also be identified.

(2) Cost Effectiveness-Incremental Cost Analyses – As used in this regulation, a plan is considered cost effective if it provides a given level of output for the least cost. Cost effectiveness analysis shall be used to identify the least cost solution for each level of environmental output being considered. Incremental cost analysis compares the additional costs to the additional outputs of an alternative. It is a tool that can assist in the plan formulation and evaluation process, rather than a dictum that drives that process. Incremental analysis helps to identify and display variations in costs among different increments of restoration measures and alternative plans. Thus, it helps decision makers determine the most desirable level of output relative to costs and other decision criteria. These analyses must be performed at an appropriate level of detail for each study to identify the most cost effective plan within the identified constraints.

(3) The significance of the outputs is a critical factor in determining if the monetary and/or non-monetary benefits of the proposed project justify monetary and/or non-monetary costs. The scarcity of the outputs is also a factor in this determination. The concepts of significance and scarcity are discussed in more detail in Appendix E. The risks and uncertainties associated with achieving the projected outputs must also be considered. (See Appendix E for additional information.) Contingent value procedures (survey techniques) for estimating existence, “option”, bequest, or other such non-use values will not be approved, and shall not be used, due to several factors including the conjectural nature of estimated values and the high difficulty in controlling bias.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including ecosystem restoration. Specific cost sharing requirements for this purpose are discussed in Appendix E. Appendix F provides details on cost sharing rules applicable to CAP authorities.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

3-6. Hydroelectric Power Generation. Congress, through various statutes, has directed the Corps to consider the development of hydroelectric power in conjunction with other water resources development plans. Current policy calls for the Corps to formulate comprehensive plans including the development of hydropower by a non-Federal sponsor. The Corps will pursue Federal development only where such non-Federal activity would be impractical. Even in those cases, all costs associated with development of hydroelectric power at the site of a Corps project are borne by non-Federal sponsors.

a. Types of Improvements.

(1) New Federal Projects. Hydroelectric power development may be considered during planning for multipurpose projects involving dams and lakes and may be recommended if non-Federal development would be impractical. The Corps does not construct single purpose hydroelectric power projects.

(2) Addition of Hydropower to Existing Projects. Corps projects without hydroelectric power facilities may add facilities through Federal Energy Regulatory Commission (FERC)

licensed non-Federal development. In rare cases, Congress may authorize Federal development. Cost of development must be borne by non-Federal sponsors.

(3) Pumped Storage. Pumped storage may be considered in the formulation of water resource projects. Non-Federal sponsors are encouraged to develop pumped storage facilities determined to be feasible.

b. Specific Policies.

(1) Practicability. A hydropower project is impractical for non-Federal development if there are compelling physical, operational, legal, competing use, institutional, environmental or economic reasons preventing development or operation, or if non-Federal development would be significantly less productive than Federal development (i.e., produce significantly fewer net NED benefits considering all project outputs).

(2) Economic Justification Requirements. Corps development of single purpose hydropower is precluded. In addition, before hydropower can be included in a multiple purpose project, the project must be economically justified based on other outputs (e.g., flood damage reduction or navigation).

(3) Marketing of Federal Hydropower. Although the Corps constructs and operates power facilities, the power itself is either sold by a Federal power-marketing agency or conveyed to a sponsor. Thus, plan formulation, financing and other implementation requirements should be coordinated with the power-marketing agency and sponsors.

(4) Studies. New studies may be conducted in cases where non-Federal development is impractical. This must be substantiated in order to justify a funding request. No single purpose hydropower studies may be initiated for new sites unless specifically directed and funded by the Congress. Non-Federal sponsors must agree to share the costs of the feasibility study with the explicit understanding that any resultant Federal project will be financed by non-Federal funds.

(5) Technical Services. Upon request, districts may provide reimbursable technical services to states or State subdivisions on hydropower development at sites where hydropower is not an authorized purpose (Intergovernmental Cooperation Act of 1968). Assistance is limited to technical services. Separate authority to construct or operate and maintain hydropower facilities is required. The Corps Center of Expertise for hydropower projects is the Hydroelectric Design Center (HDC) located in Northwestern Division (NWD). Some technical services must be done by the HDC. Any technical service agreements must be coordinated with HDC.

(6) Minimum Facilities for Future Power Installations. To support future hydropower development, penstocks and some other features ("minimum facilities") may be included in initial project construction, while installation of full facilities is postponed.

(7) Transmission Facilities. The placement of transmission lines and substations must be considered with other project effects.

(8) Hydroelectric Development at Non-Corps Sites. The Corps has no general authority to participate in hydroelectric development at non-Corps sites.

c. Evaluation Framework. The measurement standard and conceptual basis for hydropower benefits is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. In the absence of direct measures of marginal willingness to pay, the benefit can be estimated using the resource cost of the most likely alternative to be implemented in the absence of the alternatives under consideration. Since the Corps current participation on the development of hydropower generation projects is very limited, the evaluation procedures are not summarized in this regulation. (See Appendix E for a detailed description, if needed). Current Corps involvement in hydropower generation projects involves the evaluation of major rehabilitation of existing projects. The procedures to evaluate major rehabilitation projects are also described in Appendix E.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including hydropower. Specific cost sharing requirements for this purpose are discussed in Appendix E.

3-7. Recreation. The U.S. Army Corps of Engineers is one of the Nation's largest providers of outdoor recreation opportunities. Although known primarily for the opportunities managed at its lake projects, the Corps also participates in the planning, design and construction of recreation facilities at a wide variety of other types of water resource projects. Such facilities might include hiking and biking trails associated with a stream channel or levee primarily designed for flood damage reduction. There is no general authority for Corps participation in a single purpose recreation project.

a. Types of Improvements. A list of recreational facilities which may be provided in recreation development at Corps projects is provided in Appendix E. As a general rule, the Corps does not participate in the development of improvements that provide outputs or services generally considered vendible. If there is no non-Federal recreation sponsor, facilities or project modifications may not be recommended unless justified by other project purposes, in which case recreation benefits are considered incidental. Minimum facilities needed to maintain public health or safety are permissible. These are limited to road end turnarounds, guardrails, barricades, warning signs, public safety fencing and vault toilets unless upgrades are required by Federal or State regulations. Boat ramps and trailer parking justified by project operations requirements may be provided.

b. Specific Policies.

(1) Lakes (man-made).

(a) Lakes, or reservoirs, are impoundments created behind dams, or behind navigation locks and dams if lands not subject to navigation servitude are needed for water storage. Recreation policies applicable to lakes are not applicable to dry dams, that is, those dams not providing permanently impounded water. The Federal government may participate in basic

recreation facilities on project lands or separable recreation lands if a non-Federal sponsor will participate and cost share. Economically justified recreation facilities are cost shared 50 percent Federal and 50 percent non-Federal. The same conditions apply to separable lands acquired for future recreation development. Cost of recreation development at lakes may not exceed one-half of total project costs. If recreation is a project purpose, several scales of development must be formulated and evaluated.

(b) Reallocation of Storage. Storage reallocation for recreation which significantly affects other authorized purposes, or involves major structural or operational changes, requires Congressional approval. Costs reallocated to recreation and subject to cost sharing will be set to the highest of benefits foregone, revenues foregone, replacement costs, or updated cost of storage. Appendix E provides detailed information on how to compute these benefits, revenues and costs. Cost sharing of facilities is 50 percent Federal and 50 percent non-Federal.

(2) Non-lake Flood Damage Reduction and Navigation Projects. General policies described in the previous paragraphs also apply to non-lake projects, with the following exceptions:

(a) Basic recreation facilities that take advantage of project created opportunities may be provided, but only on lands acquired for non-recreation purposes.

(b) Separable lands acquired for access, parking and facilities, which are required for health and safety are eligible for recreation cost sharing.

(c) Generally, if there is no non-Federally sponsored recreation development, there is no Federal participation in minimum facilities.

(d) The Federal cost of a project including recreation may not exceed the Federal cost of the project excluding recreation by more than ten percent without prior approval by the Secretary of the Army.

(3) Shore Protection Projects. Policy precludes the addition of sand to a beach solely to increase its potential for recreation. Other associated recreation developments are entirely non-Federal responsibility except on Federally-owned shores.

(4) Nonstructural Flood Damage Reduction Projects. Nonstructural flood damage reduction projects are justified mainly by creating new uses for floodplains, and one of the most important new uses is recreation. The limitation of increased Federal cost for recreation development, described in paragraph 3-7b(2), does not apply to projects formulated for nonstructural flood damage reduction that include recreation development. Cost of recreation development may not exceed one-half of the total project costs.

(5) Recreation at ecosystem restoration projects. Recreation at ecosystem restoration projects should be compatible with these types of projects and enhance the visitation experience by taking advantage of natural values. The social, cultural, scientific, and educational values should be considered within the framework of the ecosystem restoration project purpose.

Recreation development at an ecosystem restoration project shall be totally ancillary to the primary purpose, appropriate in scope and scale, and shall not diminish the ecosystem restoration outputs used to justify the project. Recreation facilities may be added to take advantage of the education and recreation potential of the ecosystem restoration project but the project shall not be formulated for recreation. The recreation potential may be satisfied only to the extent that recreation does not adversely impact the ecosystem restoration purpose, and the recreation facilities are justified. The recreational experience shall build upon the ecosystem restoration objective and take advantage of the restored resources rather than detract from them. Ecosystem restoration projects should not encourage public use if there is no non-Federal sponsor to cost share recreation. (Refer to Appendix E for a more detailed discussion on this matter.) Federal participation in recreation development at ecosystem restoration projects will be limited to the facilities shown on the list in Appendix E. Specific policies stated in paragraph 3-7b(2) of this regulation also apply to recreation development at single purpose ecosystem restoration projects. For multi-purpose projects that include non-structural flood damage reduction, ecosystem restoration and recreation, the cost of recreation associated with the non-structural flood damage reduction features may not exceed one-half of the total cost for flood damage reduction plus recreation; and, for recreation associated with ecosystem restoration, the Federal cost of ecosystem restoration plus the Federal cost of recreation may not exceed by more than 10 percent the Federal cost of the ecosystem restoration project without prior approval of the ASA(CW). (See Appendix E for additional information on the implementation of this policy.)

(6) Continuing Authorities. Flood damage reduction, navigation and shore protection continuing authorities are subject to the same recreation policies and conditions of participation as specifically authorized projects. Additionally, all costs in excess of the statutory limitation of Federal expenditures for these projects are entirely a local responsibility.

(7) Limitations on Corps of Engineers Participation in Recreation Projects. Budget Policy generally precludes using Civil Works resources to implement recreation oriented projects in the Civil Works program. An exception is where a project is formulated for other primary purposes and average annual recreation benefits are less than 50 percent of the average annual benefits required for justification (i.e., the recreation benefits that are required for justification are less than an amount equal to 50 percent of project costs).

c. Evaluation Framework. The measurement standard and conceptual basis for recreation benefits is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. The evaluation of recreation projects shall be conducted following the process described in paragraph 2-3e of this regulation. The procedures described in the following paragraphs apply to the estimation of benefits used in the economic evaluation of recreation projects and summarize requirements and procedures. Appendix E provides additional guidance on these requirements and procedures.

(1) National Economic Development Benefits. NED benefits from recreation opportunities created by a project are measured in terms of willingness to pay. Benefits for projects that increase the supply of recreational facilities are measured as the willingness to pay for the increment of supply. Benefits for projects that alter willingness to pay for recreational facilities are measured as the with- and without-project willingness to pay.

(2) Evaluation Procedure. It is frequently not possible to estimate demand directly from observed price-consumption data for publicly provided recreation. Thus, three alternate methods can be used to estimate use and willingness to pay. They are the travel cost method (TCM), contingent valuation method (CVM) and the unit day value method (UDV). Criteria to select the method to use include availability of regional demand model, type of recreation activities affected (general or specialized), estimated annual visits and cost of proposed facilities. Appendix E provides details on how to apply these criteria and on how to estimate benefits using each one these evaluation methods.

(a) Travel cost method. The basic premise of the travel cost method is that per capita use of a recreation site will decrease as out-of-pocket and time costs of traveling to the site increases, other variables being constant. TCM consists of deriving a demand curve by using the variable cost of travel and the value of time as proxies for price. This method may be applied to a site-specific study or a regional model.

(b) Contingent Valuation Method. The contingent valuation method estimates NED benefits by directly asking individual households their willingness to pay for changes in recreation opportunities at a given site. Individual values collected may be aggregated by summing willingness to pay for all users in the study area. This method may be applied to a site-specific study or a regional model. Contingent value techniques shall not be used to estimate existence, "option", bequest or other such non-use values, due to several factors including the conjectural nature of estimated values and the high difficulty in controlling bias.

(c) Unit Day Value. The unit day value method relies on expert or informed opinion and judgment to estimate the average willingness to pay of recreational users. By applying a carefully thought-out and adjusted unit day value to estimated use, an approximation is obtained that may be used as an estimate of project recreation benefits. This method may be applied to site-specific studies only.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including recreation. Specific cost sharing requirements for this purpose are discussed in Appendix E.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

3-8. Water Supply. National policy regarding water supply states that the primary responsibility for water supply rests with states and local entities. The Corps may participate and cooperate in developing water supplies in connection with construction, operation and modification of Federal navigation, flood damage reduction, or multipurpose projects. Certain conditions of non-Federal participation are required.

a. Types of Improvements. The Corps is authorized to provide storage in multipurpose reservoirs for municipal and industrial water supply and for agricultural irrigation. Some facilities for releasing or withdrawing the stored water can be included in the project structure.

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The cost of storage and associated facilities must be repaid by the non-Federal sponsor. The Secretary of the Army is authorized to make agreements with states, municipalities and non-Federal entities for right to storage in Corps reservoirs. Storage for agricultural irrigation may be provided at the request of the Secretary of the Interior in 17 Western states as defined in Appendix E. Storage for this purpose can be provided in non-Western states provided cost sharing requirements described in Appendix E are met. Existing Corps projects may be modified to add storage for municipal and industrial water supply. Storage may also be reallocated from other purposes to municipal and industrial uses. Specific policies and procedures applicable to reallocations of storage are discussed in Paragraph 3-8b(5). Permanent reallocations for irrigation water supply may also be considered in existing projects through the submittal of a Section 216 report (Review of Completed Projects) to Congress. Paragraph 3-10b and Appendix G provide more information on Section 216 reports. The Secretary of the Army can also enter into agreements with states, municipalities, private entities or individuals for the use of surplus water as defined in, and under the conditions described in, Paragraph 3-8b(4). Surplus water can also be used to respond to droughts and other emergencies affecting municipal and industrial water supplies.

b. Specific Policies.

(1) Water Rights. Potential encroachment on the water rights of lawful downstream water users by the operation of water supply storage must be carefully considered and coordinated with responsible State and local interests. The Corps will not acquire water rights necessary for use of stored water. This is a responsibility of the water users. Nor should the Corps become involved in resolving conflicts among water users concerning rights to use stored water, but will look to responsible State agencies to resolve such conflicts.

(2) Permanent Rights to Storage. Under the authority of Public Law 88-140 of 1963 (Extension of Right to Water Supply Storage), the non-Federal sponsor acquires a permanent right to the use of storage as long as the space is physically available.

(3) New Projects. Corps provided water supply service normally means reservoir space for storing water and, where necessary, facilities in the project structure for releasing or withdrawing the stored water for water supply purposes. The non-Federal sponsor must pay all costs allocated to M&I water supply storage space. Conduits for release or withdrawal of stored M&I water may be designed as an integral part of the dam structure. Costs are identified as specific M&I water supply costs with 100 percent payment of investment and annual costs by users.

(a) Multi-purpose Project. Limits are placed on the percent of municipal and industrial (M&I) water that may be included in a multi-purpose project. To be considered multi-purpose, a project must fall in one of the following categories:

- The project has justified, separable storage for flood damage reduction or navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least ten percent of total NED benefits. If M&I water supply exceeds 90 percent of total benefits the project is considered single purpose M&I water supply and thus not eligible for Federal participation.

- The project has no separable storage for flood damage reduction, navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least twenty percent of total NED benefits. If M&I water supply exceeds 80 percent of total benefits the project is considered single purpose M&I water supply and thus not eligible for Federal participation.

(b) Single-Purpose Water Supply. The Corps does not conduct single purpose water supply studies, except for analysis of existing data under Section 22 of the WRDA of 1974 as amended. This constraint does not apply to single purpose water supply modifications to previously constructed projects having flood damage reduction or navigation purposes. Also, the Corps may conduct reimbursable single purpose water supply studies for non-Federal interests under provisions of the Intergovernmental Cooperation Act of 1968.

(c) Limits on Future Use Storage. The Water Supply Act of 1958, as amended, states that not more than 30 percent of total construction costs can be allotted to water supply for future use. In addition, Corps policy is to obtain full payment of allocated capital costs from non-Federal entities desiring water supply storage prior to or during construction. Failing this, non-Federal sponsors shall negotiate a repayment agreement, with payments to begin immediately after construction completion under the provisions of Section 932 of the WRDA of 1986.

(4) Surplus Water. Under Section 6 of the Flood Control Act of 1944, the Secretary of the Army is authorized to make agreements with states, municipalities, private concerns, or individuals for surplus water that may be available at any reservoir under the control of the Department. These agreements may be for domestic, municipal, and industrial uses, but not for crop irrigation. When the user desires long-term use, a permanent storage reallocation should be performed under the authority of the Water Supply Act of 1958, as amended. Surplus water is either water stored in a Department of the Army reservoir that is not required because the authorized use for the water never developed or the need was reduced by changes that occurred since authorization or construction, or water that would be more beneficially used as municipal and industrial water than for the authorized purposes over some specific time period. Use of the Section 6 authority is allowed only where non-Federal sponsors do not want to purchase storage because: use of the water is needed for a short term only or use would be temporary pending development of the authorized use and reallocation of storage is not appropriate. Terms of the agreements are normally for five (5) years, with an option for a five (5) year extension, subject to the space being needed for the authorized purposes, or the authorized purpose is deauthorized.

(5) Reallocation of storage. Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. Or, this amount may be added to the project to serve as storage for municipal and industrial water supply at the discretion of the Commander, USACE. When reallocating storage from the flood control pool to municipal and industrial water supply, the need to compensate existing water supply contract holders shall be evaluated. Dependable yield mitigation storage (DYMS) shall be analyzed and implemented to

compensate these users. Compensation to existing hydropower users through minor operational changes, where appropriate, may also be considered. Procedures and requirements to analyze and implement DYMS and operational changes are described in Appendix E.

(a) Costs of Reallocated Storage. The cost allocated to the non-Federal entity (i.e., the price to be charged for the capital investment for the reallocated storage) will normally be established as the highest of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project. The methodologies to be used to compute these benefits, revenues and costs are discussed in Appendix E. The non-Federal entity shall also be responsible for an appropriate share of the annual costs that include specific and joint-use operation, maintenance, repair, replacement and rehabilitation (OMRR&R) costs. In those cases where the cost of water supply is based on hydropower replacement costs, the OMRR&R increment of such cost is to be deleted from the total charge and then billed separately based on a pro rata share of the actual experienced project costs.

(b) Financial Feasibility. A test of financial feasibility must be performed to demonstrate that reallocation of storage is the most efficient water supply alternative. Appendix E provides additional information on how to conduct this analysis.

(c) Addition of Storage. When water supply storage is added to an existing project and storage is not reallocated, a willingness to pay concept is used to assign costs to the new water supply purpose. Under this concept, the non-Federal sponsor is responsible for 100 percent of the new construction costs allocated to M&I water supply. This is to be paid during the construction period. In addition, payments equal to 50 percent of the sponsor's savings are required.

(6) Seasonal Operations for Water Supply. Congress has not provided general authority for including storage space in Corps projects for seasonal M&I use, either as withdrawals or to improve groundwater supplies. However, project specific authorizations are not precluded. In addition, project operations may be modified to enhance ground water replenishment, to increase downstream flows, or to otherwise enhance usage of projects for M&I purposes. Modifications must be consistent with authorized project purposes and law. Cost sharing requirements for seasonal operations for water supply are provided in Appendix E.

(7) Water Withdrawals Contracts. The Corps will not use Section 501 of the Independent Offices Appropriations Act of 1952 to obtain reimbursement for water supply withdrawals. Existing contracts under this authority should be allowed to expire under the terms of the contract. These contracts are not to be extended.

c. Evaluation Framework. The measurement standard and conceptual basis for benefits is willingness to pay for each increment of output from a plan. In some planning situations it is infeasible to directly measure willingness to pay; therefore, alternative techniques are used to estimate the total value of a plan's output. The evaluation of water supply projects shall be conducted following the process described in paragraph 2-3e of this regulation. The procedures described in the following paragraphs apply to the estimation of benefits used in the economic

evaluation of water supply projects and summarize requirements and procedures. Appendix E provides additional guidance on these requirements and procedures.

(1) National Economic Development Benefits. Where the price of water reflects its marginal cost, that price is used to calculate willingness to pay for additional water supply. If such direct measures of marginal willingness to pay are not available, the benefits are measured by the resource cost of the alternative most likely to be implemented in the absence of the proposed plan. The benefits from nonstructural measures are also computed using the cost of the most likely alternative.

(2) With- and Without-Project Condition. Specific elements included in the definition of the without-project condition are existing water supplies, existing and expected future water systems, water management contracts and operating criteria, water supplies that are under construction or authorized and likely to be constructed during the period of analysis, the probability of delivery for each source of water supply, water quality, and conservation measures. These six elements are also considered under the with-project condition.

(3) Evaluation Procedure. The steps required to evaluate benefits for water supply projects are described in the following paragraphs. The level of effort expended on each step will depend on the scope and nature of the proposed improvement, the state of the art to accurately develop the estimates and the sensitivity of project formulation and evaluation to further refinement. Appendix E provides additional guidance for each step.

(a) Step 1 - Identify the study area. The study area is the area within which significant project impacts will accrue from the use of M&I water supplies, including areas that will receive direct benefits and/or incur costs from the provision of M&I water supply.

(b) Step 2 - Estimate future M&I water supplies. All sources of supply expected to be available to the M&I user are analyzed. The analysis is performed by time period and includes existing water supplies, institutional arrangements, additional water supplies, probability of water supply and water quality.

(c) Step 3 - Project future M&I water supply. Future water use is projected by sector considering seasonal variations in use. The projections are based on an analysis of the factors that may determine variations in levels of water use.

(d) Step 4 – Identify the deficit between future water supplies and use. Projected water use is compared to future water supplies to determine whether any deficits exist in the study area. An analysis of the intensity, frequency and duration of the expected deficits is performed.

(e) Step 5 – Identify alternatives without the Federal plan. Alternative plans that are likely to be implemented by communities and/or industries in the absence of a Federal plan are identified in this step. These plans should be identified through analysis of the total water resources of the region, allowing for present and expected competing uses.

(f) Step 6 – Rank and display the alternative plans based on least cost analysis. All the alternatives are ranked in order from the highest cost alternative to the lowest. Annualized costs for each alternative are calculated on the basis of the service (depreciable) life of the facility or the period of analysis, whichever is less.

(g) Step 7 – Identify the most likely alternative. The least cost alternative is identified as the most likely alternative.

(h) Step 8 – Compute M&I water supply annualized benefits. The annualized benefits of the Federal supply plan are equal to the annualized cost of the most likely alternative.

(i) Risk-analysis techniques, required for all water resources studies, have not been specifically developed for municipal and industrial water supply projects. Where water supply constitutes a substantial portion of total benefits, districts are required to perform, at a minimum, sensitivity analysis of key variables such as cost of least cost alternative, future demand for water and future availability of water supplies.

d. Cost Sharing Requirements. Paragraph 2-8 discusses general cost sharing considerations applicable to all project purposes including water supply. Specific cost sharing requirements for this purpose are discussed in Appendix E.

e. Other Authorities. Other authorities that may be applicable to this project purpose are discussed in paragraph 3-10.

3-9. Multiple Purpose Studies.

a. Definition. Multiple purpose studies can examine more than one type of water resources problem or opportunity and recommend projects with more than one purpose. Corps mission areas can be combined to address multiple objectives within the localized study area. For example, many existing flood control dams also supply water for M&I or agricultural uses, or provide hydropower. Additionally, there may be opportunities to address some combination of purposes which also could include ecosystem restoration and/or recreation. Oftentimes there will be competing water resources uses; therefore environmental, social, and economic considerations need to be evaluated. The evaluation process for these projects will demonstrate the trade-offs for providing various combinations and levels of economic, social, and environmental outputs. Multiple purpose studies will typically result in the recommendation of a single project or set of projects that satisfy the range of water resources purposes identified.

b. Comprehensive studies. A comprehensive study characterizes, measures, and evaluates a particular water resources problem or opportunity across a broad area or region. Typically, the focus of comprehensive studies is water resources problems related to the Corps main mission areas (flood damage reduction, ecosystem restoration or navigation). Non-Federal entities with interests common to the Corps mission area(s) identified should be encouraged to participate in the study investigations; the general public should not only be informed about the study but also be canvassed for information related to needs, opportunities and constraints. Based

on evaluation that considers existing and without-project conditions, the study will determine the need for further Corps studies and projects.

c. **Watershed Studies.** Watershed studies are planning initiatives that have a multi-purpose and multi-objective scope and that accommodate flexibility and collaboration in the formulation and evaluation process. Possible areas of investigation for a watershed study include water supply, natural resource preservation, ecosystem restoration, environmental infrastructure, recreation, navigation, flood management activities, and regional economic development. This multi-purpose approach is recommended since numerous entities within the boundaries of any watershed must agree with and support watershed improvement and management initiatives in order to successfully implement effective system-wide solutions. The outcome of a watershed study will generally be a watershed resources management plan which identifies the combination of recommended actions to be undertaken by various partners and stakeholders in order to achieve the needs and opportunities identified in the study. The watershed resources management plan may or may not identify further Corps studies or implementation projects.

d. **Cost Sharing Requirements.** Multiple-purpose studies and projects are cost shared in accordance with the cost sharing policies applicable to each project purpose required. Before determining the required cost sharing for projects, an allocation of total project costs to each purpose must be accomplished. The following paragraphs summarize the requirements and procedures used by the Corps for allocating costs of multiple purpose projects. Detailed cost allocation procedures are discussed in Appendix E.

(1) **Cost Allocation.** The need for cost allocation stems from pricing and cost-sharing policies that vary among purposes. Cost allocation is the process of apportioning total project financial costs among purposes served by a project. Financial costs are implementation outlays, transfer payments such as replacement housing assistance, and the market value of in-kind contributions. Financial costs are to be allocated to those purposes for which the project is formulated.

(2) **Cost Allocation Standard.** Cost sharing policies may differ for construction costs and other costs such as operation, maintenance, repair, replacement and rehabilitation costs. Allocations for each one of these types of costs shall be made, as applicable, to the particular project. The Separable Costs/Remaining Benefits (SCRB) method shall be used for the allocation of costs among project purposes. Costs allocated to each purpose are the sum of the separable cost for the purpose and a share of joint cost. Joint costs may be allocated among purposes in proportion to remaining benefits. They may also be allocated in proportion to the use of facilities, provided that the sum of allocated joint cost and separable cost for any purpose does not exceed the lesser of the benefit or the alternative cost for that purpose. The SCRB method is also applicable for multi-purpose projects that include ecosystem restoration as a project purpose. Guidance on this application is under development. If the need for a cost allocation analysis for this type of project is foreseen, contact CECW-PD for additional guidance, preferably during the early phases of the study.

3-10. Other Authorities.

a. Continuing Authorities Program (CAP). The planning principles, guidelines and process described in previous chapters also apply to studies conducted under the Continuing Authorities Program. Specific guidance and planning requirements for studies conducted under each section included in the Program is provided in Appendix F. The following sections are included under the Continuing Authorities Program:

- Section 14, Flood Control Act of 1946, as amended, for emergency streambank and shoreline protection for public facilities and services
- Section 103, River and Harbor Act of 1962, as amended, for protecting the shores of publicly owned property from hurricane and storm damage
- Section 107, River and Harbor Act of 1960, as amended, for navigation
- Section 111, River and Harbor Act of 1968, as amended, for mitigation of shoreline damage caused by Federal navigation projects
- Section 204 of Water Resources Development Act of 1992, as amended, for beneficial uses of dredged material
- Section 205, Flood Control Act of 1948, as amended, for flood damage reduction
- Section 206 of Water Resources Development Act of 1996, as amended, for aquatic ecosystem restoration
- Section 208, Flood Control Act of 1954, as amended, for snagging and clearing for flood damage reduction
- Section 1135 of Water Resources Development Act of 1986, as amended, for project modifications for improvement of the environment

b. Review of Completed Projects. Section 216 of the River and Harbor and Flood Control Act of 1970 authorizes investigations for modification of completed projects or their operation when found advisable due to significantly changed physical or economic conditions and for improving the quality of the environment in the overall public interest. Initial appraisal reports are prepared under Section 216 using operations and maintenance (O&M) funds. The cost of preparing the initial appraisal report is limited to \$20,000. Results from this report can be used to support initiation of a reconnaissance study through normal budgetary process. Following the initial appraisal, the 216 study process is of the same as a normal General Investigations study. A feasibility study under Section 216 authority would be appropriate for large scale ecosystem restoration projects linked to existing Civil Works projects, but whose costs would be too large for Section 1135, Section 206, or Section 204 authorities. Additional guidance can be found in [ER 1165-2-119](#).

c. Planning Assistance to States (PAS). The PAS Program is carried out in accordance with the provisions of Section 22 of the WRDA of 1974 as amended. This law authorizes the Chief of Engineers to cooperate with states, the District of Columbia, the Commonwealth of Puerto Rico, the US Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and Federally recognized Native American (Indian) Nations in preparing plans for the development, utilization, and conservation of water and related land resources of drainage basins, watersheds or ecosystems located within the boundaries of the State or Indian lands. Assistance is provided on the basis of specific requests rather than through Congressional study authorization. (See Appendix G for details on the implementation of this program).

d. Flood Mitigation and Riverine Restoration. Section 212 of the WRDA of 1999 provides programmatic authority for the Secretary of the Army to implement projects that reduce flood hazards and restore the natural function and values of rivers within certain specified limits. The program emphasizes the use of nonstructural approaches to flood damage reduction and coordination with FEMA and other Federal, State, and local agencies, and Native American Nations. Projects must significantly reduce potential flood damages, improve the quality of the environment and be justified considering all costs and beneficial outputs. Funds are authorized to be appropriated in fiscal years 2001 through 2005. Additional guidance for this program is under development.

CHAPTER 4

Types of Studies, Reports and Procedures

4-1. Types of Studies and Reports. The process by which projects are formulated and evaluated is one step in the larger project delivery process. In addition to formulation and evaluation, the project delivery process includes the preparation of the decision document, and the technical and policy reviews of that document and its supporting material. It is intended that the production and reviews of planning decision documents also reflect the same common sense approach as described in the Introduction to Chapter 2. Planning decision documents should be prepared in a timely and cost-effective manner, consistent with the size and complexity of the project. Likewise, the time and effort spent in technical and policy review and in responses to review comments should reflect the size and complexity of the project. Wherever possible, technical and policy review should be incorporated positively and proactively into early phases of the planning and documentation processes and throughout these processes, rather than at the end. Planning studies and reports planning are:

a. Pre-authorization Studies and Reports. Studies for project authorization are undertaken in response to either a study-specific authority or a general authority. Study-specific authorization may be a resolution from the House Committee on Public Works and Transportation, a resolution from the Senate Committee on the Environment and Public Works, or included in a public law. General authorities are contained in Section 216 of the Flood Control Act of 1970 and Section 2 of the Fish and Wildlife Coordination Act of 1958. Section 216 authorizes investigations for modification of completed projects or their operation. Section 2 allows investigation of modifications to projects that were not substantially completed prior to August 1958 in the interest of conservation of fish and wildlife. These studies and reports are funded with General Investigations (GI) funds. Studies under these authorities are conducted in two phases in accordance with the WRDA of 1986.

(1) Reconnaissance Phase. The objectives of the Reconnaissance Phase are to: (1) determine if the water resource(s) problems warrant Federal participation in feasibility studies, (2) define the Federal interest, (3) complete a 905(b) Analysis (refers to Section 905(b) of the WRDA of 1986) or a Reconnaissance Report, (4) prepare a Project Management Plan (PMP), (5) assess the level of interest and support from non-Federal entities, and (6) negotiate and execute a Feasibility Cost Sharing Agreement (FSCA). This determines whether or not planning to develop a project should proceed to the more detailed feasibility stage. The reconnaissance phase is Federally funded and the target for completion is 6-12 months from initial obligation of reconnaissance funds to a signed Feasibility Cost Sharing Agreement.

(2) Feasibility Phase. The objective of feasibility studies is to investigate and recommend solutions to water resources problems. Cost of feasibility studies, except single purpose inland navigation studies, are 50 percent Federal and 50 percent non-Federal as defined in Section 105 of the WRDA of 1986. Typical studies should be completed in 18-36 months. The results of these studies are documented in a feasibility report that includes documentation of environmental compliance. (See Appendix G for additional information on the content of the feasibility report.)

b. Post Authorization Studies and Reports. These planning studies and reports are generally funded as a part of engineering and design studies under the General Investigation appropriation. These studies are undertaken pursuant to project specific construction authorities. Construction authorities imply the authority to undertake reevaluation studies. Studies may be necessary if a significant period of time has elapsed or conditions have changed significantly since the feasibility study was completed. The reports described below shall be used to support post authorization changes provided they include the specific information outlined in Appendix G, paragraph G-16.

(1) General Reevaluation. This is reanalysis of a previously completed study, using current planning criteria and policies, which is required due to changed conditions and/or assumptions. The results may affirm the previous plan; reformulate and modify it, as appropriate; or find that no plan is currently justified. The results of the study are documented in a General Reevaluation Report (GRR).

(2) Limited Reevaluation. This study provides an evaluation of a specific portion of a plan under current policies, criteria and guidelines, and may be limited to economics, environmental effects or, in rare cases, project formulation. A Limited Reevaluation Report (LRR) documents the results of the analysis undertaken.

(3) Design Documentation Reports (DDR) and Engineering Documentation Reports (EDR). During the Preconstruction, Engineering and Design (PED) phase, districts will prepare a Design Documentation Report (DDR) which is a record of final design after the feasibility phase. The DDR provides the technical basis for the plans and specifications and serves as a summary of the final design. An Engineering Documentation Report (EDR) may also be prepared to support the PCA when there are minor changes in design and costs from the authorizing reports. The EDR may also be used in lieu of a GRR to document other information not included in a decision document when project reformulation is not required and the changes are only technical changes. Requirements for preparation and processing of these reports are stated in [ER 1110-2-1150](#). If reformulation of plans is required during PED, then districts shall prepare a GRR or LRR, as described in paragraphs 4-1b(1) and 4-1b(2). Per guidance contained in [ER 1110-2-1150](#), GDM's and DM's will no longer be prepared.

(4) National Environmental Policy Act (NEPA) Documentation. The scope and nature of the changes in the environmental effects of the project identified as a result of acquisition of new information, of changed conditions, or changes in the project will determine the appropriate type of NEPA documentation. Options include an Environmental Assessment which may result in a Finding of No Significant Impact or a Supplemental Environmental Impact Statement. Guidance regarding NEPA documentation is contained in [ER 200-2-2](#)

c. Other Types of Studies and Reports.

(1) Studies of Water Resources Needs of River Basins and Regions. Section 729 of WRDA of 1986 authorizes the Corps of Engineers to study the water needs of river basins and regions of the United States, in consultation with State, interstate and local governmental entities. Section 729 studies may result in recommendations for more detailed feasibility studies, but this

is not required. Section 729 studies should not result in recommendation of projects for Congressional authorization.

(2) Flood Insurance Studies. See guidance in paragraph 3-3f of this regulation and in Appendix G.

(3) Planning Assistance to States Studies. Guidance on Planning Assistance to States (Section 22) studies is in paragraph 3-10c of this regulation and in Appendix G.

(4) Continuing Authorities Program (CAP) Studies. The planning [Principles and Guidelines](#) described in previous chapters apply to studies conducted under the Continuing Authorities Program. However, due to specific legislative requirements, the guidance for each authority must be referenced. This guidance is contained in Appendix F of this regulation.

(5) Section 216 - Review of Completed Projects. See guidance in paragraph 3-10b of this regulation and in [ER 1165-2-119](#).

(6) Congressional Adds. The requirements and processes described in this chapter apply to Congressionally added studies unless specific instructions otherwise are provided through the budget process.

d. Deauthorization. The review of studies and projects to determine eligibility for deauthorization is covered in Paragraph 4-7.

4-2. Corps of Engineers Final Approval Authorities. The table below summarizes the approval responsibilities for the different planning products.

Table 4-1, Corps of Engineers Final Approval Authorities

PLANNING PROGRAM Study Phase/Product	APPROVAL RESPONSIBILITIES		
	District	Division	Headquarters (HQUSACE)
GENERAL INVESTIGATIONS:			
Section 905(b) Analysis			X
Reconnaissance Report			X
Project Management Plan	X		
Feasibility Cost Sharing Agreement ²	X		
Feasibility Report			X ¹
Section 729 Report			X
CONTINUING AUTHORITIES (Sections 14, 103, 107, 111, 204, 205, 206, 208, 1135)			
Preliminary Restoration Plans		X	
Feasibility Cost Sharing Agreement ²		X	
Planning Design Analysis Documentation		X	
Detailed Project Report		X	
PLANNING ASSISTANCE TO STATES	X		
FLOODPLAIN MANAGEMENT SERVICES	X		
POST-AUTHORIZATION REPORTS:			
General Reevaluation Report ¹			X
Limited Reevaluation Report		X	
Major Rehabilitation Reports			X
REPORTS FOR PROJECTS AUTHORIZED SUBJECT TO A SECRETARIAL FINDING³			

¹ Coordinated with ASA(CW).

² If deviation from model agreement, HQUSACE approval required.

³ ASA(CW) approval required.

4-3. Procedures for Studies and Reports.

This section provides guidance for studies for projects requiring specific authorization. Additional guidance is found in Appendix G.

a. Reconnaissance Phase. The reconnaissance phase commences with the obligation of appropriated reconnaissance funds, and terminates with the execution of a Feasibility Cost Sharing Agreement (FCSA) or the division commanders' public notice for a report recommending no Federal action. The products are a 905(b) Analysis report, a Project Management Plan, a letter of intent from the non-Federal sponsor, and a feasibility cost sharing agreement (FCSA).

(1) Reconnaissance Study Period. The reconnaissance study and the Section 905(b) Analysis, part of the reconnaissance phase, begins with the obligation of appropriated reconnaissance funds. The target for completing the reconnaissance phase or the signing of the FCSA for the 905(b) Analysis is 6-12 months. The cost of reconnaissance studies generally is limited to \$100,000.

(2) 905(b) Analysis Report. This report documents the results of the analyses conducted during the reconnaissance phase. The report shall include a preliminary analysis of Federal interest, costs, benefits, environmental impacts, and an estimate of the costs of preparing a feasibility report. The analyses conducted shall be based on existing, readily available data and professional and technical judgement. The 905(b) Analysis Report is prepared by the district and approved by HQUSACE. Additional details on the content and procedures for the 905(b) Analysis Report are provided in Appendix G.

(3) Project Management Plan (PMP). The Project Management Plan (PMP), prepared and negotiated during the reconnaissance phase, documents the Federal and non-Federal efforts required to conduct the feasibility phase. The PMP will ensure that the work required for the feasibility phase has been carefully developed and considered. The PMP forms the basis for estimating the total study cost and non-Federal sponsor share. It also is the basis for assigning tasks between the Corps and the sponsor and for establishing the value of in-kind services. While developing the PMP, the District Commander must discuss with the prospective non-Federal sponsor(s) the objectives of the feasibility study, necessary level of detail, cost of studies, and scheduling of activities for the feasibility study. During negotiations the prospective non-Federal sponsor must be informed that the level of accuracy of alternative plan evaluation and cost estimates to be developed in the feasibility study will depend on the extent of uncertainties and the depth of investigations made during the feasibility study. The Division will ensure that the PMP receives appropriate review.

(4) Feasibility Cost Sharing Agreement (FCSA). The Feasibility Cost Sharing Agreement documents the commitments of the Department of the Army and a non-Federal sponsor to share the cost of the feasibility phase. The FCSA is intended to promote a partnership for the conduct of the feasibility study. The Department of Army remains responsible for representing the Federal interest by following Federal policies and budgetary priorities. Both parties will conduct planning within the framework established by the P&G with guidance

provided in this regulation. The FCSA will be accompanied by a signed Certification Regarding Lobbying and, if applicable a completed Disclosure of Lobbying Activities.

b. Feasibility Phase. The feasibility phase starts with the issuance of initial Federal feasibility funds, following execution of the FCSA, and terminates on the date the feasibility report is submitted to the Office of Management and Budget by the Assistant Secretary of the Army for Civil Works (ASA (CW)) for review of consistency with the policies and programs of the President. The feasibility phase may also be terminated if it is determined that there is no clear Federal interest in a project or if no project would meet the current policies or budget priorities. (See paragraph 4-3c(6)) The products of the phase are a Feasibility Report, including NEPA documentation, and a Chief of Engineers Report.

(1) Feasibility Phase Cost. The total cost of the feasibility phase will be established through negotiation of the PMP. The cost estimate in appropriate Code of Accounts format will identify major costs by task and by type, and be fully supported and documented.

(2) Feasibility Report. A suggested outline for the feasibility report is provided in Appendix G. The feasibility report should document the planning process and all assumptions and rationale for decision making. The report will present the recommended plan and, if applicable, the degree of, and rationale for, departure from the NED plan, the NER Plan or the Combined NED/NER Plan. The non-Federal sponsor cost sharing requirements, including their responsibilities for implementation and operation of the project must be clearly documented. Two project cost estimates shall be displayed in the feasibility report; one based on constant dollars and one based on projected inflation rates. If there is no acceptable plan, the study should be terminated and guidance obtained from CECW-P. For deviations from the NED, NER or Combined NED/NER, the following additional documentation is required.

(a) If the recommended plan is smaller in scope and costs than the NED, NER or Combined NED/NER, the feasibility report will document the rationale for lack of sponsor support for these plans, as applicable, available facts regarding how and why the LPP is less costly and still provides high-priority outputs, information to show that alternative non-Federal funding sources are not available and the analysis performed. (This information shall be provided to HQUSACE thru the MSC for approval prior to submittal of the feasibility report. It will be included in the feasibility report to document and support the decision recommend the LPP.) In all cases, the recommended LPP must have greater net benefits than smaller scale plans. The feasibility report shall include documentation to demonstrate that sufficient alternatives were formulated and evaluated to insure that net benefits do not maximize at a scale lower than the LPP and to meet the requirements of NEPA. A detailed analysis and description of the NED, NER or Combined NED/NER plans, including a detailed final cost estimate for these plans, are not required and do not need to be documented in the feasibility report. The consequences of lost opportunities associated with implementing a LPP including residual risks and potential solutions to other water resource needs and opportunities that may be foregone will also be documented in the feasibility report. Additional documentation requirements for categorical exemptions applicable to flood damage reduction and navigation projects are discussed in paragraphs 3-3b(11) and 3-2b(10).

(b) If the LPP is larger in scale and costs than the NED, NER or Combined NED/NER plans, then a detailed analysis and description must be developed and presented for both the selected plan and the NED plan. The incremental benefits and costs of the LPP, beyond the NED, NER or Combined NED/NER plans, must be analyzed and documented in the feasibility report. The rationale for selection of the LPP must be clearly documented in the feasibility report.

(3) Environmental Compliance Documentation. Documentation of compliance with applicable environmental laws and regulations must be prepared. This may include items such as biological assessments required by the Endangered Species Act and the Fish and Wildlife Coordination Act Reports, in addition to NEPA documents. In accordance with [ER 200-2-2](#), the NEPA document, either an EA or EIS, may either be a self-supporting document combined with and bound within the feasibility report or integrated into the text of the feasibility report. The EA/EIS should generally be integrated into the text of the report unless complex environmental impacts preclude this alternative. Additional information on environmental compliance documentation is in Appendix C.

c. General Requirements for Reconnaissance and Feasibility Phases.

(1) Study Expansion. Expansion of a study's geographic extent or purposes beyond those specified in the congressional authorization is not allowed without additional congressional authority. Where existing congressional authority is not a constraint, guidance on expansion of cost or scheduling should be requested from the Division.

(2) Interagency Coordination. In the interest of improving interagency coordination on planning studies, and of avoiding issues arising late in the planning process, the following procedures apply:

(a) Appropriate Federal and non-Federal agencies shall be invited to participate in the Reconnaissance Review Conference (RRC), Issue Resolution Conferences (IRC), Feasibility Scoping Meeting (FSM), and the Alternative Formulation Briefing (AFB), as deemed appropriate. These conferences are discussed in Appendix G.

(b) Appropriate Federal and non-Federal agencies shall have opportunity for participation in developing the PMP.

(c) Federal agencies shall be invited to be cooperating agencies as defined by NEPA. Cooperating agencies are agencies with jurisdiction by law or with special expertise that qualify them to participate in a study (see 40 CFR 1508.5, Regulations Implementing the Procedural Provisions of the National Environmental Policy Act of 1969, as amended).

(d) All issues involving other agencies (concerns or non-agreement) should be raised and discussed in a separate section of the Memorandum for the Record (MFR) of the meetings held during the planning process. Issues that can not be resolved at the local or regional level will be sent forward for resolution at the Washington level.

(3) Engineering Level of Detail in Reconnaissance and Feasibility Reports. The scope and complexity of engineering analyses shall be commensurate with the size and complexity of the project being evaluated. The level of detail of the engineering efforts during the feasibility phase and the required content of the Engineering Appendix are discussed in [ER 1110-2-1150](#).

(4) Real Estate. The Real Estate Division shall be included as part of the team early in the planning process. The analysis of the nature and extent of real estate requirements must be conducted in accordance with Chapter 12 of [ER 405-1-12](#), including consideration and identification of the specific interests, estates, and acreage required for the project.

(5) Cost Estimating. All cost estimates required to support Civil Works projects will be prepared in accordance with [ER 1110-2-1302](#), Engineering and Design, Civil Works Cost Engineering.

(6) No Implementable Plan.

(a) The District Commander shall ensure that the sponsor is fully aware that the feasibility study may be terminated if there is no clear Federal interest in a project or if no project would meet the current policies or budget priorities. If the non-Federal sponsor wishes to continue the feasibility study under the terms of the FCSA, continuation will be considered on a case-by-case basis. In reaching this decision, consideration should be given to the value of the feasibility study in identifying project alternatives that reflect the sound planning principles set forth in the [Principles and Guidelines](#). The sponsor shall also be made aware that, the feasibility study may be terminated by either party under the provisions of Article X "Termination of Suspension" of the FCSA.

(b) For those reconnaissance or feasibility studies where there is no potential for a Federally implementable plan, the District Commander will stop all work and notify the Division Commander to facilitate revocation of existing funds, adjustments in budget requests and possible study reclassification except as set forth below. Criteria for making the necessary determination are: (1) the plan is not in the Federal interest, based on current Army policies; (2) the plan does not meet technical requirements for selection as set forth in the P&G and elsewhere in this ER, or; (3) non-Federal interests either do not support the plan or do not intend to provide the necessary local cooperation. If based on these criteria, no Federal action is recommended, a final report to the Congress (usually a letter report) will be prepared, regardless of whether the study is terminated in the reconnaissance or feasibility phase.

(c) Watershed studies may or may not result in identifying further Corps studies or implementation projects. Thus, the procedures specified in paragraphs 4-3c(6)(a) and (b) are not applicable to watershed studies.

(7) Responsibility for Reports. District commanders are responsible for reports, including their content; and for the presentation of reports and findings to higher authority.

d. Washington Level Processing. Procedures for processing reports and decision documents are discussed in Appendix H.

4-4. Quality Control/Quality Assurance and Policy Review of Feasibility Reports.

a. General Requirements. Feasibility reports will be reviewed for technical quality and policy compliance. Independent technical and legal reviews are the responsibility of the districts, and District Commanders are responsible for the quality and accuracy of the study processes. HQUSACE is responsible for policy review and approval for decision documents requiring Congressional authorization or ASA(CW) approval. This review will focus on the underlying assumptions, conclusions, recommendations and analyses in the context of established policy and guidance. For all other decision documents covered in this regulation, districts will be responsible for policy quality control and MSCs will be responsible for policy quality assurance. The QC/QA process will be fully documented. Documentation and certification of technical/legal review will accompany the reports that are submitted for HQUSACE policy compliance review.

b. Quality Control. Districts shall prepare a quality control (QC) plan for each product/project which will describe the procedures that will be used to ensure compliance with all technical and policy requirements. The QC plan is a component of the PMP. The District Commander shall approve QC plans. Technical review is the process that confirms the proper selection and application of established criteria, regulations, laws, codes, principles, and professional procedures to ensure a quality product. Technical review also confirms the constructability and effectiveness of the product and the utilization of clearly justified and valid assumptions and methodologies.

c. Quality Assurance. MSCs are responsible for evaluating and recommending changes to the district's QC process. The MSCs' QA process will assure that the QC plan for the project is appropriate. The overall goal of the QA process is to assure that the districts are able to plan, design, and deliver quality projects on schedule, within budget and acceptable to the customer and the Federal Government. Division Commanders shall approve QA plans.

d. Policy Compliance Review. The process for accomplishing policy compliance shall begin with study initiation, and proceed in partnership among the district, MSC and Headquarters until project authorization. Districts are responsible for policy compliance. MSCs are responsible for assuring policy compliance. This process is intended to assure that policy issues are raised and resolved as early as possible in the study, and that final policy compliance reviews of decision documents reflect the success of that process. If policy problems or conflicts are not raised and resolved until the final policy compliance review rather than during the study, the policy partnership between the district, MSC and Headquarters shall be considered a failure.

(1) Compliance Support. Policy compliance support will be available to districts and MSCs on all studies leading to decision documents from initiation to completion. For feasibility studies leading to pre-authorization decision documents, support shall include a preliminary policy compliance review as part of a formal Alternative Formulation Briefing (AFB). The AFB will be scheduled prior to the selection of the recommended plan during the study. It will result in an AFB Project Guidance Memorandum (PGM) describing all policy issues and their

resolution. Subsequent discussions and resolutions of these issues and any additional issues shall be handled through a modification to this AFB PGM.

(2) Compliance Review, Approval and Certification. Headquarters shall be responsible for the policy review, approval and certification of all decision documents requiring Congressional authorization or ASA(CW) approval. Policy review involves the analysis of decision factors and assumptions used to determine the extent and nature of Federal interest, project cost sharing and cooperation requirements, and related issues. Policy compliance review shall ensure that established policy and procedures are applied uniformly nationwide and identifies policy issues that must be resolved in the absence of established criteria, guidance, regulations, laws, codes, principles and procedures or where judgment plays a substantial role in decision making. Policy compliance review also shall ensure that the proposed action is consistent with the overall goals and objectives of the Civil Works program. The final approval and certification of decision documents for policy compliance shall incorporate the AFB PGM and its approved modifications, with sufficient review to assure that documents remain consistent with policy; this shall not constitute a new or independent policy review. Appendix H discusses in detail the policy compliance review process.

4-5. Post-authorization Changes. This section provides guidance for making changes to uncompleted authorized projects. An authorized project is defined as a one specifically authorized by Congress for construction, generally through language in an authorization or appropriation act, or a project authorized pursuant to Section 201 of the Flood Control Act of 1965. Depending on the nature and scope of the changes, a General Reevaluation Report or Limited Reevaluation Report will be required as discussed in paragraphs 4-1b(1) and 4-1b(2) and Appendix G.

a. Addition of Project Purposes. General authorities allow for the addition of project purposes, under certain circumstances, without specific congressional authorization. These purposes include water supply, recreation, fish and wildlife enhancement (except for land acquisition), and low flow augmentation for purposes other than water quality. Additionally, there is authority for adding minimum provisions for future hydroelectric power, and conservation of threatened and endangered species. (See Appendix G for additional information.)

b. Authorized Maximum Cost of Projects. Section 902 of the WRDA of 1986, as amended, legislates a maximum total project cost. Projects to which this limitation applies and for which increases in costs exceed the limitations established by Section 902, as amended, will require further authorization by Congress raising the maximum cost established for the project. No funds may be obligated or expended nor any credit afforded that would result in the maximum cost being exceeded, unless the House and Senate committees on Appropriations have been notified that Section 106 of the Energy and Water Development Appropriations Act of 1997 will be utilized. The maximum project cost allowed by Section 902 includes the authorized cost (adjusted for inflation), the current cost of any studies, modifications, and actions authorized by the WRDA of 1986 or any later law, and 20 percent of the authorized cost (without adjustment for inflation). See Appendix G for detailed procedures to calculate these costs.

4-6. Planning Assistance to States (PAS). Within personnel and funding capabilities, commanders shall cooperate with entities requesting assistance under the PAS program by

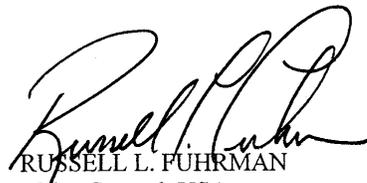
providing planning assistance in an effective and timely manner and in accordance with the guidelines in this regulation (see Appendix G). The Corps may provide technical assistance to support State preparation of comprehensive water and related land resources development plans, including watershed and ecosystem planning and help in conducting individual studies supporting the State water plan. A process of review and evaluation of State work requests and the State water plan determines eligibility for participation in the program. Because of the limited funds available under the PAS Program and because the cost sharing requirements are incompatible between the PAS Program and the General Investigations Program, it is not appropriate to use the PAS Program to prepare reports to Congress.

4-7. Study and Project Deauthorization.

a. Study Deauthorization. Section 710 of the WRDA of 1986 requires an annual submission to Congress of a list of authorized but incomplete water resources studies which have not had funds appropriated during the preceding five full fiscal years. The list is a list of studies meeting the eligibility requirement. Congress has 90 days, after the submission, to appropriate funds for the studies on the list. Studies that are not funded during the 90-day period are no longer authorized. Appendix G contains information on annual report requirements.

b. Project Deauthorization. Section 1001 of the WRDA of 1986 as amended, provides for the deauthorization of water resources projects on which Federal funds for planning, design or construction have not been obligated for 7 fiscal years. Every two years, the Secretary of the Army is required to submit to Congress a list of projects that meet this eligibility criteria. Affected congressional delegations must be notified of the projects in their districts or states. The projects remain on the list for 30 months, after which they are automatically deauthorized if Federal funds are not obligated during the 30-month period. Section 1001(c) requires publication of the lists of deauthorized projects in the Federal Register. The project deauthorization process is managed at HQUSACE by CECW-B and that office should be contacted for further information.

FOR THE COMMANDER:



RUSSELL L. FUHRMAN
Major General, USA
Chief of Staff

8 Appendices
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APPENDIX A

References

- Public Law 14, River and Harbor Act of 1945
- Public Law 212, Outer Continental Shelf Lands Act
- Public Law 409, River and Harbor Act
- Public Law 526, Flood Control Act of 1946
- Public Law 534, Flood Control Act of 1944
- Public Law 738, Flood Control Act
- Public Law 780, Flood Control act of 1954
- Public Law 826, Beach Nourishment.
- Public Law 858, Flood Control Act of 1948
- Public Law 85-500, River and harbor and Flood Control Act of 1958
- Public Law 85-624, Fish and Wildlife Coordination Act
- Public Law 86-645, River and Harbor and Flood Control Act of 1960
- Public Law 87-874, River and Harbor and Flood Control Act of 1962
- Public Law 88-140, Extension of Right to Water Supply Storage.
- Public Law 89-80, Water Resources Planning Act
- Public Law 89-298, River and Harbor and Flood Control Act
- Public Law 90-483, River and Harbor and Flood Control Act of 1968
- Public Law 90-577, Intergovernmental Cooperation Act of 1968
- Public Law 91-190, National Environmental Policy Act of 1969
- Public Law 91-611, River and Harbor and Flood Control Act of 1970

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Public Law 92-500, The Federal Water Pollution Control Act Amendments of 1972

Public Law 92-532, Marine Protection, Research and Sanctuaries Act of 1972

Public Law 93-205, Endangered Species Act of 1973

Public Law 93-234, Flood Disaster Protection Act of 1973

Public Law 93-251, Water Resources Development Act of 1974

Public Law 93-291, Historical and Archeological Data - Preservation

Public Law 94-580, Resource Conservation and Recovery Act of 1976

Public Law 94-587, Water Resources Development Act of 1976

Public Law 95-217, Clean Water Act of 1977

Public Law 96-510, Comprehensive Environmental Response, Compensation and Liability Act of 1980

Public Law 99-662, Water Resources Development Act of 1986

Public Law 104-206, Energy and Water Development Appropriations Act of 1997

Public Law 104-303, Water Resources Development Act of 1996

Public Law 106-53, Water Resources Development Act of 1999

River and Harbor Act of 1899

Executive Order 11988, Flood Plain Management

Executive Order 11990, Protection of Wetlands

[ER 200-2-2](#), Procedures for Implementing NEPA

[ER 405-1-12](#), Real Estate Handbook

[ER 1105-2-101](#), Risk-based Analysis for Evaluation of Hydrology/Hydraulics and Economics in Flood Damage Reduction Studies

[ER 1110-2-1150](#), Engineering and Design for Civil Works Program

[ER 1110-2-1155](#), Dam Safety Assurance Program

[ER 1110-2-1302, Civil Works Cost Engineering](#)

[ER 1165-2-21, Flood Damage Reduction Measures in Urban Areas](#)

[ER 1165-2-26, Implementation of Executive Order 11988 on Flood Plain Management](#)

[ER 1165-2-27, Establishment of Wetlands Areas in Connection with Dredging](#)

[ER 1165-2-119, Modifications to Completed Projects](#)

[ER 1165-2-123, Single-owner situations](#)

[ER 1165-2-124, Construction of Harbor and Inland Harbor Projects by Non-Federal Interests](#)

[ER 1165-2-130, Federal Participation in Shore Protection](#)

[ER 1165-2-131, Local Cooperation Agreements for New Start Construction Projects](#)

[ER 1165-2-132, Hazardous, Toxic and Radioactive Waste \(HTRW\) Guidance for Civil Works Projects](#)

[ER 1165-2-501, Civil Works Ecosystem Restoration Policy](#)

APPENDIX B

Public Involvement, Collaboration and Coordination

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APPENDIX B

Public Involvement, Collaboration and Coordination

B-1. Purpose. This appendix provides the requirements for public involvement, collaboration, and coordination in Civil Works planning studies. (Note: Every effort has been made to eliminate all inconsistencies between the main body of the ER and the appendices. If any inconsistencies are found, the information in the main body of the ER will prevail over the one in the appendices. Please, notify CECW-PD immediately of any inconsistencies for correction.)

B-2. Definitions.

a. **Public.** The public includes any individuals, organizations, or unit of government that might be affected by or interested in the results of the Corps planning process. The public includes Federal, regional, State and local government entities and officials, public and private organizations, Native American (Indian) tribes, individuals, and study sponsor representatives.

b. **Coordination.** Coordination is the formal exchange of information and views, by letter, report, meeting or other prescribed means, between the Corps and another agency. Coordination activities are required by and in accordance with purposes and procedures established by Federal policy (Public Law, executive order, agency regulation, memorandum of agreement, etc).

c. **Collaboration.** Collaboration occurs when the Corps works jointly with other agencies or entities throughout the planning process. Collaboration is distinguished from coordination through the active involvement of the parties in conducting studies and or implementing recommended projects. Collaborative efforts can range from participation on interagency study teams through joint funding of construction, operation or maintenance of water resource projects.

B-3. Goal and Objectives. The goal of public involvement and coordination is to open and maintain channels of communication with the public in order to give full consideration to public views and information in the planning process. The objectives of public involvement are 1) to provide information about proposed Corps activities to the public; 2) to make the public's desires, needs, and concerns known to decision-makers; 3) to provide for consultation with the public before decisions are reached; and, 4) to consider the public's views in reaching decisions. All this must occur, however, with the awareness that the Corps cannot relinquish its legislated decision-making responsibility. The outcome of any planning is subject to institutional constraints.

B-4. Requirements. District offices shall conduct planning studies in an open atmosphere to attain public understanding, trust, and mutual cooperation and shall provide the public with opportunities to participate throughout the planning process. In addition, each district office shall:

- Develop and implement an effective public involvement strategy as an integral part of the planning process for each study.
- With the cooperation of the non-Federal sponsor, develop and implement an effective management structure to insure that effective collaboration is an integral part of the feasibility study process.
- Discuss in the report how information gained from public and sponsor involvement has been used in and influenced the planning process.
- Solicit comments on the draft report and environmental document to appropriate Federal and State agencies, cooperating agencies and other members of the public ([ER 200-2-2](#)).

B-5. Public Involvement Strategy.

a. Maximize Public Input. Each project should have a detailed public involvement strategy that is keyed to maximize public input at each stage of the planning process.

b. Administrative Procedures. The Administrative Procedures Act, (including Section 3, the Freedom of Information Act) and the National Environmental Policy Act (PL 91-190), are among the principal legislative acts requiring public involvement. Federal planning policies, Corps practice, and regulations have consistently required and encouraged open and effective public involvement. Generally, it is impossible to plan effectively for water resources development in accordance with Federal regulations and laws without open and effective public involvement. Public involvement is integral to all phases and activities of the planning process.

c. Developing a Strategy. During the development of the Project Management Plan, the study team determines the extent of public involvement required and establishes an appropriate strategy for integrating public involvement into the planning process. Since there is no single best approach to public involvement, the study team should determine the best mix of public involvement methods. The important point to keep in mind is to provide an overall strategy that creates relevant, quality public involvement opportunities for those who have; or may have, an interest in the study. The purpose of initiating public involvement early in planning is to obtain a clear definition of public needs and concerns. Early involvement also provides a "sensing" stage during which an appraisal is made of the intensity of public interest, the segments of the public most likely to participate, and the kinds of issues which are most likely to generate additional public interest.

(1) Components of a Strategy. A public involvement strategy should include:

(a) An analysis of the major issues likely to be addressed in the planning process.

- (b) An identification of agencies, groups, and individuals most likely to be interested in the action under consideration.
- (c) An assessment of the level of public interest likely to be generated by the actions under consideration.
- (d) A description of the preliminary consultation activities that led to development of the public involvement approach, including the agencies, groups, and individuals consulted.
- (e) An identification of the public involvement expertise and effort that may be needed from various organizational units.
- (f) Determination of appropriate review points at which to evaluate the structure and function of the public involvement program.
- (g) A plan of sequential public involvement activities integrated with the planning and decision-making process, and development of planning reports.

(2) Major Public Involvement Activities

(a) Announce the Initiation of the Study. The public should be informed when a study is initiated. Announcements can be done through any of the communications media, but it is suggested that, at a minimum, a mailing of an announcement be made to potentially interested parties. The mailing method insures that at least those on the list have been made aware of the study initiation. If other media methods (such as TV, radio, newspapers, etc.) would be productive, they should also be pursued through coordination with the public affairs officer.

(b) Identify the Public. The Corps should be sensitive to public concerns and identify interested and affected parties including those who might be unaware of an action that could be of concern to them. Identifying publics is crucial both initially and throughout the planning effort. A starting point is to identify those people and groups who believe themselves to be affected by possible study outcomes. Three ways are typically used to identify publics: self-identification, third party identification, and staff identification. Self-identification means that individuals or groups step forward and indicate an interest in participating in the study. Third party identification is a technique in which existing committees, interest groups, or representatives of known interests are asked to identify other individuals or interests who should be involved. Staff identification comprises a wide range of techniques including intuitive/experiential information, existing lists of groups and individuals, and geographic, demographic, and historical analysis. The nature of the planning study will determine who should be contacted. As a starting point, the following organizations, among others, should be considered: Environmental/Conservation groups; civic and neighborhood associations and community leaders; other Federal, State and local public agencies and entities; user groups; consumer and public interest groups; religious and ethnic groups; business

groups, including small businesses and merchants; civil rights organizations; labor organizations; and, organizations representing the handicapped, the elderly, low income segments of the population, the minorities, and the disadvantaged.

(c) The Scoping Process. Council on Environmental Quality (CEQ) regulations (40 CFR 1051.7) require that a scoping process be utilized to identify the likely significant issues and the range of those issues. The CEQ regulations are very specific as to what is to be determined, but the techniques are left up to the agency. Since much of the information on significant issues rests only with the public, public involvement is the heart of the scoping process. Therefore, the public involvement should be an integral part of the scoping process. A scoping meeting (or meetings, if desired), should be held early in the study. Scoping meetings may be held informally with other Federal, State, local or private groups; however, at least one of the scoping meetings should be broadly announced, held at a convenient location and time and open to all. Scoping should be used to focus in one specific issue areas. Therefore, while a broad scoping meeting may be desirable, it will not suffice for meetings that may be needed to target a specific audience, such as those with fish and wildlife interest.

(d) Input to Feasibility Reports. The Feasibility Reports shall include a description and evaluation of the efforts made to acquire public input and the information and opinions expressed prior to arriving at a decision. The public involvement section of the report shall show how public input was used in the planning and decision-making process.

(e) Public Involvement Techniques.

(1) Dealing with the Media. Media relationships should be conducted by or through the Public Affairs Office (PAO). PAO is skilled in techniques for the presentation of information to the public and in techniques for dealing with various types and levels of the media.

(2) Basic Communication Techniques. Technical experts often experience difficulty in communicating with non-technically oriented publics. Corps planners should know how to recognize values and develop skills to deal with different values. "Values" information is among the most important in the planning process. Values contain the information about what various publics think the plan "ought" to do. To be successful, the planning process must provide forums for dialogue among those holding different values, and facilitate discussion of meaningful tradeoffs.

(3) Meetings and Workshops. The guiding principle of designing meetings and workshops is that "format follows functions," meaning that the design of the meeting should reflect the purpose of the meeting. Meetings can serve five basic functions: information giving; information receiving; interaction; consensus forming/negotiation; and, summarizing. After determining a meeting purpose, the second most important issue facing the planner is room arrangements. Room arrangements reflect the relationships among the participants and are a visual demonstration to participants to

what the Corps expects from the meeting. The third major issue the planner faces is the choice of leadership style and meeting process. Numerous processes, most of which revolve around variations of nominal group techniques, are available to the planner. Within the various meeting processes, the planner should be aware of basic leadership style difference in "facilitating" versus "controlling" meetings. In designing a workshop, the planners should: identify the desired product; identify the resource information which the public will need; select a series of activities which will result in the desired product; and, design a simple mechanism for evaluating the workshop product. As the desired function moves closer to conflict resolution, the state of the arts in meeting design becomes more speculative.

(4) Public Meetings. The need for public meetings in a particular study will depend on the study type and complexity. The Commander has the responsibility to determine if the public or the Corps or both would benefit by the exchange of views or information provided by public meetings. Public meetings should be designed to be fair and impartial two-way communications and should be conducted informally and as simply as possible. The person facilitating the meeting should be: thoroughly familiar with the study; a rank or grade consistent with the audience expected; and skilled in group facilitation techniques. The Corps presentation should contain a brief summarization of the reason for the meeting and the progress of the study, and should provide ample opportunity for interested parties to share their viewpoints. The process used to achieve this exchange of views and information will be determined by the responsible Corps official. Meetings should be held at a time and locality convenient to the expected audience, normally in the area of the study. In cases where interest is very widespread, it may be appropriate to hold meetings away from the study area. The meeting announcement should be sent sufficiently in advance of the meeting to allow attendees to plan for the meeting and should contain sufficient information to allow the prospective attendee to decide if attendance would be beneficial. The meeting should be held at times convenient for working people to attend without requiring them to take leave time from their jobs. The language used in the announcement should be non-technical and the tone should reflect a sincere intent to produce a fair exchange and sharing of views and information. Distribution of the announcement should be as widespread as is consistent with the study and should include the members of Congress and the Governors of the States involved. The record of the meeting should be consistent with the type of meeting being held. A meeting involving great controversy may require a verbatim transcript, while a meeting of less intense controversy may require simply a short summarization.

(5) Questionnaires. Public surveys can be a valuable tool for obtaining specific information needs and public preferences. Questions should always be organized around very specific objectives, a data or content analysis plan, and a plan for using the survey results in the planning. As required by the Paperwork Reduction Act of 1995, Public Law 104-13, the Office of Management and Budget (OMB) must approve any questionnaire to be responded to by 10 or more U.S. citizens or US firms, organizations, or agencies outside the Federal Executive Branch. Prior to the use of questionnaires for planning studies, field offices shall submit an SF 83 to HQUSACE (CECW-P). [AR](#)

[335-15](#) Chapter 4, describes required information. OMB has pre-approved a group of questionnaires for collection of planning data. The questionnaires are found under OMB-approval number 0710-0001, Questionnaires for U.S. Army Corps of Engineers Civil Works studies. The questionnaires cover the range of data that would generally be collected by surveys in water resources studies. The Paperwork Reduction Act requires OMB approval every three years. The approved questionnaires are transmitted by memorandum every three years following OMB approval. OMB also now requires that each individual survey effort be individually approved. The survey forms must be submitted through a Division office point of contact to the Office of the Secretary of Defense and OMB.

d. Analyzing Public Comment. Typically, the Corps receives large amounts of solicited and unsolicited public comments on planning alternatives. This information comes in the form of public comments, (written and spoken) and letters. Additionally, written and spoken media, as well as past studies, are often available and normally contain a wealth of public comment information. The planner should systematically describe, analyze and evaluate the layers of information usually contained in such public comments.

B-6. Study Management Coordination.

a. Conduct of Reconnaissance Studies. Although the Corps is responsible for the reconnaissance phase, efficient execution of the feasibility phase requires a cooperative reconnaissance effort as well. Therefore, the time to begin assembling the study management structure should be as early in the reconnaissance phase as possible. The management structure will be formalized in the study Feasibility Cost Sharing Agreement (FCSA).

b. Conduct of Feasibility Studies. The management structure developed during the reconnaissance phase will remain in force during the feasibility phase. Some adaptations may have to be made in the Study Management Team and in the Executive Committee to reflect the sharing of study tasks as provided in the executed FCSA and PMP.

B-7. Coordination with State and Local Governments Under E.O. 12372. Division and District commanders shall coordinate civil works planning programs with State and local governments in accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs) and 33 CFR 384 (Intergovernmental Review of the Department of Army Corps of Engineers Programs and Activities).

a. Notification Requirements. Division and District commanders shall continue to directly notify all affected and interested State, area wide and local governmental interests and shall not rely on a state "single point of contact" (SPOC) to distribute notifications. Notices to interested parties shall reference E.O. 12372; shall indicate whether or not the program for which notice is being made has been selected by the affected State, or states, for coordination under the Executive Order procedures; shall

state that comments and responses to the notice should be sent directly to a designated Corps official in addition to the State SPOC in those cases where the program has been selected, and shall not state that the public will be notified, if the report recommendations are materially modified prior to project approval.

b. **Effective Coordination.** Division commanders shall adopt such procedures as may be necessary to assure coordination is effected with states in a manner consistent with 33 CFR 384 and the processes established by the individual states. Problems should be referred to HQUSACE (CECW-P) if they cannot be resolved to the division commander's satisfaction in the field. Substantive comments received from a SPOC should be acknowledged in writing, even if SPOC comments are fully accommodated.

B-8. Consultation and Coordination with Indian Tribal Governments. Division and District commanders shall coordinate civil works planning programs with American Indian and Alaska Native governments (hereinafter referred to as "tribes") in accordance with Executive Order 13084 "Consultation and Coordination with Indian Tribal Governments" and Department of Defense policy. District and Division commanders will fully integrate the principle and practice of meaningful consultation and communication with tribes by:

- recognizing that there exists a unique and distinctive political relationship between the United States and the tribes that mandates that, whenever (DOD) Corps actions may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands, (DoD) the Corps must provide affected tribes an opportunity to participate in the decision-making process that will ensure these tribal interest are given due consideration in a manner consistent with tribal sovereign authority;
- consulting, consistent with government-to-government relations and in accordance with protocols mutually agreed to by the particular tribe and DoD, including necessary dispute resolution processes;
- providing timely notice to, and consulting with, tribal governments prior to taking any actions that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands;
- consulting in good faith throughout the decision-making process; and
- developing and maintaining effective communication, coordination, and cooperation with tribes, especially at the tribal leadership-to-Division and District Commander levels.

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B-9. Public Notices. Public notices issued by field commanders will not contain language to the effect that the public will be notified, prior to final action, should report recommendations be materially modified prior to project approval.

B-10. Advisory Committees. Public Law 92-463 establishes approval and other requirements for advisory committees, boards, councils, conferences, panels, task forces, commissions or other similar groups formed in the interest of obtaining advice or recommendations. Advisory committees wholly comprised to full time officers or employees of the Federal Government, local civic groups whose primary function is rendering a public service with respect to a Federal program, or groups providing advice to State and local governments are exempt from those requirements. If an advisory committee not exempt from the Act is desired as a part of a study, approval shall be requested through HQUSACE (CERM). No advisory committee shall be established prior to approval. [AR 15-1](#) describes information required to establish an advisory committee under the Act.

B-11. Exclusions. The Commander shall have the discretion to modify public involvement requirements for emergency planning studies under Section 14 of Public Law 79-526, as amended (Continuing Authorities)

APPENDIX C

Environmental Evaluation and Compliance

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APPENDIX C

Environmental Evaluation and Compliance

C-1. Introduction and Overview

a. Purpose. This appendix addresses the integration of environmental evaluation and compliance requirements, pursuant to national environmental statutes, applicable executive orders and other Federal planning requirements, into the planning of Civil Works water and related land resources comprehensive plans and implementation projects. (Note: Every effort has been made to eliminate all inconsistencies between the main body of the ER and the appendices. If any inconsistencies are found, the information in the main body of the ER will prevail over the one in the appendices. Please, notify CECW-PD immediately of any inconsistencies for correction.)

b. Overview. The nation is attuned to the many ways healthy ecosystems support the economy and provide for the public good. The Water Resources Planning Act, as amended (WRPA) (42 U.S.C. 1962a-2) and the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4347) guide the Civil Works planning process, serving to focus the critical evaluation of the cost of today's activities in terms of tomorrow's resources. In 1962, Congress recognized the need for coordinated planning related to the conservation, development, and utilization of water resources and, through the WRPA, required the establishment and use of principles, standards and procedures for the formulation and evaluation of water and related land resources projects. In 1969, by way of the NEPA, Congress recognized the profound impact of human activity on the interrelations of all components of the natural environment as well as the critical importance, to humans, of restoring and maintaining environmental quality. The Federal Government was charged with using all practicable means and measures in a manner calculated to foster and promote the general welfare, create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans. Numerous other laws, regulations and Administration initiatives, have echoed this National environmental policy. Integrated, the implementing regulations for the WRPA and the NEPA provide an effective framework for the formulation and evaluation of water resources comprehensive plans and implementation projects, which is responsive to the challenge of sustainable development in our Nation and the world.

c. Federal Objectives. The Federal objective for water and related land resources planning was established in the Water Resource Council's *Economic and Environmental Principles for Water and Related Land Resources Implementation Studies* (Principles), and is further discussed in the *Economic and Environmental Guidelines for Water and Related Land Resources Implementation Studies* (Guidelines).

(1) The [Principles and Guidelines](#) (P&G) provide that planning, which is to contribute to national economic development, is to be consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. With respect to "protecting the Nation's environment", the Corps has adopted the standard that it "is achieved when damage to the environment is eliminated or avoided and important cultural and natural aspects of our nation's heritage are preserved".

(2) Since implementation of the P&G, Ecosystem Restoration has become a primary mission of the Corps. The Federal objective for this mission is to increase the net quantity and/or quality of desired ecosystem resources. The planning of these projects must also be pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

d. Evaluation Procedures. Evaluation procedures are discussed in Section C-2. Sections C-3 through C-5 provide additional details for addressing the ecological, cultural and aesthetic resources included in the evaluation procedures. Section C-6 addresses additional evaluation procedures related to water quality.

e. Compliance Requirements. Requirements for complying with environmental statutes are also referenced throughout the P&G. Specific procedures for major related environmental compliance requirements are presented in Sections C-3 through 6.

C-2. Procedures for Environmental Evaluation

a. Purpose. Environmental evaluation is a process that integrates considerations of environmental considerations, impacts and opportunities throughout the planning process. This section provides guidance on applying the environmental evaluation procedures to planning water resources implementation projects while at the same time fulfilling the requirements of the NEPA and other statutory requirements. The P&G, 40 CFR Parts 1500-1508 and [ER 200-2-2](#), discussed below, provide detailed guidance and are incorporated into this appendix.

b. Environmental Planning. Implementing regulations for the WRPA are the P&G, found at: <http://www.wrsc.usace.army.mil/iwr/pdf/p&g.pdf>. Provisions for environmental considerations are integrated throughout the P&G and are specifically addressed in discussions of the Environmental Quality (EQ) Account (Section 7 of the Principles and Chapter II, Section 1.7.3, of the Guidelines) and the EQ Procedures (Chapter III of the Guidelines). The EQ procedures should be applied early in the planning process so that the significant natural and cultural resources of the study area can be identified and inventoried, used in developing planning objectives, and accommodated in a reasonable set of alternative plans, which achieve the

planning objectives. In later stages of planning, the procedures will be used to evaluate the alternative plans and aid in plan selection. The final use of the procedures is in the decision process that leads to plan selection.

c. NEPA Process. The NEPA requires that decision making should proceed with full awareness of the environmental consequences that follow from a major Federal action, which significantly affects the environment. Provisions for complying with the NEPA are found in the Council of Environmental Quality Regulations (40 CFR Parts 1500-1508) and are supplemented by [ER 200-2-2](#).

(1) The NEPA compliance process, following [ER 200-2-2](#), will begin with an assessment of potential environmental impacts as judged by comparing the with and without project conditions. These potential impacts help define the study area, and should be addressed over the whole of that area. Also, the physical impacts (air and water quality, soils and slope) should be explicitly addressed early in the assessment process, because of their potential influence on any, or all, of the resource analyses. Potential significant impacts on any of these physical attributes should be evaluated and made explicit in the decision process, in the same manner as are the ecological, cultural and aesthetic attributes under the EQ procedures.

(2) The impact assessment process may lead to a determination that an environmental impact statement (EIS) is required. The preparation and coordination of these is also detailed in [ER 200-2-2](#).

(3) Measures to avoid, lessen, mitigate or compensate for environmental impacts should be described in the decision document. The major and significant measures should be summarized in one table that is part of the environmental appendix. This table should describe each measure to be taken, the objective that it is intended to fulfill, and the impact to which it applies. If any of these are a requirement for specific compliance with a statute, legal decision, or formal commitment, that should also be indicated in the table.

d. Additional Requirements. The integrated EQ procedures and NEPA process provide a framework for compliance with other environmental elements with specific statutory compliance requirements. The majority of these are listed as sources of institutional recognition in Table 3.4.3, Chapter III, of the P&G. For additional information concerning environmental statutes and Executive Orders refer to the Civil Works Environmental Desk Reference (IWR Report 96-PS-3, updated July 1997).

C-3. Ecological Resources.

a. Purpose. This section supplements the guidance for evaluation of the ecological attributes under the EQ evaluation procedures. This section has emphasis on ecological resources and ecosystem restoration, with particular consideration of fish and wildlife resources, in Civil Works planning studies.

b. Explanation of Terms.

(1) Ecological Resources. A natural form, process, system or other phenomenon that is related to land, water, atmosphere, plants or animals that has attributes or properties which sustain and enrich human life. These properties are components of the environment and the interactions among all its living (including people) and nonliving components that directly or indirectly sustain dynamic, diverse, viable ecosystems. In this category are functional and structural aspects that require special consideration because of their unusual characteristics. Ecological Resources include fish and wildlife resources, which are provided special consideration under various environmental statutes.

(2) Ecosystem Restoration Planning Objectives. Ecosystem restoration objectives are clearly written statements that prescribe specific actions to be taken to improve the ecosystem, or fish and wildlife resources, and describe units of measurement (e.g. habitat units), to be used to evaluate contributions proposed actions make toward the stated objective.

(3) Enhancement. Enhancement is the net improvement an alternative plan, or project, makes to ecological resources (singularly or collectively) compared with the "without" plan or project condition. Policy under current budgetary constraints does not provide for implementation of separable features for enhancement of fish and wildlife resources unless such enhancement falls within the definition of fish and wildlife habitat restoration.

(4) Essential Fish Habitat: Related to marine resources, it is those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (Magnuson-Stevens Act, 16 U.S.C. 1801 et seq).

(5) Fish and Wildlife Resources Stewardship. Fish and wildlife resources stewardship is the level of preservation, conservation and protection afforded fish and wildlife resources on project lands, consistent with the Conservation of Forest Lands Act, Public Law 86-717. Stewardship of project lands is a Federal responsibility and should be considered when describing the "with" and "without" project condition.

(6) Ecosystem Restoration. Ecosystem restoration consists of separable features undertaken to return a degraded condition to a less degraded condition. The goal of ecosystem restoration is to reverse the adverse impacts of human activity and restore ecological resources, including fish and wildlife habitats, to previous levels of productivity but not a higher level than would have existed under natural conditions in the absence of human activity or disturbance.

(7) Incremental Analysis. Incremental analysis is the investigation and documentation of the relationship between costs (dollars) incurred to realize each unit of output (improvement) associated with the implementation of each plan increment.

(8) Incremental Cost. Incremental (or marginal) cost means extra cost. Incremental cost is the increase in cost incurred when output is increased by one unit. For example, if it costs \$100 to produce 10 units (\$10/unit) and \$115 to produce 11 units, then \$15 is the incremental cost of the 11th unit.

(9) Justification. The determination that the combined monetary and non-monetary value of the last increment of benefits realized from an ecosystem or a fish and wildlife management action or feature (hereafter actions are included under management features) exceeds the combined monetary and non-monetary costs of the last added increment so as to reasonably maximize overall project benefits. For mitigation, "benefits" shall be interpreted as being the same as "losses prevented or replaced".

(10) Management Features. Management features are established ecosystem, including fish and wildlife resources, management procedures, activities or techniques that contribute to mitigation and ecosystem restoration planning objectives. Examples are fencing to prevent habitat damage by livestock or human activities; land cover manipulation designed to increase habitat quality; fish ladders; lands acquired which provide preservation credit and/or opportunities for achieving other mitigation or ecosystem restoration objectives, and the development and enforcement of fish and wildlife conservation-related regulations.

(11) Management Plan Increment. A management plan increment consists of one or more management features. Plan increments may interrelate and complement one another, but they can not be functionally dependent upon another increment. For example, if the fencing out of livestock is required before a constructed food plot can be effective, then the fence and the food plot would be considered as being functionally dependent and, therefore, combined into a single plan increment.

(12) Mitigation. Mitigation includes:

(a) Avoiding the impact altogether by not taking a certain action or part of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

(e) Compensating for the impact by replacing or providing substitute resources or environments. "Replacing" means the replacement of fish and wildlife resources in-kind. "Substitute" means the replacement of fish and wildlife resources out-of-kind. Substitute resources, on balance, shall be at least equal in value and significance as the resources lost.

(13) Mitigation Planning Objectives. Mitigation planning objectives are clearly written statements that prescribe specific actions to be taken to avoid and minimize adverse impacts, and identifies specific amounts (units of measurement, e.g., habitat units) of compensation required to replace or substitute for remaining, significant unavoidable losses.

(14) Project Lands. For preauthorization studies, "project lands" are lands determined to be required to realize benefits attributed to alternative plans. For authorized projects, project lands are lands required for authorized project purposes. For projects under construction, or those that have been completed, project lands are lands that have been acquired for project purposes.

(15) Public Lands. Public lands are owned or otherwise legally entrusted to a local, State or Federal agency.

(16) Resource Categorization. Resource categorization consists of describing and assigning values and significance to resources. Ecological resource categorization is used to determine if ecosystem restoration opportunities exist, if losses warrant mitigation considerations, and for making decisions to either mitigate losses in-kind, or to allow for substitute resource trade-offs.

(17) Separable Features. Separable features are single purpose components of a plan designed to address ecological resources management objectives. Separable features include lands acquired specifically for fish and wildlife resources management purposes, engineering features, and management actions performed.

(18) Significant Resources and Effects. The criteria for determining the significance of resources and effects are provided in Chapter I, Section 1.7.3 and Chapter III, Sections 3.4.12 and 3.4.14 of the P&G, 40 CFR Part 1508.27 and section d(4) below.

(a) Significant National Economic Development (NED) Resources. Ecological resources having substantial commercial and/or recreational value.

(b) Significant Environmental Quality (EQ) Resources. Ecological resources, including fish and wildlife resources and associated habitats, that are technically, institutionally, or publicly recognized as having substantial non-monetary value from either an ecological, cultural or aesthetic standpoint.

(c) Significant Effects. Effects an alternative plan has on ecosystems or ecological resources, including fish and wildlife, that are determined to have a material bearing on the decision-making process.

c. Coordination, Consultation and Public Involvement. District commanders shall initiate general public participation procedures, for ecosystem restoration or ecological resources conservation purposes, consistent with guidance set forth in Appendix B of this regulation. Such coordination and public involvement shall include, but not be limited to, government entities at the Federal, regional, State, and local levels, and national and local public and private organizations, including Indian tribes. Special coordination and consultation requirements are discussed below.

(1) Fish and Wildlife Coordination Act (FWCA): Coordination and Funding. The District Commander shall coordinate with the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the appropriate head of the State agency exercising administration over the fish and wildlife resources beginning with the initiation of the reconnaissance report phase, and continuing through the feasibility, and planning/engineering/design phases of project development.

(a) The District Commander shall invite the above agencies to participate in study scoping, to identify fish and wildlife concerns, to identify available information, to obtain their views concerning the significance of fish and wildlife resources and anticipated impacts, and to determine those resources which shall be evaluated in the study. The District Commander shall provide the appropriate offices of the above agencies with relevant information developed in investigations included in reconnaissance, feasibility, and planning/engineering/design studies, and shall provide these agencies an opportunity to comment on the formulation and evaluation of alternative plans. Full consideration shall be given to Federal and State agency comments and recommendations resulting from this coordination.

(b) Funding arrangements between the Corps and FWS for FWCA activities associated with Civil Works feasibility and planning/engineering/design studies shall be implemented consistent with procedures set forth in the current Corps/FWS Transfer Funding Agreement. The Corps/FWS Transfer Funding Agreement is applicable to the reconnaissance report phase, and should be used to scope out FWCA compliance requirements for FWS involvement during the cost-shared feasibility study, consistent with Article III of the Agreement.

(2) Endangered Species Act (ESA): Section 7 Coordination/Consultation. Section 7 provides for specific coordination and consultation with the FWS and NMFS. The District Commander shall initiate specific coordination and consultation, as needed, for endangered and threatened species and designated critical habitat. Coordination, consultation and implementation of Section 7 of the ESA does not require the transfer of funds from the Corps to the FWS or NMFS.

(a) The District Commander shall formally request from the FWS/NMFS information on any listed or proposed species or designated or proposed critical habitat that may be in the project area.

(1) If the FWS/NMFS identifies listed or proposed species or designated or proposed critical habitat, then the District Commander shall conduct a biological assessment to determine if the proposed project may affect any such species and or critical habitat. The biological assessment should be completed within 180 days unless an extension of time is mutually acceptable to the District and FWS/NMFS.

(2) Upon completion, the District Commander shall send the biological assessment and conclusions to the FWS/NMFS, advising them whether plans being considered may affect or will not affect the listed or proposed species or designated or proposed critical habitat.

(b) During the conduct of the biological assessment the District Commander, in coordination with the FWS/NMFS and the appropriate State resource agency(s), shall identify the location in the study area of listed and proposed endangered and threatened species and designated or proposed critical habitat.

(1) If listed and proposed species or designated or proposed critical habitat are identified in the study area, these data shall be used to identify areas that should be avoided or critically considered and to determine what opportunities exist for conserving these resources during the formulation of alternative plans.

(2) If the biological assessment indicates that an alternative plan(s) may affect a listed endangered or threatened species or critical habitat, the District Commander shall request formal consultation with the FWS/NMFS. If the biological assessment determines the alternative plan(s) is not likely to adversely affect endangered or threatened species or critical habitat, then the District Commander may request informal consultation with FWS/NMFS to receive their written concurrence with the determination of no adverse affect. If the FWS/NMFS does not concur with the District Commander's no adverse determination, the FWS/NMFS may request the District Commander to initiate formal consultation with the FWS/NMFS. This request must be documented in a letter either from FWS/NMFS to the District Commander or from the District Commander to FWS/NMFS which acknowledges an oral request from FWS/NMFS made during a meeting or telephone conversation.

(c) If the biological assessment indicates that the action is likely to jeopardize the continued existence of a proposed species or result in the destruction or adverse modification of proposed critical habitat, the District Commander shall initiate a conference with the FWS/NMFS. The FWS/NMFS will review the information and make advisory recommendations, if any, on ways to avoid or minimize the adverse impact. If the species is subsequently listed or critical habitat designated prior to completion of the action, the District Commander must review the action to determine if formal consultation is required.

(d) The District Commander can formally request a formal conference on the proposed species or proposed critical habitat with the FWS/NMFS. The conference may be conducted in accordance with the procedures for formal consultation. An opinion issued at the conclusion of the conference may be adopted as the biological opinion when the species is listed or critical habitat is designated, but only if no significant new information is developed and no significant changes to the proposed action are made that would alter the content of the opinion. An incidental take statement provided with a conference opinion does not become effective unless the FWS/NMFS adopts the opinion once the listing is final.

(e) The incidental take provision, resulting from the Endangered Species Amendments of 1982, is provided in all biological opinions, where an anticipated take may occur, whether there is a "no jeopardy" or a "likely jeopardy". This provision permits the District Commander to "take" a specified number of the protected species, or impact a specified acreage of habitat in the project area, without being subject to the prohibitions (penalties) established in Section 4(d) and 9(a)(1-2) of the Act. The incidental take statement will also specify "reasonable and prudent" measures necessary to minimize impacts; set forth the terms and conditions, including, but not limited to, reporting requirements that must be complied with by the District Commander in order to implement reasonable and prudent measures; and, specify the procedures to be used to handle or dispose of any individuals of a species taken.

(f) If the FWS/NMFS biological opinion indicates that an alternative plan would have the positive effect of conserving listed species or critical habitat, the District Commander shall consider this important feature during subsequent formulation and selection of the recommended plan.

(g) If the FWS/NMFS provides conservation recommendations for an alternative plan to create enhancement opportunities for listed species or critical habitat, the District Commander shall have the discretion either to accept or reject the recommended modification. However, a decision to reject such FWS/NMFS recommendations shall be clearly documented and the rationale provided.

(h) In compliance with Section 7(d) of the Act, the District Commander shall not make any irreversible or irretrievable commitment of resources during consultation which, in effect, would preclude formulation or implementation of reasonable alternatives concerning listed endangered and threatened species. The spending of dollars for planning studies does not constitute an irreversible or irretrievable commitment of resources.

(i) If the FWS/NMFS biological opinion indicates that an alternative plan is likely to jeopardize listed species or to destroy or otherwise have an adverse impact on critical habitat, the District Commander shall either respond with additional information in support of the proposed plan, drop the alternative plan from further consideration, accept the FWS/NMFS recommended reasonable and prudent alternative and modify the alternative plan accordingly, or seek an exemption. See 50 CFR, Parts 450-453, for specific guidance for seeking an exemption.

(j) For emergency actions District commanders shall meet the consultation requirements related to the ESA to the fullest extent practicable, unless they determine that the resulting delays will lead to unacceptable risks to health, life, property, or unacceptable economic losses.

(1) When emergency circumstances mandates the need to consult in an expedited manner, consultation may be conducted informally by contacting the FWS/NMFS by telephone and requesting advice. This provision applies to situations involving acts of God, disasters, casualties, national defense or security emergencies, etc. Carrying out the directive of this paragraph is crucial, since compliance with the ESA cannot be waived by the Corps of Engineers.

(2) Formal consultation shall be initiated as soon as practicable after the emergency is under control.

(3) The District Commander shall submit information on the nature of the emergency action(s), the justification for the expedited consultation, and the impacts to endangered or

threatened species and their habitats. The FWS/NMFS will evaluate the information and issue a biological opinion including the information and recommendations given during the emergency consultation.

(3) Food Security Act of 1985: Wetlands Protection and Conversion Determination Under the Swampbuster Provisions of the Act. The Food Security Act of 1985 (Public Law 99-198) contains provisions designed to discourage the conversion of wetlands into non-wetland areas. These, collectively, are commonly referred to as "Swampbuster" provisions, and are implemented under Department of Agriculture (USDA) final rule, effective 17 September 1987 (7 CFR 12). The final rule sets forth the terms and conditions under which a farmer, who has produced an agricultural commodity on converted wetlands, shall be declared ineligible for certain benefits provided by USDA.

(a) Farmers who plant commodity crops, after 23 December 1985, on lands that were converted from a wetland to a non-wetland condition by a Corps project will trigger "Swampbuster" considerations, which may lead to the cited USDA program ineligibility.

(b) District commanders shall coordinate with the Department of Agriculture, Natural Resources Conservation Service, to determine the applicability of Swampbuster to Corps flood control projects that provide protection to agricultural lands, either through design or incidental to other project purposes.

(c) Correspondence developed in association with this coordination shall be included in project reports, and all pertinent information discussed in appropriate environmental documents.

(4) National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668)(Public Law 89-669). Part 668dd, paragraph (d), authorizes the Secretary of the Interior (Secretary) to issue use permits for activities performed on National Wildlife Refuge whenever he determines that such uses are compatible with the major purposes for which such areas were established.

(a) District commanders shall initiate coordination with the Regional Director, U.S. Fish and Wildlife Service, immediately upon determining that a Corps project feature or activity would likely involve the use of refuge lands. This coordination shall be designed to obtain a formal written response from the Regional Director on whether or not the Corps activity will require a compatibility determination; and, if so, the procedures that must be followed to obtain the necessary compatibility determination.

(b) Correspondence associated with seeking a compatibility determination shall be included in project reports, and all pertinent information shall be discussed fully in appropriate environmental documents.

(5) Magnuson Fishery Conservation and Management Act of 1976, as amended: Section 110 Coordination/Consultation: Public Law 99-659, Section 104, and Public Law 104-297, Section 110, amends the 1976 Act to provide for specific coordination and consultation with a Regional Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS), respectively. Consultation/coordination is relative to impacts a Federal activity may have on the habitat of fishery resources. The District Commander shall coordinate and consult with the Council relative to impacts a Federal activity may have on habitat under the Council's jurisdiction and with the NMFS with respect to any action federally authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, that may adversely affect any essential habitat identified under the Act, as amended.

(a) Coordination and consultation with the Council shall be in accordance with the formal coordination procedures established between District Commanders and appropriate Councils in his or her area. Such procedures shall be modified as appropriate to ensure inclusion of review and comment procedures for feasibility reports involving coastal area development and to respond within 30 days to comments and recommendations made by a Council.

(b) Coordination and consultation with the NMFS shall be initiated specifically, as needed, or concurrent with activities under the FWCA and/or the ESA. Coordination, consultation and implementation of Sections 104 or 110 does not require the transfer of funds from the Corps to the Council or the NMFS.

(c) Correspondence shall be included in project reports, and all pertinent information shall be discussed fully in appropriate environmental documents.

d. Plan Formulation and Evaluation.

(1) General.

(a) It is national policy that ecosystem restoration, particularly that which results in the conservation of fish and wildlife resources, be given equal consideration with other study purposes in the formulation and evaluation of alternative plans. Current planning guidance specifies that the Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, and applicable executive orders. Protecting the Nation's environment is achieved when damage to the environment is eliminated or avoided; i.e., mitigated, and unavoidable adverse effects are compensated. Mitigation requirements shall be pursued consistent with guidance set forth below.

(b) Ecological resources shall be described and evaluated consistent with current policy and planning guidance. Evaluation of ecological resources shall be based upon the significance of the resources involved; the significance of impacts (positive and negative) alternative plans have on these resources; and the contribution project features make toward fulfillment of established ecological resource-oriented management objectives. Evaluation of management features shall be based upon the features' completeness, effectiveness, efficiency and acceptability in fulfilling established management (mitigation or enhancement) objectives.

(2) Reconnaissance Study Phase. Ecological resources considerations during the reconnaissance stage of planning shall be of sufficient scope and detail to:

(a) Identify the presence and general location of known resources within the study area that should be approached with care;

(b) Make a preliminary appraisal of measures for restoration including an assessment of consistency with Army policies, costs, monetary and non-monetary benefits, impacts and potential for local sponsorship.

(c) Make preliminary determinations of likely impacts potential alternative plans would have on these resources;

(d) Briefly describe potential mitigation features that would address these impacts; and,

(e) Scope out resources surveys, studies and analyses to be conducted during the feasibility study stage.

(3) Feasibility Study Phase. Ecological resources consideration during this stage of planning will be of sufficient scope and detail to effectively quantify impacts the NED, NER and recommended plan (if not one of the same) will have on the resources, and to justify mitigation and restoration features being recommended. In compliance with this guidance, District commanders shall:

(a) Conduct appropriate coordination, studies and analyses throughout the planning process to determine the significance of ecological resources likely to be affected by alternative plans, and the significance of these effects;

(b) Comply with the Fish and Wildlife Coordination Act by giving full consideration to reports and recommendations furnished by the Secretary of the Interior (U. S. Fish and Wildlife Service), the Secretary of Commerce (National Marine Fisheries Service), and the appropriate head of the State agency exercising administration over the fish and wildlife resources;

(c) Give special consideration, as described in section c(2)(i) above, to the reports and recommendations of the Secretary of the Interior (U.S. Fish and Wildlife Service) and the Secretary of Commerce (National Marine Fisheries Service) on the conservation of Federally listed and proposed listed endangered and threatened species, and their designated critical habitat, furnished in compliance with the Endangered Species Act;

(d) Consider comments furnished by local public officials and the general public and use the information, as appropriate, to supplement information and recommendations provided by the above Federal and State fish and wildlife resources agencies;

(e) Determine the need for mitigation by assessing ecological resources gains and losses attributed to alternative plans;

(f) Assess the extent to which beneficial ecosystem management features of alternative plans offset adverse impacts (losses) before consideration is given to separable mitigation features;

(g) Formulate justifiable ecological resource management features based upon thorough professional evaluations;

(h) Consider including separable ecological resources management features only when adverse effects exceed beneficial effects, or when the adverse effects include such significant ecological values the specific features are justified;

(i) Formulate specific ecological resources mitigation and restoration plans using generally known and established techniques to address specific, clearly defined management objectives;

(j) Give full consideration to the establishment of wetland habitat in alternative involving the disposal of dredge material;

(k) For alternatives involving existing projects, give full consideration to modifications in the structures and operations of such projects for purposes of ecosystem restoration;

(l) Demonstrate that damages to significant ecological resources have been avoided or minimized to the extent practicable; that unavoidable damages to these resources have been compensated to the extent justified; and, that restoration opportunities for significant ecological resources have been given appropriate consideration;

(m) Demonstrate that damage to wetland resources has been avoided or minimized to the extent practicable; that unavoidable adverse impacts to wetlands have been compensated; and, that wetland restoration opportunities associated with the study have been properly addressed.

(4) Significance Determination.

(a) Resources. The significance of ecological resources shall be based upon both their monetary (NED) and non-monetary (EQ) values. Both monetary and non-monetary values shall be identified and clearly described. Monetary value shall be based upon the contribution the resources makes to the Nation's economy. Non-monetary value shall be based upon technical, institutional, and public recognition of the ecological, cultural and aesthetic attributes of resources within the study area. Criteria for determining significance shall include, but not be limited to, the scarcity or uniqueness of the resource from a national, regional, State and local perspective. Non-monetary values associated with ecological resources are subjective, and depend on the value society places on them. Different publics may express differing values and concerns for the non-monetary and monetary values associated with similar fish and wildlife resources. Such differences shall be documented, including the rationale used to select values chosen to determine resource significance.

(b) Impacts. The significance of impacts of alternative plans shall be evaluated based upon the extent, intensity and duration of the impact on significant ecological resources, compared to the "future without plan" condition. Refer to Section C-3, c, (3) if farmed or converted (Swampbuster) wetlands are involved.

(5) Methodology. Monetary, as well as a number of non-monetary, values associated with ecological resources arise primarily from the quantity and quality of fish and wildlife habitat within the study area. Therefore, habitat-based evaluation methodologies, supplemented with production, user-day, population census, and/or other appropriate information, shall be used to the extent possible to describe and evaluate ecological resources and impacts associated with alternative plans. Specific guidance for analyses required to evaluate and describe recommended mitigation and restoration features are described below.

e. Mitigation Planning and Recommendations.

(1) General. District commanders shall ensure that project-caused adverse impacts to ecological resources have been avoided or minimized to the extent practicable, and that remaining, unavoidable impacts have been compensated to the extent justified. The recommended plan and the NED plan, if not one in the same, shall contain sufficient mitigation to ensure that either plan selected will not have more than negligible adverse impacts on

ecological resources (Section 906(d), WRDA`86). Any such mitigation measures will be fully justified.

(2) Justification. Justification of mitigation features recommended for inclusion in projects shall be based upon analyses that demonstrate the combined monetary and non-monetary values of the last increment of losses prevented, reduced, or replaced is at least equal to the combined monetary and non-monetary costs of the last added increment so as to reasonably maximize overall project benefits. In addition, an incremental cost analysis, to the level of detail appropriate, will be used to demonstrate that the most cost effective mitigation measure(s) has been selected.

(3) Separable Features. Full credit shall be given to the beneficial aspects of an alternative plan, or project, before consideration is given to adding separable mitigation features. The significance of the ecological resources affected by an alternative plan/project, and the significance of adverse impacts to these resources shall be evaluated to determine the need for separable mitigation features. Evaluation of a separable mitigation feature is appropriate when it is determined that the net adverse impacts of an alternative plan/project exceed its net beneficial effects, and/or when the resulting losses include values (monetary and non-monetary) of such significance that specific consideration is justified.

(4) Range of Alternatives. To properly evaluate and compare mitigation features, and to determine remaining unmitigated losses if any, mitigation planning shall address a range of alternatives up to the full compensation of significant ecological resource losses. Appropriate units of measure shall be specified in mitigation planning objectives to aid in this evaluation. Examples of units of measure include habitat units, or other habitat quality indicators, numbers of animals, pounds of fish, user-days, etc.

(5) Land Requirements. The District Commander shall consider utilization of both public and private lands, and select the lands that represent the best balance of costs, effectiveness, and acceptability consistent with incremental cost analysis guidance described below.

(6) Special Requirements for Bottomland Hardwoods. Mitigation plans shall ensure that adverse impacts to bottomland hardwood forests are mitigated in-kind, to the extent possible. The intent is that the bottomland hardwood forest as an ecological system be mitigated rather than mitigating for faunal species in an upland hardwood forest habitat type. In this instance "to the extent possible" shall take into consideration the availability of manageable units of existing or restorable bottomland hardwood forests and the practicability and feasibility of implementing management measures to accomplish in-kind mitigation. In-kind does not necessarily mean acre-for-acre, but may be restoration or the increased management of bottomland hardwood

forests to compensate for the loss of biological productivity (habitat quality). Consultation with appropriate Federal and non-Federal agencies is required in complying with this requirement.

(7) Wetlands. District commanders shall ensure that adverse impacts to wetland resources are fully mitigated. Mitigation shall be accomplished through appropriate actions taken to avoid, minimize, and compensate for unavoidable losses as required to clearly demonstrate efforts made to meet the administration's goal of no net loss of wetlands.

(8) Incremental Cost Analysis. An incremental cost analysis shall be performed for all recommended mitigation plans. The purpose of incremental cost analysis is to discover and display variation in costs, and to identify and describe the least cost plan. Mitigation analysis shall be presented in an analytical framework commensurate with other project benefits and costs so that rational decisions regarding mitigation can be made. The least cost mitigation plan that provides full mitigation of losses specified in mitigation planning objectives, and which is unconstrained except for required legal and technical constraints, shall always be identified and displayed. The recommended plan, if different, will be compared to it. Planning methods and data shall be used which yield cost estimate accuracy and reliability commensurate with that of other cost analysis components of the overall study. District commanders shall clearly describe sources of data and information used in performing incremental cost analysis.

(a) Procedures. These or similar steps are required to conduct and document incremental cost analysis. All reports recommending mitigation shall demonstrate such steps have been performed and documented under appropriate paragraph headings.

(1) Inventory and Categorize Ecological Resources. Conduct or update, as appropriate, ecological resources inventories. Group resources into categories based on their relative significance considering National, regional, State or local perspectives. Categorize into groups that distinguish resources that must be mitigated in-kind from those that need not be. Clearly describe criteria used in the categorization of resources.

(2) Determine Significant Net Losses. Give full credit to the beneficial effects of the water resources project. Specify in quantitative terms the amount (units) of significant net losses, by resource category.

(3) Define Mitigation Planning Objectives. Develop mitigation planning objectives that reflect the specific losses to be addressed. Use a single unit of measurement to describe losses being addressed by each mitigation planning objective. For example, if the mitigation planning objective is to replace lost habitat quality, the unit of measurement must be in habitat units, or something equivalent. These objectives shall be clearly stated and used to guide plan formulation, to determine appropriate mitigation management features, and to establish

benchmarks for evaluating the performance of each increment of management included in alternative plans. Distinguish between those objectives that address losses that must be mitigated in-kind from those that need not be. Mitigation credit shall be given only to plan increments that contribute towards meeting stated mitigation planning objectives.

(4) Determine Unit of Measurement. The output of mitigation plan increments shall be described in the same units of measurement used to calculate specific ecological resource losses, and to define mitigation planning objectives. More than one unit of measurement (i.e., habitat units, production units, acres of like habitat, user days, etc.) may be appropriate for inclusion in an overall mitigation plan. However, the same unit of measurement must be used for describing increments addressing a single objective, as discussed in (c) above.

(5) Identify and Assess Potential Mitigation Strategies. Identify suitable management features responsive to mitigation objectives. Identify potential project lands, other public lands, and separable private lands determined suitable for applying each candidate management feature. The identification of potential mitigation sites should not be constrained for analysis purposes. This analysis should focus on determining the management potential of each candidate site relative to its ability to meet mitigation objectives. For the purpose of analysis preference shall not be given to the management of project and other public lands over the use of suitable private lands.

(6) Define and Estimate Costs of Mitigation Plan Increments. Properly defining cost associated with each plan increment is critical to incremental analysis. The goal is to discover and reveal variations in their costs. This requires establishing estimates of the cost of implementation of the management features on selected candidate sites. The cost of implementation includes development, operation and maintenance, and acquisition cost, if any. Express incremental cost as the annual equivalent of the present worth of costs, in dollars per unit of output, for example \$/HU. Define plan increments so that cost differences are evident when comparing plan increments with one another. Certain features should always be considered either a separate plan increment, or the first added feature of a separate plan increment, e.g., land acquisition, fish hatcheries or ladders, etc. If a given mitigation feature has differing unit costs depending on where or when it is implemented, these cost differences imply separate plan increments for cost analysis purposes. For example, two plan increments would generally result if on project lands a given management feature, e.g., a food plot, has a cost of \$.50/HU at site A and \$1.00/HU at site B. The same management measure applied to different properties (project vs public vs private lands) shall be treated as separate increments regardless of similarity in their relative costs. This is necessary to allow decision makers an opportunity to choose among these properties when factors other than cost effectiveness must be considered.

(7) Display Incremental Costs. Once costs have been estimated for mitigation plan increments, array them from lowest to highest cost per unit of output. Incremental costs shall be graphically displayed so that readers can easily see and compare the unit cost of each plan increment. For example, incremental cost can be displayed as a bar graph from lowest to highest cost per unit. The reader must be able to tell, either from the display itself or through accompanying text, pertinent facts about each increment's output and cost.

(b) Documentation. All reports recommending mitigation features shall document the above or similar steps used to perform incremental analysis, and discuss findings under the same or comparable paragraph headings.

(9) Timing of Implementation. For all water resources development projects, on which construction has not commenced as of 17 November 1986, authorized ecological resource mitigation features, including the acquisition of lands or interest in lands to mitigate losses to ecological resources, shall be undertaken or acquired either:

(a) Before any construction of the project (other than such mitigation land acquisition) commences; or

(b) Concurrently with the acquisition of lands and interests in lands for project purposes (other than mitigation of fish and wildlife losses); whichever the Secretary, determines is appropriate except that any physical construction required for the purpose of mitigation may be undertaken concurrently with the physical construction of such project. Any project authorized before 17 November 1986, on which more than 50 percent of the land needed for the project, exclusive of mitigation lands, has been acquired shall be deemed to have commenced construction.

(c) Mitigation measures will generally be scheduled for accomplishment concurrently with other project features in the most efficient way. Circumstances warranting the accomplishment of mitigation as the first or last elements of project construction will require prior approval by HQUSACE.

(10) Monitoring. Monitoring is appropriate for all mitigation actions to insure that those actions have achieved the objective. The level of monitoring should be consistent with the magnitude of the project and the degree of risk and uncertainty with the probable success of the mitigation. Forecast methods and techniques have been identified that are applicable to Corps projects that include state-of-the-art techniques and are generally acceptable to the resource agencies. The District Commander shall include the cost of a monitoring program in the estimate of O&M cost for mitigation measures, if such a program has been adopted in accordance with 40 CFR part 1505.2(c) and 1505.3.

(11) Allocation and Apportionment of Mitigation Costs. Ecological resources mitigation costs incurred after 17 November 1986 shall be allocated among the authorized purposes which caused the requirement for mitigation, and shall be cost shared to the same extent as project costs allocated to these purposes.

(a) Allocation. The impact analysis shall identify the project purposes which cause losses to be mitigated. If practicable, the analysis shall identify the extent of losses separable or specific to each purpose. Mitigation costs not associated with specific purposes will be included with other joint project costs.

(b) Apportionment. Once the proportionate amounts of losses and corresponding amounts of mitigation and costs are assigned to the appropriate purposes, joint costs of mitigation should be allocated among the causative purposes on the same basis as other joint costs.

(12) Mitigation Cost Sharing.

(a) LERRD. Non-Federal interests shall be required to provide lands, easements, rights-of-way, relocations and disposal areas (LERRD) where this is a requirement of the purpose that necessitates the mitigation except where otherwise agreed for the Corps to accomplish with non-Federal funds. As Title I of Public Law 99-662 contains a generic requirement that non-Federal interests provide LERRD, all future mitigation features will require non-Federal interests to provide LERRD, if required, unless the project authorization after 17 November 1986 provides differently for mitigation.

(b) Construction. Construction costs for mitigation will be treated the same as other project construction costs for cost sharing purposes.

(c) OMRR&R. Non-Federal interests will be responsible for all costs of operation, maintenance, repair, rehabilitation, and replacement of mitigation features except for:

(1) Inland navigation projects and harbor projects with depths up to 45 feet, which have no requirement for non-Federal sharing of these costs; and,

(2) Harbors with depths over 45 feet which require a 50 percent non-Federal share for those costs assigned to increments in excess of a 45-foot project.

(d) Exception. No cost sharing will be imposed without the consent of the non-Federal interests where contracts have previously been signed for repayment of costs or until such contracts are complied with or renegotiated.

(13) Preconstruction Environmental Protection and Mitigation Fund. This fund was established by Section 908 of WRDA '86. Implementation of the fund has not been sought since timing of implementation of mitigation features will assure that mitigation features will be available to mitigate for unavoidable adverse project impacts as they occur.

(14) Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R) of Mitigation Features.

(a) Federal Responsibility. Execution and performance of OMRR&R for ecological mitigation features of a project shall be a Corps responsibility whenever the project authorization, or recommendation for authorization, provides for the Corps to operate, maintain, repair, rehabilitate or replace other project features. The manner in which the District Commander exercises this authority and responsibility will vary widely, depending on the location of the fish and wildlife mitigation features and the type of ecological management and administration required. Plans recommended for authorization in this category shall identify the Corps OMRR&R responsibility. OMRR&R of ecological resources features included in an alternative plan to mitigate losses associated with an existing Federal program (e.g., National Migratory Bird Management Program) shall be the responsibility of the Federal agency that administers that program.

(b) Non-Federal Responsibility. OMRR&R of fish and wildlife mitigation features shall be a non-Federal responsibility whenever the project authorization or recommendation for authorization provides for non-Federal interests to operate and maintain other project features, and in some cases where there is a Federal OMRR&R responsibility but no Federal (Corps) presence, e.g., no Corps project management office located on site. Assignment of such responsibility shall be a part of the items of local cooperation for the project, to be fulfilled by either a local sponsor or another agency which will provide the necessary assurances to the Corps.

(15) Postauthorization Mitigation. Section 906(b) of the Water Resources Development Act of 1986 authorizes the Secretary of the Army to mitigate damages to fish and wildlife without further specific Congressional authorization within certain limits. Current budgetary constraints do not provide for the implementation of Section 906(b).

f. Applicability of FWCA and ESA to Postauthorization Activities.

(1) FWCA Applicability. The FWCA applies to postauthorization activities if the activity meets the threshold test outlined in Section 2(a) of the FWCA, i.e., the authorized plan is modified or supplemented, and these changes relate to Federal construction which would divert, modify, impound, or otherwise control a waterway.

(2) Section 2(b) Report and Section 2(e) Funding. Sections 2(b) and (e) of the FWCA normally apply during post-authorization activities for Federal projects where the Section 2(a) threshold test has been met.

(a) Mandatory Compliance. Section 2(b) of the FWCA is mandatory when changes to the authorized plan meets the Section 2(a) threshold test and the proposed changes to the authorized plan or project require a report to Congress, or the approval of the Chief of Engineers, or above.

(b) Discretionary Compliance. In all other instances where Section 2(a) applies, compliance with Section 2(b) requirements would be discretionary. However, it is Corps policy to fund the FWS for it's FWCA Section 2(b) activities associated with Corps studies and projects, consistent with procedures set forth in the 1980 Transfer Funding Agreement, as amended effective 21 September 1982.

(3) Discretionary Compliance Determination Criteria. The following criteria are considered appropriate for District commanders to use for determining when Section 2(b) and (e) of the FWCA applies to postauthorization project activities. First, the proposed activity must meet the Section 2(a) threshold test. Second, a project document must be under preparation that requires approval by at least the Division Commander, or above, and any of the following factors exist:

(a) The acknowledgment by the Corps in the feasibility report, or accompanying NEPA document, that sufficient uncertainty exists concerning impacts the recommended plan could have on fish or wildlife resources to warrant further investigations and analysis during postauthorization planning, engineering and design activities;

(b) Modification or supplementation of the authorized plans require the development of a supplement to the FEIS;

(c) New information or factors are identified during postauthorization project activities that appreciably change the extent to which the authorized project would or could impact upon fish and wildlife resources beyond what was documented in the feasibility report;

(d) The authorized project contains major fish and wildlife mitigation or enhancement features, and the further planning, siting, designing and construction of such features would benefit from involving the FWS, NMFS or State resources agencies in these activities; or,

(e) District and Division professional staff determine that continued involvement of the FWS, NMFS or State resources agencies during postauthorization project activities would better assure public and agency acceptance of the water resources development project, including authorized fish and wildlife features included in the project.

(f) The new or supplemented Section 2(b) report, planning aid letter, etc., shall accompany the project document throughout the decision-making process.

(4) ESA Applicability. Section 7 of the ESA is applicable for any project, or unit thereof, regardless of when the project was authorized or completed.

g. Reporting.

(1) General. Feasibility reports shall describe specific considerations given to fish and wildlife resources conservation during the study. All factors which the reporting officer considered as contributing to the justification of the expenditures recommended for mitigation and restoration features shall be explicitly described. Specifically, the report shall:

(a) Describe fish and wildlife resource features included in the recommended plan, including the basis for justification, consistent with guidance set forth in this section;

(b) Include appropriate letters and reports furnished by the FWS/NMFS and State agencies;

(c) Describe recommendations furnished by the FWS/NMFS and affected States in compliance with the FWCA and Section 7 of the ESA, discuss specifically how each recommendation was addressed in appropriate alternative plans, and provide reasons for adoption or non-adoption of each recommendation;

(d) Include, as appropriate, provisions for monitoring mitigation features included in the recommended plan;

(e) Describe consideration given to the protection and restoration of wetland resources, including the establishment of wetlands in connection with recommended plans that include the disposal of dredged material;

(f) Include the necessary letters of intent from agencies and non-Federal sponsors participating in fish and wildlife mitigation and restoration features; and,

(g) Describe how such features will be operated, managed and funded over the life of the project.

(2) Mitigation. Reports seeking authorization or approval of any water resources development project shall contain either:

(a) A determination that such project will have negligible adverse impacts on fish and wildlife; or,

(b) A recommendation with a specific plan to mitigate fish and wildlife losses created by such project.

(3) Wetlands. Feasibility reports and accompanying environmental documents shall, as applicable, describe specific consideration given to protect, reserve, conserve, mitigate adverse impacts, and restore wetland resources associated with the recommended plan. This information shall be in sufficient detail to quantify (acres and appropriate quality indicator) to what extent the recommended plan will contribute to the National goal of no net loss of wetland resources.

(4) Water Rights. If required by State water laws, rights for the use or release of stored water, to maintain reservoir pools or regulate stream flows for fish and wildlife mitigation or restoration, shall be provided by non-Federal sponsors. Reasonable costs of rights for water to accomplish initial filling of the reservoir, including water for mitigation requirements, are eligible for credit in cost sharing determinations. The computation is dependent on the manner of repayment. Non-Federal sponsors are also required to furnish assurance that appropriate action will be taken to prevent downstream withdrawals of water that would negate fishery benefits credited to such releases.

C-4. Cultural Resources.

a. Introduction. This section provides guidance for consideration of cultural resources in Civil Works planning studies, along with compliance requirements relevant to the identification, evaluation and treatment of these resources. This guidance is applicable to Corps of Engineers' Reconnaissance studies, Feasibility studies and Preconstruction Engineering and Design studies. It also applies to projects pursued under the Continuing Authority Program. This section does not apply to operating projects or Regulatory programs administered by the Corps of Engineers.

b. Definitions.

(1) Historic Property. An historic property is any prehistoric or historic district, site, building, structure or object included in or eligible for inclusion on the National Register of Historic Places (National Register). Such properties may be significant for their historic, architectural, engineering, archeological, scientific or other cultural values, and may be of national, regional, state, or local significance. The term includes artifacts, records, and other material remains related to such a property or resource. It may also include sites, locations, or areas valued by Native Americans, Native Hawaiians and Alaska Natives because of their association with traditional religious or ceremonial beliefs or activities.

(2) Cultural Resources Study. A cultural resources study is a scientific investigation conducted for the purposes of: discovering cultural resources; confirming their location, extent, and character; evaluating their significance; determining their research potential; determining potential project effects; and developing alternative preservation and/or mitigation plans. Such studies are performed at varying levels of intensity and specificity, and include archival, above-ground field examination, sub-surface testing, laboratory studies, and other scientific and analytic investigations. These studies should utilize professionally accepted and "state-of-the-art" methods and techniques as well as employing or testing innovative strategies when possible. The major study types for Civil Works planning studies are described in the following subparagraphs. Although timing of execution and level of detail will vary according to the nature of a particular project, general guidelines are provided by phase of planning study.

(a) Literature and Records Review. A search undertaken to determine what resources are known (or considered likely by informed sources), to be located within the planning area and to appraise the type, extent, and validity of any cultural resources investigations already accomplished.

(b) Sample Survey. Field examination of a representative portion of the planning area (which may be coupled with aerial, subsurface or waterborne remote sensing applications as appropriate), adequate to assess and predict, in general terms, the numbers, locations, affiliations, component(s), spatial distribution, data potential and other salient characteristics of historic properties or historic resources. The degree of coverage will be based on scientific and systematic sampling principles. Sampling strategies "should be predicated on knowledge of where pertinent resources are likely to be found, as well as on the degree to which they may be impacted by . . . land use activities." (CERL Technical Note 98/88). They may include strategies for identifying below-ground resources and additional requirements for evaluation and testing.

(c) Evaluation and Testing. Limited or restricted subsurface excavations to determine National Register eligibility of above-ground and below-ground resources by assessing and

appraising their extent and depth, their data potential, potential project effects, and other relevant characteristics that cannot be ascertained by pedestrian or surface examination alone. To evaluate significance, mapping, archival research, detailed laboratory analysis, and controlled surface collection of artifacts may precede, accompany or supplement such tests and evaluations. Evaluation and testing may also extend to the preparation of measured drawings, photographs, written data, and historical documentation to determine the National Register eligibility of structures and/or buildings.

(d) Intensive Survey/Inventory. A comprehensive, systematic, and detailed physical examination of an area as may be needed to identify and evaluate all historic properties which must be taken into account. This may include pedestrian survey, subsurface testing, archival research, and architectural studies. The inventory may be accompanied and/or followed by analytical studies such as artifact typing, radiocarbon dating, geomorphological mapping, archeobotanical analysis, and zooarcheology. It will also provide data required to develop preservation and/or mitigation plans.

(3) Mitigation. Mitigation is the minimization of losses of significant scientific, prehistoric, historic, architectural or archeological resources which will be accomplished through preplanned actions to avoid, preserve, protect, minimize, or compensate for impacts upon such resources, or to recover a representative sample of the data they contain by implementation of scientific study and other professional techniques and procedures.

(4) Historic Preservation. Historic preservation is the act of identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation and education and training for cultural, built and/or engineered environments.

(5) Advisory Council on Historic Preservation (ACHP). The ACHP is a body of the Executive branch of the Federal government that issues regulations to implement Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Council also consults with Federal agencies and comments on undertakings and programs that affect historic properties.

(6) State Historic Preservation Officer (SHPO). The SHPO reflects the interests of a State and its citizens in the preservation of their cultural heritage. In accordance with NHPA provisions, the SHPO advises and assists Federal agencies in carrying out their NHPA responsibilities.

(7) Tribal Historic Preservation Officer (THPO). The THPO is appointed or designated in accordance with the NHPA and is the official representative of an Indian tribe for the purposes

of Section 106 of the NHPA. If an Indian tribe has assumed the responsibilities of the SHPO for section 106 on tribal lands, Federal agencies shall consult with the THPO in lieu of the SHPO regarding undertakings occurring on, or affecting historic properties on, tribal lands.

(8) Indian tribe. An Indian tribe is a tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(9) Native Hawaiian organization. A Native Hawaiian organization is any organization which serves and represents the interests of Native Hawaiians; has a primary and stated purpose of the provision of services to Native Hawaiians; and, has demonstrated expertise in aspects of historic preservation that are significant to Native Hawaiians. "Native Hawaiian" means any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawaii.

(10) One Percent of the Total Amount Authorized to be Appropriated for Such Project. This is the statutory level set by the Archeological and Historic Preservation Act of 1974 (Public Law 93-291) on Corps of Engineers' general authority to make expenditures for data recovery. The Department of the Interior defines "data" as "evidence about historic and prehistoric periods which are buried in the ground" and recovery as "the scientific excavation or removal and preservation of that evidence . . . when construction projects pose threats that would result in their irreparable loss or destruction." Activities to survey, test and evaluate archeological resources are considered to be project planning activities, not data recovery activities. Further, mitigation, including but not limited to, protection of historic structures and engineering elements, built environment documentation, real estate support, and engineering support may all be appropriate activities, but, they are not data recovery activities subject to the one percent accounting established by Public Law 93-291. Section 208 of the National Historic Preservation Act Amendments of 1980 authorizes data recovery in excess of the one percent level when the Assistant Secretary of the Army (Civil Works) seeks the concurrence of the Secretary of the Interior (through the Departmental Consulting Archeologist) and notification of Congress.

(11) Significance. Significance is a term attributable to properties listed in or determined to be eligible for listing in the National Register. Significance criteria for the purpose of this regulation shall be those provided in 36 CFR Part 60.4. According to these criteria for evaluation, "(t)he quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history."

(12) Undertaking. An undertaking, for purposes of compliance with Section 106 of the NHPA, means a project, activity or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including: those carried out by or on behalf of the agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and, those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency.

(13) Collection. A collection is the composite of all material remains that are recovered from a cultural resources study as well as the associated records that are prepared or assembled in connection with that study.

(14) Collections management and curation. Collections management and curation are those services such as processing, cataloging and accessioning, as well as the application of specialized techniques necessary for conserving and maintaining collections.

(15) Collections Management Center. A collections management center is a facility where material remains and associated records are curated and maintained.

c. Overview. The National Historic Preservation Act (NHPA) of 1966, as amended, states that it is the policy of the Federal government to "provide leadership in the preservation of the prehistoric and historic resources of the United States . . .". These are finite, non-renewable resources which must be considered in formulating recommendations for project authorization and implementation. Significant cultural resources, also known as historic properties, are those listed in, or eligible for listing on the National Register of Historic Places. As early in the planning process as is possible, historic properties should be identified, characterized and taken into account in accordance with Section 106 of the NHPA and its implementing regulations at 36

CFR Part 800. Consistent with this process, and as appropriate to comply with other cultural resources laws and regulations, Corps undertakings shall be fully coordinated with State Historic Preservation Officers (SHPO), Tribal Historic Preservation Officers (THPO), the Advisory Council on Historic Preservation (ACHP), and all other appropriate interested parties and/or individuals.

d. Cultural Resources Studies.

(1) Principal investigators and key consultants conducting cultural resource studies shall meet the minimum qualifications cited in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Principal investigators shall be responsible for the validity of material presented in their reports.

(2) Draft reports on the results of cultural resources studies shall be distributed for review and comment to appropriate agencies, institutions and individuals, including, but not limited to, the State and/or Tribal Historic Preservation Offices, the Advisory Council, and the Department of the Interior.

(3) Copies of final reports shall be furnished to any appropriate individuals, agencies, and organizations. Final reports should be organized to include appendices or stand-alone volumes containing maps, site forms, references to specific site locations or other sensitive resource data. Appendices or stand-alone volumes may warrant protection from public disclosure under Exemption 3 of the Freedom of Information Act (FOIA), 5 U.S.C.A '552(b)(3) and Section 304 of the National Historic Preservation Act, as amended, 16 U.S.C.A '470w-3(a).

(4) Reconnaissance Phase Studies. Cultural resources investigations conducted during the Reconnaissance Phase of planing shall usually be limited to observations and general predictions regarding the types, variety and frequency of cultural resources that may be affected by potential solutions to water resources problems. These observations and predictions should be supported by a review of in-house information, records and available data. Cultural resources input during this phase of planning should also include projections of costs to accomplish the necessary studies, investigations, consultations and coordination that could occur during the subsequent planning phase.

(5) Feasibility Phase Studies.

(a) Cultural resources investigations during the Feasibility Phase of planning shall usually begin with a literature and records review. This literature and records review shall include manual and/or electronic searches of the National Register of Historic Places, the State archives, State site files, other files of the SHPO/THPO and other available public records of

prior cultural resource investigations within the planning area. It may also include interviews with persons knowledgeable about related topics; contacts with appropriate Native Americans, Native Hawaiians and Alaska Natives; field checks of site locations, and examinations of old photographs, maps and other documents.

(b) In consultation with the SHPO and/or the THPO, Corps Commands shall also design and implement such studies as are necessary to evaluate alternative plans in terms of their relative impact on historic properties. These studies should, when conducted on a sampling basis, provide for the efficient planning of any further cultural resource investigations that may be needed prior to initiation of construction.

(c) The Feasibility Phase studies shall normally be accomplished on a sampling basis formulated within a research strategy tailored to insure adequate coverage of the environmental zones within the alternative plan impact areas. However, when considered necessary or appropriate, a sample survey may be waived in favor of an intensive survey/inventory during the Feasibility Phase.

(d) Sample surveys will be designed to obtain such information as is necessary to identify and predict the presence of historic properties; to evaluate effects to such properties; and to evaluate impacts of alternative plans and assist in plan selection.

(1) The sampling strategy shall consider costs of survey with respect to the number of viable alternatives and the extent of the known area of potential effects.

(2) If this approach delays timely identification of historic properties and project impacts for consideration in a NEPA document or Feasibility Report, a Programmatic Agreement can be developed between the Corps Command, the SHPO and/or THPO, the ACHP and other consulting parties. This Agreement should specify the process by which required surveys, testing, evaluation, effect determination, mitigation planning, and coordination shall be achieved.

(e) The Feasibility Report and NEPA document shall briefly describe identified and predicted historic properties which would be impacted by the alternative plans. Where the extent, scope or significance of potentially impacted resources influence the commander's recommendation, these considerations should be clearly set forth in the feasibility report. If properties listed in, or eligible for listing on the National Register will be affected by the recommended plan, comments of the SHPO and/or THPO, the ACHP, and other interested parties shall be sought pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and 36 CFR 800. Comments shall also be sought in the event that for the recommended plan, there will be "no effect" on historic properties.

(F) Cultural resources studies completed during this phase of planning, may indicate that the cost of data recovery could exceed one percent of the total Federal amount authorized for appropriation. In those cases, the Feasibility Phase Report shall include a narrative on the potential need to exceed the one percent level. This narrative shall include, but may not be limited to, the factual basis for concern and the need or likelihood of seeking a waiver under Section 208 of the National Historic Preservation Act Amendments of 1980.

(6) Preconstruction Engineering and Design Phase Studies.

(a) During the period between completion of the Feasibility Report and initiation of construction, intensive surveys/inventories, if required or not previously conducted, shall be accomplished in the area of potential environmental impact of the recommended plan or authorized project. The results of such inventories serve as the basis for formulation of plans for management of historic properties prior to or during the construction and operational stages of projects.

(b) Such inventories shall be accomplished within the context of an explicit research design, formulated in recognition of prior work by the Corps of Engineers and others, and shall include such testing and other comparisons and evaluations as may be required to formulate a program which provides a defensible basis to:

(1) Seek determinations of eligibility of resources for the National Register of Historic Places.

(2) Determine when a project will have "no effect" on historic properties.

(3) Determine the need to mitigate adverse project effects on National Register and eligible properties in light of their historic or architectural significance or their potential to further archeological knowledge.

(4) Develop plans and cost estimates for such mitigation or other treatment of historic properties affected by the project.

(5) Serve as the basis for negotiation of a Memorandum of Agreement (if no Memorandum has been previously prepared) with the SHPO/THPO, and, if appropriate, the ACHP specifying actions which will be taken by the Corps of Engineers prior to or during the project construction period to mitigate adverse effects on National Register and eligible properties.

(c) Should the cost of data recovery exceed one percent of the total estimated Federal appropriation required for construction of a project, a waiver request shall be submitted in accordance with Section 208 of the National Historic Preservation Act Amendments of 1980.

(1) The waiver shall be submitted, through channels, to the Corps Federal Preservation Officer (FPO), who shall serve as the headquarters technical specialist and liaison. The FPO will review the waiver request, coordinate with all appropriate headquarters elements, informally coordinate with the Department of the Interior, and develop any additional documentation for approval by the Assistant Secretary of the Army (Civil Works). The waiver shall then be submitted to the Secretary of the Interior, through the National Park Service Departmental Consulting Archeologist, for concurrence and Congressional notification.

(2) The waiver request should be in the form of a letter report with supporting documentation as deemed necessary. The letter report should include detailed descriptions of the historic properties that will be adversely affected; descriptions of previous studies in the study area; proposed data recovery efforts for each effected property; estimated data recovery costs per property; and a detailed justification for the need to exceed the one percent level.

(3) While early planning and preparation of a waiver request is desirable, it is not always possible. It is important to note that Corps Commands may expend data recovery funds up to the one percent level prior to the completion of the waiver process.

e. Native American Considerations.

(1) When cultural resources studies examine lands held in fee title (or controlled to the same extent as fee title lands) by the Corps, provisions of Section 3 of the Native American Graves Protection and Repatriation Act (NAGPRA), Public Law 101-601, and its implementing regulations found at 40 CFR Part 10, will apply.

(2) NAGPRA does not apply to lands in which the Corps has merely been provided access, or a right of entry, by a landowner and/or local sponsor, for water resources development studies or projects. A full discussion of NAGPRA applicability can be found in a 7 Dec 1995, CECW-AO/CECW-PD/CECC Memorandum and Legal Opinion, subject: Application of the Native American Graves Protection and Repatriation Act to Water Resources Development Activities.

(3) A Presidential Memorandum on Government-to-Government Relations, dated 29 April 1994, reaffirmed the United States "unique legal relationship with Native American tribal governments." In recognition of the special considerations due to tribal interests, the President directed Federal agencies to operate within a government-to-government relationship with

federally recognized Indian tribes; consult, to the greatest extent practicable and permitted by law, with Indian tribal governments; assess the impact of agency activities on tribal trust resources and assure that tribal interests are considered before the activities are undertaken; and remove procedural impediments to working directly with tribal governments on activities that affect trust property or governmental rights of the tribes. In the Planning process for water resources development, there may be many points of connection between the Corps and Indian tribes. The following Tribal Policy Principles, developed with the Office of the Assistant Secretary of the Army (Civil Works), shall guide Corps-Indian tribe interaction during project planning.

(a) Tribal Sovereignty. The U.S. Army Corps of Engineers recognizes that Tribal governments are sovereign entities, with rights to set their own priorities, develop and manage Tribal and trust resources, and be involved in Federal decisions or activities which have the potential to affect these rights. Tribes retain inherent powers of self-government.

(b) Trust Responsibility. The U.S. Army Corps of Engineers will work to meet trust obligations, protect trust resources, and obtain Tribal views of trust and treaty responsibilities or actions related to the Corps, in accordance with provisions of treaties, laws and Executive Orders as well as principles lodged in the Constitution of the United States.

(c) Government-to-Government Relations. The U.S. Army Corps of Engineers will ensure that Tribal Chairs/Leaders meet with Corps Commanders/Leaders and recognize that, as governments, Tribes have the right to be treated with appropriate respect and dignity, in accordance with principles of self-determination.

(d) Pre-Decisional and Honest Consultation. The U.S. Army Corps of Engineers will reach out, through designated points of contact, to involve Tribes in collaborative processes designed to ensure information exchange, consideration of disparate viewpoints before and during decision making, and utilize fair and impartial dispute resolution mechanisms.

(e) Self Reliance, Capacity Building, and Growth. The U.S. Army Corps of Engineers will search for ways to involve Tribes in programs, projects and other activities that build economic capacity and foster abilities to manage Tribal resources while preserving cultural identities.

(f) Natural and Cultural Resources. The U.S. Army Corps of Engineers will act to fulfill obligations to preserve and protect trust resources, comply with the NAGPRA, and ensure reasonable access to sacred sites in accordance with published and easily accessible guidance.

(4) When Civil Works cultural resource studies include the examination of “Federal lands,” as defined by Executive Order 13007, “Indian Sacred Sites”, the provisions of that Executive Order apply. For the purposes of Executive Order 13007, Federal lands are any land or interest in land owned by the United States, including leasehold interests held by the United States, except Indian trust lands.

(a) Executive Order (EO) 13007 directs Federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It directs agencies to avoid adversely affecting the physical integrity of such sacred sites and to maintain confidentiality of information pertaining to such locations.

(b) Corps policy on EO 13007 is contained in Policy Guidance Letter Number 58, dated 28 June 1998. That policy is incorporated herein, by reference. In brief, though, it is Corps policy to utilize all reasonable means to accommodate Indian tribes by providing meaningful access to sacred sites on Federal lands. Corps Commands will ensure that Indian tribes have reasonable opportunities to review plans for activities and projects on Federal lands that could potentially adversely affect sacred sites. In the event that the Federal lands examined are owned or leased by another Federal agency, Corps Commands shall ensure that representatives from these other agencies will have a reasonable opportunity to participate in EO 13007 consultations.

(c) Corps cultural resources studies, conducted for planning purposes, on lands subject to the provisions of EO 13007, shall include narratives on the results of tribal consultations regarding access, and potential affects to, Indian sacred sites. These narratives shall include, but may not be limited to: nature and extent of sacred sites within the study area (subject to tribal approval and confidentiality concerns), access accommodations required under “with/without” project conditions, potential affects of the project, and feasible measures to ensure the avoidance of potentially adverse affects.

f. Curation. Collections recovered from lands in which the Corps merely has a right of entry (i.e. no real property interest) are the property of the landowner, unless otherwise specified. Corps Commands conducting cultural resources studies associated with these lands should ensure that collections are properly curated in appropriate collections management centers as long as there is a Corps interest in the collections. When the Corps interest in collections ends, landowners should be encouraged to arrange for permanent curation with collections management centers in a manner consistent with Federal curation requirements.

g. Continuing Authority Projects. Identification, evaluation, and mitigation of effects on historic properties within the impact area of projects planned and implemented under Continuing Authorities for flood control, navigation, streambank erosion control and shore protection shall be accomplished as follows.

(1) Section 103, 107, 111, 205. The implementation of projects under these authorities includes two planning phases (reconnaissance and feasibility), preparation of plans and specifications, and construction.

(a) Cultural resources investigations during the reconnaissance phase of planning should be consistent with the overall objectives of the study as well as time and cost limitations. Investigations during this phase of planning shall usually be limited to observations and general predictions regarding the types, variety and frequency of cultural resources that may be affected by a proposed undertaking. These observations and predictions should be supported by a review of in-house information, records and available data. The review of available information may assist in the design of more intensive investigations of the planning area and the development of cost figures for later implementation phases. In some cases, the results of reconnaissance phase investigations may indicate that the cost of data recovery could exceed the one percent level specified in Section 7a of the Archeological and Historic Preservation Act of 1974 (Public Law 93-291). In those cases, the reconnaissance report shall include a narrative on the potential need to exceed the one percent level. This narrative shall include, but may not be limited to, the factual basis for concern and the need or likelihood of seeking a waiver under Section 208 of the National Historic Preservation Act Amendments of 1980.

(b) The feasibility phase should complete the plan formulation process and result in the preparation of a Detailed Project Report (DPR). If the limited observations and predictions documented in the reconnaissance planning phase reveal the presence, or likely presence, of historic properties within the areas of potential project effect, the Corps Command shall conduct an intensive survey/inventory. The results of the intensive survey/inventory shall be presented in the DPR along with the proposed plan for mitigation if adverse effects on historic properties will occur.

(1) If historic properties will be effected by the recommended plan, comments of the SHPO and/or THPO and the Advisory Council on Historic Preservation shall be sought pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and 36 CFR Part 800. Comments shall also be sought in the event that for the recommended plan, there will be "no effect" on historic properties.

(2) Should the cost of data recovery exceed one percent of the total Federal appropriation required for construction of a project for which Congress has not specifically authorized expenditures in excess of this amount, a waiver request shall be submitted in accordance with Section 208 of the National Historic Preservation Act Amendments of 1980. For Continuing Authorities Projects, Corps Commands shall use the same waiver process described in paragraph d(6)(c) above.

(2) Section 14 and 208. Projects considered pursuant to these Continuing Authorities are subject to a single planning phase prior to the preparation of plans and specifications. Section 14 and 208 projects are not exempt from compliance with the National Historic Preservation Act of 1966 and 36 CFR Part 800.3 through 800.6. When Corps projects are in response to a disaster or emergency declared by the President, a tribal government, or the governor of a State or another immediate threat to life or property; and, when the undertaking will be implemented within 30 days after the disaster or emergency has been formally declared by the appropriate authority, Corps Commands can follow accelerated procedures established in 36 CFR Part 800.12 "Emergency situations."

h. Costs, Apportionment, and Accountability.

(1) Funds expended for cultural resource investigations during the Reconnaissance Phase of Planning shall be a full Federal expense.

(2) Funds expended during the Feasibility Phase for sample surveys, intensive surveys, or other necessary cultural resource investigations are cost-shareable. These may be treated as planning costs and thus, are not accountable under the statutory one percent data recovery expenditures.

(3) Data recovery of significant archeological properties is a full Federal cost up to the one percent level specified in Section 7a of Public Law 93-291. In the event that data recovery costs exceed the one percent level, those costs that exceed the one percent level will be shared by the Federal government and the local sponsor.

(a) For projects that will exceed the one percent level and a Project Cooperation Agreement (PCA) has not been executed, the PCA shall include a specific provision for data recovery cost sharing. In order to determine the cost share formula, the Corps Command shall identify the project purpose which caused the need for the data recovery and cost share the amount over the one percent as if it were a separate project for that purpose.

(b) For projects that will exceed the one percent level and a PCA is in place, but does not specifically address data recovery, the Local Sponsor share of the amount over one percent shall be dictated by the Sponsor's overall financial responsibilities as enumerated in the PCA.

(4) Cultural resources mitigation, other than data recovery, shall not be included in the one percent accounting specified in Section 7a of Public Law 93-291. Cultural resources mitigation, other than data recovery, shall be cost shared between the Corps and the Local Sponsor using the same cost sharing formula established for the project purpose.

(a) For projects that require cultural resources mitigation, other than data recovery, and a PCA has not been executed, the PCA shall include a specific provision for mitigation cost sharing.

(b) For projects that require cultural resources mitigation, other than data recovery, and a PCA is in place, the Local Sponsors share of the mitigation costs shall be dictated by the Sponsor's overall financial responsibilities as enumerated in the PCA.

(5) For Continuing Authorities projects, when cultural resources mitigation costs increase the Federal cost to a level in excess of the Federal Funding Limits, all mitigation costs in excess of the specified Limits shall be the responsibility of the local sponsor. For those Continuing Authorities efforts that are below specified Limits, funding formulas established in paragraph h(3) and (4), above, apply.

C-5. Aesthetic Resources

a. Purpose. This section provides guidance for consideration of aesthetic resources in Civil Works planning studies.

b. Definitions.

(1) Aesthetic Resources. Those natural resources, landform, vegetation and man-made structures in the environment which generate one or more sensory reactions and evaluations by the observer, particularly in regard to pleasurable response. These sensory reactions are traditionally categorized as visual, auditory and olfactory responses; more simply-sight, sound and smell. The visual sense is so predominant in the observers reaction and evaluation that aesthetic resources, for the purpose of this section, will be referred to as visual resources. The other sensory stimulants, sound and smell, should be dealt with to the extent their presence is perceivable.

(2) Aesthetic Quality. The significance given to aesthetic resources based on the intrinsic physical attributes of those specific features and recognized by public, technical and institutional sources.

(3) Landscape Unit. A distinct and visually connected portion of land which may include compatible vegetation, water, wildlife, land use and man-made structures and forms a distinct and describable visual component.

(4) Procedures. The methods or process used to evaluate aesthetics for Corps of Engineers planning studies. A procedure should be capable of being used to: (1) Identify and assess the existing visual resources conditions affected by a Corps study; and, (2) Assess (describe magnitude, location, duration) and appraise (determine if beneficial or adverse) the visual impacts caused by alternatives; and, (3) Provide a replicable basis of support for any recommended mitigation.

(5) Mitigation. For the purpose of this section, the definition of mitigation includes:

- (a) Avoiding the impact altogether by not taking a certain action or part of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

c. Guidance.

(1) General. It is National policy that aesthetic resources be protected along with other natural resources. Current planning guidance specifies that the Federal objective of water and related resources planning is to contribute to National Economic Development consistent with protecting the Nation's environment. The Corps established a number of environmental goals, including: (1) Preservation of unique and important aesthetic values; and, (2) Restoration and maintenance of the natural and man-made environment in terms of variety, beauty, and other measures of quality ([ER 200-2-2](#)). However, in meeting these goals, a standard of reasonableness must be applied in defining the appropriate level of expenditures for aesthetic quality at Civil Works projects. Current budgetary constraints and the intense competition for Federal funds dictate that a greater level of discipline be applied in meeting the Corps responsibilities to harmoniously blend projects with the surrounding environment while avoiding excessive expenditures. The guidance and procedures presented herein implement these planning and environmental policies and goals and complement the procedures developed for planning, economic evaluation and other environmental resource evaluation.

(2) Aesthetic Resources in Planning. Consideration of Aesthetic resources shall be consistent with current planning guidance. Review of a study (e.g. study area, alternatives) by a landscape architect or trained environmental resources personnel early in the planning process can provide valuable input to the study by identifying significant visual resources as well as other planning issues related to aesthetics that impact on plan formulation, design and engineering. Procedures for consideration of aesthetic resources shall occur throughout the planning process and be documented to reflect the continued effort throughout all phases of the project. This procedure departs from the traditional practice which introduced beautification only during the design stage.

(3) Mitigation. Appropriate mitigation shall be undertaken for adverse effects to significant aesthetic resources. Aesthetic mitigation measures, features, and actions shall be evaluated according to their ability to either avoid, minimize or compensate for adverse effects on significant aesthetic resources, or to mitigate damage to these resources shall be considered a part of the project and allocated to the project in the same manner as other project costs.

(4) Project Relationship. Any aesthetic project features must be related to harmoniously blending the project into the project setting and not aimed at "beautifying" the surrounding area. This is not an issue with measures that are integral to project design but is an important consideration for measures that are not integral. For example, plant materials can be used to reduce visual contrast or screen projects. Landscape plantings must be limited to the land required for the project and plantings will not extend to adjacent property even if the adjacent property is a public park or recreation area.

(5) Project Setting. The acceptability and compatibility of aesthetic features of project design are affected by the project setting and the expectation of the users and viewers of the project. The land use in the area surrounding the project is an important consideration in determining the appropriate measures for aesthetics. For example, a concrete channel without aesthetic treatment may not be visually objectionable in a heavy industrial area but a concrete channel in a residential area may require texturing and screening with trees and shrubs to be visually compatible with the residential land use. Linear projects such as levees and channels may incorporate different aesthetic features in different reaches of the same project depending on the visual qualities and land uses of the adjacent property in that reach with an appropriately designed transition between different treatment reaches.

(6) Partnership. Project aesthetic features will be closely coordinated with the non-Federal project sponsor. The objectives, goals, desires and values of the local sponsor will be carefully considered in formulating the aesthetic features of the project within the limits of a uniform application of standard Corps practices for aesthetic quality. A summary of standard

Corps practice is contained in Appendix R. This does not preclude the incorporation of measures into a project that would exceed the normal Corps practice if the non-Federal sponsor is willing to bear all of the incremental costs of such measures as elements of a locally preferred plan. Equity is also an important consideration in working in partnership with local sponsors. The preservation and enhancement of aesthetic quality must be an important goal in all projects regardless of the socio-economic conditions in the project area.

(7) Compatibility. All aesthetic measures must be designed so that they are fully compatible with the project purpose and in no way compromise the safety, integrity or function of the project. For example, it may be appropriate to screen a floodwall with vegetative plantings but it would be inappropriate to plant trees directly on a levee that might endanger its structural integrity or diminish its hydraulic characteristics.

(8) Cost Allocation. Costs for aesthetic measures that are in accordance with standard Corps practices are shared as project costs. Cost allocation would be an issue in multi-purpose projects where aesthetic costs would be shared in accordance with the purpose to which the costs are allocated. An example would be a hiking trail on a flood control levee. The addition of recreation as a project purpose may introduce the need for an increased consideration of aesthetics since it results in increased public visibility and use of the project. In these cases, any incremental aesthetic costs associated with the recreation purpose should be allocated to the recreation purpose and cost-shared with the non-Federal sponsor on a 50 percent basis.

d. Procedures.

(1) General. A procedure such as the Visual Resources Assessment Procedure (VRAP), WES Instructional Report EL-88-1, or comparable method, to assess aesthetic resources shall be included as a regular part of planning studies. The purpose of using a procedure is to have a systematic approach to consider aesthetic resources. Advantages of a systematic and quantifiable approach include the ability to assign a visual resource value to all of the landscape units within a study area, identify significant aesthetic resources, and to determine causes of adverse impact. Such a procedure provides a clear, tractable basis for including aesthetics in plan formulation, design, reformulation, and mitigation planning.

(2) Level of Detail. The level of effort or detail used in a Procedure will vary dependent on project size, geographical scale, costs, phase of a study, and on the availability of data, identified alternatives, and forecasts of future conditions. The level of detail will increase with the phase of planning and engineering, as the Planning data required, e.g., impact measurements, increases in detail. The procedure used may vary from development of narrative descriptions of the visual resources of a study area to implementation of a visual impact assessment study.

(3) Reporting Requirements. Project measures to preserve and restore aesthetic quality should be fully defined (i.e. described and displayed) in the feasibility report and reflected in the project cost estimate. The feasibility report should include a description of the project setting and the relationship of aesthetic features of the project to the setting. To the extent practical, all the incremental costs of the project aesthetic features should be identified recognizing that some aesthetic considerations are completely integral to the project design and are not separable. This complete description and display of costs will allow any issues on the reasonableness of the aesthetic measures to be addressed prior to project authorization and be reflected in the authorizing document. Increases in levels of project costs for aesthetics during pre-construction engineering and design, beyond inflation, will not be approved.

C-6. Water Quality and Related Requirements

a. Purpose. This section provides guidance for the consideration of water quality and related programs in Civil Works planning studies. It incorporates water quality policies embodied in Sections 102, 401 and 404 of the Federal Water Pollution Control Act, Section 319 of the Water Quality Act of 1987, and Sections 102 and 103 of the Marine Protection, Research and Sanctuaries Act, which are applicable to Corps of Engineers feasibility studies and preconstruction planning and engineering.

b. Discharge of Dredged or Fill Material into Waters of the United States. Corps of Engineers proposed projects involving the discharge of dredged or fill material into waters of the United States shall be developed in accordance with guidelines promulgated by the Administrator of the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army under the authority of Section 404(b)(1) of the Clean Water Act, as amended, unless these activities are exempted by Section 404(f).

c. Conducting the Section 404(b)(1) Evaluation in the Planning Process. During feasibility planning, District commanders shall conduct and, to the fullest extent practicable, complete the investigations and analyses required by the Section 404(b)(1) Guidelines. Water quality and related information used in the evaluation will provide documentation to demonstrate that the recommended plan is in compliance with the Clean Water Act. A suggested format for the Section 404(b)(1) evaluation is included as Exhibit C-1.

d. Clean Water Act: Section 404. Feasibility reports recommending projects involving the discharge of dredged or fill material into waters of the United States, including wetlands, shall be developed consistent with Section 404(b)(1) Guidelines. For navigation projects, if compliance with 404(b)(1) Guidelines alone prohibit the designation of a proposed dredged material disposal site, then the economic impact on navigation and anchorage shall be evaluated

and the District Commander may recommend using the proposed site, even if it cannot be officially designated under 404(h)(1) Guidelines (Section 404(b)(2)).

e. Section 404(b)(1) Evaluation Documentation. District commanders shall include in their feasibility planning reports analyses and documentation necessary to demonstrate that the recommended plan is in compliance with 404(b)(1) Guidelines. The 404(b)(1) analysis and compliance determination shall be updated as required during post authorization planning and included in appropriate project documents. Full compliance with the Clean Water Act (CWA), Section 404(b)(1) Guidelines, must be completed prior to the initiation of project construction. A suggested format for the required 404(b)(1) evaluation and compliance determinations is included in Exhibit C-1.

f. State Water Quality Certification. Section 401 of the CWA sets forth requirements and procedures for obtaining State water quality certification for activities which result in any discharge into navigable waters. Section 404(t) provides further guidance relative to navigation projects. State water quality certification requires the District Commander to accomplish the following three tasks:

(1) Complete an evaluation of the effects of the proposed discharge consistent with the Section 404(b)(1) Guidelines;

(2) Issue a public notice, with opportunity for public hearings for the proposed discharge, including or referencing the preliminary Section 404(b)(1) evaluation; and,

(3) Obtain certification, including any required conditions, from the State or interstate water pollution control agency that the proposed action is in compliance with established effluent limitations and water quality standards. If the State in question has assumed responsibilities for the 404 regulatory program, a State 404 permit shall be obtained, if applicable, which will serve as the certification of compliance. District commanders shall provide the State with necessary detailed information it may need to issue the water quality certification.

g. Section 404(r) Exemption. Section 404(r) of the Clean Water Act, waives the requirement to obtain either the State water quality certificate or the 404 permit if:

(1) Information on the effects of the discharge of dredged or fill material into waters of the United States, including the application of the Section 404(b)(1) Guidelines, are included in an environmental impact statement (EIS) on the proposed project; and,

(2) The EIS is submitted to Congress before the actual discharge takes place and prior to either authorization of the proposed project or appropriation of funds for its construction.

(3) District commanders shall clearly document in the feasibility report when the 404(r) exemption criteria have been met, regardless of whether or not the District plans to obtain State water quality certification.

h. Section 404/NEPA Documentation. Evaluation of the effects of the discharge of dredged or fill material, including consideration of the Section 404(b)(1) Guidelines, shall be included in an EA, EIS or EIS Supplement prepared for all Corps actions in planning, design and construction where the recommended plan or approved project involves the discharge of dredged or fill material into waters of the United States.

(1) For feasibility reports going to Congress for authorization, the Section 404(b)(1) evaluation will be discussed in the, body of the EA, EIS or EIS Supplement and included, in full, in an Appendix to the Main Report. The degree to which the proposed project is in compliance with the Act will be noted in the EA (FONSI), or in the Record of Decision (ROD) when an EIS is involved.

(a) If full compliance is noted in the ROD, this will satisfy the Section 404(r) exemption criteria.

(b) If full compliance is not reached during feasibility planning, i.e., the Section 404(b)(1) evaluation is not completed or Section 404(r) requirements are not satisfied, then complete compliance will not be noted until the Section 404(b)(1) evaluations are completed and included in an EIS Supplement filed with EPA prior to project construction.

(2) To aid states and agencies in their review draft feasibility reports that include a draft EIS shall indicate whether or not the District Commander plans to seek exemption under 404(r) once Section 404(b)(1) compliance is met.

(3) Feasibility reports going to Congress, that includes an EA (FONSI) rather than an EIS, must include a State water quality certificate to be in compliance with the Clean Water Act; i.e., Section 404(r) of the, Act does not apply unless an EIS is involved.

(4) For continuing authority projects involving the disposal of dredged or fill material into the waters of the United States, Section 404(b)(1) compliance will be included in the EA, EIS or EIS Supplement consistent with guidance set forth above. Since Section 404(r) does not apply to continuing authority projects (since these reports do not go to Congress) an appropriate State water quality certification or State permit must be obtained before a decision is made on the project.

(5) There may be instances when the District Commander determines that it would be prudent to seek State water quality certification even when an exemption for obtaining such certification is possible under 404(r). In such instances, the District commanders shall accomplish all actions necessary to obtain State water quality certification, and to meet Section 404 (r) exemption requirements. A State water quality certificate shall be obtained prior to requesting project construction funding unless the State is legally unable, or is unwilling to Certify the project even after receiving the necessary Section 404(b)(1) evaluation information from the Corps. In these cases, the District Commander shall officially inform the State of his/her intention to initiate Section 404(r) exemption procedures, and acknowledge this in the appropriate NEPA document.

(6) States requiring final Congressional or Corps action prior to issuing a water quality certification must be advised early in the planning process of the reporting requirements discussed above. In those instances the State must furnish a conditional water quality certification before Sections 401 and 404 requirements are considered met. This issue must be resolved and appropriate documentation included before the Division Commander approves the report and sends it forward to HQUSACE for Washington level review, approval and processing.

i. General Permits. Nationwide and regional permits fall under the category of general permits. A general permit is issued subject to the Section 404(b)(1) Guidelines and to any conditional standards pursuant to Section 404(e) of the Clean Water Act. The conditions of a general permit shall be used in lieu of this regulation for those Federal activities which the District Commander determines to be applicable. However, the use of a general permit shall not substitute for or eliminate the need for the preparation of an appropriate NEPA document, i.e., EIS or EA FONSI.

j. Protection of Wetlands. Executive Order 11990 has declared wetlands to be an important national resource warranting specific preservation measures. Policy and guidance for considering wetland resources in the planning process is found in Section C-3 of this appendix.

k. Aquatic Disposal of Dredged Material.

(1) For projects where discharge of dredged material into the territorial sea is for the primary purposes of fill (e.g., beach nourishment, or replenishment, underwater berm or island construction), the discharge will be evaluated under Section 404 of the Clean Water Act.

(2) For projects involving transportation of dredged material through the territorial sea for the purpose of ocean disposal, or involving dredged material discharge within the territorial sea for the primary purpose of disposal, the discharge will be evaluated under Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA). Required consideration for

establishing the need for ocean disposal includes compliance with applicable environmental criteria of 40 CFR Part 227 relating to the effects of disposal, navigation, economic and industrial development, foreign and domestic commerce and availability of practicable alternatives to ocean disposal.

(3) In considering feasible ocean sites for the disposal of dredged material, the District Commander will utilize ocean sites designated by EPA to the maximum extent practical. Where no EPA designated site is available or where such sites are determined not to be feasible for use based on the NED Plan, the District Commander may select a suitable ocean disposal site or sites under authority of Section 103 of the MPRSA using procedures and outlined criteria in 40 CFR 228.4(e), 228.5 and 228.6. Appropriate NEPA documentation should be used to support site selections; preferably incorporating these considerations into the project NEPA document.

(4) Where ocean disposal is determined to be necessary, the District Commander will, to the fullest extent practicable, specify potential disposal sites in the feasibility report. The feasibility report must fully demonstrate that there are acceptable potential disposal sites which incorporate both economic and environmental considerations, within the zone of siting feasibility for the project. District commanders shall conduct and, to the fullest extent practicable, complete the Section 103 evaluation during feasibility planning when ocean dumping alternatives are being considered. Data developed in this manner will facilitate the comparison of alternative ocean disposal plans. If the Section 102 evaluation has not been completed for projects currently in preconstruction planning and engineering, it shall be completed as an integral part of the decisionmaking process for initiating or implementing the project.

(5) Dredged material will be evaluated to ensure that it is suitable for aquatic disposal. Evaluation, and any subsequent sediment testing that may be required, will be performed in accordance with USEPA/USACE "Evaluation of Dredged Material Proposed for Ocean Disposal (Testing Manual)" or USEPA/USACE "Evaluation of Dredged Material Proposed for Discharge in Inland and Near-Coastal Waters - Testing Manual".

1. Water Quality Standards.

(1) Standards. The District Commander shall consider applicable Federal, State and local effluent limitations, water quality standards and management practices, as part of the formulation of alternative plans in feasibility and preconstruction planning and engineering studies. (See E.O. 12088, 13 October 1978.)

(2) Streamflow Regulation. There are two categories of reservoir capacity for the regulation of streamflow, pursuant to Section 102(b)(1) of the Clean Water Act: (a) That which is associated with identifiable project outputs such as navigation, recreation, fish and wildlife or the

prevention of salt water intrusion, and (b) That which is associated with water quality control. The need for and value of storage for the regulation of streamflow for water quality control may be taken into account in a project only if so determined by the Administrator of EPA. Costs allocated to streamflow regulation for water quality control are nonreimbursable if the benefits of such regulation are widespread. (See Chapter 2, Section III regarding deletion or modification of reservoir storage for water quality purposes in accordance with Section 65, Public Law 93-251.)

m. Water Quality Enhancement Costs. Costs for water quality enhancement must be assigned to the appropriate project purposes and shared in the same percentages as the purposes to which the costs are assigned (See Section 103(d) of Public Law 99-662.)

n. Exclusions for Emergencies. District commanders shall meet the evaluation and coordination requirements related to the Sections 404 and 102 guidelines to the fullest extent practicable, unless they determine that the resulting delays will lead to unacceptable risks to health, life, or property or severe and unacceptable economic losses. To further reduce administrative burdens and to expedite meeting these requirements, the District Commander should establish procedures in cooperation with the appropriate Federal and State agencies as recommended in ER 500-1-1. Carrying out the directives of this paragraph is crucial, since compliance with Section 401(a) of the Clean Water Act cannot be waived by the Corps of Engineers. Currently, Section 14 emergency stream bank erosion is the only element of the Civil Works planning program subject to emergency procedures.

o. Non-Point Source Pollution Program. The Water Quality Act of 1987 (Section 319) requires that Federal assistance programs and development projects be consistent with State non point source (NPS) management programs, for those States which have such Environmental Protection Agency (EPA) approved programs. Federal agencies are required to assure that their programs and projects are consistent with those programs. To assist in this process, EPA has developed a "Nonpoint Source Guidance" document dated December 1987 (52 FR 47971).

p. Coastal Zone Management. Sections 307c(1) and (2) of the Coastal Zone Management Act require that each Federal agency conducting, supporting, or undertaking development activities that are in, or directly affect, the coastal zone of a state shall insure that the project is, to the maximum extent practicable, consistent with approved state management plans. Civil Works activities of the Corps of Engineers in the coastal zone fall within this classification.

q. National Estuary Program. In 1987, Congress amended the Clean Water Act formally establishing the National Estuary Program. The purpose of the Program is to identify nationally significant estuaries, protect and improve their water quality, and enhance their living resources. Section 320 of the Act allows a state's governor to nominate an estuary and convene a management conference to develop a Comprehensive Conservation and Management Plan

(CCMP) for the estuary. Under the law, a management conference must result in the assurance that Federal assistance and development programs are consistent with the goals of the CCMP.

C-7 Air Quality and Related Requirements.

a. Purpose. This section provides guidance for the consideration of air quality in Civil Works planning studies.

b. Clean Air Act. Section 176(c) of the Clean Air Act (CAA) requires that Federal agencies assure that their activities are in conformance with Federally-approved CAA state implementation plans for geographical areas designated as “non-attainment” and “maintenance” areas under the CAA. The EPA General Conformity Rule to implement Section 176(c) is found at 40 CFR Part 93. The rule addresses how Federal agencies are to demonstrate that activities in which they engage conform to Federally approved CAA state implementation plans. The EPA rule contains a number of “exempted” or “presumed to conform” activities which include a number of Corps activities. As applicable and required, CAA conformity determinations will be completed during feasibility studies and included in feasibility reports.

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[Exhibit C-1](#). Recommended Outline for Section 404(b)(1) Evaluation Using 24 December 1980 Guidelines (40 CFR 230) 1/

I. Project Description

a. Location

b. General Description

c. Authority and Purpose

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material (grain size, soil type)

(2) Quantity of Material (cu. yds.)

(3) Source of Material

e. Description of the Proposed Discharge Site(s)

(1) Location (map)

(2) Size (acres)

(3) Type of Site (confined, unconfined, open water)

(4) Type(s) of Habitat

(5) Timing and Duration of Discharge

f. Description of Disposal Method (hydraulic, drag line, etc.)

II. Factual Determinations (Section 230.11) 2/

a. Physical Substrate Determinations (consider items in sections 230.11(a# and 230.20 Substrate)

(1) Substrate Elevation and Slope

Exhibit C-1 (Continued)

- (2) Sediment Type.
- (3) Dredged/Fill Material Movement
- (4) Physical Effects on Benthos (burial, changes in sediment type, etc.)
- (5) Other Effects
- (6) Actions Taken to Minimize Impacts (Subpart H)

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water (refer to sections 230.11(b), 230.22 Water, and 230.25 Salinity Gradients; test specified in Subpart G may be required). Consider effects on:

- (a) Salinity
- (b) Water Chemistry (PH. etc.)
- (c) Clarity
- (d) Color
- (e) Odor
- (f) Taste
- (g) Dissolved Gas Levels
- (h) Nutrients
- (i) Eutrophication
- (j) Others as Appropriate

(2) Current Patterns and Circulation (consider items in sections 230.11(b), and 230.23), Current Flow and Water Circulation.

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Exhibit C-1 (Continued)

(a) Current Patterns and Flow

(b) Velocity

(c) Stratification

(d) Hydrologic Regime

(3) Normal Water Level Fluctuations (tides, river stage, etc.) (consider items in sections 230.11(b) and 230.24)

(4) Salinity Gradients (consider items in sections 230.11(b) and 230.25)

(5) Actions That Will Be Taken to Minimize Impacts (refer to Subpart H)

e. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site (consider items in sections 230.11(c) and 230.21)

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column (consider environmental values in section 230.21, as appropriate)

(a) Light Penetration

(b) Dissolved Oxygen

(c) Toxic Metals and Organics

(d) Pathogens

(e) Aesthetics

(f) Others as Appropriate

(3) Effects on Biota (consider environmental values in sections 230.21, as appropriate)

(a) Primary Production, Photosynthesis

Exhibit C-1 (Continued)

(b) Suspension/Filter Feeders

(c) Sight Feeders

(4) Actions taken to Minimize Impacts (Subpart H)

d. Contaminant Determinations (consider requirements in section 230.11(d))

e. Aquatic Ecosystem and Organism Determinations (use evaluation and testing Procedures in Subpart G, as appropriate)

(1) Effects on Plankton

(2) Effects on Benthos

(3) Effects on Nekton

(4) Effects on Aquatic Food Web (refer to section 230.31)

(5) Effects on Special Aquatic Sites (discuss only those found in project area or disposal site)

(a) Sanctuaries and Refuges (refer to section 230.40)

(b) Wetlands (refer to section 230.41)

(c) Mud Flats (refer to section 230.42)

(d) Vegetated Shallows (refer to section 230.43)

(e) Coral Reefs (refer to Section 230.44)

(f) Riffle and Pool Complexes (refer to section 230.45)

(6) Threatened and Endangered Species (refer to section 230.30)

(7) Other Wildlife (refer to section 230.32)

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Exhibit C-1 (Continued)

(8) Actions to Minimize Impacts (refer to Subpart H)

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination (consider factors in section 230.11(f)(2))

(2) Determination of Compliance with Applicable Water Quality Standards (present the standards and rationale for compliance or non-compliance with each standard)

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply (refer to section 230.50)

(b) Recreational and Commercial Fisheries (refer to section 230.51)

(c) Water Related Recreation (refer to section 230.52)

(d) Aesthetics (refer to section 230.53)

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves (refer to section 230.54)

g. Determination of Cumulative Effects on the Aquatic Ecosystem (consider requirements in section 230.11 (g))

h. Determination of Secondary Effects on the Aquatic Ecosystem (consider requirements in section 230.11(h))

III. Findings of Compliance or Non-Compliance With the Restrictions on Discharge 3/

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem (Briefly discuss alternatives considered and that are available and practical and state why the one selected would result in the least amount of significant impacts. Reference should be made to other appropriate sections on alternatives in EIS or Main Reports when the 404 Evaluation is contained in these documents.)

Exhibit C-1 (Continued)

c. Compliance with Applicable State Water Quality Standards

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act

e. Compliance with Endangered Species Act of 1973

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant Adverse Effects on Human Health and Welfare

(a) Municipal and Private Water Supplies

(b) Recreation and Commercial Fisheries

(c) Plankton

(d) Fish

(e) Shellfish

(f) Wildlife

(g) Special Aquatic Sites

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

(3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

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Exhibit C-1 (Continued)

i. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material (specify which) is (select one)

- (1) Specified as complying with the requirements of these guidelines; or,
- (2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,
- (3) Specified as failing to comply with the requirements of these guidelines.

Notes:

1/ This outline is furnished for guidance in preparing 404(b)(1) evaluations under the December 1980 Guidelines. The outline should be considered flexible. Each evaluation should be tailored to fit project specific characteristics.

2/ The primary subheadings in this section (II) should be contained in every section 404(b)(1) evaluation since these items are specified to be included by the guidelines. If a particular item is not applicable to a project (such as salinity considerations at a freshwater site), so state.

3/ The Findings and Compliance or Non-Compliance with Restriction on the Discharge should be a narrative and cover the items listed in Section III of the outline. The data presented in the Factual Determination should be compared to the restrictions on the discharge in paragraph 230.10, and a determination should be made as to whether the discharge will or will not be in compliance. Do not repeat data given in the Factual Determination in the Finding of Compliance. See attached example of a Finding of Compliance.

(EXAMPLE)
FINDING OF COMPLIANCE
FOR
NO NAME PROJECT

1. No significant adaptations of the guidelines were made relative to this evaluation.
2. Three alternative open water disposal sites were available for this project. Use of alternative sites one and three (Figure 1) would have resulted in significant alteration of water circulation patterns and consequently, salinity patterns. These changes would have adversely affected oyster beds and other benthic and fishery populations in the bay. Also, use of site one would cause siltation of shellfish beds due to expected tidal transport of dredged material into these areas. Site two, the selected disposal area, would be the least costly site to use for disposal because it is nearer to the channel dredging area.
3. The planned disposal of dredged material at site two would not violate any applicable State water quality standards with the exception of turbidity. Turbidity standards would be violated outside the allowable mixing zone under extreme tidal conditions, i.e., spring tides. Dredging will be suspended during these periods. The disposal operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
4. Use of the selected disposal site will not harm any endangered species or their critical habitat or violate protective measures for the Long Bay Marine Sanctuary.
5. The Proposed disposal of dredged material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values will not occur.
6. Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include cessation of disposal activities during extreme tidal velocities associated with spring tides.
7. On the basis of the guidelines the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

APPENDIX D

Economic And Social Considerations

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APPENDIX D

Economic and Social Considerations

D-1. Background.

a. Introduction. This appendix covers economic and social considerations not addressed elsewhere. Guidance for estimating NED benefits is provided in Appendix E, Civil Works Missions and Evaluation Procedures, where the evaluation procedure for each project type is presented in its mission context. Some aspects of economic evaluation, and of planning generally, are constant across missions; those aspects are in this appendix.

b. Economic Considerations. Economic considerations which cut across missions and projects include such aspects as the proper use of interest rates, how to allocate costs among project purposes, how to test for financial solvency of a non-Federal sponsor, how to best estimate current project benefits, how to evaluate other direct benefits, and other economic evaluation procedures.

c. Social Considerations. The social considerations which cut across various missions and projects include such aspects as the evaluation of unemployed and underemployed labor, evaluation of urban and community impacts such as life, health and safety factors, estimations of displacement, evaluations in changes to long-term productivity or real income, evaluations in changes in energy requirements and conservation, evaluations of changes in educational, cultural or recreational opportunities, evaluations of changes in emergency preparedness.

D-2. Other Direct Benefits.

a. Purpose. This section provides a definition of other direct benefits and procedural guidance for the evaluation of other direct benefits attributable to water resources plans and projects. Other direct benefits are the incidental direct benefits of a project. The other direct benefits to be included in the NED benefit evaluation are the incidental effects of a project that increase economic efficiency by increasing the output of intermediate or final consumer goods over and above the direct outputs for which the plan is being formulated.

b. Conceptual Basis. Other direct benefits are incidental to the primary purposes of water resource projects. Primary purposes of projects are those purposes for which the alternative plans are formulated. Other direct benefits derive from incidental increases in outputs of goods and services or incidental reductions in production costs.

c. Planning Setting. Standard planning procedures involve comparison of the with project condition to the without project condition. In considering other direct benefits, define the boundary

of direct influence of the plan. Economic efficiency gains to firms in production and satisfaction gains to consumers other than those identified as the direct beneficiaries of primary project purposes should be valued and measured as other direct benefits.

(1) Without Project Condition. Forecast future conditions expected to exist without implementation of the plan. The without project condition is the projection of output and production levels and costs of production likely to be achieved in the absence of a plan.

(2) With Project Condition. Future conditions expected to exist when the plan is fully implemented. The with project condition is the projection of output and production levels and the costs of production likely to be achieved with the plan.

d. Evaluation Procedure: General.

(1) When applicable, compute other direct benefits using the procedures of Appendix E and the remainder of this appendix. Some benefits, such as reduced water supply treatment costs, can be computed on the basis of reduced costs to consumers.

(2) Improvement in production possibilities of the private market sector as well as the non-market sector (some recreation, for example) are other direct benefits. Examples of other direct benefits are included in the following illustration. A large water storage project is to be located upstream on a main tributary of a river system that enters the ocean by a delta through an estuary. The direct output of the project is flood control for communities residing on floodplains along upper valleys of the tributary. One effect of regulating flow by reducing winter high and summer low flows is to increase the recreational potential of land and water in the lower reaches of the river system. A cooling of water temperatures and increased flow during summer increases fish and wildlife productivity; riparian habitats along lower water courses expand and increase in density; and salt water marshland receives less saline water in summer. As a result, there is an increase in dove and pheasant hunting as these wildlife populations increase. Opportunities for sport angling also increase as game fish productivity rises. Also, shrimp production benefits from the change to less saline water in the marshland, and commercial shrimp harvest increases, resulting in greater output at lower unit total cost to shrimp fishermen. Another incidental effect is the improvement in water quality to downstream users as turbidity is reduced in winter and water hardness is reduced in summer. Therefore, treatment costs are lower for firms and households. If the impoundment causes the recharge of groundwater basins in the vicinity of the dam site or along the stream course, these incidental effects are other direct benefits. Pumping costs could be reduced as well.

e. Evaluation Procedure: Problems in Application. The major problems encountered in the estimation of other direct NED benefits are the identification of the firms, industries, and consumers

who will be subject to these incidental effects caused by projects and plans. It must be emphasized that it is not practical or economic to trace out all direct effects.

(1) Determining the context or system within which the major incidental impacts might be experienced is a useful first step in identifying likely direct benefits worth measuring. The immediate watershed or the subsystem of a river system would constitute a relevant context. The delineation of geographical and economic market regions in which impacts are likely to be felt cannot usually encompass the whole regional economy in a highly industrialized area. Nevertheless, it is important to avoid delineating too small an area in which to search for possible effects.

(2) Another procedure for identifying likely impacts is tracing the hydrologic changes that will occur as a result of the project. For example, flows downstream and in other parts of a river system can be changed in quantities and qualities; the water's chemical and physical characteristics, oxygenation, turbidity, temperature, etc. can undergo change that may impact on fish and wildlife resources and on the production functions of firms and the satisfaction of consumers.

f. Evaluation Procedure: Data Sources. An assessment of the current situation and the economic efficiency of potentially affected firms and individuals usually entails the collection from primary sources of data on cost, production function, and firm capacity. Studies of industrial structure and the interdependence of firms in the supply of various inputs and the use of outputs can provide valuable supplemental information.

g. Evaluation Procedure: Risk and Uncertainty. Other direct benefits are unique to each project design and its location, so the historical record of data is of limited usefulness. The risk and uncertainty attached to the hypothesized outcomes can be reduced by clearly revealing areas of uncertainty. A physical description of other direct benefits, together with assessment of their relative (major or minor) significance, is an integral part of such a procedure. Nevertheless, these estimates may involve high degrees of risk and relative uncertainty, based as they are on the total mix of project outputs and the effect these mixes would have on stimulating increased productivity.

h. Report and Display Procedures. Other direct benefits should be identified by component and added onto the benefits of the benefit-cost analysis. The method used to value the benefits should be presented in the report. Provide a tabular breakdown of all other direct benefits claimed for the project.

D-3. NED Cost Evaluation Procedures.

a. Purpose. This section defines the components of NED costs, as defined in the Principles and Guidelines, and provides procedures for the evaluation of NED costs (costs used for economic analysis) of structural and non-structural elements of water resources

plans and projects. NED costs and financial costs may differ. Guidance regarding determination of financial costs is contained in Appendix E of this regulation. Appendix E also provides guidance on classification of costs by project purpose, cost sharing requirements and potential credits to non-Federal sponsors.

b. Conceptual Basis.

(1) Project measures, whether structural or nonstructural, require the use of various resources. NED costs are the opportunity costs of resource use. In evaluating NED costs, resource use must be broadly defined to fully recognize scarcity as a component of value. This requires consideration of the private and public uses that producers and consumers are currently making of available resources or are expected to make of them in the future.

(2) The opportunity costs of resource use are usually reflected in the marketplace. When market prices adequately reflect total resource values, they are used to determine NED costs. When market prices do not reflect total resource values, surrogate values are used appropriately to adjust or replace market prices.

(3) Total NED cost is the market value of a resource plus other values not reflected in the market price of the resource; it therefore accounts for all private sector and public sector uses. Market price is used to reflect the private sector use of resources required for or displaced by a project, and surrogate value is used to reflect the public sector use.

(a) The market price approach relies on the interaction of supply and demand. Price is determined through transactions on the margin between knowledgeable and willing buyers and sellers, neither of whom are able to influence price by their individual decisions. Distortions in market price occur if one or more of the conditions of perfect competition is violated.

(b) The surrogate value approach involves the approximation of opportunity costs based on an equivalent use or condition. Surrogate values are frequently used in restricted markets and in non-market situations.

(4) Proper NED analysis requires that project NED costs and benefits be compared at a common point in time. Costs are calculated in annualized terms (see paragraph D-6).

c. Planning Setting. The basis for the evaluation rests in a thorough analysis of expected conditions in the future with a project and without a project. This requires identification of those resources that will be affected by a project; the current value of such uses is measured as the economic worth to the Nation of the services associated with those uses.

d. Evaluation Procedure: General.

(1) Resources required or displaced to achieve project purposes by project installation and/or operation, maintenance, repair, replacement and rehabilitation activities represent a NED cost and should be evaluated as such. Resources required or displaced to minimize adverse impacts and/or mitigate fish and wildlife habitat losses are also NED costs. Costs for features not required for project purposes, avoiding adverse effects caused by such features, and/or mitigating fish and wildlife habitat losses caused by such features are not project-related NED costs and should not be evaluated. Costs for features not required for project purposes will generally not be part of the Corps project.

(2) All NED costs shall be based on current costs adjusted by the project discount rate to the beginning of the period of analysis as defined in paragraph D-6. Compute all costs at a constant price level and at the same price level as used for the computation of benefits. Current costs shall be based on the price level at the time of the analysis. These costs will be updated in the year(s) the project is submitted for authorization and/or appropriations. Deferred costs will be discounted to the end of the installation period, using the applicable project discount rate. Costs incurred before the beginning of the period of analysis will be increased (i.e., to estimate future value) by adding compound interest at the applicable project discount rate from the date the costs are incurred to the beginning of the period of analysis. All NED costs will be converted to an annual equivalent value over the period of analysis.

(3) Project NED costs may be adjusted by an allowance for the salvage value of land improvements, equipment, and facilities that would have value for non-project uses at the end of the period of analysis. Significant salvage values of replaceable items (e.g., generators) will normally become adjustments to allowances for replacement costs.

e. Evaluation Procedure: Implementation Outlays. The NED costs of implementation outlays include the costs incurred by the responsible Federal entity and, where appropriate, contributed by other Federal or non-Federal entities to construct, operate and maintain a project in accordance with sound engineering and environmental principles and place it in operation. These costs are the remaining post-authorization planning and design costs; construction costs; construction contingency costs; administrative services costs; fish and wildlife habitat mitigation costs; relocation costs; historical and archaeological salvage costs; land, water, and mineral rights costs; and operation, maintenance, repair, rehabilitation, and replacement costs.

(1) Postauthorization (Preconstruction, Engineering and Design) Costs. These costs are the direct cost for investigations, field surveys, planning, design, and preparation of specifications and construction drawings for structural and nonstructural project measures. In the evaluation procedure, these costs will be based on the actual current costs incurred by the responsible Federal entity for carrying out these activities for similar projects and project measures. They may be

computed as a percentage of construction costs when there is a documented basis for the rate used. Make adjustments when appropriate to reflect circumstances special to the project under consideration.

(2) Construction Costs. These costs are the direct cost of installing project measures. They should be based on the market value of goods and services required to install project measures, including those measures required for avoiding adverse environmental effects and public health and safety risks. They include the cost of purchased materials (including associated transportation costs); equipment rental or purchase; construction wages or salaries (including social security and fringe benefit costs); and contractors' management, supervision, overhead, and profit. These costs will be based on current contract bid items in the project area or on the current market value of purchased materials and services, etc.

(3) Construction Contingency Costs. These are project costs normally added to reflect the effects of unforeseen conditions on estimates of construction costs. They are not an allowance for inflation or for omissions of work items that are known to be required. They are included to cover unforeseen construction problems. These costs will vary with the intensity of the surveys and investigations performed, the variability of site conditions, and the type of project measures being installed. They may be computed as an appropriate percentage of estimated construction costs. If contingency costs are included in real estate costs, planners shall ascertain the basis for these contingent costs. To the extent that contingencies are meant to account for inflation, this effect shall be excluded from real estate costs for evaluation purposes. Only that portion of real estate contingency cost for which there is reasonable basis for anticipating uncertainty (condemnation costs may be an example) shall be included.

(4) Administrative Services Costs. These are the costs associated with the installation of project measures, including the cost of contract administration; permits needed to install the project measures; relocation assistance advisory services; administrative functions connected with relocation payments; review of engineering plans prepared by others; government representatives; and necessary inspection service during construction to ensure that project measures are installed in accordance with the plans and specifications. Base these costs on the actual current costs incurred by the responsible Federal entity for carrying out these activities for similar projects and project measures. These costs may be computed as a percentage of construction costs if there is a documented basis for the rate used. Make adjustments when appropriate to reflect unusual circumstances special to the project under consideration.

(5) Fish and Wildlife Habitat Mitigation Costs. These are the costs of mitigating losses of fish and wildlife habitat caused by project construction, operation, maintenance, repair, rehabilitation and replacement. The mitigation measures to be included in the project will be determined by the responsible Federal entity in coordination with Federal and State Fish and Wildlife Agencies as

required by the Fish and Wildlife Coordination Act (Public Law 85-625). Installation of these mitigation measures should be concurrent with the installation of other project measures, where practical. These costs include all project outlays associated with the installation of mitigation measures, including preconstruction, engineering and design costs; construction costs; construction contingency costs; administrative services costs; relocation costs; land, water, and mineral rights costs; and operation, maintenance, repair, rehabilitation, and replacement costs. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out these activities for similar mitigation measures.

(6) Relocation Costs. These are project costs associated with relocation of public highways and other publicly owned facilities, railroads, and utility lines. The relocation cost of publicly owned facilities (except highways), railroads and utility lines will be based on the costs of replacement in kind. In the case of highways, the relocation cost will be based on replacement that reflects the current traffic count and current standards of the owner, which may result in a justified improvement over the configuration of the existing roadway. The additional relocation cost of highways that are upgraded to increase their carrying capacity for project purposes such as recreation is also a project cost. The relocation cost of highways, railroads, and utility lines shall include all project outlays associated with their relocation, including planning and design costs; construction costs; construction contingency costs; administrative services costs; fish and wildlife habitat mitigation costs; land, water, and mineral rights costs; and historical and archaeological salvage costs. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out similar relocations.

(7) The requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), as amended, including real property acquisition relocation payments as applicable to a displaced person, business, or farm operation. Such payments include moving and related expenses for a displaced person, business, or farm operation; financial assistance for replacement housing for a displaced person who qualifies and whose dwelling is acquired because of the project; and termination payments for dislocated businesses whose owners choose to close out. Base the NED cost of replacement housing on replacement in kind. (Costs over and above replacement in kind are treated as financial costs for non-project purposes.) Base these costs on current market values.

(8) Historical and Archaeological Salvage Operation Costs. These are project costs associated with salvaging artifacts that have historical or archaeological values as prescribed by the Preservation of Historic and Archaeological Data Act (Public Law 93-291). These costs will be based on the current market price of salvage operations carried on during construction.

(9) Land, Water, and Mineral Rights Costs.

(a) These NED costs include all costs of acquiring the land, water, and mineral rights required for installing, operating, maintaining, repairing, rehabilitating, and replacing project measures. They include all expenditures incurred in acquiring land, easements, rights-of-way leases, and water and mineral rights. Such costs include the cost of the land (or interest therein), water, and mineral rights minus salvage value; transactional costs including the cost of surveys incident to a sale, legal fees and transfer costs; and severance damage payments. These costs will be based on current market values and the actual current costs incurred by the Federal entity for carrying out similar land, water, and mineral rights acquisitions. The market value of easements will be based on the difference in market value of land without the easement and with the easement.

(b) Some land, water, and mineral rights are owned by Federal, State, and local governments and have been committed to specific uses. The NED cost of using such resources for project purposes consistent with their committed uses will be based on the surrogate value of the public services provided by the resources. For example, if State-owned land committed to recreation use is to be used for project recreation development, its NED cost is not the market value of the land, but the value of the recreation services that would be provided by the land without the project. Public domain lands not committed to specific uses should be valued at the market value of comparable private land or a surrogate use value, or a combination if there are complementary uses.

(10) Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R) Costs. These costs represent the current value of materials, equipment, services, and facilities needed to operate the project and make repairs, rehabilitate, and make replacements necessary to maintain project measures in sound operating condition during the period of analysis. They include salaries of operating personnel; the cost of repairs, replacements, or additions; and an appropriate charge for inspection, engineering, supervision, custodial services, and general overhead. When operation, maintenance, repair, rehabilitation, or replacement will be performed by contract, the cost should include an allowance for contingencies and the costs of survey, planning design, and administrative services. These costs will be based on actual current costs incurred for carrying out these activities for similar projects and project measures. When the project is an addition to or extension of an existing project for which the costs and benefits are not included or otherwise involved in the project analysis, include only the additional cost of operation, maintenance, repair, rehabilitation, or replacement necessitated by the addition or extension to the existing project. Adjustments can be made when appropriate to reflect circumstances special to the project under consideration.

(11) Interest During Construction. This represents the opportunity cost of capital incurred during the construction period. The cost of a project to be amortized is the investment incurred up to the beginning of the period of analysis. The investment cost at that time is the sum of construction and other initial cost plus interest during construction. Cost incurred during the construction period should be increased by adding compound interest at the applicable project discount rate from the

date the expenditures are incurred to the beginning of the period of analysis. This is comparable to the treatment of benefits that accrue during the construction period (see paragraph D-4c) and is performed to insure costs and benefits are evaluated on an equivalent time basis.

(a) All PED costs are included in project NED costs and are charged interest during construction. This includes any studies performed using PED funds (i.e., physical modeling, plans and specs, etc.) When performing economic updates, expended PED costs will be considered sunk and not included in the benefit-cost ratio.

(b) Lands acquired are charged interest during construction from the date they are put to use for project purposes, or the date their non project use ceases, whichever is earlier. Through lease back or other arrangements these dates may differ from date of acquisition.

f. Evaluation Procedure: Associated Costs. Associated costs are the costs of measures needed over and above project measures to achieve the benefits claimed during the period of analysis. For example, associated costs include the cost of irrigation water supply laterals, if they are not accounted for in the benefit estimate. Base associated costs on the current market prices of goods and services required for the installation of measures needed over and above project measures.

(1) Associated costs have often been handled through the self-liquidating cost concept. A self-liquidating cost is the cost of a particular type of asset that can be operated in such a way that it repays the money spent to acquire it (e.g. mooring or dock space). The use of self-liquidating costs is limited to those cases in which appropriate associated costs are netted out of benefit measures.

(2) It is preferred that associated costs be explicitly treated as NED project related costs, and appear as costs in benefit-cost ratios. Where the concept of self-liquidating costs has been used to account for associated costs this procedure may continue to be used as long as:

- (a) The appropriate associated costs are subtracted from the estimated benefits, and
- (b) The associated costs are identified and the netting process documented in project reports.

g. Evaluation Procedure: Other Direct Costs.

(1) These are the costs of resources directly required for a project or plan, but for which no implementation outlays are made. Consequently, they are included in the economic costs of a plan but not in the financial costs. These costs may be important for both structural and nonstructural plans. For example, a zoning plan to preserve floodplain values by restricting development would have as a cost the value of with project development opportunities foregone. A plan that responds to demand growth by reallocating existing outputs from low value uses to high value uses through pricing mechanisms (i.e., raising the price of existing outputs) would have as its major cost the value of the outputs to the users who forego its use as a result of its higher price. On the other hand, a structural project may displace recreation use at the project site and the value of foregone recreational opportunities is a direct cost. Whenever possible, compute these costs using the procedures set forth for computing benefits in Appendix E. If these costs are not quantified, they should be otherwise identified.

(2) Other direct costs also include uncompensated NED losses caused by the installation, operation, maintenance, repair, rehabilitation, or replacement of project or plan measures. All uncompensated net losses in economic outputs (not transfers) that can be quantified shall be considered project NED costs. The evaluation of such costs requires an analysis of project effects both within and outside the project area.

(3) Examples of other direct costs include increased downstream flood damages caused by channel modifications, dikes, or the drainage of wetlands; increased water supply treatment costs caused by irrigation return flows; erosion of land along streambanks caused by dams that prevent the replenishment of bedload material; loss of land and water recreation values through channel modifications, reduced instream flow due to consumptive use of water by irrigated agriculture, or inundation by reservoirs; increased transportation costs caused by rerouting traffic around a reservoir; new or increased vector control costs caused by the creation of wetlands; and decreased output or increased cost per unit of output of private firms caused by project-induced decreases in raw materials. When applicable, compute such costs using the procedures for computing benefits contained in Appendix E and this Appendix. Some costs, such as increased water supply treatment costs, may be computed on the basis of increased costs to resource users.

h. Evaluation Procedure: Problems in Application.

(1) Application of the procedures in this section requires care to ensure that all costs are included. The identification and determination of all associated costs and external diseconomies require full perception of the measures required to achieve the benefits being claimed and the impacts produced by the actions taken. It must be emphasized that it is not practical or economic to trace out all other direct effects.

(2) Application of the procedures in this section requires care to avoid double counting. A full understanding of the values reflected by market and surrogate values is necessary to prevent double counting. For example, the market value of land that includes a private recreation development reflects the recreation value. In this case, double counting would result if a surrogate recreation value (loss) were added as a cost. On the other hand, the market value of land that provides free public recreation does not reflect the recreation value, so the surrogate recreation value (loss) must be added as a cost.

(3) Market prices are relatively easy to obtain. However, some prices are subject to large fluctuations in short periods of time, so care must be taken to determine reasonable current costs of such items for project evaluation purposes.

i. Evaluation Procedure: Data Sources. Market price information is available from data on comparable sales, Government publications (e.g., bulletins of the U.S. Departments of Commerce, Agriculture, and Labor), and business reports. Data sources for those NED benefit evaluation procedures having application to cost analysis are covered in their respective sections of Appendix E.

j. Report and Display Procedures. Display NED costs identified through the procedures described above as line item entries in the adverse effects section of the NED account. The following display tables are suggested:

D-4. Planning Special Topics and Cautions. This section comprises certain topics elaborating, amplifying, and extending ideas contained in, or implied by, the planning and evaluation procedures presented in the main body of this regulation and Appendix E. In a few cases the guidance is mainly for or only for particular project purpose(s) or type(s) of authorization.

a. Non-Standard Procedures. Procedures to calculate the benefit-cost ratio of a project not approved by the Water Resources Council are considered non-standard procedures.

(1) Specific approved procedures are described in Appendix E, this Appendix, and in the [Principles and Guidelines](#) (P&G).

(2) An alternative procedure which is not specifically contained in the NED Procedures may be employed if the following requirements are met and the procedure is fully documented:

(a) The procedure is in accord with current policy and estimates of the magnitudes of project effects, that is quantities, are empirically estimated.

(b) The procedure would give a more accurate benefit estimate; or, it can be demonstrated that the procedure reduces study time and cost and does not alter the formulation of the project.

Table D- 1: Project Investment

	Alternative 1			Alternative 2			Alternative X		
	Unit		Amt.	Unit		Amt.	Unit		Amt.
	Quantity	Price		Quantity	Price		Quantity	Price	
1. Construction cost
2. Construction contingency costs
3. Post-authorization planning and design costs
4. Administrative services costs
5. Fish and wildlife habitat mitigation costs
6. Historical and archeological salvage operation costs
7. Land, water, and mineral rights costs
8. Relocation costs
9. P.L. 91-646 Costs
10. Interest during installation period at a rate of ___%
Total investments
Price level: _____
Installation period: _____
Period of analysis: _____

Table D- 2: Annualized Adverse Effects

	Alternatives		
	1	2	X
Interest on investment Amortization on investment Annual OMRR&R			
Associated costs ^a Other direct costs ^a			
Total annualized costs			
Other adverse effects not evaluated in monetary terms ^a			

(d) Prior approval for each application of such alternative procedures is obtained from HQUSACE (CECW-PD). Approval is less likely for procedures proposing use of the cost of an alternative or administratively established values as an estimate of benefits.

b. Current Estimates of Project Benefits. It is Corps policy to report and maintain current estimates of project benefits, costs, and economic justification of all active funded projects and separable elements beginning with the Report of the Chief of Engineers. The purpose of the policy is to provide reasonable estimates of economic justification to non-Federal sponsors, Congress and Federal decision makers throughout the project development process. An analysis is considered current if it was approved within 3 fiscal years of the pertinent decision date. As an example, in June 1996 budget submissions, the approval date of the document containing the most recent economic analysis could be no earlier than October 1992, since FY 1993 is three fiscal years prior to FY 1996 and October 1992 is the first month of FY 1993. If more than three fiscal years have elapsed since the release of the Report of the Chief of Engineers, an economic reevaluation must be the first item of work upon receipt of any funds intended to further project implementation.

(1) Dates and general guidance for decision requests. The pertinent dates for budgetary and investment decisions, along with guidance for various decision requests are specified below.

(a) New Start PED Budgeting. For all New Start PED funding requests the pertinent decision date is the submission of the budget request to HQUSACE. Benefit-to-cost ratios (BCR), which are required in support of budget requests, will be developed based on the latest approved

xiii _____
^a Identified by type

economic analysis, annualized at the specified discount rates. The current project costs should be deflated to the same price level as in the latest approved economic analysis, annualized at the current interest rate. The report and approval date of that analysis must be cited and should not be more than three fiscal years old. If more than three fiscal years have elapsed since the release of the Report of the Chief of Engineers, an economic reevaluation must be the first item of work upon receipt of PED funds. Follow-on funding will be contingent upon approval of the economic reevaluation.

(b) Continuing PED Budget requests. For all continuing PED funding requests the pertinent decision date is the Division submittal of the budget request to HQUSACE. The same methodology, deflating costs to the date of the approved economic analysis and adjusting costs and benefits for the budget year discount rate applying to New Start PED budget requests, should be used for continuing PED funding requests. The three year requirement for updates is also applicable.

(c) New Construction Start Budgeting. For all New Start Construction funding requests for projects and separable elements, the pertinent decision date is the submission of the Division budget request to HQUSACE. The same BCR computation and reporting requirements and the three year updating requirements previously discussed are applicable to New Construction Start Budgeting. If the reevaluation uncovers major changes that could affect project formulation or sizing, additional PED funds rather than construction funds should be requested to undertake a complete General Reevaluation (GRR) level evaluation.

(d) Project Cooperation Agreements. For all PCA's, the pertinent decision date is the submission of the final PCA to ASA (CW) for approval. If more than three fiscal years have elapsed since the approval date of the latest economic analysis, a reevaluation must be performed in sufficient detail with supporting documentation to show the project remains justified. The reevaluation may be presented in a Limited Reevaluation Report (LRR) which supplements the project document cited in the PCA. Submission of the LRR to HQUSACE for approval must be accomplished prior to submission of the draft PCA.

(e) Non-PCA Projects. The pertinent decision date for approval to initiate expenditures of Construction General appropriations for projects which do not require a PCA, such as inland navigation, is the submission date of the request to HQUSACE. The three fiscal year and reevaluation requirements for PCA's are also applicable to non-PCA projects.

(2). Definition of Last Approved Official Document. The approved official document for the Feasibility Report is the Report of the Chief of Engineers. Other approved official documents may include General (GRR) or Limited Reevaluation Reports (LRR). If other documents are to be used as the basis for obtaining budgetary or implementation approval, they must be approved by CECW.

(3) Plan for Economic Updates. Feasibility reports, General Reevaluation reports and other project decision (formulation) documents, shall include a plan for updating project benefits for future reporting and decision making. The economic update plan shall likewise be included in all Project Management Plans. The actions in the plan may be limited in that no major new analyses need be conducted but rather previous assumptions reviewed and updated with techniques such as surveys and sampling employed to develop a reasonable estimate of current project benefits provided no significant changes in without and/or with project conditions have occurred. However, in no event will simple indexing of overall benefits be acceptable. The plan shall include discussions of the data that will be required and the procedures that will be employed. Any rational set of procedures that result in a current analysis of benefits may be acceptable except procedures which amount solely to indexing of benefits. Examples of procedures that could be formulated during feasibility and other studies, and which could be useful in providing current analysis in the future are sampling and monitoring, partial benefit reanalysis, and limited indexing.

(a) Sampling or Monitoring. The focus of the effort should be on factors which are critical to project formulation and feasibility and are representative of the major benefit categories (i.e., inundation reduction benefits in a flood control project or transportation cost savings in a navigation project). For example, in a fully developed floodplain a sample of structures may be selected for development of replacement cost less depreciation of structure values using construction cost models. The values derived could then be used to represent values for the floodplain. For a navigation project, if feasibility depends critically on ships of given characteristics, a plan may be developed to monitor future use of these ships.

(b) Partial Benefit Reanalysis. This study will not have nearly the depth or breadth of a feasibility study. It could be informative regarding current benefits and may be accomplished at reasonable cost. For example, damage calculations at current prices for sampled structures provide valuable information on the current level of inundation reduction benefits.

(c) Limited Indexing. Use of generalized indices such as CWCCIS may be used for specific infrastructure benefit categories such as roads, bridges, and rail lines provided these benefit categories do not constitute a major portion of overall project benefits. Additionally, the reevaluation report must document that the infrastructure improvements are still present and used and are subject to comparable flood damages as in the latest report.

(4) Content of Limited Economic Reevaluation. Limited Reevaluation Reports (LRR) may be used to document the current economic evaluation of a project (or separable elements), or to report some other kinds of project changes.

(a) Scope and Documentation. The limited economic evaluation information submitted to HQUSACE for approval in a reevaluation document needs to be either complete within the

document or accompanied by the document it is updating. Limited economic reevaluations must include sufficient data to describe what was done in the previously approved document, what was done in the limited reevaluation, what differences there are and the reasons for the differences. Documentation should cover items which are not strictly socio-economic conditions such as changes in hydrology and hydraulic characteristics or periods of record and costs. This documentation should cover each benefit and cost item, and show net benefits and the benefit-cost ratio at the current discount rate.

(b) Format and Displays. A good format would start with brief summary description of the previous approved evaluation and the current reevaluation, accompanied by a tabular display of the changes, followed by support documentation explaining the changes. The following simple display format is a suggested guideline for the tabulation of current costs and benefits and economic justification in a structural flood control project.

Table D- 3: Tabulation of Current Costs and Benefits

	Latest Approved ¹	Current Estimate	Difference	Reason for Difference
Benefit Category ²				
Inundation				
Residential Structures				
Residential Contents				
Other				
Cost Category				
Construction				
Lands				
Other				
Net Benefits				
Benefit / Cost Ratio				

¹ Cite document, name, date, approval date, price level and interest rate.

² Use categories and sub-categories of benefits in latest approved document.

(5) Project Changes Requiring More Detailed Analysis. In some instances a more thorough reanalysis than specified in the economic update plan needs to be provided. Examples may include instances where the previously approved project document predates cost-shared feasibility study planning; an economic benefits update plan has not been approved; the project has not had seamless

funding; substantial changes in the without condition, project formulation, project design and/or project costs have occurred. The level of effort for the economic reevaluation should be based on whether the changed conditions warrant a reformulation of a project or a reaffirmation of the justification of the authorized plan. If reformulation, including evaluation of alternative sizes of a project, is warranted a GRR should be prepared and the economic reanalysis should be of similar scope as required for a feasibility study. If reformulation is not warranted a limited economic reevaluation shall be documented in an LRR.

(6) Summary. The policy of reporting and maintaining current estimates of project benefits and economic justification can most effectively be accomplished through quality cost estimates in feasibility reports, seamless funding, and development of economic update plans. Through such quality development in the early stages of planning and engineering, the necessity for laborious reevaluation and review can be diminished. Occasionally, more full reanalysis and review are warranted when conditions change and older projects are reintroduced into the system; the LRR and GRR are the appropriate vehicles for these reanalyses.

c. Benefits that Accrue During Project Construction.

(1) Benefits accruing during project construction should be documented and included in the benefit evaluation. These benefits should be brought forward from the time the benefits start to the beginning of the period of analysis, using the project discount rate. Benefits (and costs) first are stated in present worth terms as of the beginning of the period of analysis, and then are annualized.

(2) Benefits and costs during the construction period are calculated separately; it is not assumed that benefits accrued are offset by interest incurred, or vice versa.

d. Most Likely Non-Federal Alternative. The cost of the most likely alternative may be used to estimate NED benefits for a particular output if non-Federal entities are likely to provide a similar output in the absence of any of the alternative plans under consideration and if NED benefits cannot be estimated from market price or change in net income. This assumes that society would in fact undertake the alternative means. Estimates of benefits should be based on the cost of the most likely alternative only if there is evidence that the alternative would be implemented. The most likely alternative should in general be something other than a single-purpose project constructed at the same site by the non-Federal entity. In determining the most likely alternative, the planner should give adequate consideration to nonstructural and demand management measures as well as structural measures.

e. OMB-approved Survey Questionnaire. This paragraph provides guidance on the use of OMB-approved survey questionnaires for collection of planning data.

(1) The requirement for OMB approval of survey questionnaires is noted at several locations in this Appendix and in Appendix E.

(2) OMB has approved a group of questionnaire items for the collection of planning data. The questionnaire items cover the range of data that would generally be collected by survey in water resources studies.

(3) The approved questionnaire items are transmitted by memorandum every three years, as additions and revisions are made and OMB approval is renewed.

(4) The District Commander or his designee must thoroughly review the individual questionnaire for quality control purposes before it is used by the district. Currently, OMB requires that Corps questionnaires be submitted for their review and approval before implementation. The quality control review information below must be provided to OMB when seeking survey approval.

(5) Quality control review should be based upon the need for the questionnaire and the reasonableness and adequacy of:

- (a) The research questions to be answered.
- (b) The sampling strategy being employed.
- (c) Data collection procedures being employed, and follow up procedures.
- (d) Data analysis plan.

(6) Additional guidance for the conduct of questionnaire surveys is contained in the memorandum transmitting the approved questionnaire items.

f. Opportunity Cost of Time. This paragraph provides guidance for evaluating the opportunity cost of time, when time is saved or lost as a result of implementation of a project.

(1) Determine the amount of time savings or loss that results from implementation of a project for each economic activity.

(a) The amount of and circumstances resulting in the time savings or loss should be clearly expressed in the with and without project planning context.

(b) Savings and losses should be estimated by individual or unit economic activity. The number of individuals or economic activities should also be specified.

(2) Determine the alternative use of the time savings or losses. The alternate use will be valued as either work, social/recreation or other.

(3) The following table will be used for the determination of value of time saved in Corps planning studies. Thus, the value of time saved will be different depending on the purpose of the trip and the amount of time saved on each trip. The percentages shown in column (3) can be applied after the before-tax family income of drivers in the study area is estimated. The dollar values shown in column (2) are based on \$32,191, the median family income for the U.S. in 1988 (U.S. Bureau of the Census). The value of time savings for work trips is on a per vehicle-occupant basis. Therefore, to calculate the total value of work time saved per vehicle requires multiplication by the adults per vehicle. For social/recreation, vacation, and other trips, the value of time saved is on a per vehicle basis. The value of time saved for these trip purposes should not be adjusted for the number of passengers.

Table D- 4: Value of Time Saved by Trip Length and Purpose

	VALUE OF TIME SAVED ADJUSTED TO HOURLY BASIS (\$/HOUR)	VALUE OF TIME SAVED ADJUSTED TO HOURLY BASIS (% OF HOURLY FAMILY INCOME OF DRIVER)
LOW TIME SAVINGS (0-5 MINUTES)		
WORK TRIPS	\$0.99	6.4%
SOCIAL / RECREATION TRIPS	0.20	1.3%
OTHER TRIPS	0.01	0.1%
MEDIUM TIME SAVINGS (6-15 MINUTES)		
WORK TRIPS	4.99	32.2%
SOCIAL / RECREATION TRIPS	3.58	23.1%
OTHER TRIPS	2.24	14.5%
HIGH TIME SAVINGS (OVER 15 MINUTES)		
WORK TRIPS	8.33	53.8%
SOCIAL / RECREATION TRIPS	9.29	60.0%
OTHER TRIPS	9.98	64.5%
VACATION		
ALL TIME SAVINGS	11.63	75.1%

Note: Work trip is on per person basis while all other trip purposes are on a per vehicle basis.

g. Publication of Planning Data, Information and Guidance. Various data used in planning are circulated by Economic Guidance Memorandum. These data include:

- (1) Federal water resources discount rate;
- (2) Normalized agricultural prices;
- (3) Unit day values for recreation;
- (4) Areas eligible for NED benefits from employment of previously unemployed labor resources;
- (5) National Flood Insurance Program operating costs;
- (6) List of contacts for Corps of Engineers when seeking National Marine Fisheries Service (NMFS) input on measuring commercial fishing benefits; and
- (7) Vessel operating cost estimates.
- (8) Ability-to-pay factors for qualifying counties and counties eligible for price reductions on water storage contracts.

D-5. Financial Analysis.

a. Purpose. This Section provides procedures and responsibilities for financial analysis in support of construction recommendations. It also provides guidance on the relationship between project outputs and non-Federal sponsors' ability to finance projects. Approval authority for the financing plans has been delegated to Division commanders who have the authority to further delegate it to District commanders.

b. Definitions.

(1) Financial Analysis. A financial analysis consists of a non-Federal sponsor's statement of financial capability and financing plan and the District Commander's assessment of the non-Federal sponsor's financial capability.

(2) Financial Commitment. The financial commitment is the total financial obligation a non-Federal sponsor will be required to pay, including the acquisition of lands, easements, rights-of-way, relocations, and disposal areas; the costs of operation, maintenance, repairs, replacements and rehabilitation (OMRR&R), the cost of any associated work such as berthing areas for navigation projects or interior drainage for flood control projects, and the cost of debt service.

(3) **Statement of Financial Capability.** The statement of financial capability is a clear and convincing description, submitted by the non-Federal sponsor, of its capability to meet its financial obligations for the project in accordance with the project funding schedule.

(4) **Financing Plan.** A financing plan consists of a clear and convincing description of how the non-Federal sponsor plans to meet its financial obligations for the project in accordance with the project funding and OMRR&R schedules; the level of detail to be included should be commensurate with the scope and complexity of the project and financing mechanisms being considered. The financing plan is considered a working document to be used by the district commander in making his/her capability determination and should not be included in the PCA package.

(5) **Assessment of Financial Capability.** The District's assessment of the non-Federal sponsor's financial capability is to determine if it is reasonable to expect that ample funds will be available to satisfy the non-Federal sponsor's financial obligations for the project. Districts are expected to present rationale supporting the conclusion of the assessment. Appropriate rationale would include discussion of prior performance of the non-Federal sponsor on similar projects, certainty of revenue sources and method of payment, the overall financial position of the non-Federal sponsor and/or the credit worthiness of sponsor's debt obligations as reported by independent credit rating service such as Moody's or Standard & Poor's. The district commander's assessment of financial capability and the Allocation of Funds Table must be included in the PCA package.

c. **General Financial Analysis Philosophy.** Financial analysis is required for any plan being considered for Corps of Engineers implementation that involves non-Federal cost sharing. The ultimate purpose of the financial analysis is to ensure that the non-Federal sponsor has a reasonable plan for meeting its financial commitment. The financial analysis should include:

(1) The non-Federal sponsor's statement of financial capability;

(2) The non-Federal sponsor's financing plan; and

(3) The district's assessment of the non-Federal sponsor's financial capability. Financial considerations can be expected to affect project scale as well as construction scheduling and phasing and OMRR&R expenses.

d. **Procedures and Responsibilities.**

(1) **Specifically Authorized Projects.** The parts of the financial analysis to be submitted to HQUSACE with the Project Cooperation Agreement (PCA) package include the District Commander's assessment of the non-Federal sponsor's financial capability and the Allocation of

Funds Table. The financing plan and the statement of financial capability should be prepared by the non-Federal sponsor, with assistance from the District. These two documents are considered to be working documents to be used by the District Commander in making his/her capability determination and should not be included in the PCA package. If the replacement and rehabilitation costs are significant, the sponsor should be provided schedules and costs of occurrence for assistance in their overall financial planning.

(2) Specifically Authorized Studies.

(a) Reconnaissance Phase. The reconnaissance phase is expected to provide an assessment of the level of interest and support of local interests in potential solutions. A letter from the non-Federal sponsor indicating his understanding of project cost sharing requirements should accompany the Reconnaissance Report. The letter should discuss, in general terms, the options available to the non-Federal sponsor for financing the non-Federal share of project construction.

(b) Feasibility Phase. The feasibility report should be accompanied by supporting financial information consisting of a preliminary financing plan and a statement of financial capability. The preliminary financing plan will consist of a letter from the sponsor stating potential funding sources and funding availability at the time of construction. The plan (letter) should show the total cost sharing breakdown, not necessarily by construction year.

(3) Continuing Authorities Studies. See Appendix F.

e. Non-Federal Sponsor's Financing Plan and Statement of Financial Capability.

(1) Scope.

(a) Financing Plan. Each financing plan should include the following information:

(1) A current schedule of estimated Federal and non-Federal expenditures by Federal fiscal year (see Table D-5), including Federal expenditures, non-Federal contributions, non-Federal lands, easements, rights-of-ways, relocations, and disposal areas (LERRD), and, for commercial navigation projects, non-Federal utility relocations and deep draft utility relocations. The total Federal and non-Federal shares displayed in the schedule should exactly reflect cost sharing policy and should agree with estimated cost figures in the PCA. Current cost sharing policy requires that the non-Federal funds (i.e. cash) be made available to the Federal Government in proportion to scheduled Federal obligations in each Federal fiscal year; also, if there are engineering and design costs to be cost shared, but which were not covered by a PED cost sharing agreement, then these are to be recovered in the first year of construction.

Table D- 5: Schedule of Estimated Federal and Non-Federal Expenditures

Fiscal Year	FEDERAL		NON-FEDERAL			
	CASH	LERRD	CASH	LERRD	Utility Relocation	Other

Notes:

1. Federal, Non-Federal cash and LERRD should be shown for each project purpose.
2. Any repayment for navigation projects should be shown in a footnote.
3. Include in other any associated costs such as berthing areas or interior drainage.

(2) A schedule of the sources and uses of non-Federal funds during and after construction (see Table D-6) by Federal fiscal year. The schedule should include project outlays and income as well as outlays and income related to project construction and financing. Outlays during construction include cash payments to an escrow account or the government; LERRD; associated costs; and, for bonds, various insurance-related costs and interest paid to bond holders during construction. Income during construction includes funds on hand, revenues, appropriations, grants, interest on unexpended balances, and, for bonds, bond proceeds. Outlays after construction include bond debt service, repayments to the government, and OMRR&R. The schedule of the sources and uses of funds should be consistent with the schedule of estimated Federal and non-Federal expenditures.

(b) The method of finance for all non-Federal outlays including OMRR&R associated with the project should be explained in the financing plan.

(c) Statement of Financial Capability. The non-Federal sponsor's statement of financial capability should provide evidence of the non-Federal sponsor's authority to utilize the identified source or sources of funds; and each statement of financial capability should provide information on the non-Federal sponsor's capability to obtain remaining funds, if any. This information will be at a level of detail necessary to demonstrate such capability for the particular project and the particular non-Federal sponsor.

(1) Where the non-Federal sponsor's capability is clear, as in the instances where the sponsor has sufficient funds currently available or has a large revenue base and a good bond rating, the statement of financial capability need only provide evidence of such.

(2) If capability is not clear and the non-Federal sponsor is relying on its full faith and credit to obtain remaining funds (as in the use of general obligation bonds, appropriations or a repayment agreement), the statement of financial analysis should include a credit analysis which demonstrates that the sponsor is credit worthy for the required amount and purpose.

(3) If the non-Federal sponsor is relying on non- guaranteed debt (e.g. a particular revenue source or limited tax, or bonds backed by such a source) to obtain remaining funds, the statement of financial capability should include an analysis that demonstrates that the projected revenues or proceeds are reasonably certain and are sufficient to cover the non-Federal sponsor's stream of costs through time.

(4) If the non-Federal sponsor is relying on third party contributions the statement should include comparable data for the third party together with evidence of it's legal commitment to the non-Federal sponsor.

(2) Preparation.

(a) The District should, with input from the non-Federal sponsor, prepare the schedule of estimated Federal and non-Federal expenditures including OMRR&R.

(b) Either the non-Federal sponsor or the District should prepare the schedule of the sources and uses of non-Federal funds, using information provided by the other.

(c) Either the non-Federal sponsor or its financial consultant should prepare the financing plan and the statement of financial capability. The appropriately empowered official representing the non-Federal sponsor should sign the statement of financial capability.

(d) A financing plan and statement of financial capability should be prepared for each non-Federal sponsor which is signatory to an PCA (this applies to continuing authority projects as well as specifically authorized projects). If a non-Federal sponsor's financing depends on the contributions of funds by a third party or parties, and the non-Federal sponsor does not have the capability or authority to meet its financial obligations without said contribution, a separate statement of financial capability and financing plan should also be provided for the contributions for the third party or parties. These should include sources of funds, authority and capability to obtain remaining funds, and evidence of the third party's legal obligation to provide its contribution.

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Table D- 6: Schedule of Sources and Uses of Funds

	FUNDS AVAILABLE FROM LOCAL SPONSOR		
	Begin Balance Plus Annual Income	Required Annual Contribution	Fund Balance
Balance on hand construction initiated			
1st year Revenues Interest Income Operating Revenues Bond Sales etc.			
2nd year Revenues Interest Income Operating Revenues Bond Sales etc.			
3rd year Revenues Interest Income Operating Revenues Bond Sales etc.			
.			
.			
.			
Project Completion			

Required Annual OMRR&R \$_____ (Schedule of major replacement and rehabilitation costs should be included if they are significant cost items which sponsor must plan for.)

Source of Funds for OMRR&R _____

(e) The financing plan and the statement of financial capability may be combined in one document.

f. Assessment of the Non-Federal Sponsor's Financial Capability. The District's assessment of the non-Federal sponsor's financial capability should ascertain that it is reasonable to expect that ample funds will be available to satisfy the non-Federal sponsor's financial obligation for the project. Districts are expected to present rationale supporting the conclusion of the assessment. Appropriate rationale would include discussion of prior performance of the non-Federal sponsor on similar projects, certainty of revenue sources and method of payment, the overall financial position of the non-Federal sponsor and/or the credit worthiness of sponsor's debt obligations as reported by an independent credit rating service such as Moody's or Standard & Poor's.

g. Illustration of Financing Plan Outline.

<p>The (enter non-Federal sponsor's name), non-Federal sponsor of the (enter project name), is capable of meeting cost sharing and other obligations as required under the terms of the draft Project Cooperation Agreement.</p> <p>USES OF FUNDS</p> <p>(Status of land acquisition including an estimate of the cost of real estate interests that have not yet been acquired.)</p> <p>_____ (Total cash contribution required from the non-Federal sponsor for the project during construction.)</p> <p>_____ (Annual cash required from the non-Federal sponsor for operation, maintenance and rehabilitation.)</p> <p>_____ (Total cash required by the non-Federal sponsor for any project related requirements such as berthing areas for navigation projects and interior drainage for flood control projects.)</p> <p>SOURCES OF FUNDS</p> <p>_____ (Cash available for project.)</p> <p>_____ (Financing to be obtained from bonds, if any.)</p> <p>_____ (Financing to be obtained from other sources, e.g. operating revenues, tax revenues, interest earnings on funds dedicated to the project, etc.)</p>

Figure D- 1: Illustration of Financing Plan Outline

h. Sample Bond Consultant's Letter. See Figure D-2.

"We have been working with the (enter non-Federal sponsor's name) to develop a well-planned approach toward financing the pending project. In this regard the (enter non-Federal sponsor's name) has taken significant steps over the years in implementing certain actions designed to make the project financially possible. Among these are (list actions taken)."

"We have developed financial projections that indicate the (enter non-Federal sponsor's name) has the financial capability to complete the project. Bonds, in the amount of (enter amount) have been/will be authorized on (enter date) and the (enter non-Federal sponsor's name) current bond rating according to (enter source) is (enter bond rating)."

Figure D- 2: Sample Bond Consultant's Letter

i. Continuity of Financing Responsibilities.

(1) Status of Local Sponsor's Financing Plan and Corps Responsibilities During PED. Between completion of the feasibility study and signing of the PCA the District Commander shall stay informed and current regarding the continuing ability and willingness of the sponsor to meet its financial responsibilities. This time can be used to firm up any aspects of the financing plan that may have been weak. In addition, a mechanism shall be agreed upon whereby the sponsor will inform the Corps of any material changes in its financing abilities. Likewise, it is the responsibility of the District Commander to inform the sponsor in a timely way of material changes in cost estimates resulting from PED studies, due to design changes or other reasons.

(2) Local Sponsor's Financing Responsibilities and Corps Responsibilities During Construction. Mutual responsibilities regarding information about financing abilities and changes in cost estimates continue after the PCA is signed and construction initiated. The District Commander shall stay informed and current regarding the sponsor's continuing ability to meet its financial obligations, especially so if the financing plan calls for using other than cash or direct appropriations, or if the sponsor intends to repay its cost share. A mechanism shall be agreed upon whereby the sponsor will inform the Corps of any material changes in its financing abilities. The District Commander continues to be responsible for informing the local sponsor of changes in construction costs.

j. Ability to Pay Determination. See the latest rule as reproduced in EGM 02-03 for procedures for determining cost shares for qualifying non-Federal sponsors under the ability to pay provisions of Section 103 of the WRDA of 1986, as amended. Section 204 of WRDA of 2000 expanded the applicability of ability to pay to allow non-Federal cost share reductions for feasibility studies. In addition, the purposes were expanded from flood control and agricultural water supply to also include environmental protection and restoration, navigation, storm damage protection, shoreline erosion, hurricane protection and recreation. Ability to pay will also include rules for application to Federally recognized tribal governments. A new rule to implement this section is under development.

k. Relationship Between the Feasibility Study (Economic) Analysis and Financial Analysis. The primary purpose of the financial analysis itself is to ensure that the non-Federal sponsor has a reasonable plan for meeting its financial commitment. Project related economic analysis can provide data and other information potentially important in developing the financial analysis.

(1) Relationship of Financing Plans to Project Outputs.

(a) Relationship of Project Outputs to Willingness to Pay. Project outputs create willingness to pay for the project on the part of direct beneficiaries equal to the total benefits. Frequently there are indirect beneficiaries. Willingness' to pay of both direct and indirect beneficiaries can potentially be captured by the local non-Federal sponsor, and can become a part of the non-Federal sponsor's financing plan. For example, flood control for a business or commercial area has direct damages avoided benefits, and may improve the general business climate such that property values outside the flooded area increase as well.

(b) Financing Plan Alternatives. Some non-Federal sponsors will finance projects in a way that directly uses the vendibility of project outputs. Examples are port user charges or user fees for other project outputs, special taxing districts, property tax surcharges, etc. Other financing plans will be indirectly related to project outputs. For example the non-Federal sponsor's general taxing or bonding indebtedness capabilities may be used with the expectation that the project's beneficial effects will create ability to pay. Others will finance in ways entirely unlinked to the captured value of project outputs. For example, the non-Federal sponsor may have sufficient funds available, a large revenue base or may rely on third party contributions.

(1) Procedures. The role of economic analysis in development of financing plans is to establish relationships between project outputs, willingness' to pay on the part of direct and indirect beneficiaries and ability to finance projects.

(a) Outputs of projects (or use of project outputs) for which there are identifiable beneficiaries with willingness to pay that can potentially be captured should be quantified. The

quantification should be to a degree of certainty that is useful to non-Federal sponsors in developing a financing plan. Examples are: numbers, locations, values, and physical and use characteristics of structures to be protected by a flood control project; expected visitation at recreation facilities; vessel names, registries, ownership, drafts and cargo carrying abilities of ships expected to benefit from harbor deepening, etc.

(b) Indirect effects of projects, e. g., local or regional development, should be identified and quantified to the degree practicable. Maximum use should be made of secondary sources (i.e., found in the literature) regarding average, or if available, location specific relationships between investment and induced economic activities, between investment and changes in property values, etc.

(c) Estimates of the willingness to pay of beneficiaries should be provided to local sponsors. These should be in a useful form and of a degree of certainty that is useful in developing financing plans. Examples are: average annual damages avoided for structures; willingness to pay for recreation visits; and transportation cost savings for the different beneficiaries identified in (a) above. If efforts to collect from beneficiaries would affect use of project outputs and the level of induced or secondary effects this information shall also be provided to local sponsors.

D-6 Interest Rate and Period of Analysis.

a. Conceptual Basis. Project NED benefits and costs shall be compared at a common point in time. The following information shall be presented in decision documents:

(1) Installation Period. The number of years required for installation of the plan. If staged installation is proposed over an extended period of time, the installation period is the time needed to install the first phase.

(2) Installation Expenditures. The dollar expenses expected to be incurred during each year of the installation period.

(3) Period of Analysis. The time horizon for project benefits, deferred installation costs, and operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) costs. Use the same period of analysis for all alternative plans. Appropriate consideration should be given to environmental factors that may extend beyond the period of analysis.

(a) The period of analysis for comparing costs and benefits following project implementation is further defined and limited to the lesser of:

(1) The period of time over which any alternative plan would have significant beneficial or adverse effects;

(2) A period not to exceed 50-years except for major multiple purpose reservoir projects; or

(3) A period not to exceed 100-years for multiple purpose reservoir projects.

(b) In cases where alternatives have different implementation periods, a common base year will be established and costs and benefits will be compounded or discounted to that base year. Projects that accrue benefits during the implementation period should refer elsewhere in this document (paragraph D-4c) for specific guidance.

(4) Benefit Stream. The pattern of expected benefits over the period of analysis.

(5) OMRR&R Costs. The expected costs over the period of analysis for operation, maintenance, repair, rehabilitation, and replacement necessary to maintain the benefit stream and agreed-upon levels of mitigation of losses to fish and wildlife habitats.

(6) Discount Rate. The rate established annually for use in evaluating Federal water projects.

d. Calculating Net NED Benefits In Average Annual Equivalent Terms. Net NED benefits of the plan are calculated in average annual equivalent terms. To perform this calculation, discount the benefit stream, deferred installation costs, and OMRR&R costs to the beginning of the period of analysis using the applicable project discount rate. Installation expenditures are brought forward to the end of the period of installation by charging compound interest at the project discount rate from the date the costs are incurred. Use the project discount rate to convert the present worth values to average annual equivalent terms.

D-7. NED Benefit Evaluation Procedures: Unemployed or Underemployed Labor Resources.

a. Purpose. The economic effects of the direct use of otherwise unemployed or underemployed labor resources during project construction or installation may, under certain conditions, be included as a national economic development (NED) benefit. Because of the dynamic nature of unemployment situations, the appropriateness of these benefits will be determined in consideration of economic conditions existing at the time the project is submitted for authorization and for appropriations to begin construction. This section provides procedural guidance.

b. Conceptual Basis.

(1) The social cost of a project is less than the market contract cost in situations in which otherwise unemployed or underemployed labor resources are used in project construction. The opportunity cost of employing otherwise unemployed workers in project construction or installation is equal to the value of leisure time foregone by such workers. Because society does not give up any alternative production of goods and services and because it would be difficult to measure the value of leisure time foregone, a zero opportunity cost is used in these procedures. The opportunity cost of employing otherwise underemployed workers equals their without project earnings, which, by virtue of their underemployment, are less than their market cost. The most straightforward way to reflect the effects of employing unemployed or underemployed labor resources would be to reduce by the appropriate amount the project construction costs in the NED account, but this method would cause accounting difficulties in appropriations, cost allocation, and cost sharing. Therefore, these effects are treated as a project benefit in the NED account.

(2) Conceptually, any employment, anywhere in the Nation, of otherwise unemployed or underemployed resources that results from a project represents a valid NED benefit. However, primarily because of identification and measurement problems and because unemployment is regarded as a temporary phenomenon, only those labor resources employed onsite in the construction or installation of a project or a nonstructural measure should be counted. Benefits from use of otherwise unemployed or underemployed labor resources may be recognized as a project benefit if the area has substantial and persistent unemployment at the time the plan is submitted for authorization and for appropriations to begin construction. Substantial and persistent unemployment exists in an area when:

(a) The current rate of unemployment, as determined by appropriate annual statistics for the most recent 12 consecutive months, is 6 percent or more and has averaged at least 6 percent for the qualifying time periods specified in subparagraph (b) below and:

(b) The annual average rate of unemployment has been at least: (a) 50 percent above the national average for three of the preceding four calendar years, or (b) 75 percent above the national average for two of the preceding three calendar years, or (c) 100 percent above the national average for one of the preceding two calendar years.

(3) Only the portion of project construction activity located in such an area is eligible for employment benefits as calculated in accord with the procedures specified below. Any benefit claimed should be clearly justifiable both in terms of availability of amounts of unemployed and/or underemployed labor and their skills and occupations.

c. Planning Setting.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist in the future in the absence of a project, including known changes in law or public policy. The evaluation of NED benefits associated with the use of otherwise unemployed and underemployed labor resources is linked to the number by which these resources would be reduced over time without a project.

(2) With Project Condition. The with project condition is the most likely condition expected to exist in the future with a given project alternative. There is a difference with project condition and thus a different employment benefit for each alternative plan. Currently, the employment benefit cannot be estimated directly on the basis of a comparison of the size of the pools of unemployed and underemployed labor with and without a project. Instead, the benefit procedure implicitly projects the percentage of project labor hires estimated to come from the unemployed labor pool.

d. Evaluation Procedure.

(1) Step 1. Calculation of employment benefits is limited to onsite project construction or installation activity in eligible regions as defined in paragraph D-7b(2). The first step therefore is to determine whether a project is wholly or partially located in an eligible area.

(2) Step 2. Estimate the number of skilled and unskilled unemployed construction workers in the labor area. Construction labor pool data are usually available from local offices of State employment security agencies.

(3) Step 3. Determine the labor requirements for plan implementation as follows:

(a) Labor cost. The manpower requirements of water resource projects differ widely. Construction cost estimate data will provide the percentage of labor cost to total construction contract cost.

(b) Manpower requirements. Analyze the plan's construction work force and schedule to determine manpower requirements over the construction period for skilled and unskilled categories of workers. Convert these data to total construction wages in skilled and unskilled categories by year of construction. In addition, estimate the yearly wage bill of other workers needed on the project. Use the occupational tables in Table D-7 in this section to categorize different types of workers.

(4) Step 4. Compare the annual manpower requirements of the project to the size of the unemployed labor pool in eligible regions. If labor availability is significantly larger than labor

requirements, proceed to the next step. If not, reduce the percentages in the next step based on one or both of the following: expert interviews; or a careful match-up of requirements and availability for specific types of jobs (e.g., carpenters).

(5) Step 5. Calculate NED employment benefits.

(a) Standard method. The following percentages are derived from An Evaluation of the Public Works Impact Program (PWIP).¹ Although the projects studied in the PWIP report are not fully comparable to many typical water projects, the report does provide an empirical basis for relating public works expenditures to employment of unemployed workers. Case 1, below, covers situations in which there is no “local hire” rule; it is taken directly from the PWIP report, as PWIP has no local hire rule. Case 2 covers situations in which there is a local hire rule; the reference data are modified to account for an 80-percent local hire by scaling up the actual local hires (for skilled and unskilled workers) to 80 percent, but retaining the distribution of local hires previously employed to local hires previously unemployed.

(1) Case 1, NED benefits, no local hire rule. Multiply the total wages determined by categories of workers (skilled, unskilled, and other) by the following percentages to obtain NED benefits by year of construction:

Skilled--30
Unskilled--47
Other--35

(b) Case 2, NED benefits, local hire rule. Apply the following percentages in Case 2 situations:

Skilled--43
Unskilled--58
Other—35

Because the 80-percent local hire rule is a goal, not a requirement, support these percentages by data that indicate the local hire goal is likely to be met. If this is unlikely, reduce Case 2 percentages to numbers between the standard Case 1 and Case 2 percentages.

(2) Annual NED benefits. Convert the NED benefits by year of construction to an annual equivalent basis using the current discount rate.

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¹Economic Development Administration, U.S. Department of Commerce. *An Evaluation of the Public Works Impact Program (PWIP)*. Springfield, VA, National Technical Information Service (PB-263 098), January 1975.

(b) Alternative methods. The percentages of unemployment hires may be changed from those used in the standard method if the change can be supported by an empirical study that shows different percentages of unemployed and underemployed workers on a similar project, or on a segment of the same project, for labor market conditions similar to those of the proposed project. In using this method, it may be necessary to vary the categorization of construction workers used in the standard method. The opinions of experts such as local State employment security agencies, local construction firms, associations of contractors, and labor unions may not be substituted for empirical data. Studies used to document alternative percentages for specific types or locations of projects should be cited if not included in the project report.

(c) The percentages are used in the standard method to measure wages paid directly to previously unemployed workers. Previously employed workers may vacate jobs that then become available to unemployed workers, but there are no empirical data to support a quantification of such indirect effects, and no estimates of these effects should be included in the NED account.

e. Report and Display Procedures. Include the employment benefits of each alternative plan as a line item in the display of NED benefits in the system of accounts for any project or portion of a project located in an area that contains unemployed or underemployed resources.

f. Problems in Application.

(1) An IWR publication provides guidance for estimating benefits associated with the direct use of otherwise unemployed labor resources during project construction. The Report of Survey of Corps of Engineers Construction Workforce (IWR Research report 81-R05) provides an empirical basis for changing the percentages of unemployed specified in this section. The IWR report introduces a new evaluation technique and new techniques must be approved by the Water Resources Council. Therefore, if the approach in the IWR report is used, the techniques specified in this section should also be used to demonstrate the sensitivity of the results to the different methods.

(2) Unemployment benefits shall not be used in project formulation, scaling, or NED plan determination. These benefits shall not be used to justify a project where the BCR is otherwise less than unity.

Table D- 7: Occupational Tables
(For use in evaluation of unemployed or underemployed labor)

BLUE COLLAR UNSKILLED

OCCUPATIONS

Bricklayer Apprentice	Landscape Laborer
Carpenter Apprentice	Mason Helper
Apprentice Carpenter	Mason Laborer
Carpenter Helper	Mason Tender
Chairman	Mortarman
Deck Hand	Mortarmier
Electrician Apprentice	Pipe Layer
Apprentice Electrician	Pipe Helper
Apprentice Wireman	Pipe Fitter
Electrician Trainer	Plasterer Tender
Iron Worker Apprentice	Powerman
Laborer	Pusher
Asphalt Distributor	Rakeman
Assistant Carpenter	Reboundman
Bottom Laborer	Road Laborer
Brick Tender	Roof Helper
Carpenter Aid	Sand Blaster
Carpenter Helper	Set-up-man
Chainsawman	Sprinkler Apprentice
Common Laborer	Stake Setter
Concrete Barker	Tender
Concrete Laborer	Termite Operator
Concrete Saw	Tile Setter Operator
Construction Laborer	Vibrator Operator
Ditch Laborer	Water Truckman
Drill Helper	Lumberman and Nurseryman
Flag Person	Tree Thinner
Hod Carrier	Treeman
Kettleman	Treeplanter
Laborer	Operating Engineer Apprentice
Laborer Apprentice 3rd	B. M. Apprentice
Laborer Group I	EO Group III
Laborer Group V	EO Group 222
Labor Shop Man	Plumber Apprentice
Laborer Topman	Plumber Apprentice
Laborer Utilityman	Plumber Helper
	Painter's Helper
	Sheet Metal Apprentice

Vibrator Operator
Watchman
 Night Watchman

BLUE COLLAR SKILLED
OCCUPATIONS

Blaster
Boilermaker
Boilermaker Foreman
Bricklayer Foreman
 Block Layer
 Truckpointer
 Brick Mechanic
Carpenter
 Form Setter
 Journeyman Carpenter
 Soft Floor Layer
Carpenter Foreman
Carpenter Superintendent
Cement Mason
 Finisher
 Journeyman Finisher
Cement Mason Foreman
Diver
Driller
 Drill Rig Operator
Electrician
 Journeyman Electrician
 Mechanical Electrician
 Wireman
 Journeyman Wireman
Electrical Foreman
General Foreman
 General Labor Foreman
 Project Foreman
Glazier
Iron Worker
 Reinforcing Ironworker

Structural Ironworker
Steel Worker
Steel Erector
Steel Setter
Reinforcing Steel Worker
Iron Worker Foreman
 Labor Foreman
 Construction Foreman
 Foreman
 Job Foreman
 Lead Foreman
Lather
Lather Foreman
Master Mechanic
Mechanic
 Mechanic Welder
 Repairman
Mechanic (Continued)
 Repairman Leadman
Oiler
Oiler Equipment Operator
 Oiler Operator Group II
 Oiler Track Type
Operating Engineer
 Asphalt Distributor Operator
 Asphalt Heaterman
 Backhoe Operator
 Blade Operator
 Bobcat Operator
 Bulldozer Operator
 Case Operator
 Class A Operator
 Class C Operator
 Crane Operator
 Digger Operator
 Distributing Operator
 Dragline Operator
 Equipment Operator
 Equipment Operator Group III
 Front End Lift Fork Operator

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- Heavy Equipment Operator
- Hi-Lift Operator
- Lift Fork Operator
- Loader Operator
- Maintenance Loadman
- Motor Grader Operator
- Operator Group III
- Pan Operator
- Park Equipment Operator
- Power Drive Moister Operator
- Power Equipment Operator
- Operating Engineer Foreman
- Leader Operator
- Painter
 - Brush Painter
 - Roller Painter
 - Spray Painter
- Painter Foreman
- Pile Driver
- Pipe Fitter
 - Sp. Box Man
- Pipe Fitter Foreman
 - Sprinkler Foreman
- Plasterer
- Plasterer Foreman
- Plumber
 - Pipe Layer
- Plumber Foreman
 - Plumber General Foreman
 - Plumber Superintendent
- Rigger Foreman
- Roofer Sheet Metal Worker
 - Journeyman Sheet Metal
 - Sheet Metal Mechanic
 - Sheet Metal Operator

D-8. Social Effects.

a. Other Social Effects (OSE) Account. Most water and land resource plans have beneficial and adverse effects on social well-being. These effects reflect a highly complex set of relationships and interactions between inputs and outputs of a plan and the social and cultural setting in which these are received and acted upon. These effects will be reported as appropriate in the system of accounts for each alternative plan. The OSE account is a means of displaying and integrating into water resource planning information on alternative plan effects from perspectives that are not reflected in the other three accounts. The categories of effects in the OSE account include the following: Urban and community impacts; life, health, and safety factors; displacement; long-term productivity; and energy requirements and energy conservation.

b. Metric. With emphasis on their incidence or occurrence, beneficial effects on social well-being are contributions to the equitable distribution of real income and employment and to other social opportunities. Since they are integrally related to the basic values and goals of society, these effects are usually not subject to monetary evaluation. The normal market exchange process, however, produces monetary values which can be utilized to aid in measuring the distributional impacts of plans on real incomes.

c. Adverse Effects. Adverse effects of a plan have detrimental impacts on the equitable distribution of real income and employment or otherwise diminish or detract from the attainment of other social opportunities. Such adverse effects include not only those incurred in the designated planning area, but also include adverse consequences elsewhere in the Nation resulting from implementation of the plan.

(1) Measurement standards:

(a) Effects on income, employment, and population distribution, fiscal condition, energy requirements, and energy conservation may be reported on a positive or negative basis. Effects on life, health, and safety may be reported as either beneficial or adverse. Other effects may be reported on either a positive/negative basis or a beneficial/adverse basis.

(b) Effects that cannot be satisfactorily quantified or described with available methods, data, and information or that will not have a material bearing on the decision making process may be excluded from the OSE account.

(2) With and without analysis. Existing conditions encompassed by the relevant social factors will be described and presented in terms that best characterize the planning perceptions and social setting of the affected area in the situation without the plan. Planners will also prepare similar descriptions for future social conditions to be expected with and without the plan throughout the period of analysis. The situation existing before the initiation of planning will provide the data from which to evaluate significant social effects under alternative plans.

(3) Limitations. In evaluating well-being effects the obtaining of detailed breakdowns and analytically useful correlations relating to various indicators, index numbers, and similar comparative statistical indicators, as well as dollar values where possible, presents many complex definitional, data, and measurement problems. Consequently, planning studies should explicitly recognize the limitations of present methods and explore innovative approaches to the identification and measurement of the social well-being effects. Such procedures should be carefully documented in the report.

d. Urban and Community Impacts. A formal treatment of urban related impacts is not required for implementation studies. However, types and locations of significant impacts, broken down by salient population groups and geographic areas, may be reported in the Other Social Effects Account. The principle types of urban and community impacts are as follows:

(1) Effects on real incomes. Beneficial effects on real income occur when designated persons or groups receive income generated as a result of the plan. Current guidelines defining the family poverty line may be used as the data from which to measure and portray the estimated absolute and percentage increase toward meeting or exceeding this standard for specific geographic planning areas.

(2) Effects on employment distribution, especially the share to minorities;

(3) Effects on population distribution and composition;

(4) Effects on the fiscal condition of the State and local sponsor;

(e) Effects on educational, cultural, and recreational opportunities. Beneficial effects to this component include contributions to (1) improved opportunities for community services such as utilities, transportation, schools, and hospitals, (2) more cultural and recreational opportunities such as historic and scientific sites, lakes, and reservoirs, and recreations areas. Beneficial effects to improved community services may be described in appropriate quantitative terms, while increased cultural and recreational opportunities will be set forth as the numerical increase in the relevant facilities, otherwise accounting for size, use potential, and quality. Beneficial effects to improved community services may be described in appropriate quantitative terms, while increased cultural and

recreational opportunities will be set forth as the numerical increase in the relevant facilities, otherwise accounting for size, use potential, and quality. Conversely, adverse effects are identified and measured or described as detrimental effects on education, cultural, and recreational opportunities

(f) Effects on security of life, health, and safety. Beneficial effects include contributions to (1) reducing risk of flood, drought, or other disaster affecting the security of life, health, and safety; (2) reducing the number of disease-carrying insects and related pathological factors; (3) reducing the concentration and exposure to water and air pollution; and (4) providing a year-round consumer choice of food that contributes to the improvement of national nutrition. In those limited situations where historical experience is sufficiently documented to provide confidence in projecting likely future hazards, an estimate of the number of lives saved or the number of persons affected may be provided. In most instances, however, a descriptive-qualitative interpretation and evaluation of the improvement and expected results will be applicable.

(g) Displacement effects include the displacement of people, businesses, and farms.

(h) Long-term productivity effects include maintenance and enhancement of the productivity of resources, such as agricultural land, for use by future generations.

(i) Effects on emergency preparedness. Beneficial effects include contributions to (1) extending, maintaining, and protecting major components or the national water transportation system; (2) provision of flexible reserves of water supplies; (3) provision of critical power supplies (ample, stable, quickly responsive); (4) provision of reserve food production potential; (5) provision for the conservation of scarce fuels; (6) provision for dispersal of population and industry; and (7) supplying international treaty requirements. While these beneficial effects will be measured in appropriate quantitative units where readily practicable, they will be largely characterized in descriptive-qualitative terms. Conversely, adverse effects are identified and measured or described as overloading capacities of water resource systems and increasing the risk of interruption in the flow of essential goods and services needed for special requirements of national security.

(j) Other. Other effects on social well-being may be identified and displayed as relevant to alternative plans.

This amendment was approved by William R. Dawson, CECW-P, (202)761-0115

APPENDIX E

Civil Works Missions and Evaluation Procedures

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APPENDIX E

Civil Works Missions and Evaluation Procedures

SECTION I - Overview

E-1. Purpose. This chapter provides policy and planning guidance for project purposes of navigation, flood damage reduction, hurricane and storm damage reduction (shore protection), ecosystem restoration, hydroelectric power, recreation, water supply and multiple purpose projects. It covers Federal interest as defined by law and Army policies, types of improvements, specific policies, Federal and non-Federal participation and special considerations where applicable. (Note: Every effort has been made to eliminate all inconsistencies between the main body of the ER and the appendices. If any inconsistencies are found, the information in the main body of the ER will prevail over the one in the appendices. Please, notify CECW-PD immediately of any inconsistencies for correction.)

E-2. Project Purposes The term project purpose, as used above and elsewhere in this chapter, means a type or kind of project, the purpose for which it is undertaken. For example, flood damage reduction is a project purpose, as is navigation. Project purpose is also a convenient shorthand description; there may be a number of associated implications, such as a cost sharing formula, typically constructed features, a general notion of the type of outputs, and a legislative and institutional history. There also may be policies concerning individual project purposes. The term does not necessarily imply exclusive use of a particular kind or category of economic benefits however. Corps projects are formulated for specific project purposes, that is to produce specific outputs. This does not necessarily mean all project outputs will be exclusively those for which formulation occurs. Thus, a project formulated only for navigation (project purpose) could also have flood damage reduction benefits and recreation benefits.

E-3. General Policies.

a. **The Planning Process.** The Corps planning process follows the six-step process defined in the [Principles and Guidelines](#) (P&G) for Water and Related Land Resources adopted by the Water Resources Council. This process is a structured approach to problem solving which provides a rational framework for sound decision making. The six-step process shall be used for all planning studies conducted by the Corps of Engineers. The process is also applicable for many other types of studies and its wide use is encouraged. The six steps are:

- Step 1 - Identifying problems and opportunities
- Step 2 - Inventorying and forecasting conditions
- Step 3 - Formulating alternative plans

- Step 4 - Evaluating alternative plans
- Step 5 - Comparing alternative plans
- Step 6 - Selecting a plan

A description of each step is provided in the main body of this ER. Corps decision making is generally based on the accomplishment and documentation of all of these steps. It is important to stress the iterative nature of this process. As more information is acquired and developed, it may be necessary to reiterate some of the previous steps. The six steps, though presented and discussed in a sequential manner for ease of understanding, usually occur iteratively and sometimes concurrently. Iterations of steps are conducted as necessary to formulate efficient, effective, complete and acceptable plans. The following paragraphs provide additional guidance on selected steps.

(1) Step 1 - Identifying problems and opportunities. The first step in the planning process is the identification of (undesirable conditions to be solved) and opportunities (positive conditions to be improved) that the planning team seeks to address. Problems and opportunities should be defined in terms of their nature, cause, location, dimensions, origin, time frame, and importance. The planning team develops objectives and constraints based on those problems and opportunities. An objective is a statement of what an alternative plan should try to achieve, while a constraint is basically a restriction that the alternative plan should avoid. Objectives, as well as constraints, are written statements that should generally include the following four types of information: effect (the verb that expresses the intent to bring about an objective and not to violate a constraint); subject (what is to be changed for the better through meeting the objective or not changed through avoiding a constraint); location (often the study area, which defines where the objective is to be achieved); and timing and duration (often the study period of analysis, which define when and how long the objective is to be achieved or the constraint to be avoided). Developing specific, flexible, measurable, realistic, attainable, and acceptable objectives and constraints is critical to the success of the entire planning process. Objectives and constraints are used to guide information gathering, to help identify solutions and formulate alternative plans, to identify which plan effects will be evaluated, to compare the relative effectiveness of alternative plans, to assist in plan selection, and ultimately, in gauging the success of the plan implemented.

(2) Step 2 - Inventory of Existing Conditions and Forecast of Future Conditions. This entails quantifying and qualifying the planning area resources important to clearly define and characterize the problems and opportunities previously identified. Both existing conditions and future conditions expected to occur without a project must be characterized. The future without project condition forms the basis from which alternative plans are formulated and impacts are assessed. The information gathered at this step depends on the specific nature of the study.

However, at a minimum, information will be required to identify and adequately describe the problems and opportunities of the study area; to estimate life cycle project costs; and to describe important project effects. Gathering information about historic and existing resources requires an inventory. Gathering information about potential future conditions requires forecasts, which should be made for selected years over the period of analysis to indicate how changes in economic, social, environmental and other conditions are likely to impact problems and opportunities. Forecasting future conditions should be done in an iterative manner, seeking input from Federal and non-Federal entities and other stakeholders, in order to help build consensus about future without project conditions and what outputs the proposed project will and should produce. Forecasting may be especially critical in the case of a plan recommended for the protection of a given resource, where an argument must be made that there will be a decline or degradation of the resource unless protection is provided.

(3) Step 3 - Formulate Alternative Plans. Plan formulation is the process of developing management measures and plans that meet planning objectives and avoid planning constraints. A management measure is a feature (a structural element that requires construction or assembly on-site) or an activity (a nonstructural action) that can be implemented at a specific geographic site that is intended to cause a desirable change and results, preferably, in a positive output. Management measures are the building blocks of alternative plans. Alternative plans can be composed of a combination of various management measures or the same measures combined in significantly different ways. Plan formulation consists of three phases: 1) identifying management measures; 2) formulating alternatives by combining the management measures; and 3) iterative reformulation, during which alternative plans previously formulated are modified. Measures may be added, eliminated, re-scaled, or otherwise modified such that the reformulated plan will better achieve a planning objective or stay within the limits of a constraint.

(4) Step 4- Evaluate alternative plans. In this step, the significant contributions or effects of an individual plan are quantified and judged to determine which plans will continue to be considered during the planning process. All significant contributions and effects shall be quantified in order to succeed in evaluating the alternate plans. Significant contributions are identified on the basis of institutional, technical and public recognition. Institutional recognition of an effect means its importance is recognized and acknowledged in the laws, plans and policies of government, public agencies and private groups. Technical recognition of an effect is based upon scientific or other technical criteria that establish the significance of an effect. Public recognition means that some segment of the general public considers the effect important. The evaluation of alternative plans consists of four major tasks. The first task is to forecast the most likely with-project condition expected under each alternative plan. Each with-project condition will describe the same critical variables included in the without-project condition developed in step 2. Criteria to evaluate the alternative plans include all significant resources, outputs and plan effects, contributions to the Federal objective and the study planning objectives, compliance with environmental protection requirements, the P&G's four evaluation criteria (completeness,

effectiveness, efficiency and acceptability) and other criteria deemed significant by participating stakeholders. The second task is to compare each with-project condition to the without-project condition and document the differences between the two. The third task is to characterize the beneficial and adverse effects by magnitude, location, timing and duration. The fourth task is to identify the plans that will be further considered in the planning process, based on a comparison of the adverse and beneficial effects and the evaluation criteria.

(a) P&G Evaluation Criteria. The four evaluation criteria specified in the P&G are acceptability, completeness, effectiveness and efficiency.

(1) Acceptability is the workability and viability of the alternative plan with respect to acceptance by Federal and non-Federal entities and the public and compatibility with existing laws, regulations, and public policies. Two primary dimensions to acceptability are implementability and satisfaction. Implementability means that the alternative is feasible from technical, environmental, economic, financial, political, legal, institutional, and social perspectives. If it is not feasible due to any of these factors, then it can not be implemented, and therefore is not acceptable. An infeasible plan should not be carried forward for further consideration. However, just because a plan is not the preferred plan of a non-Federal sponsor does not make it infeasible or unacceptable *ipso facto*. The non-Federal partner's willingness or unwillingness to sign a Project Cooperation Agreement should not be the test of whether a plan is acceptable or not. The second dimension to acceptability is the satisfaction that a particular plan brings to government entities and the public. Obviously, the extent to which a plan is welcome or satisfactory is a qualitative judgement. Nevertheless, discussions as to the degree of support (or lack thereof) enjoyed by particular alternatives from a community, state Department of Natural Resources, Ducks Unlimited, or other national or regional organizations, for example, are additional pieces of information that can help planners evaluate whether to carry forward or screen out alternative plans.

(2) Completeness is the extent to which a given alternative plan provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. To establish the completeness of a plan, it is helpful to list those factors beyond the control of the planning team that are required to make the plan's effects (benefits) a reality.

(3) Effectiveness is the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities. An effective plan is responsive to the identified needs and makes a significant contribution to the solution of some problem or to the realization of some opportunity. It also contributes to the attainment of planning objectives. The most effective alternatives make significant contributions to all the planning objectives. Alternatives that make little or no contribution to the planning objectives can be rejected because they are relatively ineffective. Another factor that can impact the effectiveness of an alternative is whether there is substantial risk and uncertainty associated with the alternative. If the

functioning or success of an alternative is uncertain, or less certain than another alternative, its effectiveness may be compromised and should be discussed.

(4) Efficiency is the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment (P&G Section VI.1.6.2(c)(3)).

(b) Four accounts are established in the P&G to facilitate the evaluation and display of effects of alternative plans. The national economic development account displays changes in the economic value of the national output of goods and services. The environmental quality account displays non-monetary effects on ecological, cultural, and aesthetic resources including the positive and adverse effects of ecosystem restoration plans. The regional economic development account displays changes in the distribution of regional economic activity (e.g., income and employment). The other social effects account displays plan effects from perspectives that are relevant to the planning process, but are not reflected in the other three accounts (e.g., community impacts, health and safety, displacement, and energy conservation). Display of the national economic development and environmental quality accounts is required. Display of the regional economic development and other social effects accounts is discretionary.

(c) Procedures to evaluate national economic development benefits for each civil works mission (i.e., navigation, flood damage reduction, recreation, etc.) are provided in subsequent sections of this appendix. Procedures to evaluate environmental impacts are provided in Appendix C. Procedures to evaluate the impacts of ecosystem restoration projects are provided in Section V of this appendix. Steps in these procedures may be abbreviated by reducing the extent of the analysis and amount of data collected where greater accuracy or detail is clearly not justified by the cost of the plan components being analyzed. The steps abbreviated and the reason for abbreviation shall be documented in the planning reports. Planners can pursue the use of alternative procedures when these would provide a more accurate estimate of benefits. The use of alternative procedures and the consideration of new benefit categories, including the procedures to be used to estimate them, require advance approval from HQUSACE (CECW-P).

(d) General Considerations in NED Benefit Evaluation.

(1) When an alternative procedure provides a more accurate estimate of a benefit, the alternative estimate may also be shown if the procedure is documented.

(2) Goods and Services: General Measurement Standard. The general measurement standard of the value of goods and services is defined as the willingness of users to pay for each increment of output from a plan. Such a value would be obtained if the "seller" of the output were able to apply a variable unit price and charge each user an individual price to capture the full value of the output to the user. Since it is not possible in most instances for the planner to measure the actual demand situation, four alternative techniques can be used to obtain an

estimate of the total value of the output of a plan: Willingness to pay based on actual or simulated market price; change in net income; cost of the most likely alternative; and administratively established values.

(a) Actual or Simulated Market Price. If the additional output from a plan is too small to have a significant effect on price, actual or simulated market price will closely approximate the total value of the output and may be used to estimate willingness to pay. If the additional output is expected to have a significant effect on market price and if the price cannot be estimated for each increment of the change in output, a price midway between the price expected with and without the plan may be used to estimate the total value.

(b) Change in Net Income. The value of the change in output of intermediate goods and services from a plan is measured by their total value as inputs to producers. The total value of intermediate goods or services to producers is properly measured as the net income received by producers with a plan compared to net income received without a plan. Net income is defined as the market value of producers' outputs less the market value of producers' inputs exclusive of the cost of the intermediate goods or services from a plan. Increased net income from reduced cost of maintaining a given level of output is considered a benefit since released resources will be available for production of other goods and services.

(c) Cost of the Most Likely Alternative. The cost of the most likely alternative may be used to estimate NED benefits for a particular output if non-Federal entities are likely to provide a similar output in the absence of any of the alternative plans under consideration and if NED benefits cannot be estimated from market price or change in net income. This assumes, of course, that society would in fact undertake the alternative means. Estimates of benefit should be based on the cost of the most likely alternative only if there is evidence that the alternative would be implemented. In determining the most likely alternative, the planner should give adequate consideration to nonstructural and demand management measures as well as structural measures.

(d) Administratively Established Values. Administratively established values are proxy values for specific goods and services cooperatively established by the water resources agencies. An example of administratively established values is the range of unit-day values for recreation.

(3) Goods and Services: Categories. The NED account includes goods and services in the following categories: municipal and industrial (M&I) water supply; agricultural floodwater, erosion and sedimentation reduction; agricultural drainage; agricultural irrigation; urban flood damage reduction; power (hydropower); transportation (inland navigation); transportation (deep draft navigation); recreation; and, commercial fishing.

(4) Other Direct Benefits. The other direct benefits in the NED benefit evaluation are the incidental direct effects of a project that increase economic efficiency and are not otherwise accounted for in the evaluation of the plan or project. They are incidental to the purposes for which the water resources plan is being formulated. They include incidental increases in output of goods and services and incidental reductions in production costs. For example, a project planned only for flood damage reduction and hydropower purposes might reduce downstream water treatment costs; this reduction in costs would be shown as another direct benefit in the NED account.

(5) Use of Otherwise Unemployed or Underemployed Labor Resources. The opportunity cost of employing otherwise unemployed and underemployed workers is equal to their earnings under the without plan conditions. Conceptually, the effects of the use of unemployed or underemployed labor resources should be treated as an adjustment to the adverse effects of a plan on national economic development. Since this approach leads to difficulties in cost allocation and cost sharing calculations, the effects from the use of such labor resources are to be treated as an addition to the benefits resulting from a plan.

(a) Beneficial effects from the use of unemployed or underemployed labor resources are limited to labor employed on site in the construction or installation of a plan. This limitation reflects identification and measurement problems and the requirement that national projections are to be based on a full employment economy.

(b) If the planning region has substantial and persistent unemployment and these labor resources will be employed or more effectively employed in installation of the plan, the net additional payments to the unemployed and underemployed labor resources are defined as a benefit.

b. Plan Recommendations.

(1) The National Economic Development (NED) Plan. Ordinarily the plan that reasonably maximizes net benefits, known as the NED plan, is recommended. Another plan may be recommended if it qualifies for a categorical exemption, or if a specific Secretarial exception from ASA(CW) is sought.

(2) The National Ecosystem Restoration (NER) Plan. For ecosystem restoration projects, a plan that reasonably maximizes ecosystem restoration benefits compared to costs, consistent with the Federal objective, shall be selected. The selected plan must be shown to be cost-effective and justified to achieve the desired level of output. This plan shall be identified as the National Ecosystem Restoration (NER) Plan.

(3) The Combined NED/NER Plan. Projects which produce both National Economic Development (NED) benefits and National Ecosystem Restoration (NER) benefits will result in a “best” recommended plan so that no alternative plan or scale has a higher excess of NED benefits plus NER benefits over total project costs. This plan shall attempt to maximize the sum of net NED and NER benefits, and to offer the best balance between two Federal objectives. Recommendations for multipurpose projects will be based on a combination of NED benefit-cost analysis, and NER benefits analysis, including cost effectiveness and incremental cost analysis.

(4) The Locally Preferred Plan. Projects may deviate from the National Economic Development Plan and/or the National Ecosystem Restoration Plan if requested by the non-Federal sponsor and approved by ASA(CW). In some instances, a non-Federal sponsor may not be able to afford or otherwise support the NED, NER or Combined NED/NER Plan. Plans requested by the non-Federal sponsor that deviate from these plans shall be identified as the Locally Preferred Plan (LPP). When the LPP is clearly of less scope and cost and meets the Administration’s policies for high-priority outputs, an exception for deviation is usually granted by ASA(CW). In making a decision to recommend a LPP smaller in scope and costs than the NED, NER or Combined NED/NER plans, the district should assist the sponsor in identifying and assessing the financial capability of other potential non-Federal interests who may be willing and able to participate in plan development and implementation. In all cases, the LPP must have greater net benefits than smaller scale plans, and enough alternatives must be analyzed during the formulation and evaluation process to insure that net benefits do not maximize at a smaller scale than the sponsor’s preferred plan. If the sponsor prefers a plan more costly than the NED plan, the NER Plan or the combined NED/NER Plan, and the increased scope of the plan is not sufficient to warrant full Federal participation, ASA(CW) may grant an exception as long as the sponsor pays the difference in cost between those plans and the locally preferred plan. The LPP, in this case, must have outputs similar in-kind, and equal to or greater than the outputs of the Federal plan. It may also have other outputs. The incremental benefits and costs of the locally preferred plan, beyond the Federal plan, must be analyzed and documented in feasibility reports.

(5) Categorical Exemption for Flood Control and Navigation Projects. If the non Federal sponsor identifies a constraint to maximum physical project size or a financial constraint due to limited resources, and if net benefits are increasing as the constraint is reached, the requirement to formulate larger scale plans in an effort to identify the NED plan is suspended. The constrained plan may be recommended. If the NED plan is identified at a physical size or cost which is less than the constraint, the NED plan requirement is satisfied and the NED plan should be recommended.

c. Cost Sharing.

(1) Applicability. Unless otherwise specified, the cost sharing provisions of Title I of the WRDA of 1986, as amended and as interpreted in subsequent guidance, applies to all projects and separable elements thereof. Specific Federal and non-Federal cost sharing requirements applicable to each civil works mission are discussed in subsequent sections of this appendix. Exhibit E-1, at the end of this appendix, summarizes these requirements.

(2) Separable Element. A separable element is any part of a project which has separately assigned benefits and costs, and which can be implemented as a separate action (at a later date or as a separate project). Separable elements so considered are similar to the planning concept of last added increments, with the added idea of separation or detachment of the increment from the whole. The Corps has used a separable element concept for many decades; the term itself was coined in the WRDA of 1986 to assist in the transition to new cost sharing formulas. The WRDA definition was more complex, yet more ambiguous than that above. There is little continuing need for that definition. For cases where the WRDA definition (see section 103(f)) appears necessary, consult HQUSACE; otherwise use the definition above. Separable elements usually must be incrementally justified.

(3) Waivers for Territories (Section 1156 of the WRDA of 1986). Local cost sharing requirements for all studies and projects in American Samoa, Guam, the Northern Mariana Islands and the Virgin Islands will be reduced by up to \$200,000 for each study and project. Cost sharing for each study will first be established using the general cost sharing criteria; then the non-Federal share will be reduced by \$200,000 or to zero if the non-Federal share is less than \$200,000. A similar procedure will be followed for the non-Federal implementation cost share.

(4) Exceptions to the NED Plan. When the ASA(CW) grants an exception to selection of the NED plan, the costs for the granted exception will be shared on the same percentage basis as the NED plan.

(5) Locally Preferred Plans. Local interests may prefer a plan that is larger or smaller than the NED plan. A locally preferred plan may generally be recommended, except that in the geographic areas covered in (3) above, a larger than NED plan may not be recommended. The incremental cost between the Federally supportable plan (NED), and a larger locally preferred plan, is entirely a non-Federal responsibility. Recommended plans smaller or less costly than the NED plan will normally be granted an exception to NED plan selection, and cost shared on the same percentage basis as the NED plan.

d. Financing of Non-Federal Share of Project Costs. Guidance on the financing of the non-Federal share of project costs including payment options, deferral of payments, method of payments, source of non-Federal funds, and the rate of interest for deferred payments is contained in [ER 1165-2-131](#).

e. Credit for LERRD. Specific guidance on crediting the value of LERRD toward the non-Federal share of project costs is contained in [ER 1165-2-131](#).

f. Replacement Costs. Repair, replacement and rehabilitation costs must be identified and included in the estimated cost of operation and maintenance. The entity responsible for project operation and maintenance is responsible for all rehabilitation and replacement costs (except for some inland navigation projects, see Section II of this appendix).

g. Fish and Wildlife Mitigation.

(1) Allocating Costs. Fish and wildlife mitigation costs incurred after 17 November 1986 shall be allocated to the authorized purposes causing the need for mitigation in the same proportions as other allocable costs are allocated to those purposes.

(2) Mitigation LERRD. When lands, easements, rights-of-way, relocations or disposal areas (LERRDs) are a non-Federal responsibility for a project purpose, any LERRDs associated with mitigation for that purpose is likewise a non-Federal responsibility.

h. OMRR&R Mitigation. Non-Federal sponsors will be responsible for all costs of the operation and maintenance, repair, rehabilitation, and replacement of mitigation measures except for: (1) inland navigation projects and harbor projects with depths up to 45 feet, which have no requirement for non-Federal sharing of these costs, and (2) harbors with depths over 45 feet which require a 50 percent non-Federal share for those costs assigned to increments in excess of a 45-foot project.

i. Hazardous, Toxic and Radioactive Waste (HTRW). Policy is to avoid expenditure of Civil Works funds for HTRW remediation by avoiding contaminated areas where practicable. For water resource studies, emphasis should be placed on early problem identification. Reconnaissance and feasibility studies will include a phased and documented review to provide for early identification of HTRW potential. Efforts to determine the existence and extent of HTRW problems will be treated as study cost and shared accordingly. Consistent with the guidance in [ER 1165-2-132](#), the Corps will not participate in clean up of materials regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or by the Resource Conservation and Recovery Act (RCRA). The cost of clean up of materials not covered by CERCLA and RCRA will be considered when determining if the proposed project is justified. While measures to improve water quality parameters may be included in projects with an ecosystem restoration component, the ecosystem restoration portion of these projects should not principally result in treating or otherwise abating pollution other compliance responsibility.

j. **Brownfields.** Brownfields are abandoned or under-utilized properties that are perceived to be or, at worst, are lightly contaminated. Brownfields may be included in the preliminary planning phase of projects where they are integral to solving water resources problems related to Corps mission areas and authorities. If the assessment determines that there are non-CERCLA types of materials or small, easily and cost effectively managed amounts of CERCLA controlled materials, then these sites may be included in project formulation and any remediation costs would be shared as project costs. If the assessment determines a CERCLA level clean-up is required, then the site will be removed from plan formulation for processing under CERCLA procedures. It is important that no unnecessary Federal liability be incurred when working within a Brownfield site.

E-4. Risk and Uncertainty-Sensitivity Analysis. Uncertainty and variability are inherent in water resources planning. For example, there is uncertainty in projecting such factors as stream flows, population growth, and the demand for water. Therefore, the consideration of risk and uncertainty is important in water resources planning. This paragraph provides guidance for the evaluation of risk and uncertainty in the formulation of water resources management and development plans.

a. Concepts.

(1) **Risk.** Situations of risk are conventionally defined as those in which the potential outcomes can be described in reasonably well known probability distributions. For example, if it is known that a river will flood to a specific level on the average of once in 20 years, a situation of risk, rather than uncertainty, exists.

(2) **Uncertainty.** In situations of uncertainty, potential outcomes cannot be described in objectively known probability distributions. Uncertainty is characteristic of many aspects of water resources planning. Because there are no known probability distributions to describe uncertain outcomes, uncertainty is substantially more difficult to analyze than risk.

(3) **Sources of Risk and Uncertainty.**

(a) Risk and uncertainty arise from measurement errors and from the underlying variability of complex natural, social, and economic situations. If the analyst is uncertain because the data are imperfect or the analytical tools crude, the plan is subject to measurement errors. Improved data and refined analytic techniques will obviously help minimize measurement errors.

(b) Some future demographic, economic, hydrologic, and meteorological events are essentially unpredictable because they are subject to random influences. The question for the

analyst is whether the randomness can be described by some probability distribution. If there is a historical data base that is applicable to the future, distributions can be described or approximated by objective techniques.

(c) If there is no such historical data base, the probability distribution of random future events can be described subjectively, based upon the best available insight and judgment.

(4) Degrees of Risk and Uncertainty. The degree of risk and uncertainty generally differs among various aspects of a project. It also differs over time, because benefits from a particular purpose or costs in a particular category may be relatively certain during one time period and uncertain during another. Finally, the degree of uncertainty differs at different stages of the analysis, for example, between initial screening and final detailed design, when more precise analytic methods can be applied.

(5) Attitudes. The attitudes of decision makers toward risk and uncertainty will govern the final selection of projects and of adjustments in design to accommodate risk and uncertainty. In principle, the government can be neutral toward risk and uncertainty, but the private sector may not be. These differences in attitudes should be taken into account in estimating the potential success of projects.

b. Application.

(1) The role of the planner.

(a) The planner's primary role in dealing with risk and uncertainty is to characterize to the extent possible the different degrees of risk and uncertainty and to describe them clearly so that decisions can be based on the best available information. The planner should also suggest adjustments in design to reflect various attitudes of decision makers toward risk and uncertainty. If the planner can identify in qualitative terms the uncertainty inherent in important design, economic, and environmental variables, these judgments can be transformed into or assigned subjective probability distributions. A formal model characterizing the relationship of these and other relevant variables may be used to transform such distributions to exhibit the uncertainty in the final outcome, which again is represented by a probability distribution.

(b) At all stages of the planning process, the planning can incorporate any changes in project features that, as a result of information gained at that stage, could lead to a reduction in risk and uncertainty at a cost consistent with improvement in project performance.

(2) Some risk and uncertainty are assumed in nearly every aspect of a water resources project. Some types of risk and uncertainty are dealt with in terms of national planning parameters; for example, ranges of population projections and other principal economic and demographic variables. Other types of risk and uncertainty are dealt with in terms of project or regional estimates and forecasts. When projects are related to other projects and programs in their risk and uncertainty aspects (e.g., interrelated hydrologic systems), reasonable attempts should be made to see that the same analyses and presumed probability distributions are used for all of them.

(3) The risk and uncertainty aspects of projects are likely to be seen and analyzed differently as planning proceeds from rough screening to detailed project proposals. An effort should be made, therefore, to relate the techniques used in characterizing and dealing with risk and uncertainty to the stage of the planning process.

(4) The resources available for analyzing aspects of risk and uncertainty should be allocated to those assessments that appear to be the most important in their effects on project and program design. Rather than assuming in advance that one or another variable is a more important source of risk and uncertainty, the planner should make a thorough effort to determine which variables will be most useful in dealing with measurement errors and natural sources of risk and uncertainty.

(5) The aspects of project evaluation that can be characterized by a probability distribution based on reasonably firm data, such as hydrologic risk, can be treated by standard methods of risk evaluation developed by Federal agencies and others.

(6) Most risk and uncertainty aspects of projects cannot be characterized by probability distributions based on well established empirical data. A first step in dealing with this problem is to describe why the project or specific aspects of it are uncertain, as well as the time periods in which different degrees of uncertainty are likely. A range of reasonably likely outcomes can then be described by using sensitivity analysis, the technique of varying assumptions as to alternative economic, demographic, environmental, and other factors, and examining the effects of these varying assumptions on outcomes of benefits and costs. In some cases and in some stages of planning, this approach, when accompanied by a careful description of the dimensions of uncertainty, will be sufficient. It can be accompanied by descriptions of design adjustments representing various attitudes toward uncertainty.

(7) It may be appropriate in some cases to characterize the range of outcomes with a set of subjective probability estimates, but the project report should make clear that the numerical estimates are subjective. Moreover, subjective probability distributions should be chosen and justified case by case, and some description of the impact on design of other subjective

distributions should be given. Design alternatives reflecting various attitudes toward uncertainty may be suggested.

(8) Utility functions may be used in conjunction with assessments of uncertainty to explore design adaptations reflecting specific preferences. Public preferences, if well known, may be used to illustrate to decision makers what the best design would be, given the uncertainties and preferences in a particular case. If public preferences are not well known, justification could be given for the selection of various utility functions, which can be used only to illustrate the effects on design of various preferences.

(9) At each level of analysis, the planner should take into account the differences in risk and uncertainty among project purposes and costs, among various time periods, and among different stages of planning.

(10) Adjustments to risk and uncertainty in project evaluation can be characterized as general or specific. General adjustments include the addition of a premium rate to the interest, overestimation of costs, underestimation of benefits, and limitations on the period of analysis. Such general adjustments are usually inappropriate for public investment decisions because they tend to obscure the different degrees of uncertainty in different aspects of projects and programs. Specific adjustments, including explicit assessments of different degrees of risk and uncertainty in specific aspects of a project or program and specific adjustments to them, are preferable.

(11) One guide to the use of the techniques discussed here is displayed in Table E-1. In general, more complex techniques are appropriate as planning proceeds from the initial development and the screening of alternatives to the analysis and presentation of the final set of alternative plans. For example, sensitivity analysis, testing the sensitivity of the outcome of project evaluation to variation in the magnitude of key parameters, may be most useful and applicable in the early stages of planning, when the concern is to understand single factors or relatively general multiple-factor relationships. Multiple-factor sensitivity analysis, in which the joint effects or correlation among underlying parameters are studied in greater depth, may be more appropriate in the detailed analytic stage than in the screening stage.

Table E- 1 Planning Task and Approaches to Risk and Uncertainty

<-----Planning Tasks----->

Approaches to Risk and Uncertainty	Screening Alternatives	Detailed Analysis of Projects	Final Presentation of Alternatives
Sensitivity analysis	X	X	X
Use of objective and subjective probability distributions		X	X
<i>Illustrative applications of public preference and decision makers attitudes</i>		X	X

(12) Similarly, analysis of risk and uncertainty based on objective or subjective probability distributions would be more appropriate in the detailed analytic stage than in the early screening stage. Although hydrologic and economic probabilities may be used in the screening stage, the full use of independent and joint probability distributions, possibly developed from computer simulation methods, to describe expected values and variances, is more appropriately reserved for the detailed stage.

(13) Although decision makers' attitudes and decision rules can be used to give perspective on alternative designs through out the planning process, they are more appropriate at the stage of displaying alternative designs.

(14) The differences among the underlying degrees of risk and uncertainty, the design adaptations to them, and the preferences of decision makers should be kept clear throughout the analysis. The first two depend primarily on technical expertise; the last is the set of preferences based on various attitudes toward risk and uncertainty.

c. Report and Display. The assessment of risk and uncertainty in project evaluation should be reported and displayed in a manner that makes clear to the decision maker the types and degrees of risk and uncertainty believed to characterize the benefits and costs of the alternative plans considered.

E-5. Project Cost Estimating and Scheduling.

a. Accuracy and Completeness. Accuracy and completeness of project cost estimates must be emphasized throughout the project development process, including the reconnaissance

and feasibility phases. Even in these early phases cost estimates should represent as complete and as accurate a picture as is practicable. This is necessary for Federal and non-Federal sponsor planning and budgeting processes.

(1) Elements. The project cost estimate is the total cost (Federal and non-Federal) of implementing the project and includes the construction costs, lands, easements, rights-of-way, relocations, disposal areas (if needed), mitigation, add-ons such as engineering and design, and supervision and administration. The project cost estimate will be developed on a constant dollar basis.

(2) Presentation. Project cost estimates during study phases are often perceived to be more accurate than they are, and therefore, project documents must include a discussion of the elements that make up the project cost estimate and of their variability. The presentation of the project cost estimate is of particular importance in the feasibility study as it forms the basis for local decisions on project commitment and financing. It is also the basis for developing budget requests for implementation (inflation allowances are added separately). The project estimate prepared during the feasibility phase is generally the one presented to the Congress for authorization, although it may be revised during the early stages of preconstruction, engineering and design depending on the authorization cycle. Section 902 of WRDA '86 limits the authorization of projects in the Act to a 20% increase in the cost of that project (with increases due to inflation and increased requirements of law allowed). Without firm cost estimates and schedules, neither the Federal government nor the non-Federal sponsors can make prudent financial and budgetary decisions.

b. Study Management of Cost Estimates. During the feasibility study phase, the team must ensure that plans are formulated in such a way that constructability and operability are assured, that major cost items are adequately assessed or appraised as in the case of real estate, and that the uncertainty associated with the estimate is properly presented. The team should also develop plans, with appropriate consideration for Corps plan formulation criteria under the [Principles and Guidelines](#), with an awareness of the ultimate cost. With increased non-Federal financial responsibility for project planning and implementation and Federal emphasis on budgetary restraint, commanders must be sensitive to real financial constraints on project scale. Accurate estimates of the costs of alternative plans play a vital role in plan formulation and project scoping. In any case, financial considerations must not be the sole criteria on which plan development rests, as the NED plan must still be identified. The goal of this approach is to reduce significant design changes after the feasibility phase.

c. Uncertainty in Cost Estimates. Project cost estimates should be supported by a discussion of the scope of the estimate and the uncertainties associated with each major cost item in the estimate. Special attention will be given to large cost items and items that are sensitive to change. Such increased effort on these high risk components will increase the reliability of the overall project cost estimate. The goal is a final project cost that will be within 20 percent of the

estimated project cost in the feasibility report after appropriate adjustments for inflation. Based on such an approach, appropriate contingencies may be applied for each element to account for information that is lacking to more accurately establish its cost. General percentage contingencies applied to the entire project will not be used.

d. Life Cycle Costs. Life cycle costs will also be explicitly considered in the development of project cost estimates. These life cycle costs, including operation, maintenance, repair, replacement and rehabilitation (OMRR&R) costs as well as any necessary environmental monitoring and compliance inspection costs, play an important role in the trade-offs between high capital cost projects and those that have high operation and maintenance (O&M) costs. The sponsor's financial situation may accommodate one type of project better than another. The study management team should draw upon the O&M resources in the district to assist in developing accurate estimates for these costs. These costs should be presented on a constant dollar basis.

e. Full Funded Cost Estimates. Project cost estimates will also be developed on an inflated dollar basis.

f. Review of Cost Estimates. Project cost estimates will be prepared by or reviewed by the cost engineering element in the district and the chief of that unit will sign the estimate. Real estate estimates included in the project cost are reviewed, approved and signed by chief or designee of the Real Estate Office.

SECTION II - Navigation

E-6. Federal Interest. The Federal interest in navigation derives from the Commerce Clause of the Constitution, and is limited to the navigable waters of the United States. Federal navigation improvements must be in the public interest and thus must be open to the use of all on equal terms. As a matter of law and policy, a distinction is made between general navigation features, and other features or facilities serving navigation. The Corps participates financially in general navigation features and Special Navigation Programs only (see below); all other features and facilities (e.g., piers) are non-Federal responsibilities.

E-7. Types of Improvements. General navigation features include channels, jetties or breakwaters; locks and dams; basins or water areas for vessel maneuvering, turning, passing, mooring or anchoring incidental to transit of the channels and locks. They also include dredged material disposal areas (except those for the inland navigation system, the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway), and sediment basins. These are eligible for development as general navigation features of harbor or waterway projects. Special Navigation Programs include removal of wrecks and obstructions; snagging and clearing for navigation; drift and debris removal; bridge replacement or modification; and mitigation of project-induced damage.

a. Harbor and Waterway Projects. These projects are specifically authorized by Congress, except for Continuing Authorities Projects. Financial responsibility for project components is specified in Public Law 99-662. Harbors and waterways have separate cost sharing formulas.

(1) Harbors. Harbors are places that offer vessels shelter from weather. They are primarily places for vessels to put in as needed, although they may serve incidentally as connecting waterways. They are ports if they also offer port facilities. Provision of harbors offering only shelter (Harbors of Refuge) was historically an active Corps program; no new projects have been authorized in many years. Many of the existing harbors of refuge continue to be maintained however. While the terms “inland harbor” and “deep draft harbor” may be used in legislation, it is harbor depth and use which determine cost sharing, not location.

(2) Waterways. Waterways are routes used by vessels. They are rights-of-way enabling and aiding vessel movement; vessels also may stop and stay at facilities along waterways. Waterways may simply connect bodies of deep or shallow water, or they may be parts of riverine or coastal waterway systems.

(a) The waterways described in Public Law 95-502 as amended, and such other waterways that subsequently may be determined to be parts of the inland waterway system referred to in Public Law 99-662, are exempt from non-Federal cost sharing of studies.

(b) By action of Congress, construction (including PED) for PL 95-502 defined waterways or other waterways may be 100 percent Federal, the Inland Waterway Trust Fund may be used to fund all or part of the construction, and the waterway may be made subject to waterway fuel taxes. All other waterways are treated as harbors for cost sharing purposes.

b. Special Navigation Programs.

These navigation improvements are for specific purposes, and may be projects, elements of projects, or simply Corps activities. They are initiated and/or implemented on Congressional authority (specific or continuing). They are usually subject to program or project expenditure limits, with cost sharing as specified in the original authority or as amended. The following program expenditure limits and cost sharing are as amended by Public Law 99-662 unless otherwise stated.

(1) Removal of Wrecks and Obstructions (Section 19, River & Harbor Act of 3 March 1899). The Corps may remove sunken vessels and similar objects if they are determined to be obstructions to navigation. The cost is 100 percent Federal; it is recoverable from the vessel or object owner. Abandonment by the owner is not a bar to cost recovery. Sunken vessels and objects that are not obstructions to navigation but may be nuisances or otherwise undesirable, are treated as drift and debris removal.

(2) Snagging and Clearing for Navigation (Section 3, River & Harbor Act of 1945). Cost-sharing for this continuing authority is according to whether it is a harbor or inland waterway. There is no project limit, but the current program limit is \$1,000,000 annually.

(3) Drift and Debris Removal (Section 202, Water Resources Development Act of 1976). The Corps has continuing authority to study and undertake projects to remove and dispose of derelict objects such as sunken vessels, waterfront debris and derelict structures, and other sources of drift that may damage vessels or threaten public health, recreation, or the environment at publicly maintained commercial boat harbors. The harbor need not be, but usually is a Corps project. Congressional authorization is required for projects with Federal costs of \$400,000 or more. Cost sharing for the cleanup is one third non-Federal. Non-Federal sponsors are required to recover cleanup costs if there is an identifiable owner of the source. The recovery costs do not become part of the local share but can be applied to reduce total project cost. All costs of any disposal facility or area and its operation are cost shared according to project depth.

(4) Navigation Projects Under the Continuing Authorities Program. Refer to Appendix F for additional guidance concerning policies, procedures and authorities pertaining to navigation projects conducted under the CAP.

(a) Small Harbor and Waterway Projects, Section 107, River & Harbor Act of 1960. Small harbor or waterway projects constructed under this authority must be complete and capable of producing benefits as separate projects. They cannot be constructed in lieu of authorized elements of another navigation project. The requirements for study cost sharing, construction, and operation and maintenance are generally the same as those for specifically authorized studies and projects. Project and annual program Federal expenditure limits are \$4,000,000 and \$35,000,000.

(b) Mitigation of Shore Damage Due to Federal Navigation Projects (Section 101 of the WRDA of 1986 and Section 111, River and Harbor Act of 1968). The Corps can recommend measures for the prevention or mitigation of erosion or shoaling damages attributable to Federal navigation works. Costs are shared in the same proportion as is applicable to the project, which causes, or is projected to cause, the erosion or shoaling. The non-Federal interests shall agree to be responsible for O&M. Guidance for Section 111 projects is presented in Appendix F.

(5) Modification of Bridges that Obstruct Navigation (Public Law 67-647, the Bridge Alteration Act). The Bridge Alteration Act (1941), commonly called the Truman-Hobbs Act, applies only to existing highway and rail bridges. It provides authority to require bridge modification or replacement if a bridge causes an unreasonable obstruction to navigation, and it sets the apportionment of costs among the bridge owner, the Federal government, and non-Federal sponsor (if any). In 1966, responsibility for administration of the act was transferred from the Army to the Department of Transportation; the Secretary of the Army retains authority to determine whether a bridge causes unreasonable navigation obstruction.

(a) The bridge owner must bear the part of the cost attributable to direct and special benefits accruing to the owner; the remainder is apportioned between the U.S. and non-Federal sponsor (if any) according to the cost sharing that would apply at the harbor or waterway involved. (For details of cost sharing see the Act.) The bridge owner is required to absorb the cost of betterments and an apportionment of costs representing the expired service life of the obstructing bridge.

(b) Truman-Hobbs cost sharing applies as well when a new project or project improvement would cause an existing bridge to become an obstruction to navigation. The cost of constructing new bridges or replacing existing bridges over non-obstructed channels is 100 percent non-Federal. New bridges required because of land cuts for new or realigned channels are treated as general navigation features of those projects and cost shared accordingly.

(6) Beneficial Use of Dredged Material. When determining an acceptable method of disposal of dredged material, districts are encouraged to consider options that provide opportunities for aquatic ecosystem restoration. Where environmentally beneficial use of dredged material is the least cost, environmentally acceptable method of disposal, it is cost shared as a

navigation cost. Section 204 of the WRDA of 1992, as amended, provides programmatic authority for selection of a disposal method for authorized projects, that provides aquatic restoration or environmental shoreline erosion benefits when that is not the least costly method of disposal. The incremental cost of the disposal for ecosystem restoration purposes over the least cost method of disposal is cost shared, with a non-Federal sponsor responsible for 25 percent of the costs. Smaller projects typically will be pursued within the programmatic limits of Section 204, as amended. Section 207 of the WRDA of 1996 amended this authority. Section 207 will primarily be used with new navigation projects or in conjunction with maintenance dredging when the incremental cost is large. Projects pursued under Section 207 authority are separately budgeted and will not count towards the Section 204 programmatic limit. (See Section E-14 and Appendix F for additional information regarding Beneficial Use of Dredged Material).

(7) Environmental Dredging. Section 312 of the WRDA of 1990 as modified by Section 205 of the WRDA of 1996 provides programmatic authority for environmental dredging of sediments not classified as HTRW where the material lies outside and adjacent to Federal navigation channels, contributes to contamination of materials in the Federal navigation channel and it can be demonstrated the removal and remediation, if necessary, are economically justified based on savings in future operation and maintenance costs. Section 224 of the WRDA of 1999 amended this authority. Implementation guidance is under development.

E-8. Specific Policies. There are many components necessary to make a navigation project work, but there is Federal financial responsibility for only some of them. The components that are a Federal responsibility are cost-shared according to the project benefits and type of project (harbor, waterway) as shown in a subsequent paragraph. All other components are wholly non-Federal responsibilities.

a. General Application. For most project components, the responsibility and cost sharing has been determined by legislation, precedent, or practice. These components are described below.

(1) General Navigation Features. This category of structural components of harbors and waterways contains most of those components in which the U.S. will financially participate. The components may be constructed by the project sponsor with reimbursement for the Federal cost share if authorized by Congress under Section 204 of the WRDA of 1986.

(a) Locks and dams and river training works on coastal and inland waterways.

(b) Offshore, approach, and harbor entrance channels, which may have associated protective works such as breakwaters or jetties.

(c) Mainstem, or main and branch channels that are either waterways, or that connect harbor entrances with local facilities areas.

(d) Basins, areas, or widened channels for vessel maneuvering, turning, passing, or anchoring or mooring incidental to transit of locks or channels, and sediment basins.

(e) Bridges that are required by new or realigned channels that cut fast land. It is Corps policy to not recommend new navigation channels cutting fast land however.

(f) Ice control structures.

(2) Aids to Navigation. These are buoys, lights, ranges, markers, and other devices and systems required for safe navigation or to achieve the project benefits. Aids to navigation are provided by the Coast Guard, and are a Federal cost included in economic justification, but are not subject to project cost sharing. Absent sufficient Coast Guard funding, or adequate justification for the navigation aids, non-Federal interests may be required to provide them.

(3) Local Service Facilities. These are the responsibility of non-Federal interests, and they may be required as part of project cooperation agreements if they are necessary for project benefits to accrue. Examples are:

(a) Piers, wharves, floats, and other structures or devices at or near the shoreline, where vessels can moor or be held for the purpose of loading and unloading cargo and passengers, fueling, repairs and other servicing, or to await orders or use.

(b) Berthing, mooring, and anchorage areas where vessels can stay whatever time is required without obstructing the channels or other water areas provided for the movement of vessels.

(c) Port facilities or open areas, structures, or equipment on the shore for receiving, storing, and transferring cargo and passengers. Harbor facilities are for providing fuel, water, ice, provisions, repairs, and other services to vessels. Recreation facilities are for launching boats via ramps or equipment, storing boats on land, parking vehicles, and public access areas and restrooms.

(d) Utility services, such as telephone, water and power, and public services, such as police and fire protection.

(e) Land access via roadways or railroads.

(f) Access channels or, main or branch channel extensions providing access to facilities usable only by exclusive private interests, i.e., not open to the general public on equal terms.

(4) LERR. Non-Federal sponsors are required to provide all lands, easements, rights-of-way, and relocations for a navigation project or a harbor of any kind, and for waterways that are treated as harbors for cost sharing purposes. LERRD for “inland waterways” (includes disposal areas in this case) are 100 percent Federal, and may be funded up to 50 percent from the Inland Waterways Trust Fund for construction when so authorized by Congress.

b. Special Cases. Special cases that require a determination of policy, Federal responsibility, or cost sharing are described below.

(1) Access Channels. Subsidiary channels may be needed to connect main harbor channels or inland waterways with anchorages, mooring, or berthing areas not located adjacent to the primary channel. An access or connecting channel can be a Federal responsibility only if it provides access to two or more areas; or if access is provided to a single area it, must contain two or more facilities with separate owners, or a facility owned by a public entity. For a harbor project, the cost shares are determined by the depth of the access, or interior the channel. If an access channel serves an inland port or port facility it is cost shared based on its own depth, unless the channel is in an area included in the inland waterway system as described in Public Law 95-502, as amended, or as determined by Congress.

(2) Deeper Depths in Entrance Channels. Where an entrance channel is deeper than interior channels because of the more adverse navigation conditions of the entrance channel, cost sharing is the same as the deepest reach of the more protected interior channels.

(3) Barge Fleeting Areas. Barge fleeting areas are defined as mooring areas or temporary anchorages used for assembling tows, making barge transfers between tows, transferring supplies, awaiting arrival of additional barges or serving as a barge holding area. Barge fleeting areas should generally not be recommended for Federal participation. Moorages or temporary anchorage areas may be recommended if necessary to implement a non structural efficiency improvement, for example if reconstitution of tows is necessary to implement a ready to serve lockage policy. These areas should not be considered as fleeting areas in the traditional sense.

(4) Single Owner Situations and General Versus Special Interest Considerations. Section 2 of the River and Harbor Act of 5 June 1920 provides that the Chief of Engineers shall make a determination of the general versus the special interest in an improvement, and recommend an appropriate sharing of costs between Federal and non-Federal interests. When there is a general interest the cost sharing prescribed by Public Law 99-662 will be the basis for recommendations. If there is no general interest there is no Federal financial participation. The determination of general interest requires consideration of the number and type of properties served by a proposed project.

(a) Single Owner Situations. The Corps will not recommend Federal cost participation, establishment, or expansion of a Federal navigation project where the improvement would serve only property owned by a single firm, corporation or individual, or club or association with restrictive membership requirements. A single-owner situation exists when restrictive conditions of any sort permit the single property owner exclusive present and future enjoyment of project benefits. An example of exclusive benefits would be a privately owned port, even though used by several shippers. However, the Corps may recommend Federal cost participation where the improvement would serve only property owned publicly by a single state county, municipality or other duly appointed public entity. Table 1 in [ER 1165-2-123](#) summarizes single-owner situation policy for a variety of Federal project purposes and types of improvement.

(b) Initial Single Non-Public-Owner, Later Multiple-Owner Situations. Federal participation may be recommended in a significant increment of improvement when the improvement would initially serve property by a single non-public-owner when reasonable prospect exists for the improvement to later serve multiple properties with different owners. A significant increment is defined as one involving major increases in project length, depth, or width.

(1) The test for reasonable prospect is controlled by factors such as availability, ownership, and suitability of adjacent waterfront land for development. Another test is location by other industries and users, availability of land transport and other essential services. Also, the area's economic potential; the intent of the land owner or the potential developer; and the determination that no restrictive conditions exist that would prohibit the improvement from serving or benefiting two or more single-owner properties (and property owners) in the foreseeable future.

(2) In these situations, non-Federal sponsors shall contribute annually, until such time as multiple properties/owners are served by the general navigation facility, 50 percent of the annual charges for interest and amortization of the Federal first cost of the improvement, exclusive of aids to navigation. For new channels or extensions to existing channels, the required annual contribution shall also include 50 percent of the operation and maintenance costs of the improvement until such time as multiple properties/owners are served. The requirement for annual contributions may end when the Secretary of the Army determines that the improvement is actually serving/benefiting at least two properties that are owned by at least two different owners. These cash contribution requirements are in addition to the other regular established requirements of non-Federal cooperation for commercial navigation projects.

(c) Progressive Development. The Federal interest is satisfied and the regular cost sharing requirements apply where the improvement serves/benefits two or more properties having different owners or one publicly-owned property at the outset, or if new properties/owners would be served immediately after project completion. A principle of progressive development also applies. Progressive development includes situations where the last small increment of a channel serves a non-public owner. The last property owner served may be "at the end" in terms

of length, depth, or width, necessitating some project investment in his service alone. This is treated as a multiple-owner situation unless a disproportionate incremental investment is required.

(5) Project Purpose and Benefits. Navigation projects may produce both recreational navigation outputs including sport fishing, and commercial navigation outputs including commercial fishing. Current Army policy precludes budgeting Army Civil Works resources for new recreation orientated projects. Civil Works funds may normally be used to support recreational development where the level of commercial navigation benefits is equal to or exceeds 50 percent of the average annual project cost.

(6) Entrance Channels Cost Sharing. Increased depths provided in entrance channels for transit of vessels between protected interior channels and the wave action zone, e.g., across an outer bar, will be cost shared the same as the deepest protected interior channel. Breakwaters, jetties and channel width increases are cost shared in the same manner.

(7) Navigation Versus Hurricane and Storm Damage Reduction. Some measures serving navigation may also reduce hurricane and storm damage and vice versa. The following policies apply to cost sharing of measures affecting one or both of the navigation, and hurricane and storm damage reduction purposes.

(a) Measures resulting in increases in net income of commercial navigation activities or in decreases in commercial transportation costs will be evaluated and cost shared as navigation measures (harbor). This includes measures to prevent wave induced damages to berthed commercial vessels and to docks, piers and slips used in commercial navigation activities. Measures to prevent wave induced damages to berthed non-commercial (recreational) vessels, and measures to prevent wave damages to docks, piers, slips and other shoreline facilities not used for commercial navigation, are to be evaluated and cost shared under the hurricane and storm damage reduction provisions of sections 103(c)(5) and 103(j) of Public Law 99-662. Measures to provide for safe and efficient movement of commercial and recreational vessels into and within a harbor, and measures to prevent loss or damage to vessels in transit (harbors of refuge) will continue to be evaluated and cost shared as navigation measures (harbor). The Corps does not financially participate in provision of docks, terminal or transfer facilities, or berthing areas (see paragraph E-8a.(3)).

(b) Above policy applies to existing berthed vessels and shoreline facilities and to vessels and facilities that would exist in the future without project condition at the project or an alternative location. For vessels that would not be present at any location in the without project condition, but would be present in the future as a result of the project, benefits are evaluated as commercial or recreational navigation benefits, as appropriate.

(c) Where measures serve both hurricane and storm damage reduction and navigation, an allocation of multiple purpose joint costs must be made and the joint costs shared in accordance with the purpose to which they are allocated, along with any specific costs for features which serve only one purpose. This cost allocation must include operation, maintenance, repair and replacement and rehabilitation responsibility under the hurricane and storm damage reduction purpose. No cost allocation is required where a measure is formulated to serve a single purpose but results in incidental benefits.

(8) Federal Assumption of Maintenance. Section 204(f) of the WRDA of 1986, as amended, and implemented by [ER 1165-2-124](#), provides the basis for the Federal assumption of maintenance of navigation projects constructed by non-Federal interest. (Section 204(f) was previously Section 204(e). It was redesignated by Section 303(b)(1) of the WRDA of 1990.) Section 204(f) provides that a non-Federal project must be approved by the Secretary of the Army prior to construction for Federal assumption of maintenance. In view of the provisions of Section 204(f) and in recognition of budgetary constraints, the Corps will not seek study funding or authorization for Federal maintenance of existing non-Federal navigation projects. Only assumption of maintenance under provisions of Section 204(f) will be considered. This policy does not apply to traditional study, authorization and construction of improvements to non-Federal harbors, which may include subsequent Federal maintenance.

E-9. NED Benefit Evaluation Procedures: Transportation Inland Navigation

a. Purpose. This section presents the procedure for measuring the beneficial contributions to national economic development (NED) associated with the inland navigation features of water resource projects and plans.

(1) Major Rehabilitation Projects. Construction of infrequent, costly structural rehabilitation or major works that will improve reliability or efficiency of a inland navigation project or a principal feature thereof are implemented under the Major Rehabilitation Program. Major rehabilitation projects are budgeted under the Construction General account. Rehabilitation is a major project feature restoration consisting of structural work on a Corps operated and maintained facility intended to improve reliability of an existing structure, the result of which will be deferral of capital expenditures to replace the structure. Rehabilitation is considered when it can significantly extend the physical life of a feature and can be economically justified by benefit-cost analysis.

(2) Major Rehabilitation Projects Evaluation Procedures. [ER 1130-2-500](#) and [EP 1130-2-500](#) document the requirements and procedures for major rehabilitation studies and projects.

b. Conceptual Basis. The basic economic benefit of a navigation project is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as follows:

(1) Cost Reduction Benefit (same origin-destination; same mode). For traffic that uses a waterway both with and without a project, the benefit is the reduction in the economic cost of using the waterway. This reduction represents an economic efficiency or NED gain because resources will be released for productive use elsewhere in the economy; for example:

(a) Reductions in costs incurred from trip delays (e.g., reduced congestion by expanding lock sizes at congested facilities or by imposition of congestion fees).

(b) Reduction in costs because larger or longer tows can use the waterway (e.g., by channel straightening or widening).

(c) Reduction in costs by permitting barges to be more fully loaded (e.g., by channel deepening).

(2) Shift of Mode Benefit (same origin-destination; different mode). For traffic that would use a waterway with the project but uses a different mode, including a different waterway, without the project, the benefit is the difference between the costs of using the alternative mode without the project and the costs of using the waterway with the alternatives under consideration. The economic benefit of the waterway to the national economy is the savings in resources from not having to use a more costly mode.

(3) Shift of Origin-destination Benefit. If a project would result in a shift in the origin of a commodity, the benefit is the difference in total costs of getting the commodity to its place of use with and without the project. If a project would result in a shift in the destination of a commodity, the benefit is the difference in net revenue to the producer with and without the project. The shift of origin-destination benefit cannot exceed the reduction in transportation charges achieved by the project.

(4) New Movement Benefit. This benefit applies if a commodity or additional quantities of a commodity would be transported only because of lowered transportation charge with the project. The quantities are limited to increases in production and consumption resulting from lower transportation costs. An increase in waterway shipments resulting from a shift in origin or destination is not included. The new movement benefit is defined as the increase in producer and consumer surplus; practically, it can be measured as the delivered price of the commodity less all associated economic costs, including all of the costs of barge transportation other than those of the navigation project. This benefit, like the preceding one, cannot exceed the reduction in transportation costs achieved by the project.

(5) Use of Rates For Benefit Measurement. It is currently more difficult to accurately compute the long-run marginal costs of particular rail movements on the basis of cost estimation studies than to determine the rates at which railroad traffic actually moves. In competitive markets, rates (prices) correspond to marginal cost, and, given market stability, prices will settle at long-run marginal costs. Moreover, the rates actually charged determine the distribution of traffic among modes. For these reasons, rates will be used to measure shift of mode benefits. Section 7a of the Department of Transportation (DOT) Act of 1966 (Public Law 89-670) requires the use of prevailing rates, as described in paragraph E-9d(5). In the case of new waterways, this rate may or may not represent the best estimate of long-run marginal costs. In the case of existing waterways, prevailing competitive similar rates are the best available approximation of long-run marginal costs.

(6) Risk-based Analysis Procedure. Institute of Water Resources and HQUSACE staff are currently in the process of developing risk-based analysis procedures for inland navigation studies. Although these efforts are ongoing, preliminary indications are the following variables should be explicitly incorporated in risk-based analysis; 1) commodity forecasts, 2) alternative mode costs, 3) reliability of existing and proposed structures, and, 4) system delays associated with capacity constraints. Additional variables can be incorporated if appropriate for individual study areas. Districts are expected to incorporate risk-based analysis procedures in all inland navigation studies. Until risk-based procedures are fully developed, districts are expected to, at a minimum, perform sensitivity analysis of key variables.

c. Planning Setting.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist in the future in the absence of the navigation project or any change in law or public policy. The without project condition includes any practice likely to be adopted in the private sector under existing law and policy, as well as actions that are part of broader private and public planning to alleviate transportation problems. The following specific assumptions are part of the projected without project condition:

(a) Assume that all reasonably expected nonstructural practices within the discretion of the operating agency, including helper boats and lock operating policies, are implemented at the appropriate time. Substantial analysis is required to determine the best combination of nonstructural measures to ensure the most effective use of an existing waterway system over time. This analysis should be documented in project reports to assure the reviewer that the best use of existing facilities will be made in the without-project condition and that the benefits of alternative with project conditions are correctly stated. The criteria for the best utilization of the system are overall public interest concerns, including economic efficiency, safety and environmental impact.

(b) User charges and/or taxes required by law are part of the without project condition. Proposed or possible fees, charges, or taxes are not part of the without project condition but should be considered as part of any nonstructural alternatives in the with project condition.

(c) The without project condition assumes that normal operation and maintenance will be performed on the waterway system over the period of analysis.

(d) In projecting traffic movements on other modes (railroad, highway, pipeline, or other), the without project condition normally assumes that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary.

(e) Alternative modes should be analyzed as a basis for identifying the most likely route by which commodities will be transported in the future in the absence of waterway improvement.

(f) The without project condition normally assumes that only waterway investments currently in place or under construction are in place over the period of analysis.

(2) With Project Condition. The with project condition is the most likely condition expected to exist in the future if a project is undertaken. The same assumptions as for without project condition underlie the with project condition. The following discussion relates to the alternatives considered under the with project condition.

(a) Management of demand by the use of congestion or lockage fees is a nonstructural alternative, which alone or in combination with structural devices may produce an economic optimum in a congested waterway. Influencing marginal waterway users through a congestion fee can increase the net benefits of a waterway. Evaluate alternatives that influence demand on the same basis as supply-increasing (structural) alternatives. Because lockage time is a scarce commodity, the imposition of a congestion fee will work to allocate this commodity in an efficient manner. HQUSACE (CECW-PD) should be consulted for assistance in analyzing congestion fees.

(b) Additional nonstructural measures not within the current purview of the operating agency may be considered "supply management" measures. One example is traffic management. These supply-increasing (nonstructural) measures can be used alone or in combination with other structural or nonstructural measures.

(c) Project alternatives can differ in their timing as well as in their physical characteristics. Consider the optimal timing of projects and of individual project features in project formulation, so as to maximize net benefits over time.

(d) Consider improvements in alternative transportation modes as part of the without project condition only, as specified in paragraph E-9c.(1).

d. Evaluation Procedure: General. Use the following 10 steps to estimate navigation benefits. (See Figure E-1.) The level of effort expended on each step depends upon the nature of the proposed improvement, the state of the art for accurately refining the estimate, and the sensitivity of project formulation and justification to further refinement, especially as applied to steps 6, 7, and 8.

(1) Step 1--Identify the Commodity Types. Identify the types of commodities susceptible to movement on the waterway segment under consideration. The level of detail for each commodity is not pre-specified; for example, in some cases "grains" is detailed enough, while others, "corn," "wheat" or "soybeans" is needed.

(a) New Waterways. Identify commodity types primarily by interviews of shippers and by resource studies. Interviews will identify primarily the benefit potentials of a shift of mode; resource studies will identify primarily the benefit potentials of shifts in origin-destination and in new movements.

(b) Existing Waterways. Identify commodity types primarily by analysis of data on existing use of the waterway segment under study; e.g., data from the Performance Monitoring System (PMS) and the Waterborne Commerce Statistical Center (WCSC).

(2) Step 2--Identify the Study Area. The study area is the area within which significant project impacts are incurred. The origins and destinations of products likely to use the waterway are normally included in the study area, broken out by river segments.

(3) Step 3--Determine Current Commodity Flow. Gather current data for commodity movements between origin-destination pairs susceptible to waterway movement as well as for commodities currently transported by waterway.

(a) New Waterways. Identify the total tonnage that could benefit from using the waterway. Obtain this information primarily by interviews of shippers. For benefits from shifts in origin and destination and from new movements, care must be taken to identify whether such movement would be likely to occur if waterway transportation were available; base this primarily on interviews. Give particular attention to delivered price from substitute sources in the case of benefits from shifts in origin and destination, and to resource and market analysis in the case of benefits from new movements. Assess current transportation costs in the area.

(b) Existing Waterways. Identify uses beyond the existing use of the waterway to identify commodities that might use the waterway in response to a reduced transportation charge.

(4) Step 4--Determine Current Costs of Waterway Use. Determine current costs of waterway use for all the tonnage identified in step 3. Include in the waterway transportation cost

the full origin-to-destination costs, including handling, transfer, demurrage, and prior and subsequent hauls for the tonnages identified in step 3. Consider the effect of seasonality on costs. In calculating the cost of prior and subsequent hauls, care must be taken to avoid inappropriate aggregations and averaging of the costs of movements in situations in which there is a wide geographic dispersion in ultimate origins and/or destinations, as in the case of grain traffic.

(a) **New Waterways.** The current cost of the proposed waterway use represents the with project condition; there are no without project costs for waterway transportation.

(b) **Existing Waterways.** Construct two arrays, one representing the without project and one the with project condition. The difference between the two arrays reflects the reduction in current delays and any gains in efficiencies resulting from the alternative under consideration.

(5) **Step 5--Determine Current Cost of Alternative Movement.** Determine the current cost of alternative movement for all the tonnages identified in step 3. The cost includes the full origin-to-destination costs, including costs of handling, transfer, demurrage, and prior and subsequent hauls. Consider the effect of seasonality on costs. In calculating the costs of gathering or distribution prior or subsequent to the primary line haul, care must be taken to avoid inappropriate aggregations and averaging of the costs of movements in situations in which the ultimate origins and/or destinations are widely dispersed, as the case of grain traffic. This procedure uses price data when available as a proxy for the long-run costs of movement by other modes. This step, combined with steps 3 and 4, generates a first approximation of the demand schedule for waterway transportation given (1) the costs of transportation by alternative modes, (2) current levels of production, and (3) the distribution of economic activity.

(a) **New Waterways.** In the case of rail movements, use the prevailing rate actually charged for moving the traffic to be diverted to waterways. For traffic induced by the waterway construct the rail rate as in step 5b.

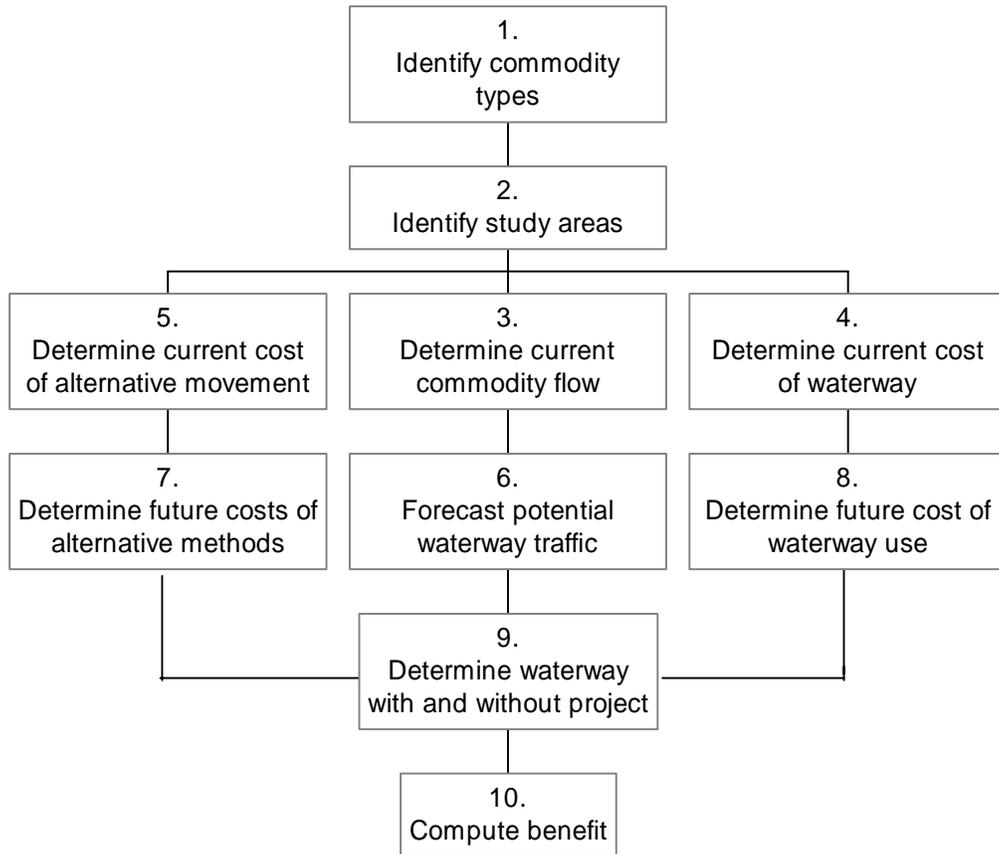


Figure E- 1 Inland Navigation Benefit Evaluation Procedure

(b) Existing Waterways. Use rate and other price data when available to estimate the cost of movement by alternative modes. In the case of rail movements, if the rate for that movement is not now used, use prevailing rates that are (1) competitive, and (2) for movements similar to the individual move that would occur without the project. Avoid the use of paper rates, i.e., rates at which no significant amount of traffic is actually moved. A rate is “competitive” to the extent that it is for traffic for which there is intra modal or intermodal competition within the relevant markets. In identifying a “similar” movement, the factors considered may include geographic location, degree of use, characteristics of terrain, backhaul, contract division, seasonality, ownership of rolling stock, and physical rail connection to the shipper. It is the responsibility of the analyst to select rates that, in his or her view, best represent the long-run marginal costs of the movement. Cost estimates for particular movements may be useful in selecting the rate or rates that best meet the criteria of competitiveness and similarity. If more than one competitive and similar rate is identified, an average may be used. Assume that all water-compelled or water-competitive rates are competitive and similar.

(6) Step 6--Forecast Potential Waterway Traffic by Commodity. Develop projects of the potential use of the waterway under study for selected years from the time of the study until the end of the project life, over time intervals not to exceed 10 years. Document commodity projects for the commodity groups identified in step 3.

(a) The usual procedure for constructing commodity projections is to relate the traffic base to some type of index over time. Indices can be constructed by many different methods, depending on the scope and complexity of the issue under consideration and the availability of data and previous studies.

(b) Generally, OBERS (now BEA) projections are the demographic framework within which commodity projections are made. There are many instances, however, in which a direct application of OBERS-derived indices is clearly inappropriate. Frequently, there are circumstances that distort the relationship between waterway flows and the economy described by OBERS. Even when total commodity flows can be adequately described through the use of indices derived from OBERS projections, factors such as increasing environmental concerns, changes in international relations and trade, resource depletion, and other factors, may seriously alter the relationship between waterway commodity flows and the economy described by OBERS.

(c) If problems of the type described in paragraph b. above are identified, undertake independent studies to ascertain the most appropriate method of projecting commodity flows. The assessment of available secondary data forms the basis of these independent studies. These data will assist in delineating the bounds on the rate of increase for waterway traffic, as well as facilitate a better understanding of the problem. Supplement these data with (1) interviews of relevant shippers, carriers, and port officials; (2) opinions of commodity consultants and experts; and (3) historical flow patterns. Commodity projections can then be constructed on the basis of the results of the independent studies.

(d) Generally, specific commodity studies are of limited value for projections beyond approximately 20 years. Given this limitation, it is preferable to extend the traffic projections to the end of project life through the use of general indices on a regional and industry basis. Such indices can be constructed from the OBERS projections or other generally accepted multi-industry and regional models.

(7) Step 7--Determine Future Cost of Alternative Modes.

(a) Future cost per unit of each commodity will normally be the same as current cost. As stated previously, the without-project condition normally assumes that the alternative modes have sufficient capacity to move traffic at current rates unless there is specific evidence to the contrary. This step combined with step 6 provides a time series of demand schedules specific to

a particular commodity origin-destination pattern. Address the projection of any change in future prices as indicated below.

(b) A future rate is a prevailing rate as defined in step 5. It reflects exclusively a shift in rates because of projected changes in the volume of shipments on a given mode or a shift from one mode to another (e.g., from rail to pipeline). To support such a shift, show that the increase in volume is likely to lead to a change in rate; do not assume, for example, that an increase in volume of traffic of a commodity from one area to another will automatically ensure a more favorable high-volume rate.

(8) Step 8--Determine Future Cost of Waterway Use. Two separate analyses make up this step. First, analyze the possibility of changes in the costs of the waterway mode for future years for individual origin-destination commodity combinations. Second, analyze the relationship between waterway traffic volume and system delay. Do this second analysis in the context of the total volume of traffic on the waterway segments being studied for with and without project conditions. This analysis will generate data on the relationship between total traffic volume and delay patterns as functions of the mix of traffic on the waterway; it may be undertaken iteratively with step 9 to produce a "best estimate."

(9) Step 9--Determine Waterway Use, With and Without Project. At this point the analyst will have a list of commodities that potentially might use the waterway segment under study, the tonnages associated with each commodity, and the costs of using alternate modes and the waterway, including system delay functions with and without the project over time. Use this information to determine waterway use over time with and without the project based upon:

(a) A comparison of costs for movements by the waterway and by the alternative mode, as modified by paragraph E-9d(7).

(b) Any changes in the cost functions and demand schedules comparing (1) the current and future without project conditions and (2) the current and future with project condition. Conceptually, this step should include all factors that might influence a demand schedule; e.g., impact of uncertainty in the use of the waterway; ownership of barges and special equipment; level of service; inventory and production processes; and the like. As a practical matter, the actual use of a waterway without a cost savings or nonuse of a waterway with a cost savings depends on the knowledgeable judgment of navigation economists and industry experts.

(c) Account for the "phasing in" or "phasing out" of shifts from one mode to another in the analysis. Base diversion of traffic from other modes to the waterway, and from the waterway to other modes as the waterway becomes congested, on expected rate savings as adjusted by any other factors affecting the willingness of users to pay or the speed of the response mechanism to changes in the relative attractiveness of alternative modes. Specifically, determine diversions

from congested waterways in the order of the willingness of users to pay for waterway transportation. Divert users with the lowest willingness to pay first.

(d) Consideration must also be given to potential shifts in origin and destination pair due to increased costs of future without project waterway use. Potentially, increased waterway costs less than alternate mode costs may cause some traffic to divert to different origin – destination pairs. This would be the case for commodities with relatively elastic demand for waterway transportation. In these cases the analysis must be expanded to address this shift in origin-destination pair.

(10) Step 10--Compute NED Benefits. Once the tonnage moving with and without a plan is known and the alternative costs and waterway costs are known, total NED navigation benefits can be computed at the applicable discount rate:

(a) For cost reduction benefits, the benefit is the reduction in cost of using or operating the waterway; the cost of the alternative mode is a factor in determining whether the tonnage would move both with and without the project but is not a factor in computing benefits. Cost reduction benefits are generally limited to evaluation of existing waterways. The benefits for current and future cost reductions are reflected by the difference in waterway costs (steps 4 and 8) with and without the project. Compare waterway cost data (steps 4 and 8) with the alternative mode costs (steps 5 and 7) in order to determine the traffic flow by mode over time (steps 3 and 6).

(b) For shift of mode benefits, the benefit is the reduction in costs when the alternative movement is compared with the waterway. These benefits apply to new or existing waterways. Cost differences between the alternative mode and the waterway mode (step 5 - step 4 x step 3 and step 7 - step 8 x step 6) will identify the shift of mode benefits over time.

(c) For shift or origin-destination benefits and new movement benefits, the benefit is the value of the delivered product less the transportation and production costs with the project. The transportation cost without the project (assuming the with project movement would have occurred) is a factor in categorizing these benefits but is not a factor in computing them. The upper limit of these benefits can normally be determined by computing reduction in transportation charges achieved by the project. These can be a reduction in waterway costs (steps 4 and 8) with and without the project or changes in mode (steps 5, 4, 7 and 8).

e. Evaluation Procedure: Problems in Application.

(1) Changes in System Delays. Differences in system delays resulting from project alternatives are difficult to compute. An assessment of system delays within the state of the analytic art is necessary for a comprehensive benefit analysis. Delays at all points in the system should be analyzed only to the extent that project formulation and evaluation are sensitive to such

refinements, and to the extent that the state of the art permits accurate refinement of the estimate. Appropriate proxy measures may be used in lieu of individual assessments at each element in the system when evaluating system delays.

(2) Interaction of Supply and Demand Schedules. The entire evaluation procedure (paragraph E-9d.) is based on an assumption that the supply and demand schedules are independent; but in fact, they are not. This problem is most acute when considering the variance in delays at high levels of lock utilization. Essentially, shippers will face not an expected delay value but rather a highly uncertain delay value. Shippers' response to uncertainty (as reflected in the demand schedule) may be quite different from their response to an expected shipping cost (as reflected by the intersect of the supply and demand schedules).

(3) User Fee Collection. The incremental collection of user charges, fees, or taxes is not a NED benefit. It is a transfer of resources between the private and public sectors of the economy, manifesting itself as resources committed to the proposed navigation system. The increased collection of these charges, fees, or taxes is therefore considered a decrease in the public sector's contribution to the proposed system.

(4) Sensitivity Analysis. Project benefits are calculated on the basis of "the most probable" with project and without project conditions. However, risk and uncertainty should be addressed in the analysis of NED benefits and costs. In particular, major uncertainty exists in the proper measure of savings to shippers, namely the difference in long-run marginal costs. To the extent that rates or other prices vary from long-run marginal costs, savings to shippers will contain a component of transfers varying from real resource savings. This element of uncertainty should always be identified or acknowledged in estimates of benefits. In dealing with uncertainty, three techniques may be used: establishing consistent sources of data, expanding the data-gathering, and estimating the range of benefits. Use the following two specific approaches to implement the third technique, and display the results in terms of their effects on project benefits in tabular form in the project report.

(a) Pre-specified sensitivity analysis. Compute the following and include it in the report:

(1) Current tonnage, new waterway. For new waterways, compute benefits for the recommended alternative on the basis of current phased-in tonnage (steps 3 and 9c), current rates, and current fleet characteristics.

(2) Current rates, fleet. For both new and existing waterways, compute benefits for the recommended alternative on the basis of tonnage over time, current rates (step 3), and current fleet characteristics.

(3) Growth beyond 20-year period. Compute the benefits for alternatives carried forward for final display assuming no growth in tonnage or changes in fleet characteristics beyond 20 years in the future.

(4) Interest rate. For projects whose authorized discount rate is different from the current discount rate, compute annualized benefits using the current rate.

(5) User charges. Estimate the effect on benefits of full recovery through user charges.

(b) Other. In addition, the report should contain such other sensitivity analyses as are necessary to meet the objective of a clear, concise report presenting a range of benefit levels that represent data and assumptions about which reasonable persons might differ. The following discussion summarizes key data sources, including problems in their use.

(1) Interviews. Interview data may be used in steps 1 through 8. (Use only forms approved by the Office of Management and Budget.) Collect data not available from secondary sources by personal interviews. Use statistically sound techniques for selecting the interview sample and for devising the questions. The questionnaire and a summary of responses should be compiled and displayed in the final report in such a way as to prevent the disclosure of individual sources. Describe the errors and uncertainty inherent in the sampling methods and responses.

(2) Other. The basic organizational source for systematically collected waterway data is the Office of the Chief of Engineers.

f. Report and Display Procedures. Clear presentation of study results, as well as documentation of key input data assumptions and steps in the analysis, will facilitate review of the report. Tables E-2 through E-5 are suggested presentations for all reports that include navigational objectives. In addition to detailed data on the NED benefits of a project, summary tables may present useful information on other aspects of the project such as its impact on commodity flows, on other modes of transportation, and on the location of economic activity. (See tables E-2 to E-5).

E-10. NED Benefit Evaluation Procedures: Transportation, Deep-Draft Navigation

a. Purpose. This section presents the procedure for measuring the beneficial contributions to national economic development (NED) associated with the deep-draft navigation features of water resources plans and projects. Deep-draft navigation features include construction of new harbors and channels and improvements to existing or natural harbors on the seacoasts to meet the requirements of ocean going and Great Lakes shipping. Harbor improvements include such structural projects as the construction of breakwaters and jetties to protect exposed harbors and the provision of entrance channels, interior channels, turning basins, and anchorage areas. Nonstructural deep-draft measures include improved traffic management and pilotage

regulations. The Institute of Water Resources is currently developing risk-based analysis procedures for deep-draft navigation studies. Unlike the current risk-based flood damage model, the navigation model will integrate both benefit uncertainty, related to fleet and commodity forecasts and vessel operating costs, with cost uncertainty related to dredging and disposal costs. Districts are expected to continue to use risk and uncertainty techniques in all navigation studies, at least in the form of sensitivity analyses, before field release of the risk-based navigation models.

b. Conceptual Basis. The basic economic benefits from navigation management and development plans are the reduction in transportation costs for commodities and the increase in the value of output for goods and services. Specific transportation savings may result from the use of larger vessels, more efficient use of large vessels, more efficient use of existing vessels, reductions in transit time, lower cargo handling and tug assistance costs, reduced interest and storage costs such as from an extended navigation season, and the use of water transportation rather than an alternative land mode. Principal direct benefits are categorized as follows:

(1) Cost Reduction Benefits. If there is no change in either the origin or destination of a commodity, the benefit is the reduction in transportation costs of quantities of the commodity that would move with and without the plan resulting from the proposed improvement. Cost reduction benefits apply in the following situations:

Table E- 2 Summary of Annualized NED Benefits For Alternative Projects

(Applicable discount rate: ____)

	Alternatives			
	1	2	3	X
Navigation benefits:				
Cost reduction benefits
Shift of mode benefits.....
Shift in origin-destination benefits
New movement benefits
Total navigation benefits
Other purpose benefits
Total project benefits
Project costs.....
Net benefits

Table E- 3 Time Phasing of NED Benefits For Recommended Project¹
(Applicable discount rate: _____)

	Time Period ¹						
	Base Years Specify	Decade ²					AAE ³
		1	2	3	4	5	
Navigation benefits:							
Cost reduction benefits:							
Traffic volume (10 ³ tons/year)
Benefits
Shift mode benefit:							
Traffic volume (10 ³ tons/year)
Benefits
Shift in origin-destination benefit:							
Traffic volume (10 ³ tons/year)
Benefits
New movement benefit:							
Traffic volume (10 ³ tons/year)
Benefits
Total navigation benefits
Other purpose benefits
Total project benefits

¹Comparable tables may be made for all detailed alternatives.
²Value for last year of decade. ³Average annual equivalent.

Table E- 4 Waterway Traffic and Delays, Without Project Condition

	Current Year	Base Year	Time Period ¹					
			Decade					AAE ²
			1	2	3	4	5	
Waterway traffic (10 ³ tons/year).....
(By major commodity group).....
Delays (minutes/tow):								
Study site
Critical constraints
Total system
Delays (dollars/ton):								
Study site
Critical constraints
Total system

¹Value for last year of decade.
²Average annual equivalent.

Table E- 5 Waterway Traffic and Delays, With Recommended Project¹
 (Applicable discount rate: ____)

	Time Period ¹						
	Base Year	Decade ²					AAE ³
		1	2	3	4	5	
Waterway traffic (10 ³ tons/year).....
(By major commodity group).....
Delays (minutes/tow):
Study site
Critical constraints
Total system.....
Delays (dollars/ton):
Study site
Critical constraints
Total system.....

¹Comparable tables may be made for all detailed alternatives.
²Value for last year of decade.
³Average annual equivalent benefits.

(a) Same commodity, origin-destination, and harbor. This situation occurs where commodities now move or are expected to move via a given harbor with or without the proposed improvement.

(b) Same commodity and origin-destination, different harbor. This situation occurs where commodities that are now moving or are expected to move via alternative harbors without the proposed improvement would, with the proposed plan, be diverted through the subject harbor. Cost reduction benefits from a proposed plan apply to both new and existing harbors and channels.

(c) Same commodity and origin-destination, different mode. This situation occurs where commodities that are now moving or are expected to move via alternative land modes without the proposed improvement would, with the proposed plan, be diverted through the subject harbor or channel. Cost reduction benefits from a proposed plan apply to both new and existing harbors and channels. Compute cost reduction benefits for alternate modes in accordance with methodology described in paragraph E-9b.(3).

(2) Shift of Origin Benefits. If there is a change in the origin of a commodity because of a proposed plan but no change in destination, the benefit is the reduction in the total cost of producing and transporting quantities of the commodity that would move with and without the plan.

(3) Shift of Destination Benefits. If there is a change in destination of a commodity because of a proposed plan but no change in origin, the benefit is the change in net revenue to the producer for quantities that would move with and without the plan.

(4) Induced Movement Benefits. If a commodity or additional quantities of a commodity are produced and consumed as the result of lowered transportation costs, the benefit is the value of the delivered commodity less production and transportation costs. More precisely, the benefit of each increment of induced production and consumption is the difference between the cost of transportation via the proposed improvement and the maximum cost the shipper would be willing to pay. Where data are available, estimate benefits for various increments of induced movement. In the absence of such data, the expected average transportation costs that could be borne by the induced traffic may be assumed to be half way between the highest and lowest costs at which any part of the induced traffic would move.

c. Planning Setting. The planning setting consists of the physical, economic, and policy conditions that influence and are influenced by a proposed plan or project over the planning period. The planning setting is defined in terms of a without project condition and with project condition.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist over the planning period in the absence of a plan, including any known change in law or public policy. It provides the basis for estimating benefits for alternative with project conditions. Assumptions specific to the study should be stated and supported. The basic assumptions for all studies are:

(a) Nonstructural measures within the authority and ability of port agencies, other public agencies, and the transportation industry determine changes that are likely to occur. These measures consist of reasonably expected changes in management and use of existing vessels and facilities on land and water. Examples are lightering, tug assistance, use of favorable tides, split deliveries, topping-off, alternative modes and ports, and transshipment facilities.

(b) Alternative harbor and channel improvements available to the transportation industry over the planning period include those in place and under construction at the time of the study and those authorized projects that can reasonably be expected to be in place over the planning period.

(c) Authorized operation and maintenance is assumed to be performed in the harbors and channels over the period of analysis unless clear evidence is available that maintenance of the project is unjustified.

(d) In projecting commodity movements involving intermodal movements, sufficient capacity of the hinterland transportation and related facilities, including port facilities, is assumed unless there are substantive data to the contrary.

(e) A reasonable attempt should be made to reflect advancing technology affecting the transportation industry over the period of analysis. However, the benefits from improved technology should not be credited to the navigation improvement if the technological change would occur both with and without the plan.

(2) With Project Condition.

(a) The with project condition is the one expected to exist over the period of analysis if a project is undertaken. Describe the with project condition for each alternative plan. Since benefits attributable to each alternative will generally be equal to the difference in the total transportation costs with and without the project, the assumptions stated for the without project condition are used to establish the with project condition for each alternative.

(b) Management practices that are sometimes within the discretion of a public entity and are therefore subject to change in the with project condition include traffic management, pilotage regulations, addition of berths, and additions or modifications to terminal facilities.

(3) Display. In the planning report, present the derivation and selection of with and without project conditions in accordance with the following guidelines:

(a) State the assumptions specific to the study.

(b) Specify the significant technical, economic, environmental, social, and other elements of the planning setting to be projected over the period of analysis. Discuss the rationale for selecting these elements.

(c) Present the with and without project conditions in appropriate tabular and graphic displays with respect to the elements selected above and as exemplified by Tables E-6, E-8, and E-9.

d. Evaluation Procedures: General. Use the following steps to estimate navigation benefits. The level of effort expended on each step depends upon the nature of the proposed improvement, the state-of-the-art for accurately refining the estimate, and the sensitivity of

project formulation and evaluation to further refinement. A flow chart of navigation evaluation procedures is shown in Figure E-2. Additional detailed support material for conducting NED evaluation may be found in Deep Draft Navigation (IWR Report 91-R-13, October 1987). This manual provides an expanded description of benefit evaluation procedures for all commercial navigation projects not a part of the inland waterways system. It also provides sources of information to identify and estimate future project use. Policy statements in this regulation take precedence in any apparent contradiction suggested by information contained within this IWR report.

(1) Step 1--Determine the Economic Study Area. Delineate the economic study area that is tributary to the proposed harbor and channel improvement. Assess the transportation network functionally related to the studied improvement, including the types and volumes of commodities being shipped, in order to determine the area that can be served more economically by the improvement. Include foreign origins and destinations in this assessment. Consider diversion from or to adjacent competitive harbors as well as distribution via competing modes of transport. It should be recognized that the lines of demarcation for the economic study area are not fixed and that the area may expand or contract as a result of innovations or technological advances in transportation or production or utilization of a particular commodity. The economic study area is likely to vary for different commodities. Combinations of economic areas will result in a trade area delineated specifically for the improvement under study. However, in many cases, due to the close proximity of adjacent harbors to the proposed improvement, the economic study area may be the same as, or overlap with, such adjacent harbors. Therefore, the final delineation of the economic study area for a given improvement, should adequately discuss the trade area relative to adjacent ports and any commonality that might exist.

(2). Step 2--Identify Types and Volumes of Commodity Flow. To estimate the types and volumes of commodities that now move on the existing project or that may be attracted to the proposed improvement, analyze commerce that flows into and out of the economic study area. This analysis provides an estimate of gross potential cargo tonnage; the estimate is refined to give an estimate of prospective commerce that may reasonably be expected to use the harbor during the period of analysis in light of existing and prospective conditions. If benefits from economies of ship size are related to proposed deepening of the harbor, the analysis should concentrate on the specific commodities or types of shipments that will be affected. Thus, an historical summary of types and trends of commodity tonnage should be displayed. The considerations generally involved in estimating current volumes of prospective commerce are discussed in the following paragraphs.

(a) If the plan consists of further improvements to an existing project, statistics on current waterborne commerce will provide the basis for evaluation. For new harbors with no existing traffic, or for existing commodity movements that may be susceptible to diversion from adjacent

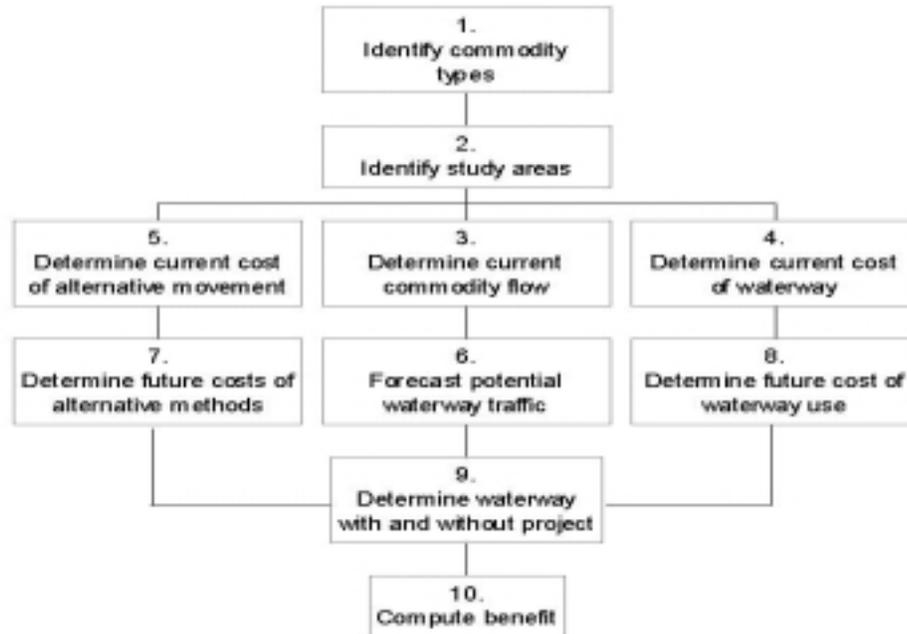


Figure E- 2 Deep-Draft Navigation Benefit Evaluation Procedure

harbors, basic information is collected by means of personal interviews or questionnaires sent to shippers and receivers throughout the economic study area. Secondary commercial data are usually available through State and local public agencies, port records, and transportation carriers. In the case of new movements, give attention of resource and market analyses.

(b) After determining the types and volumes of commodities currently moving or expected to move in the economic study area, it is necessary to obtain origins, destinations, and vessel itineraries in order to analyze the commodity types and volumes that are expected to benefit from the proposed improvement. Commodities that are now moving without the project but would shift origins or destinations with the project, as well as induced movements, should be segregated for additional analysis (see steps 5 and 6). A study should be made of various alternatives for the existing traffic and of new traffic susceptible to diversion from alternative harbors or other modes of transportation. The objective of such a study is to determine the type and volume of those commodities for which savings could be affected by movement via a proposed navigation improvement and the likelihood that such movements would occur. Cost reduction benefits sufficient to divert traffic from established distribution patterns and trade routes are navigation project benefits. In determining the likelihood of prospective commerce,

particular attention should be given to alternative competitive harbors in the case of new movements and to hinterland traffic. Elements of analysis of current tonnage include: size and type of vessel, annual volume of movements, frequency of movements, volume of individual shipments, adequacy of existing harbor and transportation facilities, rail and truck connections, and service considerations. Generally this prospective traffic is the aggregate of a large number of movements (origin-destination pairs) of many commodities; the benefit from the navigation project is the savings on the aggregate of these prospective movements.

(3). Step 3--Project Waterborne Commerce. Develop projections of the potential use of the waterway under study for selected years from the time of the study until the end of the project life, over time intervals not to exceed 10 years. Document commodity projections for the commodity groups identified in step 2.

(a) The usual procedure for constructing commodity projections is to relate the traffic base to some type of index over time. Indices can be constructed by many different methods, depending on the scope and complexity of the issue under consideration and availability of data and previous studies.

(b) Generally, Bureau of Economic Analysis (BEA), previously OBERS, projections are the demographic framework within which commodity projections are made. There are many instances, however, in which a direct application of BEA-derived indices is clearly inappropriate. Frequently, there are circumstances that distort the relationship between waterway flows and the economy described by BEA. Even when total commodity flows can be adequately described through the use of indices derived from BEA projections, factors such as increasing environmental concerns, changes in international relations and trade, resource depletion, and other factors, may seriously alter the relationship between waterway commodity flows and the economy described by BEA.

(c) If problems of the type described in paragraph (b) above are identified, undertake independent studies to ascertain the most appropriate method of projecting commodity flows. The assessment of available secondary data forms the basis of these independent studies. These data will assist in delineating the bounds on the rate of increase for waterway traffic, as well as facilitate a better understanding of the problem. Supplement these data with (1) interviews of relevant shippers, carriers, and port officials; (2) opinions of commodity consultants and experts; and (3) historical flow patterns. Commodity projections can then be constructed based on the results of the independent studies.

(d) Generally, specific commodity studies are of limited value for projections beyond approximately 20 years. Given this limitation, it is preferable to extend the traffic projections to the end of project life using general indices on a regional and industry basis. Such indices can be constructed from the BEA projections or other generally accepted multi-industry and regional

models. Describe projection methods selected in sufficient detail to permit a review of their technical adequacy.

(e) Sensitivity analysis of several levels of projections is used for the economic analysis. There may be high-level projection embodying optimistic assumptions and a low-level projection based on assumptions of reduced expectations. The high and low projections should bracket the foreseeable conditions. The third and fourth levels of projections can reflect the with- and without-project conditions based on the most likely estimates of the future. If a proposed plan would not induce commodity growth, one level of projection may be shown for both the with and without project conditions.

(f) The commodities included in the projections should be identified, if possible, according to the following waterborne modes: containerized, liquid bulk, dry bulk, break-bulk, etc. Projection-related variables include estimated value, density, and perishability. Imports, exports, domestic shipments, domestic receipts, and internal trade should also categorize the commodities. Projected tonnages by trade areas both with and without the project should be displayed at least for the study year, the base year, fifth year, tenth year, and then by decades over the period of the analysis.

(g) Most projections of waterborne commerce are static estimates of dynamic events; therefore, the projections should be sufficiently current to support the report conclusions.

(4) Step 4--Determine Vessel Fleet Composition and Cost.

(a) Vessel Fleet Composition. Key components in the study of deep-draft harbor improvements are the size and characteristics of the vessels expected to use the project. Present data on past trends in vessel size and fleet composition, and on anticipated changes in fleet composition over the project life. Use estimates of future fleet consistent with domestic and world fleet trends. Undertake studies to the extent necessary to determine the appropriate vessel fleet. The assessment of available secondary data forms the basis of the independent studies. Data may be obtained from various sources including the U.S. Department of Transportation (Maritime Administration), trade journals, trade associations, shipbuilding companies, and vessel operating companies, as well as forecasts collected and prepared by IWR. Determine the composition of the current and future fleet that would utilize the subject harbor with and without the proposed improvement. Provide adequate lead time for anticipated changes in fleet composition for vessels that are currently a small part of the world fleet. Size selection may vary according to trade route, type of commodity, volume of traffic, canal restrictions, foreign port depths, and lengths of haul. It may not be realistic to assume that the optimum size vessel is always available for charter; the preferred approach is a fleet concept that includes a range of vessels expected to call with and without the project. It is suggested that tabulations in the reports show composition of vessel fleets by deadweight tonnage for each type of vessel

beginning with the current fleet and by decades through the period of analysis. Historical records of trips and drafts of vessels calling at the existing project should also be displayed.

(b) Vessel Operating Costs. To estimate transportation costs, obtain deep-draft vessel operating costs for various types and classes of foreign and United States flag vessels expected to benefit from using the proposed improvement. Since vessel operating costs are not readily available from ocean carriers or from any central source, the Corps of Engineers, Water Resources Support Center, will develop and provide such costs on an annual basis for use in plan evaluation. Planners should determine to what extent these estimates of vessel costs must be modified to meet the needs of local conditions. Document and display selected vessel operating costs in the report.

(5) Step 5--Determine Current Cost of Commodity Movements. Determine transportation costs prevailing at the time of the study for all tonnage identified in Step 2. Transportation costs include the full origin-to-destination cost, including necessary handling, transfer, storage, and other accessory charges. Construct costs for the with and without project condition. The without project condition is based on costs and conditions prevailing at the time of the study. Transportation costs with a plan reflect any efficiencies that can be reasonably expected, such as larger vessels, increased loads, reduction in transit time and delays (tides), etc. Use competitive rates, rather than costs, for competitive movements by land (See paragraphs E-10b.(1)(c), E-9b.(5), and E-9d.(5)(b)). This concept also applies to Steps 6, 7, and 9 and elsewhere where a competitive movement by land is an alternative.

(6) Step 6--Determine Current Cost of Alternative Movement. Determine transportation costs prevailing at the time of the study for all tonnage identified in Step 2 for alternative movements. The cost includes the full origin-to-destination cost. Such alternatives include competitive harbors, lightering, lightening and topping-off operations, off-shore port facilities, transshipment terminals, pipelines, traffic management, pilotage regulations, and other modes of transportation. Consider competitive harbors with existing terminal facilities and sufficient capacities as possible alternatives for traffic originating in or destined to the hinterland beyond the confines of the harbor and for all other new commerce as well as all diverted traffic. Commerce with final origins and destinations within the confines of the study harbor is normally noncompetitive with other harbors and need not be considered for diversion unless unusual circumstances exist. Diversion of established commerce now moving through the existing harbor to or from the hinterland is dependent on many different cost and service factors; therefore, to ensure that all of these factors are included in the analysis, interviews, and consultations with shippers and receivers should be conducted prior to any determination concerning diversion of traffic. Factors to be considered in the analysis include transportation costs for both inland and ocean movement, handling and transfer charges, available service and schedules, carrier connections, institutional arrangements, and other related factors. In addition, for commodities with shifts in origins and destinations, as well as for new movements, collect data on the value of the delivered product as well as production and transportation costs for

shipments with the project. The specific data and method of collection will vary with the specific situation and the nature of the benefit.

(7) Step 7--Determine Future Cost of Commodity Movements. Estimate relevant shipping costs during the period of analysis and future changes in the fleet composition, port delays, and port capacity under the with and without project conditions for each alternative improvement under study. Base future transportation costs on the vessel operating cost prevailing at the time of the study. Additional data may be needed to analyze the relationship between total volume and delay patterns and the port capacity for the with and without project conditions for each alternative. Changes in costs due to the project should be identified and separated from changes due to other factors.

(8) Step 8--Determine Use of Harbor and Channel With and Without Project. At this point, the analyst will have a list of commodities that potentially might use the proposed improvement; potential tonnages of each commodity or commodity group; transportation costs for alternatives and for the proposed improvement; and present and future fleet composition with and without the proposed plan. To estimate the proposed harbor use over time, both with and without the project, compare costs, other than projects costs, for movements via the proposed plan and via each alternative. Analyze any changes in the cost functions and demand schedules in the current and future without condition and the current and future with condition. Conceptually, this step includes all factors that might influence a demand schedule. Determine the impact of uncertainty in the use of the harbor, the level of service provided, and existing and future inventories of vessels. Provide adequate lead time for adoption for vessels that are currently a small percentage of the world fleet.

(9) Step 9--Compute NED Benefits. Once the tonnage moving with and without a plan is known and the cost via the proposed harbor and via each alternative are known, compute total NED navigation benefits will be computed using the applicable discount rate.

(a) Cost Reduction Benefits.

(1) Traffic with same commodity, origin-destination, and harbor. For traffic now using the harbor or expected to use it, both with and without the proposed project, the transportation benefit is the difference between current and future transportation cost for the movement by the existing project (without project condition) and the cost with the proposed improvement (with project condition).

(2) Traffic with same origin-destination; different harbor. For commerce shifted to the proposed improvement from other harbors or alternatives, including future growth, the benefit is

any reduction in current and future costs when movement via the proposed improvement is compared with each alternative.

(3) Traffic with same commodity and origin-destination, different mode. For commerce shifted to the proposed improvement from other modes, the benefit is any reduction in current and future costs to the producer or shipper. (See paragraph E-10b(1)(c) when movement via the proposed improvement is compared with each alternative.)

(b) Shift of Origin Benefits. For commerce that originates at a new point because of the proposed improvement, the benefit is the difference between the total cost of producing and transporting the commodity to its destination with and without the plan.

(c) Shift of Destination Benefits. For commerce that is destined to a new point because of the proposed improvement, the benefit is the difference in net revenues to producers with and without the plan.

(d) Induced Movement Benefits. If a commodity or additional quantities of commodity are produced and consumed as a result of a plan, the benefit for each increment of induced production and consumption is the difference between the cost of transportation via the proposed improvement and the maximum cost the shipper would be willing to pay. To determine the maximum cost other shipper would be willing to pay, estimate how much of a price increase it would take to induce the producer to increase its output by each increment or how much of price decrease it would take to induce consumers to increase their consumption by each increment. In the absence of data suitable for incremental analysis, the expected average transportation costs that could be borne by the induced traffic may be assumed to be half way between the highest and lowest costs at which any part of the induced traffic would move.

e. Problems in Application.

(1) Multiport Analysis. This procedure calls for a systematic determination of alternative routing possibilities, regional port analyses, and intermodal networks that may require the use of computer modeling techniques. The data needed for such a determination are often difficult to obtain; therefore, interviews with knowledgeable experts will often have to be relied upon.

(a) The economic study area tributary to the proposed harbor project is likely to vary for different commodities because of differences in hinterland transportation costs and facilities, and presence of competing ports. The trade area for any given port must be defined in cognizance of trade areas for adjacent or competing ports.

(b) Potential reductions in transportation costs due to a proposed project result in transportation benefits with varying degrees of certainty. The certainty of the benefit is related to

the certainty that the commodity movements will take place, with benefits for existing movements most certain. Analysis of potential or prospective movements must consider competing ports, hinterland transportation, vessel itineraries, ultimate origins or destinations of commodities, and assess the certainty with which benefits will accrue.

(c) A port study must recognize the degrees to which the ships that call or might call at that port are part of a larger waterborne transportation system. Specifically, the characteristics of vessels and the composition of the vessel fleet are affected in varying degrees by changes in costs or conditions at one port. A proposed deepening at a particular port, for example, may have more effect on some ships calling there than others if the ships have different modes of operation. Some bulk carriers may be affected because only one other port is served, while container operations may not be much affected because several additional ports are served. The size and characteristics of ships expected to use a project shall be determined in light of the transportation systems in which they operate, as well as world and domestic trends in fleet composition.

(d) US ports operate in a system(s). A study that appropriately considers a port in isolation will be rare. In such a case the report shall document why systems considerations are not relevant.

(2) Ultimate Origins and Destinations. The procedure calls for an analysis of full origin-destination costs to determine routings as well as to measure benefits in some instances. Problems will arise in determining the ultimate origins and destinations of commodities and in determining costs. Therefore, the analyst should attempt to shorten the analysis to the most relevant cost items.

(3) Underkeel Clearance and Risk Analysis. The purpose of Corps of Engineers' underkeel design standards is to provide clearance between a ship's bottom and a channel's bottom, which minimizes the risk of grounding by a design vessel under design conditions in the design channel. That is, underkeel clearances are engineering judgment on the minimum amount of clearance to assure safety and do not necessarily reflect actual behavior. When ships appear to operate with substandard underkeel clearances, procedures for correct delineation of transportation costs and project benefits may seem ambiguous.

(a) The starting point in analysis is to develop an accurate picture of the existing conditions. Accurate information on operating practices is particularly important; without this, reasonable without-project and with-project conditions, and hence economic analysis, is not possible. Entering and departing vessel drafts in economic analyses shall reflect actual practices. Adherence to Corps' clearance standards shall not be assumed.

(b) Determine whether observed apparent deviations from underkeel clearance standards represent actual encroachments in the safety zone. Apparent encroachments may be due to ships' physical characteristics (e.g. size) and operating characteristics (e.g. speed, trim) which differ from the design ship's characteristics, or from navigation conditions (e.g., wave climate) less severe than the design conditions. Alternatively the apparent deviations may be due to use of favorable tides or lake levels, or to exploitation of actual channel depths which differ from authorized depths. Benefits shall be based on differences in transportation cost, taking into account without-project actual operating practices and with-project actual operating practices. Adjustments may be taken, as appropriate, to the extent that these practices themselves affect transportation costs (e.g., tidal delays, costs of reduced speed or changing trim).

(c) For cases where it is determined that encroachment in the safety zone is taking place, risk accepting behavior may be assumed. The following benefit evaluation logic will be used: Transportation firms will accept risk up until the point where the incremental revenue from accepting risk equals the incremental risk cost of doing so. Estimate the incremental revenue associated with navigation at successively deeper drafts (I. e. smaller clearances) for those ships which use the safety zone. Estimate the risk costs (e.g., probability weighted cost of grounding) for those ships. Equilibrium between incremental revenue and incremental risk cost may be assumed to occur at the actual operating drafts (clearances) of those ships. Benefits are the area under the incremental revenue curve and costs are the area under the incremental risk cost curve, between the without and with operating depths.

(4) User Fees. The Water Resources Development Act of 1986 enabled non-Federal interests, as a means of financing a harbor project's local cost share, to collect user fees from vessels. Non-Federal interests are not directed to use fees to finance the local cost share, but if a fee is used only the benefiting vessels may be assessed charges.

(a) At the time of feasibility studies it may not be known with certainty whether user fees will be charged. The with-project condition for economic analysis shall use planners' best appraisal regarding the likelihood of fees being assessed, taking into account the intentions of the non-Federal interest, practices at other ports, the willingness of vessels to pay user fees, and the competitiveness of alternative ports in light of fees at the project port.

(b) As a sensitivity, conduct an analysis using the alternative assumption.

(c) For cases with user fees, assess the effect of the fees on transportation rates and the levels of traffic at the project port, taking into account the type of use fee (e.g., ad valorem, lump sum, etc.). That portion of transportation charges to shippers that reflects user fees is credited as a benefit of the project. The fees are in effect a reimbursement of project costs which are otherwise accounted for in the benefit-cost analysis.

(5) Sensitivity Analysis. Districts are expected to use risk and uncertainty techniques in all deep draft navigation studies at least in the form of sensitivity analysis. The uncertainty in the estimates of critical variables should be analyzed. These variables specifically related to deep-draft navigation may be traffic projections, especially foreign shipments, fleet composition, and cost of commodity movements.

(6) Data Sources. The following discussion summarizes key data sources including problems in their use:

(a) Interviews. Collect data not available from secondary sources by personal interviews. (Use only interview forms approved by the Office of Management and Budget.) Display the questionnaire used and summary of responses in the project report in such a way that individual sources are not disclosed.

(b) Publications. Data concerning commerce in foreign trade, United States coastal shipping, and activities of U.S. flag vessels in foreign trade, together with limited data concerning the world fleet, are readily available from a number of Federal agencies, trade journals, and port publications. However, data concerning the foreign-flag fleet are often not regularly available in up-to-date form from sources in the United States. Principal governmental sources are the U.S. Army Corp of Engineers, the Maritime Administration and the Bureau of the Census. For more detailed background on world fleet trends, shipping outlooks, and vessel characteristics, available foreign literature must be carefully analyzed. A few of the available foreign ship registers and literature are listed below to illustrate the type of data available from foreign sources. Many of these sources are available through IWR.

- Lloyd's Register of Shipping, London (Annual).
- The Tanker Register, H. B. Clarkson (Annual).
- The Bulk Carrier Register, H. B. Clarkson (Annual).
- Shipping Statistics and Economics (and special reports), H. P. Drewry, London (Weekly).
- Fairplay International Shipping Journal (and special reports), London (Weekly).

f. Report and Display Procedures. Clear presentation of study results, as well as documentation of assumptions and steps in the analysis, will facilitate review of the report. Tables E-6 to E-9 are suggested. The number of displays will depend on the complexity of the study.

Table E- 6 Projected Vessel Fleet Size Distribution,^a

Ft. Channel Plan

(by Percentage)

Vessel size (D.W.T.)	Current ^b	Percentage of tonnage					
		Base Year ^c	Year 5	Year 10	Year 20	Year —	Year end
Total		With Project					
Total		Without Project					

Table E- 7 Typical Vessel Dimensions of Vessel Fleet

by Type and Deadweight Tonnage

Type	Vessel characteristics			
	DWT	Length	Beam	Draft, loaded

Table E- 8 Projected Commerce for Deep-Draft Traffic

Commodity ¹	Current Year ²	Base Year ³	Year 5	Year 10	Year 20	Year —	Year —	Year end	Average Annual
With project									
Without Project									

¹Commodities should be categorized by trade area.

²Study year.

³First year of project benefits.

Table E- 9 Projected Vessel Trips for Deep-Draft Traffic

Commodity ¹	Current Year ²	Base Year ³	Year 5	Year 10	Year 20	Year —	Year —	Year end	Average Annual
With project									
Without Project									

¹Commodities should be categorized by trade area.

²Study year. ³First year of project benefits.

g. New Waterways. Determine the origins and destinations primarily by interviews of shippers and by resource studies.

h. Existing Waterways. Determine origins and destinations by analysis of data on existing use of the waterway segment under study; e.g., PMS and WCSC traffic traced to its ultimate origin and destination.

E-11. NED Benefit Evaluation Procedure: Commercial Fishing

a. Purpose. This section provides procedural guidance for the evaluation of the national economic development (NED) benefits of water and related land resources plans to commercial fishing. These procedures apply to marine, estuarine, and fresh water commercial fisheries for both fish and shellfish.

b. Conceptual Basis.

(1) The NED benefits are conceptually measured as the change in consumers' and producers' surplus as a result of a plan. However, since proper measurement of these quantities ordinarily requires estimates of supply and demand elasticities, reasonable approximations may be obtained by the following methods:

(a) When no change in aggregate fish catch is expected as a result of a plan (perhaps because of an effective quota system), NED benefits may be measured as cost savings to existing fish harvests.

(b) When the fish catch is projected to change as a result of a plan, but the change is too small to affect market prices, a seasonally-weighted average of recent prices may be used to

value the without and with plan harvests. In this case, it may be convenient for computational purposes to break the total change in income into two parts: (a) the cost savings for the existing (without plan) catch; and (b) the change in net income associated with the incremental catch. This latter part may be measured as the change in total revenue due to the increased catch minus the change in total cost due to harvesting the increased catch.

(c) When the additional fish catch is expected to affect market prices, the change in net income may be estimated in two parts: (1) the cost savings for the existing, or without plan, catch; and (2) the change in net income associated with the incremental catch. The incremental gross revenue may be estimated by multiplying the change in catch by a price midway between expected without and with plan prices. The incremental cost of the harvest is then subtracted from the estimated incremental gross revenue.

(2) Harvest costs expected to vary between the with and without plan conditions should be analyzed.

(a) These include the cost of equipment ownership and operation; harvesting materials; labor and management; maintenance operation, and replacement. Examples of changed costs include reduced travel time, reduced travel time to safe moorage in storm conditions, reduced costs associated with more efficient or larger boats, reduced time awaiting favorable tides, damage reduction to vessels or facilities, reduced fish spoilage, and reduced maintenance expenditures. If costs associated with plan measures (e.g., dock costs, harbor facilities, etc.) are included in the plan cost analysis, exclude them from harvest costs.

(b) Value purchased input at current market prices. Value all labor, whether operator, hired or family at prevailing labor rates. Value management at 10 percent of variable harvest costs and interest at plan discount rates.

(c) Project current production costs to the selected time periods; any changes should reflect only changes in catch or physical conditions.

c. Planning Setting.

(1) Without Plan Condition. The without plan condition is the most likely condition expected to exist in the future in the absence of any of the alternative plans being considered. Several specific elements are included in the without plan condition:

(a) Habitat Condition. The biological resources consist of stocks of living resources subject to commercial fishing, any living resources ecologically related to the stocks, the migration pattern and reproduction rate of the stocks, and any physical characteristic of the environment essential to these living resources.

(b) The Institutional Setting. Existing and expected local, State, regional, national, and international policies and regulations governing the harvest and sale of the affected species, including the level of access to the fishery are included in the without plan condition. Other revisions of such policies and rules of the alternative plans being studied.

(c) Nonstructural Measures. The effects of implementing reasonably expected nonstructural measures. Nonstructural measures include prevention of pollution to the marine environment or relocation of shore facilities.

(d) Market Conditions. Information on the without plan situation includes the projected number of harvesters, the percentage of their time and capacity utilized, harvest technology, the markets in which they buy inputs, fishing efforts, probable harvests, harbors and channels utilized, ex-vessel price of harvests, and probable processing and distribution facilities. (See paragraph E-11c(1).) Project market conditions that are consistent with the projected biological and institutional conditions.

(2) With Plan Condition. The with plan condition is the most likely condition expected to exist in the future with a given alternative. The elements and assumptions included in the without plan condition are also included in the with plan condition. Special attention should be given to tracing economic conditions related to positive or negative biological impacts of the proposed plan.

d. Evaluation Procedure: General. Follow the steps described in the following paragraphs to estimate NED benefits to commercial fishing from water or related land resources plans. The level of effort expended on each step depends on the nature of the proposed project, the reliability of data, and the degree of refinement needed for plan formulation and evaluation (See Figure E-3). No specific risk-based procedures have been developed for commercial fishing evaluations. In studies where commercial fishing benefits constitute a significant portion of NED effects, FOAs are expected to perform, at a minimum, sensitivity analysis of key variables such as harvest costs, harvest rates and/or ex-vessel prices. FOAs should incorporate the key variables applicable to their specific study area in the risk-based analysis.

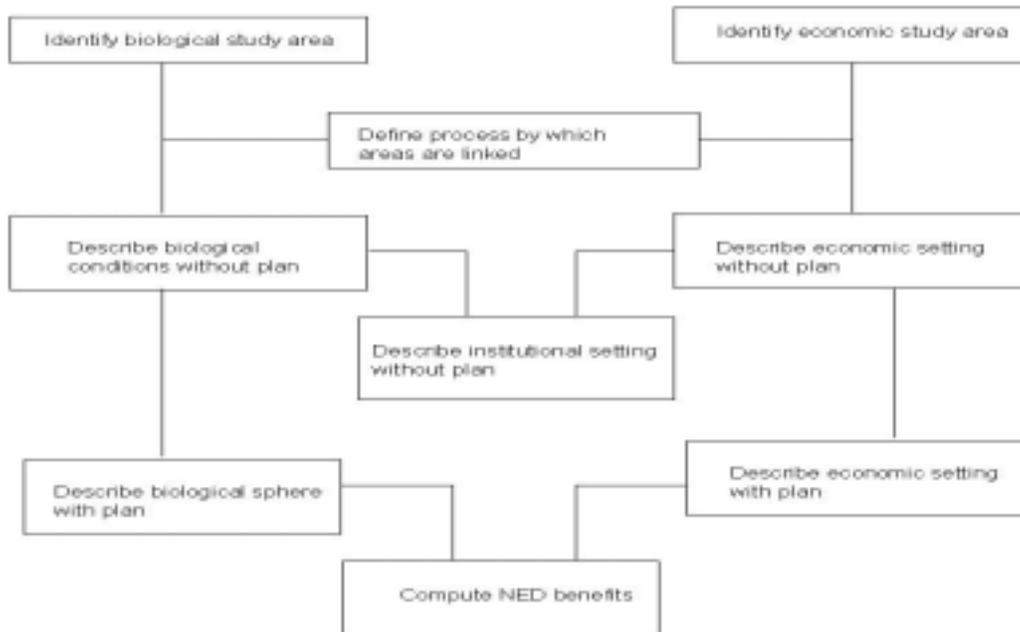


Figure E- 3 Commercial Fishing Benefits Evaluation Procedures

(1) Step 1: Identify the Affected Areas. Identify the areas which the proposed alternative plans will have biological impacts. Identify the areas in which the proposed alternative plans will have economic impacts. Describe the process by which the biological and economic study areas are linked.

(2) Step 2: Determine the Without Project Condition. Estimate the harvest of the relevant species in physical terms if a plan is not undertaken. Include a detailed description of the stock, including catch per unit of effort and whether the estimated harvest is at, or near, the range of absolute decreasing returns. Describe the most likely set of institutional conditions that would exist without a project. Estimate the total cost of harvesting the relevant species in each of the relevant years if a plan is not undertaken. For each relevant species, determine the current weighted ex-vessel price corrected for seasonal fluctuations.

(3) Step 3: Determine Conditions That Would Exist With an Alternative Plan. Estimate the harvest of the exploited stocks in each of the relevant years if an alternative plan is undertaken. Estimate the seasonally corrected current price of the harvested species and the total cost of harvesting in each of the relevant years if a plan is undertaken. This will require an understanding of the economics of entry and exit for the fish harvesting industry, as well as the effects of a change in harvest rates on the catch per unit of effort.

(4) Step 4: Estimate NED Benefits. Calculate the ex-vessel value of the harvest (output) for each alternative plan and for the without plan condition. Determine the harvesting costs, including non-project operation, maintenance, and replacement, for the level of catch (output) identified by each alternative plan and the without plan condition. Compute the NED benefit from an alternative plan as the value of the change in harvest less the change in harvesting cost from the without plan condition to the with plan condition.

e. Problems in Application.

(1) As the harvest rate of living stocks goes up, it is possible to reach a range in which the increases in annual harvesting efforts will actually produce a long-run decrease in the quantities harvested. In the absence of effective limits on harvesting, it is possible that commercial fishing will operate in this range of absolute decreasing returns. This is possible because individual operators will compare only their revenues and costs; they will not be concerned with the absolute productivity of the stock. This can be very important in determining NED benefits because what may appear to be a positive effect (something that encourages an increase in harvesting effort) may ultimately result in negative benefits (decreased total harvest and increased total cost per unit of harvest).

(2) The fact that fish are common, as opposed to private, property creates special problems in measuring NED benefits. Unless entry is restricted, excessive quantities of capital and labor may enter a fishery; that is, entry may continue until the "economic rent" from the living stock is dissipated. This excess entry will result in economic inefficiency in the utilization of fishery resources because the value of the resulting extra output will be less than the social opportunity cost of the entry. Some economic benefits may be realized but the total benefits will not be as large as they might be if entry were restricted. Although evaluation of this potential has been limited by the specification of the with and without plan condition in paragraph E-11c(1), three specific points are worth of separate mention.

(a) Transitory benefits. Because the benefits from harvesting open-access fisheries tend to be dissipated through entry of excess capital and labor, some NED benefits from commercial

fishing can be transitory. It will therefore be necessary to determine how many years these benefits will last and in what amounts for each year.

(b) Industry capacity. The excess capacity that will normally exist will make it difficult to obtain a proper estimate of changes in cost associated with changes in harvests. In some instances, idle boats will be available and the only additional costs will be operating costs. In other instances, vessels that are already operating will be able to harvest the extra catch without significant change in variable costs.

(c) Regulation. Because of the tendency of open-access fisheries to attract excess capital and labor which can deplete the stocks, most commercial fishing operations are currently subject to government regulations which stipulate the manner, time, place, etc., in which harvesting may take place. These stipulations usually result in harvesting activity that is not as economically efficient as it might be. These stipulations will therefore affect the size of NED benefits.

f. Data Sources.

(1) Data for annual harvests, demand, harvesting and processing costs, ex-vessel and other prices, physical production, biological modeling, models or information about management policies and regulations, and survey results are available from several Federal, State, and local government agencies, universities (especially those with sea grant programs), private organizations (such as industry groups, fishermen unions, or cooperatives), regional fisheries management councils, and international commissions or organizations.

(2) Initial contacts should be made with the National Marine Fisheries Service Regional Office, United States Coast Guard, State resource agencies having management or other responsibility for the fishery or resource in question, and all local or regional fishery councils, commissions, or institutes that have responsibility or jurisdiction or that are functioning within the area affected by the project. Fisheries dynamics biologists at universities or at National Marine Fisheries Service regional laboratories will be the best source of information on biological effects and their repercussion in the market.

g. Report and Display Procedures.

(1) Clear presentation of study results, as well as documentation of key input data assumptions and steps in the analysis, will facilitate review of the report. Table E-10 is a suggested method of data presentation. Its use will provide the reader with information on physical changes in output as well as value.

Table E- 10 Commercial Fishing Benefits

Benefit	Years		
	1	2	3
(1) Change in output.....
(2) Value of change in output (line 1 times expected price).....
(3) Change in costs.....
(4) NED benefit (line 2 minus line 3).....

(2) Because the benefits are broken down into annual flows, it will be possible to determine if and when the open access nature of commercial fishing will lead to a dissipation of any NED benefits provided by the project.

E-12. Navigation: Small Boat Harbors.

a. Introduction. Small boat harbor projects consist of Federal features (e.g. channels, breakwaters), usually in combination with non-Federal features (e.g. docks, ramps, berthing or mooring areas, dredging). Project outputs are enhanced access to recreational boating and sport fishing opportunities, and commercial fishing activities. Benefit estimation for recreation boating and sport fishing is conceptually no different than for other forms of recreation, and any benefit estimation method may be employed as long as it reflects NED criteria. Charter fishing craft, head boats and similar recreation oriented commercial activities are considered commercial vessels for cost allocation purposes by law. Provided commercial recreation activities are evaluated based on changes in net income to the owner/operator, project output will be considered commercial navigation benefits. This change in net income measure of benefits is appropriate only for existing vessels currently using harbor facilities.

b. Recreational Boating. Section VII of this appendix identifies three evaluation methods for recreational boating: travel cost, contingent valuation (survey method) and unit day values. All are acceptable for evaluating boating recreation benefits. The unit day value method is applicable subject to restrictions (see paragraph E-48b.(4)(a).). The travel cost method employs expenditures associated with travel to and use of a resource as input data in determination of willingness to pay schedules. The contingent valuation method is a survey approach for determining willingness to pay. It can be useful for a wide variety of evaluation problems, and can be particularly applicable in valuing changes in quality (e.g. improved access in and out of harbor due to provision of breakwater) where changes in the scale of a project are not substantial.

Unit day values will ordinarily be chosen from the range of general recreation values (General Recreation or General Fishing and Hunting) although selection from the range of specialized recreation values (Specialized Fishing and Hunting and Specialized Recreation other than Fishing and Hunting) will sometimes be acceptable when participation in specialized activities is documented. Reduction of damage to boats and facilities may be a component of benefits. If damage reduction benefits are estimated, care should be taken to avoid double counting of benefits if other benefit estimation techniques are also used.

c. Commercial Fishing. Paragraph E-11 states that changes in net income to fish harvesters or boat operators is the appropriate measure of NED benefits. Two considerations, the habitat condition and the institutional setting, must be analyzed in planning reports. Reduction of damage to boats and facilities is frequently a component of commercial fishing benefits, and may apply as well to recreational boating. Reduced damages may be a part of the net income analysis or it may proceed as a separate analysis (e.g. damage reduced to public facilities not included in fish harvester's net income). It is frequently convenient to treat this damage on a probabilistic basis, i.e. product of probability of occurrence times dollar value of damage.

E-13. Federal and Non-Federal Participation.

a. Harbors and Waterways. Cost sharing is as modified by the Water Resource Development Act of 1986 (Public Law 99-662), as amended.

(1) Studies, Planning, Engineering, and Design. See Table E-11.

Table E- 11 Navigation, PED

<u>Non-Federal Share: Studies, Preconstruction Engineering and Design (PED)</u>			
<u>Pre-construction Work</u>	<u>Commercial Navigation</u>	<u>Recreational Navigation</u>	<u>Inland Waterways</u>
Reconnaissance Study	-0-	-0-	-0-
Feasibility Study	50%	50%	-0-
Preconstruction Engineering and Design	25%	25%	-0-

(a) Section 105(a) of Public Law 99-662 specifies a 50 percent non-Federal cost share for all feasibility studies, except for studies of "inland waterway system" improvements. The law

does not define that system, and current Army policy is to limit the exemption to the waterways subject to waterway fuel taxes.

(b) Section 105(c) requires cost sharing of post-feasibility pre-construction engineering and design. Preconstruction engineering and design (PED), is all engineering, design, and planning, if any, accomplished after the feasibility phase. All preconstruction engineering and design for all projects authorized in or subsequent to Public Law 99-662 is to be cost shared at 75 percent Federal and 25 percent non-Federal.

(2) Construction, Operation, and Maintenance. Sections 101, 102 and 103(c)(4) of Public Law 99-662 specify the cost sharing for commercial harbor, inland waterway and recreational navigation projects.

(a) Harbors, General Navigation Features. (See Table E-12) Section 101 specifies cost shares for general navigation features that vary according to the channel depth: (20 feet or less, greater than 20 feet but not more than 45 feet, and greater than 45 feet). For general navigation features not changing depths, such as breakwaters, locks, channel widening, etc., cost sharing shall be at the percentage-applicable to the authorized or existing depth, whichever is greater. The percentage applies as well to mitigation and other work cost shared the same as general navigation features. The cost share is paid during construction. Section 101 also requires the project sponsor to pay an additional amount equal to 10 percent of the total construction cost for general navigation features. This may be paid over a period not to exceed thirty years, and LERRs may be credited against it.

(b) Waterways. Section 102 of PL 99-662 and subsequent legislation specify 100 percent Federal operation and maintenance on those parts of the inland waterways system paying fuel taxes. Section 102 also directs that 50% of the cost of construction is to come from the general fund of the treasury and 50% from the Inland Waterways Trust Fund. All other inland waterway construction is cost shared as commercial or recreational harbors depending on purpose. See the tables below, [ER 1165-2-131](#), and Appendixes F and G for cost sharing percentages. If a project crosses cost share depth ranges, use each applicable range to determine overall cost share. Overdepth dredging is a maintenance strategy; cost sharing is at the nominal depth.

Table E- 12 Navigation, Construction and O&M

<u>Non-Federal Share, Construction, Operation, and Maintenance</u>				
<u>Commercial Navigation</u>			<u>Recreation</u>	<u>Inland</u>
<u>to 20'</u>	<u>>20 to 45'</u>	<u>>45'</u>	<u>Navigation</u>	<u>Waterways</u>

<u>Construction</u>					
Gen'l Nav.Features	10+10% <u>1/</u>	25+10% <u>1/</u>	50+10% <u>1/</u>	50%	-0-
Aids to Navigation	-0-	-0-	-0-	-0-	-0-
Service Facilities	100%	100%	100%	100%	-0-
LERR	100%	100%	100%	100%	-0-
<u>Operation & Maint.</u>					
Gen. Nav. Features (incl mitigation)	-0-	-0-	50%	100%	-0-
Aids to Nav.	-0-	-0-	-0-	-0-	-0-
Service Facilities	100%	100%	100%	100%	100%
LERRD	100%	100%	100%	100%	-0-
<u>1/ Ten percent (10%) post-construction contribution is reduced by credit amount for LERR.</u>					

b. Recreation. Section 103(c)(4) sets the non-Federal share of construction cost at 50 percent and O&M cost at 100 percent for recreation projects. For navigation projects these cost shares apply to separable recreation costs and costs allocated to recreation.

c. Special Navigation Programs. (See Table E-13.) Cost sharing is in accordance with program authorizations as amended by Public Law 99-662. Section 940 of Public Law 99-662 shifts all responsibility and costs for operation and maintenance of shore damage mitigation projects to a non-Federal public agency. Section 939 of Public Law 99-662 increases Corps authority to recover the cost of removing wrecks and obstructions from vessel owners, lessees, or operators.

d. Land Creation or Enhancement at Inland Harbors. Federal participation in inland waterway harbor improvements under the Civil Works program is not warranted when: (1) resale or lease of the lands used for disposal of excavated material can recover the cost of the improvements; or (2) the acquisition of land outside the navigation servitude is necessary for construction of the improvements, or would permit local interest to control access to the project. The latter case is assumed to exist where the proposed improvement consists of a new channel cut into land.

Table E- 13 Navigation, Special Navigation Programs

<u>Non-Federal Share, Special Navigation Programs</u>

<u>Program</u>	<u>Study</u>	<u>Construction</u>	<u>O&M</u>
Removal of Wrecks, Obstruction	-0-	100% recoverable	NA
Snagging and Clearing	50%	10+10% (<20')	NA
Drift & Debris Removal	50%	one-third	100%
Small Navigation Projects			
Commercial navigation	50%	10+10 (<20')	-0-
Recreational navigation	50%	50%	100%
Modification of Bridges	-0-	project % (after cost apportionment to bridge owner)	100%
Project Induced Damages			
Project damage only	-0-	project %	100%
Additional Purposes	50%	purpose %	100%
Beneficial Uses of Dredged Material for Ecosystem Restoration			
(Section 204)		Same as base plan	100%
(Section 1135)		25%	100%

e. Land Creation at Harbors (Other Than Inland Harbors). Formulation and cost sharing of harbor projects that include land creation benefits must be in accordance with the following procedures.

(1) The NED plan relies on navigation benefits exclusively (land creation is not considered in the net benefit evaluation). Special cost sharing is required; it is based on the magnitude of land creation benefits relative to total benefits. The cost sharing formula is as follows:

(a) Assign LERR to the non-Federal sponsor. (Full credit of LERR toward 10% of GNF)

(b) Special non-Federal (GNF) cost sharing is equal to:

$$\text{GNF} = \frac{(\text{Land Creation Benefits for this plan}) \times (\text{GNF Costs})}{\text{Total Benefits for this Plan}} \quad \text{(c) Remaining costs are shared in accordance with Section 101 of PL 99-662, as amended, as described in Paragraph E-13a.}$$

(2) Non-Federal requests for modification of the NED Plan formulated using navigation benefits may be allowed provided all additional implementation costs are non-Federal and the incremental navigation benefits equal or exceed the incremental O&M costs for the GNF. No additional cost sharing will be required for the land creation benefits associated with the project modifications beyond the NED Plan which are requested and paid for by non-Federal entities. The cost sharing formula by which this policy is to be applied is as follows:

(a) The non-Federal share shall be the non-Federal costs determined in paragraph E-13e.(1) plus 100 percent of the difference between the NED Plan and the cost of the requested modified plan; or all costs not assigned to the Federal government under paragraph (b) below, whichever is greater.

(b) The Federal share shall be the Federal costs determined in paragraph E-13e(1); or, when the modified NED Plan results in a cost for GNF that is less than the cost for GNF for the NED Plan, the Federal share of costs will be limited to the Federal percentage of the total GNF derived in paragraph E-13e(1), times the cost of the GNF for the modified NED Plan.

f. Land Creation Requirements. Reports proposing land creation, where the lands are necessary for development of port facilities to accommodate traffic, shall require the non-Federal sponsor to ensure the lands are retained in public ownership for uses compatible with the authorized purposes of the project. The non-Federal sponsor shall regulate the use, growth and development on such lands for those industries whose activities are dependent upon water transportation.

E-14. Special Considerations.

a. Study Authorities.

(1) Navigation Facilities Replacement. Continuing authority to study the replacement, reconstruction, or rehabilitation of Congressionally authorized navigation improvements is contained in Section 4 of the River & Harbor Act of 1884 as amended by Section 6 of the River & Harbor Act of 1909. This study authority is no longer used.

(2) Review of Completed Projects. Authority to study completed projects and report thereon to Congress, when advisable due to changed physical or economic conditions, is contained in Section 216 of the River & Harbor and Flood Control Act of 1970. Studies are initiated through the regular budget process as new reconnaissance starts.

(3) Special Programs. Continuing authority to study certain small or special purpose projects is contained in the legislation cited in “Special Navigation Programs” earlier in this section. Those study authorities are used routinely.

(4) Specific Authorization. All other projects require specific authorization in the form of legislation or resolutions by the appropriate committees of Congress.

b. Shoreline Changes. Pursuant to Section 5 of the River & Harbor Act of 1935 each investigation on navigation improvements potentially affecting adjacent shoreline will include analysis of the probable effects on shoreline configurations. A distance of not less than ten miles on either side of the improvement should be analyzed.

c. Charter Fishing Craft, Head Boats, and Similar Recreation-Oriented Commercial Activities. Section 119 of the River and Harbor Act of 1970 (Public Law 91-611), states, “The Chief of Engineers, For the purpose of determining Federal and non-Federal cost sharing relating to proposed construction of small-boat navigation projects, shall consider charter fishing craft as commercial vessels.” This Act applies only to cost allocation and cost apportionment and does not involve project evaluation in any way. Particularly, it does not determine consistency with Corps primary missions. This depends on whether the benefits are commercial navigation or recreation. Only if benefits to charter fishing craft are based on change in net income to the owner/operators of vessels which would exist and operate in the without project condition can commercial navigation benefits be claimed.

d. Subsistence Fishing. This is fishing, primarily for personal or family consumption, by those whose incomes are at or below the minimum subsistence level set by the Department of Commerce. For cost allocation purposes subsistence fishing is considered commercial fishing. Subsistence fishing is not a high priority output however.

e. Coast Guard Coordination. The U.S. Coast Guard is responsible For Federal aids to navigation and enforcement of navigation regulations. In addition to enforcing its own regulations, the Coast Guard also administers and enforces speed limits, anchorage areas, and other regulations issued under Corps authority. Corps districts should confer directly with the Coast Guard concerning establishment or alteration of aids to navigation, and the regulation of lightering areas, anchorages and channels.

f. Permit Coordination. Formulation should consider whether associated or ancillary sponsor activities (or project user activities) are required to achieve project benefits, and whether Department of the Army (DA) permits are necessary. Examples are provision of mooring/berthing areas, dredge material containment areas and landside infrastructure. Once

activities are identified, a preliminary determination of whether they require DA permits, and of what types (i.e., an individual permit, a letter of permission, an existing general permit or a nationwide permit), will be made by the district regulatory element.

(1) When an activity likely will necessitate a DA permit it should be addressed in the environmental documentation of the project as required by NEPA, the Section 404 (b) (1) guidelines and other appropriate environmental statutes. It may be assumed that more detailed analysis for permitting purposes will proceed concurrent with PED studies.

(2) DA permitting activities should be discussed at public meetings or workshops held during planning or during PED. Public notices announcing meetings/workshops shall identify sponsor activities that could require DA permits. Public meetings or workshops should be coordinated with regulatory staff; coordination is particularly important if there is or will be an abbreviated processing procedure or a special management plan.

(3) Normally, Coastal Zone Management (CZM) concurrence or Section 401 water quality certification for an abbreviated processing procedure or special area management plan should be obtained concurrently with those required for the Corps project. It remains the responsibility of the project sponsor (or users) to obtain all required state and/or local permits.

g. **Beneficial Use of Dredged Material.** Construction and maintenance dredging of Federal navigation projects shall normally be accomplished in the least costly manner possible ([ER 1130-2-520](#)). Section 204 of the WRDA of 1992 established programmatic authority which allows the Corps to carry out ecosystem restoration projects in connection with dredging for construction, operation or maintenance of authorized navigation projects. Guidance for Section 204 is provided in Appendix F. Section 207 modifies Section 204 to allow the Corps select a disposal method that is not the least cost if determined that the incremental costs are reasonable in relation to the environmental benefits. Section 207 establishes an authority which is separate and distinct from the authority established by Section 204. Section 207 projects are not subject to the programmatic limitation of Section 204 and are budgeted through the standard appropriation process. Cost-sharing and decision making criteria are described in the following subparagraphs.

(1) **Cost-Sharing.** The cost-sharing for Section 207 projects is the same as Section 204 projects. The non-Federal interests must enter into a cooperative agreement in accordance with the requirements of section 221 of the Flood Control Act of 1970 in which the non-Federal interests agree to provide 25 percent of the cost associated with construction of the project for the protection, restoration, and creation of aquatic and ecologically related habitats, including provision of all lands, easements, rights-of-way, and necessary relocations; and pay 100 percent of the operation, maintenance, replacement, and rehabilitation costs associated with the project.

(2) Decision-Making Criteria. The decision making criteria is whether the incremental cost is reasonable in relation to the environmental benefits achieved. Where the incremental Federal costs is 25 percent of the total project cost or \$300,000, whichever is less, the incremental costs are judged to be "reasonable" in relation to the environmental benefits without the need for detailed analysis. However, it must still be demonstrated that the environmental resources to be protected, restored, or created are valuable, the environmental outputs can be quantified and described and the environmentally beneficial disposal method is supported by Federal and state resource agencies. The environmental disposal method would be subject to appropriate National Environmental Policy Act requirements. For environmentally beneficial disposal methods that have incremental Federal costs which exceed 25 percent or \$300,000, the incremental costs must be justified by demonstrating that the monetary and non-monetary benefits (outputs) of the ecosystem restoration project justify its incremental costs using cost effectiveness and incremental cost analysis. Where the environmentally beneficial use involves separable increments each increment must be justified. Refer to Section V of this appendix for further information on cost effectiveness and incremental cost analysis.

h. Placement of Dredged Material on Beaches for Hurricane and Storm Damage Reduction. When placement of dredged material (beach quality sand) on a beach is the least costly acceptable means for disposal, then such placement is considered integral to the project and cost shared accordingly. In cases where placement of dredged material on a beach is more costly than the least costly alternative, the Corps may participate in the additional placement costs when: (1) requested by the state; (2) the Secretary of the Army considers it in the public interest; and (3) the added cost of disposal is justified by hurricane and storm damage benefits (see Section IV of this appendix). When all local cooperation requirements are met the Corps may cost share the additional costs 50 percent (Section 933, WRDA 1986, as amended). In cases where the additional costs for placement of the dredged material is not justified, the Corps may still perform the work if the State requests it, and the state or other sponsor contributes 100 percent of the added cost. If the State requests, the Corps may enter into an agreement with a political subdivision of the State to place the sand on its beaches, with the subdivision responsible for the additional costs. The Corps should consider and accommodate to the degree reasonable and practicable a state's or subdivision's schedule for providing its cost share. Each placement event should be supported by a separate decision document. Subsequent decision reports may be supplements to the original Section 933 decision document.

E-15. Dredged Material Management Plans. All Federally maintained navigation projects must demonstrate that there is sufficient dredged material disposal capacity for a minimum of 20 years. A preliminary assessment is required for all Federal navigation projects to document the continued viability of the project and the availability of dredged material disposal capacity sufficient to accommodate 20 years of maintenance dredging. If the preliminary assessment

determines that there is not sufficient capacity to accommodate maintenance dredging for the next 20 years, then a dredged material management study must be performed.

a. Policy.

(1) General.

(a) Sound management of dredged material is a priority mission of the Corps.

(b) The Corps is committed to conducting dredging and managing dredged material in an environmentally sound manner.

(c) The interests of economic development and environmental sustainability will best be served when dredged material placement proceeds according to a management plan. Therefore each existing and proposed navigation project will have a dredged material management plan that ensures warranted and environmentally acceptable maintenance of the project.

(d) Beneficial uses of dredged material are powerful tools for harmonizing environmental values and navigation purposes. It is the policy of the Corps that all dredged material management studies include an assessment of potential beneficial uses for environmental purposes including fish and wildlife habitat creation, ecosystem restoration and enhancement and/or hurricane and storm damage reduction. Districts and MSCs will make every effort to ensure that sponsors and other interests understand the valuable contributions that beneficial uses can make to management plans and will maximize use of regional forums to share experiences of opportunities for beneficial uses.

(e) Dredged material management goals are to be achieved by District and Division Commanders within existing delegations of authority. Exceptions to this principal are when problems arise that are of such significance that HQUSACE or Administration commitment is required such as changes in dredged material management practices that require substantial capital investment.

(2) Requirements. Dredged Material Management Plans (Management Plans) shall be prepared, on a priority basis, for all Federal navigation projects, or groups of inter-related harbor projects, or systems of inland waterway projects (or segments).

(a) Priority will be given to projects for which existing dredged material disposal sites, including existing confined disposal facilities, are expected to reach capacity or to no longer be available sometime in the next 10 years, or

(b) Existing and projected navigation usage of the project indicates that continued maintenance of the project, or of any substantial increment thereof, may not be warranted.

(c) Management Plans shall identify specific measures necessary to manage the volume of material likely to be dredged over a twenty year period, from both construction and maintenance dredging of Federal channel and harbor projects. Non-Federal, permitted dredging within the related geographic area shall be considered in formulating Management Plans to the extent that disposal of material from these sources affects the size and capacity of disposal areas required for the Federal project(s). In those cases where two or more Federal projects are physically inter-related (e.g., harbors which share a common disposal area or a common channel) or are economically complementary, one Management Plan may encompass that group of projects.

(3) Base Plan. It is the Corps of Engineers policy to accomplish the disposal of dredged material associated with the construction or maintenance dredging of navigation projects in the least costly manner. Disposal is to be consistent with sound engineering practice and meet all Federal environmental standards including the environmental standards established by Section 404 of the Clean Water Act of 1972 or Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. This constitutes the base disposal plan for the navigation purpose. Each management plan study must establish this "Base Plan", applying the principles set forth below.

b. Management Plan Development Principles.

(1) Existing Projects.

(a) Process. Management Plans are intended to cost effectively and expeditiously support environmentally acceptable channel and harbor maintenance. Plan development shall employ a phased process determining the appropriate scope and detail of required assessment. This process will:

(1) Establish the Base Plan for the project;

(2) Include an assessment of the potential for beneficial uses of dredged material which is proposed to be undertaken as separate plan elements pursuant to separate authority; and,

(3) Establish the Management Plan for the project, or if approval by higher authority is required elsewhere in this guidance, the District Commander's recommended Management Plan.

(4) Demonstrate continued maintenance is economically warranted based on high priority (non-recreation) benefits. If it cannot be demonstrated based on high priority benefits but would otherwise be warranted considering recreation benefits, recommendations will state that project is economically warranted using recreation benefits.

(b) Phases. Management Plan development shall proceed in the following phases:

(1) Preliminary Assessment. Preliminary assessments establish whether more detailed study is required to establish a management plan, and, if so, provides information to justify the study and permit its prioritization in the budgetary process. For many projects with readily available maintenance and usage information, a preliminary assessment, based on indicators such as annual O&M costs per ton of cargo, volume and frequency of traffic, and vessel dimensions, may establish the Base Plan and confirm that continued maintenance appears to be warranted. Where these conditions are met, the findings of the Preliminary Assessment would complete the requirement for a Management Plan. Where these conditions are not met, the Preliminary Assessment will recommend a Management Plan Study.

(2) Management Plan Studies. A Management Plan Study shall be required to establish the Base Plan and the recommended Plan if basic indicators are inconclusive, or if attempts to define the Base Plan disclose significant problems, a major new investment, or other significant increase in maintenance costs. For example, the provision of a new confined disposal facility or use of more distant ocean disposal site would trigger this requirement. Management Plan studies shall be conducted in two phases: initial and final. The initial phase concentrates on developing a detailed scope of work, and the final phase executes that scope of work.

(2) Proposed Projects. Feasibility and Pre-construction Engineering and Design (PED) studies for proposed projects shall include a Management Plan in accordance with the criteria and procedures herein, as applicable.

c. Study Authority. Preliminary Assessment and Management Plan studies shall be conducted pursuant to existing authorities for individual navigation project feasibility studies, PED, construction, or O&M, as provided in Congressional Committee study resolutions and public laws authorizing specific projects. These specific study and/or project authorities are supplemented by general authorities relating primarily to beneficial uses of dredged material, as set forth in paragraph E-15f. Where Management Plan studies disclose the need to consider expanding or enlarging existing projects, such studies may only be pursued under specific study authority or under authority of Section 216 of the Flood Control Act of 1970.

d. Responsibilities.

(1) Existing Projects. Operations functional elements have program management responsibility for administering Dredged Material Management Plan preparation efforts for existing Federal projects. Those responsibilities include prioritizing and budgeting studies and providing subject matter expertise and guidance as members of the interdisciplinary study team. Planning functional elements have study management responsibility for conducting the studies required to implement effective dredged material management. Both elements have joint functional responsibility to ensure efficient use of shared resources.

(2) Proposed Projects. Planning functional elements are responsible for administering and conducting Management Plan studies for proposed projects. The Operations functional elements are essential participants and assume on-going responsibility for dredged material management following project completion.

e. Study Components.

(1) Alternatives. Management plan studies shall consider the full range of measures for dredged material management including: management of existing disposal sites to extend their life; various combinations of new disposal sites involving different disposal methods, disposal area locations, and periods of use; and, measures to reduce dredging requirements, including reduced dimensions. The Federal interest in continued O&M of an existing project for its navigation purpose is defined by that project of maximum scale and extent, within project authorization, for which continued maintenance is warranted in terms of vessel traffic and related factors.

(2) Beneficial Uses. Each Management Plan study shall include an assessment of potential beneficial uses of dredged material, for meeting both navigation and non-navigation objectives, including fish and wildlife habitat creation and restoration, hurricane and storm damage reduction, and recreation. Where a beneficial use is part of the Base Plan, it shall be treated as a general navigation O&M component. Beneficial uses which are not part of the Base Plan shall be considered separable elements of the management plan, and will be pursued in accordance with guidance implementing other available authorities. However, even though funded from different sources, the beneficial use planning effort must be pursued in conjunction with the overall management plan effort to assure the timely availability of dredged material for the beneficial use project. The beneficial use project site must be available to meet maintenance dredging disposal needs.

(3) Study Involvement and Coordination. District Operations and Planning functions must jointly ensure appropriate involvement of all resources and affected non-Federal interests in Management Plan studies, as follows:

(a) Interdisciplinary Analysis. The relevant professional disciplines needed to ensure sound professional decisions are to be involved.

(b) Partnership. Project sponsors, local governments, port authorities, and other project users and beneficiaries are partners in dredged material management, and have a key role as the project proponents in building local consensus for the Management Plan. A potential key role is played by the state governor to mediate sometimes competing state environmental, regulatory and economic objectives. All those having a partnership interest must be informed and involved throughout the course of all management plan studies.

(c) Review and Consultation. Federal, State and other public agencies with legal review, consultation, or other regulatory responsibilities are to be involved. Dredged material disposal is a multi-faceted issue, which involves both the water resources development, and regulatory responsibilities of the Corps. It involves the regulatory, water quality, hazardous, toxic, and radiological waste responsibilities of the U.S. Environmental Protection Agency (EPA) and state agencies. It also involves the environmental resources protection and management responsibilities of the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and various state agencies as well as the economic and regional economic development interests of states, local governments, port authorities, maritime users and shippers.

(d) Public Involvement. Members of the public who are interested, likely to be affected, or otherwise have a stake in outcomes are to be kept informed and appropriately involved.

(4) Environmental Consistency. Management Plans shall be consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal requirements. Management Plan studies shall address the requirements of all applicable environmental statutes for all disposal options considered, including the requirements of the National Environmental Policy Act, Section 404 of the Clean Water Act, Section 103 of the Marine Protection, Research and Sanctuaries Act, and the Coastal Zone Management Act. Any dredged material assessment to determine compliance with the Clean Water Act, Section 404(b)(1) guidelines, will be performed in accordance with the manual "Evaluation of Dredged Material Proposed for Discharge in Inland and Near Coastal Waters: Testing Manual". The manual "Evaluation of Dredged Material Proposed for Ocean Disposal: Testing Manual, commonly referred to as the "Green Book", will be used for assessing material proposed for ocean disposal under Section 102 of the Marine Protection, Research and Sanctuaries Act. Regional variations of these two manuals, where approved by both the Corps and EPA, may also be used.

f. Cost Sharing and Financing.

(1) Management Plan Studies.

(a) Existing Projects.

(1) General. The cost of Management Plan studies for continued maintenance of existing Federal navigation projects are O&M costs and shall be Federally funded. For harbor projects, including inland harbors, such costs shall be reimbursable from the Harbor Maintenance Trust Fund, subject to the following:

(a) Project sponsors, port authorities and other project users, are partners in dredged material management and must pay the costs of their participation in the dredged material management studies including participation in meetings, providing information and other coordination activities.

(b) Budgeting priority for the navigation purpose is limited to the Base Plan. Therefore, the cost for any component of a management plan study attributable to meeting local or state environmental standards that are not provided for by the requirements of Federal laws and regulations, shall be a non-Federal cost.

(c) Study activities related to dredged material management for the Federal project, but not required for continued maintenance dredging and dredged material disposal, will not be included in dredged material management studies unless funded by others.

(d) Studies of project modifications needing congressional authorization, including dredged material management requirements related to the modification, will be pursued as feasibility studies under the authority of Section 216 of the Flood Control Act of 1970.

(2) Beneficial Uses. The cost of studies for beneficial uses that are consistent with, and part of, the Base Plan are Federal O&M costs. However, study costs for beneficial uses, which are not part of the Base Plan, are either a non-Federal responsibility, or are a shared Federal and Non-Federal responsibility. These include reconnaissance level studies needed to identify these potential uses as part of management plan studies. Depending on the type of beneficial use, it might also include:

(a) Ecosystem Restoration. The incremental costs of studies beyond those required for the Base Plan for the use of dredged material to improve, restore and protect environmental resources, pursuant to Section 204 of the WRDA of 1992 or Section 207 of the WRDA of 1996 are not navigation O&M costs. If a potential environmental improvement or ecosystem

restoration beneficial use project exceeds the cost limitations of Section 204, it may be pursued as a cost shared feasibility study leading to specific authorization, in accordance with existing procedures.

(b) Placement of Materials on Beaches. The Corps of Engineers, under Section 933 of the Water Resources Development Act of 1986, may participate in the additional costs of placing clean sand or other suitable material on beaches. This may include material dredged by the Corps during construction or maintenance of Federal navigation projects, and the placement onto adjacent beaches or near-shore waters. This is only permitted if the added cost of placement is justified primarily by the benefits associated with the hurricane and storm damage protection provided by such beach or beaches, and the beach involved is open to the public with public access. The non-Federal sponsor must provide 50 percent of the incremental study costs.

(c) Other Beneficial Uses. Other potential beneficial uses include placement of dredged material for land creation or land enhancement for development purposes, disposal of material on beaches not meeting the criteria for Corps participation, and environmental enhancement projects not meeting the criteria for Corps participation. In these cases, all incremental study costs and implementation costs above those costs required for the Base Plan, must be paid by non-Federal interests.

(b) Proposed Projects.

(1) General. Management Plan studies to be included with feasibility studies shall be subject to the cost sharing provisions set forth in the Project Study Plan. Study cost sharing for projects in PED shall be in accordance with the specific PED cost sharing requirements for that project as authorized.

(2) Allocation of Study Costs. The costs of Management Plan studies will be allocated between the existing project and the feasibility study for the project modification. Costs will be allocated by first identifying all costs that would be associated with planning for dredged material management for the existing authorized Federal project at existing depths and widths. These costs will be allocated to maintenance of the existing project and be funded from the Operation and Maintenance (O&M), General, appropriation at 100% Federal cost. Increments of dredged material management study costs above those required for planning for continued maintenance of the existing project, shall be allocated as feasibility study costs. Those costs which are associated with disposal of dredged material from construction of the project modification or increments of new maintenance cost attributable to the project modification, shall also be allocated as feasibility study costs. The definition of the required dredged material management studies and the allocation of the costs of these studies between the existing project and the feasibility study must be a carefully coordinated effort involving Planning and Operations elements and the non-

Federal sponsor. While the costs for dredged material management are allocated between O&M and the feasibility study, the dredged material management studies will be conducted as a unified study within the context of the feasibility study.

g. Implementation.

(1) Operation and Maintenance.

(a) Existing Projects. Costs for implementing Management Plans for existing projects are O&M costs and shall be shared in accordance with navigation O&M cost sharing provisions applicable to the project as authorized. Dredged material disposal facility costs shall be shared in accordance with Section 201 of the Water Resources Development Act of 1996 (P.L. 104-303). The cost for any component of a Management Plan attributable solely to meeting state water quality standards which are more restrictive than those upon which the Base Plan is based, shall be non-Federal cost.

(b) Proposed Projects. Costs for implementing management plans for proposed projects are O&M costs and shall be shared in accordance with navigation O&M cost sharing provisions of the Water Resources Development Act of 1986. The cost for any component of a Management Plan attributable solely to meeting state water quality standards which are more restrictive than those upon which the Base Plan is based, shall be non-Federal cost.

(2) Beneficial Uses. Costs for beneficial uses consistent with, and part of, the Base Plan are O&M costs and shall be shared in the same manner as other navigation O&M costs. Where beneficial uses involve an incremental cost over the Base Plan, these incremental costs are either a non-Federal responsibility or are a shared Federal and non-Federal responsibility depending on the type of beneficial use, as follows:

(a) Environmental Improvement and Ecosystem Restoration. The incremental costs above the Base Plan for the use of dredged material to improve, restore and protect environmental resources, pursuant to Section 204 of the WRDA of 1992 or Section 207 of the WRDA of 1996 must be shared in accordance with procedures set forth in Section E-14g.(1) of this Appendix.

(b) Placement of Materials on Beaches. Under the authority of Section 145 of the Water Resources Development Act of 1976, as amended by Section 933 of WRDA 86, the additional cost, beyond the cost of the Base Plan, for the placement of materials on beaches must be shared 50 percent Federal and 50 percent non-Federal. The non-Federal sponsor must provide (without cost sharing) any necessary additional lands, easements, rights-of-way, and relocations.

h. Procedures for Existing Projects.

(1) Phased Plan Development Process. A phased process will be used to determine the need for, and to develop, Management Plans on a priority basis; to manage existing projects in the interim while Management Plans are being developed; and, to review, approve and implement the Management Plans.

(2) Preliminary Assessment. Preliminary assessments shall be undertaken for all navigation projects. Priority shall be given to projects for which maintenance is expected to be required within the next ten years. Preliminary assessments shall include the following components:

(a) An economic assessment to determine whether continuing O&M of the overall project and separable increments appears to be warranted;

(b) A preliminary assessment of potential impediments to continuing maintenance;

(c) An evaluation of the consistency of existing environmental compliance documents with ongoing O&M activities; and,

(d) An assessment of need for Management Plan studies;

(e) Summary of Findings and Recommendations. Preliminary assessments will produce a summary of Findings and Recommendations, prepared in accordance with the format and guidance presented herein, and signed by the District Commander. If applicable, the District Commander may request for funds to initiate Management Plan studies in accordance with instructions in annual guidance for preparation of the program and budget request.

(3) Management Plan Studies.

(a) General Requirements. The purpose of Management Plan studies (studies) is to ensure timely and economical completion of quality reports that recommend implementable solutions to identified management problems, in the form of Management Plans. The Management Plan shall include sufficient detail to ensure unimpeded maintenance, with respect to dredging, for a 20-year time horizon. The study shall be conducted in two phases: initial and final. The initial phase shall be completed within 12 months of receipt of funds by the district, and shall produce a Scope of Work for the final phase of the study.

(b) Scoping. Management Plan studies are intended to cost effectively and expeditiously support project maintenance. The scoping of the final phase of the study is the most important activity in the initial phase. The scope of the final phase is dictated by the study objective of formulating a plan for the continued O&M of the Federal project.

(1) The most important scoping factor, and therefore the focus of the initial phase, is the degree of engineering, environmental and economic risk and uncertainty associated with the project.

(2) Related activities, such as surveys of bottom sediments outside the limits of the Federal project, identification and elimination of sources of contamination, and control of non-point sources of pollution, shall be included only if these activities are funded by local, state or other Federal agencies.

(3) In some cases, the need for a project modification requiring Congressional authorization (for example the need for an enlarged project to meet increased shipping demands) may be identified. Studies to support recommendations for authorization of such modifications are outside the scope of Management Plan studies. In these cases, a new feasibility study (General Investigations funded new start Reconnaissance) under authority of Section 216 of the Water Resources Development Act of 1970 should be sought through the budget process. O&M study funding should be terminated unless there is an immediate need for additional planning for continued maintenance of the existing project pending the project modification.

(c) Scope of Work. A Scope of Work (SOW) shall be prepared during the initial phase to ensure that the work required for the final phase has been carefully developed and considered.

(1) The SOW shall be the basis for estimating the total study cost and local share, if any, and shall allow not longer than 36 months to complete the final phase. The SOW will guide the allocation of study funds among tasks to assure that all interests are given adequate attention.

(2) As a minimum, the SOW should address the work tasks, their milestones, negotiated costs, and responsibility for their accomplishment. The SOW should also address the Corps and other professional criteria to assess the adequacy of the completed work effort; the schedule of performance; the coordination mechanism between the Corps and the non-Federal sponsor; and references to regulations and other guidance that will be followed in conducting the tasks.

(3) The SOW will address the level of technical and scientific detail required for the final phase. Technical studies and analysis should be scoped to the minimum level needed to establish project features and elements that will form an adequate basis for the plan implementation

schedules and cost estimate. Risk and uncertainty should be sufficiently identified and addressed to provide the basis for appropriate contingencies.

(4) The SOW should include the work items typically necessary to support the review process from the signing of the report through approval. These items could include answering comments, attending Washington Level meetings (including the non-Federal sponsor), and minor report revisions as a result of review by higher authority. Any significant increase in study scope shall require HQUSACE approval in accordance with guidance provided as conditions of approval of the Scope of Work.

(d) Management Plan Reports. Management Plan Reports (reports) should be complete decision documents that present the results of both study phases. The reports will:

(1) Provide a complete presentation of study results and findings, including those developed in the initial phase so that readers can reach independent conclusions regarding the reasonableness of recommendations;

(2) Indicate how compliance with applicable statutes, executive orders and policies is achieved; and

(3) Provide a sound and documented basis for decision makers at all levels to judge the recommended Management Plan. The reports shall, at a minimum, address the subject matter outlined in Table E-14, and shall identify all necessary agreements (Federal, sponsor, real estate, etc.) and procedural requirements (appropriate NEPA documentation, long-term permits, certifications, etc.) necessary to cover, at a minimum, the next twenty years of project maintenance. The reports shall include executed copies of all such agreements or schedules for obtaining them. District Commanders shall sign and submit Management Plan Reports to the Division Commander for appropriate action.

Table E- 14 Management Plan Report Outline

<p>Project Description(s) <i>[include project map(s)]</i></p> <p>Scope of Study <i>[indicate whether single project or group of projects; relationship to permittee dredging, etc.]</i></p> <p>Authorization and Development History <i>[include all project authorizations, Section 221 agreements, Project Cooperation Agreements (PCAs), other agreements entered into, easements obtained, fee acquisition, construction dates, etc.]</i></p>
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Description of existing conditions
Projections of future conditions in the absence of a Management Plan
Concise statement of specific problems and opportunities
Alternative plans:
Alternative disposal measures to address identified problems and opportunities
Beneficial uses alternatives
Reasons for selecting and combining measures to form alternative plans
Evaluation of Alternative Plans
Trade-off analysis
Selection of final plan [<i>discuss rationale for selection, sensitivity analysis, and risks and uncertainties</i>]
Description of selected Management Plan
Plan components
Implementation requirements and schedules
Consistency with the Base Plan
NEPA documentation, as required
Results of coordination with local, state and Federal agencies
Recommendations

(e) Issue Resolution Conferences. Issue Resolution Conferences (IRCs) with HQUSACE and laboratory participation shall be held for all Management Plan studies whenever significant problems or issues require higher level guidance or concurrence during the course of the study. Issue Resolution Conferences may be called by Division Commanders at their discretion. Upon review of the SOW, HQUSACE may call for an IRC to resolve pertinent issues. HQUSACE participation shall include at a minimum, senior staff of both CECW-0 and CECW-P. IRCs shall

identify required follow-up actions and assign responsibilities for their execution. These actions and assigned responsibilities shall be documented explicitly.

(f) Review and Approval. Division Commanders shall ensure full technical review of Management Plan reports, and may approve Management Plans except in those cases where one or more of the following conditions apply:

(1) Implementation of the Management Plan will require a non-recurring item of work or aggregate item of related work which qualifies as major maintenance as defined in the annual guidance for preparation of the program and budget request.

(2) Implementation of the Management Plan requires an adjustment to the District's funding targets (a Corps-wide Priority Incremental Request, CPIR) as defined in the annual guidance for preparation of the program and budget request.

(3) Implementation requires additional congressional authority. Where one or more of the above conditions apply, the Division commander will transmit the final report and associated NEPA documentation by concurring endorsement to HQUSACE, CECW-0 for review and approval. Upon approval of the report, the Major Subordinate Commander shall prepare the draft Record of Decision following the completion of the final NEPA review, and if required, shall file the final NEPA documentation.

(g) Implementation.

(1) Project Cooperation Agreement and Financing Plan.

(a) For Management Plans that involve new capital investments, (such as a new confined disposal facility) relocations, or acquisition of interests in real estate, and require the execution of a Project Cooperation Agreement (PCA), a draft PCA and financing plan shall be developed in connection with preparation of the Management Plan report and submitted therewith in accordance with procedures outlined in [ER 1165-2-131](#).

(b) The full implication of PCA requirements should be discussed with the local sponsor. The first draft PCA is prepared, by the District Commander, in coordination with the local sponsor. However, no commitments relating to a construction schedule or specific provisions of the draft PCA can be made to the local sponsor on any aspect of the project until the Management Plan report and the draft PCA have been approved.

(c) Once the Management Plan has been approved, the District Commander shall begin final negotiations with the local sponsor and submit the PCA package for review by HQUSACE, attention CECW-A, and approval by the ASA(CW).

(2) Monitoring and Periodic Review. Division Commanders shall ensure monitoring and review of approved Management Plan implementation.

(3) Curtailment and Disposition. Curtailment refers to the indefinite discontinuance of maintenance of a project or a substantial portion thereof (e.g., segment or length, depth, width increment of channel or turning basin). Curtailment requires the development of a plan for disposition of the project. Disposition requirements and procedures generally are project specific; and guidance thereon should be obtained from HQUSACE. Where continued O&M of a project, or substantial portion thereof, is determined by the District Commander to no longer be warranted, the District Commander shall submit, subject to concurring endorsement by the Division Commander, a report recommending disposition of the project, to HQUSACE (attn: CECW-P).

(h) Budgeting and funding.

(1) General Requirements. Study activities required to develop Preliminary Assessments for all eligible projects shall be funded from available project O&M funds in accordance with priorities established annually by HQUSACE. Requests for funding to accomplish Management Plan studies to cost no more than \$150,000 to complete shall be included in project O&M funding requests, provided that a Summary of Findings and Recommendations has been completed in accordance with the requirements of outlined in this section. Requests for funding to initiate Management Plan studies to cost more than \$150,000 will be considered on a national priority basis, commensurate with the urgency and significance of impediments to continued maintenance. These will be considered upon HQUSACE review of submission documents, in accordance with annual budget guidance, as may be supplemented by guidance to be provided periodically by HQUSACE.

(2) Limitations. Preliminary Assessments shall be limited to an expenditure of \$20,000 per project, or multiples thereof for assessments involving more than one deep draft project. If more than \$20,000 (or multiple thereof) is required, written approval must be requested from HQUSACE (attention CECW-O). The request must include sufficient information to justify the additional expenditure.

(i) Ongoing Studies. Ongoing O&M studies for planning, managing or regulating dredging and dredged material disposal activities shall be phased into conformity with the procedures and guidance of this ER. This includes any O&M studies of disposal options including studies of alternative open water disposal sites or studies of sites for new confined disposal facilities. The following procedures shall be used to bring the existing studies into conformity with the new procedures.

(1) Review of Continuing Economic Justification. Continuation of ongoing dredged material management studies is conditioned on a confirmation that continued maintenance is warranted. Therefore, for each ongoing study, a review of indicators of continued economic justification will be conducted.

(2) Scope of Work. For each ongoing study, the district shall prepare a review of studies accomplished to date, and a SOW for studies yet to be accomplished. This SOW, along with the results of the review of indicators of continued economic justification, will be included in the Preliminary Assessment or the Management Plan Report, as appropriate.

(3) Management Plan Report. The results of ongoing studies, when completed, will be presented in a management Plan report conforming with the guidance for preparation, review and approval of such reports as presented in this appendix.

i. Procedures for Proposed Projects. Feasibility reports recommending Congressional authorization of new navigation projects or modifications of existing projects shall include a plan for management of dredged material associated with the construction and maintenance of the new project or project modification, consistent with the requirements for Management Plans for existing projects. This plan shall satisfy all identified dredged material management requirements associated with the project, to include construction dredging, projected maintenance dredging for the established project economic life, and other dredged material disposal requirements (for example dredging of berthing areas) needed to realize project benefits.

SECTION III - Flood Damage Reduction

E-16. Federal Interest. The Flood Control Act of 1936 established the policy that flood control on navigable waters or their tributaries is in the interest of the general public welfare, and is therefore a proper activity of the Federal Government. It provided that the Federal Government, cooperating with state and local entities, may improve streams or participate in improvements “for flood control purposes, if the benefits to whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected.” The 1936 Act, as amended, and more recently the Water Resources Development Act of 1986 and other acts, specify the details of Federal participation.

E-17. Types of Improvements.

a. **Structural Measures.** These include dams with reservoirs, dry dams, channelization measures, levees, walls, diversion channels, ice-control structures, and bridge modifications.

b. **Nonstructural Measures.** Section 73 of the 1974 Water Resources Development Act requires consideration of nonstructural alternatives in flood damage reduction studies. They can be considered independently or in combination with structural measures. Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. They do this by changing the use made of the flood plains, or by accommodating existing uses to the flood hazard. Examples are flood proofing, relocation of structures, flood warning/preparedness systems, and regulation of flood plain uses.

(1) **Permanent Relocation/Evacuation Plans.** These plans provide for permanent evacuation and relocation/demolition of flood plain structures. There are no damages avoided claimable as benefits for the properties which are relocated or evacuated. Benefits accrue in four ways: a) the value of new use of the vacated land; b) reduction in damage to public property, such as roads and utilities; c) reduction in emergency costs; and d) reduction in the administrative costs of the National Flood Insurance Program and disaster relief. Benefits from future use of the vacated flood plain (usually recreation) will generally be the dominant NED benefit. Non-monetary benefits accruing from ecosystem restoration may also be considered. For evacuation plans that are clearly formulated for flood damage reduction there is no limitation on the amount of recreation benefits, as may exist for structural projects. Thus for these plans the recreation benefits may exceed 50 percent of the benefits needed for justification. Separable costs for improvements necessary to achieve ecosystem and or recreation benefits are cost shared in accordance with specific cost-sharing provisions for those purposes.

(2) With Project Land Use and Benefit Evaluation for Nonstructural Projects. The central fact about nonstructural projects, changes in land use, has several important implications. First, eliminating the existing land uses eliminates all services previously provided in the area, not just the flood damages. That is, all housing services, all retailing or commercial services and all other services provided by the removed structures (and associated activities) will also be eliminated. Second, in most cases, most of the benefits for the nonstructural project will be associated with new uses of the vacated land, yet frequently little effort is devoted to forecasting and evaluating the new land uses. Recreational and environmental uses will be the most common post-project uses. If non structural projects are to be justified, plans for the post-project land use will generally be needed. In other words, just simply stating that post-project land use will be “open space” will not be sufficient to support the benefits of the nonstructural projects. Third, land use changes will have spillover effects, that is, they can affect nearby property values. Most frequently, spillover effects are negative and are used to justify zoning changes, but spillover effects for nonstructural projects will be, in all likelihood, positive and the task is therefore not to prevent them through zoning but to estimate their magnitude through analysis.

(3) Flood Proofing Measures. These are modifications of structures to minimize flood damages by such methods as elevating buildings, sealing walls, closing off openings, protecting plumbing and utilities and installing pumps and valves. Corps participation in flood proofing plans is permitted as long as they address two or more structures.

(4) Flood Warning Systems.

(a) The typical flood warning system consists of methods for determining the flood threat, methods for disseminating the flood warning, and a preparedness plan detailing the response to that warning. The Corps involvement in development of methods for determining the flood threat and disseminating the warning can include selection, siting, installation, and calibration of gages and other equipment to collect, evaluate and disseminate pertinent data. In addition, the Corps can provide assistance and guidance to ensure that the preparedness plan is adequate and will provide the necessary response to minimize the possibility of loss of life, and to reduce damages. This includes coordinating with local officials, providing technical advice and planning guidance, and developing adequate mapping to identify flood threatened areas, evacuation routes, temporary shelters, etc.

(b) A flood warning system can be recommended as a stand-alone project, or as a component of a more complex, flood damage reduction plan. For example flood warning could be combined with levee closing devices or with a channel modification. In addition, a flood warning system can be proposed as an interim measure until other structural or non-structural measures can be implemented.

(5) Regulation of Flood Plain Uses. Adoption and enforcement of regulations for flood plain management are entirely a local responsibility. However, the Corps can provide technical assistance and planning guidance in conjunction with a flood control project. Also, flood plain management planning assistance is continuously available through the Corps Flood Plain Management Services Program.

c. Major Drainage. Drainage projects are usually undertaken in rural areas to increase agricultural outputs. Some portions of drainage improvements may be considered flood control measures in accordance with Section 2 of the 1944 Flood Control Act. The typical drainage system consists of drainage ditches, dikes, and related work. An outlet structure is provided at the downstream end where the system empties into a larger channel. The Federal interest in these projects is normally limited to the outlet works. Drainage in urban areas can also qualify under the 1944 Act if the major outlet works do not substitute for works that are a local responsibility, such as municipal storm sewer improvements.

d. Groundwater. Section 403 of the WRDA of 1986 expands the definition of flood control to include flood prevention improvements for protection from groundwater induced damages. Budget and authorization support is not available for a groundwater induced damage reduction program.

E-18. Specific Policies.

a. Without Project Condition.

(1) Assume flood plain communities belong to the National Flood Insurance Program administered by the Federal Emergency Management Agency. To participate in the program a community must preclude new development in the regulatory floodway, and require that new development outside the floodway, but within the median discharge 1% chance flood plain, be constructed with first floor elevations at or above the median discharge 1% chance flood level.

(2) Uncertainties in without project conditions must be explicitly considered. For example, for any particular damage reduction study there may be other Federal or non-Federal flood control or drainage plans, which are authorized or in various stages of planning but, which are not yet constructed. Whether or not some other project will actually be constructed can be quite uncertain; when present this uncertainty should be explicitly treated in Project Study Plans (PSP). Any such uncertainties potentially affecting study recommendations must be similarly addressed.

b. Flood Plain Management (E.O. 11988). This executive order was issued in 1977 and remains in effect. The intent is to avoid flood plain development, reduce hazards and risk associated with floods, and restore and preserve natural flood plain values ([ER 1165-2-26](#)). In

the event there is no alternative to construction in the flood plain, as is the case with flood control projects, the Corps is required to minimize the adverse impacts induced by construction of the project. In considering adverse impacts, the following should be addressed:

(1) Induced new development in the flood plain or induced improvements to existing development in the flood plain that would increase potential flood damages; and,

(2) The detrimental effect of induced activities on natural flood plain values.

c. Project Performance and Risk Framework.

(1) Projects are analyzed and described in terms of their expected performance, not in terms of levels of protection. Contingencies are acknowledged and residual risk is not routinely reduced by overbuilding or by inclusions of freeboard. A levee, for instance, is described as having a probability of overtopping of x percent in any given year, without implication for level of protection. If there are particular floods of reference or interest, the levee is described as having a probability y of containing the z percent flood, and so on. For example, a levee of a given height is described as having a (say) two percent chance of being overtopped in any year. If the one percent flood flow is of interest, the levee is said to have a (say) twenty-five percent chance of containing the one percent flow event, should it occur.

(2) There is no minimum level of performance or protection or size required for Corps projects. The smaller in size or the lower the level of performance however, the higher the residual risk. Residual risk must therefore be carefully analyzed and communicated. Departures from the NED plan may be considered options to manage this risk; in addition, explicit risk management alternatives may be formulated. . Documentation requirements for deviation from the NED plan for flood control projects should be based primarily on consideration of residual risk. Other considerations can include reducing the non-Federal eligibility requirements for the National Flood Insurance Program and /or unique characteristics of the protected area such as historic structures, hospitals and public buildings essential to the operation of government or essential public service. In all cases the incremental costs for the higher level of protection must be shown to be reasonable with respect to total project costs.

(3) Flood damage reduction studies are conducted using a risk-based analytical framework. Models, data, and measurement and many physical, social, economic and environmental conditions are subject to variation and uncertainty. This has been long known, if in the past incompletely acknowledged. Management by routine overbuilding and freeboard are not affordable. The risk framework captures and quantifies the extent of the risk and uncertainty, and enables quantified tradeoffs between risk and cost. Decision making considers explicitly what is gained at what cost.

d. Existing Levees/Dams. If there is any question about the reliability of an existing levee, reliability should be specifically included in the risk analysis (see [ER 1105-2-101](#)). The Corps is moving toward a risk-reliability framework for evaluation of dam reliability; methods development is just beginning. Downstream consequences are analyzed in a risk framework however.

e. Residual Damages. Levees interrupt interior drainage, and levee benefit analysis should reflect any residual damages. Interior damages can be mitigated by ponding areas or pumping. The amount and kind of recommended mitigation should be that which maximizes net benefits, unless other considerations override.

f. Induced Flooding. When induced flooding results in induced damages, mitigation should be investigated and recommended if appropriate. Mitigation is appropriate when economically justified or there are overriding reasons of safety, economic or social concerns, or a determination of a real estate taking (flowage easement, etc.) has been made. Remaining induced damages are to be accounted for in the economic analysis and the impacts should be displayed and discussed in the report.

g. Minimum Flows, Minimum Drainage Area and Urban Drainage. In urban and urbanizing areas provision of a basic drainage system to collect and convey local runoff is a non-Federal responsibility. Water damage problems may be addressed under flood control authorities downstream from the point where the flood discharge is greater than 800 cubic feet per second for the median discharge 10 percent chance flood. Drainage areas of less than 1.5 square miles are assumed to lack sufficient discharge to meet the above criterion. Exceptions may be granted in areas of hydrologic disparity, that is areas producing limited discharge for the median discharge 10 percent chance event but in excess of 1800 cubic feet per second for the one percent event (See [ER 1165-2-21](#)).

h. Single Properties. The Corps will not participate in structural flood control for a single private property. Nor will it participate in nonstructural flood control measures, unless single property protection is part of a larger plan for structural or nonstructural measures benefiting multiple owners collectively. The Corps may consider participation in structural and nonstructural flood control measures protecting a single, non-Federal, public property. Public facilities, which are separable portions of larger protection plans, must have their own distinct presentations in budget requests so that they compete for limited study and construction funds.

i. Recreation at Non-Lake Projects. Recreation activities must have a strong, direct relationship to the proposed flood control measures, for example trails along the channel or levee right-of-way. Constraints on development and requirements for participation are discussed in Section VII of this appendix.

j. Environmental Mitigation. There are adverse impacts associated with practically all flood control projects. If these impacts are significant, mitigation measures should be evaluated. If justified by tangible and intangible benefits, the measures can be included in the recommended plan. Specific policies and planning guidance for consideration of environmental mitigation are discussed in Appendix C.

k. Agricultural Flood Protection. The Corps flood control programs apply to agricultural as well as urban flood damages. Usually the NED plan for agricultural areas provides only a low degree of flood prevention. The Food Security Act of 1985 (Public Law 99-198), as amended by the Federal Agriculture Improvement and Reform Act of 1996 (PL 104-127), contains so-called "Swampbuster" provisions (affecting conversion of wetlands) that may be triggered with implementation of a flood protection project.

l. Land Development. The following general policy principles apply to land development benefits at structural flood damage reduction projects.

(1) Projects or separable increments producing primarily land development opportunities do not reduce actual flood damages and therefore have low budget priority. Federal participation in these projects will not be recommended.

(2) The NED plan is formulated to protect existing development, but inclusion of vacant property interspersed with existing development is acceptable. The NED plan may also provide for the protection of vacant property that is not interspersed with existing development, if it can be demonstrated that the vacant property would be developed without the project, and benefits are based on savings in future flood proofing costs or reduction in damages to future development.

(3) If no project or separable project increment can be economically justified to protect existing development, interspersed vacant property and/or property that would be developed without the project, there is no interest in expanding the area of protection to achieve land development (location) benefits, even if net benefits are increased and economic justification can be achieved.

(4) A special case can be considered where the cost of protecting existing development can be substantially reduced if some vacant property not interspersed with existing development

is included in the protected area. Such cases will be considered on their individual merits. Compatibility with Executive Order 11988 must be demonstrated.

m. Groundwater-Induced Damages. Prevention of groundwater induced damages is not a traditional mission; restricted budgets prevent taking on this new mission.

n. Flood Insurance Considerations. Flood damage reduction projects can greatly impact what is required of a local community for participation in the National Flood Insurance Program. In addressing these impacts, the following should be considered:

(1) During development of the Project Management Plan (PMP) in reconnaissance, and in concert with the sponsor, consideration should be given to including work items to develop flood maps and flood profiles depicting post-project conditions. The information should be in a form useful to FEMA in revising flood insurance rate maps.

(2) The appropriate FEMA Regional office should be notified of proposed flood protection works or of changes to established flood protection works.

E-19. NED Benefit Evaluation Procedures: Urban Flood Damage

a. Purpose. This section presents the procedure for measuring the beneficial contributions to national economic development (NED) associated with the urban flood hazard reduction features of water resource plans and projects.

b. Conceptual Basis.

(1) General. Benefits from plans for reducing flood hazards accrue primarily through the reduction in actual or potential damages associated with land use.

(2) Benefit Categories. While there is only one benefit standard, there are three benefit categories, reflecting three different responses to a flood hazard reduction plan.

(a) Inundation Reduction Benefit. If floodplain use is the same with and without the plan, the benefit is the increased net income generated by that use. If an activity is removed from the floodplain, this benefit is realized only to the extent that removal of the activity increases the net income of other activities in the economy. Engineering Regulation 1105-2-101, Risk-Based Analysis for Evaluation of Hydrology/Hydraulic and Economics in Flood Damage Reduction Studies, requires risk-based analysis in all flood-damage reduction studies. The regulation and the complementary Engineering Manual 1110-2-1619 provide the evaluation framework to be used in these studies. The regulation identifies key variables that must be explicitly incorporated into the risk-based analysis. At a minimum, the stage-damage function for economic studies

(with special emphasis in structure first floor elevation, and content and structure values for urban studies); discharge associated with exceedence frequency for hydrologic studies; and conveyance roughness and cross-section geometry for hydraulic studies must be incorporated in the risk-based analysis. The ER further requires a probabilistic display of benefits and eliminates freeboard to account for hydraulic uncertainty.

(b) **Intensification Benefit.** If the type of floodplain use is unchanged but the method of operation is modified because of the plan, the benefit is the increased net income generated by the floodplain activity.

(c) **Location Benefit.** If an activity is added to the floodplain because of a plan, the benefit is the difference between aggregate net incomes (including economic rent) in the economically affected area with and without the plan

(3) **Types of Flood Damage.** Flood damages are classified as physical damages or losses, income losses, and emergency costs. Each activity affected by a flood experiences losses in one or more of these classes.

(a) **Physical Damages.** Physical damages include damages to or total loss of buildings or parts of buildings; loss of contents, including furnishings, equipment, [motor vehicles,] decorations, raw materials, materials in process, and completed products; loss of roads, sewers, bridges, power lines, etc.

(b) **Income Loss.** Loss of wages or net profits to business over and above physical flood damages usually results from a disruption of normal activities. Estimates of this loss must be derived from specific independent economic data for the interests and properties affected. Prevention of income loss results in a contribution to national economic development only to the extent that such loss cannot be compensated for by postponement of an activity or transfer of the activity to other establishments.

(c) **Emergency Costs.** Emergency costs include those expenses resulting from a flood what would not otherwise be incurred, such as the costs of evacuation and reoccupation, flood fighting, cleanup including hazardous and toxic waste cleanup, and disaster relief; increased costs of normal operations during the flood; and increased costs of police, fire, or military patrol. Emergency costs should be determined by specific survey or research and should not be estimated by applying arbitrary percentages to the physical damage estimates.

c. **Planning Setting.**

(1) General. The benefit of flood hazard reduction plans is determined by comparison of the with and without project conditions.

(2) Without Project Condition. The without project condition is the land use and related conditions likely to occur under existing improvements, laws, and policies. There are three significant assumptions inherent to this definition:

(a) Existing and authorized plans. Existing flood hazard reduction plans are considered to be in place, with careful consideration given to the actual remaining economic life of existing structures. Flood hazard plans authorized for implementation but not yet constructed are evaluated according to the relative likelihood of actual construction. If there is a high likelihood of construction, the authorized plan is considered to be in place.

(b) Flood Disaster Protection Act. The adoption and enforcement of land use regulations pursuant to the Flood Disaster Protection Act of 1973 (Public Law 93-234) is assumed.

(1) Regulation certified or near certification. If the local land use regulation has been or will be certified, partially waived, or adjusted by the Flood Insurance Administration (FIA) as adequate under 24 CFR 1910.3(c) and/or (d) and 24 CFR 1910.5, that regulation defines the without project condition.

(2) Regulation not yet certified. It is assumed that the local jurisdiction will adopt in the near future land use regulations certifiable to FIA under the without project condition as a datum and under the with project condition if a residual hazard will remain. This applies to floodplains regulated under 24 CFR 1910.3(a) and (b); to floodplains regulated by local ordinances independent of FIA; and to floodplains with no flood regulation in effect. For riverine situations, the following two crucial features are included: no future confinement or obstruction of the regulatory floodway; and no future occupancy of the flood fringe unless residences are elevated to or above 100-year (.01 annual probability) flood level and nonresidential buildings are flood proofed to that level.

(3) Application. It is assumed that flood proofing costs will be incurred if an activity decides to locate in the floodplain.

(4) Executive Orders. Compliance with E.O. 11988, Floodplain Management and E.O. 11990, Protection of Wetlands, is assumed.

(5) Individual actions. In addition to the three assumptions stated above, the analyst shall consider the likelihood that individuals will undertake certain flood hazard reduction

measures, such as flood proofing, when the cost of such measures is reasonable compared to the costs of potential flood damages.

(3) **With Project Condition.** The with project condition is the most likely condition expected to exist in the future if a specific project is undertaken. There are as many with project conditions as there are alternative projects.

(a) In projecting a with project condition, the analyst must be sensitive to the relationship between land use and the characteristics of the flood hazard for the alternative project being analyzed.

(b) The same assumptions underlie the with project condition and without project conditions.

(c) Consideration should be given to both structural and nonstructural alternatives and to alternatives incorporating a mix of structural and nonstructural measures. Non structural measures include:

(1) Reducing susceptibility to flood damage by land use regulations, redevelopment and relocation policies, disaster preparedness, flood proofing, flood forecasting and warning systems, floodplain information, floodplain acquisition and easements; and

(2) On-site detention of flood waters by protection of natural storage areas such as wetlands or in manmade areas such as building roofs and parking lots.

(3) Since project alternatives can differ in their physical characteristics, the optimal timing of projects and of individual project features should be considered in project formulation.

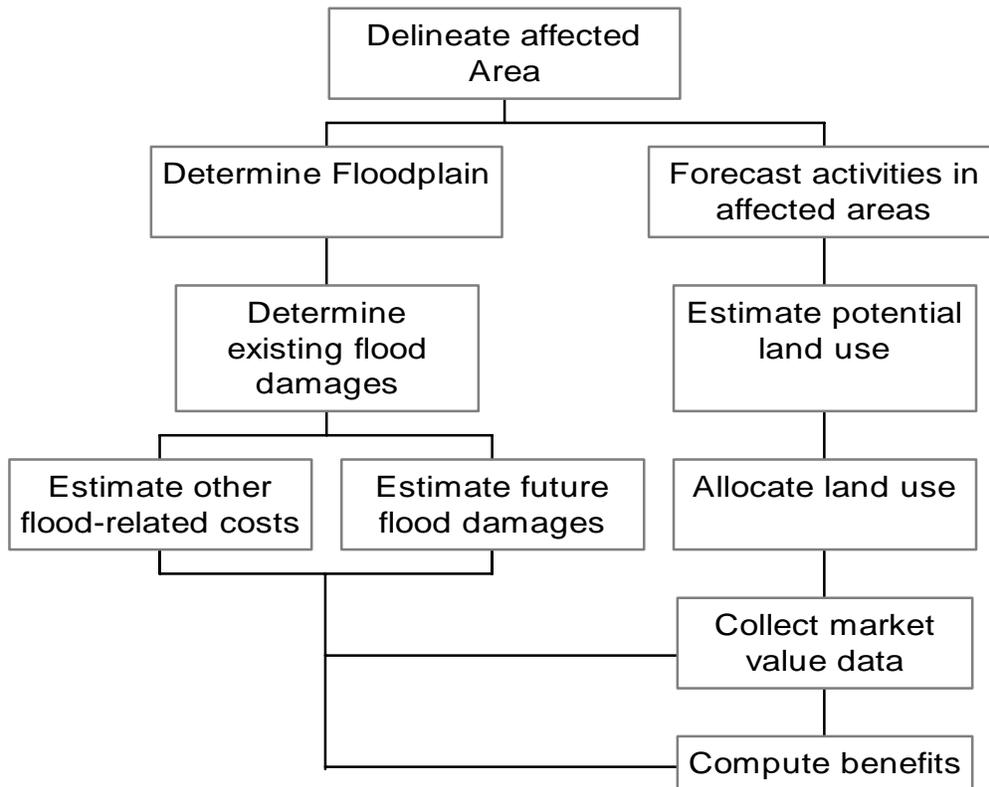
commercial. If the potential use of the floodplain includes industrial use within a standard metropolitan statistical area (SMSA) (now called metropolitan statistical area (MSA)), the entire SMSA (MSA) is the affected area; for residential use, even within an SMSA (MSA), a much smaller area may be designated the affected area.

d. **Evaluation Procedure: General.** Ten steps are involved in computing benefits (see Figure E-4). The steps are designed primarily to determine land use and to relate use to the flood hazard from a NED perspective. The level of effort expended on each step depends on the nature of the proposed improvement and on the sensitivity of the project formulation and justification to further refinement. The first five steps result in a determination of future land use; emphasis is on the overall reasonableness of local land use plans with respect to OBERS (OBERS no longer exist, but population, income and economic projections can still be obtained from the U.S.

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Department of Commerce, Bureau of Economic Analysis) and other larger area data, and to recognition of the flood hazard.

Figure E- 4 Urban Flood Damage Benefit Evaluation Procedure



e. Step 1--Delineate Affected Area. The area affected by a proposed plan consists of the floodplain plus all other nearby areas likely to serve as alternatives sites for any major type of activity that might use the floodplain if it were protected.

f. Step 2--Determine Floodplain Characteristics. The existing characteristics of the floodplain must be determined before its actual use can be estimated; therefore, undertake an inventory of the floodplain to determine those characteristics that make it attractive or unattractive for the land use demands established in steps 3 and 4, with emphasis on those characteristics that distinguish the floodplain from other portions of the affected area. Use the following categorizations as a guide:

(1) Inherent Characteristics of a Floodplain. Floodplain characteristics may include:

(a) Flooding. Describe the flood situation, including a designation of high hazard areas. The description should include characteristics of the flooding, such as depths, velocity, duration, and debris content; area flooded by floods of selected frequencies, including 100-year frequency [.01 annual probability]; historical floods, and, where applicable, larger floods. [Description of flood characteristics for a given frequency or discharge should be based on the median probability discharge. The regulatory floodplain as defined by the National Flood Insurance Program will always be described.]

(b) Floodway, Natural Storage. Describe and delineate those areas which, if urbanized or structurally protected, would affect natural storage, velocity, or stage, or would affect flood flows elsewhere.

(c) Natural and Beneficial Values. Many floodplains, particularly those near urban areas, are potential sites for recreation, open space, wetland, or wildlife preserves. This potential should be recognized and presented.

(d) Transportation. Floodplains near navigable streams have inherent attractiveness for industries that demand water-oriented transportation. Floodplains also serve as sites for railroads, highways, pipelines, and related facilities that are not susceptible to serious flood damage but have a tendency to attract industry to the area. [Flood damage to transportation systems and the resulting transportation delay costs may be an important damage category in many urban settings. Care should be taken to adequately address transportation delay costs in both the without and with project condition.]

(e) Other Attributes. Other inherent attributes of floodplains may include soil fertility, reliability of water supply, waste disposal, and sand, mineral, and gravel deposits.

(2) Physical Characteristics. Describe pertinent physical characteristics, including slope, soil types, and water table.

(3) Available Services. Most activities require some or all of the following services: transportation (highway and rail), power, sewerage, water, labor, and access to markets. Indicate the availability of such services in or near the floodplain, including comparisons with similar services available in other portions of the affected area.

(4) Existing Activities. Include in the inventory of the floodplain a list of existing activity types, the number of acres, and the density, age, and the value of structure of each activity-type by flood hazard zone.

g. Step 3--Project Activities in Affected Areas. Base economic and demographic projections on the most recent available studies and include the following: population, personal income, recreation demand, and manufacturing, employment, and output. Additional projections may be necessary for any given area, depending on the potential uses of these projections. Base projections on assessment of trends in larger areas and appropriate data (e.g., OBERS) [Bureau of Economic Analysis]; the relationship of historical data for the affected area to trends projected for larger areas; and consultation with knowledgeable local officials, planners, and others. The basis for the projections should be clearly specified in the report. [Estimates of future growth benefits shall be based on current unbiased economic growth indices. Whenever possible the growth indices should be independent estimates. Paragraph E-19c. requires that for the without project condition, floodplain communities will be assumed to belong to the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency. In order to participate in this program, the local community must preclude new development in the regulatory floodway as defined by the community, and require that new development in the NFIP regulatory floodplain outside of the floodway be constructed with first floor elevations at or above the .01 annual probability 100-year elevation. Therefore, future development will be assumed to be protected to the .01 probability 100-year discharge at the end of the period of analysis. The .01 probability discharge and elevation will be determined by the Corps consistent with levee certification guidance. If individual communities have floodplain restrictions more stringent than NFIP criteria, projections of future development should reflect the local criteria. However, under no circumstances, will future development be assumed in any area subject to flooding in the present and future median .01 probability flood.]

h. Step 4--Estimate Potential Land Use. Estimate potential land use within the affected area by converting demographic projections to acres. The conversion factors can normally be derived from published secondary sources, from agency studies of similar areas, or from empirical and secondary data available in the affected area. The categories of potential land use

need be only as detailed as necessary to reflect the incidence of the flood hazard and to establish the benefits derived from a plan.

i. Step 5--Project Land Use. Allocate land use demand to floodplain and non floodplain lands for the without project condition and for each alternative floodplain management plan.

(1) Basic Factors. Base the allocation on a comparison of the floodplain characteristics, the characteristics sought by potential occupants, and availability of sought-after characteristics in the non floodplain portions of the affected area.

(2) Criteria. The floodplain should not be used unless it has characteristics that give it a significant economic advantage to the potential user over all other available sites within the affected area. If such advantages exist, determine whether they overcome potential flood losses, potential flood proofing costs, and the costs of other related hazards. Flood losses and costs should be specific to the zone of the floodplain being considered.

j. Step 6--Determine Existing Flood Damages. Existing flood damages are the potential average annual dollar damages to activities affected by flooding at the time of the study. Existing damages are those expressed for a given magnitude of flooding or computed in the damage frequency process. No projection is involved. The basis for the determination of existing damages is losses actually sustained in historical floods; therefore, specify the year and month of all significant recorded discharges above zero point of damage and indicated the damages actually sustained by reach or zone and type of property and activity. Historical data are often incomplete; urbanization and other changes will have occurred over the years. Many streams and reaches do not have gaging stations. Therefore, data on historical flood losses should be carefully scrutinized and supplemented by appraisals, use of area depth-damage curves, and an inventory of capital investment within the floodplain. Further, estimates of damages under existing conditions should be computed for floods of magnitude that have not historically occurred. Estimate average annual losses by using standard damage-frequency integration techniques and computer programs that relate hydrologic flood variables such as discharge and stage to damages and to the probability of occurrence of such variables. Annual hydrologic data are normally sufficient for urban drainage estimates. Access flood damages by activity-type and by whether they are borne by the owner or by the public at large.

k. Step 7--Project Future Flood Damages. Future flood damages are the dollar damages to economic activities identified in step 3 that might use the floodplain in the future in the absence of a plan. Use this step in combination with step 5 (land use) to determine land use and associated damages for each future with project and without project condition. "Future" is any time period after the year in which the study is completed; in order to relate costs ultimately to benefits, however, future damages must be discounted to the base year. Determine future flood

damages on the basis of losses sustained both by the floodplain occupant and by others through insurance subsidies, tax deductions for casualty losses, disaster relief, etc.

(1) Hydrologic Changes. Changes in basin land use may result in major alteration of drainage characteristics, particularly surface runoff; project such hydrologic changes for the planning period. Average future hydrologic conditions should not be used, since they obscure situations in which the level of protection afforded by a project may be significantly different from average conditions by the end of the planning period.

(2) Economic Changes. Economic changes can be expected to result in a change in the level of future flood losses. A benefit-cost ratio for the existing condition should always be shown. If the ratio is greater than 1:1, the projection of future benefits may be accomplished in abbreviated form unless it would distort the comparison of alternative projects or the cost allocation and cost sharing in multipurpose projects. In the latter situation, the detail and accuracy of the estimates of flood control benefits should be comparable to the estimates of benefits for other water resources purposes.

(3) Projection of Physical Damages. Base measurement and projection of flood damages on the establishment of actual, observed relationships between damages, flood characteristics, and those indicators used for measurement and projection. These relationships should be modified as appropriate by consideration of constraints that change the historically derived relationship between flood damages and a given indicator. The relationships should be made explicit in the report and their accuracy and representativeness supported, to the extent possible, by empirical evidence. Use three steps in measuring flood damages for a future year: estimate the number and size of physical units; estimate the future value of units; and determine the damage susceptibility of units.

(a) Physical Units. The first step in measuring flood damages for a future year is to determine from step 2 (paragraph E-19f.) the number and size of physical units with potential to use the floodplain by hazard zones for each activity type. Care must be taken to determine whether existing structures will continue to occupy the floodplain over the period of analysis and, if not, the future land use and damage potential of new structures.

(b) Value per Physical Unit. This step involves estimating future unit value. Increases in the value of property in the floodplain may result from the expansion of existing facilities or the construction of new units. The following guidance applying to content value is derived from an empirical study of flood-prone property.

(1) Existing development. Use the OBERS [Bureau of Economic Analysis] regional growth rate for per capita income as the basis for increasing the real value of residential contents in the future.

(2) Future development. Project the value of contents within new residential structures from the year each unit is added.

(3) Translation to future flood damages. Use the projected rate of increase in the value of flood-susceptible household contents as the basis for increasing the future unit flood damage to household contents.

(4) Limit. The value of contents should not exceed 75 percent of the structural value of the residence unless an empirical study proves that a special case exists (e.g., trailer parks), nor should the increase in value of household contents be projected beyond project year 50. [Current guidance on content-to-structure ratios is provided in paragraph E-19q.]

(5) Commercial and industrial property. The procedure described for residential contents does not apply to commercial and industrial categories.

(c) Damage susceptibility. The third step in measuring future flood damages is to determine the damage susceptibility of units. Once the number of physical units and the value associated with each unit are known, examine possible future changes, if any, in damage susceptibility relationships as a function of the total value of each physical unit and the stream's flood characteristics, such as velocity, depth, duration, volume, debris load, and salinity. Some of the determinants of damage susceptibility are type of activity, vertical development, location within the floodplain, nature of flood proofing, construction material used, and individual response.

(1) Projection of Income Losses. Income losses may be projected to increase on the basis of projected land use. Increases in physical losses should not be used to project income losses.

(2) Projection of Emergency Costs. Emergency costs encompass a wide variety of programs. Some, such as emergency shelter and food, are primarily a function of occupancy of the floodplain but not of the value of development in the floodplain. Emergency costs should not be projected to increase as a direct function of physical losses.

(4) Use of Assessed Value Real Estate Appraisal and Market Value Data in Flood Damage Reduction Studies. Flooding causes physical damages to structures. In the past the Corps frequently estimated damages and cost of repair directly. The Corps now uses a risk-based procedure as defined by [ER 1105-2-101](#). This procedure requires the use of depth-damage

curves, which express an average relationship between depth of flooding and damages. Damages are expressed as a percentage of structure value. When depth-damage curves are used, the correct measure of structure value, consistent with cost-benefit concepts, is replacement cost less depreciation to the existing (pre-flood) structure.

(a) Replacement cost is the cost of physically replacing (reconstructing) the structure (only). Depreciation accounts for deterioration occurring prior to flooding, and variation in remaining useful life of structures.

(b) Assessed value, real estate appraisal and market value data do not necessarily provide acceptable and directly useable estimates of replacement cost less depreciation, even when separate land and improvement values are reported. A variety of particular causes may make the data inappropriate, but the fundamental reason is that these data are produced for and primarily used for purposes other than estimation of flood damages, that is for other than NED benefit estimation purposes.

(c) Such data has some advantages for Corps planners as it is generally available and can be relatively inexpensive. Furthermore, in many cases such data may be useable, either directly or as modified. The appropriateness of the data must be verified however.

(d) When real estate appraisals are used as a source of basic data, the appraisal process shall be documented.

(e) Requirement. When structure value data is obtained from sources other than direct estimation of cost of physical replacement less depreciation, these data shall be verified as being reasonable estimates of replacement cost less depreciation. This can be done using a sampling procedure to select a relatively small number of structures for direct estimation of replacement cost less depreciation. The results can be used to compare to, and if appropriate, adjust the data obtained from other sources.

1. Step 8--Determine Other Costs of Using the Floodplain. The impact of flooding on existing and potential future occupants is not limited to flood losses. Some of the impacts are intangible but others can be translated into NED losses. These latter include the following:

(1) Flood Proofing Costs. High flood hazards lead to high flood costs. Therefore, compute the flood proofing costs of different activity-types and different flood hazard zones.

(2) National Flood Insurance Costs. A national cost of the flood insurance program is its administration. The cost of servicing flood insurance policies in effect at the time of the study is the average cost per policy, including agent commission, and the costs of servicing and claims adjusting. FIA should be contacted to obtain these costs.

(3) Modified Use. In some cases, the flood hazard has caused structures to be used less efficiently than they would be with a project. For example, the first floor of garden apartments may not be rented because of a flood hazard, or property may be configured in a different way with the plan compared to without a plan.

m. Step 9--Collect Land Market Value and Related Data. If land use is different with and without the project, compute the difference in income for the land. This is generally accomplished by using land market value data. Provide supporting data in the situations described in the paragraphs below.

(1) Land Use is Different With Project. If land use is different with compared to without the project, collect the following data as appropriate to complete step 10.

(a) Comparable Value. If the plan does not result in a major addition to the supply of land in the area, the value with protection is the market value of comparable flood-free land. If the plan results in a major addition to the supply of land, the effect on the price of land should be taken into account in estimating the value of floodplain lands with protection. The flood-free land should be comparable in terms of physical and infrastructural characteristics.

(b) Existing Value. Use the value of nearby floodplain sites or, as appropriate, the current value of the floodplain. In either case, report the current and, if available, past market values of the floodplain. Use actual market values, not capitalized income values. Therefore, it should not be assumed that the value of land being used for agriculture in an urban or urbanizing situation is the capitalized value of agricultural returns or that any value higher than this is due to speculation that a Federal project will be constructed or lack of knowledge. On the contrary, without project land values in excess of agricultural land values should be expected, reflecting the probability of future use as well as existing and anticipated infrastructural investments.

(c) Net Income Data. The net income (earned) with a project may be estimated directly based on an analysis of a specific land use with the project. This approach would be used, for example, for lands to be developed for recreation; the projected recreation benefits would constitute the gross income earned on the floodplain and would be shown as a project benefit.

(d) Encumbered Title Market Value. Estimate the market value of land with an encumbered title for inclusion as a benefit in step 10 in situations in which the floodplain is to be evacuated, no specific public use is planned, and the land could be resold with an encumbered title (which would ensure that future uses would be consistent with Executive Order 11988--Floodplain Management, May 24, 1977).

(2) Land Use is Same But More Intense With Project. If land use is the same but more intense, as when an activity's use of the floodplain is modified as a result of the project, base determination of the increase in income on increased land values or direct computation of costs and revenues.

(3) Evacuation Plan. In the case of an evacuation plan, changes in market value of properties adjacent to a restored floodplain may reflect recreation or open-space benefits to occupants of those properties. Document such an NED benefit by empirical evidence. Care must be taken to avoid double counting of benefits.

(4) Market Value is Lowered by Flood Hazard. If the market value of existing structures and land is lower because of the flood hazard, restoration of the market value represents a quantification of otherwise intangible benefits. In such cases, the benefit is the difference between increased market value and that portion of increased market value attributable to reductions in flood damages. Careful attention should be given to ensuring that factors not related to the flood hazard are not included as project benefits.¹

(5) No Projected Increase in Market Value. Projected increase in the market value of land over the project life with and without a plan should not be used to measure flood hazard reduction benefits because the current market value of land theoretically captures the expected stream of income over time.

n. Step 10--Compute NED Benefits. At this point in the analysis, enough information is available to compute NED benefits for structural and nonstructural measures. Table E-15 displays the types of benefits claimable for three of the major flood hazard reduction measures and the steps in the procedure that provide the necessary data. The table applies generally; specific cases may vary. Discount and analyze all benefits at the appropriate discount rate to the beginning of the period of analysis. Benefits are categorized in the following way:

(1) Inundation Reduction Benefits. To the extent that step 5 indicates that land use is the same with and without the project, the benefit is the difference in flood damages with and without the project (step 7), plus the reduction in flood proofing costs (step 8), plus the reduction in insurance overhead (step 8), plus the restoration of land values in certain circumstances (step 9). To the extent that step 5

Table E- 15 Guide to Types of Benefits

Type of Benefit (and step)	Structural	Floodproofing	Evacuation
Inundation:			
Incidental Flood damages (step 6)	Claimable.....	Claimable.....	Claimable.....
Primary Flood damages (step 6)	Claimable.....	Claimable.....	Not Claimable..
Floodproofing cost reduced (step 7)	Claimable.....	Not Claimable....	Not Claimable..
Reduction in Insurance overhead (step 7)	Claimable.....	Claimable.....	Claimable.....
Restoration of land value (step 9)	Claimable.....	Claimable.....	Not Claimable..
Intensification (steps 7 and 9)	Claimable.....	Claimable.....	Not Claimable..
Location:			
Difference in use (step 9)	Claimable.....	Claimable.....	Not Claimable..
New use (step 9)	Not Claimable.....	Not Claimable....	Claimable.....
Encumbered title (step 9)	Not Claimable.....	Not Claimable....	Claimable.....
Open space (step 9)	Not Claimable.....	Not Claimable....	Claimable.....

indicates a difference in land use for an evacuation plan, the benefit is the reduction in externalized costs of floodplain occupancy that are typically borne by taxpayers or firms providing services to floodplain activities. Examples of such costs are subsidized flood insurance; casualty income tax deductions; flood emergency costs; and flood damages to utility, transportation, and communication systems. Reduction of costs not borne by the floodplain activities may be a major benefit of projects to evacuate or relocate floodplain activities. Reduction of flood damages borne by floodplain activities should not be claimed as a benefit of evacuation or relocation because they are already accounted for in the fair market value of floodplain properties.

(a) All damages avoided by flood mitigation measures are beneficial effects. Evacuation and relocation projects provide a special case for economic analysis because the effect of damage reductions are present in measures of both benefit and cost, therefore, double counting of this

benefit must be carefully avoided. IWR Research Report 85-R-1, Assessment of the Economic Benefits from Flood Damage Mitigation by Relocation and Evacuation, provides a comprehensive discussion of NED benefit evaluation procedures for relocation and evacuation projects. In planning for, and evaluation of, relocation and evacuation projects considerable attention should be paid to the with project use of land which is to be evacuated, as the benefit, associated with such use may be crucial to project feasibility.

(b) Benefit from Saving Insurance Costs. One category of costs that can be avoided by a removal plan is public compensation for private flood damages through the subsidized Federal Flood Insurance Program. Expressing savings in these externalized costs as project benefits is appropriate for properties in communities that participate in the Federal Flood Insurance Program or are expected to participate under the without project condition. This benefit is the reduction of insurable flood damages projected over the life of the project with careful attention to the projected without project condition.

(c) Insurable Flood Damages. Base the projection of insurable flood damages on traditional depth-damage-frequency relationships used in projecting total flood damages. Then reduce projected total damages by subtracting: Losses that are noninsurable either because they are in noninsurance loss categories or because they exceed the coverage limits of the subsidized program; the deductible portion of each expected flood damage event; and the annual cost of the insurance premium paid by the policyholders. For this benefit calculation, assume that all eligible parties purchase subsidized insurance. This assumption is appropriate because the market value of properties, which determines project costs, reflects the availability of the program, not the extent of its utilization by current floodplain occupants.

(2) Intensification Benefits. If step 5 indicates that land uses are the same with and without the project but activity is more intense with the project, measure the benefit as the increase in market value of land from step 9 or changes in direct income from step 6. Care must be taken to avoid double counting.

(3) Location Benefits. If step 5 indicates that land use is different with and without the project, measure the benefit by the change in the net income or market value of the floodplain land and certain adjacent land where, for example, the plan creates open space (step 9).

o. Evaluation Procedure: Problems in Application. There are six major problem areas in computing flood hazard reduction benefits:

(1) Income Losses. The loss of income by commercial, industrial, and other business firms is difficult to measure because of the complexity involved in determining whether the loss is recovered by the firm at another location or at a later time. Direct interview and empirical post-flood studies are the most appropriate data sources for analyzing whether a real resource

loss, such as the idle capital or decaying inventories, is involved. The loss of income because of idle labor may be measured from the point of view of the firm or the household, but care must be taken to avoid double-counting. Loss of income because of idle labor must be net of income to labor employed in cleanup and repair of damages; unemployment compensation and other transfer payments to idle labor are not income from an NED perspective.

(2) **Intensification Benefits.** This category of benefits is theoretically applicable to urban situations, but there are to date few documented case studies. This benefit cannot exceed the increased flood damage potential when the existing activity is compared to the intensified activity (without the proposed plan).

(3) **Location Benefits.** This benefit cannot exceed the increased potential damages with the changed land use but without the project, or the costs of fill/flood proofing, whichever is less. The limitation applies to floodplain but not floodway land. The prohibition of development in floodways reduces land value by more than can be attributed to flood risk alone. That is, land value would have been higher in the absence of development prohibition. Thus, the lessor of limitation is not an upper bound on the increase in land value due to a flood control project since the project removes both the flood risk and the development restrictions.

(4) **Risk.** The analysis of response to a flood hazard is based on a probability weighing of floods of various magnitude. This implies that floodplain occupants are risk-neutral, but many occupants, individually or as a group, either avert or accept risk. Therefore, responses to actual and potential flood damages should be viewed broadly in determining land use, mode of conducting business, and even benefits. Explain any significant deviations from expected behavior based on actual or potential flood damages computed on a risk-neutral basis.

(5) **Sensitivity Analyses.** The report should contain sensitivity analyses that present a range of benefit levels representing data and assumptions about which reasonable persons might differ. Report the benefit level that is most probable; present other levels for public information. If increases in damages are based on increases in value, conduct a sensitivity analysis of value per structure under the alternate assumption that there is no increase in the average value of structure or contents and that increases in damages are due solely to increases in the number of structures and/or shifts from one type of structure to another. If explicit risk-based analysis has been used in the report, sensitivity analyses are not required. Sensitivity analyses could be performed as necessary to describe the sensitivity of the formulation to inherent assumptions.

(6) **Existing Levees that do not Meet Corps Criteria.** Problems have often arisen in the benefit evaluation of flood damage reduction studies when there are existing levees of uncertain reliability. Specifically, the problem is one of engineering judgment but has implications for benefit evaluation: engineering opinion may differ or be uncertain on the ability of the levees to

contain flows with water surface elevations of given heights. This may lead to difficulty in arriving at a clear, reasonable and agreed upon without project condition.

(a) General. Investigations for flood damage prevention involving the evaluation of the physical effectiveness of existing levees and the related effect on the economic analysis shall use a systematic approach to resolving indeterminate, or arguable, degrees of reliability. Reasonable technical investigations shall be pursued to establish the minimum and, to the extent possible, the maximum estimated levels of physical effectiveness. Necessary information and summary of analyses shall be included in report presentations of plan formulation and shall be documented in appropriate supporting materials.

(b). Sources of Uncertainty. Studies involving existing levees will focus on the sources of uncertainty (likely causes of failure). Other than overtopping, levees principally fail due to one or a combination of four causes: surface erosion, internal erosion (piping), underseepage, and slides within the levee embankment or foundation soils. Reasonable investigations, commensurate with the level of detail suitable to the planning activity underway, shall determine the condition of existing levees with respect to the factors that can lead to failure, if this information does not already exist.

(c). Performance Record. Existing levees either have or have not failed during previous flood events or have shown evidence of distress such as various degrees of piping, underseepage and sloughing. Information regarding their performance is relevant and vitally important in forming judgments regarding future performance. However, it should not be assumed that because a levee has passed a flood of a given frequency it will always do so in the future or vice versa, assuming the levee has been repaired.

(d) Reliability.

(1). Reliability judgments should be based solely on physical phenomena. The question to be answered is: what percent of the time will a given levee withstand water at height x ? This means that considerations such as meeting FIA regulatory requirements, induced damages, induced flood heights, potential for increased risk of loss of life due to false sense of security, etc., are not included. These considerations will be dealt with separately during the plan formulation process.

(2). The purpose of the reliability determination is to be able to estimate the without-project damages. Its purpose is not to make statements about the degree of protection afforded by the existing levees. The preferred procedure is to estimate the reliability from the levee base to its top. As a minimum, information shall be gathered to enable the identification of two points on the existing levees. The first point is the highest vertical elevation on the levee

such that it is highly likely that the levee would not fail if the water surface elevation were to reach this level. This point shall be referred to as the Probable Non-failure Point (PNP). The second point is the lowest vertical elevation on the levee such that it is highly likely that the levee would fail. This point shall be referred to as the Probable Failure Point (PFP). As used here, “highly likely” means 85+ percent confidence. As defined, the PNP will be at a lower elevation than the PFP. When there are unresolved uncertainties or differences of opinion, consideration should be given to having the range of uncertainty extend from the lower of arguable PNPs to the higher of arguable PFPs. Because of lack of information or other reasons, if the PFP cannot be determined then the PFP shall be the low point in the levee where the levee is first overtopped. When determining the low point in the levee, assume that closure actions have taken place.

(3) Further technical guidance on reliability determinations is available in Engineering Technical Letter 1110-2-556, Risk Based Analysis in Geotechnical Engineering for Support of Planning Studies, 28 May 1999.

(e). Benefit Evaluation Procedure. Even if no PNP is claimed for an existing levee, it does, most likely, provide some benefits. Assessment of these benefits must be in some degree arbitrary in the absence of illuminating engineering or statistical analyses. The function of identifying the probable failure and non-failure points is to create a range of water surface elevations on the levee over which it may be presumed that the probability of levee failure increases as water height increases. The requirement that as the water surface height increases the probability of failure increases, incorporates the reasonable assumption that as the levee becomes more and more stressed it is more and more likely to fail. If duration information is known, explicit incorporation of the information is encouraged. If the form of the probability distribution is not known, a linear relationship is an acceptable approach for calculating the benefits associated with the existing levees. For benefit evaluation, assume all flood damages will be prevented below the PNP; and no damages will be prevented above the PFP.

p. Data Sources. The following paragraphs summarize problems associated with two key data sources.

(1) Interviews. The primary use of personal interviews is to collect flood damage data, but interviews may also be used to collect other necessary data not available from secondary sources. Use only interview forms approved by the Office of Management and Budget. Use statistically sound techniques for selecting the interview sample and for devising the questions. The questionnaire and a summary of responses should be compiled and displayed in the final report in a way that protects the source of individual disclosures. Describe the errors and uncertainty inherent in the sampling methods and responses.

(2) Local Land Use Plans. Local land use plans and zoning ordinances are valuable guides to future land use in the floodplain, but caution must be exercised in the use of such plans

and ordinances. First, the demographic implications of local plans and ordinances must be consistent with, or convincingly distinguished from, trends in a larger area, e.g., OBERS [Bureau of Economic Analysis]. Second, a local plan is not an acceptable projection for the without project condition if it ignores the flood hazard. Third, the status, date, and likelihood of change of local plans vary. Finally, local plans may not contain sufficiently detailed information to be of direct use in benefit analysis.

(3) IWR Reports. Additional detailed support material for conducting NED evaluation for urban flood damage may be found in the following reference documents. Policy statements in this regulation take precedence in any apparent contradiction suggested by information contained within these IWR reports.

(a) Urban Flood Damage (IWR Report 88-R-2, March 1988)--This manual provides an expanded description of urban flood damage reduction benefit procedures.

(b) Urban Flood Damage, Volume II, Primer for Surveying Flood Damage for Residential Structures and Contents (IWR Report 91-R-10, October, 1991)--This manual is a primer for conducting comprehensive flood damage and related surveys. It explains how basic principles of survey research can be applied to data collection for flood damage studies. Two prototype questionnaires (one in person and one mail with a preliminary telephone supplement) for collecting residential flood damage and related information are presented. Examples from previous applications of these questionnaires provide insight as to how they may be adapted and implemented for future flood damage studies.

q. Urban Flood Damage - Additional Procedures.

(1) Content Value.

(a) For feasibility studies, residential content-to-structure ratios should be based on either site-specific surveys or surveys of comparable floodplains. In areas where surveys of comparable floodplains are used, at a minimum, qualitative rationale will be provided to demonstrate comparability of the survey to the study floodplain. Districts may request deviation from this guidance if can reasonably demonstrate lack of site specific content surveys will not effect plan formulation. Rationale for deviation from this guidance should be submitted to HQUSACE (CECW-PD) with accompanying Project Management Plan.

(b) Commercial, industrial and public content-to-structure ratios should be based on either site-surveys or surveys of comparable business or structure types. In areas where surveys of comparable types are used, at a minimum, qualitative rationale will be provided to demonstrate comparability of the survey to the study floodplain. Districts may request deviation

from this guidance if it can reasonably demonstrate lack of site specific content surveys will not effect plan formulation. Rationale for deviation from this guidance should be submitted to HQUSACE (CECW-PD) with accompanying Project Study Plan.

(2) Depth-Damage Relationships. For feasibility studies, depth-damage relationships should be developed based on site-specific data or from comparable floodplain data. In areas where depth-damage relationships are based on comparable floodplain data, at a minimum, qualitative rationale will be provided to demonstrate the reasonableness of use of the depth-damage relationship in the study area. Districts may request deviation from this guidance if they can reasonably demonstrate lack of site-specific depth-damage relationships will not effect plan formulation. Rationale for deviation from this guidance should be submitted to HQUSACE (CECW-PD) with accompanying Project Study Plan.

(a) In FY 2000 the Corps began releasing generic depth-damage relationships developed through the Flood Damage Data Collection Program. In flood damage reduction studies where site-specific or comparable floodplain depth-damage information is not readily available these curves are approved for use. As these curves are intended for nation-wide use no rationale is required to demonstrate applicability in individual floodplains. The curves are developed for specific building types, i.e., residential one-story without basement, and cannot be substituted for other building types.

(b) These generic depth-damage curves relate content damages directly to structure values. When generic depth-damage curves are used no valuation of contents is required. Districts are therefore not required to collect or report content valuations for flood damages analyzed through the use of generic curves.

(3) Documentation Requirements for Location Benefits. A location benefit is the increase in aggregate net income (increases less decreases) due to efficiencies of a floodplain location compared to the best non floodplain location. The P&G says estimated change in floodplain land price is an acceptable benefit measure, but care must be taken that decreases in price elsewhere are accounted for. Alternatively, when change in net income to the occupying activities is directly estimated, accounting for compensating changes in land prices is not relevant.

(a) Provide the following documentation in addition to that required by paragraphs E-19e. to E-19n.

(1) Document alternative sites for activities that might occupy the floodplain. Include sites which are available or would likely be available for development over the planning horizon, but which may not typically be included in a real estate study that focuses on comparable sales. There is usually substantial industrial/commercial land available in a typical urban area.

(2) Document specific characteristics of the protected floodplain which make it attractive in comparison to alternative non floodplain locations, such as availability of services, etc. Some idea of the likely nature of the occupying activity is required. Compare floodplain and non floodplain alternative locations on a characteristic by characteristic basis.

(3) Based on economic projections for the overall area, and on the potential for land use change in the overall area, allocate land use to floodplain and non floodplain locations in without and with project conditions. The allocation must be explicitly based on the comparisons of subparagraph (2) above. Significant economic advantage of the floodplain location must be apparent as a basis for attributing predicted changes in land prices to locational advantage.

(4) If predicted changes in floodplain land values are to be the measure of benefits, the data and procedures by which the benefit estimate results from analysis of comparable sales must be documented.

(a) Choose comparable sales based on their similar characteristics to floodplain locations. These data are used in estimating NED benefits as discussed in paragraphs E-19m. and E-19n. Also, compare these sale prices to asking prices of non floodplain alternative locations identified in subparagraph (1) above. If alternative location asking prices are less, assess whether this means such sites would be preferable to floodplain sites. For example, if non floodplain asking prices are lower, it must be shown that floodplain site characteristics are sufficiently advantageous to outweigh the lower cost of non floodplain alternative sites.

(b) The spatial allocation and benefit estimates are supported when comparisons of both relative locational characteristics and relative land prices indicate floodplain locations are superior.

(5) If allocations are supportable by both comparisons of the locational characteristics and comparable sales data, it should be assumed that use of floodplain land is phased in as demand for additional land develops. Floodplain land should not be assumed to increase in value instantaneously.

(b) Required sensitivity on the reasonableness of benefits estimated by land value comparisons, and test of the non practicability of non floodplain locations.

(1) For representative activities estimate directly the change in net income that would accrue when a floodplain location is chosen over the best non floodplain location. Use these calculations to support benefits based on land value projections and for findings of non practicability of non floodplain locations.

(2) Estimate the increased damages which would accrue on the newly developable land in the floodplain if the development occurred in the without project condition.

(4) Documentation Requirements for Lost Net Income and Lost Wages. The P&G allow income loss as an NED benefit only when it can be demonstrated that postponement or transfer does not occur. This is exceedingly difficult to demonstrate. If lost net income or lost wages is to be claimed as a benefit, an estimating procedure must be developed and submitted to HQUSACE CECW-PD for approval prior to inclusion of the benefits in feasibility reports or other decision documents. The PSP is an appropriate vehicle for documenting proposed procedures when it is desired to include lost income or lost wages benefits in feasibility studies.

(5) Documentation Requirements for Savings in Floodproofing Costs on Alluvial Fans. Alluvial fans are triangular or fan shaped, gently sloping land forms which provide attractive development sites due to their commanding views. Alluvial fans primarily occur in the southwestern U.S. Active fans exhibit braided channels and erratic flowpaths that are typical of a young fan formation. These fans have severe flood hazards which exhibit unpredictable flow paths and high velocities that usually occur with little advance warning time. Flooding on the fan can cause considerable erosion in some areas and deposit large amounts of sediment and debris in other areas.

(a) The Federal Emergency Management Agency (FEMA) has provided guidance on techniques and strategies for minimizing losses from the flood hazards when building and developing on an alluvial fan (Alluvial Fans: Hazards and Management, May 1989) and additionally has placed restrictions on housing developments in Special Flood Hazard Areas (SFHA). The creation of an overall development master plan, drainage maintenance and floodplain management is encouraged by FEMA. The Federal Register dated March 7, 1989, 44 CFR states "topographic alterations alone, by fill or other means, will not serve as a basis for removing SFHA designations from alluvial fans." The procedures necessary for FEMA to recognize that a flood control measure is effective in removing or reducing the size of a SFHA on an alluvial fan have associated costs. To ensure that development projects are protected from alluvial fan flood hazards, FEMA's review criteria requires that the construction include elements which: do not cause the disturbance of natural flood processes on the fan; allow for safe collection, passage and disposal of flood related water, sediment and debris without negative impact to adjacent property; address erosion, scour, deposition, impact and hydrostatic forces; provide that the design and maintenance of project elements be coordinated with the local jurisdiction and/or agency responsible for flood control within the community.

(b) Cost associated with development compliance in accordance with FEMA alluvial fan regulations are NED costs where it can be demonstrated that these costs will occur in the without project condition. Removal of these costs through regional flood control solutions would therefore be an NED benefit. FOAs must, however, carefully document the without project

condition. It can reasonably be expected that without project development will not occur in some areas of an alluvial fan because of prohibitively high compliance costs. This is likely true in the high velocity areas approaching the apex of the fan. In studies where alluvial fan compliance cost benefits constitute a major portion of total benefits, districts are required to quantitatively demonstrate that development will occur in the without project condition. An example of an appropriate quantitative analysis would be a comparison of developer costs and expected profits in project alluvial fan and non-alluvial fan areas. Additionally, districts must document historic floodproofing costs and explain any deviation from those projected for the benefit analysis.

r. Report and Display Procedures. Include in the report enough data to enable the reviewer to follow the key steps above and, more important, the underlying rationale for the project.

(1) Report Procedures For Risk and Uncertainty. To assist reviewers in assessing response to risk, summarize the following separately and display the information in tabular form:

(a) Remaining Flood Damage Situations: Categorizations. The remaining damages are those expected to occur even with a floodplain management plan in operation. Remaining damages include:

(1) Damages to activities that would occupy the floodplain with as well as without the plan;

(2) Damages to activities that would occupy the floodplain only with the plan; and

(3) Increased damages to activities outside the protected area with and without the plan. This includes downstream flooding, if any, caused by the plan or project.

(b) Flood with two-tenths of 1 percent chance of occurrence. Fully describe the flood with two-tenths of 1 percent chance of occurrence (500-year frequency) with and without the plan. The report should contain, for example, two-tenths of 1 percent flood damages; the number of people and towns affected; the number of structures and acres by land-use type; disruption of essential services (e.g., water, power, fire protection, and sanitary services) and distance to unaffected essential services; anticipated warning time; flood depths, velocity, duration, debris content, etc.; and other indicators pertinent to catastrophic flooding. The .02 probability flood description will be based on the median probability discharge. If protection against the .02 probability event is recommended, the Standard Project Flood (SPF) shall also be analyzed and described, if it is larger than the .02 probability flood.

(2) Summary Tables. Tables E-16 through E-19 are suggested presentations for all reports that include flood hazard reduction as a purpose. The summary tables should include

pertinent land use data for computing not only NED benefits, but also environmental, social, and regional impacts. Also present other floodplain data pertinent to the evaluation on one or more maps: Flood limits and depths with and without the project; current and future land use; and 100-year [.01 annual probability] and other flood limits and depths.

E-20. NED Benefit Evaluation Procedures: Agriculture

a. Purpose. This section provides procedures for the evaluation of agricultural benefits from water resources plans. The benefits attributable to flood damage reduction, drainage, irrigation, erosion control and sediment reduction should be evaluated separately to the extent practical.

b. Conceptual Basis.

(1) NED Benefits. The NED benefits are the value of increases in the agricultural output of the Nation and the cost savings in maintaining a given level of output. The benefits include reductions in production costs and in associated costs; reduction in damage costs from floods, erosion, sedimentation, inadequate drainage, or inadequate water supply; the value of increased production of crops; and the economic efficiency of increasing the production of crops in the project area.

(2) Basic and Other Crops.

(a) Basic crops (rice, cotton, corn, soybeans, wheat, milo, barley, oats, hay, and pasture) are crops that are grown throughout the United States in quantities such that no water resources project would affect the price and thus cause transfers of crop production from one area to another. The production of basic crops is limited primarily by the availability of suitable land.

(b) On a national basis, production of crops other than basic crops is seldom limited by the availability of suitable land. Rather, production is generally limited by market demand, risk aversion, and supply factors other than suitable land. Thus, production from increased acreage of crops other than basic crops in the project area would be offset by a decrease in production elsewhere. In some parts of the Nation analysis of local conditions may indicate that the

Table E- 16 Summary of Annualized NED Benefits and Costs for Alternative Projects

(Applicable discount rate: _____)

Project benefits and costs	Alternatives			
	1	2	3	X

Flood hazard reduction benefits				
Inundation:				
Physical .....	.....	.....	.....	.....
Income.....	.....	.....	.....	.....
Emergency.....	.....	.....	.....	.....
Total .....	.....	.....	.....	.....
Intensification .....	.....	.....	.....	.....
Location:				
Floodplain .....	.....	.....	.....	.....
Off Floodplain.....	.....	.....	.....	.....
Total	.....	.....	.....	.....
Total flood benefits	.....	.....	.....	.....
Benefits from other purposes	.....	.....	.....	.....
Total project benefits	.....	.....	.....	.....
Project costs	.....	.....	.....	.....
Net benefits	.....	.....	.....	.....

Table E- 17 Flood Damages by Decade, Alternative Projects

(Applicable discount rate: ____)

Project	Time Period ¹			
	P0	P10	P20 etc	AAE ²
No. 1.....
No. 2.....
No. 3.....

¹The designations P10 and P20 identify the 10th and 20th years, respectively, of project life

²Average annual equivalent

Table E- 18 Flood Damages by Decade Without Project

(Applicable discount rate: ____)

Property Type	Time Period ¹						
	P50	P40 etc	Existing	pn	P10	PN	AAE ²
a (Subclassification of residential).....
b.....
c.....
Commercial.....
Industrial.....
Other.....
Total.....

¹The designations P10 and P20 identify the 10th and 20th years, respectively, of project life, P50 is 1932, P40 is 1942, etc.

²Average annual equivalent

Table E- 19 Number of Acres (or Structures), Floodplain Without Project

Property Type	Existing	Time Period ¹						
		P0	P10	P20	P30	P40	P50	P100
a (Subclassification of residential units.....
b.....
c.....
Commercial.....
Industrial.....
Semipublic.....
Transportation.....

¹Comparable tables may be made for all alternatives, if pertinent.
²The designations P10 and P20 identify the 10th and 20th years, respectively, of project life

production of other crops is limited by the availability of suitable land. (Suitable land is land on which crops can be grown profitably under prevailing market conditions.) In this case, crops other than basic crops listed above may also be treated as basic crops when measuring intensification benefits by farm budget analysis. (See paragraph E-20e(4) to determine when other crops may be treated as basic crops.)

(3) Benefit Categories. Agricultural benefits are divided into two mutually exclusive categories, depending on whether there is a change in cropping pattern:

(a) Damage reduction benefits, that is, benefits that accrue on lands where there is no change in cropping pattern between the with and without project conditions; and

(b) Intensification benefits, that is, benefits that accrue on lands where there is a change in cropping pattern. There is also a subcategory of intensification benefits called efficiency benefits, which accrue from reduced costs of production.

(4) Measurement of NED Benefits.

(a) Damage reduction benefits. Damage reduction benefits are the increases in net income due to the plan, as measured by farm budget analysis. These income increases may result from increased crop yields and decreased production costs. [ER 1105-2-101](#) requires risk-based

analysis in all flood damage reduction studies. This includes studies where the primary damages occur to agricultural crops. The ER identifies key variables that will be specifically incorporated into the risk-based analysis. The identified hydrologic/hydraulic variables, discharge associated with exceedence frequency and conveyance roughness and cross-section geometry, apply to agricultural studies. However, the economic variables do not identify the key areas of uncertainty related to the stage-damage relationship in agricultural studies. The ER suggests that key variables in agricultural areas may be seasonality of flooding and cropping patterns. FOAs should incorporate the key variables that apply to their specific area in the risk-based analysis. Documentation of the key variables and the method of analysis should be incorporated in the PSP. Districts are under no requirement to use the economic variables identified in the ER (structure first floor elevation, content and structure values) for agricultural damages or to perform explicit risk-based analysis of agricultural structures if they do not affect the formulation of the project

(b) Intensification benefits. Intensification benefits are measured either by farm budget analysis or by land value analysis. Intensification benefits from increased acreage of basic crops and other crops that are constrained by the availability of suitable land in the WRC assessment subarea (ASA) are measured as the net value of the increased production. Intensification benefits from increased acreage of other crops (except for acreage of crops to be treated as basic crops because they are land constrained) result when there are production cost savings. These production cost savings are called efficiency benefits and are measured as the difference between production costs in the project area and production costs on land elsewhere in the ASA.

(1) Farm budget analysis. On land where the intensification benefit is solely from increased acreage of basic crops (and crops to be treated as basic crops), benefits are measured as the change in net income (see paragraphs E-20e.(3). through E-20e.(6).). On land where the intensification benefit is from increased acreage of other crops, use the efficiency procedure found in paragraph E-20e(8).

(2) Land value analysis. Intensification benefits alternatively may be measured as the difference in the value of benefiting lands with and without the plan. The market value of a parcel of land reflects the capitalized value of the expected net income that can be derived from the land. Therefore, the difference in market value of two parcels of land that are identical except for the provision of improved water conditions reflects the present value of the additional net income (i.e., the intensification benefit) that can be attributed to improved water management or supply. (See paragraph E-20e(9))

c. Evaluation Components. Evaluation of the impact of water management practices or control measures should consider the following components:

(1) Cropping Patterns. Project the most probable cropping patterns expected to exist with and without the project. If project measures are designed to reduce damage or associated cost problems without changing cropping patterns, project the current cropping pattern into the future for both with and without project conditions.

(2) Prices. Use normalized crop prices issued by the Department of Agriculture to evaluate NED agricultural benefits; adjustments may be made to reflect quality changes caused by floods or drought. The Department of Agriculture provides commodity prices, and indexes of prices paid by farmers for purchased inputs, to Federal water resource agency planners for estimating benefits from water projects. In the past, for each crop two prices and for each purchased input two price indexes were reported. One was market clearing prices with Government crop support programs, the other was market clearing prices without the programs. As a result of Section 632 of Public Law 100-460 market clearing prices without Government crop support programs will no longer be reported. Economic evaluation will therefore necessarily use only prices with the support programs. For crops not covered above, statewide average prices over the three previous years may be used.

(3) Production Costs.

(a) Analyze production costs that can be expected to vary between the with and without project conditions. These may include the costs of equipment ownership and operation; production materials; labor and management; system operation, maintenance, repair, rehabilitation and replacement (OMRR&R); and interest payments. If costs associated with project measures (e.g., on-farm drainage or water distribution costs) are included in the project cost analysis, exclude them from production costs.

(b) Value purchased inputs at current market prices. Compute interest at the project discount rate. Value all labor, whether operator, family, or hired, at prevailing farm labor rates. Estimate management cost on the basis of the type of farming operation. The estimate normally is expected to be at least six percent of the variable production cost (the cost of equipment ownership and operation, production materials and labor, but excluding the cost of land and added capital improvements).

(4) Crop Yields. Project current yields with average management in the project area to selected time periods. Adjust future yields to reflect relevant physical changes (e.g., erosion, drainage, water supply, and floodwater runoff) in soil and water management conditions. Increases in yields due to future improvements in technology may be included in the evaluation when realization of these benefits is dependent upon installation of the project. The costs associated with these improvements in technology should be accounted for in the analysis.

Changes in yields, both with and without the project, should be projected consistently with the water management and production practices accounted for in the production cost analysis.

(5) Livestock Production. In geographically isolated areas increased livestock production may depend on installation of the water resources project. Where this can be demonstrated, net income from additional livestock production may be included as a benefit. The test for dependency is whether the livestock feeds can economically be transported into or out of the area. Benefits cannot exceed the delivered cost of the livestock feed if it were purchased for use in the project area. Such purchase prices would automatically include the costs of transporting the feeds into the area.

(6) Comparable Lands. Comparable lands are lands that have climate, aspect, slope, soil properties and water conditions similar to those of a given category of lands benefitting from a plan.

(7) Land Values. The market value of lands method for estimating the economic benefits of alternative plans requires the involvement of qualified land appraisers with local experience. Use of this procedure is appropriate when:

(a) Lands to be affected by the proposed alternative plan are comparable to lands elsewhere which can be appraised;

(b) Water resources conditions on comparable lands are similar to those to be provided on lands affected by an alternative plan, and they can be identified and evaluated;

(c) Current market data are used to determine the value of capital improvements and other factors when making adjustments for these factors on comparable lands; and

(d) The estimated value of lands to be affected by the plan is not changed by speculation that Federal action is anticipated.

d. Planning Setting.

(1) The without project condition, including conservation measures, is the condition expected to exist in the absence of an alternative plan.

(2) The with project condition is the condition expected to exist with each alternative plan under consideration.

(3) Agricultural income and production costs should be determined for various conditions or levels of land and water quantity and/or quality use. (Include other resources

associated with changes in land and water quantity and/or quality.) The level of use to be evaluated initially is the without-plan condition. Other levels of use to be evaluated will depend on the number of alternative plans selected for analysis.

e. Evaluation Procedure: Crops. This procedure is for the evaluation of benefits to crop production that would accrue from an alternative plan. Steps in this procedure are summarized in Figure E-5.

(1) Step 1. Identify Land Use and Cropping Patterns With and Without a Plan. This information is generally developed for segments of the plan area with significantly different characteristics. Collect appropriate data about the current and historic cropping patterns and yields in the project area. When appropriate, collect similar data on other areas with comparable soils to determine conditions expected with alternative plans. Analyze trends and expected changes for without project conditions. Project future cropping patterns and yields under without plan conditions. Include the effects of conservation and structural and nonstructural measures expected under existing programs. Project future cropping patterns and yields for each alternative plan. For analytical purposes, separate land in the project area into two categories: lands on which the cropping pattern is the same with and without the plan; and lands on which there would be a change in cropping pattern with the plan. To estimate crop production benefits on lands where there would be a change in cropping pattern, go to Step 3. To estimate crop production benefits on lands where there would not be a change in cropping, proceed with Step 2.

(2). Step 2. Determine Damage Reduction Benefit. For land on which the cropping pattern would not change, determine the change in net income with and without a plan. This is the damage reduction benefit. Income increases may result from increased crop yields and decreased production costs. They are measured as reduced damage to crops from excessive soil moisture, water inundation, drought and erosion, and reduced costs associated with using water and land resources for the production of crops.

(a) Estimate reduced damage to crops from excessive soil moisture on the basis of the change in frequency and duration of excessive soil moisture. Estimate reduced damage to crops from water inundation on the basis of the change in frequency, depth, and duration of inundation. Estimate reduced damage from drought on the basis of the change in frequency and duration of inadequate soil moisture during the growing season. Estimate reduced damage from erosion on the basis of the change in land voiding from gully and streambank erosion and on the basis of the

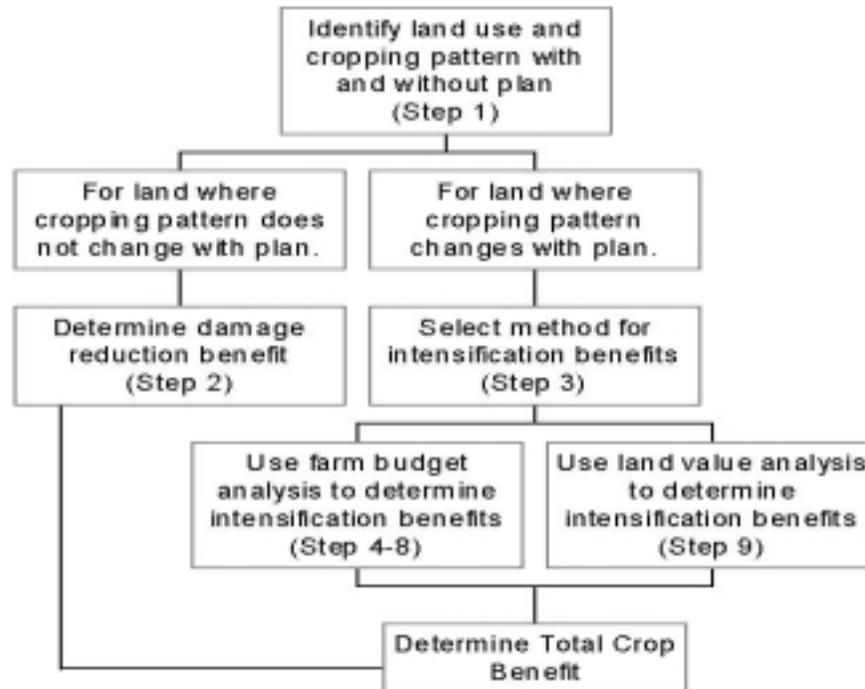


Figure E- 5 Agricultural Benefits Evaluation Procedure

change in productivity losses from floodplain scour, sheet erosion, overbank deposition, and swamping.

(b) Estimate reduced costs associated with using water and land resources for the production of crops on the basis of the changes in the costs of equipment ownership and operation; production materials; labor and management; and system operation, maintenance, and replacement.

(c) Use farm budget analysis to measure changes in net income from reduced damage to crops and reduced costs of production.

(3). Step 3. Select Evaluation Method for Estimating Intensification Benefits. For land on which the cropping pattern would change, select either farm budget analysis or land value analysis as the method for measuring intensification benefits. If land value analysis is selected, go to Step 9. If farm budget analysis is selected, proceed with Step 4.

(4) Step 4. Determine Whether Other Crops Are to be Treated as Basic Crops. If the change in cropping pattern increases the acreage in production of other crops and if it is believed that the production of other crops is constrained by the availability of suitable land, the following test may be applied to determine whether these crops should be treated as basic crops in the benefit analysis. If the test is not applied, go to Step 8.

(a) Select a representative sample of farm operations on lands comparable to lands benefitting from the project under with project conditions where there would not be a change in cropping pattern, proceed with Step 2.

(b) For each farm operation determine the respective acreage of basic and other crops.

(c) Use these data to compute the proportion of other crop acreage to total crop acreage for each farm.

(d) Use farm budget analysis to identify the top 25 percent of farms in the representative sample in terms of expected net income per acre.

(e) The average of the proportions of other crop acreage to total crop acreage for the top 25 percent of farm operations is defined as the "optimal proportion". The optimal proportion for these farm operations will reflect risk and uncertainty, returns to management, and prevailing market conditions.

(f) If it can be demonstrated through standard statistical tests that the optimal proportion is not statistically different from the proportion computed as the average of individual farm operation proportions for the complete sample, then the production of other crops can be considered to be constrained by the availability of suitable land in the ASA and, therefore, treated as basic crops. Otherwise it can be inferred that production of other crops is not land constrained in the ASA. When the crops are not land constrained, go to Step 8; otherwise, proceed with Step 5.

(5) Step 5. Determine Limit on Acreage of Other Crops That May be Treated as Basic Crop Acreage. If the production of the other crops is found to be constrained by availability of suitable land in the ASA, then multiply the acreage of comparable land in the project area by the optimal proportion found in Step 4(a). This is the maximum acreage of other crops that may be analyzed using the steps that apply to basic crops (Steps 6 and 7). To analyze benefits for any acreage of other crops in excess of this maximum acreage, go to Step 8.

(6) Step 6. Project Net Value of Agricultural Production With and Without the Plan. Use information from farm budget analysis to estimate the net value of agricultural production under without plan conditions. Estimate the net value of agricultural production associated with each of the alternative plans. Account for variable costs related to production. Include non-project OM&R costs and associated costs for each alternative plan.

(7) Step 7. Compute Intensification Benefits for Acreage of Basic Crops and Other Crops to be Treated as Basic Crops. Compute intensification benefits as the change in net income between the without project condition and conditions with an alternative plan. Express these intensification benefits in average annual equivalent terms. This completes the analysis of benefits for lands with increased acreage of basic crops and other crops that are to be treated as basic crops.

(8) Step 8. Determine Efficiency Benefits. Compute efficiency benefits for acreage producing other crops not treated as basic crops as the sum of:

(a) The difference between the cost of producing the crops in the project area and the cost of producing them on other lands in the ASA; and

(b) The net income that would accrue from production of an appropriate mix of basic crops on those other lands. Express this efficiency benefit in average annual equivalent terms.

(9) Step 9. Land Value Analysis. When estimating intensification benefits on the basis of land value analysis, base appraisals on market values, not on capitalized income values.

(a) Obtain appraisals of the current market value of lands that would benefit from the plan. These lands should be divided into various categories where values differ significantly.

(b) Obtain and appropriately adjust appraisals of non-project lands in the ASA that are comparable to lands in each category of project lands and that have water conditions comparable to those that would result from each alternative plan.

(1) Adjust the value of these comparable lands for facilities and other capital improvements that are not present on project lands. For example, subtract the current market value of improvements such as investments in orchards.

(2) In the case of irrigation projects, add to the appraised value of comparable lands the present value of water costs incurred by the operator. These water costs include both payments to outside suppliers and the cost of self-supplied water. Use the project discount rate to calculate the present value of these costs.

(3) Control for other factors that may affect the value of land, such as kinds of crops grown, distance to urban areas, availability of transportation facilities, presence of utilities, zoning regulations, and special property tax rates. This control may be achieved by using totally comparable parcels of lands; by collecting a sample large enough so that differences will be averaged out; or by a statistical means such as regression analysis.

(c) Subtract the value in paragraph E-20e(9)(a) from the adjusted value in paragraph E-20e(9)(b). This is the intensification benefit.

(d) Annualize the intensification benefit found in the subparagraph (c) above at the project discount rate.

f. Damage Reduction For Other Agricultural Properties and Associated Agricultural Enterprises.

(1) Determine Damage Reduction for Other Agricultural Properties. The term “other agricultural properties” includes physical improvements associated with various farm enterprises and the agricultural community. Measure benefits to such properties as reduction in damages in the future with the project compared to without the project. The following discussion identifies key analytical steps in the evaluation. Benefits accrue through alterations in water conditions or in altering the susceptibility of the property to damage (e.g., flood proofing).

(a) Inventory Damageable Improvements. Identify the location, type, number, and value of other agricultural properties within the area that are subject to damage. This information is most easily obtained through interviews of farmers and field reconnaissance.

(b) Determine Damage to Improvements. Gather historical data on damages to other agricultural properties, such as equipment, improvements, and agricultural enterprises.

(c) Determine Average Annual Equivalent Damage to Improvements. Use appropriate data to determine average annual equivalent damage to improvements. For example, use depth-damage relationships for each reach, integrated with hydrologic data, to develop average annual flood damages with and without the plan. Include consideration of the frequency and duration of the damage.

(2) Determine Damage Reduction Benefits for Associated Agricultural Enterprises. Associated agricultural enterprises are economic activities that may be affected by changed water supply or water management conditions. Evaluate damages of this type as reduced net income under without project and with project conditions. An example of this type of damage is delay in spring planting on flood free lands because of flooding of access roads.

(3) Calculate Average Annual Equivalent Benefits. The damage reduction benefit is the difference between average annual equivalent damages with and without the plan.

g. Off-site Sediment Reduction. Determine average annual equivalent sediment damages by adding the costs in constant dollars of removing sediment from roads, culverts, channels, etc., over a representative period of time and dividing by the years of record. The difference in damages with and without the project is the benefit. Extending the useful life of an existing reservoir is another type of sediment reduction benefit. Discount the net value of the extension to present values, and amortize it over the project life. The increased cost of providing goods and services (e.g., additional treatment costs for removing sediment from municipal water) can also be used to evaluate damages. Reductions in the costs of sediment removal or water treatment provide the basis for assessing benefits with the plan.

h. Evaluation Procedures: Problems in Application.

(1) Damage Reduction Benefits. Damage reduction benefits are measured by farm budget analysis. Proper measurement of such benefits requires accurate estimates of with and without plan soil, water, and land use conditions. Changes in physical conditions take place at different rates and over different time periods. Analysis can be improved by projecting changes in physical conditions to selected time periods, analyzing net income for the time periods, and converting net income for the time periods to an average annual equivalent value. In farm budget analysis, double counting can be avoided by taking a holistic approach (including all soil, water and land use conditions in a single farm budget analysis).

(2) Determination of Land Constraint. Intensification benefits for other crops are measured either as a change in net income or as an efficiency gain depending on whether there is an adequate supply of suitable land in the region for growing crops other than basic crops (that is, whether production is land constrained). This determination requires a regional (ASA) analysis of comparable lands. In order to make this determination properly, care must be exercised to ensure that lands being evaluated are fully comparable. Care must also be exercised in order to obtain the proper determination of aggregate acreage of basic and other crops for the top 25 percent of the farms. (See paragraph E-20e(4))

(3) Benefit Attribution. In flatland watersheds, drainage and flood damage reduction benefits cannot be separated analytically. Therefore, they are arbitrarily allocated on a 50/50 basis. The value of benefits in other categories is determined on the basis of changes in physical conditions with and without the plan. The benefits are assigned according to the following: the proportion of the change in net income attributed to changes in soil moisture, water inundation, drought and erosion; the proportion of land use changes attributed to each of the above; and changes in production costs attributed to each of the above. Except for the problem with drainage and flood damage reduction in flatland watersheds, benefits can be measured independently if proper assumptions are made to avoid double counting. Double counting can be avoided by making sure that total benefits measured independently do not exceed total benefits from a holistic farm budget analysis.

(4) Residual Damages. In evaluating with plan conditions, care must be taken to consider residual damages, that is, damages that would still occur with implementation of the plan.

(5) Land Value Analysis. Because proper real estate value(s) analysis is dependent on accurate appraisals, the land analysis must be based on appraisals performed by qualified appraisers. Adjustment of comparable real estate to project lands requires detailed knowledge of local physical and financial conditions to account for capital improvements, costs of water supply, and other factors affecting the values.

(6) Agricultural intensification benefits cannot exceed the increased flood damage potential when the existing cropping pattern is compared to the intensified cropping pattern (without the proposed plan).

(7) Agriculture: Swampbuster. The Food Security Act of 1985 (Public Law 99-198) contains provisions known collectively as "Swampbuster". Their intent is to discourage conversion of farm wetlands. The Swampbuster provisions were implemented as a USDA final rule (7 CFR 12), effective 17 September 1987.

(a) Conversion of wetlands is discouraged by imposing penalties on farmers who plant commodity crops on lands that were converted from wetlands after 23 December 1985. The penalty is loss of a wide variety of Agriculture Department program benefits, including all types of price supports or payments; crop insurance; access to loans made, insured, or guaranteed by FMHA; and others. If imposed, the penalty applies to all holdings of the farmer, not just to the acres that were converted and cropped.

(b) More information about the purposes, policies, and procedures of the Swampbuster program are contained in the final rule cited above. Details about the program, and its management and administration, as well as determinations of its applicability to specific Corps projects can be obtained through the regional offices of the USDA Soil Conservation Service.

(c) Without and With Project Analysis. The effects of the Swampbuster program shall be explicitly considered in without and with project conditions.

(1) Benefit Evaluation. The effects of the program will operate through farm operator decisions to convert and cultivate on-farm wetlands. Particularly important for benefit evaluation is with project condition analysis, as a Corps project may by itself convert wetlands to non wetlands, or may make additional private conversion investments more profitable. The Swampbuster program, however, may modify incentives sufficiently to alter with project cropping plans, and may even affect support for particular projects.

(2) Incremental Cost of Mitigation Analysis. Swampbuster will have no effect procedurally on the analysis of the incremental cost of mitigation. It may affect the amount of wetland loss expected in the without project condition, the amount of any wetland preservation

credit due the project, and through these the total amount that will be considered for mitigation. (See Appendix C.)

i. Evaluation Procedure: Data Sources.

(1) Interviews. Interviews with farmers and other area residents are important for most of the categories of benefits to be evaluated. Interviews should not be confined to farmers in the project area. Data collected outside the project area serves as a comparative basis for estimating damages and yields in the project area. Use only interview forms approved by the Office of Management and Budget. In the project report, the questionnaire and a summary of responses should be compiled and displayed in such a way as to prevent the disclosure of individual sources.

(2) Physical Specialists. Agronomists and soil scientists can provide data to establish yield estimates by soil type and the effects on production of soil depletion or sediment deposition.

(3) Universities and Federal Agencies. Many universities and the Department of Agriculture have developed typical enterprise budgets that can be modified to reflect conditions in the area being studied.

(4) Land Appraisers. Market values of project lands and comparable lands should be provided by qualified real estate appraisers. The market values must be processed through the appropriate real estate division.

(5) IWR Report. Additional detailed support material for conducting NED evaluation may be found in Agricultural Flood Damage (IWR Report 87-R-10, October 1987). This manual provides an expanded description of agricultural benefit evaluation procedures. Policy statements in this regulation take precedence in any apparent contradiction suggested by information contained within this IWR report.

j. Report and Display Procedures. A clear presentation of the study results will facilitate review. Tables E-20 and E-21 are suggested presentations.

E-21. Federal and Non-Federal Participation. As a general rule, a PCA must be executed between Federal and non-Federal participants prior to advertising and award of the contract.

a. Structural Measures. The 1986 and 1996 Water Resources Development Acts modified the basic requirements for non-Federal participation in flood control projects. The requirements for structural projects are essentially as follows:

(1) Provide a cash contribution equal to 5 percent of structural flood control features costs.

(2) Provide all lands, easements, rights-of-way, relocations (except existing railroad bridges and approaches thereto) and suitable borrow and dredged material disposal areas (referred to as LERRD).

(3) If the sum of the above two items is less than 35 percent of the costs assigned to flood control, non-Federal sponsors will pay the difference in cash. If it is greater than 35 percent, total non-Federal costs shall not exceed 50 percent of total project costs assigned to flood control. Contributions in excess of 50 percent will be reimbursed by the Federal Government to the non-Federal sponsor. Total contributions in excess of 30 percent may be reimbursed to the Federal government over a period not to exceed 15 years.

(4) Operate, maintain, repair, replace and rehabilitate the project after completion without cost to the United States in accordance with regulations prescribed by the Secretary of the Army.

(5) Hold and save the United States free from damages due to the construction or subsequent operation and maintenance of the project, except those damages due to the fault or negligence of the United States or its contractors.

(6) Prevent future encroachment or modifications, which might interfere with proper functioning of the project.

(7) Participate in the National Flood Insurance Program and other applicable Federal flood plain management programs.

(8) Provide guidance and leadership to prevent unwise future development in the flood plain.

b. Nonstructural Measures.

(1) Provide thirty-five percent of total project costs. A five percent cash contribution is not required.

(2) Provide all LERRDs, credited to sponsor's share. If credited LERRDs are less than thirty-five percent, sponsor will pay the difference in cash. Payments during construction are preferred, but an option exists for payment beginning upon construction completion. Deferred payments require ASA(CW) agreement. If LERRDs are more than thirty-five percent, the excess is reimbursed by the Federal Government.

(3) When LERRDs are more than thirty-five percent an agreement between the sponsor and the Federal Government on the most efficient and practical means for acquiring the excess LERRDs is required.

(4) Operate, maintain, repair, replace and rehabilitate completed project including, for a flood warning system, development and adoption of a detailed response plan. This plan must be acceptable to the Corps.

(5) Participate in the National Flood Insurance Program and other applicable Federal flood plain management programs.

(6) Nonstructural measures are always cost shared as nonstructural measures, even if they are mitigating for damages induced by structural measures of the same project.

(7) Other standard items included under structural measures will apply where appropriate.

Table E- 20 Summary of Crop Benefits (Farm Budget Analysis Method)

Item	Current	Base	Year _a	Year_{a}	Year_{a}	Year_{a}	Year_{a}	Annualized Value _b
Without Plan								
Acres:								
basic crops
other crops
Value of agricultural production
Agricultural production costs
With Plan								
Acres:								
basic crops
other crops
Value of agricultural production
Agricultural production costs
NED BENEFITS

^aAnnual value at the given year.

^bAnnualized at ____ percent discount rate.

Table E- 21 Intensification Benefits (Land Value Analysis Method)

Item	Current Year	Annualized ^a
Without Plan		
Value of agricultural land		
With plan		
Value of agricultural land		
INTENSIFICATION BENEFIT		

^aAnnualized at ____ percent discount rate

c. Cost Sharing - Special Cases.

(1) Betterments. Non-Federal interests normally pay the incremental cost for all desired betterments. Examples include the cost of flood control channel covering not needed for safety ([ER 1165-2-118](#)), and the costs of departures from the NED plan not part of an exception granted by ASA(CW).

(2) Highway Bridges. Alterations to highway bridges necessitated by a flood control project are considered part of LERRD and are a non-Federal responsibility. However, protection by reinforcement, underpinning, or construction to ensure the structural integrity of the bridge foundations, piers, or abutments, are considered construction costs, and are subject to standard cost-sharing rules. But, if new piers, foundations or abutments are required for additional spans in the bridge crossing, the work will be considered a relocation and a non-Federal responsibility. Highway bridges over channel cuts in fast lands are highway relocations and part of LERRD.

(3) Railroad Modifications. Existing railroad bridge (and approaches thereto) relocations and alterations, required as part of a flood control project, are considered construction costs and not relocations for cost-sharing purposes. This is in accordance with the intent of Section 3 of the 1946 Flood Control Act. Any required modification to the bridge approaches can also be evaluated as a construction cost. However, for railroad lines that are not bridges, relocation or alteration is considered a non-Federal responsibility. An example is a rail line passing through a reservoir site. New railroad bridges over a channel cut in fast lands that are included in feasibility reports are considered LERRD unless specifically authorized as a construction cost item.

(4) Abandoned Bridges/Buildings. Removal costs are considered construction costs.

(5) Covers for Flood Control Channels. If needed for safety the costs are considered construction costs. Otherwise the costs are non-Federal and are not credited towards total project costs.

(6) Utility Lines Under Proposed Levees. If the relocation is required as a matter of just compensation, these costs are considered LERRD. Otherwise, such costs are removals and are considered construction costs.

(7) Pedestrian Bridge Over Proposed Levee. A bridge provided because a levee interrupts pedestrian traffic is considered a relocation under LERRD.

(8) Relocation of Existing Recreation Facilities. If a proposed levee passes through an existing park and recreation facilities will be impacted, relocated facilities are a non-Federal responsibility under LERRD.

(9) Lands Needed for F&W Mitigation. There are no special rules for F&W mitigation costs. All land costs are LERRD and costs of plantings or other modifications are construction costs.

(10) Intercepted Interior Drainage. Interception and conveyance of drainage through or over a flood control work with measures such as intercepting ditches, ponding areas, pumping plants, gravity outlets, and pressurized conduits, are part of project construction, with the costs shared as construction costs. All lands associated with measures for interior drainage are part of LERRD. Any costs of increasing the size of the facilities to meet special local needs, as for betterments, are non-Federal costs.

(11) Stormwater/Sanitary Sewer Collection Systems and Interceptor Storm Sewers. Stormwater/Sanitary collection systems consisting of sewer pipes are utilities, and alterations of such systems are part of LERRD. Interceptor sewers and associated features may be more efficient than a number of separable sewer alterations, and such features are also LERRD. Efficient design may result in a single project feature to accommodate blocked interior drainage and the requirements for stormwater/sanitary sewers collected via interceptors. In such cases, the costs will be apportioned on a fair share basis between LERRD and construction costs. The fair share is to be based on the costs associated with separable facilities. The costs of measures that provide for positive flood control, such as gated sewers, outlets and gate well structures are project construction costs to be shared by non-Federal sponsors.

(12) Headwall Structures. Accommodation of pipes through the side slopes of channel projects may be accomplished along with project construction, but any identifiable added costs for end treatment of sewer pipes is part of LERRD.

(13) Levee Crossings. Where a levee or floodwall intersects a transportation facility, and a crossing structure is necessary, a closure structure or a ramp structure will be selected on the basis of efficiency and the appropriateness of a closure structure in view of the flood characteristics of the area. The closure structure or an appropriate section of the ramp structure along the line of protection (i.e., the volume of the ramp structure that would be a part of the flood control structure in the absence of a transportation feature) shall be classified as a construction item. Any additional work necessary to provide a ramp structure included in the selected plan shall be classified as a LERRD item.

(14) Credit for LERRD Specific guidance on crediting the value of LERRD toward the non-Federal share of project costs is contained in [ER 1165-2-131](#).

(15) Windfall Benefits. Projects that provide land enhancement benefits of unconscionable magnitude to a few beneficiaries are subject to special cost sharing. Usually a

cash contribution is required, equal to 50 percent of the cost allocated to the windfall benefits. In those cases where windfall benefits are minor and incidental to implementation of the project, no special cost sharing is required. Potential windfall benefit situations should be surfaced as early as possible in the planning process and addressed by higher authority but no later than the FRC.

(16) Other Special Cost Sharing. Section 2 of the 1920 River and Harbor Act indicates that every report submitted to Congress should discuss special or local benefits which accrue to localities with a recommendation as to what local cooperation should be required, if any, on account of such benefits. This authority may be used to recommend special cost sharing for reasons of equity. The act predates the “a-b-c” requirements of the 1936 Flood Control Act and the landmark cost sharing requirements of the WRDA 1986. But, it remains relevant in that it signifies that Congress is concerned with, and directs the Corps to address, equity issues arising when identifiable localities or communities are beneficiaries to a far greater degree than they are cost sharers.

(17) General Credit for Flood Control. Section 104 of the 1986 WRDA establishes guidelines for crediting sponsors for constructing portions of a flood control project. [ER 1165-2-29](#) outlines the procedures for crediting sponsor construction work. Sponsor work must receive ASA (CW) approval prior to initiation of construction to be eligible for credit. Work eligible for approved credit should be addressed in report recommendations, and recommendations must be supported by specific report documentation of compliance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resource Implementation Studies (for example, documentation of economic justification).

SECTION IV – Hurricane and Storm Damage Prevention

E-22. Federal Interest. Congress has authorized Federal participation in shore protection projects to prevent or reduce damages caused by wind and tidal generated waves and currents along the Nation's ocean coasts and Great Lakes shores.

E-23. Types of Improvements. The improvements are usually structural measures including such features as beachfill, groins, seawalls, revetment, breakwaters, and bulkheads. Nonstructural measures, such as property acquisition, may also be appropriate.

E-24. Specific Policies. These policies are presented in more detail in [ER 1165-2-130](#).

a. **Geographic Applicability.** The shore protection authority is applicable to the shores of the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, estuaries, and bays directly connected therewith of each of the States, the Commonwealths of Puerto Rico and the Northern Mariana Islands, and the possessions of the United States. The authority extends only that distance up streams where the dominant causes of damage are storms or ocean tidal action (or Great Lakes water motion) and wind-generated waves. The program does not address damages caused by streamflows or vessels.

b. **Beach Restoration and Protection and Historic Shoreline.** Existing authority provides for restoration and protection of beaches. It does not provide for extending a beach beyond its historic shoreline unless the extension is desirable for engineering reasons, is environmentally acceptable, and is an economically justified means to prevent or reduce storm damage behind the historic shoreline.

c. **Formulation and Establishing Corps Participation.** Shore protection projects are formulated to provide hurricane and storm damage reduction. Recreation is incidental. The Corps participates only in those projects formulated exclusively for hurricane and storm damage reduction, and justified (BCR = 1.0) based solely on damage reduction benefits, or a combination of damage reduction benefits plus (at most) a like amount of incidental recreation benefits. In other words, recreation benefits useable to establish Corps participation may not be more than fifty percent of the total benefits required for justification, which in turn means they may not exceed an amount equal to fifty percent of costs. If the criterion for participation is met, then all recreation benefits are included in the BCR. Costs incurred for other than the damage reduction purpose, i.e. to satisfy recreation demand, are a 100% non-federal responsibility.

d. **Public Use and its Relation to Federal Participation.** Federal involvement in shore protection developed historically in a beach context, generally with efforts to stabilize, create or restore beaches. It was intended that beaches receiving public aid should not provide exclusively private benefits, and therefore, whenever a hurricane and storm damage reduction project involves beach improvements, real estate interest to insure public use of the Federal project is required. (See Table E-22.) Items related to public access are discussed below.

(1) User Fees. Reasonable beach recreation use fees used to offset the local share of project costs are allowable.

(2) Parking. Lack of sufficient parking facilities for the general public (including nonresident users) located reasonably near and accessible to the project beaches may constitute a restriction on public access and use, thereby precluding eligibility for Corps participation. Generally, parking on free or reasonable terms should be available within a reasonable walking distance of the beach. The amount of parking should be consistent with the attendance used in benefit evaluation. In some instances non-Federal plans may encourage or direct substitution of public transportation access for private automobile access. Reports considering public transportation must indicate how the public transportation system would be adequate for the needs of projected beach users.

(3) Access. Provision of reasonable public access rights of way, consistent with attendance used in benefit evaluation is a condition of Corps participation. Reasonable access is access approximately every one-half mile or less.

(4) Beach Use by Private Organizations. Federal aid to private shores owned by beach clubs and hotels which limit beach use to members or guests is contrary to the intent of Public Law 84-826.

(5) Public Shores with Limitations. Publicly owned beaches, which limit use to residents of the community or a group of communities, are not considered to be open to the general public and are treated as private beaches.

e. Shore Lines Owned by Federal Agencies.

(1) Work to provide shore protection to lands under the jurisdiction of another Federal agency is accomplished only on a reimbursable basis, upon request from the agency. In the event protection has not been requested and such lands are within the study area, Civil Works funds may be used if including them in a project is more cost effective than excluding them.

(2) Protection of (non Civil Works) Department of the Army lands is accomplished with military funds, not civil works funds. If the lands are a minor part within the study area, Civil Works funds may be used if including them in a project is more cost effective than excluding them.

f. Evaluation. This paragraph provides general principles for evaluation of benefits from hurricane and storm damage prevention projects.

Table E- 22 Shore Ownership and Levels of Federal Participation

<u>Shore Ownership (4)</u> <u>and Project Purposes or Benefits</u>	<u>Maximum Level of Federal Participation</u>	
	<u>Construction (2)</u>	<u>Operation</u> <u>Main, Repair, Replace</u> <u>Rehabilitation</u> <u>(OMRR&R)</u>
<u>I. Federally owned (1)</u>		
HSDR on Developed Lands	100%	100%
HSDR to Undeveloped Lands	100%	100%
Recreation (Separable Costs) (7)	100%	100%
<u>II. Publicly and privately owned</u> <u>(protection results in public</u> <u>benefits) (3)</u>		
HSDR on Developed Lands	65% (8)	0%
HSDR to Undeveloped Lands		
Public lands (5) (6)	50% (8)	0%
Private lands	0%	0%
Recreation (Separable Costs) (7)	50% (8)	0%
<u>III. Privately owned, use limited</u> <u>to private interests</u>		
HSDR on Developed Lands (9)	0% (8)	0%
HSDR to Undeveloped Lands	0%	0%
Recreation (Separable Costs) (7)	0%	0%

- (1) See paragraph E-24e on protecting other Federal agency shores.
- (2) Periodic nourishment is considered "construction."
- (3) Privately owned shores under public control, as through a sufficiently long-term lease assuring realization of public benefits throughout the economic life of the project.
- (4) The status of Indian shores depends upon the particular treaty provisions pertaining to the lands in question and will need to be examined in each instance. Specific cases should be referred to CECW-P for guidance.
- (5) Non-Federal public shores dedicated to recreation or fish and wildlife purpose.
- (6) Adjusted by the ratio of public to total shore protection benefits along the protected shore.
- (7) Department of Army Policy precludes civil works funding of separable recreation measures at shore protection projects.
- (8) The fair market value of LERRD is included in these cost sharing percentages, unless the land has no value or special benefit situation considerations apply.
- (9) Federal participation in construction could be 65 percent if project is only for inundation reduction or wave damage reduction and does not provide beach erosion control or shoreline protection. Note that no Federal participation in beach fill or restoration would be allowed due to the absence of public benefits.

(1) Systems Analysis. Because shoreline processes are dynamic, shore protection measures may generate both beneficial and adverse impacts beyond immediate project sites. Impacts elsewhere may occur as a consequence of the design and implementation of site specific hurricane and storm damage reduction projects, and navigation projects may impact or be impacted by such projects. These impacts must be evaluated, and this requires expansion of the study area to include reaches adjacent to the project site. Generally, the adjacent reaches are bounded by natural features that interrupt or substantially limit the natural littoral processes (e.g., bays, sounds, inlets, geomorphic features, etc.). For studies which may not require a full systems approach, the justification shall be documented in the feasibility report. A systems analysis approach will include the following components:

(a) Physical Processes. Develop a sediment budget for the segment of coast under investigation based on modeling of sediment movements, empirical data, and estimates of gross and net shoreline change rates over the past fifty year period, as well as rates of change during the most recent decade. Ascertain the effects and probability of occurrence of relevant storm events. Identify the magnitude of the average annual volumetric changes in beach area and volume.

(b) Coastal Alterations. Identify man-made alterations to the shore (jetties, sand-bypassing and recycling, dredging, seawalls, groins, breakwaters, beach nourishment, etc.) and estimate their contribution to the balance of littoral processes and shoreline changes. This information, and knowledge of the physical processes, establishes the historical and existing conditions.

(c) Forecast Shoreline Changes. Forecast shoreline changes (including changes in nourishment requirements, if appropriate) and navigation related dredging requirements for the economic life of the proposed measure. Forecast this for future without and with project conditions.

(d) Economic Benefits and Costs. Inventory potential damage centers and locations of other project induced benefits or costs. For without and with project conditions estimate the costs of maintaining shore protection and navigation projects. At the project site and other impacted sites assess the extent of damages to property through analysis of storm surge and wave damage; assess changes in recreation (if any); and evaluate project impacts to jetties, channels and other navigation features.

(2) Evaluation Procedure. The steps to evaluate benefits for hurricane and storm damage prevention projects are described in the following paragraphs. (See Figure E-6.) The level of effort expended on each step will depend on the scope and nature of the proposed improvement, the state of the art to accurately develop the estimates and the sensitivity of project formulation and evaluation to further refinement.

(a) Step 1 – Delineate the Study Area. The study area is that area affected by storms and erosion problems and by proposed alternatives. It includes areas indirectly affected by the

problems and projects such as downdrift areas and navigation and other projects outside the immediate project site.

(b) Step 2 – Define the Problem. In this step, existing storm damage and erosion problems are identified and described. The description of existing conditions should include a history of the economic and social effects of storm damage and erosion problems in the area, a history of storms and erosion trends and historical floods and wave attack problems. A determination of the degree of protection afforded by existing structures is also made as part of this step. This includes an assessment of the level of protection actually provided by the structure, its structural integrity, the remaining useful life and operation and maintenance requirements.

(c) Step 3 – Select Planning Shoreline Reaches. Reaches are the primary economic sub-unit of analysis. Geomorphic conditions, land uses and type or level of existing protection are criteria used in the designation of reaches.

(d) Step 4 – Establish Frequency Relationships. Two types of frequency relationship are developed for the analysis. These are elevation-frequency relationship and erosion-frequency relationship. The first one shows the relationship between wave and water level and frequency of occurrence and is used to derive expected annual inundation damages. The second one shows the relationship between periodic erosion (or accretion) and frequency of occurrence and is used to estimate erosion-induced damages.

(e) Step 5 – Inventory Existing Conditions. An inventory of affected properties, including land, is performed to estimate potential damages. The inventory is done by land use activities (i.e., residential, commercial, industrial, etc.) and includes variables such as value, use, ground elevation, distance from the water, construction materials, area, and number of stories. Areas likely to be developed in the future or where land use changes could occur are also identified.

(f) Step 6 – Develop Damage Relationships. Damage relationships describe the expected value of structural or contents damages caused by various factors, such as depth of flooding, duration of flooding, sediment load, wave heights, amount of shoreline recession and warning time. Generalized or site-specific damage relationships can be used depending on the scope of the study and the availability of applicable generalized relationships. Generalized damage relationships are those developed for other geographic areas with similar characteristics to the study area. Site-specific damage relationships are usually required to estimate wave attack and erosion damages. These damage relationships are developed using actual damage data from past storm events. Estimates of losses for buildings, roads, protective works, and other features are developed at current price levels for existing development. Damage relationships are developed for each land use

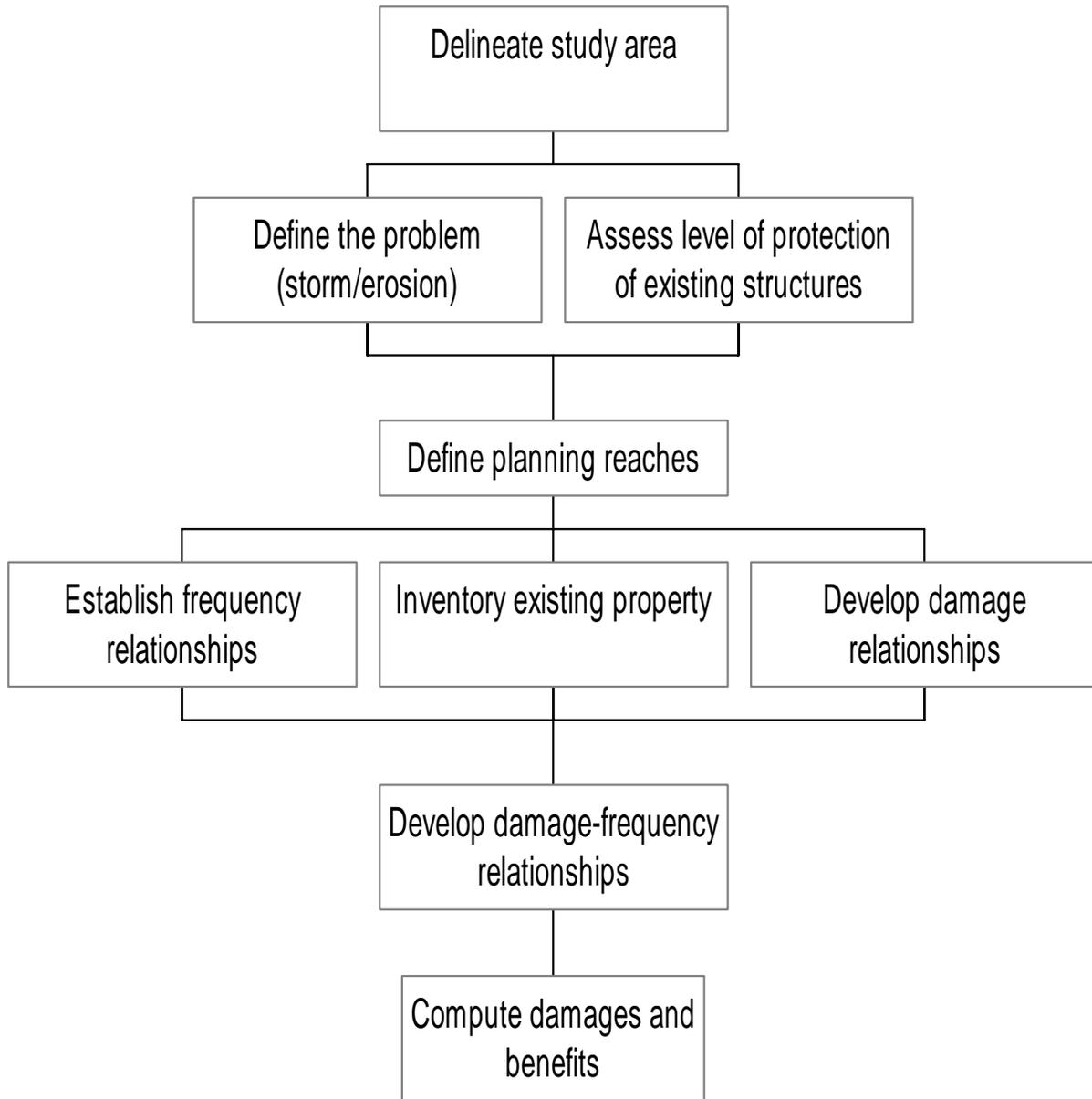


Figure E- 6 Hurricane and Storm Damage Prevention Benefits Evaluation

category. Anticipated damages from land loss due to erosion are computed as the market value of the average annual area expected to be lost. Nearshore land values are used to estimate the value of land lost. A risk-based analytical framework should be used to develop the damage relationships.

(g) Step 7 – Develop Damage-Frequency Relationships. The damage-frequency relationships represent how the damage associated with a given event (i.e., storm, wave, erosion)

is related to the frequency of that event (probability of occurrence). The damage relationships developed in step 7 are combined with the frequency curves (developed by the hydraulic and hydrologic engineers) to estimate the damage-frequency relationships. Damage-frequency relationships (curves) are developed for each of the applicable damage mechanisms, i.e., long-term erosion, recession, inundation and wave attack and for each land use category. These relationships should be developed using a risk-based analytical framework.

(h) Step 8 – Calculate Expected Annual Damages and Benefits. The expected annual damage is the expected value of erosion losses and storm damages in any given year. Expected annual damages are calculated by computing the area under the damage-frequency curve using a life-cycle approach. Expected annual damages are calculated for the with- and without-project conditions. The difference between the with- and without-project expected annual damages represents the benefit associated with the project.

(3) Other Data Source. Additional detailed support material for conducting benefit evaluation procedures for prevention of coastal storm damage and erosion is in IWR report 91-R-8, dated August 1991. Policy statements in this regulation take precedence in any apparent contradiction suggested by information contained in the IWR report.

(4) Risk Analysis. Storm damage reduction studies should adopt a life cycle approach and probabilistic analysis (and display) of benefits and costs. Key considerations are listed below; at a minimum, those with the greatest effect on plan formulation should be explicitly incorporated in the analysis.

(a) The erosion damage function (with special emphasis on structure values and land values)

(b) The stage-damage function (with special emphasis on structure first floor elevation, content and structure values.

(c) The wave-damage function by structure class

(d) Storm-related parameters such as peak wave height and period storm duration, peak surge elevation, and timing with respect to tidal phasing

(e) Wave height above the dune

(f) Wave penetration

(g) The shoreline retreat or eroded volume

(h) The natural post-storm recovery

g. Periodic Nourishment. Public Law 84-826 provides that Federal participation in periodic beach nourishment may be appropriate when it comprises a more suitable and economical remedial measure for shore protection than retaining structures such as groins. Under such conditions periodic nourishment can be considered construction for cost sharing purposes. Retaining structures may be recommended, but then any required periodic nourishment is not considered construction and is not cost shared by the Federal government. Projects with structures included to maintain a shore alignment, but not to materially prevent littoral drift (which may nourish downdrift beaches), such as low-profile groins and offshore breakwaters, are eligible for periodic nourishment.

(1) New Projects. Federal participation in periodic nourishment may be recommended to continue for the shortest of: (a) project economic life; (b) physical life of cooperating structural features; (c) fifty years.

(2) Existing Projects.

(a) General. When the authorized period of Federal participation in periodic nourishment at existing projects expires, it may be extended without further Congressional action for a period not to exceed 50 years after the date of initial construction. (Section 934 of Public Law 99-662). Reevaluation is necessary using current evaluation guidelines and policies. Prior to the expiration of the existing periodic nourishment period the sponsor must request the extension and express a willingness to cost share in accordance with Public Law 99-662. This Section 934 authority does not apply to projects using sand bypassing plants.

(b) Section 934 Studies.

(1) The basic purpose of a Section 934 study is to determine if continued Federal participation in the authorized project is economically justified given current conditions. Justification is determined using current evaluation guidelines and policies. The cost of Section 934 studies will initially be financed by the Federal government using construction general funds. If extension of periodic nourishment is feasible, the cost of the study will be shared in accordance with PL 99-662 cost sharing for hurricane and storm damage reduction projects. The non-Federal sponsor will reimburse its share of study costs to the Federal government when the first re-nourishment occurs.

(2) Only an extension of periodic nourishment can be implemented under Section 934. Nevertheless, other alternatives should be evaluated as part of the Section 934 study. This alternatives analysis should be similar in scope to an initial appraisal under Section 216 of the 1970 FCA.

(3) If the analysis indicates that the NED plan formulated for hurricane and storm damage reduction differs from the authorized plan, additional studies should be considered. If additional studies are needed, the Section 934 study should place an appropriate time limit on the extension of Federal participation.

(4) The basic purpose of a Section 934 study is to determine if continued Federal participation in the authorized project is justified given current conditions. Thus, the without project beach profile should reflect the conditions that existed just prior to initial construction. The following is required: estimate current benefits (new surveys or updating of recently estimated benefits but no indexing of benefits) of the existing project to determine justification and consistency with current policy; develop alternatives (size and timing) for nourishment; and recommend the most cost effective nourishment scheme for the authorized project.

(5) Environmental documentation requirements are determined by the likely impact that Federal action would have on the environment. The extent and nature of environmental studies therefore depends on what is expected to occur without Federal participation. If nourishment would occur anyway, as is likely for well justified projects, incremental effects due to Federal participation would appear less consequential. If nourishment would not occur there may be more substantial environmental differences in the without Federal participation and with Federal participation conditions. This would in turn require more substantial analyses. In either case the environmental documentation must be coordinated with Federal and State agencies and others. This coordination provides the opportunity to identify environmental concerns. Comments from the Fish and Wildlife Service (at a level commensurate with a Planning Aid Report), Environmental Protection Agency, National Marine Fisheries Service, the state's coastal agency and the state's water quality agency should be included.

(c) Reporting. Section 934 reevaluation reports with the division commander's recommendation will be forwarded to HQUSACE (CECW-P) for preparation of a recommendation to the Assistant Secretary of the Army for Civil Works (ASA(CW)). If ASA (CW) concurs in continued participation, an amended draft project cooperation agreement (PCA) should be developed. Extension or modification of any Section 221 agreement will require approval by the Secretary of the Army and the signature level will be determined at the time of approval.

h. Mitigation of Shore Damage Due to Federal Navigation Projects. Shore protection measures undertaken using the authority of Section 111, Rivers and Harbors Act of 1968 shall generally follow the policies provided in Appendix F.

i. Placement of Dredged Materials on Beaches. See paragraph E-14h.

j. Outer Continental Shelf Mineral Resources. If mineral resources from the outer continental shelf are proposed for use in civil works projects, the Corps and Minerals Management Service (MMS), U.S. Department of Interior, must enter into a memorandum of agreement. The sponsor must also negotiate a noncompetitive lease with the MMS. Section 215 (b) of the WRDA of 1999 amended Section 8(k)(2)(B) of the Outer Continental Shelf Lands Act to exempt State and local government agencies, in addition to Federal agencies, from the assessment of fees for the use of Outer Continental Shelf sand, gravel and shell resources in a shore protection, beach restoration or coastal wetlands project or program, or in any other project

funded or authorized by the Federal Government. The MOA and lease must be executed prior to PCA approval and execution. This is addressed in more detail in [ER 1165-2-131](#).

k. Sea Level Rise. The National Research Council (NRC) study on sea level change ([Responding to Changes in Sea Level: Engineering Implications, 1987](#)) is a practical and rational review of data on relative sea level changes and the resulting impact on engineering structures. The study should be used by the Corps for technical guidance until more definitive data are available. The NRC study recommended that feasibility studies for coastal projects should consider the high probability of accelerated sea level rise. Since precise estimates of future sea level rise are unknown, the risks associated with a substantial rise should be addressed. Feasibility studies should consider which designs are most appropriate for a range of possible future rates of rise. Strategies that would be appropriate for the entire range of uncertainty should receive preference over those that would be optimal for a particular rate of rise but unsuccessful for other possible outcomes.

(1) Potential relative sea level change should be considered in every coastal and estuarine (as far inland as the new head of tide) feasibility study that the Corps undertakes. The degree of consideration that the possible change receives will depend upon the historical record for the study site. Areas which are already experiencing relative sea level rise or where increases are predicted should undertake an analysis as part of the study. Plans should be formulated using currently accepted design criteria.

(2) For now, planning should consider what impact a higher relative sea level rises rate would have on the design based on the historical rate. A sensitivity analysis should be conducted to determine what effect (if any) changes in sea level would have on plan evaluation and selection. This analysis should be based, as a minimum, on the extrapolation of the local, historical record of relative sea level rise as the low level and Curve III from the NRC report as the high level.

(3) If the plan selection is sensitive to sea level rise, then design considerations could allow for future modification when the impacts of future sea level rise can be confirmed. It may be appropriate to consider plans that are designed for today's conditions but that incorporate features to facilitate future changes, or plans designed for future conditions. In these cases, an evaluation of the timing and the cost of potential changes should be conducted during the plan selection process.

E-25. Federal and Non-Federal Participation

a. General Requirements.

(1) The Federal approach to participation in shore protection is similar to that for participation in riverine flood damage reduction. Highest priority is for reducing damages to existing development. Reducing flooding on or erosion to undeveloped lands is not high priority. Federal participation in the protection of private undeveloped shores is prohibited by law.

(2) In the past, particularly prior to the WRDA of 1986, beach fill or beach restoration was frequently considered an erosion control measure, and erosion control was thought of, perhaps rather inexact, as a project output or project purpose. As a result of enactment of the law, however, erosion control has no separate status as a project purpose or as a project output. Thus, erosion control measures (beaches) are purely means to the ends of hurricane and storm damage reduction or recreation, just as breakwaters or revetments are.

(3) Beaches can be a factor complicating analysis and decision making, however, for in addition to reducing damages they also provide for recreation, and are in themselves highly desired amenities. Because of these characteristics, when hurricane and storm damage reduction plans include beach fill or restoration, Federal cost participation depends on shore ownership, use, and types and incidence of benefits.

(4) Construction costs are assigned, as appropriate, to the purposes of hurricane and storm damage reduction or recreation, and shared in the percentages designated in Section 103 of Public Law 99-662, with any adjustments required to reflect conditions of ownership as discussed below and summarized in Table E-22.

b. Project Purposes.

(1) Hurricane and Storm Damage Reduction. The Federal share is 65 percent of the costs assigned to hurricane and storm damage reduction. The non-Federal share is 35 percent. Participation in the National Flood Insurance Program and other applicable Federal floodplain management programs is required. Non-Federal interests must provide LERRDs; fair market value is credited to the non-Federal share. When the value of LERRD is less than 35 percent the difference must be provided in cash during construction. When the value is more than 35 percent the excess will be refunded.

(2) Recreation. Federal participation in separable recreation measures is not permitted by current budget policies. Recreation related access facilities such as bathhouses, roads, ramps, toilets, parking areas and so on are a non-Federal responsibility. Costs for the facilities are not included as project costs unless they are required for recreation benefits claimed by the project, and the costs are not being "offset" by user fees.

c. Shore Ownership.

(1) Private Shores. All costs for hurricane and storm damage protection on privately owned shores (where use of such shore is limited to private interests) are non-Federal; except that benefits to private shores beyond project limits, if trivial in amount, are considered incidental for cost-sharing purposes.

(2) Losses of Undeveloped Private Lands. All costs for hurricane and storm damage reduction measures of any kind assigned to the prevention of losses of undeveloped private lands are non-Federal.

(3) Federal Shores. All costs assigned to the protection of Federally owned shores are Federal.

(4) Non-Federal Public Shores (Park and Conservation Areas). Park and conservation areas produce recreation outputs, and cost sharing established in law is a maximum 50 percent Federal share. Policy precludes participation in projects not principally justified by hurricane and storm damage reduction however.

E-26. Recommendations in Feasibility Reports.

a. Cost Sharing. In a shore protection feasibility report, which includes measures for beach creation, restoration or preservation or for beach fill, recommendations on the percentage of construction costs to be borne by local interests or the Federal Government must be qualified as tentative. Final apportionment will be based on conditions of ownership and project purpose at the time of construction or subsequent nourishment.

b. Authorization Language. Authorization for shore protection projects that call for periodic beach fill will refer to an initial construction cost and an average annual cost for periodic nourishment as a part of construction. The recommendation wording should be as follows:

“The project for shoreline protection, (project name), as described in the Report (report to be cited for authorization), at an initial total cost of (\$100,000), with an estimated Federal cost of (\$75,000) and an estimated non-Federal cost of (\$25,000), and an average annual cost of (\$600) for periodic beach nourishment over the (50) year life of the project, with an estimated annual Federal cost of (\$450) and an estimated annual non-Federal cost of (\$150).”

Projects thus authorized would be subject to two cost limits in accordance with Section 902 of the WRDA of 1986, as described in Appendix G.

SECTION V - Ecosystem Restoration

E-27. Federal Interest. Numerous Federal laws and executive orders establish National policy for and Federal interest in the protection, restoration, conservation and management of environmental resources. These provisions include compliance requirements and emphasize protecting environmental quality. They also endorse Federal efforts to advance environmental goals, and a number of these general statements declare it national policy that full consideration be given to the opportunities which projects afford to ecological resources. Recent water resources authorizations have enhanced opportunities for Corps involvement in studies and projects to specifically address objectives related to the restoration of ecological resources and ecosystem management. Specific authorities for new individual studies and projects to restore ecological resources have also been provided in legislation. Examples of legislation that broadly supports Federal involvement in the restoration and protection of ecological resources include:

- Federal Water Project Recreation Act of 1965, as amended
- Water Resource Development Acts of 1986, 1988, 1990, 1992, 1996 and 1999
- Coastal Wetlands Planning, Protection and Restoration Act of 1990 (Title III of P.L. 101-646)

a. The Corps ecosystem restoration policy is described in more detail in [ER 1165-2-501](#) and [EP 1165-2-502](#). This policy applies to all ecosystem studies and projects. The focus of projects implemented under this section of the guidance is the restoration of ecosystems and ecological resources and not restoration of cultural and historic resources, aesthetic resources, or clean up of hazardous and toxic wastes. Corps ecosystem restoration projects may not be able to address every functional and structural characteristic, nor may it be necessary where the nature and degree of impairment are limited to only one or a few of these parameters. Some restoration projects may only be able to address the symptoms of the disturbance or degradation, and not the cause(s).

b. The authorities through which the Corps can participate in ecosystem restoration and protection studies and project implementation are summarized below.

(1) Congressionally authorized studies, pursued under General Investigations (i.e., new start reconnaissance and feasibility studies) for single-purpose ecosystem restoration or multiple purpose projects which include ecosystem restoration as a purpose.

(2) Programmatic authorities for study, design and implementation of ecosystem restoration and protection projects: 1) Section 1135, Project Modifications for Improvement of the Environment Water Resources Development Act, WRDA of 1986, as amended; 2) Section 206, Aquatic Ecosystem Restoration WRDA of 1996, as amended; 3) Section 204, Beneficial Uses of Dredged Material, WRDA of 1992, as amended; 4) dredging of contaminated sediments under Section 312, WRDA of 1990, as amended; and 5) Flood Mitigation and Riverine Restoration Program Section 212 of WRDA of 1999. Sections 1135, 206 and 204 are discussed

in Appendix F. Section 312 of WRDA of 1990 is discussed in Section II of this appendix. Flood Mitigation and Riverine Restoration is discussed in Appendix G.

(3) Additional opportunities for ecosystem restoration and protection may also be pursued through existing project authorities for the management of operating projects; e.g., through water control changes, or as part of natural resources management.

E-28. Definitions.

a. **Ecosystem.** An ecosystem is the dynamic and interrelating complex of plant and animal communities and their associated nonliving environment, considered as an integrated unit. Implied within this definition is the concept of structure and function unified through life processes. An ecosystem may be characterized as a viable unit of community and interactive habitat. Ecosystem restoration can be directed at different sized ecosystems within the nested set, and may encompass multiple states, more localized watersheds, or a smaller complex of aquatic habitats.

b. **Environmental Restoration.** Care should be taken in the use of this term, which is often used interchangeably with “ecosystem restoration”. However, in the context of Corps of Engineers programs and missions, “environmental restoration” is more commonly associated with “cleanup” measures undertaken to achieve compliance with state and/or Federal laws or regulations to clean up hazardous, toxic and radioactive wastes. Environmental restoration generally refers to actions such as Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial actions, Resource Conservation and Recovery Act (RCRA) corrective actions, and cleanups related to underground storage tanks.

c. **Mitigation.** Mitigation consists of those measures taken to avoid, minimize or compensate for adverse environmental impacts. Mitigation measures are authorized by Congress or approved by HQUSACE or MSCs to compensate for ecological resources unavoidably affected by a Corps project or activity. Appendix C discusses natural resources mitigation in more detail, along with other environmental compliance requirements.

d. **Enhancement.** Historically the term “enhancement” has been used as an indication of a net habitat improvement over the without project condition. However, this term now implies making the habitat better for some species than it would have been naturally in the absence of human intervention. Since this goes beyond the goal of ecosystem restoration, the use of the term “enhancement” is rarely appropriate in Corps documents.

e. **Net Ecosystem Restoration Benefits.**

(1) The recommended plan should be the justified alternative and scale having the maximum excess of monetary and non-monetary beneficial effects over monetary and non-monetary costs. This plan occurs where the incremental beneficial effects just equal the incremental costs, or alternatively stated, where the extra environmental value is just worth the

extra costs. This plan should be called the NER plan. In making these value and cost comparisons it is assumed that each plan and scale is the minimum cost way of achieving that level of output; i.e., that an appropriate least cost or cost effectiveness algorithm was used in their development. Deviations from the NER Plan requires justification.

(2) For plans having both economic and restoration benefits, the plan with the greatest net sum of economic and restoration benefits is to be selected, consistent with protecting the Nation's environment, unless ASA(CW) grants an exception when there is some overriding reason for selecting another plan, based upon other Federal, State, local, and international concerns. (For plans having both NER and NED outputs, see Section IX of this appendix for policies and procedures related to multipurpose projects.)

E-29. Types of Improvements. Recommendations for ecosystem restoration projects will emphasize improving degraded ecosystem function and structure through the application of the Corps' engineering and other technical expertise related to solving water and related land resources problems, as opposed to projects that primarily rely on land acquisition to achieve the projected outputs. Those restoration opportunities that are associated with wetlands, riparian and other floodplain and aquatic systems are most appropriate for Corps involvement. The roles of various plant and animal populations and related habitats shall be considered in the larger context of community and ecosystem frameworks rather than maximizing habitat benefits for a single species or a resource commodity. A wide range of improvements is possible including, but not limited to, use of dredged material to restore wetlands, restoring floodplain function by reconnection of oxbows to the main channel, providing for more natural channel conditions including restoration of riparian vegetation, pools and riffles and adding structures, modification of obstructions to fish passage including dam removal, modifications to dams to improve dissolved oxygen levels or temperature downstream, removal of drainage structures and or levees to restore wetland hydrology, and restoring conditions conducive to native aquatic and riparian vegetation.

E-30. Policies. The policies specific to ecosystem restoration planning are summarized below.

a. The objective of Civil Works ecosystem restoration is to restore degraded significant ecosystem structure, function, and dynamic processes to a less degraded, more natural condition. However, partial restoration may be possible, with significant and valuable improvements made to degraded ecological resources. The needs for improving or re-establishing both the structural components and the functions of the natural area should be examined. Restored ecosystems should mimic, as closely as possible, conditions which would occur in the area in the absence of human changes to the landscape and hydrology. Indicators of success would include the presence of a large variety of native plants and animals, the ability of the area to sustain larger numbers of certain indicator species or more biologically desirable species, and the ability of the restored area to continue to function and produce the desired outputs with a minimum of continuing human intervention. Those restoration opportunities that are associated with wetlands, riparian and other floodplain and aquatic systems are most appropriate for Corps involvement.

b. Protection may be included as part of Civil Works ecosystem restoration initiatives, when such measures involve efforts to prevent future degradation of elements of an ecosystem's structure and functions. Protection consists of measures undertaken to protect and preserve elements of an ecosystem's structure and functions against future degradation. Such measures are most appropriate if they require the Corps' engineering expertise in accomplishing the protection measure.

c. Planning for Ecosystem Restoration. Restoration projects should be conceived in a systems context, considering aquatic (including marine, estuarine and riverine), wetland and terrestrial complexes, as appropriate, in order to improve the potential for long-term survival as self-regulating, functioning systems. This system view will be applied both in examination of the problems and the development of alternative means for their solution. Consideration should be given to the interconnectedness and dynamics of natural systems, along with human activities in the landscape, which may influence the results of restoration measures. Projects for restoring ecological resources may be recommended, based on the monetary and non-monetary benefits anticipated from the measures recommended. Ecosystem restoration can be included as part of multipurpose plans, which can produce both economic and environmental outputs. The planning for ecosystem restoration objectives is essentially the same as for other water resources development purposes. However, there are some special considerations because of limitations in understanding the complex interrelationships of the components of ecological resources and services which are the focus of these studies, and because the environmental outputs considered in the evaluation process are typically not monetized. The consideration of significant resources and significant effects is integral to plan formulation and evaluation for any type of water resources development project. In ecosystem restoration planning, the concept of significance of outputs plays an especially important role because of the challenge of addressing non-monetized benefits.

d. Mitigation. Ecosystem restoration projects should be designed to avoid the need for fish and wildlife mitigation. Projects implemented using restoration authorities may not be used as wetland banks or mitigation credit for the non-Federal sponsor.

e. Public Interest. For projects where the land on which the majority of the physical ecosystem restoration will occur is in the ownership of a single firm, individual, club, or association with restrictive membership requirements, it must be demonstrated clearly that the restoration benefits are in the overall public interests and that the benefits do not accrue primarily to the property owner.

f. Land Acquisition. Land acquisition in ecosystem restoration plans must be kept to a minimum. Project proposals that consist primarily of land acquisition are not appropriate. As a target, land value should not exceed 25 percent of total project costs. Projects with land costs exceeding this target level are not likely to be given a high priority for budgetary purposes.

g. **Water Quality.** Water quality is an important component of ecosystem structure, and good water quality is generally integral to healthy functioning ecosystems. An important Corps contribution in rehabilitating ecosystems, where water characteristics are a critical structural component of those ecosystems, may involve improvement of water quality characteristics using engineering solutions. Corps restoration and protection projects may involve cost effective solutions to improve aeration, temperature, turbidity, acidity, sedimentation and other water quality parameters. Consideration should be given to whether the water quality improvements will accomplish restoration of the system, because in many instances, other functional or structural ecosystem components may require attention as well. The Corps will not propose, for Civil Works implementation, any restoration projects or features that would result in treating or otherwise abating pollution problems caused by other parties where they have, or are likely to have, a legal responsibility for remediation or other compliance responsibility. (See [EP 1165-2-502](#).)

h. **Recreation.** It is important that proposed recreation features are appropriate in scope and scale to the opportunity provided by ecosystem restoration projects, and that the recreation development and anticipated use be compatible with the ecosystem restoration purpose of the project. The recreation potential may be satisfied only to the extent that recreation does not significantly diminish the ecosystem outputs that justify the ecosystem restoration project. More detailed information on policy regarding recreation development at ecosystem restoration projects is provided in Section VII of this appendix and in Appendix B of [EP 1165-2-502](#). A list of approved facilities for ecosystem restoration projects is provided in Exhibit E-3.

i. **Monitoring and Adaptive Management.**

(1) Monitoring may be necessary to determine if the predicted outputs are being achieved and to provide feed back for future projects. The information obtained from monitoring can be used to ascertain whether: 1) the project is functioning as per its objectives; 2) adjustments for unforeseen circumstances are needed; and , 3) changes to structures or their operation, or management techniques are required.

(2) Cost shared post-implementation monitoring will rarely be required. If cost shared post-implementation monitoring is being considered, it must be clearly defined, justified and shall be limited to no more than five years following completion of construction. The cost of monitoring included in the total project cost and cost shared with the non-Federal sponsor should normally not exceed one percent of the first cost of the ecosystem restoration feature(s).

(3) For complex specifically authorized projects that have high levels of risk and uncertainty of obtaining the proposed outputs, adaptive management may be recommend. The cost of the adaptive management action, if needed, will be limited to 3 percent of the total project cost excluding monitoring costs. Appendix F contains guidance for the CAP.

j. **Real Estate Considerations.** The analysis of the nature and extent of real estate requirements must be conducted in accordance with Chapter 12 of [ER 405-1-12](#), including

consideration and identification of the specific interests, estates, and acreage required. After coordination and consultation with the non-Federal sponsor, the government will determine the lands, easements, rights-of-way, utility or public facility relocations, and dredged or excavated material disposal areas (LERRD) required for the implementation, operation, and maintenance of the project.

(1) Generally fee title is required for ecosystem restoration projects in accordance with [ER 405-1-12](#). An easement estate may be appropriate based on the extent of the interest required for the implementation, operation and maintenance of the project. However, if an estate less than fee is recommended consideration should be given to the preservation of the physical integrity of the ecosystem restoration project and to risks associated with achieving benefits that serve to justify the project cost.

(2) A comprehensive Real Estate Plan (REP) prepared in accordance with the requirements of Chapter 12 of [ER 405-1-12](#) must be included in the feasibility report or other decision document for the project. The level of detail required will vary depending on the scope and complexity of the project.

k. Operational Effectiveness. Because self-regulation is a key goal of ecosystem restoration, it is generally more desirable to pursue ecosystem restoration projects that have limited maintenance requirements. However, because of irreversible cultural modifications in the landscape, there will be instances where O&M measures may be essential to the functioning of the project. Operation and maintenance costs should be considered in evaluating the costs and benefits for alternatives for ecosystem restoration projects.

E-31. Federal and Non-Federal Participation.

a. Cost Sharing. For specifically authorized ecosystem restoration projects the costs of the Feasibility phase are shared equally with the non-Federal sponsor. The non-Federal share will be 35 percent of the project or separable element implementation costs (preconstruction, engineering and design, and construction), or total implementation costs of a multiple purpose project allocated to ecosystem restoration. Non-Federal sponsors shall provide 100 percent of LERRDs, and operation, maintenance, repair, rehabilitation, and replacement (OMRR&R). The value of LERRD shall be included in the non-Federal 35 percent share. Where the LERRD exceeds the non-Federal sponsor's 35 percent share, the sponsor will be reimbursed for the value of LERRD which exceeds their 35 percent share. For more detailed discussion of these requirements see [ER 1165-2-501](#) and [EP 1165-2-502](#). For information about cost sharing related to the Continuing Authorities Program see Appendix F.

b. In the identification of ecosystem restoration opportunities, Corps field offices shall seek the advice and cooperation of Federal, state, and tribal resource agencies, as well as input from interested non-governmental environmental organizations. The assistance of these agencies and other interests should be used in identifying the "boundaries" and parameters of the ecosystem, or portions thereof; prioritizing ecosystem restoration needs taking into account

national and regional priorities; identifying the existing and without project future conditions of selected ecosystem(s), or parts thereof; and in defining the restoration goals and objectives desired. See Appendix B for guidance on public involvement in planning studies.

E-32. Planning Process.

a. Consideration of ecosystems within (or encompassing) a watershed provides a useful organizing tool to approach ecosystem-based restoration planning. Ecosystem restoration projects that are conceived as part of a watershed planning initiative or other regional resources management strategy are likely to more effectively meet ecosystem management goals than those projects and decisions developed independently. Independently developed ecosystem restoration projects, especially those formulated without a system context, may only partially and temporarily address symptoms of a chronic systemic problem. Not all restoration studies will be “watershed studies”, but all Corps studies should have a watershed perspective.

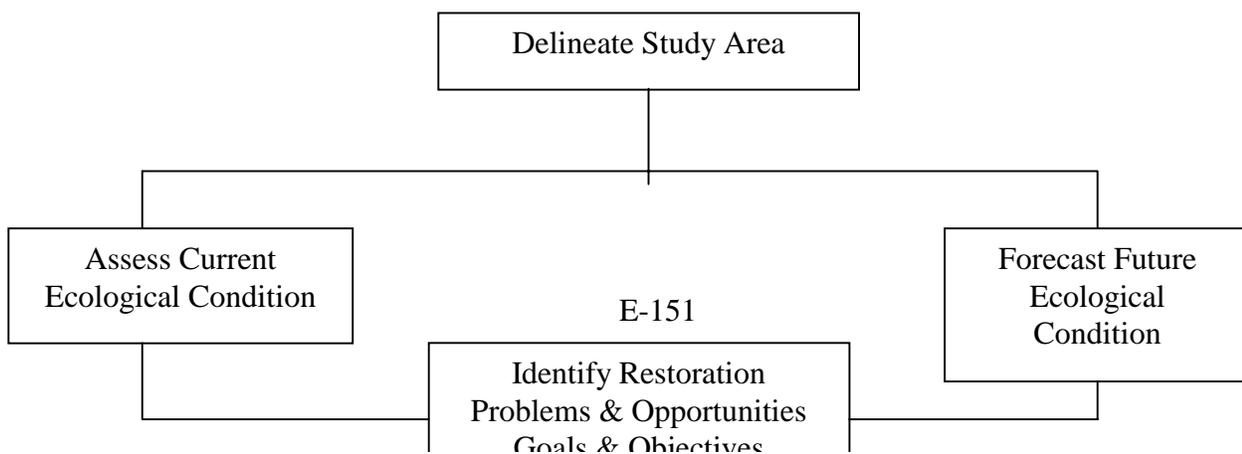
b. Six Steps. The six-step planning process as discussed in Chapter 2 of the main body of this ER and defined in the P&G applies to ecosystem restoration. These steps are summarized in the subsequent paragraphs. (See Figure E-7.)

E-33. Planning Steps 1 and 2.

a. Objective and Constraints. Problems and opportunities should be defined in terms of their nature, cause, location, dimensions, origin, time frame, and importance. The planning team develops objectives and constraints based on those problems and opportunities. Developing specific, flexible, measurable, realistic, attainable, and acceptable objectives and constraints is critical to the success of the entire planning process.

b. Inventory of Existing Conditions and Forecast of Future Conditions. Both existing conditions and future conditions expected to occur without a project must be characterized. The future without project condition forms the basis from which alternative plans are formulated and impacts are assessed.

(1) Selection of Assessment Methods. Many methods and models are available to measure existing ecosystem resource conditions and to estimate future conditions of those resources. Habitat models developed for individual species may have limitations when used to assess ecosystem restoration problems and objectives. They do not consider communities of organisms and typically consider habitat in isolation from its ecosystem context. Single species



habitat models may be limiting if used to optimize for a particular species, but they can be useful when carefully applied in the ecosystem context in which the habitat is situated. They can be helpful in identifying important influential functions or structural components for ecosystem projects to address. The assessment methodology chosen for a study should be governed by how well the technique meets the needs of the study goals and objectives and level of detail for a given study. The assessment methodology may include habitat models, or information derived from community or ecosystem assessments using other scientifically based methods that are generally accepted by state or Federal resource agencies.

(2) Gathering information about historic and existing resources requires an inventory. Gathering information about potential future conditions requires forecasts, which should be made for selected years over the period of analysis to indicate how changes in environmental conditions are likely to impact problems and opportunities. Forecasting future conditions in an ecosystem may be subjective and can be very difficult, but is essential in order to formulate restoration projects. It should be done in an iterative manner, seeking input from State and Federal resource agencies and the environmental community, in order to help build consensus about future without project conditions and what outputs the restoration project will produce. Forecasting may be especially critical to a case for protection where an argument must be made that there will be a decline or degradation of the resource unless protection is provided.

E-34. Planning Step 3 – Formulation of Alternative Plans. Plan formulation consists of three phases: 1) identifying management measures; 2) formulating alternatives from mixing and matching the management measure building blocks; and 3) iterative reformulation, during which alternative plans previously formulated are changed for one or more reasons. Measures may be added, dropped, re-scaled, or otherwise modified such that the reformulated plan will better achieve a planning objective or stay within the limits of a constraint.

E-35. Planning Step 4 - Evaluation of Alternative Plans. The inability to quantify ecosystem benefits in the familiar metric of dollars probably makes the evaluation of plan effects (planning step 4) the single biggest challenge in ecosystem planning.

a. The evaluation of effects is a comparison of the with-plan and without-plan conditions for each alternative. At a minimum, two categories of effects will be evaluated: costs and outputs. Environmental outputs are the desired or anticipated measurable products or results of restoration measures and plans. The term “outputs” is often used interchangeably with “benefits.” Ecosystem restoration proposals may possess multiple output categories, as well as other effects that may need to be considered, but the evaluation must at least address cost and an output category that has been determined to reasonably represent ecosystem restoration benefits. The evaluation is conducted by assessing or measuring the differences between each with- and without plan condition and by appraising or weighting those differences. Evaluation consists of four general tasks: (1) forecast the most likely with-project conditions expected under each alternative; (2) compare each with-project conditions to the without-project conditions and document differences between the two; (3) characterize the beneficial and adverse effects by magnitude, location, timing, and duration; and (4) qualify plans for further consideration.

b. All Corps water resources development projects be evaluated in terms of acceptability; completeness; effectiveness; efficiency. Ecosystem restoration alternatives are also evaluated on the basis of cost effectiveness and incremental cost analyses of the possible restoration alternatives and significance of ecosystem outputs. How each of these criteria is used to evaluate alternatives is explained in the following paragraphs.

E-36. Cost Effectiveness and Incremental Cost Analyses (CE/ICA). CE/ICA are two distinct analyses that must be conducted to evaluate the effects of alternative plans. First, it must be shown through cost effectiveness analysis that an alternative restoration plan's output cannot be produced more cost effectively by another alternative. "Cost effective" means that, for a given level of non-monetary output, no other plan costs less, and no other plan yields more output for less money. Subsequently, through incremental cost analysis, a variety of implementable alternatives and various-sized alternatives are evaluated to arrive at a "best" level of output within the limits of both the sponsor's and the Corps' capabilities. The subset of cost effective plans are examined sequentially (by increasing scale and increment of output) to ascertain which plans are most efficient in the production of environmental benefits. Those most efficient plans are called "Best Buys". They provide the greatest increase in output for the least increases in cost. They have the lowest incremental costs per unit of output. In most analyses, there will be a series of Best Buy plans, in which the relationship between the quantity of outputs and the unit cost is evident. As the scale of Best Buy plans increases (in terms of output produced), average costs per unit of output and incremental costs per unit of output will increase as well. Usually, the incremental analysis by itself will not point to the selection of any single plan. The results of the incremental analysis must be synthesized with other decision-making criteria (for example, significance of outputs, acceptability, completeness, effectiveness, risk and uncertainty, reasonableness of costs) to help the planning team select and recommend a particular plan.

a. There are a number of ways of conducting CE/ICA, thereby determining which plans are cost effective, and, from the set of cost effective plans, identifying those plans which are most efficient in production (i.e., "Best Buys"). In relatively uncomplicated cases, these analyses may simply be performed by hand with pencil and paper. In slightly larger or more complex situations, user-built and generated spreadsheet models may suffice. In still larger and more involved calculations, planners may need to use more sophisticated software applications specifically designed for CE/ICA.

b. The Corps' Institute for Water Resources (IWR) has developed procedures and software to assist in conducting CE/ICA. Please refer to the following IWR reports for detailed discussion of CE/ICA: IWR Report 94-PS-2, *Cost Effectiveness Analysis for Environmental Planning: Nine EASY Steps*; IWR Report 95-R-1, *Evaluation of Environmental Investments Procedures Manual Interim: Cost Effectiveness and Incremental Cost Analyses*; and IWR Report 98-R-1, *Making More Informed Decisions in Your Watershed When Dollars Aren't Enough*. Two software packages are also available to assist in performing CE/ICA: *ECO-EASY*, a DOS-based software application, and Windows-based *IWR-PLAN* Decision Support Software. These

reports and the *IWR-PLAN* software package are available from the IWR web site at <http://www.wrsc.usace.army.mil/iwr>.

c. CE/ICA Procedures:

(1) Step 1. Before starting CE/ICA, the planning team should have already identified potentially implementable solutions for achieving the desired ecosystem outputs. The solutions must be described in terms of their effects on costs and outputs. That is, an estimate of the cost of each management measure/scale combination and an estimate of the environmental output it will produce must be developed. All costs should be calculated in terms of present worth using the appropriate discount rate and annualized (see Appendix D on Economic and Social Considerations for more detailed information). Ecosystem restoration outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time. For example, if one of the outputs is a mature oak forest, the full benefits may not be realized for 30 years. Note that the output values listed are the differences between with- and without-project conditions, not total values before and after the project is implemented. The management measures, scales, costs, and outputs should then be listed.

(2) Step 2. After estimating the costs and outputs of each solution, the next step is to formulate all possible combinations of management measures and scales. Each possible combination may be considered an alternative plan.

(a) By definition, scales within a management measure are mutually exclusive; they represent the application or implementation of different amounts of a given management measure. Formulating all possible combinations requires choosing one scale from each of the management measures to combine in turn with one scale from each of the other management measures, until all possible permutations have been combined. The “No action” possibility for each management measure should also be included in the permutations.

(b) When measures and scales are combined, the cost and output of each constituent part of the combination is summed. Each combination thus has an associated total cost and total output.

(3) Step 3. The next step is to sort all possible combinations of management measures and scales (which are, in effect, all possible alternative plans) in terms of increasing output. This is done as a prelude to cost effectiveness analysis. All possible plan combinations are listed and sorted in terms of increasing output. Costs and outputs of combined solutions may be additive or synergistic. It is important to document the rationale for determining which of these cases applies.

(4) Step 4. Once all possible plans have been formulated and sorted by increasing output, the next step is conducting cost effectiveness analysis. Cost effective means that, for a

particular level of output, no other plan costs less. Furthermore, no plan yields more output for the same or less cost.

(a) Graphing cost effective plans in terms of their respective costs and outputs can help visually display the relationship between the increasing financial investment required for increasing environmental outputs.

(b). Each of the cost effective plans produces its associated level of output at the least cost; no other plan can provide as much output for the same level of investment. This is an important point to make in ecosystem restoration evaluations, and an important criterion in qualifying plans for further evaluation.

(5) Step 5.

(a) The next step is to examine the efficiency of each of the cost effective plans, which is accomplished through incremental cost analysis. In incremental analysis those cost effective plans that are most efficient in production are identified. These plans, known as “Best Buy” plans, provide the greatest increase in output for the least increase in cost. They have the lowest incremental costs per unit of output. The concept of incremental changes in costs and outputs is analogous to the concept of marginal changes, i.e., the differences in cost or output between one plan or alternative and the next one in succession.

(b) The decision rule in incremental analysis is to select the plan with the lowest cost per unit (i.e., the first “Best Buy” from a production perspective, producing output at the lowest unit cost) and then remove from consideration (in this analytical process) any plans that provide a smaller output level than the selected plan (they are less efficient in production, producing a lower level of output at a higher unit cost).

(c) To conduct incremental cost analysis, start with the subset of cost effective plans ranked by increasing output. Beginning with the “No Action” alternative, compute the incremental cost, incremental output, and incremental cost per unit of incremental output advancing from the No Action alternative to each successive alternative. The incremental cost is the additional cost incurred in selecting one plan over another, or in this case the difference in cost between each alternative and No Action. Similarly, the incremental output is the additional output gained in selecting one plan over another, or in this case the difference in output between each alternative and No Action. The incremental cost per unit of incremental output is the incremental cost divided by the incremental output. It shows the change in cost from No Action to each other alternative plan in a per unit basis.

(6) Step 6. The next step is to recalculate the incremental cost per unit of incremental output of implementing each remaining plan instead of the last selected plan

(a) The same decision rule still applies: of the remaining plans (all larger than the first Best Buy plan), select the plan with the lowest incremental cost per unit of incremental output,

then remove from consideration (in this analytical process) any plans that provide a smaller output level than the selected plan.

(b) This process of recalculating incremental cost per incremental unit for each remaining plan over the last selected Best Buy plan is reiterated until the incremental unit cost for the last remaining plan has been recalculated. The number of iterations is dependent upon the number of plans and on the respective cost and output data of each.

(c) It should be noted that the iterative process of selecting successively larger Best Buy plans is an arbitrary, but rational, decision process based on production efficiency. Situations could arise where the most efficient plan produces such a large quantity of output that its total cost makes it infeasible due to cost constraints. However, because the plan is the most efficient in production, all plans that produce smaller output levels (possibly at lower and acceptable cost levels) would be eliminated from consideration in the iterative process. In such situations, it may be useful to remove such a large scale plan from consideration and repeat the Best Buy iterative process. The purpose of the iterative process is not to eliminate plans from the possibility of being selected, but rather to identify those plans (and their corresponding level of output) where there is a marked increase in production costs. By identifying where significant increases in production costs occur as output levels are increased, better information is provided to assist in determining desirable project scale.

(7) Step 7. The final step in the CE/ICA process is to tabulate and graph the incremental costs.

(a) It is not necessary to display all such iterations in ecosystem restoration report documentation. What should be provided, however, is a table that summarizes the pertinent incremental cost and output information associated with the increasing size (in terms of output) of the Best Buy plans.

(b) Graphing the Best Buy plans can help visually display the relationship between the increasing financial investment required for increasing environmental outputs. Figure E-8 shows the incremental costs of alternative plans (in \$1000) on the y-axis and the average annual environmental benefits (in habitat units) on the x-axis. A similar one should be provided in ecosystem restoration report documentation.

d. CE/ICA as Evaluation Criteria. Neither cost effectiveness analysis nor incremental cost analysis include a "one plan" selection rule similar to the "NED plan" selection rule for NED evaluations. In the absence of such a decision-making rule, neither analysis dictates what choice to make. However, the information developed by both analyses can inform decision-making by progressively proceeding through the available levels of output to ask whether the

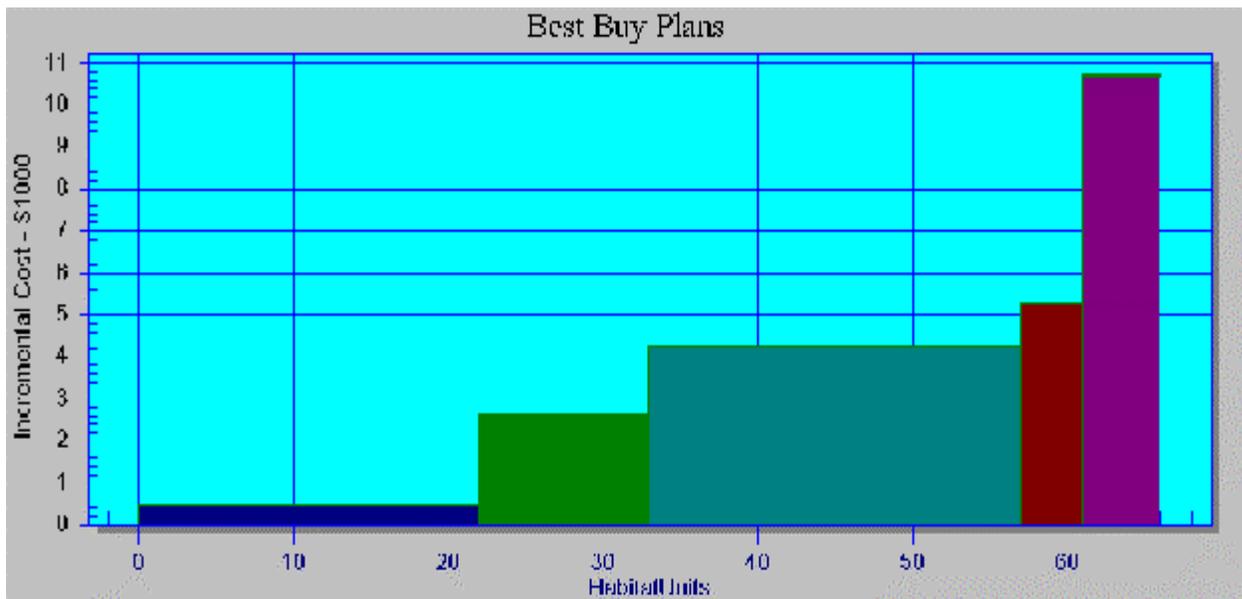


Figure E- 8 Best Buy Plans

next level is “worth it”; that is, whether the environmental benefit of the additional output in the next level is worth its additional cost. In the example shown in the graph, Figure E- 6, the question is whether the first increment of 22 habitat units are worth \$440 each, as opposed to No Action of 0 habitat units at \$0 each. If it is judged that 22 habitat units are worth \$440 each, then proceed to the next level of output and repeat the questioning. At the next level there is a total of 33 habitat units, or 11 additional habitat units over the last level at a cost of \$2,600 for each additional habitat unit. Again, if the case can be made that the additional 11 habitat units are worth \$2,600 each, then proceed to the next increment.

(1) Often this questioning process will tend to continue to conclude that successive levels of output are “worth it” until an unusual increase in incremental costs, beyond the general range of preceding costs, is encountered. In the CE/ICA graph, Figure E-8, the last increase represents a jump in incremental costs of \$10,700 per habitat unit for each of the last five habitat units. This doubling of unit cost for additional output (from the preceding increment) most likely presents a situation where the value of increasing outputs to this level should be explained, supported, or otherwise considered in more detail than previous increases.

(2) The following general decision-making guidelines related to outputs, costs, and the display curves should be applied to the results of cost effectiveness and incremental cost analyses to assist in making “Is it worth it?” arguments:

(a) Curve anomalies (abrupt breakpoints, spikes, peaks, jumps, inflection points, or changes in cost effectiveness and incremental cost curves) identify potential points that provide decision-makers with reasons to question the causes of the changes, and whether additional incremental costs are worth it.

(b) Output Target. If a study has established a specific resource output target to be met, then a decision rule can be developed to meet some portion of that target. For example, a habitat unit target could be marked on an incremental cost bar graph to provide a picture of the relationship between the target and possible solutions. The display may be useful in focusing on whether the incremental costs of the solutions leading to the target are worth it.

(c) Output Thresholds. In some cases it may be necessary to first produce a minimum base amount of output, and any lesser amount would not be successful. Similarly, there may also be a "maximum threshold" level of output where production beyond that output would no longer contribute to the achievement of planning objectives. If minimum or maximum output thresholds exist, they can be used to bound the range of acceptable solutions.

(d) Cost Affordability. If implementation funds are a constraint, either from the perspective of the Corps' or the local sponsor's funding limitations, then decision makers can review both the cost effectiveness curve and the incremental cost curve for information to help them judge the best investment for the funds available.

(e) Unintended Effects. Decisions to recommend a particular cost effective or best buy plan are not made in isolation. Other factors that matter in terms of selecting one alternative over another could include, for example, land ownership, effects on other outputs, and effects on nearby stakeholders. It is possible that the unintended consequences could be just as important as the primary project purpose of ecosystem restoration. The importance and magnitude of these unintended effects will of course vary from study to study.

(3) The results of cost effectiveness and incremental cost analyses are intended to help decision makers make better informed decisions. In all but the most unusual cases, the NER Plan should be derived from the final set of Best Buy solutions. Other solutions, identified as non-cost effective in cost effectiveness analysis; as well as cost effective plans identified as relatively less efficient in production ("non-Best Buys") in incremental analysis, may continue to be considered for selection. In some cases, the economic and environmental models used to estimate the effects of ecosystem restoration plans are not capable of capturing the full range of such effects, or considerable uncertainty may accompany the estimates of such effects. Other evaluation criteria, such as environmental significance, acceptability, completeness, and effectiveness also impact the decision process. For example, concerns about endangered species, support by a local sponsor or other interest group, unintended effects on other economic and ecological resources, and other factors may lead to the continuing consideration and selection of solutions that may not be the most cost effective, or that may incur substantial incremental costs

E-37. Significance of Ecosystem Outputs. Because of the challenge of dealing with non-monetized benefits, the concept of significance of outputs plays an important role in ecosystem restoration evaluation. Along with information from cost effectiveness and incremental cost analyses, as well as information about acceptability, completeness, and effectiveness, information on the significance of ecosystem outputs will help determine whether the proposed environmental investment is worth its cost and whether a particular alternative should be recommended. Statements of significance provide qualitative information to help decision-makers evaluate whether the value of the resources of any given restoration alternative are worth the costs incurred to produce them. The significance of restoration outputs should be recognized in terms of institutional, public, and/or technical importance. This basically means that someone, some entity, some law/policy/regulation, or scientific evidence indicates that a particular resource is important. How to determine and characterize institutional, public, and/or technical significance is an important point and explained in greater detail in the paragraphs below. Detailed procedures for determining and describing the significance of environmental resource(s), including a hypothetical restoration study example as well as sample significance statements, is found in IWR Report 97-R-4, *Resource Significance Protocol for Environmental Project Planning*.

a. **Institutional Recognition.** Significance based on institutional recognition means that the importance of an environmental resource is acknowledged in the laws, adopted plans, and other policy statements of public agencies, tribes, or private groups. Sources of institutional recognition include: (1) public laws, executive orders, rules and regulations, treaties, and other policy statements of the Federal government; (2) plans, laws, resolutions, and other policy statements of states with jurisdiction in the planning area; (3) laws, plans, codes, ordinances, and other policy statements of regional and local public entities with jurisdiction in the planning area; and (4) charters, bylaws, and other policy statements of private groups.

(1) Examples of sources of information that can assist in identifying and describing significant resources at the Federal level include the threatened and endangered plant and animal species listed by the Endangered Species Act of 1973, as amended; the species lists of the U.S. Fish and Wildlife Service, Office of Migratory Bird Management; species listed in the Anadromous Fish Conservation Act of 1965; species protected by the Marine Mammal Protection Act of 1972; the waterfowl habitat areas and habitat joint ventures of the North American Waterfowl Management Plan; the wetlands designated in the National Wetlands Priority Conservation Plan; the rivers identified by the National Wild and Scenic Rivers Act of 1968 - Nationwide Rivers Inventory; and the estuaries designated under the National Estuary Program.

(2) Examples of sources of regional level information include the wetlands designated under the Coastal Wetlands Planning, Protection, and Restoration Act of 1990 -- Annual Coastal Wetlands Restoration Plan and Priority Project List; the rivers identified in the Northwest Power Act of 1980 - Protected Areas Program; the aquatic habitats identified through the Water Resources Development Act of 1986 (Section 1103) -- Upper Mississippi River System Environmental Management Program; the marine habitats designated by the Coastal America

Partnership; the aquatic resources identified through the Chesapeake Bay Program; and marine resources identified in the Gulf of Mexico Program.

(3) On the state level, examples of sources of information may include the species and habitats identified in state natural heritage programs; species listed under state endangered species programs; habitats designated in state wetlands priority plans; marine resources identified in state coastal zone management programs; and habitats identified by state chapters of the Nature Conservancy.

(4) Local level sources may include zoning ordinances; wetlands regulations; master plans; shoreline regulations; and habitat conservation plans.

b. **Public Recognition.** Public recognition means that some segment of the general public recognizes the importance of an environmental resource, as evidenced by people engaged in activities that reflect an interest or concern for that particular resource. Such activities may involve membership in an organization, financial contributions to resource-related efforts, providing volunteer labor, and correspondence regarding the importance of the resource.

(1) The public expresses its recognition of resource significance through membership in many local, regional, state, national and international organizations (e.g., Arlingtonians for a Clean Environment, Ducks Unlimited, local chapters of the Nature Conservancy, the National Audubon Society, World Wildlife Fund); and through participation in many activities, whether they be resource-specific (e.g., focusing on a river, a type of fish, a watershed), user-based (e.g., fishing, bird-watching, hiking, camping), or conservation- or management-based (e.g., wetlands restoration projects, posting signs for no-wake zones, planting seedlings).

(2) Another form of public recognition is the role of the resource in the public's customs and traditions. For example, some communities may hold annual festivals, fairs and seasonal celebrations in association with a resource that reflects its importance to the community. In the Pacific Northwest, many tribal ceremonies revolve around salmon runs, indicating the importance of salmon to the culture and traditions of these Native American Indian tribes.

(3) Public and agency records (e.g., newspaper articles, letters written to the Corps) and scoping meetings with the general public as well as non-profit organizations with an interest in the resource may help Corps planners identify sources of public recognition of resource significance.

c. **Technical Recognition.** Technical recognition means that the resource qualifies as significant based on its "technical" merits, which are based on scientific knowledge or judgement of critical resource characteristics. Whether a resource is determined to be significant may of course vary based on differences across geographical areas and spatial scale. While technical significance of a resource may depend on whether a local, regional, or national perspective is undertaken, typically a watershed or larger (e.g., ecosystem, landscape, or ecoregion) context should be considered. Corps planners should describe technical significance in terms of one or

more of the following criteria or concepts: scarcity, representativeness, status and trends, connectivity, critical habitat, and biodiversity.

(1) Scarcity. This is a measure of a resource's relative abundance within a specified geographic range. Generally, scientists consider a habitat or ecosystem to be rare if it occupies a narrow geographic range (i.e., limited to a few locations) or occurs in small groupings. Unique resources, unlike any others found within a specified range, may also be considered significant, as well as resources that are threatened by interference from both human and natural causes.

(2) Representativeness. This is a measure of a resource's ability to exemplify the natural habitat or ecosystems within a specified range. The presence of a large number and percentage of native species, and the absence of exotic species, implies representativeness, as does the presence of undisturbed habitat.

(3) Status and Trends. This concept involves evaluating the occurrence and extent of the resource over time, how it has changed, and why. Documenting the status, or health, of the resource, includes describing its physical attributes, the extent of degradation, and human alterations of the resource. The trends associated with the degradation of the resource should indicate whether the resource is declining, recovering, or maintaining a steady status, as well as how quickly the resource is changing. Different variables may be used to describe the status of the resource and include: the presence of pollution; biodiversity; abundance of distress-loving and exotic species; extent of man-made barriers and other disturbances; and degree and immediacy of threats. In general, Corps planners can consider a potential restoration site that has declining trends and an imperiled status to be more significant than one that is recovering. Planners should also consider the "recoverability" (i.e., the ability of human intervention to restore the natural productivity or condition of the ecosystem) of a degraded resource in examining a resource's status and trends.

(4) Connectivity. This is a measure of the potential for movement and dispersal of species throughout a given area or ecosystem, and should be considered in the context of an entire landscape or watershed. The variation and quality of links between habitats in a landscape or watershed determine the level of connectivity. Landscape spatial patterns that effect the level of connectivity include the existence and suitability of habitat corridors, the degree and pattern of habitat fragmentation, and the presence of natural and man-made barriers. Often, rivers, waterways, and riparian forests serve as highly functional habitat corridors, and aquatic ecosystems inherently serve a connective function to other waterways and terrestrial landscapes. Corps planners may recognize as technically significant those restoration alternatives that serve to improve connectivity by creating or re-establishing habitat corridors; eliminating or addressing the pattern of fragmentation; or removing barriers, such as dams and other water blockages, that disrupt otherwise contiguous habitats.

(5) Limiting Habitat. This is habitat that is essential for the conservation, survival, or recovery of one or more species. Limiting habitat may serve as a criterion for both institutional and technical significance. Under the Endangered Species Act, the Secretary of the Interior has

designated critical habitat for a portion, but not all, of the species listed as threatened or endangered. In that context, critical habitat is an example of limiting habitat with both institutional and technical significance. Since the term "critical habitat" has specific legal and regulatory ramifications, it should only be used in relation to Federally listed threatened or endangered species. The protection or restoration of limiting habitat for non-designated or non-Federally listed species may be technically significant.

(6) Biodiversity. Most simply defined, biodiversity is a measure of the variety of distinct species and the genetic variability within them. It can be measured at the individual level (genetic variation), population level (species variation), and the community level (variation of biological communities and interaction of ecosystem functions). In measuring diversity, biologists usually attempt to describe species richness (i.e., the number of species found in a community) as well as the distribution of individuals among species (i.e., how evenly the total number of individuals is divided among species). Diversity is greater if individuals are more evenly distributed. Corps planners may recognize as technically significant those restoration alternatives that serve to improve biodiversity within a specified area.

(7) In summary, the case can be made that environmental resources are significant based on technical recognition when, within a specified geographic range, those resources are either scarce; are representative of their respective ecosystems; will improve connectivity or reduce fragmentation of habitat; represent limiting habitat for important species; will improve or increase biodiversity; or trends indicate that the health of the resource is imperiled and declining, but can be recovered through human intervention.

E-38. Acceptability, Completeness, Effectiveness, and Efficiency. Acceptability, completeness, effectiveness, and efficiency are the four evaluation criteria specified in the P&G (Paragraph 1.6.2(c)) in the screening of alternative plans. Alternatives considered in any planning study, not just ecosystem restoration studies, should meet minimum subjective standards of these criteria in order to qualify for further consideration and comparison with other plans. These concepts are discussed in more detail in Section I of this appendix.

a. Acceptability. An ecosystem restoration plan should be acceptable to State and Federal resource agencies, and local government. There should be evidence of broad based public consensus and support for the plan. A recommended plan must be acceptable to the non-Federal cost-sharing partner. However, this does not mean that the recommended plan must be the locally preferred plan.

b. Completeness. A plan must provide and account for all necessary investments or other actions needed to ensure the realization of the planned restoration outputs. This may require relating the plan to other types of public or private plans if these plans are crucial to the outcome of the restoration objective. Real estate, O&M, monitoring, and sponsorship factors must be considered. Where there is uncertainty concerning the functioning of certain restoration features and an adaptive management plan has been proposed it must be accounted for in the plan.

c. Efficiency. An ecosystem restoration plan must represent a cost effective means of addressing the restoration problem or opportunity. It must be determined that the plan's restoration outputs cannot be produced more cost effectively by another agency or institution.

d. Effectiveness. An ecosystem restoration plan must make a significant contribution to addressing the specified restoration problems or opportunities (i.e., restore important ecosystem structure or function to some meaningful degree).

E-39. Risk and Uncertainty Considerations. When the costs and outputs of alternative restoration plans are uncertain and/or there are substantive risks that outcomes will not be achieved, which may often be the case, the selection of a recommended alternative becomes more complex. It is essential to document the assumptions made and uncertainties encountered during the course of planning analyses. Restoration of some types of ecosystems may have relatively low risk. For example, removal of drainage tiles to restore hydrology to a wetland area. Other activities may have higher associated risks such as restoration of coastal marsh in a area subject to hurricanes. When identifying the NER plan the associated risk and uncertainty of achieving the proposed level of outputs must be considered. For example, if two plans have similar outputs but one plan costs slightly more, according to cost effectiveness guidelines, the more expensive plan would be dropped from further consideration. However, it might be possible that, due to uncertainties beyond the control or knowledge of the planning team, the slightly more expensive plan will actually produce greater ecological output than originally estimated, in effect qualifying it as a cost effective plan. But without taking into account the uncertainty inherent in the estimate of outputs, that plan would have been excluded from further consideration. This topic is discussed in more detail in Section I of this appendix.

E-40. Planning Step 5 - Plan Comparison. Alternative plans that qualified for further consideration will be compared against each other in order to identify the plan to be recommended for implementation. A comparison of the effects of various plans must be made and tradeoffs among the differences observed and documented to support the final recommendation. The effects include a measure of how well the plans do with respect to planning objectives including NED and NER benefits and costs. Effects required by law or policy and those important to the stakeholders and public are to be considered. Previously, in the evaluation process, the effects of each plan were considered individually and compared to the without-project condition. In this step, plans are compared against each other, with emphasis on the important effects or those that influence the decision-making process. The comparison step concludes with a ranking of plans.

E-41. Planning Step 6 - Selection of Ecosystem Restoration Plan. When selecting a single alternative plan for recommendation from all those that have been considered, the criteria used to select the National Ecosystem Restoration (NER) plan include all the evaluation criteria discussed above. Selecting the NER plan requires careful consideration of the plan that meets planning objectives and constraints and reasonably maximizes environmental benefits while passing tests of cost effectiveness and incremental cost analyses, significance of outputs,

acceptability, completeness, efficiency, and effectiveness. Additional factors to consider include the following items.

a. **Partnership Context.** Restoration projects that were planned in cooperation with other Federal resource agencies, and where those agencies also have a significant role in implementing the project, using their authorities and funding, should receive higher priority than those that do not, assuming they also satisfy the other criteria. Similarly, restoration projects that make a significant contribution to regional or national interagency programs (e.g., North American Waterfowl Management Plan, Coastal America, Marine Fish Habitat Creation and Restoration Program, Chesapeake Bay Program, etc.) should also receive priority.

b. **Reasonableness of Costs.** All costs associated with a plan should be considered. Even after tests of cost effectiveness and incremental cost analysis have been satisfied, the decision-maker must ascertain that the benefits to be realized are really worth the costs. This will almost always be a subjective decision and ultimately must rely on experience, reasonableness and common sense.

c. Rarely will the NER plan not be among the best buy plans identified during the cost effectiveness and incremental cost analyses. If the recommend plan is not the NER plan its selection must be justified. The reasons for such a selection should be clearly explained in the supporting documentation as well as the potential implications for cost sharing.

SECTION VI - Hydroelectric Power

E-42. Federal Interest. Hydroelectric power development may be included in formulation of water resources projects when certain criteria are met.

E-43. Types of Improvements.

a. **New Federal Projects.** Hydroelectric power development may be considered during planning for multipurpose projects involving dams and lakes and may be recommended if non-Federal development would be impractical. The Corps does not construct single purpose hydroelectric power projects. No single purpose hydropower studies may be initiated for new sites unless specifically directed and funded by the Congress. Non-Federal sponsors must agree to share the cost of the feasibility study with the explicit understanding that any resultant project will be financed by non-Federal funds.

b. **Additions to Existing Projects.** Existing Corps projects without hydroelectric power facilities may have them added, either through Congressionally authorized Federal development, or preferably through Federal Energy Regulatory Commission (FERC) licensed non-Federal development.

c. **Pumped Storage.** Pumped storage may be investigated where non-Federal development would be impractical. Pumped storage facilities are either integral or adjoining. Integral facilities frequently consist of a conventional powerhouse with reversible units (the same turbines alternately generate power and pump water). Adjoining facilities usually consist of an upper or lower reservoir and powerhouse and intake separate from the multipurpose project dam (and conventional powerhouse, if any). Adjoining facilities may be the only practical way to add pumped storage to an existing project.

d. **Minimum Facilities for Future Power Installations.** To support future hydropower development, penstocks and some other features, classified as minimum facilities, may be included in initial project construction, while installation of full facilities is postponed. This authority applies even to projects where hydropower is not an authorized purpose (Flood Control Act of 1938 and subsequent authorizing acts). It requires approval by the Secretary of the Army, on recommendation of the Chief of Engineers and the Federal Energy Regulatory Commission (FERC). Recommendations for minimum facilities should be based on estimates of future economic and financial viability of power, and the expected willingness of non-Federal interests to finance the facilities (or repay). The rationale for this authority is the greater dam modification costs, and the potentially foregone project outputs while modification takes place, compared to the cost of initial provision of minimum facilities. Procedures for report processing and approval are contained in [ER 1110-2-1](#).

e. **Transmission Facilities.** Transmission lines and substations must be considered with other project effects. Transmission investment plus operation and maintenance costs may be included as project costs, or accounted for in benefit estimates (i.e., through the effect of

differences in transmission requirements between hydropower and other (typically thermal alternatives).

f. Hydroelectric Development at Non-Corps Sites. The Corps of Engineers has no general authority to participate in hydroelectric development at non-Corps sites.

g. Major Rehabilitation Projects. Construction of infrequent, costly structural rehabilitation or major replacement works that will improve reliability or efficiency of a hydropower generating plant or a principal feature thereof are implemented under the Major Rehabilitation Program. Major rehabilitation projects are budgeted under the Construction General account. Rehabilitation is a major project feature restoration consisting of structural work on a Corps operated and maintained facility intended to improve reliability of an existing structure, the result of which will be a deferral of capital expenditures to replace the structure. Rehabilitation is considered as an alternative when it can significantly extend the physical life of the feature and can be economically justified by benefit-cost-analysis. [ER 1130-2-500](#) and [EP 1130-2-500](#) document the requirements and procedures for major rehabilitation studies and projects. A summary of the procedures to evaluate this type of projects is provided in Section X of this appendix.

E-44. Specific Policies

a. Non-Federal Development Encouraged. Corps policy is to encourage non-Federal development where feasible, and thus development should ordinarily proceed under FERC procedures. Pursue Federal action only when non-Federal development is impractical.

b. Practicability. A hydropower project is impractical for non-Federal development if there are compelling physical, operational, legal, competing use, institutional, environmental or economic reasons preventing development or operation, or if non-Federal development would be significantly less productive than Federal development (i.e., produce significantly fewer net NED benefits considering all project outputs).

c. Economic Justification Requirements. Before hydropower can be included in a multiple purpose project, the project must be economically justified based on other outputs (flood damage reduction or navigation). If included, however, hydropower scale is not limited by policy.

d. Conditions of Non-Federal Payment or Repayment.

(1) The cost of Federal hydropower development is a non-Federal responsibility. The Corps of Engineers determines the development costs, including cost allocations, if any. The Separable Cost-Remaining Benefit method (SCRB) is the preferred cost allocation procedure (Corps, Interior, FERC interagency agreement).

(2) Payment via reimbursement is permissible in law, but Corps policy is to seek payment concurrent with construction. Under non-Federal sponsor financing, all or some of the vendible power outputs may be ceded to the sponsor, or, the law permitting, the sponsor may

receive revenue from the Federal power marketing agency selling the power. Traditional reimbursement by Federal power marketing agencies is unlikely because of budget restraints.

(3) Although the Corps constructs and operates power facilities, the power itself is either sold by a Federal power marketing agency or conveyed to a sponsor. Thus, plan formulation, financing and other implementation requirements should be coordinated with the power marketing agency or sponsor, if any.

E-45. NED Benefit Evaluation Procedure

a. Purpose. This section describes procedures for the evaluation of national economic development (NED) benefits of hydropower features of water resources projects and plans. These features include single-purpose hydropower (when Congressionally authorized), the inclusion of hydropower as a function in new multipurpose projects, addition of hydropower power-generating facilities to existing water resource projects, and expansion of existing power plants

b. Conceptual Basis.

(1) The conceptual basis for evaluating the benefits from energy produced by hydroelectric power plants is society's willingness to pay for these outputs. If this is not possible or cost effective, benefit information may sometimes be obtained through examination of market prices. Although utility pricing of electricity is complex and usually based on average cost rather than marginal cost, in cases where it can be determined that market price to the final consumer is based on marginal production costs, this may be used as a measure of benefits. When using market price as a measure of benefits the increment in supply should ordinarily be relatively small compared to the total (i.e., little change would be expected in market price due to the incremental supply). Continued movement of retail electricity pricing towards marginal cost approximations (e.g., seasonal rates, time of day rates, etc.) may make market prices more relevant for benefit evaluation in the future. In the absence of such direct measures of marginal willingness to pay, the benefit from energy produced by hydroelectric powerplants is measured by the resource cost of the most likely alternative to be implemented in the absence of the alternatives under consideration. Non-Federal investment analysis generally does not provide an adequate basis for evaluation of potential investments of Federal resources in hydroelectric power. This is because non-Federal investments reflect financial conditions, insurance, and tax incentives that differ from those applying to Federal investments. The procedure that follows allows the planner to construct an NED benefit estimate based on real resource cost of the most likely non-Federal alternative. Simplifications are encouraged for small-scale hydropower projects. An alternative hydropower benefit evaluation procedure is provided for single-purpose projects that are to be 100 percent non-federally financed, provided that there are no significant incidental costs.

(2) The real resource cost of the most likely alternative can also be used to compute benefits from nonstructural measures. However, the net benefits of certain nonstructural

measures that alter the electric power load cannot be measured effectively by the alternative cost procedures for the following reasons:

(a) Structural measures and many nonstructural measures (except those that alter the load) result in similar plan outputs, whereas load-altering measures (e.g., revised rate structures) may change levels of output; and,

(b) Load-altering measures may have fewer direct resource costs than measures based on higher levels of output. Because of this lack of comparability, the benefits from such load-altering nonstructural measures should not be based on the cost of the most likely alternative. Attempts to measure the benefits of load-altering nonstructural measures on the basis of direct willingness to pay are encouraged.

c. Planning Setting.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist in the future in the absence of a project, including any known changes in law or public policy. The without project condition includes the following specific assumptions:

(a) Existing Resources. Existing generating resources are part of the without project condition. Make adjustments to account for anticipated plant retirements and changes in plant output due to age or environmental restrictions associated with existing policy and regulations.

(b) Existing Institutional Arrangements. Existing and reasonably expected future power system and water management contracts, treaties, and non-power river operating criteria are part of the without project condition. If revision of these arrangements is part of an alternative plan, the new arrangement (revised contract, criteria, etc.) would be considered in the with project condition.

(c) Alternative Actions Anticipated or Under Way. The without project condition includes those generating resources that can reasonable be expected to be available in the forecast period.

(d) Nonstructural Measures and Conservation. The without project condition includes the effects of implementing all reasonably expected nonstructural and conservation measures.

(2) With Project Condition.

(a) The with project condition is the most likely condition expected to exist in the future with the plan under consideration. Examples of alternative plans include: alternative combinations of projects in a basin study; alternative sites in a reach study; alternative plant sizes at a specific site; alternative reservoir sizes at a reservoir site; use of reregulation and/or pumpback to increase firm capacity; and reallocation of storage to increase firm energy output.

(b) Nonstructural alternatives to hydropower may be used alone or in combination with structural measures. Nonstructural measures include but are not limited to reducing the level and/or time pattern of demand by time-of-day pricing; utility-sponsored loans for insulation; appliance efficiency standards; education programs; inter-regional power transfers; and increased transmission efficiency.

d. Evaluation Procedure

(1) Follow the steps shown in Figure E - 9 and described in the following paragraphs to estimate NED benefits that would accrue whenever the plan would be cost shared. When single-purpose hydropower alternatives being studied would be 100 percent non-federally financed, the market-based procedure specified in paragraph E-45 may be used. Non-federally financed means that all construction and operating costs would be financed entirely from sources other than federally appropriated funds. The level of effort expended on each step depends upon the nature of the proposed development, the state of the art for accurately refining the estimate, and the likely effect of further refinement on project formulation and justification. For the purpose of ensuring efficiency in the use of planning resources, simplifications of the procedures set forth in this section are encouraged in the case of single-purpose, small scale hydropower projects (25 MW or less), if these simplifications lead to reasonable approximations of NED benefits and costs. In addition, an analysis of marketability may be substituted for determination of need for future generation for hydropower projects up to 80 MW at existing Federal facilities.

(a) Step 1 - Identify System For Analysis. Because of the trend toward interconnection and coordination among utilities and power systems, it is most appropriate to evaluate NED benefits for hydropower on a system basis, rather than on the needs of an individual utility or local area. The size of the system would depend on the situation but could consist of a power pool, a National Electric Reliability Council (NERC) regional area, the marketing area of a Federal Power Marketing Administration, or other geographic region. In some cases, physical or institutional constraints may limit the analysis to a smaller area, but care must be taken to ensure that benefits are not misstated by such analysis.

(b) Step 2 - Estimate Future Demand For Electric Power. Forecast electric power loads in terms of the annual peak demand period. When a high proportion of the generation is from hydropower, a forecast of annual energy demand should be made. Also forecast weekly load shapes to represent a minimum of three periods in the year (e.g., typical summer, winter, and spring/fall days) to assist in determining the type of load that a hydropower project could carry. Load forecasts should reflect the effects of all load management and conservation measures that, on the basis of present and future public and private programs, can reasonably be expected to be

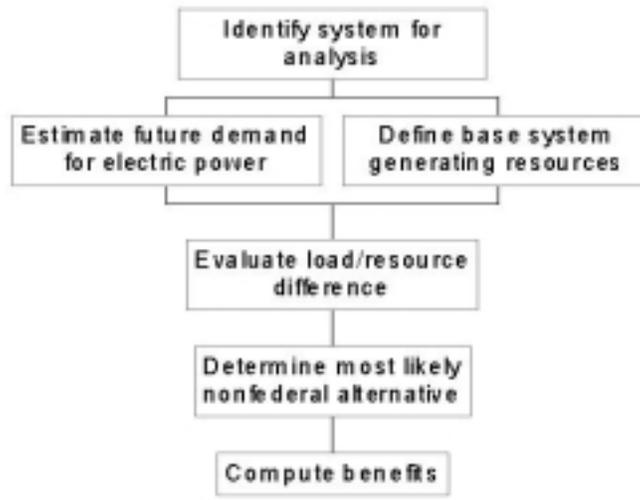


Figure E- 9 Flowchart of Hydropower Benefit Evaluation Procedures

implemented during the forecast period. Load forecasts should be made and analyzed by sectoral use (e.g., residential, commercial, industrial). Estimate loads at increments of no more than 10 years from the present to a time when the proposed plant will be operating in a state representative of the majority of its project life. In the case of staged hydropower development or where generation system resource mixes may change markedly, load forecasts may be appropriate for 20 years or more beyond the initial operation date. Account for system exports and reserve requirements.

(c) Step 3 - Define Base System Generating Resources. Project future generating resources and imports at various points in time without the proposed plan or any alternative plan. Estimate resources for the time periods stated in step 2. Provide information on peak capacity and on average annual energy production where a high proportion of the systems generation is hydropower. Data are readily available on projected system resources for about 10 years. Base projected resource additions beyond that time on system studies. Account for retirement of older plants as well as the reduction of output of some plants due to age or environmental constraints.

(d) Step 4 - Evaluate Load/Resource Difference. Compare the loads identified in step 2 with the resources identified in step 3 to determine: (1) when generating resource deficits will occur, (2) the magnitude of these deficits, and (3) what portion of these deficits could be met by the hydropower project. If nonstructural measures are components of an alternative plan and these measures reduce system loads, the amount of such reduction lessens system deficits. Hydropower sites can be developed to provide either a base load, mid-range, or peaking service. Evaluate the system demand for each class of hydropower generation. Simple tabulation of annual peak and energy loads and resources is generally adequate for preliminary studies. Use

system load-resource models that account for load characteristics and generating plant operating capabilities, if available, to evaluate accurately the usability of specific projects.

(e) Step 5 - Determine the Most Likely Non-federal Alternative.

(1) General. Select the one alternative most likely to be implemented in the absence of the proposed Federal project. Begin identification of the most likely alternative to the plan being considered with the least costly alternative. If an alternative with a lesser cost is passed over for a more expensive one, justify not selecting the lower cost plan.

(2) Screen Alternatives. The alternatives to a specific hydropower project must be viable in terms of engineering, environmental quality, and other national policy considerations. Engineering viability limits thermal alternatives to commercially available electric powerplants. Environmental viability implies that plant costs include all equipment required to meet environmental quality criteria. National policy considerations include factors such as legal limitations on the use of oil, natural gas, and other “scarce” fuels for electric power generation. Each alternative need not in itself deliver service similar in kind to the hydropower project, but the total power system with the alternative must deliver service similar in kind to the system with the hydropower project. If nonstructural measures or conservation are components of an alternative plan and these measures reduce the need for additional capacity or for additional power, the amount of such reduction constitutes provision of service similar in kind; this ensures that evaluation procedures will not be biased against the selection of an alternative that utilizes nonstructural measures.

(3) Identify the Most Likely Alternative. Compare the system with the hydropower project under consideration to alternatives capable of meeting system loads within established criteria of system reliability. Base the comparison on the basis of cost and other factors to determine the most likely alternative, i.e., the structural and/or nonstructural measures that will be implemented if the project under consideration is not implemented. If institutional obstacles to implementation are noted, an alternative plan should still be considered the most likely if the barriers are substantially within the power of the affected users to correct. A detailed description of the institutional obstacles should be included, with a discussion of the basis for the conclusion that the obstacles cannot be overcome. If the most likely alternative includes new thermal plants, use those plants’ capacity costs (including amortized investment costs, transmission costs and fixed operating and maintenance (O&M) costs) as the measure of the value of the hydropower project’s generating capacity, and use the thermal plants’ energy costs (primary variable O&M costs and fuel costs) as the measure of the value of the hydropower project’s energy production.

(f) Step 6 - Compute Benefits.

(1) Compute Hydropower Plant Annual Benefits. Compute annualized benefits based on the costs of the most likely alternative for each hydropower development and installation component. Base the calculation of alternative costs to be used as a measure of NED benefits on the following: (i) calculate all interest and amortization costs charged to the alternative on the basis of the Federal discount rate; (ii) charge no costs for taxes or insurance to the alternative; and (iii) in calculating costs of the most likely alternative, use assumptions and procedures that parallel those used to calculate the costs of the plan being evaluated. In many cases, benefits may vary over the life of a project. This may be due to such factors as staged development of the hydropower project, changes in operating of the hydropower project resulting from changes in the resource mix in the total generating system, and real escalation in fuel costs (if the most likely alternative system includes a thermal plant). Compute project benefits by time intervals and discount these values to derive annualized power benefits. When applicable, the evaluation shall reflect differences in the cost of transmission, distribution, and other facilities compared to the most likely alternative. Occasionally, the initial output of a hydropower project is large compared to annual growth in system load; two or more years may be required to fully absorb its output into the load. In these cases adjust the credit (benefit) to reflect the generating capacity and energy actually used in the load in the early years of project life.

(2) Energy Value Adjustment. Account for the effect on the system production expenses when computing the value of hydroelectric power. Adding structural or nonstructural measures of a plan to a system instead of adding an alternative power source may result in greater or lesser system production expenses than if a particular thermal capacity were added; the effect on production expenses can be determined by performing a system analysis. If there is a difference in system production expenses, adjust the energy value in the economic analysis of the plan. If the alternative plan would increase system production expenses, the adjustment would be positive. Consider system production expenses in determining the most likely alternative.

(3) Capacity Value Adjustment. The physical operating characteristics of hydropower projects differ significantly from alternative thermal plants. Appropriate credit may be given to hydropower projects to reflect their greater reliability and operating flexibility. When the value of these characteristics cannot otherwise be quantified, an adjustment can be made to the alternative plant capacity costs. Typically, the adjustment per kilowatt of capacity ranges from 5 to 10 percent of the cost per kilowatt of thermal capacity, depending on the operating characteristics of the hydropower project and alternatives that include thermal capacity. The adjustment may be applied by increasing the capacity cost of the most likely alternative by the appropriate percentage determined by the Federal Energy Regulatory Commission (FERC).

(4) Intermittent Capacity Adjustment. The dependable capacity of hydropower project is based on the load-carrying capacity of the project under the most adverse combination of system

loads, hydrologic conditions, and plant capabilities. This very conservative approach is unrelated to the dependable capacity of a hydropower project's alternative if thermal capacity is included and given no credit for the value of capacity that is available a substantial amount of the time. When power system operation studies show that there is an intermittent capacity value to the system, a capacity adjustment should be made.

(5) Price Relationships. Assume relative price relationships and the general level of prices prevailing during the planning study to hold generally for the future, unless specified studies and considerations indicate otherwise. Examples of the latter include escalation of relative fuel cost (e.g., due to increasing scarcity) or increased capital costs expected to result from changed environmental or safety criteria. Fuel costs used in the analysis should reflect economic prices (market clearing) rather than regulated prices.

e. Data Sources. Data on existing and planned resources, loads, marketability criteria, and alternative costs are available from various agencies and groups, including the Department of Energy, NERC regional councils, FERC regional offices, Federal power marketing administrations, State energy agencies, utility companies, and regional planning groups. If specific operating characteristics of individual plants are not available, generalized data can be obtained from other sources, including the Electric Power Research Institute. Load-resources models based on simulated system operation may be used if available. Some of these models are available from various sources, including FERC, Federal power marketing administrations, and a number of consulting services.

f. Alternative Procedure: Financial Evaluation.

(1) General. This section provides an alternative hydropower benefit evaluation procedure that may be used for evaluating single-purpose projects that are to be 100 percent nonfederally financed, provided that there are no significant incidental costs. This approach employs market data based on long-run (10 or more years) utility wholesale prices as an estimate of the cost of producing equivalent power from the most likely alternative. These prices may be used to evaluate and compare the financial feasibility of alternative plans, provided that they are consistently applied to all of the alternatives. Through this process, the most financially attractive alternative is identified. Because the benefits and costs of all alternative plans are evaluated in a consistent way, the most financially attractive plan can be identified as the NED plan.

(2) Industry Long-run Wholesale Prices. The market approach must be carefully applied to ensure that the long-term (10 or more years) contract prices reflect the energy and capacity characteristics of the proposed hydropower project. In screening contracts for applicability, a number of factors should be examined, including: term of contract, power and energy availability (daily, weekly, seasonally), geographic relationship, delivery voltage, power factor, point(s) of delivery (busbar, high voltage grid, load center), interconnecting facilities, reliability

standards and emergency backup. Information on long-term wholesale power contracts may be obtained from FERC, State public service commissions, the Federal power marketing administrations, and electric generating and distribution utilities.

g. Report and Display Procedures.

(1) Tables E-23 through E-25 are suggested for presentation for reports that include federally financed hydropower measures. Table E-23 summarizes the output of all plans by peaking capacity and system load factor, and presents the costs of each alternative plan. Tables E-24 and E-25 summarize the output of the structural component of each alternative, the benefits of the structural components, and the resource costs of all structural and nonstructural components of each alternative plan. The number of benefit categories included will vary from project to project. Not all projects will have intermittent capacity, for example, and in some cases it will be appropriate to account separately for firm and secondary energy. System energy costs are sometimes included in the unit energy values; in those cases such costs would not have to be accounted for separately.

(2) Table E-25 is suggested if the nature or magnitude of hydropower benefits changes substantially over time. Examples are: staged construction of the hydropower project; change in the role of hydropower in the system over time; and situations in which several years are required to absorb a large project into the system. When the alternative financial evaluation procedure is used to evaluate financial feasibility of plans that are to be 100 percent non-Federally financed (see paragraph E-45f), physical data similar to that found in Tables E-23 through E-25 should be displayed. Capacity and energy values, as developed through the financial analysis, should also be displayed in a manner facilitating comparison among alternatives. These displays are in lieu of the standard presentation of hydropower benefits and project costs in the NED account. Also display any incidental benefits and costs of the alternatives. However, no benefit-cost ratio can be presented, because the analysis of the hydropower project's financial feasibility is not comparable to economic analysis.

h. Major Rehabilitation Projects Evaluation Procedures. Benefits associated with major rehabilitation projects are increases in reliability and efficiency improvements. Procedures to estimate these benefits are found in [ER 1130-2-500](#) and [EP 1130-2-500](#).

E-46. Special Considerations. Upon request, districts may provide reimbursable technical services to states or State subdivisions on hydropower development at sites where hydropower is not an authorized purpose (Intergovernmental Cooperation Act of 1968; see [ER 1140-1-211](#)). Assistance is limited to technical services; separate authority to construct or operate and maintain hydropower facilities is required. The Corps Center of Expertise for hydropower projects is located in Northwestern Division (NWD).

b. Coordination Initiatives.

(1) FERC Coordination-Costs of Alternatives. Ordinarily the Corps collaborates with FERC in estimating costs of alternatives to Corps hydropower projects, and frequently has adopted FERC values as benefits. The Corps is under no requirement to use FERC values however; if a district can perform superior analysis, it should do so.

(2) Marketing Agencies. The Corps does not market the power it produces; marketing is done by the Federal power marketing agencies (Southeastern Power Administration, Southwestern Power Administration, Western Area Power Administration, Bonneville Power Administration, Alaska Power Administration) through the Secretary of Energy. The rates are set by the marketing agency to: (a) recover costs (producing and transmitting) over a reasonable period of years (50 years usually); and (b) encourage widespread use at the lowest possible rates to consumers, consistent with sound business principles. The law requires that preference for sale be given to public bodies and cooperatives. Rates are determined by the marketing agency and approved by FERC (Section 5 Flood Control Act 1944, Public Law 78-534; see ER 1130-2-324). In compliance with Section 103(c)(1) of the Water Resources Development Act of 1986 (Public Law 99-662), any proposal to Congress for hydroelectric power authorization must contain statements of the appropriate power marketing agency regarding its marketing of the power to recover all costs allocated to power and any other costs assigned for power cost recovery pursuant to law.

Table E- 23 Electric Power Supply Alternatives

[Period of analysis, price level, discount rate]

	Annualized cost ¹ (\$1,000)	Peak power supplied conserved, and system load factor (MW) ² by time period ³			
		P ₁	P ₂	P ₃	P _N
Most likely alternative
Recommended plan.....
Other plans analyzed.....

¹Annual equivalent cost includes system costs.

²For example, for the summer season, an entry "90 10 .6" would represent the 100 MW deficit in the summer peak use identified in the without-project condition by supplying 90 MW and reducing the quantity used by 10 MW; the system load factor for the entire system for the summer would be .6.

³Show by time period and season where there are seasonal variations

Table E- 24 Summary of Annualized NED Benefits for Structural Measures and NED Costs for Structural and Nonstructural Measures¹

[(Thousands of month, year dollars) Applicable discount rate: ____]

	Alternative			
	1	2	3	X
Plant data:				
Installed capacity, MW
Dependable capacity, MW
Intermittent capacity, MW
Average annual energy, gWh.
Average annual capacity				
factor
(percent).....
Benefits:	(.....)	(.....)	(.....)	(.....)
Unit capacity
Dependable capacity benefits.
Intermittent capacity benefits.
Unit energy value	(.....)	(.....)	(.....)
(mills/kWh).....
Energy benefits	(.....)
Unit system energy	(.....)	(.....)	(.....)
adjustment
(mills/kWh).....	(.....)
System energy cost	(.....)	(.....)	(.....)
adjustment.....	(.....)
Real fuel cost escalation rate	(.....)	(.....)	(.....)
(percent).....
Period of real fuel cost				
adjustment (yrs)
Real fuel cost adjustment
Total hydro benefits.....
Other purpose benefits (list).....
Annualized cost.....
Structural measures
Nonstructural measures
Net annualized benefits

¹Note that benefits from load-altering nonstructural measures are excluded. This table may be used for displaying the benefits of nonstructural measures that do not alter the load (see 2.5.2(b)).

Table E- 25 Time Distribution of NED Electric Power Benefits

for Structural Measures of Alternatives¹(Applicable discount rate: ____)

	Alternative				
	P ₁	P ₂	P ₃	P _X	AAE ³
Plant data:					
Installed capacity, MW
Dependable capacity, MW..
Intermittent capacity, MW..
Average annual energy, gWh
Average annual capacity factor (percent).....
Benefits:					
Unit capacity	(.....)	(.....)	(.....)	(.....)	(.....)
Dependable capacity benefits
Intermittent capacity benefits
Unit energy value (mills/kWh)	(.....)	(.....)	(.....)	(.....)	(.....)
Energy benefits
Unit system energy adjustment (mills/kWh)	(.....)	(.....)	(.....)	(.....)	(.....)
System energy cost adjustment
Real fuel cost escalation rate (percent)	(.....)	(.....)	(.....)	(.....)	(.....)
Period of real fuel cost adjustment (yrs)	(.....)	(.....)	(.....)	(.....)	(.....)
Real fuel cost adjustment....
Annualized benefits

SECTION VII – Recreation

E-47. Federal Interest. The legislative basis for Federal participation in recreation development is found in the Flood Control Act of 1944, as amended, the Federal Water Project Recreation Act of 1965 (Public Law 89-72), and the Water Resources Development Act of 1986 (Public Law 99-662). These give broad authority to include recreation as a project purpose. Policy limits exercise of these authorities however. Recreation is a low priority output and thus the Corps will not plan for (formulate for) single purpose recreation unless a sponsor is willing to pay one hundred percent of the associated implementation costs. For projects with other purposes to which separable recreation is added, the statutory cost sharing requirement is just fifty percent. The Corps will plan for and implement projects serving other purposes (hurricane and storm damage reduction for example) and these may have incidental recreation benefits. Benefits are incidental when: (1) a project is formulated for other primary purposes and recreation benefits are less than 50% of total benefits, or (2) a project is formulated for other primary purposes and average annual recreation benefits are less than 50% of the average annual benefits required for justification. This is equivalent to saying the recreation benefits, which are required for justification, must be less than an amount equal to 50% of project costs. There may be additional recreation benefits if they are not required for justification. In addition, for multiple purpose projects recreation may be included as a primary purpose if there is a non-Federal sponsor. For cases 1 and 2, recreation benefits are considered incidental; cost sharing (and cost allocation, if any) is based on the formula for the primary purpose only.

E-48. Types of Improvements

a. **Vendible Outputs and Services and Non-Federal Facilities.** Improvements providing outputs or services generally considered vendible are non-Federal responsibilities. Marina facilities and telephone services are examples. Any improvement or service not closely and directly related to enjoyment of the natural resource itself (or created resource itself) is a non-Federal responsibility, even if it is not generally considered vendible. Examples are tennis courts and accommodations for viewing sporting or cultural events taking place on or near a lake.

b. **Federal Participation, Joint Facilities and Cost Sharing.** If there is no non-Federal recreation sponsor, facilities or project modifications may not be recommended unless justified by other project purposes, in which case recreation benefits are considered incidental. Minimum facilities needed to maintain public health or safety, are permissible. These are limited to road end turnarounds, guardrails, barricades, warning signs, public safety fencing and vault toilets (unless upgrades are required by Federal or state regulations). Boat ramps and trailer parking justified by project operations requirements may be provided. Costs are joint costs and allocated to project purposes.

c. Facilities Justification and Cost Sharing. When there is a recreation sponsor economically justified facilities are cost shared 50 percent Federal and 50 percent non-Federal.

d. Check List of Facilities. Exhibit E-2 contains a list of recreational facilities which may be provided in recreation developments at Corps water resources projects with requirements for funding each as either: (1) joint facilities cost-shared jointly with other project features; (2) separable recreation features dependent upon the water resource project that may be cost-shared at 50 percent Federal and 50 percent non-Federal with the recreation sponsor; and/or, (3) separable recreation facilities for which there will be no Federal cost-sharing and which must be provided at 100% non-Federal cost.

E-49. Specific Policies

a. Lakes (man-made).

(1) Lakes, or reservoirs, are impoundments created behind dams, or behind navigation locks and dams if lands not subject to navigation servitude are needed for water storage. Recreation policies applicable to lakes are not applicable to dry dams, that is those dams not providing permanently impounded water. The Federal government may participate in basic recreation facilities on project lands or separable recreation lands if a non-Federal sponsor will participate and cost share as outlined in paragraph E-51. The same conditions apply to separable lands acquired for future recreation development.

(2) Recreation costs may not exceed one-half of total costs.

(3) If recreation is a project purpose, several scales of development must be formulated and evaluated.

(4) Reallocation of Storage. Storage reallocations for recreation which significantly affect other authorized purposes, or involve major structural or operational changes, require Congressional approval. Costs reallocated to recreation and subject to cost sharing will be set to the highest of: benefits foregone; revenues foregone; replacement costs; updated cost of storage. Cost sharing of facilities is 50/50.

b. Other Types of Projects. These include works or improvements for commercial and recreational navigation, hurricane and storm damage prevention, non-lake projects for flood damage prevention and ecosystem restoration. The benefits and costs of recreation are considered incremental. Specific policies and exceptions are provided in the following paragraphs.

(1) Non- lake Projects.

(a) At non lake projects basic recreation facilities exploiting project created opportunities may be provided, but only on lands acquired for non recreation purposes.

(b) The Federal government will not participate in acquiring lands for recreation purposes. A special case may exist when the real estate interest required for other project purposes is insufficient for recreation development. The sponsor may obtain real estate interest sufficient for recreation and receive a credit for the incremental cost. For example, if an easement is adequate for other project purposes, but fee acquisition is necessary for recreation development, the sponsor may receive credit for the incremental cost of fee acquisition. This real estate upgrade policy does not apply to temporary construction easements, nor to disposal or borrow areas.

(c) If there is to be recreation development, then beyond real estate interest upgrades the only other Federal participation in land acquisition is for providing access to project lands, parking, potable water, sanitation and related developments for public control and for health and safety.

(d) Unlike lake projects, at non lake projects there is no routine Federal interest in provision of minimum facilities for public health and safety. That is, if no recreation development is sponsored by a non-Federal entity, there is no Federal participation in minimum facilities.

(e) The Federal cost of a project including recreation may not exceed the Federal cost of the project excluding recreation by more than ten percent without prior approval by the Secretary of the Army.

(2) Shore Protection Project. Except for Federal shores the Corps will not participate in the cost of beach use recreation developments. Local cooperation requirements shall include the provision and maintenance of roads, parking, sanitary facilities and any other on-shore recreation development necessary to accommodate anticipated beach users needed to realize recreational benefits claimed. Also, Army policy precludes the addition of sand to a beach solely to increase its potential for recreation.

(3) Nonstructural Flood Damage Reduction Projects. The formulation of nonstructural flood damage reduction projects is not constrained by the limitation of increased Federal cost for recreation development described above. This is because such projects are justified mainly by creating new uses for floodplains, and the most important new use is frequently recreation.

(4) Recreation at Ecosystem Restoration Projects. Recreation at ecosystem restoration projects should be compatible with these types of projects and enhance the visitation experience

by taking advantage of natural values. The social, cultural, scientific, and educational values should be considered within the framework of the ecosystem restoration project purpose. Recreation development at an ecosystem restoration project shall be totally ancillary to the primary purpose, appropriate in scope and scale, and shall not diminish the ecosystem restoration outputs used to justify the project. Recreation facilities may be added to take advantage of the education and recreation potential of the ecosystem restoration project but the project shall not be formulated for recreation. The recreation potential may be satisfied only to the extent that recreation does not adversely impact the ecosystem restoration purpose, and the recreation facilities are justified. The recreational experience shall build upon the ecosystem restoration objective and take advantage of the restored resources rather than detract from them. Ecosystem restoration projects should not encourage public use if there is no non-Federal sponsor to cost share recreation. Federal participation in recreation development at ecosystem restoration projects will be limited to the facilities shown in Exhibit E-3 of this appendix. Specific policies stated in paragraph E-49b also apply to recreation development at single purpose ecosystem restoration projects.

(5) Multipurpose Projects. For multipurpose projects that include nonstructural flood damage reduction, ecosystem restoration and recreation, the cost of recreation associated with the non-structural flood damage reduction features may not exceed one-half of the total cost for flood damage reduction plus recreation; and, for recreation associated with ecosystem restoration, the Federal cost of ecosystem restoration plus the Federal cost of recreation may not exceed by more than 10 percent the Federal cost of the ecosystem restoration project without prior approval of the ASA(CW). For example, a multipurpose project with a total cost of \$8 million for nonstructural flood damage prevention and Federal cost of \$2 million for ecosystem restoration, may include recreational facilities associated with the nonstructural flood damage prevention project with a cost not to exceed \$8 million and recreational facilities associated with the ecosystem restoration projects with a Federal cost not to exceed \$200,000.

(6) Continuing Authorities. Flood control, navigation and shore protection continuing authorities are subject to the same recreation policies and conditions of participation as specifically authorized projects. Additionally, all costs in excess of the statutory limitation of Federal expenditures for these projects are entirely a local responsibility.

E-50. NED Benefit Evaluation Procedure

a. Purpose. This section provides the procedures for evaluating the beneficial and adverse effects of water project recreation on national economic development (NED). The Federal Water Project Recreation Act of 1965 requires that full consideration is given to the opportunities that Federal multipurpose and other water projects afford for outdoor recreation and associated fish and wildlife enhancement.

b. Conceptual Basis.

(1) General.

(a) Benefits arising from recreation opportunities created by a project are measured in terms of willingness to pay. Benefits for projects (or project features) that increase supply are measured as the willingness to pay for each increment of supply. Benefits for projects (or project features) that alter willingness to pay (e.g., through quality changes) are measured as the difference between the without and with project willingness to pay. Willingness to pay includes entry and use fees actually paid for site use plus any unpaid value (surplus) enjoyed by consumers. (Payment for equipment, food, transportation costs, or lodging associated with recreation activity cannot be used as direct estimates of willingness to pay, because these payments are not specifically for site use.) The total willingness to pay is represented as the area under the demand curve between the old and new supply. Because most recreation is publicly provided, it is usually not possible to estimate demand directly from observed price-consumption data. This section describes procedures for estimating use and willingness to pay by means of travel behavior, user surveys, and other quantifiable measures.

(b) Many proposed projects subject to NED benefit-cost analysis involve both recreation gains and recreation losses. Section 928 of the Water Resources Development Act of 1986 requires, for projects having recreation benefits, analysis of the effects of the proposed project on existing recreation resources. For example, stream and land-based recreation may be lost because of the project, or recreation may be transferred to the proposed site from a more distant site. Net recreation benefits are the value of the gains minus the value of the losses; benefits may be positive or negative. Since reliable empirical methods for estimating willingness to accept compensation for losses have not been developed, measures of willingness to pay are used to value both gains and losses. Evaluation procedures should be based on sound economic rationale and have an empirical basis that permits an objective and reproducible analysis of benefits and costs. Reports shall include:

(1) A description of the alternative or competing facilities and their existing and future use, with and without the proposed project. Describe alternative resource use at a level of detail

roughly similar to that used to describe use of the proposed project. For example, if peak and non-peak attendance, types of facilities and categories of use, etc., are used to characterize the proposed project, a similar level of detail shall also be used to describe the competing resources.

(2) Analysis of the proposed project which takes into account use of the alternative resources. Estimate benefits of the proposed project net of benefits of the alternative facilities. For example, beach recreation benefits for a proposed project are net of benefits from use of an alternative beach in the without project condition.

(2) Criteria for an Acceptable Evaluation Procedure. An acceptable evaluation procedure has the following characteristics:

(a) Evaluation is based on an empirical estimate of demand applied to the particular project.

(b) Estimates of demand reflect the socioeconomic characteristics of market area populations, qualitative characteristics of the recreation resources under study, and characteristics of alternative existing recreation opportunities.

(c) Evaluation accounts for the value of losses or gains to existing sites in the study area affected by the project (without project condition).

(d) Willingness to pay projections over time is based on projected changes in underlying determinants of demand.

(e) Development of recreation facilities for non-reservoir projects must be on the land required for the basic project with the exception that additional recreation land may be acquired if needed for access, parking, potable water, sanitation, and related development for health, safety and public access.

(3) Description of Evaluation Methods. The procedures described in this section incorporate three evaluation methods. They are the travel cost method (TCM), contingent valuation method (CVM), and unit day value (UDV) method. The use of any other method should be justified as conforming to the characteristics listed in paragraph E-50b and the selection process described in paragraph E-50b(4).

(a) Travel Cost Method. The basic premise of the travel cost method is that per capita use of a recreation site will decrease as out-of-pocket and time costs of traveling to the site increase, other variables being constant. TCM consists of deriving a demand curve by using the variable

costs of travel and the value of time as proxies for price. This method may be applied to a site-specific study or a regional model.

(b) Contingent Valuation Method. The contingent valuation method estimates NED benefits by directly asking individual households their willingness to pay for changes in recreation opportunities at a given site. Individual values may be aggregated by summing willingness to pay for all users in the study area. This method may be applied to a site-specific study or a regional model. Contingent value techniques shall not be used to estimate existence, "option", bequest or other such non-use values, due to several factors including the conjectural nature of estimated values and the high difficulty in controlling bias.

(c) Unit Day Value. The unit day value method relies on expert or informed opinion and judgment to estimate the average willingness to pay of recreational users. By applying a carefully thought-out and adjusted unit day value to estimated use, an approximation is obtained that may be used as an estimate of project recreation benefits.

(4) Selection of Evaluation Procedure. Select a procedure for evaluating each of the following two categories of project-related use: (1) total or gross expected use of project facilities, including transfers of use from other sites; (2) and existing site use displaced or destroyed by project facilities. The criteria for selecting the appropriate procedure for each category are set out in Figure E-10. Application of the criteria may result in selection of different procedures for the two categories. The criteria given in Figure E-10 consider several dimensions of project evaluation situations: Three measures of the absolute and relative size of the recreation benefit created, displaced, or transferred by the proposed project, and the nature of the recreation activities affected. If either use category specified above involves more than 750,000 annual visits, use either a regional model or site-specific study to evaluate benefits or benefits foregone. If recreation in an important project component relative to other outputs and costs, or if specialized activities (those for which opportunities in general are limited, intensity of use is low, and users' skill, knowledge, and appreciation is great) are affected, the criteria also require greater accuracy in benefit estimates. If both specialized activities and general recreation are affected by the project, the choice between a regional model and a more limited site-specific study is at the discretion of the agency, based on consideration of the relative importance of the specialized activity, the advantages of the respective methods, and cost considerations.

(a) Restrictions on UDV Use. The general principle for the recreational analysis is, the more important recreation benefits are in plan formulation and/or plan selection and the more costly recreation components are, the more important is economically sound and empirically defensible analysis. The arguments for employing the user day approach can be based on two foundations: (1) Infeasibility for technical reasons or due to study cost considerations; or, (2) formulation or plan selection not materially affected by willingness to pay value or by expected

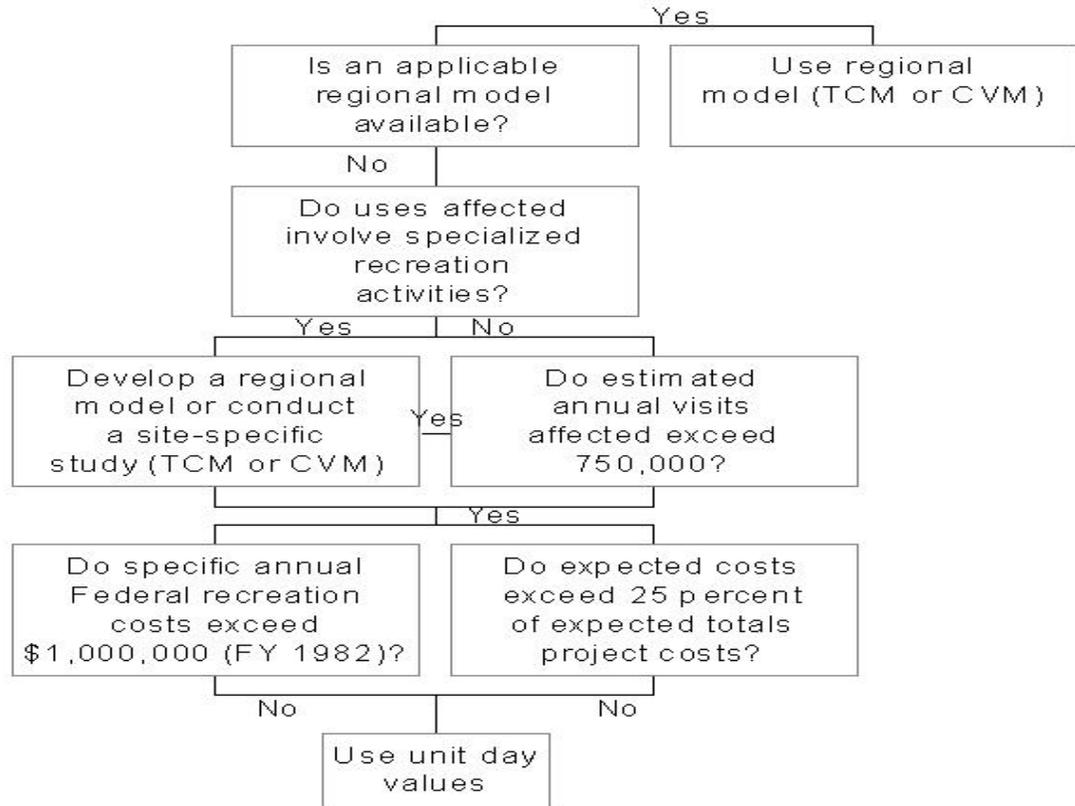


Figure E- 10 Criteria for Selecting Procedures for Evaluating Recreation Benefits

visitation. Study cost considerations do not simply mean the least study cost method is chosen; quality of analysis and results must be considered. The reasons for choosing a particular benefit evaluation method must be documented in the planning reports.

(b) Required Visitation Documentation. The UDV approach in recreation benefit analysis consists of two parts: estimating visitation and determining value per visit. Both must be documented in planning reports. Of the two parts, the determination of UDV is subjective; the visitation is not. Projected visitation must be based on data, either at the existing project or by comparisons with other similar resources. Historic and existing visitation and the capacity of the proposed project and its substitutes should be displayed. Expected visitation at the proposed project, in the without project and with project conditions, should be analyzed taking into account transfers from substitute recreation resources. Reasonableness of visitation should be established. This can sometimes be done via comparisons to other verifiable data (e.g. visitation at other similar resources, comparison to statewide participation data, references to other credible modeling studies, smaller scale surveys than would be required in CVM, etc). The key elements are reasonableness and documentation.

(c) Required Procedure for Determining Willingness to Pay Surrogate. Unit day values are to be developed using a point rating scale. Use of a particular point rating scale is not limited to the one presented at the end of this section. Additional or substitute rating criteria are allowed and encouraged. Resource and socioeconomic characteristics similar to those that would form the independent variables in a willingness-to-pay model are candidates for additional/substitute rating criteria. Similar recreation resources in the region should be surveyed for comparison to the proposed project. The main constraint is the range of monetary values. Point ratings are developed in a systematic, consistent and documented process; public participation in assigning point values lends credibility to this essentially subjective process. Changes in the quantity and quality of a recreation experience must be directly related to the nature of the Federal project. For example, changes in the ease of use or convenience of a small boat harbor have no effect on the environmental quality of the primary resource (ocean, bay, etc). Note that unit day value does include entry and use fees actually paid for the site. Therefore, entry and use fees should not be added to the unit day value to determine total willingness to pay.

(5) Additional Reference Material. Additional detailed support material for conducting NED evaluation may be found in a series of documents prepared by the Institute of Water Resources (add net site). Policy statements in this regulation take precedence in any apparent contradiction suggested by information contained within these IWR reports.

c. Planning Setting.

(1) General. Determine changes in recreation use and value resulting from alternative plans through analysis or without project and with project conditions in the study area over the prescribed period of analysis.

(2) Without Project Condition. The without project condition is the pattern of recreation activity expected to prevail over the prescribed period of analysis in the absence of the recreation project or plan. The without project condition includes existing water and related land recreation resources, and projects and additional recreation resources currently being developed or both authorized and likely to be developed during this period.

(3) With Project Condition. The with project condition is the pattern of recreation activity expected to prevail over the prescribed period of analysis with a recreation plan or project. Recreation resources included in the without project condition provide the basis for the with project condition. Analysis of the with project condition considers recreation opportunities that will be diminished in quality or quantity because of project development and operation. This will be accomplished in assessing the use of the proposed recreation development.

d. Evaluation Procedure. Use the following procedure to determine the benefit from recreation resource use with a plan or project. (See Figure E-11). The benefit is based on the gross value of recreation use of the resource for the with project condition less the gross loss in recreation use caused by the project or plan. The recreation benefit is measured in nine steps. The level of effort expended on each step depends on the nature of the proposed improvement, the state of the art for accurately refining the estimate, and the sensitivity or project formulation and justification to further refinement.

e. Step 1 - Define the Study Area. Determine changes in recreation use and value resulting from alternative plans through the analysis of without project and with project conditions in the study area over the prescribed period of analysis. The impacts should relate to the geographical recreation "market" defined by the location of actual and potential user populations. Definition of the study area should be justified with respect to the particular characteristics and quality of the site and the availability of similar alternative recreation opportunities. Reference to statistical evidence regarding the spatial distribution of trip generation is encouraged.

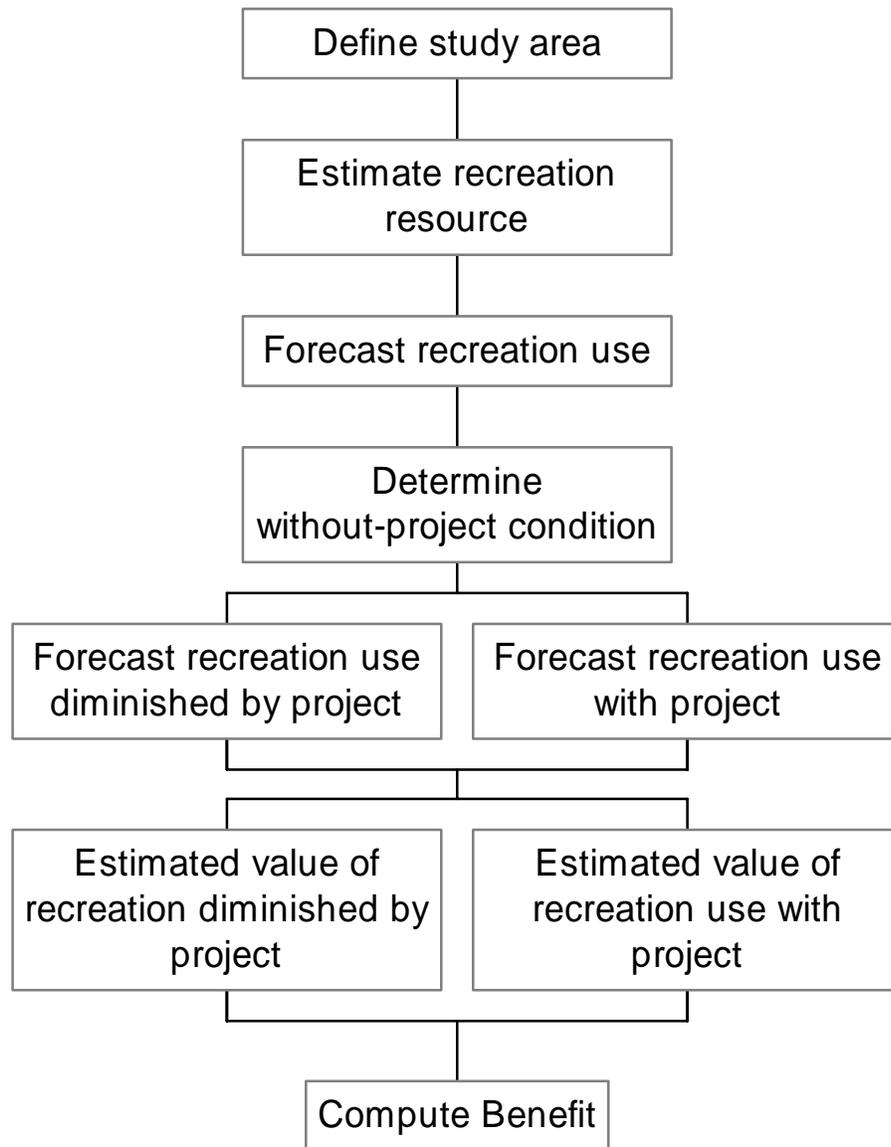


Figure E- 11 Recreation Benefit Evaluation Procedures

f. Step 2 - Estimate Recreation Resource.

(1) Include in estimates of the recreation resource capacity for the study area all sites that provide recreation activities similar to those displaced or provided by the project. The recreation resource in the study area is the system of water and related land recreation sites that influence the demand for the proposed project and are influenced in turn by the demand at the existing site.

(2) Include in the inventory of water and related land recreation sites in this study area those Federal, State, county, local, and private sites that are in varying stages of development or that are authorized and likely to be developed in the forecast period.

(3) Identify the ability of recreation alternatives to provide different recreation activities and assess the quality of the alternative recreation experiences.

g. Step 3 - Forecast Potential Recreation Use in the Study Area. Potential use is the expected visitation at prevailing prices unconstrained by supply. Forecast of total recreation use in the study area should be made for each activity currently provided at the project site and for each activity proposed in the plan or project. The potential use for a specified outdoor water and related land recreation activity will depend on the size and characteristics of the study area population and the availability of the specified recreation activity and other types of recreation in the study area.

(1) The recreation use of the site's resources will depend not only on the attributes of the site and its proximity to population centers, but also on its location in relation to the location of other water and related land resources providing similar or complementary types of recreation with the study area.

(2) Forecasting potential future participation in recreation activities for the study area involves four steps: (1) Collect data on explanatory variables that influence the demand for recreation activities; (2) Relate potential use to these variables by means of some use estimating techniques as described in paragraph E-50i; (3) Forecast values of the explanatory variables over the period of analysis. Justify projections and explain any simplifying assumptions. Reference to statistical evidence on trends is encouraged; (4) Calculate expected use for the study area using the values obtained in Step (3) and the relationships determined in Step (2).

h. Step 4-Determine the Without Project Condition. Determine the without project condition for the study area on the basis of a comparison of the available recreation resources as specified in step 2 and the recreation resource use as specified in step 3 for each activity currently

provided at the project site and each activity proposed in the plan or project. Compare the capacities of all sites, including the site without the proposed project, to produce recreation activities with the expected demand for each activity.

i. Step 5 - Forecast Recreation Use With Project.

(1) General. Forecast recreation use with the project as a basis for estimating project recreation values. Project use over time by calculating the change in use induced by anticipated changes in the variables that determine use. Explain values employed for projecting future demand and any simplifying assumptions. For the capacity method, use is constant over time as determined by the capacity constraint. Explain use projections and any simplifying assumptions. Reference to statistical projections of recreation participation is encouraged.

(2) Use Estimating Techniques. Use one or more of the following approaches for estimating recreation use for the with project and/or without project conditions. The use of any other method should be justified as conforming to the characteristics listed in paragraph E-50b. References to statistical estimates are encouraged.

(a) Regional Use Estimating Models. Regional use estimating models are statistical models that relate use to the relevant determinants based on data from existing recreation sites in the study area. The use of regional models can economize on resources required for site-specific studies. In the absence of a regional model, estimate use by one of the site-specific methods described below. If a use-estimating model has already been developed for the region in which a proposed project is to be located, use estimates should be obtained by the following procedure:

(1) Delimit the areas of origin for the proposed project (use of counties or parts of counties as origin areas will facilitate gathering of data in subsequent steps).

(2) Compute measures of the explanatory variables in the use equation for each origin area and for each year for which an estimate is required.

(3) Calculate use from each area for each year.

(4) Aggregate use from each area to get estimated annual use.

(b) Site-specific use estimating models. The preferred site-specific method of estimating use is a use estimating model (UEM) that relates use per 1,000 of origin population to distance traveled, socioeconomic factors, and characteristics of the site and alternative recreation opportunities. Use estimating models yield regression coefficients estimated from data gathered at a comparable existing site or cross section of existing sites. The coefficients are used to estimate visitation at a proposed site in the same way as described for regional models. Factors that influence demand for recreation, such as characteristics of user populations and availability of alternative opportunities, are explicitly taken into account by variables in the model. Because of the influence of congestion during heavy use periods, it is desirable to distinguish use during summer weekends and holidays. If data limitations do not permit disaggregation, explain treatment of seasonal use variation and any simplifying assumptions.

(c) Application of information from a similar project.

(1) If a UEM is not available and cannot be estimated because of data limitations, use may be estimated by the similar project method. This method assumes that recreation demand for a proposed project can be estimated from observations of visitation patterns at one or more existing projects with similar resource, operations, and use characteristics. The alternatives under study are compared with water resource projects and recreation resource areas for which trip generation and other statistics are known. It is important to obtain as close a match as possible in type, size, and quality of project; market area demographic and socioeconomic characteristics; existence and location of competing recreation opportunities; and other variables that influence demand.

(2) The most efficient and technically sound similar project procedure is based on per capita use curves (i.e., regression curves relating per capita rate of use to travel distance) from which use estimates are derived. The similar project method involves the following steps:

(a) Evaluate the characteristics of a proposed project or other area under study.

(b) Select a similar project or area by comparing characteristics of the proposed project with available information for existing sites; include evaluation and comparison of the respective recreation market areas.

(c) Adjust the per capita use curve to account for the differences between the similar project and the proposed project.

(d) Determine the county populations within the market area for the years in question, and derive per capita use rates for each county population by measuring road mile distance from the

project to the center of the most populated city within the county (proxy for centroid of county population).

(e) Multiply each county per capita rate by county population and sum to get total use.

(f) Determine the percentage of total use that the foregoing estimate represents; if 100 percent, use as is; if less, adjust accordingly.

(3) Justify assumptions used to adjust or modify per capita use curves.

(4) Capacity method of determining use. If data on use determining variables are unavailable and are not cost effective to obtain, and if it can be demonstrated that sufficient excess demand exists in the market area to accommodate the additional capacity supplied by a proposed project, use may be assumed to be equal to capacity. Since this method provides no information on trip generation, willingness to pay cannot be evaluated by the travel cost method.

j. Step 6 - Estimate Value of Use With the Project. As noted in E-52b, three alternative methods can be used to estimate recreation benefits:

(1) Travel Cost Estimate of Willingness To Pay Based on Use Estimating Model or Per Capita Use Curves.

(a) Conditions under which TCM may not be used are discussed in the following paragraphs.

(1) Use was not estimated by a technique relating trip-generation to distance to the site;

(2) There is insufficient variation in travel distances to allow parameter estimation (for example, urban sites); or

(3) The project site is typically only one of several destinations visited on a single trip.

(b) Construction of a TCM demand curve. The area under a demand curve based on travel costs to a site approximates the willingness to pay for access to the recreation opportunities there. This estimate involves the following calculations:

(1) Convert round-trip distance from each origin into monetary values by using the most recent U.S. Department of Transportation average variable costs in cents per mile to operate an automobile, plus the opportunity cost of leisure time spent in travel and on the site. Time costs vary according to the alternative uses of time available to visitors and are correlated with income,

age, education, occupation, time of year, and day of week. Explain values assigned to time and any simplifying assumptions.

(2) Construct a demand curve that relates “prices” to total visits. Given a relationship between travel costs and annual visitation from a use estimating model or a per capita use curve, construct a demand curve by gradually increasing travel cost and calculating the total visitation associated with each increase, until visitation falls to zero for all origins.

(3) Compute the area under the demand curve plus any user charges or entrance fees. This value measures the annual total willingness to pay for recreation activities available at the site.

(2) Contingent Valuation (Survey) Estimate of Willingness To Pay.

(a) Use of Contingent Valuation Method for Daily or Annual Values. CVM may obtain either daily or annual estimates of willingness to pay. Multiply daily estimates by annual use obtained previously. Annual estimates do not require use estimation except to demonstrate the net increase in recreation use in the market area.

(b) Five steps are involved in designing and using simulated markets to identify the value of recreational resources as if actual markets existed as discussed in the following paragraphs.

(1) Establish a market to the respondent.

(2) Permit the respondent to use the market to make trades and establish prices or values reflecting the respondent’s individual evaluation of the recreation opportunities bought or sold.

(3) Treat the values reported by the respondent of individual values for recreation, contingent upon the existence of the market.

(4) Given willingness to pay bids from an unbiased sample of users in the market area, the socioeconomic characteristics of respondents, distance to the site, and available alternative recreation opportunities for each origin, obtain multiple regression estimates of average household value for the proposed change in recreation opportunities for households in each group.

(5) Multiply this value by the number of households in the group and sum the group values to estimate the aggregate willingness to pay if the average values are annual; multiply this value by estimated annual use if average values are daily.

(c) Obtaining Individual Bids from Personal Interviews or Mail Surveys. The preferred format is one in which the respondent is required to answer “yes” or “no” to questions if he or she is willing to pay a stated amount of money to obtain a stated increment in annual recreation opportunities. The value is increased gradually until the highest amount that the respondent is willing to pay is identified.

(d) Developing Regional Contingent Valuation Models. Regional models may be developed with CVM as well as use estimating models. All survey forms are subject to the clearance procedures of the Office of Management and Budget.

(3) Unit Day Value Approximation of Willingness to Pay.

(a) Application of Unit Day Values. See paragraph E-50b.

(b) Selection of Value. If the UDV method is used for economic evaluations, select a specific value from the range of values agreed to by Federal water resource agencies. The product of the selected value times the difference in estimated annual use over the project life relative to the without project condition provides the estimate of recreation benefits.

(1) If evidence indicates that a value outside the agreed-to range is more accurate, a regional model or site-specific study should be conducted. Explain the selection of any particular value within the published range.

(2) To explain the selection of a specific value, a point rating method may be used to reflect quality, relative scarcity, ease of access, and esthetic features. Appropriate use should be made of studies of preferences, user satisfaction, and willingness to pay for different characteristics; particular efforts should be made to use estimates derived elsewhere from applications of the TCM and CVM techniques.

(c) Account for site transfers in choosing unit day values.

k. Step 7 - Forecast Recreation Use Diminished With Project. Using the appropriate method described in E-52i, forecast the recreation resource uses that would be diminished due to physical displacement expected because of the plan or project.

l. Step 8 - Estimate Value of Recreation Use Diminished With Project. Using the appropriate methods described in paragraph E-50j and selected by the appropriate criteria described in paragraph E-50b, estimate the value of the recreation uses that would be diminished by the physical displacement expected to occur as a result of the plan or project. In determining project net benefits, account for changes in recreation use of an existing resource and/or project as a result of transfers to the plan or project under study.

m. Step 9 - Compute Net Project Benefits. Compute the project benefit as the difference between the gross value of recreation use as estimated in paragraph E-50j and the value of recreation use diminished as estimated in paragraph E-50l. However, if excess capacity for any activity exists in the study area, benefits are the user cost savings plus the value of any qualitative differences in recreation.

n. Report and Display Procedures. Tables E-26 and E-27 are suggested presentations for reports that include recreation as a purpose.

o. Recreation Evaluation Techniques in Detail. More detail on recreation benefit estimation techniques is in the P&G <http://www.wrsc.usace.army.mil/iwr/pdf/p&g.pdf>.

Table E- 26 Recreation Capacity and Use (19__)¹

	Without project			With project		
	Capacity	Use	Surplus or Deficit	Capacity	Gross use	Displaced use
Plan 1
Plan 2
Plan 3
Plan 4

¹Prepare for representative project years.

Table E- 27 Annualized Recreation Benefits, Recommended Plan

	Value of gross use	Value of displaced use	Net value
Specialized
General

E-51. Federal and Non-Federal Participation. Costs allocated to recreation shall be apportioned to Federal and non-Federal interests as below:

a. Recreational Developments at Lakes.

(1) Federal. The Federal Government will assume not more than one-half of the separable first costs of construction of initial and future recreation facilities, including one-half of the cost of lands acquired specifically for recreation and access. All joint construction costs allocated to recreation shall be assumed by the Federal government.

(2) Non-Federal. The non-Federal entity must assume at least one-half of the separable first costs of construction of recreation facilities, including project lands acquired specifically for recreation and access, and all cost and full responsibility for the operation, maintenance, replacement, and management of recreation lands, areas, and facilities. Costs of revenue-producing facilities to be provided by private enterprise under Federal or third party agreements are not eligible for cost sharing.

b. Recreational Developments at Other Types of Projects. Agreements to participate with a non-Federal entity in the development of basic recreational facilities will require the non-Federal entity to:

(1) Acquire in its name in fee title, and dedicate to public outdoor recreation use, lands on which cost shared recreation facilities and improvements for access, parking, potable water, sanitary facilities and related developments for health and safety are provided, with credit as specified below.

(2) Make an additional contribution sufficient to raise the non-Federal share to at least 50 percent of the total first cost of adding recreation to the project if the appraised value of the creditable lands amount to less than that percentage.

(3) Operate, maintain and replace without cost to the Federal Government, for the economic life of the project, the recreation areas and all facilities installed pursuant to the agreement.

ER 1105-2-100
22 Apr 2000

SECTION VIII - Water Supply

E-52. Federal Interest. The Flood Control Act of 1944 and the Water Supply Act of 1958, as amended, among other pieces of legislation, define the Federal interest in water supply. The current policy was defined by Congress in Section 932 of the WRDA of 1986. This policy is based on a recognition that states and non-Federal entities have the primary responsibility in the development and management of their water supplies. The policy also recognizes a significant but declining Federal interest in the long range management of water supplies and assigns the financial burden of supply to users. The Corps may, however, participate in developing water supplies in connection with water resource improvements for construction, operation, maintenance, and modification of Federal navigation, flood control, or multiple purpose projects when certain conditions of non-Federal participation are met. Existing legislation give the Corps authority to use its reservoirs for surplus water, for municipal and industrial (M&I) water supply and for agricultural water supply . The Corps is also authorized to provide emergency water and assist states and local interest in their water supply planning process.

E-53. Types of Improvement

a. **Multiple Purpose Project.** In order to include M&I as a project purpose in a multiple purpose project, benefits from water supply can not exceed the following limits depending on the type of project:

(1) The project has justified, separable storage for flood control or navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least ten percent of total NED benefits. If M&I water supply exceeds 90% of total benefits the project is considered single purpose water supply and thus not eligible for Federal participation.

(2) The project has no separable storage for flood control or navigation or agricultural water supply. In this case the sum of benefits for these purposes must be at least twenty percent of total NED benefits. If M&I water supply exceeds 80% of total benefits the project is considered single purpose water supply and thus not eligible for Federal participation.

b. **Single-Purpose Project.** The Corps will not conduct single purpose water supply studies, except for analysis of existing data under Section 22 of the Water Resources Development Act of 1974. This constraint does not apply to single purpose water supply modifications to previously constructed projects having flood damage reduction or navigation purposes. Also, the Corps may conduct reimbursable single purpose water supply studies for non-Federal interests under provisions of the Intergovernmental Cooperation Act of 1968.

E-54. Specific Policies

a. Municipal and Industrial Water Supply. Section 301 (a) of the Water Supply Act of 1958, as amended, established a policy of cooperation in development of water supplies for domestic, municipal, industrial, and other purposes. Section 301(b) is the authority for the Corps to include municipal and industrial water storage in reservoir projects. The terms “municipal and industrial,” while not defined in the legislative history of the Water Supply Act, have been defined by the Corps as supply for uses customarily found in the operation of municipal water systems and in industrial processes. Irrigation is not ordinarily found among customers of a municipal system and, therefore, is not eligible to be included in a project under the M&I authority unless specifically authorized by Congress. Other policies applicable to this category of water supply are as follows:

(1) Storage. Corps provided water supply service normally means reservoir space for storing water, and where necessary, facilities in the project structure for releasing or withdrawing the stored water for water supply purposes. The non-Federal sponsor must repay all costs allocated to water supply storage space.

(2) Water Conduits. Conduits for release or withdrawal of stored water may be designed as an integral part of the dam structure. Cost of water conduits are specific water supply costs and the users must repay 100 percent of investment and annual costs. A non-Federal sponsor must contract for the costs if the features are to be included in construction. For existing projects with conduits, any remaining unpaid conduit cost shall be prorated just as storage costs are prorated unless one or more entities agree to repay the entire cost.

(3) Seasonal Operations for Water Supply. Congress has not provided general authority for including storage space in Corps projects for seasonal M&I use, either as withdrawals or to improve groundwater supplies. The Corps may consider seasonal operations for water supply when specifically authorized by Congress. In addition, project operations may be modified to enhance ground water replenishment, to increase downstream flows, or to otherwise enhance usage of projects for M&I purposes. These modifications must be consistent with authorized project purposes and law. Pricing policy for M&I water supply driven changes in project operations require the non-Federal sponsor be responsible for:

- (a) 100 percent of new construction costs and new operations costs;
- (b) A share of joint use operation maintenance and replacement cost based on use-of-facilities cost allocation;
- (c) Benefits foregone;

(d) Compensation to others for losses in their operations (may be same as (c) above); and,

(e) Payment of an amount equal to one-half the savings to non-Federal interests (least cost alternative minus the specific cost of the modifications). In any case, the cost to the non-Federal sponsor should not exceed the costs derived for permanent reallocation of storage (see paragraph E-57d(2)).

(4) Limits on Future Use Storage. The Water Supply Act of 1958, as amended, states that no more than 30 percent of total construction costs can be allocated to water supply for future use. In addition, Corp policy is to obtain full payment of allocated capital costs from water supply sponsors prior to or during construction, or failing this to negotiate a repayment agreement, payments to begin immediately after construction completion. Thus, formulation of water supply storage without a current sponsor willing to participate is an exception requiring prior approval. Forward requests for exception to HQUSACE CECW-P.

(5) Water Rights. Potential encroachment on the water rights of lawful downstream water users by the operation of water supply storage must be carefully considered and coordinated with responsible state and local interests. The Corps will not acquire water rights necessary for use of stored water. This is a responsibility of the water users. Nor should the Corps become involved in resolving conflicts among water users concerning rights to use stored water, but will look to responsible state agencies to resolve such conflicts. Where there is more than one water user, it is recommended to arrange for payment for the entire water supply storage from a single agency, if this is practical.

(6) Permanent Rights to Storage. Under the authority of the Permanent Right to Storage Act of 1963, the non-Federal sponsor acquires a permanent right to the use of storage as long as the space is physically available. The sponsor must have completed or be making payments pursuant to its agreement with the government. It must also agree to continue to pay its share of annual allocated operation and maintenance costs, together with its share of costs allocated to necessary reconstruction, rehabilitation, or replacement of project features. Equitable reallocations of storage space may be necessitated by sedimentation.

(7) Water Quality. The Federal Government makes no representation and assumes no responsibility with respect to the quality or the treatment of the water.

b. Irrigation (Agricultural Water Supply). Water storage for agricultural irrigation, to meet entire needs or as a supplement to natural supplies, may be considered in plan formulation.

(1) Western States. Section 8 of the Flood Control Act of 1944 provides that Corps lakes may include irrigation as a project purpose upon recommendation of the Secretary of the Interior

(DoI). Section 8 also states that the DoI may provide the irrigation works needed to make use of the irrigation storage. The DoI is responsible for constructing, operating and maintaining the additional irrigation works, as well as to contract for the storage space. If allocated irrigation costs exceed the amount that can be repaid by water users, the excess amount will be stated. Specific Congressional authorization is required for projects where irrigation costs exceed water users' repayment ability. Section 8 applies only to the 17 Western States defined as those 17 contiguous states lying west of the 98th meridian .

(2) Areas Outside the Western States. The Corps may include irrigation storage in reservoirs in areas outside the 17 Western States provided the non-Federal sponsor assumes thirty five (35) percent of the costs of the reservoir allocated to irrigation.

E-55. NED Benefit Evaluation Procedure

a. Purpose. This section provides procedures for the evaluation of NED benefits of municipal and industrial (M&I) water supply features of water resource plans. The procedures presented apply to both structural and nonstructural elements of such plans. Risk-analysis techniques are required in all formulation, evaluation and investment decision studies. No specific risk-based procedures have been developed for municipal and industrial water supply analysis. For studies and projects where water supply benefits constitute a substantial portion of total benefits, analysts are expected to perform, at a minimum, sensitivity analysis of key variables such as least cost alternative cost, future demand for water and future availability of water supplies.

b. Conceptual Basis.

(1) The conceptual basis for evaluating the benefits from municipal and industrial water supply is society's willingness to pay for the increase in the value of goods and services attributable to the water supply. Where the price of water reflects its marginal cost, that price is used to calculate willingness to pay for additional water supply. In the absence of such direct measures of marginal willingness to pay, the benefits from a water supply plan are measured instead by the resource cost of the alternative most likely to be implemented in the absence of that plan.

(2) The benefits from nonstructural measures are also computed by using the cost of the most likely alternative. However, the net benefits of certain nonstructural measures that alter water use cannot be measured effectively by the alternative cost procedure for the following reasons: (1) Structural measures and many nonstructural measures (except those that alter use) result in similar plan outputs, whereas use-altering measures (e.g., revised rate structures) may change levels of output; and (2) use-altering measures may have fewer direct resource costs than

measures based on higher levels of output. Because of this lack of comparability, the benefit from such use-altering nonstructural measures should not be based on the cost of the most likely alternative. Attempts to measure the benefits of use-altering nonstructural measures on the basis of willingness to pay are encouraged, although the display of such benefits is not required.

c. Planning Setting.

(1) Without Project Condition. The without project condition is the most likely condition expected to exist in the future in the absence of the proposed water supply plan, including any known changes in law or public policy. Several specific elements are included in the without project condition.

(a) Existing Water Supplies. Existing water supplies are included in the without project condition. Adjustments are made to account for anticipated changes in water supply availability because of the age of facilities or changed environmental requirements.

(b) Institutional Arrangements. Existing and expected future water systems and water management contracts and operating criteria are considered part of the without project condition unless revision of these systems, contracts, or criteria is one of the alternative plans being studied.

(c) Additional Water Supplies. The without project condition includes water supplies that are under construction or authorized and likely to be constructed during the forecast period.

(d) Probability of Water Supply. Include calculation and specification of the probability of delivery for each source of water supply in the analysis.

(e) Water Quality. Water use is based on both the quantity and the quality of water supply. Different uses may require different qualities as well as quantities of water. Supplies also vary according to quality and quantity. Because water quality is a critical factor in water supply, it should be specified in any consideration or presentation related to water quantity. The degree of detail used to describe water quality should be suitable to permit differentiation among water sectors or available water supply sources.

(f) Nonstructural Measures and Conservation. The without project condition includes the effects of implementing all reasonably expected nonstructural and conservation measures. These measures include:

(1) Reducing the level and/or altering the time pattern of demand by metering, leak detection and repair, rate structure changes, regulations on use (plumbing codes), education programs, drought contingency planning;

(2) Modifying management of existing water development and supplies by recycling, reuse, and pressure reduction; and

(3) Increasing upstream watershed management and conjunctive use of ground and surface waters.

(2) With Project Condition. The with project condition is the most likely condition expected to exist in the future with the Federal water supply plan under consideration. The six elements and assumptions addressed in the without project condition should also be addressed in the with project condition. Nonstructural water supply measures may be used alone or in combination with structural measures. If the proposed measures are already in the process of implementation, they are part of the without project condition.

d. Evaluation Procedure

(1) General. Follow the steps described in the following paragraphs to estimate NED benefits that would accrue to one or more alternative plans for providing an M&I water supply (see Figure E-12). The level of effort expended on each step depends on the nature of the proposed development, the state of the art for accurately refining the estimate, and the sensitivity of project formulation and justification to the estimate.

(2) Step 1 - Identify the Study Area. The study area is the area within which significant project impacts will accrue from the use of M&I water supplies, including areas that will receive direct benefits and/or incur costs from the provision of M&I water supply.

(3) Step 2 - Estimate Future M&I Water Supplies. Prepare an analysis of all sources of supply expected to be available to the M&I water user. Data may be obtained from various sources, including water utilities, State and local planning agencies, and State water resources agencies. This analysis should be by time period and include existing water supplies, institutional arrangements, additional water supplies, probability of water supply, and water quality.

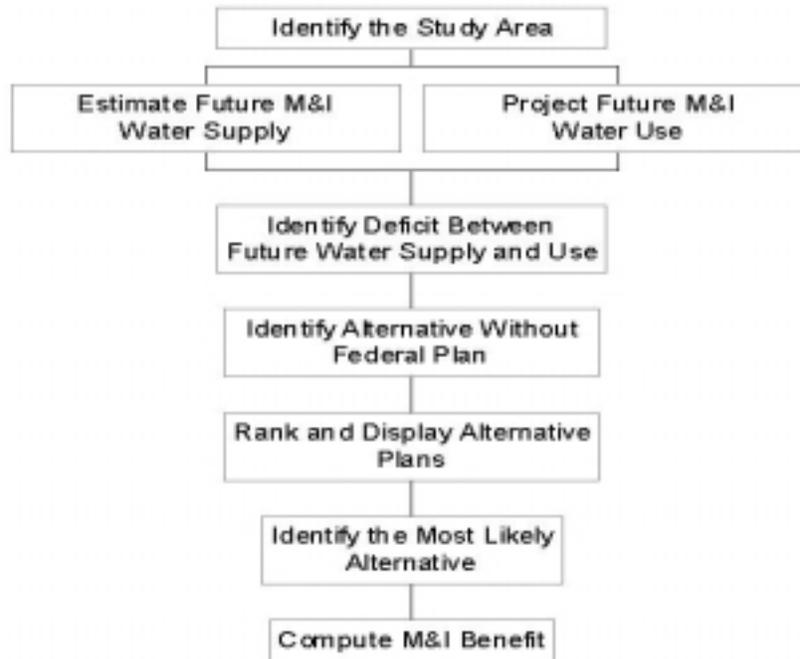


Figure E- 12 Flowchart of M&I Water Supply Benefit Evaluation Procedure

(4) Step 3 - Project Future M&I Water Use. Project future water use by sector in consideration of seasonal variation. Base projections on an analysis of those factors that may determine variations in levels of water use.

(a) Sector Analysis. Project future water use for the same time periods as for the supply projections for each of the following sectors: Residential (include indoor use and outdoor uses such as lawn irrigation and car washing); commercial (include water use for retail and wholesale trade, offices, hospitals, schools, medical lab (include all water used by manufacturing industries as an input in the production process); and additional uses (include public service use and unaccounted-for losses).

(b) Analysis by Time of Use. Identify seasonal variations in use for each of the above sectors and maximum day use for the system for each season.

(c) Related Factors Analysis.

(1) Identify the determinants of demand for each sector. Use such determinants as price of water and sewer service, income, number and type of housing units and population per unit, industrial mix, and level of economic activity. Explain the variable projection of these factors as well as the extent to which they influence projection of water use in various sectors.

(2) Determine the relationship expected to exist between future levels of water use and the relevant determinants of water demand. Develop and use a forecast or forecasts of future levels of the determinants to project alternative future water use by sector and explain the choice of the particular forecast used.

(3) Aggregation of Projections. Aggregate separate projections for each sector to a single projection by time period. (This is not a deterrent to meeting the needs of each sector by separate alternatives.)

(5) Step 4 - Identify the Deficit Between Future Water Supplies and Use. Compare projected water use with future water supplies to determine whether any deficits exist in the study area. Make an analysis of the intensity, frequency, and duration of the expected deficits. Address deficits in three basic options: (1) Reduce projected water use by implementation of nonstructural or conservation measures that are not part of the without project condition; (2) increase and/or more efficiently use water supplies through structural measures; and (3) accept and plan to manage water supply shortages. Plans generally are formulated to include some or all of these options.

(6) Step 5 - Identify Alternatives Without Federal Plan. Identify alternative plans that are likely to be implemented by communities and/or industries in the absence of any Federal alternative. Test various alternatives to the Federal plans for acceptability, effectiveness, efficiency, and completeness. These plans should be identified through analysis of the total water resources of the region, allowing for present and expected competing uses. Consideration of alternative plans is not limited to those that would completely eliminate the projected gap between supply and demand. Plans that do not completely satisfy water supply objectives should also be considered. Include in such plans measures to minimize and allocate shortages when they occur (drought management measures). Balance the increased risk of occasional shortages against the savings from lesser investments that would increase the probability of occasional shortages. The costs of shortages include the costs of implementing drought management measures and the costs of related public health and safety measures.

(a) Alternative plans need not be based on the development of a single source of supply at one time. They may consist of the development of a single source or the conjunctive development of several sources with increments phased to match anticipated growth in water use.

(b) If institutional obstacles to implementation are noted, the plan should still be considered if the barriers are substantially within the power of the affected water users to correct. Include a detailed description of the institutional obstacles, with a discussion of the basis for any conclusion that the obstacles cannot be overcome.

(7) Step 6 - Rank and Display the Alternative Plans Based on Least Cost Analysis.

(a) Rank all of the alternatives in order from the highest cost alternative to the lowest. Calculate the annualized costs of the alternatives on the basis of the service (depreciable) life of the facility or the period of analysis, whichever is less.

(b) Calculate costs of the alternatives on the following basis. Analyze all costs charged to the alternative on the basis of the Federal discount rate, no costs for taxes or insurance should be charged to the alternative; and all other assumptions and procedures used in calculating the costs of the alternatives, including external diseconomies, should be parallel to those employed in calculating the costs for the proposed Federal project.

(8) Step 7 - Identify the Most Likely Alternative. Begin identification of the most likely alternative with the least costly. If an alternative with a lesser cost is passed over for a more expensive one, present the justification for not selecting the lower cost plan.

(9) Step 8 - Compute M&I Water Supply Annualized Benefits.

(a) Annualized benefits of the Federal water supply plan are equal to the annualized cost of the most likely alternative. When applicable, the evaluation should reflect differences in treatment, distribution, and other costs compared to the most likely alternative.

(b) The alternative cost of providing a water supply for smaller communities (population of 10,000 or less) may be extremely expensive on a per capita basis because these communities lack the efficiencies of large-scale development. If such communities are not able to afford an alternative water supply comparable to the Federal water supply plan as identified in the procedure described above, the alternative should not be used as the basis for evaluating the benefits of the Federal water supply plan. In this case, the benefit may be considered equal to the cost of the separable M&I facilities plus an appropriate share of the remaining joint cost of the project. Provide documentation of the without project condition.

(10) Problems in Application of NED Evaluation Procedure.

(a) Two major problems exist in the application of this procedure. The first is identification of the value of conservation and other nonstructural measures. Examples of evaluation of conservation strategies, pricing methods, and drought management measures are available in technical publications.

(b) A second major problem will arise over the disaggregation of water use by sectors. Some communities do not collect water use data by sectors. Where the system is fully metered, such data can be obtained by coding customer accounts and accumulating data on use for at least one year. Water use by unmetered customers may be estimated by extrapolating experience with similar metered systems, recognizing that unmetered customers face a price of zero. Verify that data and/or forecasts obtained from all sources are reliable and reasonable.

e. Report and Display Procedures. Tables E-28, E-29, and E-30 are suggested presentations for reports that include municipal and industrial water supplies. Tables E-28 and E-29 summarize by time period (and season, if applicable) the projected use by sector, projected supply by source, and the difference between the two for average day and maximum day, respectively. Table E-30 shows the costs of alternative plans and the quantity supplied under each alternative by time period (season, if applicable).

E-56. Federal and Non-Federal Participation

a. Impacts of Section 932 of the Water Resources Development Act of 1986. This law further amends the Water Supply Act of 1958 (Public Law 85-500) as follows: Eliminates the 10-year interest free period for future water supply; modifies the interest rate formula; limits repayments to 30 years; and requires operation, maintenance, and replacement costs to be reimbursed on an annual basis. The amendments are applicable only to Corps projects.

b. Repayment Rate. The repayment rate used to calculate annual payment for storage in new projects, reallocated storage, and surplus water will be the yield rate defined in Section 932 of the Water Resources Development Act of 1986.

c. Repayment Period. The maximum repayment period for existing M&I storage, reallocated storage, and surplus water agreements will be 30 years from the date in which storage is available. For existing storage, this date will be the plant-in-service date or the date the first storage agreement is signed, whichever is later. For reallocated storage, the date will generally be the date the agreement is signed by the Assistant Secretary of the Army (Civil Works).

Table E- 28 M&I Water Supplies—Without Project Condition
 Average Day Use and Capacity

Projected average day water use ¹	Time Period ²			
	P ₁	P ₂	P ₃	P _N
Residential (mgd).....
Commercial (mgd).....
Industrial (mgd).....
Additional (includes public services and unaccounted for losses) (mgd).....
Total
Average day water supply capacity				
Without a plan:				
Source 1 (mgd).....
Source 2 (mgd).....
Source 3 (mgd).....
Source X (mgd).....
Total
Difference between projected average day water use and supply without a plan (mgd).....

¹Include effects on nonstructural and conservation measures

²Show by time period and season where there are seasonal variations.

Table E- 29 M&I Water Supplies—Without Project Condition
Maximum Day Use and Capacity

Projected average day water use ¹	Time Period ²			
	P ₁	P ₂	P ₃	P _N
Residential (mgd).....
Commercial (mgd).....
Industrial (mgd).....
Additional (includes public services and unaccounted for losses) (mgd)
Total
Average day water supply capacity				
Without a plan:				
Source 1 (mgd)
Source 2 (mgd)
Source 3 (mgd)
Source X (mgd).....
Total
Difference between projected average day water use and supply without a plan (mgd).....

¹Include effects on nonstructural and conservation measures

²Show by time period and season where there are seasonal variations.

Table E- 30 M&I Water Supply Alternatives

[Period of analysis, price level, discount rate]

Alternatives	Annualized cost (in thousands of dollars)	Quantity supplied (mgd) time period ¹			
		P ₁	P ₂	P ₃	P _N
Most likely alternative
Recommended plan.....
Other plans

¹Show by time period and season where there are seasonal variations

d. Water Withdrawal Agreements. The Corps of Engineers is not to use Section 501 of the Independent Offices Appropriations Act of 1952 to obtain reimbursement for water supply withdrawals. Existing contracts or agreements should be allowed to expire and not be extended.

e. Annual Operation and Maintenance Expense. The non-Federal sponsor is responsible for all water supply costs allocated to operation and maintenance. These costs must be paid yearly in advance, based on estimated expenditure. Appropriate adjustment will be made at the end of each year.

f. Repayment Period for Major Replacement and Major Rehabilitation Costs. Major replacement and major rehabilitation costs are to be paid either during construction or in lump sum upon completion of construction. The non-Federal sponsor should be encouraged to establish a sinking fund to cover these costs when they occur.

g. New Construction Starts. Cost sharing and financing will be based on construction new start guidance provided in the annual budget guidance circular. This applies to water supply included in projects considered for new start, projects funded for construction but which are not started, resumptions and separable elements of ongoing projects. Authorized but not constructed single purpose M&I projects will not be proposed for construction.

E-57. Other Authorities.

a. Interim Use of Water Supply for Irrigation. Section 931 of the WRDA of 1986 provides that the Secretary of the Army may allocate water at Corps lakes currently allocated to

M&I purposes but not under contract to irrigation purposes, on an interim basis. In accordance with the WRDA of 1986, the non-Federal sponsor cost share is 35 percent of the original project investment cost allocated to M&I water supply. The time period for computing annualized payments is 30 years. The non-Federal sponsor is responsible for 100 percent of the operation and maintenance expense, major replacement cost, and major rehabilitation cost allocated to the storage space contracted for.

(1) Investment Cost Computation. The investment cost for this interim use irrigation storage/water is calculated by multiplying 0.35 (35 percent) by the percentage of the interim use storage to the total M&I water supply storage (as determined by the use of Facilities cost allocation method). This factor is then multiplied by the original M&I water supply investment cost which would include accrued interest after a 10-year interest free period from the plant-in-service date. The project water supply interest rate in effect when the project went under construction is to be used for all interest computations including the repayment amortization schedule for the interim use storage agreement. In the case of projects that went under construction after 17 November 1986, the rate will be as established in Section 932, WRDA of 1986 and will be adjusted at 5-year intervals. The term of the agreement for this interim use shall not exceed five years. An option for incremental five year extensions is allowed with the basic agreement only if recalculations for annual O&M, major replacements and major rehabilitation costs are performed at the end of each five year increment.

(2) Annual Cost Computation. The annual O&M cost for the required interim use storage/water may be estimated if the expected annual O&M cost is relatively low and would not justify annual billing procedures. Otherwise, reimbursement of applicable actual project O&M expenses would be required. An estimated annual major replacement and major rehabilitation cost is to be determined and included as a part of the annual repayment costs.

(3) Credit. Future sponsors for municipal and industrial use of the storage space shall not receive any credit from the interim use payments toward repayment of investment cost when such interim use is for agricultural water supply.

(4) Agreements. Agreements for such interim use of the water supply storage for irrigation shall follow the same reporting requirements as those for water supply storage agreements (see paragraph E-58). A report shall accompany the draft agreement. The report shall document the exact use of the water to assure that it will not be used for municipal and industrial purposes. It will also explain the manner in which the annual costs in the agreement were developed and show the impacts of the interim use of the water supply for irrigation on the currently existing uses of such storage. Further, it will include an appropriate analysis describing and assessing any adverse and/or beneficial environmental impacts that are expected to result

from the interim use of storage for irrigation purposes, that were not discussed in the FEIS for the project.

b. Surplus Water.

(1) Authority. Under Section 6 of the Flood Control Act of 1944, the Secretary of the Army is authorized to make agreements for surplus water with states, municipalities, private concerns, or individuals at such prices and on such terms as he may deem reasonable. These agreements may be for domestic, municipal, and industrial uses, but not for crop irrigation, from surplus water that may be available at any reservoir under the control of the Department of the Army.

(2) Classification.

(a) Surplus water will be classified as either:

(1) water stored in a Department of the Army reservoir that is not required because the authorized use for the water never developed or the need was reduced by changes that occurred since authorization or construction; or

(2) water that would be more beneficially used as municipal and industrial water than for the authorized purpose and which, when withdrawn, would not significantly affect authorized purposes over some specified time period.

(b) An Army General Counsel opinion of March 13, 1986, states that Section 6 of the Flood Control Act of 1944 empowers the Secretary of the Army to make reasonable reallocations between different project purposes. Thus, water stored for purposes no longer necessary can be considered surplus. In addition, the Secretary may use his broad discretionary authority to reduce project outputs, envisioned at the time of authorization and construction, if it is believed that the municipal and industrial use of the water is a higher and more beneficial use. However, surplus water declarations citing use for higher beneficial purposes should be made with caution and only on a fixed period agreement for temporary use. When the user desires long term use, a permanent storage reallocation should be performed under the authority of the Water Supply Act of 1958, as amended.

(3) Requirements and Restrictions. Surplus water declarations will only be made when related withdrawals will not significantly affect authorized purposes. Surplus water agreements shall be accompanied by a brief letter report similar to reallocation reports and shall include how and why the storage is determined to be surplus. Surplus water agreements will normally be for small amounts of water and/or for temporary use as opposed to storage reallocations and

permanent right to that storage. Normally, surplus water agreements will be limited to 5 year periods. Use of the Section 6 authority should be encouraged only where non-Federal interests do not want to buy storage because the need of the water is short term or the use is temporary pending the development of the authorized use. The views of the affected state(s) will be obtained, as appropriate, prior to entering into any agreement under Section 6. The annual price deemed reasonable for this use of surplus water is to be determined by the same procedure used to determine the annual payment for an equivalent amount of reallocated storage plus an estimated annual cost for operation and maintenance, repair, replacement, and rehabilitation. The total annual price is to be limited to the annual costs of the least cost alternative, but never less than the benefits foregone (in the case of hydropower, revenues foregone). Declaration of surplus irrigation water in the 17 Western states will require appropriate coordination and consultation with the Department of the Interior (Bureau of Reclamation).

c. Drought Contingency Water Supply. Drought and other emergencies affecting municipal and industrial water supplies will likely generate requests for water stored in Corps reservoirs. When these situations occur, requests may require immediate action. Section 6 of the Flood Control Act of 1944 provides an opportunity to be responsive with surplus water. The preferred approach is for a State or subdivision to enter into an agreement with the Secretary of the Army and to agree to act as wholesaler for all of the water requirements of individual users. This places the local governments in a position to help their citizens and minimizes the potential for problems that could arise if the Secretary were to determine who is entitled to shares of surplus water. District commanders should take the initiative to make Section 6 assessments of the availability of storage for limited withdrawals (up to 99 acre-feet of storage may be reallocated by the District Commander). This assessment can be made prior to any specific request in order to be ready to respond to urgent requests in a timely manner. The assessment should also summarize the impacts of such withdrawals and should be kept on file. Preferably, one agreement for each reservoir with the State or political subdivision can be used to distribute the water to small users. If this is not possible, individual agreements may be executed. Project managers are authorized to sign these agreements. However, if the user will be installing water lines or other facilities or equipment, an appropriate real estate instrument must be issued as required in [ER 405-1-12](#). Drought contingency agreements for greater than 50 acre-feet should follow the cost and contracting format for surplus water agreements.

d. Reallocation of Storage.

(1) Approval Authority. Reallocation or addition of storage that would have a severe effect on other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Providing the above criteria are not violated, 15 percent of total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes or may be added to the project to serve as storage for municipal and industrial water supply at the discretion of the

Commander, USACE. For reallocations up to 499 acre-feet the Commander, USACE has delegated approval authority to the Division commanders. Reallocations which exceed the Commander's authority may be approved at the discretion of the Secretary of the Army if such reallocations do not require Congressional approval as described above. All reallocations or additions of storage should be to serve immediate needs. All reallocations or additions of storage must be accompanied by a report that includes:

- (a) Purpose of the report and Background, including map
- (b) Pertinent project data table
- (c) Water supply needs analysis
- (d) Test of financial feasibility
- (e) Cost of storage analysis
- (f) Analysis of alternatives considered to address the water supply needs
- (g) Appropriate NEPA documentation of environmental impacts
- (h) Pertinent letters from affected Federal, state and local interests, including documentation of public review and comment. Opportunities for public review and comment must be provided.
- (i) Commander's recommendation

(2) Cost of Storage. The cost allocated to the non-Federal sponsor (i.e., the price to be charged for the capital investment for the reallocated storage) will normally be established as the highest of the benefits or revenues foregone, the replacement cost, or the updated cost of storage in the Federal project.

(a) Benefits Foregone. Benefits foregone are generally estimated using standard Corps NED economic evaluation criteria in compliance with the P&G. For small reallocations from hydropower (i.e., within the Chief of Engineers discretionary authority), benefits may be based on current estimates of long term power rates. These may be obtained from in house power value estimating procedures or otherwise in accordance with the P&G. For large reallocations, estimates should be calculated in accordance with P&G procedures for evaluation of hydropower benefits.

(b) Revenues Foregone. Revenues foregone to hydropower are the reduction in revenues accruing to the Treasury as a result of the reduction in hydropower outputs based on the existing rates charged by the power marketing agency. Revenues foregone from other project purposes are the reduction in revenues accruing to the Treasury based on any existing repayment contracts.

(c) Replacement Costs.

(1) If the reallocation is from flood control it is appropriate to utilize the replacement cost of equivalent protection. This would not be appropriate for reallocations within the Corps discretionary authority which by definition do not have severe impacts.

(2) For reallocation from hydropower the replacement cost of power should normally be considered equal to the benefits foregone and calculated in accordance with P&G procedures for evaluating hydropower benefits. In cases where the power marketing agency has existing customer contracts, the replacement cost of power may be estimated as the agency's cost of obtaining power from the lowest cost alternative source for the duration of the contracts. Once the contracts expire and for the remainder of the period of analysis the replacement cost of power should be equal to the benefits foregone. Documentation of the contracts and estimates of replacement costs of power to fulfill them should be included in the reallocation report.

(d) Updated Cost of Storage. The costs to be reallocated to the water supply storage are determined by first computing the costs at the time of construction by subtracting the specific costs from the total construction cost and multiplying the result by the ratio of storage reallocated (ac-ft) to total usable storage space (ac-ft). In this computation, usable storage does not include space set aside for sediment distribution or for hydropower head. The cost allocated to the storage on this basis is then escalated to present day price levels by use of the Corps of Engineers Civil Works Construction Cost Index System (CWCCIS). This index is maintained in EM 1110-2-1304. Because the CWCCIS does not cover all items, however, the Engineering News Record (ENR) Construction Index will be used for indexing three cost categories: relocations; buildings, grounds, and utilities; and permanent operating equipment. Land values will be updated, on a case-by-case basis, by a qualified Corps of Engineers real estate appraiser. The value of the land is not to include enhancement due to the presence of the existing project. Since the CWCCIS dates back only to 1967, the ENR Construction Index will be used to update the cost of older projects to the 1967 time frame. Costs are to be indexed from the midpoint of the physical construction period to the beginning of the fiscal year in which the agreement for the reallocated storage is approved. In this manner, interest during construction is not used in this updating procedure.

(3) Cost Accounts. All income and expenses (investment, operation, maintenance, and replacement) associated with the water supply function shall be separately identified in the official cost account record. When there is a loss of revenue of existing purposes, or additional

operation and/or maintenance expense to existing purposes are incurred because of the new water supply addition, such charges shall be shown as a direct charge against the water supply function.

This will affect the appropriate cost reductions in the existing project purposes and all revenues from the new addition will be credited to the new purpose. If hydropower revenues are being reduced as a result of the reallocation, the power marketing agency will be credited for the amount of revenues to the Treasury foregone as a result of the reallocation assuming uniform annual repayment. In instances where existing contracts between the power marketing agency and its customer would result in a cost to the Federal Government to acquire replacement power to fulfill the obligations of contracts, an additional credit to the power marketing agency can be made for such costs incurred during the remaining period of the contracts. Such credits should not actually be made for replacement costs until the costs are incurred and documented by the power marketing agency.

(4) Annual Costs. The non-Federal sponsor shall also be responsible for an appropriate share of the specific and joint-use operation, maintenance, replacement and major rehabilitation (OMR&R) costs. In those cases where the cost of water supply is based on hydropower replacement costs, the OMR&R increment of such cost is to be deleted from the total charge and then billed separately based on a pro rata share of the actual experienced project costs.

(5) Financial Feasibility. As a test of financial feasibility, the governing annual cost of storage derived, as determined above, should be compared to the annual cost of the most likely, least costly alternative that would provide an equivalent quality and quantity of water which the non-Federal interest would undertake in the absence of utilizing the Federal project. This analysis is to be included in M&I storage reallocation reports.

(6) Funding for Reallocation Studies. Feasibility studies of storage reallocation should be conducted using the framework of the [Principles and Guidelines](#). The study will have two phases, reconnaissance and feasibility. The reconnaissance phase should be sufficiently detailed to determine if a feasibility study is warranted and if Congressional authorization is required for reallocation or addition of M&I storage. The reconnaissance phase is normally done using Operation and Maintenance, General funds. Use of Section 216 authority and regular survey authority are also options however. If O&M funds are utilized and Congressional authorization is required, cost sharing of the additional studies with the non-Federal sponsor is required in accordance with WRDA 86. The Federal share of the additional studies or the feasibility phase cost in the case of a Section 216 or regular survey authority comes from the General Investigations appropriation. If at the start of the study it appears likely the proposed reallocation will require Congressional authorization, contact HQUSACE (CECW-P) for additional guidance on requesting funds for the feasibility phase. If the reallocation is determined to be warranted, but does not require additional studies or Congressional authorization, then Operation and Maintenance, General funds may be used to complete the reallocation at Federal expense.

e. Reallocation of Flood Control Storage.

(1) Introduction. When reallocations of storage from the flood control pool would impact existing water supply and hydropower users, the need to provide Dependable Yield Mitigation Storage (DYMS) to compensate the existing water supply users must be considered in the analysis. Also to be considered, where appropriate, is the need to compensate hydropower users through operational changes. The following paragraphs provide procedures and requirements for implementation of the DYMS analysis.

(2) Compensation to Existing Municipal and Industrial Water Users.

(a) Mitigation Storage. Whenever the conservation pool of a reservoir project is expanded into the flood control pool, the critical period dependable yield (which is produced from storage and inflow) per unit of storage will be reduced. This occurs because, even though there is more conservation storage available from which to draft water, the inflow into the reservoir remains the same. Since more users will be sharing the same inflow, the yield per unit of storage decreases even though the total yield of the project increases. While water storage contracts (agreements) do not guarantee a yield, due to fairness and possible legal liability, the Corps should not make additional (and discretionary) storage reallocations in a project which impose measurable negative impacts on existing water supply contracts by reducing their critical period yields. To avoid such negative impacts, sufficient storage would be reallocated to meet the needs of the new user and to maintain the dependable yield of the existing water supply contract holders. This additional storage required to keep existing users whole is termed Dependable Yield Mitigation Storage (DYMS). The new user of the new water supply storage space (i.e., the water supply requestor) will pay for all costs associated with DYMS. Cost of storage is computed using the same procedure as for any other reallocation. Instructions on how to compute DYMS are provided in the following paragraph. For a discussion of storage-yield relationships, see EM 1110-2-1420. Districts should determine when storage-yield curves need to be updated as part of their normal operations.

(b) Computation of DYMS. Computation of DYMS requires an understanding of the use of project yield curves. During the formulation of projects that provide conservation storage, curves are typically developed that depict critical period dependable yield. The resultant curve is a conditional relationship which is based on a given bottom elevation for the conservation pool storage zone. Any point on the curve then, defines the relationship for storage and yield for a specific project. To apply this relationship to any project, either the total conservation pool storage or desired yield is selected and the other corresponding value is read from the yield curve. No further use is made of the yield curve unless a different total conservation pool is to be evaluated. The total yield of the given conservation pool storage then, is prorated among the various users based on the percentage of the total conservation pool storage that they have

contracted for or that is allocated to them. In many cases it will be required that project critical period dependable yield curves be developed. This will be the case if a curve does not exist or there is any doubt as to the assumptions or source of an existing yield curve. The important consideration in DYMS computations is that all yield estimates for all water supply storage agreements and storage allocations for other purposes are on the same basis. The storage adjustments that are made, in many cases, will be quite small. Great care then must be taken to prevent presentation of data that would confuse the users and would be difficult to explain. There are many computer programs available that can be used to determine the critical period dependable yield by simulation of the operation of a reservoir operated either independently or in a multiple reservoir system. Again, however, it is important that the same program and input data be used throughout the analysis. Examples of DYMS computations are provided in Exhibit E-4.

(c) Adjustments to Water Supply Agreements. Districts should decide when to adjust water supply agreements. To avoid the excessive amount of work required to change every agreement each time a new reallocation is made, a suggested alternative is that changes be made at the same time the interest on the unpaid balance is adjusted. In the sample water supply agreement, Article 5 – Payments, this adjustment is made at 5-year intervals for reallocated storage agreements pursuant to Section 932 of the 1986 WRDA of 1986.

(3) Compensation to Hydropower Users.

(a) Financial Credits. When hydropower is adversely impacted by reallocation of the flood pool to satisfy additional water supply needs, hydropower losses can be mitigated through the provision of financial credit. In this case, credits will be provided to the hydropower account from a portion of the water supply storage proceeds. This credit is based on revenues foregone to the United States Treasury for repayment of the hydropower costs assigned to the project. Revenues foregone reflect the allocated costs to power upon which the rates are based. When reallocation is accomplished through this credit approach, in essence, the allocation of costs is adjusted without performing a laborious new cost allocation. Additionally, where existing Federal power delivery contracts require market purchases of power as a result of storage reallocations and withdrawals, the power marketing agency may obtain an additional credit for the funds expended for those purchases upon demonstration that they were made as a direct result of the reallocation.

(b) Operational Changes.

(1) General. While financial credits have historically been used to compensate for hydropower losses, the Power Marketing agencies (PMAs) have continued to express concern that such credits do not adequately compensate for losses, particularly for capacity losses.

Capacity losses are more critical from a marketing standpoint since they are the principle basis for contractual agreements with their customers. Project operational modifications, where appropriate, could be an effective mechanism for compensating for hydropower losses. Modification of operating rules should be considered only where the new water supply storage is reallocated from the existing flood control pool. The implementation of operational changes will help marketing agencies fulfill their Federal contractual agreements and will not financially impact new water supply users. They will also result in a reduction of the financial credit to the marketing agencies. The following paragraphs describe policies and procedures for the consideration of operational changes in reallocation studies. Other operational changes may be considered by districts on an ongoing basis. Operational changes for compensating hydropower users suggested in this regulation are over and above normal operational practices.

(2) Reservoir Regulation Schedule. The term reservoir regulation schedule refers to a compilation of operating criteria, guidelines, rule curves and specifications that govern basically the storage and release functions of a reservoir. In general, schedules indicate limiting rates of reservoir releases required during various seasons of the year to meet all functional objectives of the particular project, acting separately or in combination with other projects in a system. Schedules are usually expressed in the form of graphs and tabulations, supplemented by concise specifications and are prepared and implemented by Corps Water Control Management staffs.

(3) Water Control Plans. Water control plans include coordinated reservoir regulation schedules for project/system regulation and such additional provisions as may be required to collect, analyze and disseminate basic data, prepare detailed operating instructions, assure project safety and carry out regulation of projects in an appropriate manner. [ER 1110-2-240](#) require that necessary actions be taken to keep approved water control plans up-to-date. While water control plans and their documentation in water control manuals are developed for specific projects and reservoir systems, they will be revised as necessary to conform with changing requirements resulting from developments in the project area and downstream, improvements in technology, new legislation and other relevant factors. The instructions contained in [ER 1110-2-240](#) are to be followed when modifications to water control plans become necessary due to reallocations of flood control storage to water supply. Funding of reallocation studies and associated modifications to water control plans/manuals is an internal decision to be made by each district. The reallocation report shall describe the proposed modifications to the water control plan/manual as a result of the reallocation action, if applicable.

(4) Criteria for Evaluation and Selection of Operational Change. The following criteria will be used for evaluating and selecting an operational change.

- The operational change shall not adversely affect flood damage reduction capability or any other project purposes.

- The objective of the operational change is to diminish as much as reasonably possible the loss in dependable capacity (and also energy if possible, but not probable), but not to increase dependable capacity beyond the level prior to the reallocation action.
- Consider to the maximum extent possible, making only seasonal changes to the operation plan (i.e., to the time of year when flood control is less likely to be needed and hydropower capacity is most critical).
- The change in the elevation of the conservation pool should not exceed (or significantly exceed) what the elevation would otherwise be if DYMS was provided for hydropower.

(5) Legal Considerations. There are three primary legal considerations that need to be addressed when project operational changes are recommended to compensate the hydropower purpose. The first relates to downstream impacts (i.e., flood control is jeopardized) and the second two considerations are related to the potential impacts of raising of the lake level. In this later action, raising of the lake could adversely impact the environment (e.g., impacts on trees and other vegetation, habitats, etc.) and it could impact on the real estate interest of surrounding land owners (e.g., marinas, residents, etc.). The impacts on these three items (flood control, environment and real estate) must be adequately addressed in the reallocation report. Resolution of these issues will require extensive coordination with all stakeholders and users of the reservoir. If significant legal problems are encountered as related to these or other items, a decision must be made whether the action can proceed under the discretionary authority, or if Congressional action is needed.

(4) Coordination Requirements. [ER 1110-2-240](#), which implements Section 5 of WRDA of 1988, requires that before the Corps may modify a reservoir water control plan which will result in or require a reallocation of storage space or significantly affect any project purpose, it shall provide an opportunity for public review and comment to include public meetings. This coordination requirement, as previously described, applies to all reallocation actions.

f. Addition of Storage. When water supply storage is added to an existing project and storage is not reallocated, a willingness to pay concept is used to assign costs to the new water supply purpose. Under this concept the non-Federal sponsor is responsible for 100 percent of the new construction costs allocated to water supply. This is to be paid during the construction period. In addition, payments equal to 50 percent of the sponsor's savings are required. The sponsor's savings are construed as the cost of the most likely alternative which would be constructed by the non-Federal sponsor in lieu of the proposed modification, less the sponsor's share of the cost of the modification to the Corps project. This cost is to be repaid at the water supply rate current at the start of project modification. It is to be adjusted at 5-year intervals

within the remaining physical life of the project, but not to exceed 25 years from completion of project modification; or if water supply is already a project purpose, within 30 years from the time the project was first used for water supply. Total local capital contributions (original project plus modification) should not exceed the sum of the local share of the new construction costs, plus the Federal construction costs of the original project. The non-Federal sponsor shall also be responsible for an appropriate share of the specific and joint use operation, maintenance, replacement and major rehabilitation costs.

E-58. Water Supply Agreements. All revenues received, from agreements with non-Federal sponsors, shall be deposited into the Treasury of the United States as miscellaneous receipts.

a. Agreement Formats.

(1) Water Storage. Part 1 of the Model Formats for Agreements and Permits (see www.hq.usace.army.mil/cecc/ccpca.htm) is to be used in entering into agreements under the authority of the Water Supply Act of 1958, as amended. Bracketed language may be changed as appropriate and material particular to either present or future use storage may be deleted if such storage is not included in the agreement. Non-Federal parties to water storage agreements must meet the requirements of Section 221 of the Flood Control Act of 1970, as amended.

(2) Surplus and Agricultural Water Supply. The sample format set forth in Part 2 of the Model Formats for Agreements and Permits (see www.hq.usace.army.mil/cecc/ccpca.htm) is to be used for agreements under the authority of Section 6 of the Flood Control Act of 1944 and Section 931 of the WRDA of 1986. A agreement for either can also be tailored to the format of Part 1. The primary factor in deciding which format to use is whether the non-Federal sponsor wants storage space or water. Agreement terms are normally for 5 years with an option for a 5 year extension, until the space is needed for the authorized purpose, or until the authorized purpose is deauthorized.

(3) Drought Contingency. Agreements for small amounts of water (withdrawals from 100 acre-feet of storage or less) may be accomplished via the form provided as Part 3 of the Model Formats for Agreements and Permits (see www.hq.usace.army.mil/cecc/ccpca.htm). Larger amounts and long term arrangements should be the subject of a Section 6 agreement in accordance with this regulation, unless written approval by HQUSACE (CECW-P) is obtained.

(4) Disclosure of Lobbying Activities. Water supply agreements will be accompanied by a signed Certificate Regarding Lobbying and, if applicable, a completed Disclosure of Lobbying Activities. These forms must be thoroughly discussed with the sponsor prior to signature by the Contracting Officer. Completed forms will be attached to the agreement prior to its signature by the Contracting Officer, and kept on file by the district for later submittal to HQUSACE, if requested.

b. Submittal and Review.

(1) Water Storage.

(a) During initial negotiations leading to a draft agreement, significant departures from policy or complex interpretations of policy or legislation are to be submitted to HQUSACE (CECW-P) before spending time and resources negotiating a draft agreement.

(b) The first storage agreement on any project will be approved by the Assistant Secretary of the Army (CW), as will all agreements, which deviate from the approved model (other than editorial changes.) Approval authority for subsequent agreements and reallocation reports which do not require Congressional approval has been delegated to the Commander, USACE, and to Division and District commanders in accordance with Table E-31. Under these delegations, two copies of all agreements, draft and final, along with appropriate reallocation reports must be submitted to HQUSACE (CECW-AR). One will be retained in HQUSACE files and the other will be provided to ASA(CW). Draft agreements and reallocation reports which require ASA(CW) review (or approval), and final agreements requiring HQUSACE or ASA(CW) approval must be accompanied by four copies.

(c) The cutoff point for incorporation of policy changes into water supply agreements will be the date of draft agreement approval by the ASA(CW). An approved agreement will be exempt from application of policy changes provided a final agreement is signed by the local sponsor within six months of the date of draft agreement approval. An exception may be granted to the six-month limitation; however, a request for a longer time period should accompany the draft agreement and must contain a complete justification.

Table E- 31 Water Supply Storage Agreement Approval Authority [1]

Drafts				
Acre – Feet [2]		Storage Agreements [3]		Reallocation Reports [5]
From	To	Without Reallocation	With [4] Reallocation	
0	99	District [6]	District [6]	District
100	499	Division [6]	Division [6]	Division
500	999	Division [6]	ASA(CW)	HQUSACE [7]
1000	& up	ASA(CW)	ASA(CW)	HQUSACE [7]
Finals [8]				
Acre – Feet [2]		Storage Agreements		
From	To	Without Reallocation	With [4] Reallocation	
0	499	District	District	
500	999	District	HQUSACE	
1000	& up	HQUSACE	HQUSACE	

Footnotes:

- [1] A copy of all approved agreements will be provided to ASA(CW).
- [2] In any particular agreement, the acre-feet of storage needed to produce the water under agreement on a dependable basis.
- [3] At projects where storage agreements have been previously approved. The first storage agreement on any project will be approved by the ASA(CW).
- [4] For reallocations which do not require Congressional approval, i.e., no significant effect on other authorized purposes and/or no major structural or operational changes.
- [5] When the cumulative amount of storage reallocated exceeds the lesser of 4000 ac-ft of 10% of available storage, reports will be submitted to ASA(CW) prior to approval.
- [6] When using approved model or approved model with editorial changes only. Agreements involving other changes will be submitted to ASA(CW) for approval.
- [7] Submitted to ASA(CW) with the draft agreement prior to approval.
- [8] When using the approved draft agreement and local signature within six months of draft approval. If beyond six months or if changes are made, the final agreement will be resubmitted for approval to the office with approval authority for the draft. If the proposed agreement involves changes other than editorial changes, the agreement will be submitted to ASA(CW) for approval. The ASA(CW) reserves the right to retain approval authority of any final agreement he approved as a draft. In cases where that right will be exercised in advance, the draft agreement will so note.

Table E- 32 Surplus Water Agreement Approval Authority [1]

Drafts			
Acre - Feet [2]		Agreement [3]	Letter Report [4]
From	To		
0	99	District [5]	District
100	499	Division [5]	Division
500	999	Division [5]	HQUSACE [6]
1000	& up	ASA(CW)	HQUSACE [6]
Finals [7]			
Acre - Feet [2]		Agreement [3]	
From	To		
0	499	District	
500	999	District	
1000	& up	HQUSACE	

Footnotes:

- [1] A copy of all approved agreements will be provided to the ASA(CW).
- [2] The storage needed to produce the agreed to water on a dependable basis.
- [3] Not affecting authorized purposes (water not being used for an authorized purpose). When surplus water agreements involve water being used for an authorized purpose, they will be treated like a reallocation agreement and report (See Table E-31).
- [4] When the cumulative amount of storage reallocated exceeds the lesser of 4000 acre-feet or 10% of available storage, reports will be submitted to ASA(CW) for approval.
- [5] When using approved model or approved model with editorial changes only. Agreements involving other changes will be submitted the ASA(CW) for approval.
- [6] Submitted to ASA(CW) with the draft agreement prior to approval.
- [7] When using the approved draft agreement and local signature within six months of draft approval. If beyond six months or if changes are made, the final agreement will be resubmitted for approval to the office with approval authority for the draft. If the proposed agreement involves changes other than editorial changes, the agreement will be submitted to ASA(CW) for approval. The ASA(CW) reserves the right to retain approval authority of any final agreement he approved as a draft. In cases where he will exercise that right in advance, the draft agreement will so note.

(2) Surplus and Agricultural Water Supply. Procedures similar to those described above for water storage shall be applied to both agricultural and surplus water agreements. Delegations for surplus water are described in Table E-32. Agreements submitted to HQUSACE shall be accompanied by a brief letter report explaining the method used in determining the dollar values in the agreement, together with the recommendation of the division commander. Two copies of all agreements, draft and final, approved under delegated authority must be submitted to HQUSACE (CECW-AR).

SECTION IX - Multiple Purpose Projects

E-59. Federal Interest.

a. General. Federal interest in water resources development is established by law. Within the larger Federal interest in water resource development, the Corps of Engineers is authorized to carry out projects in seven mission areas: navigation, flood damage reduction ecosystem restoration, hurricane and storm damage prevention, water supply, hydroelectric power generation and recreation. Navigation projects include both inland and deepwater projects. Ecosystem restoration projects provide restored habitat for terrestrial and aquatic species. Wherever possible and subject to budgetary policy and Congressional authorization, projects shall combine these purposes to formulate multiple purpose projects. For example, flood protection projects could include ecosystem restoration and recreation. As another example, navigation projects could include hydroelectric power generation and ecosystem restoration. In addition, efforts to solve problems within these mission areas should consider the full range of programs as solutions. For example, flooding problems may be addressed by implementing solutions within the purview of the congressionally authorized projects, the Continuing Authorities Program, the Flood Plain Management Services Program or emergency authorities.

b. Watershed Approach. Watershed planning takes a systems view of water resources and opportunities over a large hydrologic region commonly called a river basin or a watershed. Watershed studies will usually be multiple purpose and multiple objective investigations. Watershed studies will likely involve participation of other Federal, State and local agencies and groups with interests and authorities to address problems and opportunities beyond the Corps missions. It is fundamental to the planning process to investigate the full range of solutions to problems, and to develop multiple purpose solutions to problems. Comprehensive systems planning, including watershed and river basin planning will improve our opportunity for sound water resource management.

E-60. Types of Improvements. The types of improvements to be considered in multiple purpose/multiple objective studies include, but are not limited to, the ones identified in previous paragraphs for each of the Civil Works mission area. Other types of improvements identified by other members of the planning team (representatives from other Federal agencies, State and local governments, tribal governments, non-profit organizations and the general public) will also be considered during the planning process. Corps participation in these type of improvements might be limited by law or policy.

E-61. Specific Policies

a. General. Specific policies and procedures for each of the Civil Works mission areas described in previous sections of this appendix apply to projects that are formulated for multiple purposes.

b. Cooperation with other Agencies. The cooperative efforts of multiple Federal agencies as well as non-Federal interests will generally be necessary to achieve multi-purpose economic and ecosystem goals. Corps multi-purpose planning efforts should complement and be complemented by the various authorities of other Federal and State agencies, Native American tribes and private groups, such that common objectives are identified early in the study process. The Corps will, in some instances, lead in the development of alternative restoration plans, and in other instances play only a supporting role. The Corps can provide assistance in planning, study management, engineering, construction, environmental science and analysis, and in economic analysis of plans generated by others.

c. Plan Selection. When a project has both NED benefits and NER effects the recommended plan should be “best” in the sense that no alternative plan or scale has a higher excess of NED benefits plus NER effects over total project costs. This plan should be called the combined NED/NER plan.

E-62. Benefit Evaluation Procedure

a. Conceptual Basis. The conceptual basis for evaluating NED benefits is society’s willingness to pay for the increase in the value of goods and services attributable to improvements for navigation, flood damage reduction, hurricane and storm damage prevention, ecosystem restoration (in circumstances where the outputs can be monetized), hydroelectric power generation, recreation, and water supply. The conceptual basis for evaluating non-monetized NER benefits is society’s value toward the increase in ecosystem services.

b. Planning Setting. The planning setting should be broadly conceived to include geographic scales compatible with watershed plans. Multiple programs and authorities for both the Corps and non-Federal participants should be considered to maximize the net beneficial effects of alternative plans.

c. Evaluation Procedure. The general evaluation principles described for each Civil Works mission area shall be followed in the evaluation of multiple purpose projects. Monetary and nonmonetary benefits will be estimated following the steps applicable to each mission area under consideration. One key element in the evaluation of multiple purpose projects is the potential need for tradeoffs between NED and NER outputs. Distinct implementation actions may produce only NED outputs or only NER outputs, and involve no conflicts of space

utilization, water utilization or land use, and if so no question of trading off one output for another arises. In other cases, more of one output (say, NER) can only be obtained by accepting less of another (say, NED). In these cases, tradeoffs between NED outputs and NER outputs are permissible, and should be made as long as the value of what is gained exceeds its implementation cost plus the value of what is foregone. Thus, it is acceptable to trade NED benefits in favor of NER outputs as long as the incremental (subjective) value of the NER outputs exceeds the sum of NED benefits foregone plus incremental costs. Incremental costs equal added cost necessary to realize added environmental outputs less reduced cost permitted by reduced NED outputs. Trades of one output for another shall be made until it is not possible to make further trades improving the total project. Naturally, the potential trades go in both directions, more NER output for less NED output and more NED output for less NER output. This is a formulation-evaluation process by which the Combined NED/NER Plan is discovered.

(1) Benefit-cost ratios are not relevant for environmental projects, and environment specific costs are not included in the benefit-cost ratio for a multiple purpose project. Displays in Tables E-33, E-34 and E-35 illustrate several cases. In the first example, Table E-33, the project produces only NED benefits.

(2) In the second example, Table E-34, the project produces only environmental benefits. In this example, several plan scales are shown so that the public and decision makers know at what level of incremental and total output the costs of the incremental units just equals the subjective valuation of their worth. Since a recommendation depends on this subjective evaluation of worth, which is not readily displayed in a table, no recommended plan is indicated.

(3) In the third example, E-35, the project produces NED and NER outputs. For the first two displayed plan scales there is no interaction between NED and environmental outputs and thus no tradeoff. The third plan scale indicates that the next increment of environmental outputs requires an additional environmental implementation cost of \$5 and the foregoing of \$10 in NED benefits, resulting in incremental adverse effects of \$15. For this plan to be recommended the subjective worth of the additional environmental outputs would need to be (at least) \$15. Total project costs are \$150 but the benefit-cost ratio is based only on costs associated with the NED benefits, \$110. Any of the displayed plans could be the recommended plan, provided that the economic development plan under consideration maximizes NED benefits or that the restoration plan under consideration is shown to be most cost effective.

Table E- 33 Project Produces only NED benefits

BENEFITS (\$)	COSTS (4)*	BENEFIT-COST RATIO
150	100	1.5

*Includes justified mitigation cost, if any.

Table E- 34 Project produces only NER outputs

<u>Environmental Outputs</u> (Units)	<u>Costs (\$)</u>	<u>Cost per Unit (\$)</u>	<u>Incremental Cost per Unit (\$)</u>
40	80	2.00	Not Available
50	105	2.10	2.50
60	135	2.25	3.00

Table E- 35 Project Produces NED and NER Outputs

NED Benefits (\$)	Costs (\$)	B/C	Net Benefits (\$)	NEQ Outputs (Units)	Costs (\$)	NED Benefits Foregone (\$)	Total Adverse (\$)	Cost per Unit	Inc Cost per Unit (\$)	Total Project Cost (\$)
140	110	1.3	30	40	30	0	30	0.75	NA	140
140	110	1.3	30	43	35	0	35	0.81	1.67	145
130	110	1.2	20	50	40	10	50	1.00	2.14	150

E-63. Federal and Non-Federal Participation

a. Cost Sharing. Multiple-purpose studies and projects are cost shared in accordance with the cost sharing policies applicable to each project purpose under consideration. Before determining the required cost sharing for projects, an allocation of total project costs to each purpose must be accomplished. The following paragraphs describe the requirements and procedures used by the Corps for allocating costs of multiple purpose projects.

b. Cost Allocation. The need for cost allocation stems from pricing and cost-sharing policies that vary among purposes. Cost allocation is the process of apportioning total project financial costs among purposes served by a plan. Financial costs are implementation outlays, transfer payments such as replacement housing assistance payments, and the market value of contributions in kind, e.g., lands. Financial costs are to be allocated to those purposes for which the plan is formulated. These purposes do not include other direct benefits and use of otherwise unemployed or underemployed labor resources. All purposes are to be treated comparably.

c. Definitions.

(1) Separable cost for each purpose in a plan is the reduction in financial cost that would result if that purpose were excluded from the plan. This reduction in cost includes:

(a) The financial cost of measures serving only the excluded purpose; and

(b) Reductions in the financial cost of measures serving multiple purposes. In some cases removal of a purpose would result in selection of different measures to address the remaining purposes.

(2) Joint cost is the total financial cost for a plan minus the sum of separable financial costs for all purposes.

(3) Alternative cost for each purpose is the financial cost of achieving the same or equivalent benefits with a single-purpose plan.

(4) Remaining benefit for each purpose is the amount, if any, by which the NED benefit or, when appropriate, the alternative financial cost exceeds the separable financial cost for that purpose. The use of alternative cost is appropriate when alternative financial cost for the purpose is less than the NED benefit, or when there are project purposes that do not address the NED objective.

d. Cost Allocation Standard. Costs allocated to each purpose are the sum of the separable cost for the purpose and a share of joint cost as specified below:

(1) Joint cost may be allocated among purposes in proportion to remaining benefits.

(2) Joint cost may be allocated in proportion to the use of facilities, provided that the sum of allocated joint cost and separable cost for any purpose does not exceed the lesser of the benefit or the alternative cost for that purpose.

e. Allocation of Constituent Cost. Cost-sharing policies for some purposes pertain to cost constituents such as construction costs, and operation and maintenance costs. Costs for each cost constituent specified in the relevant cost-sharing policy should be allocated among purposes.

f. Requirements for Cost Allocations. There are two types of cost allocation studies: Preliminary cost allocations and firm cost allocations. This paragraph prescribes policies and requirements common to both. A cost allocation is required for any multipurpose project with a reimbursable project purpose.

(1) General. Cost allocation studies shall identify specific facilities. The results of such studies shall be summarized to show the percentage of joint-use costs which, together with specific facilities costs, comprise the total allocation to each project purpose. Joint-use cost percentages are derived separately for construction expenditures and for operation and maintenance expenditures. Percentages for construction shall also be applicable to replacement and rehabilitation costs when these occur. As a general rule, percentages are to be rounded to the nearest tenth of one percent.

(2) Responsibility for Cost Allocations. Allocation of total costs among purposes of a project is the responsibility of the Commander, USACE for projects planned and constructed under his jurisdiction. Where cost allocation is assigned by law to another Federal agency, HQUSACE will furnish cost data to such agency, together with views concerning appropriate allocation.

(3) Purposes and Objectives to Which Costs Are Allocated. Preliminary cost allocations may allocate costs to all project purposes, recognized by current executive guidelines, which encompass the direct services or outputs of the project as recommended. In firm cost allocations reports, costs may be allocated only to the project purposes authorized by Congress, or those added under general authority.

(4) Costs Included in the Allocation.

(a) Costs to be allocated include the total construction expenditures, value of lands and property transferred without cost to the project, interest during construction, operation and maintenance costs (including replacement costs necessary to maintain conditions as constructed throughout the project life).

(b) The cost allocation computation shall be computed on the basis of annual costs and benefits, with all expenditures and benefit accruals reduced to a common time basis and equivalent annual values over the period of analysis.

(c) Interest during construction is computed on expenditures during the construction period, in accordance with prescribed procedures for cost estimating or cost accounting requirements.

(d) Deferred costs shall be included in the allocation only if they are an integral component of the plan and its justification, and if they are integral to the investment decision to initiate construction. Deferred recreation costs and benefits dependent thereon (both discounted to the initial project operation date) which do not meet these criteria, may be included only if a cost-sharing contract, including designated future facilities and a construction schedule, is signed and approved in advance of initiation of construction. If deferred costs are included the allocated costs should be presented in a breakdown as to initial and future costs.

(e) Funds allocated for Continued Planning and Design (CP&E) prior to authorization are not included in project costs if the funds were obligated prior to 1 October 1985. Funds allocated for CP&E obligated on or after 1 October 1985 and all advance engineering and design funds shall be made a part of the cost allocated to project purposes and of the cost apportionment between Federal and non-Federal shares.

(5) Costs Excluded from the Allocation.

(a) There are certain project costs included in the appropriations required for construction which by law or administrative regulation are excluded from economic analysis and shall not be allocated to the purposes of the water resources plan. These include the following:

(b) Highway betterments, pursuant to Section 208(c) of Public Law 87-874.

(c) Postauthorization costs of cultural resources mitigation, pursuant to Section 7 of Public Law 93-291, up to one percent of total funds authorized for appropriation, and costs in excess of one percent authorized by waiver pursuant to Section 208 of Public Law 96-515.

(d) Cost excluded from the allocation shall be shown in the allocation data by separate line item or footnote. The allocation data should identify the costs, including an appropriate share of Engineering and Design (E&D) and supervision and Administration (S&A), with sufficient information to permit a cost accounting determination consistent with the derivations in the cost allocation study.

(6) Addition of Purpose to Existing Project (Completed or Under Construction). All added costs incurred by the addition of a new purpose shall be allocated to that purpose and a recommendation shall be made for approval by HQUSACE as to how all purposes should share in the joint-use costs of the original plan considering comparative benefit accruals over the new period of analysis.

g. Preliminary Cost Allocation Studies.

(1) Allocation Study Reported in the Feasibility Report. The preliminary cost allocation study is to provide information to those responsible for reimbursement as to the magnitude and share of reimbursable costs which may be part of the local cooperation requirements and to develop an estimate of Federal costs. Supporting allocation data should be in the detail comparable to other economic analyses in the planning report, and should be available for reviewing officers to verify the reasonableness of the cost allocation. These percentages from the preliminary cost allocation study in the feasibility report shall be used in budget presentations for initial funds for preconstruction, engineering and design, unless and until an updated preliminary allocation is completed during preconstruction engineering and design, or as part of a restudy of an inactive or deferred project.

(2) Cost Allocation Study in Preconstruction, Engineering and Design. The division commander shall determine the need for updating the preliminary cost allocation study. An updated preliminary cost allocation study shall be based on current cost allocation standards and other planning and engineering studies current at the time of preparation. This cost allocation is particularly important for the following reasons:

(a) It provides the cost allocation data to be presented to local sponsors and other agencies as a basis for updated letters of intent or cost-sharing contracts required prior to initiation of construction.

(b) It provides the information on reimbursable and non-reimbursable costs to be included in budget presentations during implementation of a plan, until a firm allocation has been approved.

(c) It provides the information on allocated percentages of joint-use costs which will be used in project cost accounting until a firm allocation is adopted.

(3) Coordination of Preliminary Cost Allocation Studies. Interagency Coordination of preliminary cost allocations shall be accomplished as deemed necessary by the commander, or as specifically required for project purposes.

(a) Coordination of preliminary and firm cost allocation studies with hydropower as a purpose is required with the marketing agency to permit its determination of financial feasibility. Preliminary coordination should be accomplished by the district commander, and final field level coordination is the responsibility of the division commander.

(b) In Reclamation States, the division commander shall insure that preliminary and firm cost allocation studies are coordinated with the regional office of the Bureau of Reclamation which has the responsibility for determining financial feasibility and repayment capacity for irrigation.

h. Firm Cost Allocation Study.

(1) Requirements of a Firm Cost Allocation. The firm cost allocation shall be prepared as a separate report. The report shall present a summary description of the water resources plan, its purposes, and operational characteristics in sufficient detail for a reviewer to understand the relationship between the derived allocation and the formulation objectives. The supporting tables shall present relevant data on benefits, costs, and derivation of the cost allocation.

(a) A firm cost allocation is required at the time the first reimbursable purpose of a multipurpose project becomes operational. However, because projects often become operational before final contracts are awarded and final real estate purchases are made, the division commander may authorize a delay of up to one year in submission of the firm cost allocation report. Authorization of longer delays must have the concurrence of the Director of Civil Works.

(b) A project will be nearing completion of construction when a firm cost allocation report is prepared. The report shall reflect the actual expenditures up to the time the firm allocation study is made and provide a schedule for any remaining estimated expenditures.

(c) Interest during construction will be computed in accordance with accounting practices ([ER 37-2-10](#)) which provide for interest from the middle of the month in which expenditures are made to the in-service date of the function or separable unit thereof. The in-service date is the first of the month following availability for service.

(d) Estimates of alternative costs required for the cost allocation shall be developed to a level of detail and to a scope consistent with the plan to be implemented.

(e) Benefits for all project purposes shall be adjusted to a price level representative of the period during which the project was constructed.

(f) The interest rate to be used in the firm cost allocation study is the project evaluation rate, established by applicable laws and regulation.

(2) Review and Approval of Firm Cost Allocation Reports. The Chief of Engineers is the approving authority for firm cost allocation reports. The Division Commander, however, has review and coordination responsibilities as follows:

(a) District commanders shall submit firm cost allocation reports to the Division Commander for review and interagency coordination at the regional level.

(b) The Division Commander shall resolve all conflicts surfaced in review and coordination of the report, to the maximum extent feasible and shall forward the report with recommendations to HQUSACE (CECW-P). Division commanders are not to coordinate the report with the Federal Energy Regulatory Commission (FERC) regional offices. Formal coordination with FERC will be accomplished by HQUSACE.

(c) Upon adoption by the Chief of Engineers, notice will be given by CECW-P to CERM-FC and to the District and Division commanders. Retroactive adjustment of cost accounts will be made as required, in accordance with EP 37-2-1. The joint use cost percentages of the adopted report shall also be used for allocations of all remaining expenditures, for future additions, rehabilitations and replacements, and for operations and maintenance expenditures.

i. Cost Allocation - Detailed Guidance. The remaining paragraphs of this section provide detailed guidance for and examples of allocation of cost among the purposes served by a multipurpose project.

(1) Definitions. The definitions presented in this paragraph are those specific to this section. General definitions of items, such as costs and benefits, are included in other sections of this regulation.

(a) Alternative Costs. The costs of alternative projects with one purpose eliminated, to determine separable costs, or the costs of single purpose projects necessary to obtain the same benefits for the corresponding purpose as in the multipurpose project. The cost of the most economical alternative means for obtaining the same service for any one project purpose frequently is used as the measure of that project benefit.

(b) Cost Allocation. A systematic distribution of costs among the project purposes of a multipurpose project.

(c) Joint-use Costs. Total project costs less all specific costs.

(d) Joint-use Facilities. All project facilities which cannot be identified as specific facilities.

(e) Joint Costs. The total project costs less the summation of separable costs. These are sometimes called "residual costs."

(f) Separable Costs. Costs incurred to add a purpose to a project. These costs are normally calculated as a step in project (plan) formulation in considering the economic feasibility of including a purpose in a joint project. The separable cost is the minimum amount which should be considered for allocation to a given purpose. The separable cost for any specified purpose is determined by subtracting from the cost of the multipurpose project the cost of the most economical alternative project to obtain the same benefits for the other purposes with the specified purpose omitted.

(g) Specific Costs. The costs of identifiable project features normally serving only one purpose, such as a powerhouse or switch yard. These costs are the total cost of identifiable project features for that purpose.

(h) Specific Facilities. Identifiable project features normally serving only one purpose.

(i) Total Costs. All costs for planning, design and construction of the project following completion of the feasibility report. These costs include the estimated value of all items transferred or furnished without cost to the United States government. Also included is accrued interest on these expenditures and values until the project becomes operational.

(2) Purpose of Cost Allocation. Cost allocations are made to derive an equitable distribution of project costs among authorized project purposes, or those proposed for authorization. Laws and regulations requiring reimbursement or cost-sharing generally specify recovery of costs incurred for the service or function. Cost allocation is, therefore, required for most multipurpose projects with a reimbursable purpose. An exception may apply where recreation is the only reimbursable purpose. Under present policy, reimbursement for recreation is limited to one-half of the separable costs. A complete cost allocation study normally would not be required to determine separable costs. However, it could be required to demonstrate that not more than 50 percent of project costs are allocated to recreation as required by Public Law 89-72 and the WRDA of 1986.

(a) The cost allocation is an essential part of the multipurpose planning process where cost-sharing will be required. It provides information needed to determine the magnitude and share of estimated project costs that are reimbursable. This information is essential to the tests of financial feasibility and plan acceptability. During subsequent planning and construction, it provides the information required for allocating actual expenditures and insures that cost accounts are maintained consistent with the plan formulation and allocation principles.

(b) The significant outputs of the cost allocation study are the percentages for allocating joint-use costs among purposes. Although each allocation study derives the amount of cost allocated to each purpose (by cost of specific facilities and allocated joint-use cost), the amounts are pertinent only to the cost estimate used in the study. As total project costs change during the planning and construction phases, revised amounts allocated to each purpose are derived by application of the joint-use percentages contained in the allocation study.

(3) Purposes and Objectives to Which Costs Are Allocated. The recognized services which can be included in a Federal water resources project plan and to which costs may be allocated include the following: environmental quality, navigation, flood control, storm damage reduction, coastal erosion control, irrigation, power, water supply, recreation (including fish and wildlife recreation), fish and wildlife enhancement, streamflow regulation and, in limited cases, water quality. In some cases bank stabilization may also be included.

(4) Method of Cost Allocation.

(a) The separable costs-remaining benefits method (SC-RB) of cost allocation was adopted by interagency agreement in March 1954 as the preferred method for allocating costs of Federal multipurpose water resource projects. Current Executive guidelines endorse its continued use. Under some circumstances, other methods may be used.

(b) Under the SC-RB method, each purpose included in a project is allocated at least its separable costs, i.e., the incremental costs associated with including the purpose in the project. Benefits limited by alternative justifiable expenditures are the upper limit of allocation to each purpose. Remaining benefits (i.e., benefits in excess of separable costs) provide the basis for equitably apportioning joint costs among purposes. A description of the method, extracted from the "Green Book" on "Proposed Practices for economic Analysis of River Basin Projects," is presented in paragraph E-63i(23).

(5) Addition of Purposes to Existing Projects (Completed or Under Construction). Modification of existing projects to accommodate a new purpose may result from a change in planned operation at no additional cost, or from a physical addition to or modification of project facilities, or both. If the added purpose is reimbursable, or would have an effect on existing

reimbursable purposes, the report in justification of the modification should include a determination of costs or charges to be assessed against the new purpose and any proposed reallocation of costs to existing purposes.

(a) The approach to be used in the analysis includes consideration of benefits of the new purpose, alternative costs to obtain the benefits, effects on benefits and revenues of existing purposes, change in project operation, reallocation of storage space, and changes in the physical scope and cost of the project.

(1) The significance of the added purpose should be clearly defined, both as to its benefits and its effects on all existing project outputs.

(2) A new period of analysis should be established when adding a project purpose. The period should be the lesser of the remaining physical life of the reformulated project, or 100 years from the time the purpose is added.

(3) Repayment period and interest rates should be discussed in the report setting forth the proposed addition of a reimbursable purpose. The repayment period should not exceed the new period of analysis, as established in accordance with a(1)(b) above. Normally, the interest rate will be the current year project formulation rate when considering addition of a new purpose to a project. Exceptions should be cleared individually with HQUSACE (CECW-PD).

(b) The economic principles of evaluation and cost allocation are the same as those relating to the previously approved project analysis. Benefits from the addition of a purpose to an existing project must equal or exceed the incremental costs of adding the purpose. These latter costs also include the opportunity costs of the reduction in the beneficial outputs of the existing project as operated. Allocation of costs to the purpose should cover, as a minimum, any additional or incremental costs; the total cannot exceed the lesser of the benefits or the justifiable alternative expenditure.

(c) Two different procedures or approaches are acceptable for applying these principles to derivation of charges for added purposes. The first of these approaches sets forth guidance to be followed where addition of a purpose is of incidental significance, involving only minor losses to other purposes, and there is no change in plan scope. The second approach deals with the addition of a purpose where the change is significant and the effect on other purposes creates a need for a new distribution of costs. Use of these two approaches is applicable to addition of any purpose with the exception of deferred recreation facilities developed at reservoir projects pursuant to Section 5 of the Federal Water Projects Recreation Act, and, for non-reservoir projects pursuant to Section 4 of the Flood Control Act of 1944, as amended, by Section 207 of the Flood Control Act of 1962.

(1) These approaches do not require a determination of the extent to which originally allocated costs of existing purposes have been reimbursed or amortized. Status of reimbursement for existing purposes should be adjusted as required in cost accounts relative to any reallocation.

(2) In no case should costs allocated to existing purposes be increased unless the physical magnitude of their outputs has been increased by a change in project operation.

(d) Addition of a Project Purpose with Insignificant Effect on the Authorized Project. When the addition of a project purpose is incidental and has no significant effect on other project purposes, and the general scope of the project is not altered, a cost allocation need not be made. Consideration will be given to added benefits, incremental costs, and benefits foregone by authorized project purposes using current conditions and interest rates. A procedure for determination of price when reallocating an insignificant storage volume to water supply is included in Section VIII of this appendix (Water Supply).

(e) Addition of a Purpose with Significant Effect on the Existing Project.

(1) When the addition of a new purpose entails identifiable costs and significant changes in expected benefits to other purposes, a cost allocation should be performed. Examples of situations that could require reallocation of costs are addition of power, addition of recreation which involves redistribution of storage allocations and not merely the addition of specific recreation facilities, or addition of water supply when it entails significant loss of flood control or other benefits.

(2) In addition to all modification costs required to add a new purpose to an existing project, joint-use costs equivalent to benefits foregone by pre-existing authorized project purposes should be assigned to the new purpose. These benefits and cost assignments should be computed using the current year interest rate and benefit levels for all purposes. (Should this computation result in an annual cost exceeding annual benefits for the added purposes, it obviously would not be economically justified. Joint-use costs assumed by the new purpose would be at current price (benefit) levels, establishing equity for that purpose. Cost reductions to pre-existing authorized purposes would be in proportion to lost benefits which should be proportional to any repayment capabilities lost by these purposes). Every effort should be made to avoid modifications to existing cost-sharing contracts. If a contract is impacted, equity must be maintained.

(6) Cost Allocations for Specific Project Purposes: Water Supply.

(a) Allocation of costs will be made in recognition of benefits and costs for future water supply that will be realized from storage included in the initially constructed plan.

(b) Where a project provides for both immediate and future water supply, the amount allocated to the future use component should be presented. The ratio of this amount to total estimated construction costs should also be given to demonstrate that allocation to future use does not exceed 30 percent of total estimated project construction cost, which is a limitation imposed by the Water Supply Act of 1958.

(7) Interest Rate for Cost Allocations: Water Supply. For water supply, the reimbursement rate may be different than the plan evaluation interest rate. The cost allocation study establishes the basis for allocation of construction costs to project purposes, and as such, the project evaluation interest rate should be used for the allocation. Cost accounts and reimbursement contracts should compute interest during construction and annual interest and amortization at the applicable reimbursement rate.

(8) Cost Allocation Prior to Initiation of Construction: Water Supply.

(a) Where water supply for immediate use is included in a plan, contracts should be executed with water users prior to initiation of construction or purchase of lands. Water users' responsibilities are fixed in terms of the percentages of specific and joint-use costs from the cost allocation report to be applied to actual cost as constructed.

(b) In most cases, a cost allocation under these circumstances will be based on preconstruction, engineering and design studies. However, costs, benefits, and all other aspects of the project should reflect the latest approved estimates.

(9) Addition of Water Supply to Completed Project. When addition of water supply is incidental and of no severe effect on other project purposes, and the project scope is not altered, a cost allocation should not be performed. Determination will be made as to appropriate charges for water supply. Adjustments to existing project purposes should be made by an internal bookkeeping credit as detailed in paragraph E-63i(9)(b). An example of appropriate charge determination when storage is reallocated is described below. This approach may be used on allocations for additions of other plan purposes, as determined appropriate by the District Commander subject to approval from HQUSACE. Questions on the use of this approach may be addressed to HQUSACE (CECW-P).

(a) Price of Water Supply Storage. The cost to the non-Federal interests for reallocated storage is established as the incremental increase in operations and maintenance costs plus the highest of benefits or revenues foregone, replacement costs, or the updated cost of storage in the Federal project.

(1) **Benefits Foregone.** Benefits foregone are estimated using a standard Corps NED economic evaluation using a constant price level, the Federal discount rate, and conditions projected for the remaining economic life of the project or 50 years, whichever is greater.

(2) **Revenues Foregone.** Revenues foregone to hydropower are the reduction in revenues accruing to the U. S. Treasury, based on existing rates charged by the power marketing agency as a result of the reduction in the hydropower.

(3) **Replacement Cost.** For reallocations from hydropower, the long-term replacement cost of power should normally be the same as benefits foregone. In some instances, however, where the power marketing agency has existing contracts with their customers, the replacement cost of power may be determined by the estimated cost to the power marketing agency to obtain outputs from alternative sources to fulfill the Federal Government contractual obligations for the duration of the contracts. Once the contracts expire, the replacement cost of power should be equal to the benefits foregone for the remainder of the period of analysis.

(4) **Updated Cost of Storage.** The costs to be reallocated to the water supply storage are determined by first computing the costs at the time of construction by using the Use of Facilities cost allocation procedures as follows:

$$\frac{(\text{Total construction cost} - \text{specific costs}) \times [\text{Storage reallocated (ac-ft)}/\text{Total usable storage (ac-ft)}]}{1}$$

The cost allocated to the storage on this basis is then escalated to present day price levels. Costs are to be indexed from the midpoint of the physical construction period to the beginning of the fiscal year in which the contract for the reallocate storage is approved. By use of this procedure, interest during construction is eliminated from consideration. The cost of storage determined by this method is compared against the cost of the least costly alternative as determined in subparagraph (5) below. Based on this comparison, the FOA should recommend a cost for the water storage space, and provide justification for that recommendation. Operation, maintenance and major replacement costs should be computed annually by the Use of Facilities Method and added to the cost of the storage to determine the total yearly payment.

(5) **Financial Feasibility.** As a test of financial feasibility, the governing annual cost of storage derived as determined above should be compared to the annual cost of the most likely, least costly alternative that would provide an equivalent quality and quantity of water which the local interest would undertake in absence of utilizing the Federal project. This analysis is to be included in reports which request the reallocation of storage for municipal and industrial water supply.

(b) Cost Accounts. All income and expenses (investment, operation, maintenance, and replacement) associated with the water supply function should be separately identified in the official cost account record. When there is a loss of revenue to existing purposes, or additional operation and/or maintenance expense to existing purposes are incurred because of the new water supply addition, such charges should be shown as a direct charge against the water supply function. This will effect the appropriate cost reductions in the existing project purposes and all revenues from the new addition will be credited to the new purpose.

(c) Hydropower Credit. While existing signed contracts between the power marketing agency and their power customers are in force the power marketing agency may be given credit for the incremental increase in costs incurred to obtain power for these contracts (revenues foregone plus the incremental increase in the cost to purchase power, i.e. replacement cost). After the expiration of current contracts, the power marketing agency will be credited for the amount of revenues to the U.S. Treasury foregone as a result of the reallocation (as determined in (2) above assuming uniform annual repayment.

(10) Cost Allocations for Specific Project Purposes: Recreation and Fish and Wildlife Enhancement. The allocation of recreation costs is made in light of the following:

(a) Recreation developed as a purpose pursuant to Public Law 89-72 or by the project authorization will bear its full and equitable share of joint-use costs. However, if recreation development must be eliminated from initial project construction because of lack of sponsorship, its later addition does not require reallocation of a share of joint-use costs to recreation. Lands may be acquired for possible future recreation and fish and wildlife development pursuant to Section 3 of Public Law 89-72. No lands, however, will be acquired under this authority unless a non-Federal public body has agreed to the same project cooperation requirements applied to all recreation lands and facilities.

(b) The inclusion of recreation in a plan pursuant to authority of the 1944 Flood Control Act does not constitute a purpose to which joint use costs are allocated. Only the cost of specific facilities and any other related costs specifically for recreation may be allocated to recreation in these cases, unless a project reformulation has been presented to Congress with costs otherwise allocated.

(c) Exceptions may be made for projects not yet constructed, if recreation is proposed as a purpose in postauthorization planning prior to the initiation of construction. These cases should be brought to the attention of the HQUSACE with a revised project reformulation and preliminary cost allocation report incorporating allocation of costs to recreation as a purpose.

(11) Lake Recreation Benefits. Recreation, sports fishing and wildlife enhancement, which are derived primarily from availability and use of the lake, should be treated as a single purpose in the cost allocation process, if required to properly identify separable lake costs for their common use. Suballocation of separable costs should be made as necessary to identify cost-sharing requirements for different sponsors.

(12) Downstream Benefits: Recreation and Fishery. Recreation and fishery benefits accruing downstream as a result of lake releases are not usually associated with the plan formulation and operational aspects that produce the lake recreation and fishery. When they are, derivation of an equitable apportionment of costs for these benefits would require separate consideration. The total allocation to recreation would then be presented as a combination of the two separately determined amounts. Information on plan formulation which is pertinent to the cost allocation process will dictate when this approach is to be utilized.

(13) Fish Mitigation Benefits. Fishery mitigation facilities required by plan construction are not a specific or separable cost of fishery enhancement. Even though enhancement may be realized incidentally from mitigation facilities, the separable enhancement costs calculated by SC-RB procedures are limited to incremental facilities for enhancement over and above mitigation requirements. Contributions of mitigation facilities to realization of enhancement benefits is recognized in the allocation of separable and joint costs to the enhancement purpose.

(14) Addition of Recreation and Fish and Wildlife Enhancement to Completed Projects. The provisions of Section 5 of the Federal Water Projects Act permit acquisition of lands for deferred recreation and fish and wildlife enhancement development at reservoir projects. These lands will be acquired only if a non-Federal entity agrees, prior to acquisition, to local cooperation and cost sharing requirements applied to all recreation lands and facilities. Further authorization is not required if facilities are subsequently developed. Federal costs of lands and facilities are allocable to recreation and fish and wildlife, and these are subject to cost-sharing requirements as specified by the Federal Water Projects Act. The repayment obligation begins at the time non-Federal sponsors sign a contract indicating their intent to meet the cost-sharing requirements. In plans where only this type of development is added, no joint-use costs are to be allocated. However, if a modification to the dam and lake is proposed, all modification costs for the purpose of adding recreation and fish and wildlife enhancement to the project are chargeable to the added purpose.

(15) Interest Rate: Recreation. The reimbursement rate for recreation may be different than the project evaluation interest rate. The cost allocation study establishes the basis for allocation of construction costs to project purposes, and as such, the project evaluation interest rate will be used in its preparation. Cost accounts and reimbursement contracts will compute or recompute interest during construction, and annual interest and amortization, at the applicable reimbursement rate.

(16) Incidental Fish and Wildlife Enhancement. Costs should not be allocated to fish and wildlife enhancement if such enhancement is not an authorized project purpose and the benefits to fish and wildlife are incidental to meeting other project purpose goals.

(17) Cost Allocations for Specific Project Purposes: Hydroelectric Power. Cost allocations for multipurpose projects with hydroelectric power should be coordinated with the Federal Energy Regulatory Commission (FERC). This will usually be in the form of a proposed cost allocation report. The Corps should also provide FERC with information to assist FERC in its responsibilities for specifying charges in its permits and licenses.

(18) Annual Notification of Power Marketing Agency. The appropriate power marketing agency should be notified annually as to the amount of credit, if any, that should be deducted from power reimbursement requirements based on adjustments in cost accounts.

(19) Construction Period and Price Level for Alternative Power Projects. The construction period for alternative power projects should be the average period for projects of the type and size used in the FERC analysis to determine economic benefits. The price level for the power alternative in firm cost allocations should be at a point in time one-half of the alternative project construction period back from the initial power-on-line date. The latest available price level shall be used in preliminary cost allocations.

(20) Cost Allocations for Specific Project Purposes: Navigation Projects Producing Commercial, Recreational and Land Enhancement Benefits. The costs of specific or separable project features will be allocated to the purposes served. The costs of jointly used general navigation facilities producing commercial, recreational, or land enhancement benefits, will be allocated to each use in proportion to the remaining benefits expected to accrue to each use. Thus, the costs of breakwaters would be allocated to commercial and recreational navigation, and the cost of dredging to these uses and to land enhancement as well.

(21) Cost Allocations for Specific Project Purposes: Mitigation Cost-Sharing. In the general case of multipurpose projects, for which all project costs are allocated by the separable costs-remaining benefits method (SC-RB), the mechanical procedures which lead to appropriate mitigation cost-sharing conforming to our policy are not susceptible to appreciable variation. The annual costs for mitigation measures are entered into the computations along with the annual costs for all other project features, and when these have been allocated to the several purposes the several increments of annual costs are translated back into their first cost and annual operation and maintenance (or management) cost components. These are then apportioned to Federal and non-Federal interests based on the established legislative and policy requirements for each individual purpose.

(22) Single Purpose Procedures. In the case of single purpose projects (navigation or flood control) which, on the surface, are simpler because they do not involve any elaborate allocations of costs to purposes, future reports should use the following procedure:

(a) Basic project costs (less mitigation), first costs and annual operation, and maintenance, repair, rehabilitation and replacement costs, will first be apportioned to Federal and non-Federal sponsors based on the established legislative and policy requirements for the project purpose.

(b) The Federal/non-Federal percentages for sharing mitigation costs will then be determined on the basis of the respective sums of basic project costs apportioned to each entity: first costs plus the capitalized (present worth) value of annual operation, maintenance, repair, rehabilitation and replacement costs.

(c) These percentages will then be applied to the sum of estimated mitigation costs: first costs for mitigation measures plus the capitalized value of annual operation, maintenance, repair, rehabilitation and replacement (or management) costs for the mitigation plan.

(d) The Federal/non-Federal share of mitigation first costs will then be adjusted as appropriate depending upon which entity is assigned actual performance of operation, maintenance, repair, rehabilitation and replacement (or management) for mitigation; that entity receiving credit, against its apportioned responsibility for total mitigation costs, for the capitalized value of the estimated costs for the annual work it will perform.

(23) Separable Cost-Remaining Benefit Method (SC-RB). This recommended method of cost allocation is extracted verbatim from: Report to the Inter-Agency Committee on Water Resources, Proposed Practices for Economic Analysis of River Basin Projects (The "Green Book", prepared by the Subcommittee on Evaluation Standards, May 1958).

"The separable costs-remaining benefits method of cost allocation is a method for obtaining an equitable distribution of the costs of a multipurpose project among the purposes served. Briefly, it provides for: (1) assigning to each purpose its separable costs, i.e., the added costs of including the purpose in the project; and (2) assigning to each purpose a share of the residual or remaining joint costs in proportion to the remaining benefits; i.e., the benefits (as limited by alternative costs) less the separable costs. Thus, the method provides for an equitable sharing among the purposes in the savings resulting from multiple-purpose development.

"The separable costs-remaining benefits method described in detail below is recommended for general use in allocating costs of Federal multiple-purpose river basin

projects. It differs from the generally recognized benefits method in that the amount of benefits used as a basis for the allocation in the recommended method is limited by the costs of available single-purpose alternative projects. In this respect it resembles closely the alternative justifiable expenditure method, except that the concept of specific costs for each purpose is replaced by the concept of separable costs for each purpose. The separable costs for each purpose are determined as part of the procedures recommended herein for project formulation, so that no added work should be required by this method of cost allocation. Since separable costs include all specific costs and generally include other added costs, residual joint costs to be allocated are usually smaller under the separable costs-remaining benefits method than under the alternative expenditure method. Thus, the separable costs-remaining benefits method maximizes the direct allocation of costs and minimizes the residual costs to be apportioned.

Description of Method

"The method consists of (1) determining the separable cost of including each function in the multiple-purpose project, and (2) determining an equitable distribution of costs incurred for several purposes in common. It makes allowance for any economic significance attributable to the peculiarities of any one purpose in its use of facilities or its prior right to project services. Thus, the use of benefits as a basis for cost allocation under this method makes allowance for both the use made of conditions assumed with respect to those factors. Furthermore, the separable costs determined through project formulation reflect the costs of providing facilities used by each purpose as explained more fully below.

"Separable Costs. The separable cost for each project purpose is the difference between the cost of the multiple-purpose project and the cost of the project with the purpose omitted. Separable costs include more than the direct or specific costs of physically identifiable facilities serving only one purpose, such as an irrigation distribution system. They also include all added costs of increased size of structures and changes in design for a particular purpose over that required for all other purposes, such as the cost of increasing reservoir storage capacity. In effect, separable costs are computed from a series of project cost estimates, each representing the multiple-purpose project with one purpose omitted. Such information will be readily available when the recommended practices of project formulation have been followed. Where project formulation has not been of the detail suggested in the recommended procedure and separable costs are not available, specific costs may be used in lieu of separable costs (as in the alternative justifiable expenditure method).

"Distribution of Residual or Remaining Joint Costs. Residual costs are here defined as the difference between the cost of the multiple-purpose project as a whole and the total of the separable costs for all project purposes. Residual costs thus represent a remaining joint cost attributable to all or several purposes. The amount of project benefits used as a basis for allocation of residual costs to any purpose is limited by the cost of providing equivalent services from the most likely economically feasible alternative source available in the area to be served. From such benefits for each purpose, separable costs are deducted to give remaining benefits. Then residual costs are distributed in proportion to the remaining benefits for each purpose. The distribution of residual costs in proportion to the excess of benefits over separable costs assigns to each purpose an equitable share of project savings.

"If the total separable costs of all purposes should exceed the cost of the multiple-purpose project, there are in effect no residual costs as defined above, but rather a joint saving, which can be distributed among purposes by reducing separable costs to obtain the allocation to each purpose instead of by adding a portion of residual costs to each separable cost as illustrated herein.

"Total Allocation. The sum of the separable costs and the allocated residual cost for each purpose constitutes the total allocation to that purpose. Under the separable costs-remaining benefits method, the total cost allocated to each purpose will not be less than the cost of including that purpose in the project (unless the total of separable costs for all purposes exceeds the multiple-purpose project costs as explained in preceding paragraph), and will not be more than the benefits of that purpose or the cost of the most economical single-purpose alternative."

j. Reporting Requirements: Firm Cost Allocation Study. The following paragraphs provide the format for the firm cost allocation report. Give name of project and location by river, State and nearby community. Indicate current status; as under construction, in operation, etc. Cite purposes of project to which costs are allocated.

(a) Plan of Improvement.

(1) Authorized Plan. Review authorizing legislation for the original plan of improvement and subsequent authorizations which modify the scope. The outline should fully cover any aspects of project authorization which have a bearing on the allocation of costs to the various purposes. Pertinent parts of authorizing legislation and recommendations in project documents should be referenced.

(2) Related Improvements. If the project is a unit in an overall development, its relationship to other units in the plan should be described. Modifications in purposes and operations contemplated when additional units in the plan are added should be explained to the extent that they are pertinent to the allocation of costs. The relationship of the project to upstream or downstream developments which have been constructed, or which are proposed for construction by others, should be outlined. If any payment for downstream benefits pursuant to the provisions of the Federal Power Act is anticipated, explain how such prospective payments have been taken into account in the cost allocation. Refer to drawing(s) included with the studies showing locations of the project and related improvements.

(3) Operational Requirements. Outline the manner in which the project is to be operated to achieve the various objectives, describing the requirements for, and relationships of, the individual purposes as they pertain to such operation. Include explanation of any use to be made of seasonal or multiple use storage, and limitations to be imposed on operations for the various purposes.

(4) Description of Project. Refer to drawings and briefly describe major features of the project such as type of construction, length, and height of dam and spillway structures; reservoir capacity; initial and ultimate power generating facilities; etc. Refer to Table E-36 for additional information. Identify facilities which are used specifically for one project purpose, facilities which are used for several but not all project purposes, and facilities used for all project purposes. Identification should be referenced to the breakdown of costs into specific and joint-use classifications given on a table entitled "Summary of Construction Expenditures" (Table E-37).

(5) Construction Program. The planning and construction program for the multipurpose project should be outlined under this paragraph. Dates when planning and construction were initiated should be stated. Dates upon which the project became, or is scheduled to become, partially and fully available for each of the major purposes should be given and related to the in-service dates used in the cost allocation.

(6) Project Costs and Charges.

(a) Construction Expenditures. Give estimate of construction expenditures for the multipurpose project, the value of items furnished without cost to the Federal Government, and amounts assigned for specific and joint-use features. Identify facilities provided in initial construction for future use and give estimated cost and bases for estimates. (See Table E-37 for breakdown of costs.) The following remarks pertain to Table E-37. This table should clearly identify specific and joint-use costs, and facilitate a comparison of the cost of similar items in the

multiple purpose and alternative projects, both single purpose and multipurpose with each purpose omitted. Costs should be segregated in this table generally in accordance with the classification of permanent features as outlined in [ER 37-2-10](#).

- Funds allocated for CP&E prior to authorization are not included in project costs if the funds are obligated prior to 1 October 1985. Funds allocated for CP&E obligated on or after 1 October 1985 and all advance engineering and design funds shall be made a part of the cost allocated to project purposes and of the cost apportionment between Federal and non-Federal shares, except where exempted by law.
- Costs for Engineering and Design and for Supervision and Administration will be distributed to the applicable project features.
- Costs will be recorded against sub-features necessary to identify the source of specific and joint-use costs.
- Care should be exercised in identifying specific and joint-use features because of the relationship between the breakdowns made for the cost allocation report and subsequent accounting of actual costs.
- Fish facilities should be segregated as between mitigation and specific enhancement facilities.
- Any specific recreation costs for lands or other items not under the recreation account should be identified.
- Wildlife enhancement lands should be shown as a separate line item.
- Costs not allocable to project purposes, such as certain highway improvement costs and certain costs related to cultural resources, should be identified and carried as separate line items.

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Table E- 36 Cost Allocation Report: Lake Pertinent Data

Item	Unit	Multiple-purpose Project (as constructed)	Alternative single-purpose Project (Power)	Alternative multiple-purpose project	
				Without Power	Without Flood Control
General					
Location:					
		Middle Fork Willamette River	Middle Fork Willamette River	Middle Fork Willamette River	Middle Fork Willamette River
RM above Mouth of Middle Fork Willamette	Mile	47.8	47.8	47.8	47.8
RM above Lookout Point Dam	Mile	26.5	26.5	26.5	26.5
Drainage Area	Sq. mile	389	389	389	389
Reservoir					
Elevation:					
Full & Max. Pool	Ft MSL	1,543	1,536	1,524	1,541
Flood Control Pool	Ft MSL	1,543	-	1,524	-
Max. Conservation Pool	Ft MSL	1,541	-	1,522	1,541
Max. Secondary FC Pool	Ft MSL	1,480	-	-	-
Min. FC Pool	Ft MSL	1,448	-	1,414	-
Min. Power Pool	Ft MSL	1,414	1,411	-	1,414
Stream bed at dam axis	Ft MSL	1,244	1,244	1,244	1,244
Minimum tailwater	Ft MSL	1,223	1,223	1,223	1,223
Reservoir area:					
Maximum Pool	Acre	2,735	2,650	2,480	2,715
Flood Control Pool	Acre	2,735	-	2,480	-
Conservation Pool	Acre	2,715	-	2,450	2,715
Max. Secondary FC Pool	Acre	1,930	-	-	-
Min. FC Pool	Acre	1,575	-	1,320	-
Min. Power Pool	Acre	1,325	1,300	-	1,325
Storage capacity:					
Total	Acre-foot	356,000	337,000	307,000	350,000
Flood Control, primary	Acre-foot	145,000	None	200,000	-
Flood Control, Secondary	Acre-foot	55,000	-	-	-
Power	Acre-foot	49,000	233,000	None	243,600
Dead + Inactive	Acre-foot	107,000	104,000	107,000	107,000
Summer Flood Control	Acre-foot	5,400	-	5,400	-
Dams & Appurtenances					
Dam:					

Type		Earth and Gravel Fill			
Elevation, top of dam	Ft MSL	1,548	1,541	1,529	1,546
Length	Feet	2,150	2,135	2,105	2,135
Height (from stream bed)	Feet	304	297	285	302
Spillway:					
Type		Gated chute	Gated chute	Gated chute	Gated chute
Elevation of crest	Ft MSL	1,495.5	1,486.7	1,476.5	1,491.7
Number of gates		3	3	3	3
Size of gates	Feet	42x47.3	42x49.5	42x47.5	42x49.3
Spillway design flood (reservoir inflow)	c.f.s.	151,000	151,000	151,000	151,000
Spillway design capacity	c.f.s.	141,600	151,000	141,600	151,000
Fish Facilities:					
At site		None	None	None	None
At existing Leaburg Hatchery		Added ponds	Added ponds	Added ponds	Added ponds
Outlet conduits:					
Type		Tunnel	Pipe	Tunnel	Pipe
Diameter of tunnel or pipe (bypass)		13'9"	2'0"	13'9"	2'0"
Operating gates (or bypass valve)		2-6'6"x12'6"	1-24"	2-6'6"x12'6"	1-24"
Emergency gates (or bypass valve)	each	2-6'6"x12'6"	1-24"	2-6'6"x12'6"	1-24"
Penstocks:					
Number	each	1	1	-	1
Diameter	feet	12	12	-	12
Power Plant					
Powerhouse:					
Type		Indoor	Indoor	-	Indoor
Dimension		55'3"x118'6"	55'3"x118'6"	-	55'3"x118'6"
Installed capacity:					
Number of generating units		2	2	-	2
Capacity of units, each	KW	15,000	15,000	-	15,000
Installed capacity	KW	30,000	30,000	-	30,000
In-service dates:					
1 st unit		May 1962	May 1962		May 1962
2 nd unit		May 1962	May 1962		May 1962
Power Data					
Operating gross head:					
Maximum	Feet	317	310	-	315
Minimum	feet	188	185	-	186
Net regulated flow:					
Average critical period net power flow	c.f.s.	746	724	-	746
Power available (31 months)					

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Continuous power, critical hydro. Period	Kw	13,100	13,100	-	13,100
Dependable power, critical hydro. Period	Kw	16,400	16,400	-	16,400
Minimum peaking capability	Kw	24,200	24,000	-	23,400
Primary energy per year	Kwh	114,756,000	114,756,000	-	114,756,000
Total energy per year	Kwh	162,279,000	162,279,000	-	162,279,000
Load factor critical period	Percent	80	80	-	80

Table E- 37 Cost Allocation Report: Lake Summary of Construction Expenditures

Permanent Features	Multiple Purpose Project (as constructed)			Alternative Single- Purpose Project	Alternative multiple purpose-projects	
	Specific Cost Power	Joint Use Cost	Total Cost	Power	Without Power	Without Flood Control
Lands and Damages	--	\$743,100	\$743,100	\$743,100	\$715,300	\$743,100
Relocation	--	9,858,200 <u>4/</u>	9,858,200	9,858,200	9,593,200	9,830,200
Reservoirs	--	1,024,300	1,024,300	992,300	928,800	1,016,800
Dams	\$3,137,600	26,946,800	30,084,400	25,709,500	24,025,900	26,918,500
Main dam		(23,947,900)	(23,947,900)	(22,505,900)	(21,207,900)	(23,659,900)
Outlet Works (exclusive of power)		(2,943,900)	(2,943,900)	(66,000) <u>3/</u>	(2,763,000)	(66,000) <u>3/</u>
Power Intakes works	(3,124,600)	--	(3,124,600)	(3,124,600)	--	(3,124,600)
Domestic and powerhouse fire Protection water supply inlet	(13,000) <u>1/</u>	(55,000) <u>2/</u>	(68,000)	(13,000) <u>1/</u>	(55,000) <u>2/</u>	(68,000)
Fish Facilities (for Mitigation)	--	140,500	140,500	140,500	140,500	140,500
Power Plant	3,412,000	--	3,412,000	3,412,000	--	3,412,000
Roads, Railroads, and Bridges	--	130,500	130,500	130,500	70,000	130,500
Buildings, Grounds, & Utilities	--	227,800	227,800	227,800	227,800	227,800

Permanent Operating Equipment	--	<u>97,100</u>	<u>97,100</u>	<u>72,100</u>	<u>64,200</u>	<u>72,100</u>
<u>Project Cost</u> ^{2/}	\$6,549,600	\$39,168,300	\$45,717,900	\$41,118,000	\$35,765,700	\$42,491,500
Credit						
Transfer of property without cost	300	-17,600	-17,300	--	--	--
TOTAL EXPENDITURE OF PROJECT FUNDS	\$6,549,900	\$39,150,700	\$45,700,600 ^{4/}	\$41,118,000	\$35,765,700	\$42,491,500

Note: The alternative single-purpose flood control project is substantially the same as the alternative multiple-purpose project without power, as shown above. The alternative multiple-purpose projects without irrigation and without navigation are identical to the overall multiple-purpose project shown above.

^{1/} Fire protection facilities.

^{2/} Water supply facilities for possible future use.

^{3/} Increased size of bypass pipe (for conservation releases) 20" to 24".

^{4/} Exclusive of \$500,000 non-allocable highway improvement costs.

(b) Interest During Construction. Refer to tables on "Interest During Construction" and explain method by which interest during construction for the multipurpose project has been calculated. Interest during construction will be separately identified for the cost of specific facilities (Table E-38) and the cost of joint-use facilities (Table E-39). Computations will be based on scheduled construction expenditures (including value of items transferred), either actual or estimated. Interest will be computed from the middle of the month in which expenditures are incurred until the first of the month following the availability for service. Interest on any additional expenditures after the in-service date will be an operating expense. The various features and sub-features of a project will be considered in service progressively as they are completed and the project is available for serving the corresponding purposes. For this purpose, is not contemplated that features and sub-features related to a project purpose will be reported individually as sub-items but will be treated essentially as a unit, such as the specific flood control facilities being considered in service at the time the project is completed to the extent that it is available for flood control. The in-service date for a feature or sub-feature will be considered as the first of the month following the availability for service. In-service dates will be documented by memorandums to files or reported to higher authority as provided in other regulations. At the time the project is available for serving a particular purpose, the total cost of the joint-use facilities allocated to that purpose will be considered in-service, and interest during construction on those costs will be discontinued. For a multiunit power installation, each generating unit together with its proportionate share of joint-use facilities will be considered separately for purposes of computing interest during construction. Thus, when the first unit of a four unit power installation is available for service, interest during construction will be discontinued on one-fourth (assuming 4 identically sized power units) of the total cost of the specific power facilities, as well as interest on one-fourth of the total

(c) Investment Cost. The total project investment cost consisting of construction expenditures, (including value of items transferred without cost to the Federal government) plus interest during construction, will be summarized. If the project includes non-allocable costs, this will be noted and total investment subject to allocation will be emphasized.

(d) Annual Costs.

- Interest and Amortization. Interest rate and economic life at which costs are amortized will be specified and the amount of annual interest and amortization costs will be cited. The basis for establishment of the project interest rate will be presented.

Table E- 38 Cost Allocation Report: Lake Interest During Construction - Specific Power Facilities

Period		Expenditures				Interest During Period
Beginning D.M.Y.	End D.M.Y.	During Period	At Beginning of Period			
			Total	In Operation	Interest Bearing	
010352	300652	6,927		<u>Dollars</u>		28
010752	300653	37,277	6,927		6,927	638
010753	300654	20,926	44,204		44,204	1,366
010754	300655	22,270	65,130		65,130	1,906
010755	300656	39,740	87,400		87,400	2,680
010756	300657	133,690	127,140		127,140	4,849
010757	300658	289,441	260,830		260,830	10,138
010758	300659	95,148	550,271		550,271	14,945
010759	300660	2,197,143	645,419		645,419	43,599
010760	300661	2,643,727	2,842,562		2,842,562	104,110
010761	301161	706,918	5,486,289		5,486,289	60,829
011261	300562	261,187	6,193,207	<u>1/</u>	6,193,207	79,047
010662	300662	13,024	6,454,394	6,549,600	95,206-	
010762	300663	57,618	6,467,418	6,549,600	82,182-	
010763	300664	5,896	6,525,036	6,549,600	24,564-	
010764	300665	18,653	6,530,932	6,549,600	18,668-	
010765	300666	15	6,549,585	6,549,600	15-	
010352	000000	6,549,600				324,135

Table E- 39 Cost Allocation Report: Lake Interest During Construction - Joint-Use Facilities

Period		Expenditures				Interest During Period	Comments
Beginning D.M.Y.	End D.M.Y.	During Period	At Beginning of Period				
			Total	In Operation	Interest Bearing		
010352	300652	40,044		<u>Dollars</u>		166	
010752	300653	215,459	40,044		40,044	3,694	^{1/} In-service, functions other than power:
010753	300654	120,951	255,501		255,501	7,898	
010754	300655	128,727	376,454		376,454	11,020	.7525 x 39,169,300 = 29,473,656
010755	300656	333,567	505,176		505,176	16,798	
010756	300657	2,098,401	838,741		838,741	47,198	^{2/} Interest during construction of joint-use facilities other than power:
010757	300658	7,428,851	2,937,144		2,937,144	426,075	Interest to date: 2,595,700
010758	300659	13,354,128	10,365,995		10,365,995	684,509	
010759	300660	7,320,636	23,720,123		23,720,123	846,149	
010760	300661	5,610,555	31,040,759		31,040,759	385,954	$\frac{29,474,000}{37,452,000} \times \$2,595,700 - \$2,042,800$
010761	301161	800,654	36,651,314		36,651,314	103,828 ²	
011261	300562	664,157	37,451,968	29,473,656 ¹	7,978,312-		Interest during construction of joint-use facilities chargeable to power:
010662	300662	96,312	38,116,125	39,168,298	1,052,173-		
010762	300663	272,625	38,212,437	39,168,298	955,861-		
010763	300664	651,222	38,485,062	39,168,298	683,236-		\$2,699,600 - \$2,042,800 = \$656,800
010764	300665	30,392	39,136,284	39,168,298	32,014-		
010765	300666	1,624	39,166,676	39,168,298	1,622--		^{3/} Both power units to service.
010352	000000	39,168,300	39,168,300			2,699,627	INOPERATION DATES OF FACILITIES Power units Nos. 1 & 2 1 June 1962 Function other than power 1 December 1961
							Trial percentages for allocation of joint costs:
							Functions other than power 75.25%
							Power 24.75%

- Operation and Maintenance. Give estimates of total average annual cost for operation and maintenance of the multipurpose project and the amounts assigned to specific and joint-use classifications. Give basis for these estimates. Refer to table "Summary of Average Annual Operation and Maintenance Costs" for breakdown (Table E-40). Costs for Operation and Ordinary Maintenance should be segregated in this table generally in accordance with the classification in [ER 37-2-10](#).
- Major Replacements. A breakdown of major replacements in accordance with the Rehabilitation accounts is not normally necessary in cost allocation reports as the item is small and usually is estimated empirically. As with construction expenditures, the classification of specific and joint-use costs should be carefully prepared so that insofar as practicable the cost allocation report will be consistent with actual recorded costs. Amounts should be included in a separate line item in Table E-40.
- Total Annual Costs. Cite amount and refer to appropriate tables showing specific and joint-use costs summary (Table E-41).

(7) Project Benefits. By separate subparagraph for each purpose, give amounts of estimated benefits and reference planning reports which explain bases of estimates. Any major deviation from planning reports must be explained.

(8) Alternative Projects. Describe why estimates of alternative single purpose projects and of alternative projects with a purpose omitted are needed for the allocation study. By single or separate subparagraph describe briefly the alternative projects, costs, and investments. Refer to Tables E-36, E-37, E-40, E-41 and E-42 and drawings as appropriate. In regard to interest during construction for alternative projects, the computation of such on the basis of a year-by-year analysis of costs is often impractical. In such cases the reporting offices should furnish estimates of interest during construction which they consider to be appropriate. If basic information on alternative projects or features is not of the scope indicated in the illustrative tables, in explanation should be furnished.

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Table E- 40 Cost Allocation Report: Lake Summary of Annual Operation & Maintenance and Replacement Costs

	Multiple-purpose project				Alternative multiple-purpose projects	
	Specific Costs		Joint use	Total	Without power	Without Flood Control ^{1/}
	Power	Control				
<u>Operation and Maintenance</u>						
Dam, Reservoir	--	--	\$26,000	\$26,000	\$26,000	\$26,000
Real Estate Management	--	--	1,000	1,000	1,000	1,000
Roads, Railroads, and Bridges	--	--	1,000	1,000	1,000	1,000
Buildings, Grounds, Utilities, Operating Equipment	\$3,000	--	8,000	11,000	8,000	11,000
Power Plant	28,000	--	--	28,000	--	28,000
Fish and Wildlife Facilities	--	--	18,000	18,000	18,000	18,000
Condition and Operation Studies	3,000	\$2,000	20,000	25,000	20,000	20,000
Supervision, Administration, and Reports	3,000	1,900	5,000	9,900	5,000	5,000
Surveys and Layouts	--	--	1,000	1,000	1,000	1,000
Subtotal - Operation and Maintenance	\$37,000	\$3,900	\$80,000	\$120,900	\$8,000	\$111,000
<u>Major Replacements</u>	14,000	--	7,000	21,000	7,000	20,600
<u>Total</u>	\$51,000	\$3,900	\$87,000	\$141,900	\$87,000	\$131,600

^{1/} Also applicable to the alternative single purpose power project

Table E- 41 Cost Allocation Report: Lake Summary of Costs, Charges, and Benefits

	Multiple-Purpose Project ^{3/} Total	Alternative Projects		
		Single Purpose Power	Multiple-Purpose	
			Without Power ^{1/}	Without Flood Control
<u>Construction Costs</u>	\$45,717,900	\$41,118,000	\$35,765,700	\$42,491,500
<u>Interest During Construction</u>				
Specific facilities costs				
Power	324,100	2,677,000	--	324,100
Joint-use facilities	2,699,700	--	2,365,500	2,486,400
Total	3,023,800	2,677,000	2,365,500	2,810,500
<u>Federal Investment</u>	48,741,700	43,795,000	38,131,200	45,302,000
<u>Average Annual Charges</u>				
Interest and amortization	1,718,600	1,544,200	1,344,500	1,597,400
Operation and maintenance	120,00	111,000	80,000	111,000
Major replacements	21,000	20,600	7,000	20,600
Total	1,860,500	1,675,800	1,432,500	1,729,000
<u>Average Annual Benefits</u>				
Flood control	3,945,000	--	3,945,000	--
Irrigation	258,100	--	258,100	258,100
Power	793,500	793,500	7,000 ^{2/}	793,500
Navigation	33,500	--	33,500	33,500
Recreation	167,000	--	167,000	167,000
Total	5,197,100	793,500	4,410,600	1,252,100
<u>Benefit-to-Cost Ratio</u>	2.79 to 1			

^{1/}Alternative single-purpose flood control project would be the same as the multiple purpose project without power.

^{2/}Downstream power.

^{3/}Exclusive of non-allocable highway improvement costs: construction \$500,000; investment \$530,000; interest and amortization \$18,700

Note: Recreation was not a purpose to which joint costs were allocated. There were no costs for specific facilities. If recreation facilities had been included, these would have been charged as a specific recreation cost.

- **Alternative Single Purpose Projects.** The most likely single purpose alternatives should in general be something other than a single purpose project constructed at the same general site as the multipurpose project. For example, the most economical single purpose alternative for power is likely to be a steam, nuclear, combustion turbine, or combined cycle plant. A likely alternative for water supply that would be developed in absence of the multipurpose project is a tributary site development or wells. An alternative project for recreation might be one or a number of smaller lakes at other nearby sites. The alternative costs used in the allocation process as a limitation on benefits should be determined on the basis of financing costs comparable to the Federal plan. The alternative used to limit benefits should be available at the same time as the multipurpose project, or where benefits are based on future need, at the time the alternative project would be required to satisfy the need. Discounting based on future use may be a factor if the entire project purpose is based on a future requirement, or if the requirement is for an increasing project output and construction of the alternative single purpose project would be staged by the non-Federal sponsor. An example of the matter would be adding wells to an alternative water supply project as the demand for water increased. In some cases, the development of detailed data on alternative single purpose plans may not be required; for example, where it can be conclusively established that costs would be greatly in excess of benefits and hence would not be a limitation on the amount allocated to the purpose.
- Alternative projects with a purpose omitted should briefly describe significant differences from the multipurpose project as constructed to permit understanding of the separable costs determination. Reference should be made to appropriate tables. A derivative table (Table E-43) showing separable costs of each function, for construction, investment, OM&R and total annual costs, should be presented.

(9) **Discussion of Cost Allocation Method.** The cost allocation method will be briefly described, referring to steps of the allocation and the conversion of cost allocation results to cost accounting application in terms of specific facilities costs and allocated joint-use costs. Reference should be made to the cost allocation table (Table E-44).

(a) If costs included in the allocation cover both initial and future costs, results in Table E-44 will include subheadings (1) and (2) under table line item 5g to show breakdown between initial construction cost and additional future costs (present worth value if appropriate) respectively. It may be desirable to present a summary tabulation (Table E-46), particularly if the cost allocation has included both initial and future costs. In such cases, Table E-45 would be limited to initial costs, providing a better understanding of results for cost accounting use.

Table E- 42 Cost Allocation Report: Lake Annual Benefits, Multipurpose Project

1.	<u>FLOOD CONTROL</u>	\$3,945,000
2.	<u>NAVIGATION</u>	33,500
3.	<u>POWER</u>	
	a. At site	
	Capacity: 16,400 x 19.29 x .955	\$302,100
	Energy: 162,279,000 x .00386 x .965	604,500
	Less cost of transmission: 34,500 x 3.48 -	<u>120,000</u>
	Net benefit at load center	786,500
	b. Downstream	
	Capacity	
	Energy: 2,800,000 kwh at 2.5 mills	7,000
4.	<u>IRRIGATION</u>	258,100
5.	<u>RECREATION</u>	<u>167,000</u>
	<u>TOTAL</u>	\$5,197,100

(b) Proper understanding of the cost allocation requires inclusion of data as presented in tables E-36 through E-45. The data should generally be presented in the format shown to provide understanding of the relations between the multipurpose project and alternative projects as to pertinent data, costs, and benefits. Additional tables as required should be included on computation of interest during construction (IDC) for all purposes with specific facilities.

(c) The procedures for computation as illustrated in the tables required that an approximate determination be made of percentages for allocating joint-use construction costs in order to derive project investment. Interest during construction is partially dependent on the allocation, yet the estimated investment is required before the cost allocation can be made. The approximation can be made using construction expenditures instead of investment, or by approximating percentage for placing plant in service in computing interest during construction on joint-use costs. Where the approximate percentages do not differ more than one-half of one percent from the final percentages determined for allocating construction cost, no further adjustment is necessary. Where the deviation is greater than one-half of one percent, a subsequent refinement shall be made in the computations. It is not necessary to include the trial allocation in the report. However, the table showing interest during construction on joint-use facilities should state the trial percentages used in placing purposes in service, and other data as required for understanding the computation of interest during construction (reference footnotes on Table E-39).

(10) Summary of Cost Allocation Findings.

(a) The final paragraphs of the text should present the percentages for cost accounting use, including those for joint-use construction costs and for O&M costs rounded to the nearest one-tenth of one percent. It should be specified that percentages for operation and maintenance are also applicable to replacement costs.

Table E- 43 Cost Allocation Report: Lake Determination of Separable and Joint Costs

Item	Construction Expenditures	Investment	Annual Charges				
			Operation and Maintenance	Interim Replacements		Interest and Amortization	Total
MULTIPLE-PURPOSE PROJECT					<u>DOLLARS</u>		
As Constructed	45,717,900	48,741,662	120,900	21,000		1,718,631	1,860,531
Without Flood Control	42,491,500	45,301,869	111,000	20,600		1,597,343	1,728,943
Without Irrigation	45,717,900	48,741,661	120,900	21,000		1,718,630	1,860,530
Without Navigation	45,717,900	48,741,661	120,900	21,000		1,718,630	1,860,530
Without Power	35,765,700	38,131,227	80,000	7,000		1,344,507	1,431,507
SEPARABLE COST							
Flood Control	3,226,400	3,439,793	9,900	400		121,288	131,588
Power	9,952,200	10,610,435	40,900	14,000		374,124	429,024
Total Separable Costs	13,178,600	14,050,230	50,800	14,400		495,414	560,614
RESIDUAL COSTS	32,539,300	34,691,432	70,100	6,600		1,223,217	1,299,917

Apparent minor discrepancies are caused by electronic data processing equipment being programmed to drop all the digits to the right of the units column in computed values instead of rounding and adjusting the number in the units column.

Table E- 44 Cost Allocation Report: Lake Allocation by Separable-Cost-Remaining-Benefit Method¹

Item	Function				
	DOLLARS, unless otherwise noted				
	Flood Control	Irrigation	Navigation	Power	Total
1. Allocation of annual costs:					
a. Average annual benefits	3,945,000	256,100	33,500	793,500	5,030,100
b. Alternate costs	1,430,300			1,675,000	
c. Limited benefits	1,430,300	258,100	33,500	793,500	2,515,400
d. Separable costs	131,588				560,614
e. Remaining benefits					
(1) Amount	1,298,712	258,099	33,499	364,476	1,954,786
(2) Percent of total	66.44	13.20	1.71	18.65	100.00
f. Allocated joint costs	863,633	171,633	22,276	242,373	1,299,917
g. Total allocation	995,221	171,634	22,277	671,397	1,860,531
2. Allocation of operation and maintenance costs:					
a. Separable costs	9,900			40,900	50,800
b. Allocated joint costs	46,572	9,255	1,201	13,070	70,100
c. Total allocation	56,472	9,255	1,201	53,970	
3. Allocation of major replacements:					
a. Separable costs	400			14,000	
b. Allocated joint costs	4,384	871	113	1,230	
c. Total allocation	4,784	871	113	15,230	

Apparent minor discrepancies are caused by electronic data processing equipment being programmed to drop all the digits to the right of the units column in computed values instead of rounding and adjusting the number in the units column.

Table E-44 (cont.). Cost Allocation Report: Lake Allocation by SC-RB Method

Item	Function				
	DOLLARS, unless otherwise noted				
	Flood Control	Irrigation	Navigation	Power	
4. <u>Allocation of investment:</u>					
a. Annual investment cost	933,965	161,508	20,963	602,197	
b. Allocated investment	26,487,946	4,580,487	594,526	17,078,757	
5. <u>Allocation of construction expenditures:</u>					
a. Special investment				6,873,735	
b. Investment in conventional joint-use facilities	26,487,946	4,580,487	594,526	10,205,022	
c. Interest during construction on conventional joint-use facilities	1,708,911	295,517	38,356	656,845	
d. Construction expenditure in conventional joint-use facilities	24,779,035	4,284,970	556,170	9,548,177	
e. Percent of construction expenditures in conventional joint-use facilities	63.26	10.94	1.42	24.38	
f. Construction expenditures in specific facilities				6,549,600	
g. Total construction expenditures	24,779,035	4,284,970	556,170	16,097,777	

¹Exclusive of non-allocable highway improvement costs, as noted in Table 7.

Table E- 45 Cost Allocation Report: Lake

Item	Flood Control	Irrigation	Power	Navigation	Total
	Thousands of Dollars				
<u>Construction expenditures:</u> ^{1/}					
Total allocation	\$24,779.0	\$4,285.0	\$16,097.8	\$556.1	\$45,717.9
Specific expenditures	0	0	6,549.6	0	6,549.6
Allocated joint-use expenditures	24,779.0	4,285.0	9,548.2	446.1	39,168.3
Percent of joint-use expenditures	63.3	10.9	24.4	1.4	100.0
<u>Operation and ordinary maintenance:</u>					
Total allocation	56.4	9.3	54.0	1.2	120.9
Specific costs	3.9	0	37.0	0	40.9
Allocated joint-use costs	52.5	9.3	17.0	1.2	80.0
Percent of cost of conventional joint-use facilities	65.6	11.6	21.3	1.5	100.0

^{1/} Exclusive of \$500,000 highway improvement costs.

Table E- 46 Cost Allocation Report: Lake Summary of Cost Allocation Findings

	<u>CONSTRUCTION</u> ^{1/}	<u>O&M</u> ^{2/}
Flood Damage Prevention	63.3	65.6
Power	24.4	21.3
Irrigation	10.9	11.6
Navigation	1.4	1.5

^{1/} Non-allocable highway relocation costs are not included, but costs in the amount of dollars are set aside as a highway improvement cost.

^{2/} Applicable also to replacements costs.

(b) Appropriate reference should be made to separable recreation costs relative to specific costs. If they differ, information must be presented to permit accounting identification of separable costs consistent with the cost allocation findings. Identification will be by designation of sub-features or proportionate part, as may be appropriate. The summary findings should also make reference to any non-allocable costs. If final amounts are known at the time of the allocation study, these should be cited. Otherwise, information should be provided as to how final determination will be made, with reference to a percentage of appropriate feature or sub-feature costs.

(c) The summary, with reference to the project cost allocation, should be presented as in Tables E-44 and E-45. For application to financial records, the percentages for allocations of joint-use costs are summarized as in Add cost allocation file here.

SECTION X - Major Rehabilitation Studies

E-64. Background. Major Rehabilitation projects began to be budgeted under Construction, General and Flood Control, Mississippi River and Tributaries (construction element) appropriation accounts beginning in FY 1993. Major Rehabilitation new starts have to compete with other types of new construction starts for scarce resources. To successfully compete as new starts, Rehabilitation Evaluation Reports and supplemental information sheets will have to provide a level of detail and evidence of criticality commensurate with other civil works new starts. The following steps outline generic procedures which can be used to evaluate major rehabilitation projects. Although these guidelines have primarily been used in evaluating hydropower and inland navigation projects, they are applicable to other project purposes.

a. Federal Interest. For the majority of cases, the Federal interest in an existing project will be obvious. However, reasonable argument which shows a Federal interest, and in some cases, a non-Federal interest (i.e. proposed cost sharing), will be provided in the report. Emphasis shall be placed on project outputs and whether they serve priority purposes as defined in the Annual Program and Budget request for Civil Works Activities, Corps of Engineers.

b. Base Condition. The base condition is the alternative which all other plans will be measured against. In comparison to other Corps planning studies, the base condition is synonymous with the without project condition. The base condition assumes that the project will be operated in the most efficient manner possible without the proposed rehabilitation. This treatment of the base condition is uniquely defined and applicable only to analysis of major Rehabilitation projects. Should the project benefit stream be interrupted due to unsatisfactory feature performance, it is assumed that emergency funds will be available to fix the feature. For the economic analysis, allowance must be made for the effect of the repair on the reliability of the feature. Considerable risk and uncertainty is inherent in the base condition. The timing, frequency, and consequences of system disruption are all unknown and must be estimated. The analysis should explicitly show the effects of reasonable alternative assumptions concerning these variables. Portray the base condition in the following manner.

(1) Step 1. Based upon the reliability index calculated for the current physical condition select the probability of unsatisfactory performance for each feature, or component, from the Target Reliability Indices Table in the annual Major Rehabilitation Guidance. If the probability of unsatisfactory performance is due to a combination of events, provide the method used to determine these probabilities. Both the probability of unsatisfactory performance of a feature and the probability of occurrence of an event which results in load conditions causing the unsatisfactory performance shall be explicitly discussed and displayed. Reporting requirements to support the reliability analysis are also addressed in the Major Rehabilitation Guidance.

(2) Step 2. Based on the existing physical condition of, and the current and forecasted demands on the features, estimate the frequency of service disruption and the physical consequences resulting over the planning period. Frequencies and consequences should be expressed in terms which are unambiguous and which facilitate analysis. For example, estimate the percent chance of disruption per year (annual probability) or probability of disruption per event (per event probability).

(3) Step 3. Develop an event tree. A useful way of presenting information of alternative future pathways is an event tree diagram. The event tree is used to display the possible outcomes from some initiating event.

(4) Step 4. Estimate All Costs Necessary to Correct the Service Disruption. The repair should be the least cost fix necessary (as considered reasonable for the circumstances) to continue service.

(5) Step 5. Estimate the Economic Cost for Each Disruption. (The economic cost for different project purposes should be calculated using the guidelines contained in other sections of this appendix)

(6) Step 6. Combine the frequency of service disruption with the consequences of disruption. Monte Carlo simulation is one technique for combining risks and determining expected values. This technique is especially useful when the arithmetic of the expected value calculation is highly complex or intractable. Under some, perhaps many situations, the standard statistical procedure of summing the products of the probabilities and corresponding consequences is sufficient. That is, calculating the value analytically may be more expedient and transparent than estimating by simulation. An advantage of the Monte Carlo approach is that it yields both the expected value and the variance. The fundamental point of the analysis however, is to explicitly consider the likelihood and consequences of the base condition.

c. With Rehabilitation Condition.

(1) General. As previously stated, the base condition should not describe an immediate or certain failure. Nor is the only project alternative immediate and full scheduled rehabilitation. There are a variety of intermediate strategies that should be evaluated. In addition, the rehabilitation decision must give consideration to the choice of timing and extent of rehabilitation. Therefore, the approach is to develop alternatives to solve the problems. This does not predetermine that one major rehabilitation scenario is the only alternative.

(2) Alternatives Considered. Discuss the alternatives considered. The narrative should address the level of detail developed for each alternative, the data available, assumptions made

and the level of reliability, risk and uncertainty associated with the alternative. Present the results of the analysis for each alternative. The following represent some potential alternative plans that should be evaluated and compared.

- Advance maintenance strategy. Advance maintenance consists of expenditures in excess of routine O&M that reduces the likelihood of some emergency repairs and temporary service losses, or the rate of service degradation. Under this scenario, one must evaluate the effect that probabilities and consequences of the strategy have on expected service disruptions and reliability.
 - Scheduled repair strategy. Assess the components of the feature in terms of the service disruption probabilities and consequences to the reliability of the structure. Based on this assessment, stockpile replacement parts and make other preparations on this assessment to reduce the time of expected project service disruption.
 - Scheduled rehabilitation strategy. The scheduled rehabilitation strategy requires that the optimum rehabilitation timing be identified based on service disruption rates, service degradation and their economic cost.
 - Immediate rehabilitation strategy.
- d. Summary Statistics. Provide a table to illustrate the cost, benefits, net benefits and benefit to cost ratios of the base condition and each alternative considered.
- e. For additional information on the Major Rehabilitation Program and applicable procedures refer to [ER 1130-2-500](#) and [EP 1130-2-500](#).

Exhibit E- 1 Summary of Federal/non-Federal Cost Sharing by Civil Works Mission

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Navigation Harbors Sections 101&214, WRDA '86 Section 13, WRDA '88 Section 201, WRDA 96	For primary access channels, anchorages, turning basins, locks and dams, harbor areas, jetties, and breakwaters.	Down to 20 ft below mlw— 10% non-Federal Over 20 ft and down to 45 ft below mlw—25% non-Federal Exceeding 45 ft below mlw –50ft non-Federal	100% Federal 100% Federal 50% of incremental costs for O&M associated with project depths in excess of 45 ft.
	Projects (GNF) with no channel deepening	GNF is cost shared at the same depth zones as the existing project depth or, if no existing project, the natural controlling depth	
	Channel deepening limited to one depth zone (40 to 45 feet)	Entire cost of GNF is shared at the depth zones of the improved depth	
	Channel deepening not limited to one depth zone (40 to 50 feet)	The existing and improved main channel depths will be used to determine cost sharing. The GNF costs of non-depth related features will be assigned to the depth zones in the same proportion that dredging costs are assigned to each zone	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Navigation, Harbors (Cont)	<p>Where more than one disposal site is used for a specific reach in one dredging operation and each disposal site has a different unit cost.</p> <p>Where more than one disposal site will be used for a specific reach of channel when dredging will be done in phases.</p>	<p>The cost of disposal for deepening that reach will be assigned to the depth zones proportionally.</p> <p>Each depth zone will be assigned its actual cost of disposal.</p>	
	<p>Channel deepening is in segments and segments are in 2 different cost-sharing zones.</p>	<p>Entire cost of GNF associated with deepening segment is determined by improved depth for that segment.</p> <p>GNF costs for non-depth related features will be assigned to the depth zones in the same proportion that dredging costs are assigned.</p> <p>Where non-depth features are associated with only one channel segment, cost is shared in accordance with that segment.</p>	

Exhibit E-1 (Continued)

<p>Additional Considerations for Navigation, Harbors Non-Federal sponsor shall: Provide all LERR for construction and maintenance. Hold and save US free from damages due to construction, operation and maintenance. For all depths, provide additional cash contribution of 10% of GNF, which includes dredged material disposal construction costs. These costs may be financed over a period not exceeding 30 yrs. Sponsor costs for LERR, except utilities, are credited against 10% cash contribution. The owner of a utility requiring relocation as part of an improvement deeper than 45 ft below mlw must fund 50% of the costs thereof. Removal of a utility is at the owner's expense. The owner of a bridge requiring modification must share the costs according to the principles of the Truman-Hobbs Act (P.L. 77-647); the balance is cost shared as part of the GNF.</p>			
Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Dredged Material Disposal Facility</p> <p>Section 217, WRDA '96</p>	<p>The SA may at the request of the non-Federal interest, add capacity at a dredged material disposal site being constructed by the SA.</p>	<p>100% costs for additional capacity paid by non-Federal sponsor.</p>	
	<p>Disposal plan which consists of construction of a rehandling facility for dewatering and stabilization of dredged material, evacuation from the rehandling facility and transportation to a commercial landfill and payment of the tipping fee.</p>	<p>The costs for the disposal plan are shared as GNF for both disposal of material from O&M of an existing Federal project or disposal of material from construction of a Federal harbor improvement.</p>	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/Non-Federal)	
		Construction	OMRR&R
<p>Navigation, Inland Waterways</p> <p>Section 102, WRDA '86 and Section 206, Inland Waterways Revenue Act '78, as amended by Section 1405, WRDA '86</p>	<p>Lock and dam replacements are studied and recommended for specific Congressional authorization; other extensive work is normally accomplished under the major rehabilitation program Dredging and Disposal facilities.</p>	<p>If the waterways users are subject to fuel taxes paid into the IWTF – 100% non-Federal</p> <p>Inland channels not specifically designated by Congress as part of the taxable system will be cost shared according to the terms of harbors.</p>	<p>100% Federal</p> <p>O&M will be cost shared according to the same terms as harbors.</p>
<p>Navigation, Recreational</p> <p>Section 103(c)(4), WRDA '86</p>		<p>All ancillary shoreside facilities including interior access channels and berthing areas – 100% non-Federal</p> <p>All related LERRD for construction and maintenance, except to the extent that the value may exceed 50% of the total (separable and joint) recreational navigation costs – 100% non-Federal</p> <p>Cash contribution plus LERRD = 50% non-Federal</p>	<p>100% non-Federal</p>

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Structural Flood Control Sections 1 & 3, FCA '36 Section 2, FCA '41 Section 103(a), WRDA '86 Section 202(a), WRDA '96	Federal Government should participate in improvements for flood control purposes if the benefits to whomsoever they may accrue exceed the estimated costs	All LERRD uncontaminated with hazardous and toxic wastes, and minimum cash contribution amounting to 5% of the flood control features of TPC --non-Federal. For projects authorized on or before 10/12/96: If the value of LERRD plus cash is less than 25 % of TPC, non-Federal provides additional cash to make 25% of TPC. For projects authorized after 10/12/96: If value of LERRD plus 5% is less than 35% of TPC, then non-Federal provides cash to make 35 % of TPC. Maximum non-Federal contribution will not exceed 50% of TPC (5% cash, 45% LERRD).	100% non-Federal
Additional Considerations for Structural Flood Control: Non-Federal cost sharing may be reduced under the ability to pay rule. Funding LERRD in excess of 45% will be covered in PCA. Generally, this excess LERRD is reimbursed. There is a \$200,000 credit for flood control for territories other than Puerto Rico. Non-Federal will hold and save U.S. free from damages due to construction, operation and maintenance. Community has to participate in FEMA's NFIP and comply with requirements of the program. Community must prepare a floodplain management plan which must be adopted within one year of signing PCA. Non-Federal will prevent future encroachment or modification that might interfere with proper functioning of the project.			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Nonstructural Flood Control Section 73, WRDA '74 Section 103(b), WRDA '86 Section 202(a), WRDA '96	In Corps planning, consideration will be given to nonstructural alternatives to prevent or reduce flood damages.	<p>For projects authorized on or before 10/12/96: non-Federal sponsor must provide all LERRD, except to the extent that the value thereof may exceed 25% of TPC for nonstructural measures.</p> <p>For projects authorized after 10/12/96, non-Federal sponsor must provide all LERRD, except to the extent that the value thereof may exceed 35% of TPC for the nonstructural measures.</p> <p>If the value of the non-Federal contribution is less than 25% or 35% of TPC, a cash contribution must be made, that when combined with LERRD value equals 25% or 35% of TPC</p>	100% non-Federal
<p>Additional Considerations for Nonstructural Flood Control: If LERRD is greater than the 25% or 35% prescribed, the excess will be reimbursed. Recreation can provide up to 50% of the benefits of a project. Non-Federal sponsor will hold and save U.S. free form damages due to construction, operation and maintenance. Community has to participate in FEMA's NFIP and comply with requirements of the program. Community must prepare a floodplain management plan which must be adopted within one year of signing PCA. Non-Federal will prevent future encroachment or modification that might interfere with proper functioning of the project.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Emergency Section 5a, FCA '41, as amended Emergency Flood Control Funds Act of '55 P.L. 87-874, RHA '62 P.L. 93-523, Safe Drinking Water Act '74 P.L. 95-51 Section 917, WRDA '86 Section 302, WRDA '90 Section 204(e), WRDA '96</p>	<p>Planning preparedness for all natural disasters. Flood fighting and rescue operations. Emergency repair and restoration of flood damaged or destroyed flood control works. Nonstructural alternatives to the repair or restoration of flood damaged flood control works. Emergency protection of the Federal hurricane or shore protection project structures damaged or destroyed by extraordinary storm occurrences. Emergency supply of clean drinking water where source is contaminated. Emergency supply of water for human consumption in drought distressed areas.</p>	<p>LERRD – 100% non-Federal Construction costs, including S&A, excluding E&D for repair or restoration of non-Federal flood control works – 20% non-Federal</p>	<p>100% non-Federal in connection with any flood control measures undertaken pursuant to Section 5(a) of the FCA '41, as amended.</p>
<p>Additional Considerations for Emergency: Advance measures are undertaken only to supplement state and local efforts (when their capabilities are exceeded). The sponsor may be asked, in connection with these or any other of the efforts authorized under Section 5(a) of the FCA '41, as amended, to provide such other measures of cooperation that, in the discretion of the Chief, would be appropriate to the specific case.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Floodplain Management Services Program Section 206, FCA '60	General authority to provide floodplain information and planning assistance to state, county and city govts., and other Federal agencies. Flood and floodplain information is also provided to private citizens, corporations and groups. Flood proofing and general floodplain management guidelines are developed and published. Hurricane evacuation studies and flood warning preparedness studies are conducted jointly with other Fed. Agencies for state and local governments.	Non-Federal public entities may not pay the Corps for these services; private citizens and other Federal agencies may.	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Hurricane and Storm damage Reduction, Shore Protection, General Authority (including beach erosion control)</p> <p>1946 Shore Protection Cost Sharing Act, as amended</p> <p>Sections 103(c)(5) and (d), WRDA '86</p> <p>Section 55, WRDA '74</p> <p>Section 14, WRDA '88</p> <p>WRDA 99</p>	<p>Federal policy to assist in construction but not maintenance of works for the improvement and protection of shores of the U.S. against erosion by waves and currents. Provide technical and engineering assistance to non-Federal public interests in developing structural methods of preventing damages attributable to shore and streambank erosion.</p> <p>Corps projects must be formulated primarily for hurricane and storm damage reduction.</p>	<p>LERRD – 100% non-Federal</p> <p>Costs assigned to protection of federally owned lands and shores – 100% Federal</p> <p>Costs assigned to privately owned lands (undeveloped) and shores (where use of the shores is limited to private interests) – 100% non-federal.</p> <p>Costs assigned to privately owned, developed lands where criteria for public access and public use of the shores are met – 35% non-Federal.</p> <p>Costs assigned to non-federal public shores used for parks and recreation --50% non-Federal.</p>	<p>100% non-Federal for non-Federal shores</p>
<p>Additional considerations for hurricane and storm damage reduction: The non-Federal LERRD will be credited against the sponsor's total (percent) responsibility or sharing construction costs; any excess of LERRD will be reimbursed to the sponsor. Sponsors must comply with Federal flood insurance and floodplain management programs requirements.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Hurricane and Storm Damage Reduction, Shore Protection, Periodic Nourishment</p> <p>1956 Beach Nourishment Act</p> <p>WRDA '99</p>	<p>Federal assistance in periodic beach nourishment is provided on the same basis as new construction when it would be the most suitable and economical remedial measure.</p>	<p>Costs are shared in the same proportion as the initial project construction costs.</p>	<p>100% non-Federal for non-Federal shores.</p>
<p>Hydroelectric Power, General</p> <p>Section 103(c)(1), WRDA '86</p>	<p>Corps policy is to maximize sustained public benefits from each of its projects for all desirable purposes, including power. Power developed at Corps projects surplus to project's needs is turned over to DoE for marketing.</p>	<p>All capital investment and OMRR&R allocated to power are reimbursable. DoE's PMAs establish power rates that will recover costs over time (usually 50 years).</p> <p>Cost sharing will be in accordance with existing law, currently 100% non-Federal.</p>	
<p>Additional Considerations for Hydropower, General: The Corps can survey the potential and methods of rehabilitating former industrial sites for use as hydroelectric facilities and provide technical assistance in dredging projects to rehabilitate the sites that have been surveyed. In return, the non-Federal entity will receive power produced, or an equivalent value of power for 30 years. Non-Federal power development may be conducted at Corps projects through FERC licensing procedures, and it is Corps policy to encourage non-Federal interests to develop such hydropower potential where it is feasible and not authorized for Federal development. No general authority exists for Corps development of hydropower at non-Corps sites, although this has been done through specific Congressional authority.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Hydroelectric Power Facilities for Future Power Installations (Minimum Provisions)</p> <p>Section 4, FCA '83 and subsequent authorizing acts</p>	<p>Penstocks and other similar facilities may be included in the initial construction of projects where power is not authorized. Requires approval of the SA, on recommendation of the Corps and FERC. Probability of future economic and financial viability and willingness to pay of the non-Federal interest to finance or contract for the facilities must be determined. Purpose of this authority is to preclude loss of hydropower viability and to provide significant future construction savings.</p>	<p>Costs allocated to hydropower are reimbursable.</p> <p>The DoE PMAs establish rates that recover costs over time (usually 50 years) when power is ultimately developed.</p>	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Water Supply Storage</p> <p>Water Supply Act '58</p> <p>P.L. 88-140, Permanent Rights to Storage</p> <p>Section 932, WRDA '86</p> <p>Section 103(c)(2) and (3), WRDA '86</p>	<p>Grants permanent rights to use the storage space to the sponsor upon completion of the payments of the cost of storage.</p>	<p>Sponsor must contract to provide 100% reimbursement of the costs allocated to water supply within the life of the project but not more than 30 years from the initial use of the projects for water supply.</p> <p>For new projects reimbursement is based on the actual development costs allocated to water supply storage and shall be made during the period of construction. For reallocations, reimbursement is based on the highest of benefits or revenues foregone, the replacement cost or the updated cost of storage.</p>	<p>100% reimbursement of the O&M on an annual basis and repairs, reconstruction and major rehabilitation and replacements, as they are required for storage allocated to water supply.</p>
<p>Additional Considerations for Water Supply Storage: 10% of benefits for new projects must be flood control or navigation.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Water Supply, Surplus Water Section 6, FCA '44	ASA(CW) can enter into contracts with states, private concerns and individuals at prices and terms ASA(CW) finds reasonable, to provide surplus water or temporary use of available storage from Corps reservoirs for domestic and industrial uses, rather than reallocating and granting a permanent right to storage.	For the period of use, user pays an annual amount based on the updated cost of storage plus OMRR&R.	
<p>Additional Considerations for Water Supply, Surplus Water: The storage must have been provided in the reservoir for some other purpose not yet being realized, or the water would have been more beneficially used as M&I water than for authorized purposes. The use must not significantly affect the authorized purposes. Such contracts are normally limited to 5 years, with provisions for an additional 5-year extension.</p>			
Water Supply, Minor Emergency Withdrawals Section 6, FCA '44	When a governor of a state has declared an emergency due to drought, withdrawals of up to 50-acre feet of storage may be permitted for domestic and industrial uses for a period of up to 1 year.	The cost assigned to the water is based on the current value of the storage, with a minimum of \$50 per year. The project manager signs the permit.	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Recreation, Lake Projects Section 4, FCA, as amended Federal Water Project Recreation Act '65, as amended Section 103(c)(4), WRDA '86 Section 2804, Reclamation Projects Authorization and Adjustments Act '92	Projects must be under the control of the Army. Requires non-Federal cost sharing. If there is no willing cost sharing partner, Corps may only provide minimum facilities. The Corps may also provide type "C" visitor centers, handicap access and operational boat ramps.	50% first costs of all recreational features, except when those costs are paid from SRUF funds – non-Federal. Upgrading sanitary facilities on Corps operated areas – 100% Federal LERRD – 100 % non-Federal	100% non-Federal
<p>Additional Considerations for Recreation, Lake Projects: ASA(CW) requires the sponsor share to be provided during construction. Minimum facilities are joint costs and are shared among the project purposes in accordance with Section 103(c)(4), WRDA '86. Non-Federal sponsor will hold and save the U.S. free from damages due to construction, operation and maintenance.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Recreation, Non-lake Projects</p> <p>Section 4, FCA '44</p> <p>Federal Water Project Recreation Act '65</p> <p>Section 103(c)(4), WRDA '86</p> <p>Section 313, WRDA '90</p>	<p>Requires non-Federal cost sharing.</p> <p>Recreation benefits do not influence project formulation. Non-lake structural projects must attain a benefit to cost ratio greater than unity without recreation.</p> <p>Facilities must be on lands required for basic project. Separable lands may be acquired at flood control projects for access, parking and facilities required for health and safety.</p> <p>Recreational development costs at structural flood control projects may not increase the Federal project cost by more than 10% without prior approval by ASA(CW).</p> <p>Facilities are not provided at shore protection projects.</p> <p>Corps can expend up to \$2 million annually to mitigate for adverse impacts on recreation from the maintenance, repair, rehabilitation or reconstruction of a project.</p>	<p>Separable costs – 50% non-Federal</p> <p>For harbor and channel projects, 50 % of the joint and separable costs allocated to recreational navigation – non-Federal.</p> <p>LERRD – 100% non-Federal</p>	<p>OMRR&R for all types of projects – 100% non-Federal</p>
<p>Additional Considerations for Recreation, Non-lake Projects: ASA(CW) requires the sponsor share to be paid during construction. Facilities that are eligible for cost sharing must be on the facilities checklist in Appendix E. Other qualifications and guidance is also provided in this document.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Ecosystem Restoration and Protection Section 210, WRDA '96	Address ecosystem restoration needs and opportunities, as a single objective or one of multiple objectives, as per provisions of the specific authorization.	35% implementation costs (LERRD, post feasibility phase design, including plans and specifications, materials and project construction – non-Federal The value of LERRD is credited towards the 35% share of total first costs, and the Corps will reimburse the sponsor for the amount that LERRD exceeds 35% of first costs. The sponsor must pay the difference between the LERRD and the 35% in cash.	100% non-Federal
Additional Considerations for Ecosystem Restoration and Protection: The sponsor can not receive credit for work-in-kind for post-feasibility phase design, plans and specifications, materials or project construction. 50% non-Federal feasibility costs can be work-in-kind (i.e., 25% of total feasibility cost). Non-Federal will hold and save the U.S. free from damages due to construction, operation and maintenance.			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
Mitigation, Fish and Wildlife F&W Coordination Act '58 Section 906, WRDA '86	Requires projects to include justifiable means and measures of mitigation. Requires Congressional authorization of land acquisition except for authority provided by Section 906(b), WRDA '86. Requires the Corps to determine justification and desirability of project modification.	Costs are assigned to appropriate project purposes and are shared accordingly.	O&M responsibilities are project specific, but the following is generally true: For projects owned and operated by the Corps, OMRR&R will be paid by the Federal Gov. For projects that will be turned over to the sponsor to be operated, OMRR&R will be paid by the sponsor.
<p>Additional Considerations for Mitigation, Fish and Wildlife:</p> <p>Water rights: If required by state water laws, rights for the use or release of stored water, to maintain reservoir pools or regulate stream flows for fish and wildlife mitigation shall be provided by the non-Federal sponsor. Reasonable costs of rights for water to accomplish initial filling of the reservoir, including water for mitigation requirements, are eligible for credit in cost-sharing determinations. The computation is dependent on the manner of repayment. Non-Federal sponsors are also required to furnish assurance that appropriate action will be taken to prevent downstream withdrawals of water that would negate fishery benefits credited to such releases.</p>			

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Mitigation, Cultural and Historic Resources</p> <p>Section 7(a) of P.L. 93-291</p>	<p>Funds expended during feasibility for sample surveys, intensive surveys, or other needed historic preservation investigations are cost shared.</p> <p>These costs may be treated as planning costs and thus, are not accountable under the statutory 1% limit on expenditures.</p>	<p>Mitigation, including data recovery and all other mitigation treatments or measures – 100% Federal up to 1% of construction costs.</p> <p>Costs in excess of 1%, with a waiver, may be cost shared according to project purposes.</p>	<p>O&M responsibilities are project specific, but the following is generally true:</p> <p>For projects owned and operated by the Corps, OMRR&R will be paid by the Federal Gov.</p> <p>For projects that will be turned over to the sponsor to be operated, OMRR&R will be paid by the sponsor.</p>

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Aesthetic Resources</p> <p>Section 232, WRDA '96</p>	<p>Corps shall consider measures to preserve and enhance scenic and aesthetic qualities in the vicinity of water resources projects.</p>	<p>Costs will be cost shared in the same proportion as the associated project.</p> <p>Any incremental aesthetic costs associated with a recreation project will be allocated to that purpose and cost shared with the non-Federal sponsor on a 50% basis.</p> <p>In multi-purpose projects, costs will be shared in accordance with the purpose to which the costs are allocated.</p>	<p>100% non-Federal</p>
<p>Review of Completed Projects</p> <p>Section 216, FCA '70</p>	<p>Review of completed projects, when found advisable due to changed physical, economic or environmental conditions. A report is made to Congress on advisability for modifying structures or operations.</p>	<p>Project construction cost sharing determined by project purpose</p>	

Exhibit E-1 (Continued)

Authority	Provisions	Cost Sharing (Federal/ Non-Federal)	
		Construction	OMRR&R
<p>Planning Assistance to States</p> <p>Section 22, WRDA '74, as amended</p> <p>Section 605, P.L. 96-597</p> <p>Section 221, WRDA '96</p>	<p>Provide technical assistance to support state, territories and tribal preparation of comprehensive water and related land resources development plans, including watershed and ecosystem planning. Assist in conducting individual studies supporting these plans. Assistance is provided at the request of non-Federal entity and upon availability of Corps expertise.</p>	<p>No construction will be accomplished under this program.</p>	
<p>Additional Considerations for Planning Assistance to States: Technical services, rather than grants, are provided without charge or cost sharing. Nationwide annual funds may not exceed \$10 million, with not more than \$500,000 in any one year in any one non-Federal entity. The Corps can provide assistance to state and local governments in disaster preparedness, response and recovery efforts. Section 22 can not be used to supplement other ongoing or pending efforts, or to offset required state contributions to Federal grant programs.</p>			

Notes:

- | | |
|---|--------------------------------------|
| WRDA – Water Resources Development Act | S&A – Supervision and administration |
| Mlw- mean low water | E&D – Engineering and design |
| LERR –Lands, easements, rights-of-ways and relocations | P.L.- Public law |
| GNF – general navigation features | DoE – Department of Energy |
| ASA(CW) – Assistant Secretary of the Army for Civil Works | SA – Secretary of the Army |
| IWTF – Inland Waterways Trust Fund | FCA – Flood Control Act |
| LERRD – Lands, easements, rights-of-ways, relocations and disposal/borrow areas | TPC – Total Project Cost |
| NED – National Economic Development | RHA – Rivers and Harbors Act |
| PCA – project Cooperation Agreement | SRUF – Special recreation user fees |
| OMRR&R – Operation, maintenance, repair, replacement and rehabilitation | F&W – Fish and wildlife |
| PMA – Power Marketing Agency | |
| FERC – Federal Energy Regulatory Commission | |

Exhibit E-2 Recreation Facilities Checklist

<u>Activity/Facility</u>	<u>Joint Cost 2/</u>	<u>Cost Shared 3/</u>	<u>100% Other 4/</u>
<u>I. Access and Circulation</u>			
Roads <u>5/</u>		X	X
Turnarounds	X	X	X
Trails			
Hiking		X	X
Exercise			X
Bicycle/Jogging		X	X
Equestrian/without jumps		X	X
Snowshoe		X	X
Cross County Ski		X	X
Ski Slopes			X
Chairlifts/Tows			X
Snowmobile		X	X
Off-Road Vehicles		X	X
Water		X	X
Slalom			X
Artificial White Water			X
Parking <u>5/</u>		X	X
Bridges and Culverts		X	X
Boat Launching Devices			
Mechanical			X
Surfaced Ramps	X	X	X
Boat Piers (Fixed or Floating)		X	X
Walks		X	X
Steps (Outdoor)		X	X
Pedestrian Ramps		X	X
Fishing piers and attendant facilities		X	X
Footbridges <u>9/</u>		X	X

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Exhibit E-2 (Continued)

Activity/Facility	Joint <u>Cost 2/</u>	Cost <u>Shared 3/</u>	100% <u>Other 4/</u>
II. <u>Structures</u>			
Sanitation			
Vault Toilets	x6/	x	x
Comfort Station	x6/	x	x
Comfort Station w/showers	x	x	
Laundry Room			x
Bath-Changehouse		x	x
Fish Cleaning Station		x	x
Shelters			
Picnic		x	x
Overlook		x	x
Trail		x	x
Group Camp			
Cabins and Dormitories			x
Dining Hall			x
Infirmaries			x
Amphitheaters		x	x
Caretaker Quarters			x
Outdoor Cooking		x	x
Beaches		x	x
Docks		x	x
Camping pads		x	x
Swimming Beaches		x	x
Visitor Center	x2/		x
Nature Center			x
Historical Centers			x
Archeological Centers			x
Environmental-Education Centers			x
Lodges/Cabins			x
Hotels/Motels			x
Restaurants/Snack Bars			x
Stores/Commissaries			x
Bait/Tackle Shops			x

Exhibit E-2 (Continued)

Activity/Facility	Joint <u>Cost 2/</u>	Cost <u>Shared 3/</u>	100% <u>Other 4/</u>
Marina			X
Docks/Piers			X
Fuel Dispensing/Storage			X
Repair Facilities			X
Storage Facilities			X
Swimming Pools			X
Clubhouse			X
Stables			X
Corrals			X
Equestrian Jumps/Courses			X
Fountains/Statuary			X
Decorative Lakes/Ponds			X
Decorative Promenades			X
Maintenance and Operation			
Vehicle and Material			
Storage			X
Garages			X
Work Shops			X
Utility Buildings			X
Inflammable Storage			X
Administrative Facilities			X
Gate House, Control Structures			X
Boat Storage			X
Employee Quarters			X
Bulk Storage			X

III. Utilities

Water Supply			
Municipal System		X	X
Wells		X	X
Treatment Plant		X	X

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Exhibit E-2 (Continued)

Activity/Facility	<u>Joint Cost 2/</u>	<u>Cost Shared 3/</u>	<u>100% Other 4/</u>
Storage		X	X
Distribution		X	X
Fountain and Outlets		X	X
Irrigation System (manual)		X	X
Irrigation System (automatic)			X
Camp Site Hook-ups		X	X
Sewage and Waste Water			
Disposal			
Municipal System		X	X
Septic Tanks and Tile			
Fields		X	X
Treatment Plants		X	X
Oxidation Lagoon		X	X
Sanitary Dump Station			
(Boats and Camping			
Trailers)		X	X
Camp Waste Water and Garbage			
Disposal		X	X
Storm Drainage		X	X
Public Telephone		X ^{2/}	X
Electrical			
Lighting		X	X
Lift Pumps		X	X
Camp Site Hook-ups		X	X
Gas, Natural/Propane		X	X
Land Fill			X
Incinerator			X

IV. Site Preparation and Restoration

Clearing and Grubbing (Includes vista clearing)		X	X
Grading and Land Form		X	X
Tree Planting		X	X
Shrub Planting		X	X

Exhibit E-2 (Continued)

Activity/Facility	<u>Joint Cost 2/</u>	<u>Cost Shared 3/</u>	<u>100% Other 4/</u>
Other Planting (Perennial, etc.)		X	X X
Turf Establishment		X	X
Reforestation		X	X
V. <u>Park Furniture</u>			
Picnic Tables		X	X
Grills and Fireplaces		X	X
Campfire Circles		X	X
Trash Receptacles/holders		X	X
Benches		X	X
Camping Pads		X	X
Flag Poles			X
Lantern Hangers		X	X
VI. <u>Play Facilities</u>			
Courts			
Multiple Use		x7/	X
Tennis			X
Basketball			X
Handball			X
Shuffleboard			X
Volleyball			X
Horseshoe-Pits			X
Sports/Play Fields			
Baseball Diamond with			
Backstop		X	X
Bleachers			X
Dugouts			X

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Exhibit E-2 (Continued)

Activity/Facility	<u>Joint Cost 2/</u>	<u>Cost Shared 3/</u>	<u>100% Other 4/</u>
Fencing			X
Lighting			X
Playfield Area (open space)		X	X
Marking/Goals			X
Play Equipment			
Standard		X	X
Elaborate 8/			X
Golf Course/Putting Greens			X

VIII. Signs

Entrance-Directoral-Marked Traffic Control (Vehicular and Pedestrian) Instruction (Includes Fire Danger Notices)		X	X
		X	X
		X	X

VIII. Interpretive Guidance and Media

Display Boards		X	X
Display Cases			X
Interpretive Markers (Natural, Historical Archeological, etc.)		X	X
Electronic Audio-Visual Devices		X	
Exhibit Space			X
Bulletin Boards		X	X

IX. Protection, Control,
Health and Safety

Protection and Control

Exhibit E-2 (Continued)

Activity/Facility	Joint <u>Cost 2/</u>	Cost <u>Shared 3/</u>	100% <u>Other 4/</u>
Gates and Barricades	x	x	x
Cattle Guards		x	x
Walls and Fencing		x	x
Guardrails	x	x	x
Breakwaer-fishing walkways		x	x
Entrance Stations		x	x
Buoys/Waterways Markers		x	x
Fire Fighting and Protection			x
Communication			x
Vandalism and Theft Control Devices			x
Campground Registration Box		x	
Health and Safety Lighting		x	x
Life Guard Stand (Where life guard services are authorized)			x
First Aid Station			x
Handrails		x	x

1/ Includes new and completed lakes, local protection projects, navigation projects, etc. Facilities not listed must be justified and approved prior to commitments made to cost sharing partners. This check list will be modified as appropriate.

2/ The facilities to be provided are to be limited to those required for minimum health and safety; beyond these the Corps will also provide type "C" visitor center and operational boat ramps. Handicapped access will be a consideration.

3/ Facilities to be cost shared are limited to standard designs that do not include embellishments such as decorative stone work, planters, elaborate designs or pretentious space.

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4/ Includes facilities which may not be resource oriented, are revenue producing or are over and above that which would normally be provided at a water resource project.

5/ When roads and/or parking are to be used and/or designed for use under more than one financing category, cost will be allocated on the basis of estimated use by function. The discretion of the D.E. is to be applied.

6/ Minimum sanitary facilities are limited to those that meet minimum Federal and local health requirements.

7/ Grading and paving, to the extent they represent least cost alternatives to stabilizing floodways, may be used by local interests for recreational activities or facility developments not eligible for cost sharing. Such grading and paving may be done by the Corps to specifications more costly than necessary for floodway stabilization provided the additional cost is met by a non-Federal sponsor.

8/ Includes extensive specialized play equipment over and above basic climbing, swinging and sliding apparatus.

9/ Footbridges are to be austere and used only when other crossing methods are impractical. Footbridges which are the center of a recreation experience are to be at local costs.

Exhibit E-3 Checklist of Facilities which may be Cost Shared in Recreation Developments at Environmental Protection and Ecosystem Restoration Projects¹

I. Access and Circulation

Roads
Turnarounds
Trails (multiple-use)
Parking
Bridges and Culverts
Walks
Steps/ramps
Footbridges ²

II. Structures

Sanitation - Vault Toilets, Comfort Stations
Shelters - Picnic, Trail

III. Utilities

Water Supply - Municipal System ³, Wells, Drinking Fountains and Faucets
Sewage and Waste Water Disposal - Municipal System, Septic Tanks and Tile Fields
Storm Drainage
Public Telephone

IV. Site Preparation/Restoration

Clearing and Grubbing
Grading and Land Form
Vegetative restoration - includes native trees, shrubs and turf establishment

V. Park Furniture

Picnic Tables
Trash Receptacles/holders
Benches

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Exhibit E-3 (Continued)

VI. Signs

Entrance-Directional-Marker
Traffic Control (Vehicular and Pedestrian)
Instructional (Includes Fire Danger Notices)

VII. Interpretive Guidance and Media

Display Boards
Interpretive Markers (Natural, Historical, Archeological, etc.)
Bulletin Board

VIII. Protection, Control, Health and Safety

Gates and Barricades
Cattle Guards
Walls and Fencing
Guardrails
Entrance Stations
Lighting
Handrails

1/ Facilities to be cost shared are limited to standard designs consistent with the natural environment of the surrounding area but should not include embellishments, elaborate designs, or be ostentatious.

2/ Footbridges are to be austere and used only when other crossings methods are impractical. Footbridges which are the center of recreation experience are to be a non-Federal cost. Pedestrian bridges at highways or railroads are normally a non-Federal cost; however, if they are integral to the recreation feature and the most cost effective alternative, they may be cost shared.

3/ Connection to an existing municipal system.

Exhibit E-4 Examples of DYMS Computations

1. Hypothetical Situation. The first example is a hypothetical situation. For this example the assumptions as shown in Table E-47 are made on an exaggerated bases for computational ease.

Table E- 47 DYMS Hypothetical Example

Item	Existing project	Expanded project
Total conservation storage	100,000 a-f	300,000 a-f
Critical period dependable yield	200 cfs	300 cfs
Unit yield	2 cfs per 1000 a-f	1 cfs per 1000 a-f
Contracted storage (user # 1)	100,000 a-f	200,000 a-f
Dependable yield (user # 1)	200 cfs	200 cfs
Contracted storage (user # 2)	none	100,000 a-f
Dependable yield (user # 2)	none	100 cfs
DYMS	none	100,000 a-f

In this example, user #1 had a prior contract for 100,000 a-f of storage, which was the entire conservation pool of the existing project. The estimated critical period dependable yield for that storage was 200 cfs. Subsequently, a second user requested storage in the project sufficient to provide an estimated critical period dependable yield of 100 cfs. The sum of the required critical period dependable yield for both users would then be $200 + 100 = 300$ cfs. Reading of the yield curve at 300 cfs indicated a required total conservation storage of 300,000 a-f. In the expanded project, user #1 requires 200,000 a-f rather than the contracted 100,000 a-f to provide an estimated critical period dependable yield of 200 cfs. The difference ($200,000 - 100,000 = 100,000$ a-f) is the DYMS. User #2 requires 100,000 a-f of storage to provide an estimated critical period dependable yield of 100 cfs. The water supply contract for user #1 would be amended at no cost to him to provide that his share of the conservation pool is 200,000 a-f and 2/3 of the total. The contract with user #2 would provide that his share of the conservation pool is 100,000 a-f and 1/3 of the total. User #2, however, would be required to pay for 200,000 a-f. The 100,000 a-f provided to him by the contract and the 100,000 a-f of DYMS storage required to maintain the critical period dependable yield of user #1.

Exhibit E-4 (Continued)

2. The following paragraphs describe two procedures to estimate DYMS manually for a project without storage allocated to hydropower (Table E-48) and for one with storage allocated to hydropower (Table E-49). It is assumed that the project yield curve already exists.

Table E- 48 Procedure for a Project Without Storage Allocated to Hydropower

Step	Procedure
1	Tabulate the conservation storage allocated to each existing user. The sum of these should be equal to the total existing conservation storage.
2	Read the yield curve corresponding to the total existing conservation storage to obtain the total yield.
3	Prorate the total yield among the existing users on the basis of the percentage of the total conservation storage that is allocated to each user.
4	Add the yield required by the new user to the total yield provided by the existing conservation storage to arrive at the total yield to be provided by the expanded project.
5	Read the yield curve corresponding to the total yield to be provided by the expanded project to obtain the total conservation storage of the expanded project..
6	Prorate the total conservation storage of the expanded project to each of the existing users and the new user on the basis of the percentage of their yield to the total yield of the expanded project. The storage so determined will be each user's allocation.
7	The DYMS (the new user is responsible for paying for the DYMS) is the increase in storage determined in Step 6 over that provided in Step 1 for each of the users in the existing project.

Exhibit E-4 (Continued)

Table E- 49 Procedure for a Project With Storage Allocated to Hydropower

Step	Procedure
1	Tabulate the conservation storage allocated to each existing user including hydropower. The sum of these should be equal to the total existing conservation storage.
2	Read the yield curve corresponding to the total existing conservation storage to obtain the total yield.
3	Prorate the total yield among the existing users and hydropower on the basis of the percentage of the total conservation storage that is allocated to each user.
4	Assume a value for the total conservation storage of the expanded project. This value will be greater than the total conservation storage of the existing project.
5	Read the yield curve for the assumed total conservation storage of the expanded project to obtain the corresponding total yield.
6	Determine the storage required in the assumed expanded project for each of the water supply users in the existing project by using the percentage their existing yield is to the total yield of the expanded project. The storage required by the new use would be similarly obtained using the desired yield of the new user. The storage so determined would be each water supply user's allocation in the assumed expanded project. The remaining storage (assumed total conservation storage minus the sum of the water supply storage for each user) would be for hydropower. If this value is not equal to the hydropower storage tabulated in Step 1, repeat Step 4 through Step 6.
7	The DYMS (the new user is responsible for paying for the DYMS) is the increase in storage determined in Step 6 over that provided in Step 1 for each of the water supply users in the existing project.

The procedure in the above example is straightforward whenever the entire conservation pool of the existing project is allocated to water supply storage. However, when the existing project has some or the entire existing project allocated to hydropower, the procedure requires a trial and error reading of the yield curve with various assumptions of total conservation storage. This is required for two reasons: (1) it is Corps policy that, to the extent possible, impacts to hydropower will be compensated through means other than the application of DYMS (financial

Exhibit E-4 (Continued)

credits and operational modifications, if possible); and, (2) to comply with the requirement that critical period dependable yield be prorated to all users on the basis of the percentage of the total conservation pool that is allocated to each. The computations of DYMS should not be performed manually because of their tedious nature and more importantly to avoid round off errors in the storage adjustments.

3. Example with Hydropower Storage Held Constant. The next example is an actual case for the Greers Ferry Project in the Little Rock District. In this example, hydropower storage is held constant because of the policy that DYMS does not apply to hydropower storage. This discussion is relative to a proposed expansion of the conservation pool at Greers Ferry Lake, AR. Greers Ferry Lake is a multiple purpose project, which had the storage allocations as shown in Table E-50 prior to the proposed expansion.

Table E- 50 Greers Ferry Lake Storage Allocations, Prior to Expansion
(Example with Hydropower Storage Held Constant)

Item	Elevation (Feet NGVD)	Storage Capacity (Acre-Feet)
Top of flood pool	487	2,844,500
Top of power pool	461	1,910,500
Bottom of power pool	435	1,194,000
Flood pool zone	461-487	934,000
Conservation pool zone	435-461	716,500
Hydropower storage		714,367
Water supply storage		2,133
Heber Springs W.S. agreement		1,008
CWS water supply agreement		225
Clinton water supply agreement		900

Exhibit E-4 (Continued)

Community Water System (CWS) had requested additional storage sufficient to yield 6.8 MGD. They needed this storage in two phases, with an initial request of 3.3 MGD. The example only addresses the 3.3 MGD request and the determination was made that it should be provided by an expansion into the flood pool. A detailed daily sequential reservoir routing computer program was utilized to determine the points on the dependable yield curve. This program was selected because the hydrologic data was already available and because the program had been used for numerous flood control and hydropower studies in the past. The detail required for hydropower analyses generally dictates that a weekly or daily reservoir routing model be utilized. Again, the most important consideration is not which routing model is used but rather that the same model and data set be used for the entire study.

The results of the routings produced four points on the dependable yield curve as shown in Table E-51. These data encompasses a 50,000 acre-foot expansion (the Corps' discretionary reallocation limit) into the flood pool.

Table E- 51 Routing Results
(Example with Hydropower Storage Held Constant)

Dependable Yield (cfs)	Required Conservation Storage (acre-feet)
909.2	716,500
914.0	722,200
930.5	741,500
952.0	766,500

The results of the analysis assuming that hydropower storage is held constant (the equivalent of the policy that DYMS does not apply to hydropower storage) are shown in Table E-52. The DYMS was computed as the sum of the difference of required storage (expanded project - existing project) for prior water supply storage contracts. The DYMS for this example is barely significant. CWS would be responsible for all costs of the added storage. The 4,031 acre-foot required to provide their phase 1 request and the 4 acre-feet DYMS required. After rounding to the nearest 1 acre-foot, the DYMS is distributed as 2 acre-feet for Heber Springs and 2 acre-feet for Clinton to maintain the yield of prior water supply contracts.

Exhibit E-4 (Continued)

Table E- 52 DYMS Holding Hydropower Storage Constant

Item	Existing Project		Expanded Project		DYMS
	Acre-feet	cfs	acre-feet	cfs	acre-feet
Total conservation storage	716,500		720,535		
Critical period dependable yield		909.0		912.6	
Allocated storage (hydropower)	714,367		714,367		0
Dependable yield (hydropower)		906.5		904.8	
Contracted storage (Heber Springs)	1,008		1,010		2
Dependable yield (Heber Springs)		1.3		1.3	
Contracted storage (CWS – prior)	225		225		0
Dependable yield (CWS - prior)		0.3		0.3	
Contract storage (Clinton)	900		902		2
Dependable yield (Clinton)		1.1		1.1	
Contracted storage (CWS - phase 1)	None		4,031		
Dependable yield (CWS - phase 1)		none		5.1	
DYMS					4

Exhibit E-4 (Continued)

4. Example with Hydropower Yield Held Constant The next example assumes that hydropower yield is held constant. While it is not Corps policy to maintain hydropower yield constant, these computations are necessary in order to determine the maximum limit of operational changes that could be implemented to minimize the impacts on hydropower and to determine the adjustments to the financial credits provided to the power marketing agencies. In addition, this example is included for the evaluation of alternatives that incidentally preserve the hydropower yield (e.g., an alternative that increases the average head and actually provides greater hydropower benefits than the existing project). The information in Table E-53 shows the results of the analysis assuming that hydropower yield is held constant. The DYMS was computed as the sum of the difference of required storage (expanded project - existing project) for prior water supply storage contracts and hydropower.

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Exhibit E-4 (Continued)

Table 1 (E-53) Holding Hydropower Yield Constant

Item	Existing Project		Expanded Project		DYMS
	acre-feet	cfs	Acre-feet	cfs	acre-feet
Total conservation storage	716,500		722,562		
Critical period dependable yield		909.0		914.3	
Allocated storage (Hydropower)	714,367		716,388		2,021
Dependable yield (Hydropower)		906.5		906.5	
Contracted storage (Heber Springs)	1,008		1,011		3
Dependable yield (Heber Springs)		1.3		1.3	
Contracted storage (CWS - prior)	225		226		1
Dependable yield (CWS - prior)		0.3		0.3	
Contracted storage (Clinton)	900		903		3
Dependable yield (Clinton)		1.1		1.1	
Contracted storage (CWS - phase 1)	none		4,035		
Dependable yield (CWS - phase 1)		none		5.1	
DYMS					2,028

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DEPARTMENT OF THE ARMY
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31 January 2007

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CONTINUING AUTHORITIES PROGRAM
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APPENDIX F

Continuing Authorities Program

SECTION I – PROGRAM OVERVIEW

F-1. Purpose and Applicability.

a. Purpose. This appendix provides the policy and procedural guidance for planning, design, and implementation of projects pursued under the legislative and administrative provisions of the Continuing Authorities Program.

b. Applicability. The new project implementation processes in this Appendix will apply to all CAP projects initiated (received initial work allowance) after 31 January 2006. In addition, Table F-1 describes the transition of any ongoing CAP project (received initial work allowance prior to 31 January 2006) to the new CAP project implementation processes. For the purpose of applying Table F-1:

(1) A “decision document” means: a Detailed Project Report for Section 204, 206, and 1135 projects if Federal costs exceed \$1M; a Planning and Design Analysis (PDA) for Section 204, 206, and 1135 projects with Federal costs less than \$1M; and a PDA for Section 14 and 208 projects. A Preliminary Restoration Plan is not considered a decision document.

(2) Because a PDA consists of all the planning and design activities to demonstrate that Federal participation is warranted and no formal report is required, “the approval date for the decision document” is the date on which the district determines to proceed with design activities. Further, for ongoing PDAs it will be necessary to separate the costs incurred for feasibility activities from those incurred for design activities by the district allocating the total costs incurred for the PDA between the costs of the planning portion of the PDA (feasibility phase costs) and the design portion of the PDA (design costs).

(3) A “work allowance” is a work allowance issued by HQUSACE located in Washington. A reprogramming action initiated by the district or the division is not considered a work allowance.

TABLE F-1 CAP TRANSITION	
Project Status as of 31 January 2006 (under Old Procedures)	Procedures for Further Work on Project
All Sections – Work not started	Follow new procedures for entire project.
Sections 103,107,111, and 205 -- 100% Federal portion (\$100,000) of feasibility study was under way	Complete 100% Federal portion of feasibility study. Follow new procedures for remainder of study and design/construction of project.
Sections 103, 107, 111, and 205 – Feasibility Cost Sharing Agreement (FCSA) was executed and decision document was not approved	Follow new procedures for remainder of study and design/construction of project.
Sections 206 and 1135 with Federal costs exceeding \$1M – Feasibility study was under way and decision document was not approved	Complete feasibility study with 100% Federal financing of feasibility costs. Follow new procedures for design/construction of project. However, all feasibility costs will be included in total project costs in the Project Cooperation Agreement (PCA).
Sections 206 and 1135 with Federal costs NTE \$1M -- Feasibility level work on PDA was under way (district had not determined to proceed with design level work)	
Section 204 with Federal costs exceeding \$1M – Feasibility study was under way and decision document was not approved	If decision document is approved by 31 January 2007 -- Complete feasibility level work with 100% Federal financing of feasibility costs. Follow new procedures for design/construction of project. However, the PCA should include provision that all feasibility costs in excess of \$100K are shared 50/50 with sponsor.
Section 204 with Federal costs NTE \$1M, Section 14, and Section 208 -- Feasibility level work on PDA was under way (district had not determined to proceed with design level work)	If decision document is not approved by 31 January 2007 – Stop all feasibility level work by 31 January 2007, except for negotiation of FCSA. Resume feasibility level work after FCSA execution. FCSA should include normal provision that all feasibility costs in excess of \$100K, including feasibility costs incurred prior to execution of FCSA, are shared 50/50 with sponsor.
Sections 204, 206, and 1135 with Federal costs NTE \$1M, Section 14, and Section 208 -- Design level work on PDA was under way (district had determined to proceed with design level work and PCA was not executed)	Continue design with 100% Federal financing of design costs in FY 2006, and in each <u>consecutive</u> year thereafter that the project receives a work allowance. If design is funded in <u>consecutive</u> years until fully funded, complete design at 100 percent Federal financing. Negotiate a PCA.
Sections 204, 206, and 1135 with	If design level work is not fully funded, and there is a

Federal costs exceeding \$1M, and Sections 103, 107, 111, and 205 – Design (P&S) underway and PCA was not executed	<p>fiscal year when the project does not receive a work allowance, stop all design work by March 31 of that fiscal year, except for negotiation of a PCA. Resume design level work after PCA execution.</p> <p>For Section 204, 206, and 1135 projects, include all feasibility and design costs in total project costs under the PCA.</p> <p>For Section 14 and 208 projects, include all feasibility and design costs, in excess of \$40K, in total project costs under the PCA.</p> <p>For Section 103, 107, 111, and 205 projects, include all design costs, but no feasibility costs, in total project costs under the PCA.</p>
All Sections – PCA was executed	New procedures will not apply.

F-2. Definitions.

a. The term “Continuing Authorities Program” or “CAP” means a group of 10 legislative authorities under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and implement certain types of water resources projects without additional project specific congressional authorization. Table F-2 lists the CAP authorities and their project purposes.

b. The term “decision document” means the consolidated documentation of technical and policy analyses, findings, and conclusions upon which the District Commander bases the recommendation to the Major Subordinate Command Commander to approve the recommended project for implementation. The decision document will be used to support the PCA. Minimum decision document requirements are listed in Section II, paragraph F-10.f. (2) of this Appendix.

c. The term “feasibility phase” means the project formulation phase during which all planning activities are performed that are required to demonstrate that Federal participation in a specific project is warranted, culminating in approval of the decision document. All plan formulation must be completed during this phase, including all technical analyses, policy compliance determinations, and Federal and non-Federal environmental and regulatory compliance activities required for approval of the decision document.

d. The term “design and implementation phase” means the phase of the project during which all post feasibility phase activities (except for operation, maintenance, repair, rehabilitation, or replacement activities) are performed including negotiation and execution of the PCA, final design, preparation of contract plans and specifications,

construction, and any other activities required to construct or implement the approved project.

e. The letters “LERRD” mean lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas.

f. The letters “LERR” mean lands, easements, rights-of-way, and relocations.

g. The letters “LER” mean lands, easements, and rights-of-way.

h. The letters “OMRR&R” mean operation, maintenance, repair, rehabilitation, and replacement.

i. The letters “HQ RIT” mean a Regional Integration Team located in HQUSACE, Washington, D.C.

j. The letters “PED” mean preconstruction engineering and design.

k. The letters “GI” mean General Investigations.

l. The letters “MSC” mean Major Subordinate Command.

TABLE F-2 CAP AUTHORITIES		
AUTHORITY	US CODE	PROJECT PURPOSE
Section 14, Flood Control Act of 1946, as amended	33 USC 701r	Streambank and shoreline erosion protection of public works and non-profit public services
Section 103, River and Harbor Act of 1962, as amended (amends Public Law 79-727)	33 USC 426g	Beach erosion and hurricane and storm damage reduction
Section 107, River and Harbor Act of 1960, as amended	33 USC 577	Navigation improvements
Section 111, River and Harbor Act of 1968, as amended	33 USC 426i	Shore damage prevention or mitigation caused by Federal navigation projects

TABLE F-2 CAP AUTHORITIES		
Section 145, Water Resources Development Act of 1976, as amended	33 USC 426j	Placement of dredged material on beaches
Section 204, Water Resources Development Act of 1992, as amended	33 USC 2326	Beneficial uses of dredged material
Section 205, Flood Control Act of 1948, as amended	33 USC 701s	Flood control
Section 206, Water Resources Development Act of 1996, as amended	33 USC 2330	Aquatic ecosystem restoration
Section 208, Flood Control Act of 1954, as amended (amends Section 2, Flood Control Act of August 28, 1937)	33 USC 701g	Removal of obstructions, clearing channels for flood control
Section 1135, Water Resources Development Act of 1986, as amended	33 USC 2309a	Project modifications for improvement of the environment

F-3. General Principles.

a. Purpose. The purpose of the CAP is to plan and implement projects of limited size, cost, scope, and complexity. Although there is no specific minimum project size or cost, very small projects should not be pursued under CAP as they should be implemented by other Federal or non-Federal entities. Further, District Commanders, in coordination with the MSC Commanders, should consider termination of CAP feasibility activities when the estimated or actual total cost of feasibility studies equals or exceeds the estimated implementation cost including LERRD value. Finally, large or complex problems should be pursued under the specifically authorized programs.

b. General Requirements. Projects recommended for implementation pursuant to CAP authorities must be justified in accordance with the requirements of the applicable project purpose as discussed in Appendix E of this regulation and must be implemented in accordance with the applicable legal and policy requirements as further discussed in Section III of this Appendix.

c. Using CAP at Projects Specifically Authorized by Congress. CAP authorities may be used to provide additional improvements to a completed portion of a specifically authorized project so long as they do not impair or substantially change the purposes or functions of the specifically authorized project.

d. Multi-purpose Projects. Multi-purpose projects may be formulated using CAP authorities in accordance with procedures stated in Section IX of Appendix E of this regulation and as discussed in Section II, paragraph F-18 of this Appendix.

e. Plan Formulation, Evaluation, and Selection Principles.

(1) General. Plan formulation, evaluation, and selection will follow the procedures developed for specifically authorized studies and projects as discussed in Appendix E of this regulation, at a level of detail appropriate for the scope and complexity of the proposed CAP project. District staff, in coordination with MSC staff, will determine the appropriate level of detail of analyses required to produce a quality project in a reasonable time and at a reasonable cost. Simplified evaluation procedures may be adopted for low risk/low cost projects and when the consequences of failure are minimal and do not pose a threat to human life or safety. However, District and MSC Commanders cannot deviate from legislative requirements, or from policy or regulatory requirements of HQUSACE, the Department of the Army, Department of Defense, or other Federal agencies.

(2) Formulation and Evaluation. Alternative plans should be developed to the level of detail necessary to select a justified, acceptable, and implementable plan that is consistent with Federal law and policy and, to the extent that law and policy permit, consistent with the goals of the non-Federal sponsor. Benefit and cost, risk and uncertainty, cost effectiveness, and incremental cost analyses will be undertaken using procedures appropriate for the scope and complexity of the project. Further, as required by the National Environmental Policy Act of 1969 (NEPA) and other applicable statutes, when formulating measures and plans that will result in the recommendation for a project, the project delivery team must consider opportunities to reasonably avoid or minimize adverse environmental impacts and mitigation requirements.

(3) Guidance on model certification will apply to models used in the planning of CAP projects.

(4) Environmental Sustainability. As expressed in ER 200-1-5 (30 October 2003), in implementing the USACE Environmental Operating Principles and associated doctrine, the Corps must strive to achieve environmental sustainability, which is defined as “a synergistic process whereby environmental and economic considerations are effectively balanced through the life cycle of project planning, design, construction, operation and maintenance to improve the quality of life for present and future generations.” For all CAP projects, and particularly for those not implemented under the ecosystem restoration authorities, this principle is best satisfied through forethought in the formulation stage of project development. The goal is to design projects that will not degrade existing ecosystem quality while eliminating or minimizing the need for compensatory mitigation measures. Section II, paragraph F-20 of this Appendix provides basic guidance for formulation of ecosystem restoration projects and references to other environmental related guidance.

(5) Selection of a Plan. Plan selection will be in accordance with the guidance in Appendix E of this regulation for the applicable project purpose(s). Further, if a locally preferred plan (LPP) is proposed by a non-Federal sponsor, a decision document recommending such LPP may only be approved after a waiver has been obtained in accordance with Section II, paragraphs F-10.f.(3) and F-10.f.(4) of this Appendix.

(6) Guidance on Collaborative Planning will apply to the multipurpose project planning (Combined Plans) described in Section II, paragraph F-18 of this Appendix. In particular, the plan selection concepts will be incorporated into the plan development and recommendation process.

f. Modification of Design and Construction Standards.

(1) General. Corps design and construction standards can be modified to reduce project costs for CAP projects provided that the application of modified standards has no more than minimal increased risk to public health and safety, and has no more than a minimal impact on the operation, structure, or purposes of any existing Corps project. Modifications cannot result in adverse impacts or effects extending beyond the CAP project area. The basis for a modification of standards is a comparison of the risk of failure or improper functioning with the consequences of failure or improper functioning. However, modification of mandatory standards requires a waiver in accordance with ER 1110-2-1150. If a State permit is required for the non-Federal sponsor to operate the project, the applicable State engineering standards must be met.

(2) Coordination with non-Federal sponsors. Modification of standards pursuant to paragraph F-3.f.(1) of this Appendix must be discussed with the non-Federal sponsor so it recognizes and understands any risk that it may be assuming as part of its responsibilities under the PCA, including any potential effect on its OMRR&R responsibilities.

g. Project Implementation Process. CAP projects will be implemented in two phases: the feasibility phase and the design and implementation phase. Each phase is carried out under the provisions of a separate cost sharing agreement executed by the District Commander and the non-Federal sponsor. Guidance addressing these two phases is set forth in Section II, paragraphs F-10 and F-11 of this Appendix.

h. Requirements to serve as a non-Federal Sponsor.

(1) For projects pursued under Sections 14, 103, 107, 111, 145, 205, and 208, non-Federal sponsors must be public agencies able to enter into cost sharing agreements in accordance with the requirements of Section 221 of the Flood Control Act of 1970, as amended. Section 221 specifies that the non-Federal sponsor must be “a legally constituted public body with full authority and capability to perform the terms of its agreement and to pay damages, if necessary, in the event of failure to perform.” The

non-Federal sponsor's responsibilities include paying its required share of project costs; provision or performance of LERRD (or LERR, as applicable) for the project; and performance of OMRR&R for the project, as applicable.

(2) For projects pursued under Sections 204, 206, and 1135, a non-Federal sponsor may be an entity that meets the "public body" requirement of Section 221, or may be a non-profit entity. In either event, the non-Federal sponsor must have the full authority and capability to perform the terms of its agreement and to pay damages, if necessary, in the event of failure to perform. As with a public body non-Federal sponsor, a non-profit entity that serves as the non-Federal sponsor must be able to demonstrate not only its capability to participate during design and implementation of the project but also its long-term commitment and capability to finance and perform any necessary OMRR&R activities. Further, as required by Federal statute, the affected local government must consent to a non-profit entity being the non-Federal sponsor for a Section 204, 206, or 1135 project.

i. Federal Funds Used As Part of Non-Federal Sponsor Share. The non-Federal sponsor must not use Federal program funds to meet its obligations, including LERRD, for a project unless the Federal agency providing the Federal portion of such funds verifies in writing that expenditure of such funds for such purpose is expressly authorized by Federal law. The term "Federal program funds" includes the funds or grants provided by a Federal agency as well as any non-Federal matching share or contribution that was required by such Federal program or grant.

F-4. Restrictions on Program Eligibility.

- a. Studies. CAP will not be used for study only activities.
- b. Specifically Authorized Projects. CAP will not be used to implement or replace any portion of a project specifically authorized by Congress.
- c. Existing Non-Federal Responsibilities. CAP will not be used to nullify or change an existing condition of non-Federal responsibility required for a project specifically authorized by Congress or implemented under a CAP authority.
- d. Non-Federal Operation and Maintenance. CAP will not be used to adopt a non-Federal project for future maintenance at Federal expense, to restore completed Corps projects to their authorized dimensions, or to accomplish required non-Federal maintenance at a Federally constructed project.
- e. Design Deficiencies. CAP will not be used to correct design deficiencies on another CAP project or a specifically authorized project.

F-5. Coordination Account. The Coordination Account is provided to District Commanders by authority line item under procedures established by the HQUSACE

Programs Integration Division (CECW-I). This account will be used for all initial contacts and site investigations with local interests until a potential Federal interest is identified and a decision by the non-Federal sponsor and the Corps is made to initiate the feasibility phase. The account should be used to screen out ineligible situations or cases where it is unlikely that a project eventually will be implemented. This account may also be used for internal coordination prior to establishing a project account, or non-project specific coordination activities such as participation in regional or national CAP review meetings. These funds may also be used for participation in regional meetings and interagency coordination where the primary means of Corps participation is through CAP projects. However, Coordination Account funds are not to be used as supplements for coordination activities which receive line item funding, such as EPA's National Estuary Program or the Coastal America initiative. Coordination account funds are not cost shared, will be counted against the authority's statutory annual program limit, but will not be counted against any specific per project limit. Coordination activities related to specific on-going projects will be accomplished using that project's funding account, and shared accordingly.

F-6. Program Cost Sharing.

a. Feasibility Phase. This phase will be initially Federally funded up to \$100,000. Any remaining feasibility phase costs will be shared 50/50 with the non-Federal sponsor pursuant to the terms of a CAP FCSA. If the feasibility phase can be completed for less than \$100,000, a CAP FCSA is not required. The Federally funded \$100,000 can only be used in the feasibility phase. Any unused portion of the Federally funded \$100,000 is not transferable to the design and implementation phase.

b. Design and Implementation Phase. All costs beyond the feasibility phase are considered total project costs and will be shared as specified in the authorizing legislation for that purpose. The specific requirements for each individual project must be detailed in the project's PCA.

F-7. Statutory Federal Participation Limits.

a. General. The CAP legislative authorities contain specific Federal financial participation limits which apply to (1) the amount of Federal participation allowed for each specific project implemented under a CAP authority (per project limit); (2) the amount of Federal participation under a CAP authority in any one fiscal year (annual program limit); or (3) both a per project limit and an annual program limit. Table F-3 displays the applicable per project and annual program Federal participation limits for each CAP authority. All Corps funds expended for feasibility and design and implementation activities are counted against the statutory per project and annual program limits. For Sections 204, 206, and 1135, expenditures by other Federal agencies on feasibility and design and implementation activities are included in the Federal share of the project cost and counted toward the Federal per project limits and annual program limits. For Sections 14, 103, 107, 111, 145, 205, and 208, expenditures of other Federal

agencies under their own authorities are not included in these Federal per project limits and annual program limits. For Section 107 projects for commercial navigation, Federal expenditures for operation and maintenance of the general navigation features are not counted toward the Federal per project limit and annual program limit. In no event will Civil Works funds be allotted to a project for the feasibility or design and implementation phases if the allotment would result in the applicable per project or annual program limit being exceeded. Refer to Section III, paragraph F-26.g of this Appendix for instructions regarding the Section 111 Federal participation limit. HQUSACE will monitor the annual program limits and will issue guidance on how to proceed in the event an annual program limit is approached. The amounts shown below as the annual program limit for Sections 204, 206, and 1135 is the limit on annual appropriations from Congress (and on obligation of those appropriations) for that authority. For the remaining authorities, the amounts shown below as the annual program limit is the annual limit of allotments from HQUSACE for that authority.

b. Costs in Excess of the Statutory Federal Per Project Participation Limit. There is no limit on the total project costs of a project implemented under CAP. However, Army policy does not permit continuing with planning of a project pursuant to CAP when after application of the appropriate Federal/non-Federal cost sharing percentages, it is estimated that the Federal share would exceed the applicable per project limit.

(1) If this is discovered before execution of the PCA, the study may be converted to the GI program in accordance with paragraph F-9 of this Appendix. As an alternative to conversion to the GI program (except in the case of Section 111), the non-Federal sponsor may offer to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit. If the MSC Commander supports this offer, the MSC Commander shall treat the offer as a proposal for a policy deviation in accordance with Section II, paragraph F-10.f.(4) of this Appendix. In no event will Federal funds in excess of the per project limit be allotted to a project even if the non-Federal sponsor proposes to reimburse the Government for any amount in excess of the per project limit.

(2) If this is discovered after execution of the PCA, the non-Federal sponsor must contribute funds in accordance with the terms of the PCA for any costs that would normally be part of the Federal share but are over the per project limit or the PCA will be terminated (Table F-3).

TABLE F-3 STATUTORY FEDERAL PARTICIPATION LIMITS		
Authority	Per Project Limit (\$)	Annual Program Limit (\$)
Sec 14	1,000,000	15,000,000
Sec 103	3,000,000	30,000,000
Sec 107	4,000,000	35,000,000
Sec 111	5,000,000	N/A
Sec 145	N/A	N/A
Sec 204	N/A	15,000,000
Sec 205	7,000,000	50,000,000
Sec 206	5,000,000	25,000,000
Sec 208	500,000	7,500,000
Sec 1135	5,000,000	25,000,000

F-8. Converting GI Funded Studies or PED to CAP.

a. General. The MSC commander may approve transfer of an ongoing GI funded study or PED to CAP. However, the MSC commander may not use GI and CAP funds simultaneously on any study.

b. Converting GI 905(b) Studies to CAP. A new CAP study may be initiated based on the analyses of a GI 905(b) investigation which found that there is likely a Federal interest in pursuing further planning analyses.

(1) For a new CAP study that will continue with evaluation of the same or generally similar project that was the subject of the GI 905(b) investigations, the GI 905(b) investigations will be considered the initially Federally funded portion of the CAP feasibility phase. Therefore, the initial amount of such new CAP study that would be funded at 100 percent Federal expense will be reduced by the amount of funds expended for the GI effort. If it is determined that the cost of the GI efforts equaled or exceeded \$100,000, then all costs of the new CAP study will be shared with the non-Federal sponsor. None of the GI expenditures will be counted against the applicable CAP per project or annual program limits.

(2) For a new CAP study that will evaluate a project that is one of many that could result from a more encompassing GI 905(b) investigation (such as a watershed study), only that portion of the GI effort that is allocated by the district to the project being pursued under the new CAP study will be considered as the initially Federally funded portion of the CAP feasibility phase. Therefore, the initial amount of such new CAP study that would be funded at 100 percent Federal expense will be reduced by the

amount of funds expended for the GI effort that the district allocates to the project being studied. If it is determined that the cost of the GI efforts equaled or exceeded \$100,000, then all costs of the new CAP feasibility study shall be shared with the non-Federal sponsor. None of the GI expenditures will be counted against the applicable CAP per project or annual program limits.

c. Converting GI Funded Cost Shared Feasibility to CAP. Prior to converting to CAP, work for the GI cost shared feasibility study should be terminated in an orderly manner pursuant to the provisions of the existing GI FCSA. However, the MSC Commander may find it more appropriate to complete the ongoing GI effort and convert to CAP upon completion of the feasibility study. In any event, a conversion to CAP would require executing a CAP FCSA for any remaining feasibility phase items required to proceed to execution of a PCA. All costs of the CAP feasibility phase activities will be shared with the non-Federal sponsor. None of the GI expenditures will be counted against the applicable CAP per project or annual program limits.

d. Converting GI Funded PED to CAP. Prior to converting to CAP, work for a GI PED (pre-authorization) should be terminated in an orderly manner pursuant to the provisions of the existing Design Agreement. However, the MSC Commander may find it more appropriate to complete the ongoing GI effort and convert to CAP upon completion of the PED phase. In any event, a conversion to CAP would require execution of a PCA to address any remaining design activities and to proceed with construction. All remaining costs of the CAP design and implementation phase will be shared with the non-Federal sponsor. None of the GI expenditures will be counted against the applicable CAP per project or annual program limits. Conversion of a GI funded PED to CAP is only applicable for a project that has not been specifically authorized for construction by Congress. If a project has been specifically authorized for construction, it will not be transferred for implementation under CAP until Congress specifically deauthorizes the project or Congress specifically funds its implementation under a CAP authority in law.

F-9. Converting CAP Feasibility Studies to GI.

a. General. CAP studies must be converted to GI once it has been determined that the solution will be beyond the scope of CAP. If possible, any such determination should be made during that portion of the feasibility phase that is 100 percent Federally funded. The determination and supporting analyses will be documented.

b. Conversion to GI Prior to Execution of a CAP FCSA. If further study is required to complete a decision document, after the determination that a CAP study should be converted to the GI program, a new GI reconnaissance or feasibility phase study, as appropriate, will be started following the process for new GI studies. The process for new GI studies can be found in the annual Budget EC.

c. Conversion to GI After Execution of a CAP FCSA but Before Completion of the Feasibility Phase. If it is determined after execution of the CAP FCSA that a project should be converted to the GI Program, work under the CAP FCSA will be terminated in an orderly manner pursuant to the terms of the CAP FCSA, and a new GI feasibility phase study will be started following the process for new GI studies.

d. Conversion to GI After Feasibility Phase but Prior to Execution of PCA. If it is determined after completion of the feasibility phase but before execution of the PCA that a project should be converted to the GI Program, a new GI PED will be started following the process for new GI PED.

SECTION II – PROJECT IMPLEMENTATION

F-10. Feasibility Phase.

a. General. The feasibility phase encompasses the entire range of planning activities required to demonstrate that Federal participation in a project is warranted and justified. This phase will be initially Federally funded up to \$100,000. Any remaining feasibility phase costs will be shared 50/50 with the non-Federal sponsor pursuant to the terms of a CAP FCSA. If the feasibility phase can be completed for less than \$100,000, a CAP FCSA is not required. The Federally funded \$100,000 can only be used in the feasibility phase. Any unused portion of the Federally funded \$100,000 is not transferable to the design and implementation phase.

b. Initiation of Feasibility Phase.

(1) Request for Assistance. A feasibility phase is normally initiated based on receipt of a letter from a potential non-Federal sponsor stating its desire to participate in a solution, and acknowledging its financial responsibilities for the study and the project, if one is recommended.

(2) Legislative Action. A feasibility phase may also be initiated based on directions contained in authorization or appropriations act language or committee report language accompanying such legislation and receipt of a letter from a potential non-Federal sponsor stating its desire to participate in a solution, and acknowledging its financial responsibilities for the study and the project, if one is recommended.

c. Procedures to Obtain Federal Funding for Feasibility Phase.

(1) 100% Federally Funded Portion of Feasibility Phase. After the decision by the non-Federal interest and the Corps to initiate the feasibility phase, the district should request the funds necessary for the \$100,000 Federally funded portion of the feasibility phase.

(2) Cost Shared Portion of Feasibility Phase. Upon execution of the CAP FCSA (see paragraph F-10.d. of this Appendix), the district should request the remainder of the Federal funds (above the \$100,000 Federally funded portion) required for the feasibility phase.

(3) Funds Requests. The district should prepare and send the requests for funds, through the MSC Programs Office, to the appropriate HQ RIT for coordination with HQ Programs Integration Division (CECW-IP). Each request should identify the name of the project, the PWI, the CAP authority it will be implemented under, the total amount of funds requested, and, if the remainder of the feasibility phase will extend beyond one fiscal year, the amount of funds needed by fiscal year. The study should be entered into PRISM and P2 as soon as possible.

d. Feasibility Cost Sharing Agreement (FCSA). No CAP FCSA is required if the feasibility phase can be completed for \$100,000 or less. Any feasibility phase costs in excess of \$100,000 will be shared 50/50 with the non-Federal sponsor pursuant to the terms of a CAP FCSA executed by the District Commander and the non-Federal sponsor. The model CAP FCSA will be used. Authority to approve a CAP FCSA, including any deviations, and to execute the CAP FCSA will be in accordance with the implementation memo for the CAP FCSA. The CAP FCSA must be negotiated and executed during the 100 percent Federally funded portion of the feasibility phase and no funds in excess of \$100,000 will be allotted to a project until the CAP FCSA is executed. Subsequent to execution of the CAP FCSA, no work may be initiated until the non-Federal sponsor's appropriate proportional share of costs over \$100,000 has been made available either in cash or through an agreement on a schedule for and estimated value of non-Federal feasibility work (see paragraph F-15 of this Appendix) that is necessary for the feasibility phase.

e. Required Milestones. The purpose of the two required milestones listed below is to assure that continuing work on the feasibility phase is consistent with the policies, principles, priorities, procedures, and constraints of CAP, thus preventing excessive expenditures on questionable projects. The MSC Commander shall develop requirements, to be submitted by the district to the MSC, for the information necessary to support the determinations made at these milestones. These requirements should be consistent with the scope and scale of the situation under study. The MSC Commander may establish additional milestones as deemed necessary for each study.

(1) Federal Interest Determination. The first milestone is the determination that study efforts are likely to lead to project implementation. The purpose is analogous to that served by a 905(b) Report. The review would include consideration of problem specification, identification of Federal interest and potential for solution(s) that would result in a policy consistent project of a scope appropriate for CAP, with a willing and capable sponsor. This determination will be accomplished early enough in the Federally funded portion of the feasibility phase to ensure that there are no impediments to proceeding with the project.

(2) Alternatives Formulation Briefing. The second milestone is an Alternatives Formulation Briefing (AFB) that takes place after the alternative plans have been formulated and prior to the release of the draft decision document for public review. The purpose of the AFB is to ensure that plans have been properly formulated, legal and policy issues have been identified and a consensus on resolution has been reached, and the MSC concurs with the plan that will likely proceed into the design and implementation phase.

f. Decision Document Requirements and Approval.

(1) General. Subject to the minimum requirements set forth in paragraph F-10.f.(2) of this Appendix, the MSC Commander will establish decision document requirements and formats. The guidance in Appendix G of this regulation covering feasibility report content should help guide technical and policy decision document requirements.

(2) Decision Document Requirements. The minimum decision document and supporting documentation requirements are: a clear description of the recommended plan; demonstration of the project justification based on standard Corps project justification criteria for the particular project purpose in accordance with the general guidance applicable to the project purpose(s); documentation of the results of any request for a waiver of policy under paragraph F-10.f.(4) of this Appendix; documentation of compliance with appropriate Federal, State, and local environmental and regulatory requirements such as NEPA, etc., normally included in a feasibility study specifically authorized by the Congress; a completed Real Estate Plan consistent with the requirements of Chapter 12, ER 405-1-12; the non-Federal sponsor financial analysis and financing plan at a level of detail appropriate to the scale of the project; District Real Estate certification that the non-Federal sponsor has the capability to acquire and provide the required real estate interests; a detailed description of the non-Federal sponsor's local cooperation requirements; identification of the anticipated operation, maintenance, repair, replacement, and rehabilitation activities, including estimated costs; the feasibility level ITR certification; and the District Counsel statement of legal sufficiency for the decision documentation and NEPA process.

(3) Locally Preferred Plans. Projects may deviate from the NED and/or NER plan if requested by the non-Federal sponsor and approved by ASA (CW). The decision document may recommend locally preferred plans (LPP) formulated using the same procedures for specifically authorized projects described in paragraph 2-3.f.(4) of this regulation. Before a decision document recommending a LPP may be approved, a waiver request prepared in accordance with paragraph F-10.f.(4) of this Appendix must be approved by ASA (CW). When the LPP is clearly of less scope and cost and meets the Administration's policies for high priority outputs, a waiver is usually granted. For those cases, in which the LPP has costs in excess of the NED or NER plan, the decision document must describe and compare the NED or NER plan and the LPP and specify the

difference in the costs of the two plans and that the non-Federal sponsor agrees to pay all costs over the Federal share of the NED or NER plan. The LPP, in this case, must have outputs similar in-kind, and equal to or greater than the outputs of the Federal plan.

(4) Waiver for Deviation from Policy.

(a) Policy Waivers Identified During Feasibility Phase. The MSC Commander must seek a waiver for any deviation from policy and obtain a response coordinated through Headquarters and OASA (CW) staff before he or she can approve a decision document containing a deviation from policy. Waivers are required for any proposed deviation from general policy including but not limited to policies regarding plan formulation and cost sharing, as well as the specific policies on statutory Federal per project participation limits (see Section I, paragraph F-7.b.(1) of this Appendix), recommendation of a LPP (see paragraph F-10.f.(3) of this Appendix), limits on recreation costs (see paragraph F-19 of this Appendix), limits on cost shared monitoring (see paragraph F-21 of this Appendix), and implementing a Section 107 project (see Section III, paragraph F-25.d. of this Appendix). The MSC Commander must submit the waiver request to the appropriate HQ RIT together with a full explanation of the circumstances for the waiver. The appropriate HQ RIT will prepare a letter responding to the MSC request, which will be coordinated through Headquarters staff and the OASA (CW) staff. In no event will the decision document be approved until all deviations from policy have been addressed through waiver requests and the written response from the HQ RIT has been received by the MSC.

(b) Policy Waiver Identified After the Feasibility Phase but Before Execution of the PCA. The only waiver request that will be considered after approval of the decision document is a waiver of the specific policy on statutory Federal per project participation limits (see Section I, paragraph F-7.b.(1) of this Appendix) due to cost escalation identified during any design performed prior to execution of the PCA. The MSC Commander must submit the waiver request to the appropriate HQ RIT together with a full explanation of the escalation of costs between the approval of the decision document and the identification of the need for a waiver and the non-Federal sponsor's offer to contribute funds for any costs that normally would be part of the Federal share but are over the per project limit. The appropriate HQ RIT will prepare a letter responding to the MSC request, which will be coordinated through Headquarters staff and the OASA (CW) staff. In no event will the PCA be executed until the written response from the HQ RIT has been received by the MSC.

(5) Decision Document Approval. Approval of the decision document will be by letter of the MSC Commander to the District Commander, with a copy furnished to the appropriate HQ RIT. This authority may not be further delegated to the District Commander. The approval letter will certify that the requirements specified in this Appendix for approving the decision document have been satisfied; summarize the findings, conclusions, and rationale for approving the decision document; and certify that

the project addressed in the decision document is justified and is policy compliant or has received the necessary policy waivers.

g. Completion of the Feasibility Phase. The feasibility phase is completed when 1) the decision document, addressing a plan formulated in accordance with the Principles and Guidelines, has been approved by the MSC Commander or 2) the feasibility phase is terminated.

h. Termination of the Feasibility Phase. Following coordination with affected non-Federal interests, the feasibility phase should be terminated if analyses indicate a lack of Federal interest or a lack of public support or if a satisfactory letter of intent is not received from a potential non-Federal sponsor within a reasonable length of time (as determined by the MSC Commander in consultation with the District Commander). The phase is officially terminated when the District Commander so advises the MSC Commander and the appropriate HQ RIT of termination of the study. The District Commander will also notify Congressional delegations and non-Federal interests when the study has been officially terminated.

F-11. Design and Implementation Phase.

a. General. This phase follows completion of the feasibility phase and includes all of the activities that would normally be included in the PED and construction phases of specifically authorized projects. All costs incurred for this phase will be shared with the non-Federal sponsor in accordance with the cost sharing requirements of the applicable CAP authority.

b. Initiation of Design and Implementation Phase. This phase begins upon the MSC Commander approval of the decision document that recommends proceeding into the design and implementation phase. The first action of the design and implementation phase is negotiation and execution of a PCA.

c. Procedures to Obtain Federal Funding for Design and Implementation Phase.

(1) Initial Work Allowance to Negotiate and Execute PCA. Upon approval of the decision document by the MSC Commander, thus completing the feasibility phase, the district shall submit a request for funds, not to exceed \$50,000, to pay the Federal costs of negotiating the PCA and initiating design. While these costs are 100% Federally funded prior to the PCA, once the PCA is executed the Federal costs to negotiate the PCA and initiate design will be included in total project costs and shared with the non-Federal sponsor pursuant to the terms of the PCA. No additional funds in excess of \$50,000 will be allotted to a project until the PCA is executed.

(2) Remainder of Design and Implementation Phase. After execution of the PCA, the district should request the remaining funds required for the design and implementation phase as appropriate to comply with budgetary and contracting guidance.

(3) Funds Requests. The district should prepare and send the requests for funds, through the MSC Programs Office, to the appropriate HQ RIT for coordination with HQ Programs Integration Division (CECW-IP). Each request should identify the name of the project, the PWI, the CAP authority it will be implemented under, the total amount of funds requested, and if the design and implementation phase will extend beyond one fiscal year, the amount of funds needed by fiscal year. The request should also contain a current CAP Fact Sheet. The project information in PRISM and P2 should be updated as soon as possible.

d. PCA. The design and implementation phase will be conducted under the provisions of the PCA executed by the District Commander and the non-Federal sponsor. The appropriate model PCA will be used. Authority to approve the PCA, including any deviations, and to execute the PCA shall be in accordance with the implementation memo for the appropriate model.

(1) Design. The design portion will conclude with completion of the plans and specifications for the project. Compliance with all applicable environmental laws and regulations, including, but not limited to NEPA and Section 401 of the Federal Water Pollution Control Act (33 U.S.C. 1341) must be verified and documented during the design portion.

(2) Implementation. Once the design portion has been completed, the parties must decide whether to proceed with implementation of the project, or terminate the PCA, in an orderly manner pursuant to the provisions of the PCA. However, no Government or non-Federal sponsor construction work shall be initiated prior to compliance with all applicable environmental laws and regulations.

e. Solicitations for Contracts.

(1) Solicitations for contracts will not be issued prior to execution of the PCA unless approved in advance by the MSC Commander following the District's written request.

(2) Further, solicitations for construction contracts should not be issued until the District Chief of Real Estate has certified in writing that sufficient real property interests are available to support construction under such contracts. However, in exceptional circumstances the District Commander may proceed and issue a solicitation contrary to this general policy after full assessment of the risks and benefits of proceeding.

(3) In those cases where solicitations are issued without sufficient real property interests, or prior to PCA execution, as allowed above, the solicitation documents should advise potential bidders of such facts.

f. Contract Bid Opening.

(1) No contract bids will be opened prior to execution of the PCA and prior to receipt of the non-Federal sponsor's required cash contribution. In no event will this policy be waived.

(2) If the District Commander issued a solicitation for a construction contract without sufficient real property interests to support a construction contract as described in paragraph F-11.e.(2) of this Appendix, sufficient real property interests must be available to support implementation under that contract before submitted bids may be opened and considered. The MSC Commander may approve opening bids prior to sufficient real property interests being available after receipt and review of a District's written request that includes adequate justification and full risk and benefit assessment. Due to concerns regarding liability and fairness to potential bidders, approval of such requests are discouraged and should be granted only in exceptional circumstances.

g. Award of Construction Contracts. Construction contracts will not be awarded until the District Chief of Real Estate has certified in writing that sufficient real property interests are available to support implementation under that contract. HQUSACE will consider limited exceptions to this policy only after submission of a written request by the District, through and with the concurrence of the MSC Commander, to the appropriate HQ RIT that contains clear and persuasive evidence that the outstanding real property interests will be obtained in a timely manner, that proceeding to award poses no significant liability or risk to the Government, and that approval is otherwise appropriate considering all relevant facts and circumstances.

h. Completion of the Design and Implementation Phase. The design and implementation phase is completed when 1) the District Commander determines that project construction and any cost shared monitoring, to be performed after physical construction, is complete or 2) the PCA is terminated, in an orderly manner pursuant to the provisions of the PCA, prior to completion of project construction.

i. OMRR&R of the Project. Upon physical completion of the project, the District Commander will notify the non-Federal sponsor in writing that construction of the project is complete, and will provide the non-Federal sponsor with an Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R) Manual. Upon receipt of the notice of completion of construction of the project, the non-Federal sponsor will operate, maintain, repair, rehabilitate, and replace the project in accordance with the OMRR&R Manual.

j. Project Completion Report. After project completion, including any cost shared monitoring to be performed after physical construction is complete, and the final audit and project closeout, the District Commander will transmit a project completion report to the MSC. The report will contain a short description of the project, the final Federal and non-Federal feasibility and design and implementation costs by phase, and the date that

the non-Federal sponsor was provided notice of physical completion in accordance with the terms of the PCA.

F-12. Approval Authorities for Decision Documents and Agreements.

a. Decision Documents. As discussed in detail in paragraph F-10.f. of this Appendix, the MSC Commander is authorized to approve project decision documents that he or she certifies are in compliance with law and policy including those where necessary policy waivers have been received (see paragraph F-10.f.(4) of this Appendix). Decision document approval authority may not be delegated to the District Commander.

b. Agreements.

(1) Authorities With Approved Model Agreements. The authority to approve a CAP FCSA or PCA, including any deviations thereto and the authority to execute such agreements, will follow the authorities and procedures outlined in the implementation memo for the applicable model.

(2) Authorities Without Approved Model Agreements. In cases where there is not an approved model, the MSC Commander, must forward to the appropriate HQ RIT one hardcopy and an electronic copy of a PCA package each containing the following: a clean copy of the negotiated draft agreement; a copy of the negotiated draft agreement with the deviations indicated by redline/strikeout from the Section 205 structural flood damage reduction model; a list of the deviations from the Section 205 structural flood damage reduction model and detailed reasons for the deviations; Certificate of Legal Review signed by the District Counsel; CAP PCA Checklist; and current letter of intent from the non-Federal sponsor. All documents requiring signatures (CAP checklist, Certificate of Legal Review, and letter of intent) must be scanned so that required signatures are contained in the electronic files.

F-13. Post Implementation Federal and Non-Federal Sponsor Responsibilities. Once any CAP project or separable element, under any CAP authority, has been completed, the project will be treated in the same manner as a completed project that was specifically authorized by the Congress. This includes assuring non-Federal sponsor compliance with PCA responsibilities and the periodic inspection of projects.

F-14. After Action Reviews. As part of the Headquarters responsibility to monitor policy and procedural compliance in this program, HQUSACE and MSC CAP managers will meet to conduct policy and procedural after action reviews of projects with PCAs executed in the past year. The procedural reviews shall be based on HQUSACE and existing MSC documentation requirements for decision-making. In addition to monitoring policy and procedural compliance, these reviews will serve as a forum for identification of management and procedural problems, general policy issues, and successes which will in turn form the basis for any needed corrective action and continued evolution of program operating principles.

F-15. Non-Federal Feasibility Work and Non-Federal Design and Implementation Work.

a. General. Non-Federal feasibility work and non-Federal design and implementation work is planning, design, or implementation activities performed by the non-Federal sponsor in lieu of the Federal Government during the feasibility phase or design and implementation phase, respectively. Such work is often referred to as “work-in-kind”. Neither non-Federal feasibility work nor non-Federal design and implementation work includes activities the non-Federal sponsor must perform as required in the CAP FCSA or PCA, respectively, such as participation on the study coordination team or Project Coordination Team, performance of activities related to acquisition of LERRD, investigation or response actions under the Hazardous Substances article, and certain audit-related activities. Credit may be afforded only for non-Federal feasibility work or non-Federal design and implementation work performed after execution of the applicable agreement (CAP FCSA or PCA). Non-Federal sponsors will not be afforded credit against the non-Federal share of a CAP study or project or reimbursed for any work undertaken, or contributed, or provided, for a CAP study or project except as described below.

b. Feasibility Phase. In accordance with the principles of Section 105(a) of the Water Resources Development Act of 1986, as amended, the non-Federal sponsor may be afforded credit against its share of study costs for the value of non-Federal feasibility work performed during the feasibility phase.

(1) Performance of non-Federal feasibility work and affording of credit toward the non-Federal sponsor’s share is only applicable for the portions of feasibility studies beyond the first \$100,000 in cost, and for non-Federal feasibility work performed subsequent to execution of the CAP FCSA.

(2) Credit afforded in accordance with the principles of Section 105(a) is limited to credit for non-Federal feasibility work that does not result in any reimbursement to the non-Federal sponsor. Therefore, the credit for non-Federal feasibility work can only be applied toward the additional cash requirement. To determine the additional cash requirement, subtract from the total required non-Federal share of total study costs the costs that the non-Federal sponsor must incur under the CAP FCSA for participation in the study coordination team and certain audit-related activities. Any amount of non-Federal feasibility work that exceeds the additional cash requirement must be included in total study costs but will be a 100 percent non-Federal sponsor responsibility.

c. Implementation Phase. Pursuant to Section 215 of the Flood Control Act of 1968, as amended, the non-Federal sponsor may be afforded credit against its share of total project costs for the value of non-Federal design and implementation work performed during the design and implementation phase.

(1) In the CAP program, the policy is that the maximum amount of credit that can be afforded for non-Federal design and implementation work is limited so that it does not

result in any reimbursement to the non-Federal sponsor. Therefore, the credit for non-Federal design and implementation work can only be applied toward the additional cash requirement. To determine the additional cash requirement, subtract from the total required non-Federal share of total project costs the sum of the value of LERRD and the costs that the non-Federal sponsor must incur under the PCA for participation in the Project Coordination Team, investigations or response actions under the Hazardous Substances Article, and certain audit-related activities. Any amount of non-Federal design and implementation work that exceeds the additional cash requirement will be included in total project costs but will be a 100 percent non-Federal sponsor responsibility.

(2) For Section 1135 projects, no more than 80 percent of the non-Federal sponsor's share may be non-Federal design and implementation work.

(3) For Sections 14, 205 (structural), and 208 projects, non-Federal design and implementation work cannot be credited toward the 5 percent cash requirement.

d. Eligible Parties to Perform Non-Federal Feasibility Work or Non-Federal Design and Implementation Work. Non-Federal feasibility work and non-Federal design and implementation work for credit may only be provided by the non-Federal sponsor, and can be accomplished by the hired labor of the non-Federal sponsor or by contract administered by the non-Federal sponsor.

e. Determination of Value. The value of the non-Federal feasibility or design and implementation work will be estimated prior to the initiation of the effort. For the purposes of estimating total study costs or total project costs and projecting the non-Federal sponsor's cash requirement, the Corps and the non-Federal sponsor will agree upon a value for such work at the beginning of the study or design and implementation, as applicable. The actual amount of credit to be afforded for non-Federal feasibility or design and implementation work will be subject to an audit to determine reasonableness, allowability and allocability of the costs and will not exceed the actual costs incurred or the amount of the Government estimate of such work if the work had been performed by the Government, whichever is less. The Corps shall apply applicable Federal regulations, including OMB Circular A-87 or A-122 (for non-profit sponsors). The non-Federal sponsor must comply with applicable Federal and state laws and regulations, including the requirement to secure competitive bids for all work to be performed by contract.

f. Ineligible Activities. The non-Federal sponsor may not receive credit for supervision and administration of work performed by the Government or the Government's contractors. Many of the tasks included in the Supervision and Administration account during the design and implementation phase, including most of the contract management related activities, are inherent Government functions which may not be contracted out or assigned to others to perform (see Federal Acquisition Regulation subpart 7.5). The non-Federal sponsor will receive credit for supervision and

administration of any contracts that it awards subject to an audit to determine reasonableness, allowability, and allocability of the costs.

g. Other Contributions. Contributions of cash, funds, materials and services from other than the non-Federal sponsor may be accepted for ecosystem restoration projects (Sections 204, 206, and 1135) under the provisions of Section 203 of the WRDA of 1992. However, the value of such contributions will not be included in total project costs and will not be credited toward the non-Federal sponsor's share of total project costs.

F-16. Real Estate.

a. Real Estate Plan Requirements. The analysis of the nature and extent of real estate requirements must be conducted in accordance with Chapter 12 of ER 405-1-12, including consideration and identification of the specific interests, estates, and acreage required for the project. While all CAP decision documents must contain a Real Estate Plan (REP) prepared in accordance with Chapter 12, the level of detail required for each topic required to be discussed in the REP will vary depending on the scope and complexity of the project. The level of detail contained in the REP generally should match the level of detail contained in the balance of the project decision document.

b. Existing Projects. For projects involving modification of existing projects, the interests and estates acquired for the existing project, as well as any outgrants, must be analyzed by the District Real Estate Division to determine if sufficient rights are available for the project modification. A standard lease format has been prepared for Section 1135 projects and is included in Chapter 8 of ER 405-1-12.

c. Credit. The value and amount of credit given for LERRD required to be provided by the non-Federal sponsor will be determined after review and preliminary approval by the District Real Estate Division after consultation with the Project Manager.

F-17. Beneficial Uses of Dredged Material. There is a new budget category of work that includes Section 145, as amended and Section 204, as amended. The primary purpose of budgeting these types of projects under one line item is that beneficial use of dredged material and sediment management requires an integrated, systematic approach using all applicable authorities. This budgetary approach enhances the consideration and use of these authorities during dredging activities. Guidance on each individual authority is located in Section III of this Appendix.

F-18. Multi-Purpose CAP Projects.

a. General. In an effort to promote comprehensive collaborative planning, the formulation of multipurpose projects may be accomplished under CAP. The term "multi-purpose project" often is used to describe two different types of situations, each involving different formulation. In the first situation, a project is formulated as either a NED plan with incidental NER benefits or a NER plan with incidental NED benefits and costs are

shared according to one cost sharing formula. In the second situation, often referred to as “Combined Plans”, an NED plan and an NER plan are formulated together, i.e. have interdependent features, using a trade-off analysis. Combined Plans require complex evaluation and tradeoff analyses not normally consistent with the limited scope and complexity associated with CAP projects. Each of these two approaches is appropriate for consideration under CAP.

b. **Cost Allocation Between Purposes for Combined Plans.** If the districts wish to engage in the formulation and evaluation of Combined Plans, they should follow the procedures stated in Section IX of Appendix E of this regulation. However, in no case will the cost for a purpose included in the Combined Plan exceed the statutory Federal per project limit for that purpose under its applicable CAP authority. The cost for each purpose will include the separable costs, plus the joint costs allocated to each purpose. Cost allocation will be performed using the SCRUB method as described in Appendix E of this regulation. The costs for each purpose will be shared in accordance with the cost sharing formula for the applicable CAP authority. For accounting purposes, it is critical to keep track of the costs assigned to each purpose. Consultation with HQ is required prior to proceeding with the Combined Plan approach.

c. **Limitations.** Sections 14 and 1135 will not be used for multi-purpose planning under the CAP Program. Section 111 will not be used in conjunction with any other CAP authority besides Section 103. Further, Sections 145 and 204 will not be used in conjunction with any other CAP authorities besides Section 107.

d. **Recreation.** As used in this paragraph, the addition of recreation does not result in a “multi-purpose project”. For procedures and limitations for adding recreation to CAP projects, see paragraph F-19 of this Appendix.

F-19. Recreation.

a. **General.** Recreation features may be added to any project implemented under the CAP authorities (except for Section 14 and Section 208), if appropriate. Any recreation features should be formulated in accordance with current policies and procedures governing recreation (see Section VII of Appendix E of this regulation).

b. **Limits on Inclusion of Recreation Features.** For each CAP authority, justified separable recreation features may be added (except for Section 14 and Section 208) if the cost of such measures does not increase the Federal share of total project costs by more than 10 percent of the Federal share of total project costs without the added recreation, except as follows:

(1) When adding recreation to a multi-purpose project, the recreation costs must not exceed 10 percent of the total Federal cost of the combined purposes;

(2) Where the non-Federal sponsor has waived reimbursement of the value of LERRD as described in paragraph F-20.c.(5) of this Appendix, the 10 percent amount will be calculated on total project cost that does not include the value of LERRD for which the non-Federal sponsor waives reimbursement;

(3) The formulation of non-structural flood damage reduction projects is not constrained by the limitation of increased Federal cost for recreation; and

(4) Where a policy waiver has been approved in accordance with paragraph F-10.f.(4) of this Appendix.

c. Cost Sharing. Separable recreation features will be cost shared 50/50 with the non-Federal sponsor.

F-20. Ecosystem Restoration Policies Applicable to Section 204, Section 206, and Section 1135.

a. General. A discussion of policies applicable to ecosystem restoration may be found in Appendix E of this regulation, in ER 1165-2-501, and in EP 1165-2-502. This paragraph describes policies for projects formulated under Section 204, Section 206, and Section 1135.

b. Considerations in Determining Real Estate Requirements. Paragraph F-16 of this Appendix presents the general principles for determining real estate requirements for CAP projects. However, the formulation of ecosystem restoration projects generally can present challenges with regard to determining the acreage, interests, and estates required to support the implementation of ecosystem restoration projects under CAP authorities. Accordingly, the following policies, procedures, and three part analyses must be applied in determining the real estate requirements for such projects.

(1) Acreage Required. Identification of the acreage directly and physically required to implement and operate and maintain ecosystem restoration project features typically is similar to the efforts in non-ecosystem restoration projects and presents few unusual difficulties. However, determining what additional acreage may be required outside of the "footprint" of project features to reasonably ensure the production of the benefits upon which the project was formulated may be more complex. The need to include, and the amount of, acreage in addition to the footprint of project features and immediately surrounding areas should be carefully evaluated by the project delivery team. Factors to consider in making this determination include the physical integrity of the project, cost effectiveness, incremental costs, operation and maintenance requirements, and the risks associated with not including the additional acreage. For example, there may be an acceptable minimal risk that future land use detrimental to the project will occur on the land adjacent to the project footprint where it is owned in fee by a public agency whose mission is compatible with project outputs or where development of the adjacent land is legally restricted for the foreseeable future to purposes consistent

with project outputs. Inclusion of acreage in addition to that required for the footprint of project features must be directly tied to identified and measurable planning and implementation objectives, must not be simply assumed to be required for the project, and must be properly documented and justified. In some cases, an interest in all of the land benefiting from the project may not be required to reasonably ensure that the outputs justifying the project are obtained.

(2) Interest Required.

(a) General Policy. Determination of required interests (fee or permanent easement) must be driven by program, policy, and project requirements that ensure achievement of ecosystem benefits and protection of the Federal interest in a manner that best serves the public interest. As a matter of Corps policy, and as stated in ER 405-1-12, fee title is required as a general rule for all lands required for the construction and operation and maintenance of the project. The rationale for this general rule is that the land use requirements for implementation of CAP restoration projects, and the significant restrictions on remaining non-project land uses, generally are tantamount to fee ownership and to fee value. Further, where the restoration project provides the opportunity for use by the general public in ways consistent with the ecosystem restoration purpose, members of the general public should not be excluded from project lands that have been purchased, or otherwise provided, with public funds. Finally, fee title greatly reduces the risk that incompatible uses on project land will occur over the period of OMRR&R and, when compared to easement interpretation and enforcement that may vary from state to state, ensures that ownership rights vested in the project are clear and enforceable.

(b) Exceptions to General Policy Requiring Fee. Notwithstanding that fee title is generally the interest that must be provided to support CAP ecosystem restoration projects, there are circumstances where it may be appropriate to utilize permanent easements instead of fee. Such circumstances include:

i. where only select and easily identifiable and narrow affirmative rights are required for successful implementation of the project (for example, channel improvement rights or the right to flood);

ii. where project lands consist of the bed and immediate bank of a watercourse for the installation of features that improve habitat for aquatic resources (for example, root wads, shallow excavations, riffles, etc.);

iii. where the acreage of project lands, as assembled, is relatively small, is limited to that acreage necessary to construct and operate and maintain project ecosystem restoration features, and does not provide the opportunity for use by the general public in ways consistent with project purposes either because the lands are isolated from lawful public access (such as a public road, adjacent public lands, or publicly accessible watercourse) or because of the configuration of the project lands; or

iv. where project lands are owned in fee by public agencies other than the non-Federal sponsor and the owning agency cannot convey fee title and will not serve as a co-sponsor of the project; foreseeable future uses of the land by the public agency fee owner are compatible with project purposes; and public access is provided otherwise or is not compatible with project purposes.

(c) Approval Authority. Where one or more of the circumstances described above in sub-paragraph (2)(b) exist, and the project decision document, or other written request of the District, persuasively describes the need for an exception from the general policy rule, the MSC may approve use of a permanent easement instead of fee for the implementation of the CAP ecosystem restoration project where use of such easement will satisfy project requirements and protect the project benefits. All other requests for an exception to require easement rather than fee are discouraged and must be forwarded to the appropriate HQ RIT for review, coordination within HQUSACE, and approval.

(3) Estate Required. Once the appropriate interest is determined as described above, the corresponding standard estate must be used as explained and identified in Chapter 12 to ER 405-1-12. Except as otherwise provided in Chapter 12, all non-standard estates must be approved at HQUSACE with requests for such approval forwarded to the appropriate HQ RIT for review, coordination within HQUSACE, and approval.

c. Eligibility Limitations.

(1) Work on Other Federal Agency Lands. In the absence of specific legislative authority or direction of the Department of the Army, restoration projects will not be implemented on other Federal lands. Where incidental restoration benefits may accrue to lands owned by another Federal agency, these incidental benefits may be identified, but not included in the benefit evaluation.

(2) Remediation. Recommended projects will be for ecosystem restoration, not remediation of pollution problems covered by other statutes or for which others are liable. Remediation is typically for the purpose of meeting target criteria for contaminants or regulatory conditions related to human health and safety, rather than for ecosystem quality.

(3) Eradication of non-native or invasive species. Projects may be implemented for control of noxious or invasive species in situations where there is not another applicable Corps authority. This will be limited to a single action at any location. However, during formulation, the likelihood of obtaining positive outputs in sufficient quantity and/or for a sufficient period of time to justify the costs must be considered.

(4) Section 206 and Section 1135 projects with high LERRD values. The Corps ecosystem restoration mission is to apply its planning, hydrologic and engineering

expertise to solve large and/or complex restoration problems. Projects with very limited manipulation of the ecosystem that utilize extensive tracts of land appear to present themselves as preservation measures rather than restoration measures. Such projects are not appropriate civil works ecosystem restoration investments. Therefore, as an indicator of this potential situation, land values for a restoration project generally should not exceed 25 percent of total project costs. If the estimated LERRD value for a proposed project exceeds 25 percent of total project costs, the MSC must evaluate the project formulation to ensure that the project properly utilizes Corps expertise and is not land intensive. As part of its evaluation, the MSC must ensure that the project plan requires only the lands necessary to implement the project and to reasonably assure that the benefits sufficient to justify the project are achieved.

(5) Voluntary waiver of reimbursement of LERRD value in excess of non-Federal sponsor's percentage share for Section 206 and Section 1135 projects. If the MSC determines that the project properly utilizes Corps expertise, that the project plan is not land intensive, but that the estimated LERRD value exceeds 25 percent of total project costs (e.g., due to high land values in urban areas) the MSC may approve the project for implementation if the non-Federal sponsor provides a letter of intent to voluntarily waive reimbursement for the value of LERRD that exceeds the non-Federal sponsor's percentage share of total project costs. If the non-Federal sponsor does not voluntarily waive reimbursement for the value of LERRD that exceeds its percentage share of total project costs, any further efforts on the project should be suspended. Work on such suspended projects will continue only to the extent Congress provides funding specific to the project. If the non-Federal sponsor does provide the necessary letter of intent, the project decision document must clearly describe that the non-Federal sponsor has voluntarily agreed to waive reimbursement for the value of LERRD above its percentage share of total project costs, and the PCA must contain provisions for implementing this concept. Notwithstanding that the non-Federal sponsor has agreed to such a waiver, compliance with the following principles must continue:

(a) The project must be formulated so that only the lands necessary to implement the project and reasonably assure benefits sufficient to justify the project are required for the project;

(b) The estimated value of all project LERRD must be considered in comparison of alternatives for plan selection; and,

(c) The non-Federal sponsor must comply with all applicable provisions of Public Law 91-646, as amended and implementing regulations, for all LERRD that it must acquire to implement the project.

F-21. Monitoring and Adaptive Management.

a. **Monitoring.** Monitoring to be performed after physical construction is complete is rarely appropriate for CAP. Such monitoring will only be appropriate where

the uncertainty of achieving the projected outputs is high. All proposed monitoring to be performed after physical construction is complete must be clearly defined and justified in the project decision document. Such monitoring will be limited to no more than five years after completion of physical construction. The cost of such monitoring will be included in total project costs and shared with the non-Federal sponsor and will not exceed one percent of the costs included in total project costs for the features that are to be monitored minus the costs for monitoring. A waiver is needed pursuant to paragraph F-10.f.(4) of this Appendix to increase either of these limits (costs or duration). Monitoring will not be performed on recreation features. The non-Federal sponsor will be responsible for performance of OMRR&R during the monitoring period.

b. Adaptive Management. Adaptive management will not be performed and will not be a cost shared item in CAP projects.

F-22. Design Deficiency Corrections.

a. Design Deficiency Criteria. The engineering criteria described in ER 1165-2-119 for establishing the existence of a design deficiency apply to the establishment and correction of design deficiencies for CAP projects. Costs for all design deficiency corrections at non-Federally operated and maintained projects will be shared with the non-Federal sponsor in accordance with the current cost sharing for that purpose as established in the Water Resources Development Act of 1986, Public Law 99-662, as amended, unless, in the case of a project implemented with different cost sharing, an exception is granted by ASA (CW) during the investigation of the design deficiency.

b. Design Deficiency Correction for Uncompleted Project. Where the District Commander has not notified the non-Federal sponsor of completion of construction of the project in accordance with the terms of the PCA, the investigation and remediation of any design deficiency correction will be carried out and cost shared under the project PCA. The Federal share of all work on the project, including the deficiency correction, cannot exceed the statutory Federal per project participation limit.

c. Design Deficiency Correction for Completed Project. The following procedures will be followed where the District Commander already has notified the non-Federal sponsor of completion of the project. The MSC Commander may initiate a reconnaissance-level study of the project with the sole purpose of determining whether the improper functioning is the result of a design deficiency. This study will be funded at 100 percent Federal expense under Inspection of Completed Works and will be limited to no more than \$100,000. If the study concludes that a deficiency exists, the corrective works will be processed as a new project decision. Design and implementation work will be carried out under the original PCA, once it has been modified to reflect the addition of the deficiency correction work under the new decision document, and will be cost shared in accordance with the current cost sharing formula for that purpose as established in the Water Resources Development Act of 1986, Public Law 99-662, as amended, unless, in the case of a project implemented with different cost sharing, an exception is granted by

ASA(CW) during the reconnaissance-level study. However, if there is not an existing PCA for the project, one will be prepared to cover design and implementation work necessary to correct the design deficiency. The Federal share of all work on the project, including the deficiency correction, cannot exceed the statutory Federal per project participation limit. None of the costs of the work financed under Inspection of Completed Works will be counted against the applicable CAP per project limit.

SECTION III - SPECIFIC GUIDANCE FOR PROJECT AUTHORITIES

F-23. Section 14, Flood Control Act of 1946, as amended - Streambank and Shoreline Erosion Protection of Public Works and Non-Profit Public Services.

a. General. This program is designed to implement projects to protect public facilities and facilities owned by non-profit organizations that are used to provide public services that are open to all on equal terms. These facilities must have been properly maintained but be in imminent threat of damage or failure by natural erosion processes on stream banks and shorelines, and are essential and important enough to merit Federal participation in their protection. The streamlined formulation and justification procedures outlined in this paragraph are in recognition of the urgency of addressing such projects.

b. Eligible Facilities. Eligible facilities are: highways, highway bridge approaches, public works, churches, public and private non-profit hospitals, schools, and other public or non-profit facilities offering public services open to all on equal terms; and known historic properties whose significance has been demonstrated by a determination of eligibility for listing on, or actual listing on, the National Register of Historic Places. The historic property (ies) must be open to all on equal terms.

c. Restrictions. Although the facilities may be eligible for protection, the following situations are not eligible for implementation: work designed solely to protect undeveloped land or to protect non-essential, temporary, or mobile facilities; bank failure clearly not related to stream flow, storm, or wind driven waves; inadequate drainage (groundwater, surface runoff, overland flow, poor drainage undermining the facility itself and springs); facilities that are the cause of erosion (e.g. exfiltrating sewer-lines, drains, water lines, lagoons); erosion clearly and directly caused by the operation of a man-made project or facility (e.g. the use of navigation facilities or the operation of water control structures); levees or other facilities for which the owner has a contractual agreement with the Federal government to maintain; construction, repair, restoration, relocation, or modification of the facility to be protected; work within the limits of Corps projects which are operation and maintenance responsibilities of those projects; and work benefiting other Federal agencies, which will be accomplished on a cost reimbursable basis under other Corps programs.

d. Formulation and Justification. Following a finding of eligibility, and given the narrow geographic focus, low cost of these projects, and the imminent threat to the facilities, the formulation and evaluation should focus on the least cost alternative solution. The least cost alternative plan is considered to be justified if the total costs of the proposed alternative is less than the costs to relocate the threatened facility.

e. Valuation of LERRD. The valuation of LERRD for crediting purposes for a Section 14 project is the same as for any other project, except when the lands, easements or rights-of-way are part of the tract of land that includes the facility or structure being protected. In such cases, the non-Federal sponsor will not receive credit for the value of LERRD it provides that are part of the tract of land on which the facility or structure to be protected is located, if such tract of land is owned by either the non-Federal sponsor or the owner of the facility or structure on the date that the PCA is executed.

f. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as structural flood damage reduction projects implemented under specific congressional authorization. The non-Federal sponsor is responsible for a minimum of 35 percent of total project costs to a maximum of 50 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must pay 5 percent of total project costs in cash, provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 35 percent of total project costs, the non-Federal sponsor must pay additional cash so that its contributions equal 35 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

F-24. Section 103, River and Harbor Act of 1962, as amended - Beach Erosion and Hurricane and Storm Damage Reduction.

a. Eligibility. This authority may be used for protecting multiple public and private properties and facilities and single non-Federal public properties and facilities against damages caused by storm driven waves and currents. All projects must be formulated for hurricane and storm damage reduction, in accordance with current policies and procedures governing projects of the same type which are specifically authorized by Congress (see Section IV of Appendix E of this regulation). Any policies and procedures applicable to Federal participation in projects involving beach nourishment must apply to Section 103 projects involving beach nourishment.

b. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as hurricane and storm damage reduction projects implemented under specific congressional authorization. The non-Federal sponsor is responsible for 35 percent of total project costs assigned to hurricane and storm damage reduction, plus 50 percent of total project costs assigned to recreation plus 100 percent of total project costs assigned to privately owned shores (where use of such shores is limited to private interests) during the design and implementation phase. Any costs assigned to protection of Federally owned shores are 100 percent Federal. See Appendix I of this regulation and ER 1165-2-130 for more detailed guidance regarding cost sharing of hurricane and storm damage reduction projects. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than the non-Federal sponsor's required share, the non-Federal sponsor must make a cash payment so that its contributions equal the required share. OMRR&R on non-Federally owned shores is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

F-25. Section 107, River and Harbor Act of 1960, as amended - Navigation Improvements.

a. General. Section 107 projects are to be formulated for commercial navigation purposes in accordance with current policies and procedures governing projects of the same type which are specifically authorized by Congress (see paragraph 3-2.d.(2) of this regulation and Section II of Appendix E of this regulation).

b. As modified by Section 201 of WRDA 1996, Public Law 104-303, Section 101 of WRDA 1986, Public Law 99-662, requires that the term "general navigation features" include dredged material disposal facilities required for construction or operation and maintenance of the other general navigation features. Accordingly for Section 107 projects, both the Federal costs of initial construction and the Federal costs of construction for subsequent dredged material disposal facilities count toward the per project limit. Studies of projects for which the per project limit would be reached as a consequence of the construction of future dredged material disposal facilities should be converted to a GI study unless a waiver is obtained pursuant to Section I, paragraph F-7.b(1) and Section II, paragraph F-10.f.(4). of this Appendix.

c. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as commercial navigation projects implemented under specific congressional authorization.

(1) Commercial Navigation. The non-Federal sponsor is responsible for 10 percent of total costs of construction of the general navigation features (GNF) (including costs of construction of dredged material disposal facilities) for depths, excluding associated over-depth and entrance channel wave allowances, less than or equal to 20 feet, 25 percent of total costs of construction of the GNF (including costs of construction of dredged material disposal facilities) for depths, excluding associated over-depth and entrance channel wave allowances, in excess of 20 feet but equal to or less than 45 feet, and 50 percent of total costs of construction of the GNF (including costs of construction of dredged material disposal facilities) for depths, excluding associated over-depth and entrance channel wave allowances, in excess of 45 feet during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor will participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the sponsor's contributions listed above is less than the non-Federal sponsor's required share, the non-Federal sponsor must make a cash payment so that non-Federal contributions equal the required share. In addition, the non-Federal sponsor must pay an additional 10 percent of the total costs of construction of the GNF (including costs of construction of dredged material disposal facilities) which will be offset by the value of LERR provided by the non-Federal sponsor for the project. Further, the non-Federal sponsor will be responsible for the construction and operation and maintenance of any local service facilities required for the project. Operation and maintenance (O&M) of the GNF will be a Federal responsibility. For projects in excess of 45 feet, the non-Federal sponsor is responsible for 50 percent of the increased costs of operation and maintenance. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix). The costs of O&M of the GNF are not counted toward the statutory Federal per project participation limit for Section 107.

(2) Recreational Navigation. The non-Federal sponsor is responsible for 50 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 50 percent of total project costs, the non-Federal sponsor must make a cash payment so that its contributions equal 50 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal

sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

d. A Section 107 fact sheet including a project map must be prepared for all proposed Section 107 projects and submitted electronically to the appropriate HQ RIT for review, coordination within HQUSACE (including CECW-I), and consultation with OASA(CW) during the Federally funded portion of the feasibility phase. The CAP FCSA or the PCA (if a CAP FCSA is not required or has already been executed as of 31 January 2006) will not be executed until the OASA (CW) has concurred or non-concurred in proceeding with the project. However, in the event of non-concurrence, work on the project may proceed only to the extent that Congress makes specific allocations to the project. See page 43 of this Appendix for sample format of fact sheet.

e. If the decision document determines that the project is not economically justified, no further action shall be taken under this authority.

F-26. Section 111, River and Harbor Act of 1968, as amended - Shore Damage Prevention or Mitigation Caused by Federal Navigation Projects.

a. Purpose. This authority authorizes the planning of a justified level of work for prevention or mitigation of damages to both non-Federal public and privately owned shores to the extent that such damages can be directly identified and attributed to Federal navigation works located along the coastal and Great Lakes shorelines of the United States, and shore damage attributable to the Atlantic Intracoastal Waterway and the Gulf Intracoastal Waterway. Further, the Corps is authorized to implement such a project without specific Congressional authorization if the Federal share of the first cost of implementation is \$5,000,000 or less.

b. Eligible work. Under this authority, Federal funds may only be used to address the shore damages caused by the Federal navigation works. If there are multiple causes for the damages, Federal participation in a Section 111 solution may continue only if the non-Federal sponsor agrees to bear all costs associated with correcting the shore damage not attributed to the Federal navigation works or if the integrated solution is pursued under both Section 111 and Section 103 as a Combined Plan in accordance with Section II, paragraph F-18 of this Appendix or under an authorized hurricane and storm damage reduction study or project. However, when there is a larger shore damage problem caused by more than just the Federal navigation works, a complete solution may be formulated under either an authorized hurricane and storm damage reduction study and project, or under Section 103. Section 111 cost sharing would apply to those portions of the project addressing damages caused by the Federal navigation works.

c. Coordination.

(1) Implementation measures proposed under this authority will be coordinated with other Federal and non-Federal shore protection projects in the same geographic area.

(2) To the extent practicable, any Section 111 projects and shore protection pursued under other authorities in the same area will be combined into a comprehensive regional project.

d. Restrictions.

(1) Geographic Limitation. Work under this authority extends only to the geographic limit of damages that can be directly identified and attributed to the navigation project.

(2) Construction, Operation, and Maintenance on Federally Owned Land. The Corps may not use this authority to provide shore damage control measures on Federally owned property when the Federal Government would be the major beneficiary. The Corps may include Federal property to be protected if the property is a small but integral part of the shore damage control measure but the Corps will not bear any financial responsibility for the share of project or maintenance costs attributable to these lands.

(3) Erosion Process. Works for prevention or mitigation of shore damages such as those caused by riverbank erosion or vessel generated wave wash will not be addressed under this authority.

e. Level of Mitigation. The target degree of mitigation is the reduction of shore damage to the level which would have existed without the influence of navigation works at the time such navigation works were accepted as a Federal responsibility. This authority will not be used to restore shorelines to historic dimensions.

f. Periodic Nourishment. Policy and procedures applicable to Federal participation in periodic nourishment for shore protection projects will apply to Section 111 projects with periodic nourishment.

g. Limit on Delegated Corps Implementation Authority. Section 111 provides the Secretary of the Army the authority to implement projects for which the estimated Federal first cost is \$5,000,000 or less (Feasibility phase costs are shared 50/50 with the non-Federal sponsor in accordance with Section I, paragraph F-6.a. of this Appendix; these costs are not included in computing the estimated Federal first cost). If the Federal share of implementation costs for a Section 111 project, including periodic nourishment during the period of analysis, would exceed \$5,000,000, the project may not proceed as a Federal undertaking without specific congressional authorization. This provision applies even if the non-Federal sponsor is willing to be responsible for the amount of the Federal share exceeding \$5,000,000. If at any time it becomes apparent that the Federal share of

total project costs would definitely exceed \$5,000,000, the Section 111 works may not proceed or continue as a Federal undertaking without specific Congressional authorization, and the work should be converted to GI in accordance with Section I, paragraph F-9 of this Appendix.

h. Items of Non-Federal Cooperation.

(1) Total Project Cost. The costs of implementing measures under this section must be shared in the same proportion as the cost sharing provisions applicable to the project causing the shore damage.

(2) Real Estate. The non-Federal sponsor's responsibility for providing interests in real estate, and for performance of facility or utility relocations, required for projects pursued under Section 111 will be the same as for the project causing the shore damage. HQUSACE should be consulted early in the formulation process if there are questions regarding this issue.

(3) Operation and Maintenance. The non-Federal sponsor is required to operate and maintain the mitigation measures, and, in the case of interests in real property acquired in conjunction with non-structural measures, to operate and maintain the property in accordance with regulations prescribed by the Corps.

(4) General. The above are items that are generally required to implement a project under this authority. However, given the wide variety of circumstances that could exist for Section 111 projects such items may not be appropriate for all projects. Therefore, for any projects proposed for implementation under this authority it is recommended that the details of the project be coordinated with the MSC, appropriate HQ RIT, and HQ Policy Compliance Division, early in the feasibility phase, to ensure that the appropriate items of cooperation are identified for the project.

F-27. Section 145, Water Resources Development Act of 1976, as amended – Placement of Dredged Material on Beaches.

a. General. The purpose of this authority is to provide for placement of beach quality sand, that has been dredged in constructing or maintaining navigation inlets and channels adjacent to such beaches, when the costs are greater than the least cost disposal plan, provided that (1) a State requests it, (2) the Secretary of the Army considers it to be in the public interest, (3) the additional cost of disposal is justified by reduction in potential hurricane and storm damages, (4) the non-Federal sponsor is willing to contribute the appropriate share of the additional costs, and (5) requirements for public use and access are provided. In cases where the additional costs for placement of the dredged material is not justified, the Corps may still perform the work if the State requests it, and the State or other non-Federal sponsor contributes 100 percent of the additional costs. Consideration must be given to the schedule of a State, or a political

subdivision of a State, for providing its share of funds for placing sand on beaches, and, to the extent practicable, accommodation of such schedule.

b. Feasibility Phase. There is no requirement to identify the NED plan for a Section 145 project. However, there is a need to demonstrate efficient use of Federal funds. The additional costs of the requested disposal must be justified by the NED benefits associated with the protection of the beach upon which the sand is placed and must meet all other related policies and procedures associated with storm damage reduction including but not limited to public access, environmental acceptability, cost sharing, and the provision of LERRDs. These analyses will be performed during the feasibility phase and shared 50/50 with the non-Federal sponsor.

c. Project Cost Sharing. The non-Federal sponsor is responsible for 35 percent of the additional costs of placement of the material. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. However, the non-Federal sponsor will not receive credit for the value of LERRD required for the project – only the incremental placements costs are shared by the Government. OMRR&R on non-Federally owned shores is a 100% non-Federal responsibility.

F-28. Section 204, Water Resources Development Act of 1992, as amended - Beneficial Uses of Dredged Material.

a. General. The purpose of this authority is to carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging for construction, operation, or maintenance by the Secretary of an authorized navigation project.

b. Determination of Base Plan. Disposal of dredged material associated with construction or maintenance dredging of navigation projects should be accomplished in the least costly manner consistent with sound engineering practice and meeting all Federal environmental requirements. This constitutes the base plan for the navigation purpose. If the base plan (least cost disposal alternative) includes disposal of material in a manner benefiting the environment the costs for this disposal are included in total costs of the general navigation features and funded accordingly. Where the disposal of material in a manner that benefiting the environment is not part of the base plan for the navigation purpose, the base plan shall serve as a reference point for determining the incremental costs of the ecosystem restoration features that are attributable to the environmental purpose.

c. Section 204(e) of WRDA 1992, as amended (often referred to as Section 207). Although it amends Section 204 of WRDA 1992, Section 207 of WRDA 1996 is a separate authority, which authorizes for navigation projects, subject to certain

requirements, the use of a disposal method that is not the least cost option if the incremental costs are reasonable in relation to the environmental benefits. Implementation of Section 207 is not covered by this Appendix. Therefore, the MSC and district should consult with the appropriate HQ RIT and the HQ Policy Compliance Division for appropriate guidance prior to considering use of this authority.

d. Project Cost Sharing. Any incremental costs above the cost of the base plan will be shared with the non-Federal sponsor. The non-Federal sponsor is responsible for 25 percent of total project costs of the Section 204 project during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 25 percent of total project costs of the Section 204 project, the non-Federal sponsor must make a cash payment so that its contributions equal 25 percent of total project costs of the Section 204 project. OMRR&R is a 100% non-Federal responsibility.

F-29. Section 205, Flood Control Act of 1948, as amended - Flood Control.

a. General. Projects implemented under this authority are formulated for structural or non-structural measures for flood damage reduction in accordance with current policies and procedures governing projects of the same type which are specifically authorized by Congress (see Section III of Appendix E of this regulation).

b. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as structural flood damage reduction projects or non-structural flood damage reduction projects implemented under specific congressional authorization.

(1) Structural Flood Damage Reduction Projects. The non-Federal sponsor is responsible for a minimum of 35 percent of total project costs to a maximum of 50 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must pay 5 percent of total project costs in cash, provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 35 percent of total project costs, the non-Federal sponsor must pay additional cash so that its contributions equal 35 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of

the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

(2) Non-Structural Flood Damage Reduction Projects. The non-Federal sponsor is responsible for 35 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 35 percent of total project costs, the non-Federal sponsor must make a cash payment so that its contributions equal 35 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

c. If the decision document determines that the project is not economically justified, no further action shall be taken under this authority.

F-30. Section 206, Water Resources Development Act of 1996, as amended - Aquatic Ecosystem Restoration.

a. General. The purpose of this authority is to develop aquatic ecosystem restoration and protection projects that improve the quality of the environment, are in the public interest, and are cost effective in accordance with current policies and procedures governing projects of the same type which are specifically authorized by Congress (see Section V of Appendix E of this regulation).

b. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as ecosystem restoration projects implemented under specific congressional authorization. The non-Federal sponsor is responsible for 35 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 35 percent of total project costs, the non-Federal sponsor must make a cash payment so that its contributions equal 35 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to

contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

F-31. Section 208, Flood Control Act of 1954, as amended - Snagging and Clearing for Flood Damage Reduction.

a. General. This authority provides for minimal measures to reduce nuisance flood damages caused by debris and minor shoaling of rivers. This authority is treated as a flood damage reduction project for policy eligibility and cost sharing purposes.

b. Restrictions. Work under this authority is limited to clearing and snagging or channel excavation and improvement with limited embankment construction by use of materials from the channel excavation. If investigation indicates that placement of revetment is needed to provide a complete and fully effective project, this work will be accomplished at the expense of the non-Federal sponsor.

c. Project Cost Sharing. Projects implemented under this authority have the same project cost sharing requirements as structural flood damage reduction projects implemented under specific congressional authorization. The non-Federal sponsor is responsible for a minimum of 35 percent of total project costs to a maximum of 50 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must pay 5 percent of total project costs in cash, provide all LERRD required for the project, participate in the Project Coordination Team, perform necessary non-Federal audits, and perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project. If the value of the non-Federal sponsor's contributions listed above is less than 35 percent of total project costs, the non-Federal sponsor must pay additional cash so that its contributions equal 35 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

F-32. Section 1135, Water Resources Development Act of 1986, as amended - Project Modifications for Improvement of the Environment.

a. Purpose. This authority provides for the review and modification of structures and operations of water resources projects constructed by the Corps for the purpose of improving the quality of the environment when it is determined that such modifications are feasible, consistent with the authorized project purposes, and will improve the quality of the environment in the public interest. In addition, if it is determined that a Corps water resources project has contributed to the degradation of the quality of the

environment, restoration measures may be implemented at the project site or at other locations that have been affected by the construction or operation of the project, if such measures do not conflict with the authorized project purposes.

b. Eligible Projects. A project must fit at least one of the categories described in the following sub-paragraphs.

(1) Modification of an Existing Corps Project. These are projects that incorporate modifications in the structures or operations of a permanent water resources project constructed by the Secretary of the Army in response to a Corps construction authority. For projects in this category, there is no requirement to demonstrate that the Corps project contributed to degradation.

(2) Restoration Projects. Restoration projects may be undertaken at those locations where the construction or operation of an existing Corps project has contributed to the degradation of the quality of the environment. These projects do not need to modify an existing Corps project.

(3) Joint projects. Where a project was constructed or funded jointly by the Corps and another Federal agency, those elements constructed or funded by the other Federal agency may be modified using the Section 1135 authority. Where the construction or operation of the joint project has contributed to the environmental degradation, projects may be undertaken which contribute to the restoration of the degraded ecosystem.

c. Project Cost Sharing. The non-Federal sponsor is responsible for 25 percent of total project costs during the design and implementation period. In accordance with the terms of the PCA, the non-Federal sponsor must provide all LERRD required for the project, participate in the Project Coordination Team, and perform necessary non-Federal audits. The non-Federal sponsor also must perform investigations necessary to identify the existence and extent of hazardous substances on LER required for the project except for the investigations necessary to identify the existence and extent of hazardous substances on LER owned by the United States and administered by the Corps. If the value of the non-Federal sponsor's contributions listed above is less than 25 percent of total project costs, the non-Federal sponsor must make a cash payment so that its contributions equal 25 percent of total project costs. OMRR&R is a 100% non-Federal responsibility. The non-Federal sponsor's required share determined above could increase if the Federal costs of planning, design, and implementation for the project exceed the statutory Federal per project participation limit for this authority and the non-Federal sponsor agrees to contribute funds for any costs that would normally be part of the Federal share but are over the per project limit (see Table F-3 and Section I, paragraph F-7.b. of this Appendix).

d. Non-Federal Design and Implementation Work. For all Section 1135 projects, the value of non-Federal design and implementation work that can be credited toward the

non-Federal sponsor's share of total project costs is limited to 80 percent of the non-Federal sponsor's share of total project costs.

e. OMRR&R. For Section 1135 projects, the costs of OMRR&R are a 100 percent non-Federal responsibility and the work is usually performed by the non-Federal sponsor. However, upon request by the non-Federal sponsor, the Government may perform the OMRR&R of a Section 1135 project modification on behalf of the non-Federal sponsor, if the entire Section 1135 project modification is on lands for which the Corps has the necessary real estate interest and is responsible for operation and maintenance (i.e. the land has not been leased to another agency for fish and wildlife purposes). In such event, the non-Federal sponsor must pay the Government, in advance of performance of such work, for the costs of OMRR&R attributable to the Section 1135 project modification. The decision to perform OMRR&R, on the behalf of the non-Federal sponsor, should be documented in the decision document and appropriate language should be included in the PCA addressing Government performance of OMRR&R.

f. Cost Allocation. The Section 1135 project features are in addition to the existing Corps project features, and they are distinct from mitigation. Therefore, the costs of the Section 1135 project feature will not be allocated to the existing Corps project, but must be shared in accordance with the provisions of Section 1135 of WRDA 1986, as amended.

SAMPLE - SECTION 107 PROJECT FACT SHEET

1. Project Name: Official Name of Project
2. a. Corps District:

b. Sponsor:
3. Congressional Delegation: List affected House and Senate members. Include congressional District numbers.
4. Location: Provide one or two sentences, sufficient to locate the vicinity of the study/project area.
5. Problem: Briefly describe the problem and the scope of the study/project in general terms.
6. Alternative Plans Considered. Briefly list the features of each alternative, explain why the alternative was not selected, and state whether the alternative met policy criteria.
7. Description of Likely Recommended Plan. Include a brief narrative description of the likely recommended plan, including major features and expected outputs. Give full coverage to features sensitive to the eligibility criteria of paragraph 3-2.d.(2) of ER 1105-2-100.
8. As of the date of this fact sheet, are there any policy waivers required, including a waiver for deviation from the NED Plan? If so, provide rationale for waiver and highlight waiver request in transmittal.
9. Scheduled Initial Construction Award (FY):
10. Authorization, appropriations act, or report language: Cite specific provisions, and attach copies of language.
11. Financial Information:
 - a. Feasibility Study Cost: \$ (Federal share: \$)
 - b. GNF Costs:
Total: \$ (Federal share: \$)
(Plans and specifications: \$)
(Construction: \$)

- c. LERR Costs: \$
- d. Local Service Facilities (LSF) costs: \$
- e. Ultimate Federal Cost: \$
- f. Benefit/Cost ratio:
- g. Average Annual O&M Costs: \$

12. Complete Funding History by FY (Include one line for each additional FY):

	AMOUNTS SPECIFIED ("NAMED") BY CONGRESS	NET ALLOCATIONS FOR FISCAL YEAR
FY		
FY		
FY		

13. Supplemental Information: Any additional information which may impact on an implementation decision on this project.

14. Project Map: Attach a map of the project area showing the navigation servitude boundaries superimposed over the general navigation features and local service facilities. The boundaries between the GNF and LSF must be clearly delineated.

APPENDIX G

Planning Reports and Programs

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APPENDIX G

Planning Reports and Programs

G-1. Purpose. This appendix provides guidance and procedures for the management and conduct of planning studies, activities and programs.

SECTION I - Types of Studies and Reports

G-2. Types of Studies and Reports.

a. Reconnaissance Studies (Phase). The objective of reconnaissance studies is to determine whether or not planning to develop a project should proceed to the more detailed feasibility stage. These studies are 100% Federally funded.

b. Feasibility Studies (Phase). The objective of feasibility studies is to investigate and recommend solutions to water resources problems. These studies are 50% Federally funded and 50% funded by a non-federal sponsor.

c. Reports. Reports prepared for initial authorization are based on the studies discussed above.

(1) Section 905(b). Section 905(b) Analysis documents the reconnaissance study, and provides a basis for determining whether a study should proceed to the feasibility phase.

(2) Feasibility Reports. Feasibility reports document the feasibility study, and provide the basis for a decision on construction authorization of a project. The feasibility report includes either an environmental assessment (EA) or an environmental impact statement (EIS) to comply with the National Environmental Policy Act (NEPA) (see [ER 200-2-2](#)).

d. General Reevaluation Studies. These studies are to affirm, reformulate or modify a plan, or portions of a plan, under current planning criteria. General reevaluation studies frequently are similar to feasibility studies in scope and detail.

e. Limited Reevaluation Studies. The scope for Limited Reevaluation Studies is limited when compared to the General Reevaluation Study. For example, a Limited Reevaluation Study may address only economic justification, environmental effects, effects of revised policy or (more rarely) project formulation. Limited Reevaluation Studies ordinarily should require only

modest resources and documentation. If any part of the reevaluation will be complex, or will require substantial resources, or if the recommended plan will change in any way, a General Reevaluation is required.

f. Other Types of Studies and Reports.

(1) Legislative Studies. Various Water Resources Development Acts have authorized specifically named projects. Studies under these authorities are to be conducted in accordance with this regulation, and reports are to be similar to a feasibility report.

(2) Reallocation Studies. See Appendix E.

(3) Postauthorization Changes.

(4) Flood Insurance Studies. See paragraph G-23.

(5) Section 22 Studies. See Section VI.

(6) Continuing Authorities Program Studies. See Appendix F.

(7) Review of Completed Projects Studies. This type of study is in response to the standing authority of Section 216 of the Flood Control Act of 1970, which authorizes studies to review the operation of completed Federal projects and recommend project modifications “when found advisable due to significantly changed physical or economic conditions...and for improving the quality of the environment in the overall public interest”. An initial appraisal is conducted using Operation and Maintenance (O&M) General funds to determine whether or not a study is warranted. If it is determined that further study is warranted, these studies are conducted using the two-phase study process described for feasibility studies.

G-3. Classification of Studies and Reports. In order to keep an accounting of the status of authorized studies and projects, they are classified into several categories as discussed below.

a. Studies. Division commanders may approve classification of authorized studies according to the categories listed below. If studies are not funded for five full fiscal years, they are deauthorized.

(1) Active. These are authorized studies that are funded or authorized but not funded having significant non-Federal support and reasonable prospects for a Federal project.

(2) Inactive. These are authorized studies that are not funded and have no non-Federal

support, or have few prospects for a Federal project.

b. Projects. Uncompleted authorized projects are classified in three categories as listed below. Division commanders may approve reclassification to a lower category. Upward reclassification requires approval of HQUSACE (RIT). Additional information is contained in [ER 11-2-240](#). Projects for which no funds have been obligated within the times specified in Section 1001, WRDA '86, shall be submitted to Congress for deauthorization.

(1) Active. Projects which are: funded; economically justified; engineeringly feasible without requiring modification of the authorized plan beyond the discretionary authority of the Chief of Engineers; supported by a non-Federal sponsor as evidenced by recent statements of ability and willingness by responsible bodies to provide local cooperation; and with no anticipated major problems of compliance with requirements of local cooperation.

(2) Deferred.

(a) Projects with doubtful or marginal economic justification, and for which a restudy is necessary to determine whether an economically justified and locally supported plan of authorized scope can be developed.

(b) Projects not generally opposed by non-Federal interests, but having sponsors currently unable to furnish the required cooperation, where it is expected the cooperation difficulties will be resolved in the near future.

(c) Projects that could be significantly affected by an ongoing feasibility study, and which should not be undertaken pending the outcome of Congressional action based on the feasibility study.

(3) Inactive.

(a) Economically unjustified projects where a restudy would not develop an economically justified plan.

(b) Projects which, as authorized, no longer meets current and prospective needs, and which require such substantial modifications and involve such increased costs to obtain an adequate project that they cannot proceed without new authorization.

(c) Projects without a non-Federal sponsor.

(d) Projects, or parts thereof, which have been accomplished by local interests or another

agency, or which have been superseded by another project, or for other reasons are no longer required.

c. **Reclassification.** Reclassification of studies and projects is accomplished as the need develops. An annual review of classifications is required by [ER 11-2-220](#) (studies) and [ER 11-2-240](#) (projects) to determine whether studies and projects are appropriately classified. A change in classification of a project may be accomplished by one of the following methods.

(1) By means of a restudy, funded with GI funds. The procedure for obtaining funds for this purpose and accomplishing the necessary restudy is contained in [ER 11-2-220](#).

(2) Where an ongoing reconnaissance or feasibility study investigating associated improvements develops sufficient information on which to base the reclassification of the authorized project, a recommendation for such reclassification is to be made on that basis, without further separate study.

(3) Where a desirable change in project classification can be determined at such nominal cost that a specific allocation of funds is not required, a brief investigation may be undertaken. For example, where a project was classified as deferred or inactive based on opposition to the project, or on the lack of willingness or ability of the non-Federal sponsor to furnish the required cooperation, and where the situation changes such that the non-Federal sponsor desires the work and demonstrates willingness and ability to participate as required, a letter supporting a new classification will suffice.

(4) **Review.** Whenever it becomes apparent that a study or project in the active category no longer meets the qualifications for retention in that status, a letter supporting a recommendation that the project be reclassified will suffice.

G-4. Naming of Studies and Projects. The study or project title shall generally be based on the name of a nearby geographic feature (e.g., town, river, mountain). HQUSACE provides the official name for the study or project in the assignment letter. Impounded bodies of water shall be referred to as lakes instead of reservoirs. Whenever the name of a project is established by separate legislation, that designation shall be used exactly as stated in the law.

SECTION II - Study Procedures and Reports

G-5. Purpose. This section provides guidance for conducting reconnaissance and feasibility studies and preparing studies; it applies to all two-phase studies, cost shared or not.

G-6. General Requirements for Reconnaissance and Feasibility Phases.

a. Study Conduct. Studies conducted in accordance with all applicable laws and policies.

b. Study Conversion. If, upon completion of the reconnaissance phase or during the feasibility phase, it appears one or more projects could be pursued more efficiently under the Continuing Authorities Program (CAP), that approach is encouraged. The MSC commander may approve transfer of an ongoing specifically authorized study to the CAP.

c. Study Management. Per [ER 5-1-11](#), Division commanders shall establish, in a standard operating procedure or regulation, appropriate uniform procedures for managing two phase studies. As a minimum, a system should be early established that monitors actual versus scheduled performance and costs. Prospective sponsor(s) for the anticipated feasibility study should be identified early enough during the reconnaissance study to establish a well defined study management structure. Although the Corps is responsible for the reconnaissance study, efficient execution of the feasibility study requires a cooperative effort during the reconnaissance phase as well. Therefore, the time to begin assembling the study management structure should be as early in the reconnaissance phase as possible. The management structure will be finalized in the FCSA. Project management must be initiated during the reconnaissance study period to permit smooth implementation into subsequent phases to the extent it establishes accountability for study and project costs and schedules, and more effectively reconciles Corps performance with the concerns and expectations of the non-Federal sponsor.

d. Study Documentation. Commanders will maintain complete documentation of coordination, negotiations, and agreements between the Corps and study sponsor, and any subsequent changes in those agreements. The documentation must show how consideration was given to the desires and capabilities of the non-Federal interests and that they were advised of the Corps procedures and policies.

e. No Implementable Plan. A letter report will ordinarily be adequate. The report will rely on information developed up to the time further study was terminated; additional work is not required simply to satisfy a reporting requirement. However, the report must clearly describe the reasons why the study was terminated in view of the criteria in the previous subparagraph. Terminated interim studies are excepted from this reporting and processing

requirement; they will continue to be incorporated into the final report of their parent study.

f. Issue Resolution Conference (IRC) and In-Progress Review (IPR). The objective of these meetings is to ensure orderly progress of the study or preparation of a report. This is accomplished by identifying, discussing and resolving technical and policy questions before they unduly affect the progress of the study.

g. General Evaluation Guidelines. The general evaluation guidelines, presented in Exhibit G-1, describe the information to be included in reports and in other materials which are provided to ensure agency endorsement of the reconnaissance and feasibility study findings. These guidelines will also be used by reviewers at the IRCs for the reconnaissance and feasibility phases as well as for policy review. Adaptations of these guidelines may also be useful in conducting studies, particularly in conjunction with requirements for report content in Exhibits G-2 and G-3.

Exhibit G-1. General Evaluation Guidelines	
1. Formulation/Design Criteria	a. The water resource related problems and opportunities addressed in the study will be fully and clearly described.
	b. The key assumptions underlying the forecasted without project condition over time will be explained and documented as the most likely without project parameters.
	c. The feasibility report will document that all reasonable alternatives for addressing the identified problems, including non-structural measures and measures beyond the authority of the Corps to implement, have been systematically formulated and evaluated in accordance with the P&G. A well-documented formulation process is essential to ensure that the scale (level of output) and scope (geographic extent) of the project are appropriate and that the cost effective means of providing the recommended level of output or service is identified.
	d. For each alternative project, the key assumptions underlying the predicted with project conditions over time will be documented and justified as the most likely with project parameters.
	e. Federal participation in the proposed project is not to be recommended unless the outputs used in comparing the benefit to cost ratio, or the (environmental) outputs when justification is not dollar benefit based, are in accord with

Exhibit G-1. General Evaluation Guidelines	
	departmental policies governing Federal participation.
2. Sensitivity Analysis	The sensitivity of project justification to key with and without project assumptions should be displayed. As a minimum, the benefit to cost ratio (BCR) for the recommended plan, assuming conditions projected to prevail in the first year of project operation, is to be displayed
3. Economic, Financial, And Effectiveness Criteria	a. Scaling and scoping of the recommended project must be determined using NED criteria, except as modified by non-Federal financial resource limitations or other explicitly stated criteria in accordance with the P&G, including consistency with protecting the Nation's environment. Explain any deviation from incremental analysis of separable elements. Scaling and scoping of ecosystem restoration projects are supported by cost effectiveness and incremental cost analysis, combined with subjective estimates of output value.
	b. Provide adequate supporting documentation to allow reviewers to understand the models and assumptions used to estimate benefits and costs. For commercial navigation studies, the systems models used in the estimates of navigation benefits are to be fully described and their strengths and limitations presented. For flood damage reduction studies, the source of the depth damage relationships is to be provided. If approved generic curves are not used or the source of the relationships is not actual damage data for the study area, the rationale for using other relationships must be provided. For ecosystem restoration studies, both inventory and forecasting of past, present and future environmental conditions require that some form of quantitative measurement be used and defined in the report. Where indicators or other units of measure of ecosystem function or structure are used, the models used to develop them, along with their strengths and weaknesses must be fully described.
	c. Identification of the NED plan is to be based on consideration of the most effective plans for providing

Exhibit G-1. General Evaluation Guidelines	
	different levels of output or service. Where two cost-effective plans produce no significantly different levels of net benefits, the less costly plan is to be the NED plan, even though the level of outputs may be less. For ecosystem restorations studies, project costs and outputs are measured in both monetary and non-monetary terms. Restoration plans must be justified through a determination that the plan is the most cost-effective for a given level of outputs and that the benefits (outputs), or losses restored or prevented, justify the cost of the last increment added.
	d. If Secretarial exception is sought to recommend a plan other than the NED or NER plan, the basis for the request is to be fully documented.
	e. For projects having non-Federal sponsors, a preliminary financial analysis must be included that shows the sponsor's current and projected ability to finance its share of the project cost and to carry out project implementation, operation, maintenance, repair, replacement and rehabilitation responsibilities.
4. Cost Estimates	a. For economic analysis, project first cost estimates are to be developed on a constant dollar basis. Costs and benefits are to be compared on the same, current price levels. For financial analysis, an inflated dollar basis is to be used for the sponsor's information.
	b. Life cycle project cost estimates in appropriate Code of Accounts format are to include all financial outlays associated with preconstruction engineering and design, construction and operation, maintenance, repair, replacement and rehabilitation costs. This will include cash expenditures previously incurred. (Note that some costs included in the economic analysis may not be part of the project implementation expenditures. The converse also may be true. Examples include the economic costs of unmitigated losses and current market value of lands previously acquired by the sponsor.)
	c. Contingency factors are to be consistent with extent of detail in estimating procedure and physical investigations to ensure high probability of achieving implementation within

Exhibit G-1. General Evaluation Guidelines	
	estimated costs.
	d. Tradeoffs between risk and costs are to be explicitly identified as areas for detailed evaluation in project design. For example, for flood damage reduction, relationships between the design reliability and costs; and for navigation, tradeoffs between channel dimensions and cost.
	e. Cost estimates consistent with efficient project implementation are to be projected so information can be incorporated into cost performance monitoring system.
5. Legal/Institutional Criteria	a. The non-Federal sponsor's acceptance of, or desired departures from, the terms of the applicable model PCA must be presented, including: 1) applicable cost sharing and financial policies; 2) policies regarding provision and valuation of non-Federal lands, easements, rights-of-way, and disposal areas provided by non-Federal sponsors; 3) policies governing non-Federal project construction; and, 4) other provisions required by law and policy for new start construction projects.
	b. The non-Federal sponsor must either state that it possesses all authorities necessary to implement its responsibilities under the PCA or submit a plan to obtain those authorities.
	c. The preliminary cost allocation for a multipurpose project is to be presented.
	d. Legal and institutional problems to project implementation are to be identified, and a plan to resolve them is to be presented.
	e. Physical criteria for satisfactory project performance that can be used as a basis for establishing the non-Federal sponsor's operation, maintenance, repair, replacement, rehabilitation and land use management responsibilities must be identified. These responsibilities may include preservation of the structural integrity of complementary structures such as highway embankments to ensure successful performance of the total functional project.
6. Environmental Criteria	a. Compliance with the NEPA process and other applicable

Exhibit G-1. General Evaluation Guidelines	
	Federal and State environmental laws and regulations is to be fully documented; specific issues that require resolution before the feasibility study is completed are to be identified; and any environmental compliance matters that may remain and need resolution in preconstruction engineering and design must be specified.
	b. Ecosystem restoration and fish and wildlife habitat mitigation measures are to be formulated incrementally, and an explicit justification for the recommended amount and type of mitigation or restoration is to be presented. Required coordination with other concerned Federal and State agencies on mitigation and other ecological, cultural and historical preservation matters, is to be documented.

h. Reports.

(1) Two basic reports are produced in the two phase planning process: the reconnaissance phase Preliminary Analysis and the feasibility phase Feasibility report. Their similarities are discussed here; unique requirements are covered in Reconnaissance Study and Section 905(b) Analysis and Feasibility Studies sections. Report objectives are to:

(a) Present study results and findings so that the readers can reach independent conclusions regarding the reasonableness of the recommendations.

(b) Document compliance with applicable statutes and policies; and ,

(c) Provide a sound basis for decision makers to initiate feasibility phase studies, or make recommendations to Congress; or, in the case of Congress, to enact legislation authorizing project construction.

(2) The District Commander to whose District a particular study is assigned shall be responsible for the required reports. The Division Commander may recommend, and the Director of Civil Works may designate, another District to assume study and reporting responsibility. The District Commander or other designated person shall sign and date the report, prior to reproduction, immediately below the recommendations.

(3) The District Commander shall transmit the reports to the Division Commander, except for reports on the Mississippi River and Tributaries (MR&T) project or features thereof,

in which case the report shall be transmitted to the President, Mississippi River Commission (MRC).

(4) Reports shall provide direct, concise, and orderly presentations. Narratives generally shall be in the active voice; use tabular and graphic displays for support. Narratives shall have adequate paragraphing, with headings and subheadings that are descriptive of the subject matter. Text formats will conform to the requirements of AR 335-15.

(5) Displays, such as maps, graphs, tables, drawings, photographs, and other graphics shall be used to facilitate the presentations.

G-7. Reconnaissance Study and Section 905(b) Analysis.

a. Purpose. The reconnaissance study and Section 905(b) Analysis are components of the reconnaissance phase. The study and report shall accomplish the following six essential tasks:

(1) Determine if the water resource problem(s) warrant Federal participation in feasibility studies. Defer comprehensive review of other problems and opportunities to feasibility studies;

(2) Define the Federal interest based on a preliminary appraisal consistent with Army policies, costs, benefits, and environmental impacts of identified potential project alternatives;

(3) Complete a 905(b) Analysis (Reconnaissance Report);

(4) Prepare a Project Management Plan (PMP);

(5) Assess the level of interest and support of non-Federal entities in the identified potential solutions and cost-sharing of feasibility phase and construction. A letter of intent from the local sponsor stating the willingness to pursue the cost shared feasibility study described in the PMP and to share in the costs of construction is required; and

(6) Negotiate and execute a Feasibility Cost Sharing Agreement (FCSA).

b. Cost Sharing. The entire reconnaissance phase is conducted at full Federal expense, exclusive of any costs incurred by non-Federal interests in volunteered work or services during the phase. Costs incurred by non-Federal interests during the reconnaissance phase are not creditable toward the non-Federal sponsors share of the feasibility phase.

c. Basic Requirements.

(1) The Expedited Reconnaissance Study will address the requirements of Section 905(b) of the WRDA of 1986, as amended. This provision requires that the reconnaissance study will include an analysis of the Federal interest, costs, benefits, environmental impacts of proposed action(s), and an estimate of the costs of preparing the feasibility report.

(2) The expedited reconnaissance study normally will cost no more than \$100,000 and should be completed as expeditiously and efficiently as possible. By law, the duration of the reconnaissance phase shall normally be no more than 12 months and in all cases is to be limited to 18 months.

(3) The development of a PMP is an essential task in the Expedited Reconnaissance Study. The PMP shall be developed in accordance with guidance provided by CECW-CB.

(4) Existing, readily available data should be used during the Expedited Reconnaissance Study. Sponsor, other agency, State, and local government sources of available data must be used to the maximum extent possible.

(5) The accomplishment of the tasks under G-7a.(1)(2), shall be based on professional and technical judgment, utilizing an experienced study team. Special attention must be given to identifying the problem, project purposes, types of outputs, and whether the intended project purpose and/or likely outputs are consistent with Army/ Corps implementation and budgetary policies. While sound judgment and limited analytical approaches should be employed during the Expedited Reconnaissance Study, the detailed procedures for conducting economic and environmental analyses outlined in [Principles and Guidelines](#) (P&G), and in Corps regulations based on P&G, will not be required. However, the principles of P&G justification will be followed. Economic and environmental investigations should be limited to qualitative assessments of benefits and costs of a limited number of potential solutions in sufficient detail to indicate that a solution to the water resource problem will likely warrant Corps participation. The economic assessment should describe the existing conditions, and potential magnitude and types of benefits from proposed solutions. Likewise, the environmental evaluation should describe existing conditions, effects of potential measures, and the likely requirement for mitigation.

(6) To keep the Expedited Reconnaissance Study focused, cost low, and duration short, the following items should not be included for these studies: (1) development and formalized displays of detailed cost estimates (such as MCACES); (2) detailed engineering and design studies and data gathering; (3) detailed environmental resources evaluations; (4) optimization and benefit-cost analyses; (5) detailed real estate information; (6) report preparation; (7) formal coordination with other Federal and state agencies and; (8) other studies not directly needed to support the essential tasks. There is no need to quantify benefits and costs. Meaningful qualitative descriptions of likely benefits and costs are sufficient to support Federal interest in feasibility studies.

(7) As part of the Section 905(b) (WRDA of 1986) Analysis, the District will describe the major feasibility phase assumptions that will provide the basis for the study, discussion of alternatives that will be considered, and estimate of feasibility study cost and schedule. The Section 905(b) (WRDA of 1986) Analysis format enclosed in Exhibit G-2 provides the minimum requirements for MSC review and approval, and a sample set of assumptions.

(8) A Section 905(b) (WRDA of 1986) Analysis, as described above, is to be used as the basis for making the decision to proceed or to not proceed into the feasibility phase. The Section 905(b) (WRDA of 1986) Analysis should be submitted to HQUSACE for review and approval as early as possible in the reconnaissance phase. The PMP discussions with the non-Federal sponsor should be initiated at the start of the study phase and should be continuous throughout the study phase.

(9) MSCs have delegated authority to approve policy compliant 905(b) analysis. (Refer to Exhibit G-6 for determination of policy sensitive areas.) Section 905(b) analysis that are not in accordance with Corps policy will be coordinated with the respective Headquarters Regional Integration Team (RIT) prior to the MSC taking action on the report. A copy of the approval and report will be provided to the RIT. After approval of the 905(b) analysis and letter of intent and upon completion of PMP negotiation and approval by Headquarters of any requested deviations to the model FCFA, the District may execute the Feasibility Cost Sharing Agreement, which would then conclude the reconnaissance phase and initiate the feasibility phase.

(10) Cost Limits. The \$100,000 expedited reconnaissance study is an important means to initiate quality feasibility studies more quickly and at less cost. However, the \$100,000 expedited reconnaissance studies may not be the most effective means to initiate every feasibility study. Districts may request exceptions to the \$100,000 cost limit of the Expedited Reconnaissance Study. The justifications for exceptions must be submitted with the request to the appropriate RIT for review and approval.

(11) The following language is required in correspondence from the District Commander to the study sponsor in transmitting the proposed FCSA prior to submission for certification.

"It is recognized and understood that upon completion of this feasibility study, extensive review is required at several levels in the Executive Branch of the Federal Government and may also be required at state and local levels. Consequently, the recommendations made in this report may be changed. The following paragraph is required in my recommendations. The recommendations contained herein reflect the policies governing formulation of individual projects and the information available at this time. They do not necessarily reflect program and budgeting priorities inherent in the local and state programs or the formulation of a national Civil Works construction program. Consequently, the recommendations may be modified at higher review levels within the Executive Branch before they are transmitted to the Congress as proposals for authorization and implementation funding. However, prior to transmittal to the Congress, the sponsor, the state(s), interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further."

d. Special Cases. Studies with large geographic areas, or having multiple objectives or sponsors, may present special management problems which require case-by-case guidance. In instances where there are several separable problem areas and several potential non-Federal sponsors, or where a study will address multiple purposes, and there are likely to be study components for which costs are not easily allocated to the separate areas or sponsors. In instances where the complexity of the study dictates significant revision of the model FCSA, the Division Commander should request an IRC with HQUSACE (RIT) and non-Federal sponsors to consider the appropriate way to proceed.

e. Study Conduct.

(1) A study team shall be organized as a multi-disciplinary group, consisting at least of the affected functional elements in the District. The potential non-Federal study sponsor should be invited and encouraged to participate at their expense. Given the increased emphasis in the planning phase on cost estimating, scheduling, real estate, ability to construct, and operation of proposed plans, the composition of the study team must ensure that these areas are addressed.

(2) District commanders will ensure that experienced and qualified personnel are assigned to the study team for the reconnaissance phase. Due to the short time available to conduct the study, many decisions will necessarily be based primarily upon professional judgment, without all the desirable information available.

(3) During the reconnaissance study, the study team will scope the problems, the planning setting, and the potential solutions. It will establish members' roles and interests, and

focus on the issues to be addressed. The team will recommend to the executive committee (defined in (4)) the tasks to be conducted and the extent of planning to be carried out in the feasibility study.

(4) When the reconnaissance study progresses sufficiently, an executive committee structure and participants will be identified. The potential executive committee participants will serve as the coordination points of contact for the remainder of the reconnaissance study, including development of the draft FCSEA (see paragraph G-8). The executive committee membership normally includes the District Engineer, the District's chief planner (or designate), and a representative of the non-Federal sponsor(s) with commensurate decision making authority. The District Engineer and the non-Federal sponsor's counterpart will co-chair the committee.

f. Cost Estimating and Scheduling.

(1) During the reconnaissance study, a project management plan (PMP) will be developed in task detail to the first major decision point or IPR.

(2) Section 905(b) (WRDA of 1986) Preliminary Analysis should be submitted to HQUSACE for review and approval prior to completing the negotiation of the PMP. PMP discussions with the non-Federal sponsor should be initiated at the start of the study phase and should be continuous throughout the study phase.

g. Section 905(b) Analysis.

(1) The requirement for a traditional Reconnaissance Report is waived. A Section 905(b) (WRDA of 1986) Analysis is to be used. It will define the value of proceeding with a feasibility cost sharing agreement. The Section 905(b) Analysis shall address, as a minimum, the subject matter outline in Exhibit G-2.

(2) Additional information should be included in the analysis when needed for unusual situations. Generally the test for including such information is whether or not it is necessary for either the Federal or non-Federal decision maker to reach a conclusion on proceeding to the feasibility phase.

h. Fish and Wildlife Resources Considerations. Fish and wildlife resources considerations during the reconnaissance stage of planning shall be of sufficient scope and detail to:

- (1) Identify the presence and general location of known fish and wildlife resources within the study area that should be approached with care;
- (2) Make preliminary determinations of the likely impacts that potential alternative plans would have on these fish and wildlife resources;
- (3) Briefly describe potential mitigation features that would address these impacts; and,
- (4) Develop the scope of fish and wildlife resources surveys, studies and analyses to be conducted during the feasibility study stage.

Exhibit G-2. Section 905(b) WRDA of 1986 Analysis Outline and Sample Assumptions for an Ecosystem Restoration Feasibility Study
OUTLINE
1. STUDY AUTHORITY. Include the full text of principle resolution(s) and/or other study authorities. Provide summary of study funding including budget and appropriation history.
2. STUDY PURPOSE
3. LOCATION OF PROJECT/CONGRESSIONAL DISTRICT
4. DISCUSSION OF PRIOR STUDIES, REPORTS AND EXISTING WATER PROJECTS
5. PLAN FORMULATION
a. Identified Problems. Provide assessment of water and related land resource problems and opportunities specific to the study area. The following information is required: (1) existing conditions; (2) expected future conditions; and, (3) concise statement of specific problems and opportunities with emphasis on problems warranting Federal participation in the feasibility study.
b. Alternative Plans. Description and discussion of the likely array of alternatives to be developed and the environmental impacts and outputs for each alternative analyzed.
c. Preliminary Evaluation of Alternatives. Description and discussion of the likely benefits, costs and environmental impacts and outputs for each alternative analyzed.
6. FEDERAL INTEREST. Define the Federal interest, consistent with Army policies, based on a preliminary appraisal, costs, benefits and environmental impacts of identified potential project alternatives.
7. PRELIMINARY FINANCIAL ANALYSIS. The 905(b) Analysis must be accompanied by a letter of intent from the non-Federal sponsor stating their willingness to pursue the feasibility study described in the PMP and to share in the costs of construction.
8. SUMMARY OF FEASIBILITY STUDY ASSUMPTIONS. The summary will describe the normal assumptions used for the formulation, evaluation, coordination and reporting procedures described in this regulation, ER 200-2-2 and related planning phase guidance. The summary should highlight any anticipated deviations from the normal feasibility phase requirements.
9. FEASIBILITY PHASE MILESTONES

Exhibit G-2. Section 905(b) WRDA of 1986 Analysis Outline and Sample Assumptions for an Ecosystem Restoration Feasibility Study
10. FEASIBILITY PHASE COST ESTIMATE
11. RECOMMENDATIONS. Recommend whether to continue to a feasibility study or not, based on consistency with Army and budgetary policies and likelihood of a project meeting criteria for Federal participation in project implementation.
12. POTENTIAL ISSUES EFFECTING INITIATION OF FEASIBILITY PHASE. Discuss any potential issues which may affect the initiation of the feasibility phase or project implementation.
13. VIEWS OF OTHER RESOURCE AGENCIES (if known)
14. PROJECT AREA MAP
<i>District Engineer Signature Block</i>
SAMPLE ASSUMPTIONS FOR ECOSYSTEM RESTORATION STUDY
1. The resulting document will be a combined EIS/EIR prepared by the local sponsor combined (but not integrated) with the Feasibility Report prepared by the Corps. The Feasibility Report will rely heavily on the NEPA/CEQA document as a reference.
2. The document will address the project as an independent project that does not rely on other projects (describe), but which could benefit from other projects through an accelerated realization of the anticipated environmental outputs.
3. The schedule assumes that ongoing activities (describe) will result in a clean enough site for R/E to assign a land value appropriate for some type of highest and best use in order to predict how the properties will ultimately be zoned.
4. The schedule assumes that the property will be available for wetland restoration (as scheduled) by January 2000.
5. The Feasibility Report will be based on a package of engineering information provided by the Local Sponsor. An Engineering Appendix will not be prepared by the Corps. The engineering information provided by the Local Sponsor will be reviewed by the relevant district sections. The schedule assumes that no additional engineering analysis will be necessary, and that no major revision to the engineering package will be needed.
6. A Draft Coordination Act Report may not be ready by August 1. The Fish and Wildlife Service may be able to prepare a Planning Aid Letter, in which F&W issues and concerns are identified, in time for circulation with the draft report. A HEP analysis will be conducted by FWS and the resulting Habitat Units will be used by the Corps to quantify the environmental

Exhibit G-2. Section 905(b) WRDA of 1986 Analysis Outline and Sample Assumptions for an
Ecosystem Restoration Feasibility Study

output of the proposed project.

7. An MCACES will be performed on the selected plan providing an analysis suitable for a feasibility level study.
8. An approved real estate gross appraisal will not be required for the draft feasibility report.
9. There will be only one conference before the AFB. Due to the need for expedited reviews. The AD FR/EIS/EIR will be provided to HQ before the District and sponsor completes their review of the documents. Issues from the conference will be provided to HQ before the AFB.
10. QC certification of the AFB package (AD FR/EIS/EIR) will not be provided prior to the AFB conference, but will be provided at the conference.
11. The FCSA will be signed after the Public Meeting.
12. There will be no AFB Decision Conference as the decision to have an AFB conference has already been made.
13. An incremental analysis of some sort will be performed by the Corps on information provided by the local sponsor in order to display cost vs. ecological output (benefits). The Feasibility Report will not contain a detailed economics analysis as there are no traditional economic outputs anticipated.
14. Four increments will be analyzed:
 - a. Wetland restoration without the use of dredged material.
 - b. Placement of dredged material to accelerate wetland restoration.
 - c. Wetland restoration at the project site and State Lands properties without the use of dredged material.
 - d. Placement of dredged material at the State Lands property using dredged material to accelerate wetland restoration.
15. All alternatives except the no action alternative will have a goal of creating a mix of 20 percent seasonal wetland and 80 percent tidal marsh. This ratio is a result of interagency input.
16. The report will assume that construction will last a maximum of ten years, after which the levee will be breached regardless of remaining capacity.
17. The report will not address the costs or impacts of the transportation of dredged material

Exhibit G-2. Section 905(b) WRDA of 1986 Analysis Outline and Sample Assumptions for an Ecosystem Restoration Feasibility Study

into the site. Those costs will be addressed for specific dredging projects. Because the cost of transportation to the site (including unloading) will be less than the cost of ocean disposal, the transportation and unloading costs will be funded by the specific dredging projects. The report will address the site preparation, placement of material, and the levee breaching, as well as O&M and monitoring of the completed project.

18. The schedule assumes that the local sponsor is willing to go along with it and they do not have their own list of conditions that conflict with ours. Discussions on this issue are currently underway.

19. The schedule assumes that the FCSA will be signed prior to HQ approval of the PSP. HQ concurrence on this is needed ahead of time. The local sponsor is willing to sign the FCSA at this stage provided they agree with the conditions of the draft PSP. At this time we are requesting permission to proceed in this manner.

G-8. Feasibility Cost Sharing Agreement (FCSA).

a. Partnership. The FCSA (see www.hq.usace.army.mil/cecc/ccpca.htm for model agreement) is intended to promote a partnership for the conduct of the feasibility study. The Department of the Army remains responsible for representing the Federal interest by following Federal policies and budgetary priorities. Both parties will conduct planning within the framework established by the P&G and additional guidance provided in this regulation. The model FCSA shall be followed for all agreements, but minor adaptations may be made to accommodate individual study circumstances. The District Commander shall be satisfied that the non-Federal sponsor has authority to enter into the agreement and that the FCSA is legally sufficient.

b. Negotiations with Potential Non-Federal Sponsor.

(1) While developing the PMP, which will be incorporated in the FCSA, the District Commander must discuss with the prospective non-Federal sponsor(s) the objectives of the feasibility study, necessary level of detail, cost of studies, and scheduling of activities for the feasibility study. If desired and acceptable to the non-Federal sponsor, various project detail studies normally achieved after completion of the feasibility phase could be scheduled for the feasibility study to reduce uncertainties in areas such as design and cost.

(2) During negotiations, the prospective non-Federal sponsor must be informed that the level of accuracy of alternative plan evaluation and cost estimates to be developed in the

feasibility study will depend on the extent of uncertainties and the depth of investigations made during the feasibility study.

c. Project Management Plan (PMP).

(1) A PMP, negotiated between the Corps and the non-Federal sponsor, will ensure that the work required for the feasibility phase has been carefully developed and considered. The PMP forms the basis for estimating the total study cost and local share. It also is the basis for assigning tasks between the Corps and the sponsor and for establishing the value of in-kind services. The responsibility for the preparation of the PMP rests with the study manager, in coordination with the project manager. During the feasibility phase, significant changes to the PMP, may require a modification of the FCSA.

(2) The PMP will be completed during the Reconnaissance phase and will be revised and updated, as appropriate, based on discussions, resolution of issues and agreements on actions at the Feasibility Scoping Meeting.

(3) The determination of the dollar value of in-kind products or services will be negotiated, based on a detailed government estimate and sponsor proposal, between the Federal Government and the non-Federal sponsor as fixed fee items, applying applicable Federal regulations, including OMB Circular A-87. The dollar value of the in-kind effort will be established prior to the initiation of the in-kind effort. Acceptance of the product will be as called for in the PMP.

(4) The PMP should include the costs for the tasks which non-Federal sponsors have historically accomplished without charge, such as: supervision and administration; study management; attendance at meetings, both public and technical; and overhead and indirect costs which are directly related to the feasibility study. It is expected that detailed scopes of work may be needed for individual items in the PMP. Work items will also include those tasks typically necessary to support the review process from the signing of the report through the ASA(CW)'s request to OMB for the views of the Administration. These items could include answering comments, attending Washington level meetings (including the non-Federal sponsor), and report revisions as a result of review by higher authority.

(5) The PMP will guide the allocation of study funds among tasks to assure that all interests are given adequate attention. As a minimum, the PMP should address: work tasks, and their milestones and negotiated costs, and responsibility for their accomplishment; Corps and other professional criteria used to assess the adequacy of the completed work effort; procedures for reviewing and accepting the work of both parties, which can be audited; the schedule of performance; the coordination mechanism between the Corps and non-Federal sponsor; and

references to regulations and other guidance that will be followed in conducting the tasks.

(6) The PMP will address the appropriate level of engineering detail required for the feasibility phases. Engineering studies and analysis should be scoped to the minimum level needed to establish project features and elements that will form an adequate basis for the project construction schedules and cost estimate. Uncertainties should be reflected in contingencies which will be resolved during feasibility and/or PED.

(7) To ensure that the sponsor is afforded the opportunity to participate in any significant effort as a result of Washington level policy review, review support will be included as a work item in the PMP for District and non-Federal sponsor costs only. These costs, including any necessary travel, will be limited to those reasonable costs associated with the review and processing of the feasibility report. This item will be 5 percent of the total study cost or \$50,000, whichever is less, and will be cost shared equally.

(8) During the feasibility phase, significant changes to the PMP may require a modification of the FCSA.

d. Feasibility Phase Cost.

(1) The total cost of the feasibility phase will be established through negotiations of the PMP. The cost estimate in appropriate Code of Accounts format will identify major costs by task and by type (i.e., labor, materials, equipment, indirect cost, etc.), and be fully supported and documented. Procedures will be established for tracking expenses and cost accounting, including the allocation of costs between the Federal government and non-Federal sponsor. These procedures will include the ability to review costs incurred during the study, and will provide the basis for the annual cost accounting and the final cost settlement. All parties to the FCSA must agree to the funding schedule established in the PMP.

(2) Should the review support costs exceed the limit of 5 percent of the total study cost or \$50,000, whichever is less, the FCSA will be modified to provide for 50-50 sharing of those additional costs. Any costs relating to the feasibility report that are incurred following completion of the feasibility phase will be 100 percent Federal.

e. Disclosure of Lobbying Activities. The FCSA will be accompanied by a signed Certification Regarding Lobbying and, if applicable a completed Disclosure of Lobbying Activities. These forms must be thoroughly discussed with sponsors prior to their signature. Completed forms will be attached to the FCSA prior to its signature by the District Commander, and kept on file by the District for later submittal to HQUSACE, if requested.

G-9. Feasibility Studies.

a. Purpose. The purpose of the feasibility study is to identify, evaluate and recommend to decision makers an appropriate, coordinated, implementable solution to the identified water resources problems and opportunities. The resulting report should be a complete decision document, referred to as a feasibility report. It presents the results of both study phases. The report will:

(1) Provide a complete presentation of study results and findings, including those developed in the reconnaissance phase so that readers can reach independent conclusions regarding the reasonableness of recommendation;

(2) Indicate compliance with applicable statutes, executive orders and policies; and

(3) Provide a sound and documented basis for decision makers at all levels to judge the recommended solutions(s).

b. Cost Sharing.

(1) The cost of the feasibility phase will be shared equally between the Federal government and the non-Federal sponsors during the study. The non-Federal sponsor's share, 50 percent of the total feasibility phase cost, may be in-kind products and services.

(2) Section 105(a)(1) of WRDA of 1986 requires the sponsor to contribute 50 percent of the study costs during the period of such study. No credit may be given to the non-Federal sponsor for work prior to the start of the feasibility phase or after its completion.

(3) Cost sharing is not applicable to single purpose inland navigation studies on the Nation's inland waterways system. For studies where inland navigation is the primary purpose and there are other purposes being considered, request additional guidance from the appropriate RIT for feasibility phase cost sharing procedures.

c. No Implementable Plan. If the District Commander determines that a feasibility study should be terminated, but the non-Federal sponsor wishes to continue the feasibility study under the terms of the FCSA, continuation will be considered on a case-by-case basis. Normally, an exception to termination will not be granted. However, consideration will be given to those cases where there are compelling reasons to complete the feasibility report. Such situations might occur when the feasibility report is very near completion and there is a strong likelihood that non-Federal interest would implement one of the alternatives. Requests for an exception to termination shall be submitted to HQUSACE (RIT) for decision.

d. Monitoring and Tracking. The Division Commander shall establish a procedure for accomplishing an annual reconciliation of study costs between the Federal government and the non-Federal sponsor. No adjustments in the non-Federal contributions are required until the final accounting required in ARTICLE IV of the FCSA.

e. Project Cost Estimating and Scheduling.

(1) A baseline estimate will be developed for the selected plan and NED plan if it is not the selected plan, in accordance with [ER 5-1-11](#).

(2) Two project cost estimates shall be displayed in the feasibility report; one based on constant dollars and one based on projected inflation rates. Inflation rates utilized shall be those published in Engineer Manual [EM 1110-2-1304](#), Civil Works Construction Cost Index. The cost estimate based on constant dollars is the one used for authorization purposes.

f. Review Process. Feasibility reports must undergo both technical and policy compliance review. Technical review, which is the District's responsibility, is accomplished at the district level, in accordance with their quality management control regulations. Policy compliance review, which is Headquarters responsibility, unless it has been delegated, is intended to identify and resolve policy concerns that might otherwise delay or preclude approval of feasibility reports. The policy compliance review process provides for early Headquarters involvement and participation in the study process and in the review of the feasibility reports and other decision documents. General requirements for review and approval of decision documents and specific procedures for review of draft and final feasibility reports are described in Appendix H. Prior to preparation of the draft feasibility report, Headquarters policy compliance review is required at two points in the feasibility study - the Feasibility Scoping Meeting (FSM) and the Alternative Formulation Briefing (AFB). If there are additional requirements for Headquarters involvement in the study that are not met by the FSM and/or the AFB, an Issue Resolution Conference (IRC) or In-Progress Review (IPR) may be held. Additional information on the purposes and procedures for conducting FSMs, AFBs, and IRCs/IPRs is provided in Exhibit G-3 through G-6.

Exhibit G- 3. Procedures for Conducting Feasibility Scoping Meetings, Alternative Formulation Briefings, and Issue Resolution Conferences/In-Progress Reviews for Feasibility and Post Authorization Studies and Reports
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<u>Purpose.</u> This exhibit describes procedures and requirements for conducting the Feasibility

Exhibit G- 3. Procedures for Conducting Feasibility Scoping Meetings, Alternative Formulation Briefings, and Issue Resolution Conferences/In-Progress Reviews for Feasibility and Post Authorization Studies and Reports

Scoping Meeting (FSM), Alternative Formulation Briefing (AFB), and other Issue Resolution Conferences/ In-Progress Reviews (IRCs/ IPRs) in conjunction with feasibility and post authorization studies and reports generally covered in ER 1105-2-100.

Background. The primary objective of FSMs, AFBs, and IRCs/IPRs is to engage the USACE vertical team (i.e., District, Division, Headquarters) and ASA(CW), if needed, to identify, discuss and resolve policy issues to ensure the study progresses in an orderly manner and that preparation of a final report is not delayed. The FSM and the AFB are required to be held at the appropriate time during the conduct of the study. IRCs and IPRs can be held at any point in time during the study process to provide an update of study findings and progress (IPR) or to identify and resolve potential problems (technical/policy) that could delay study completion (IRC). The District should strongly encourage the non-Federal sponsor and resource agencies to participate in all FSMs, AFBs, and IRCs/IPRs. The end-product of all FSMs, AFBs, and IRCs/IPRs is a formal guidance memorandum from Headquarters that documents issues to be resolved by the district for incorporation in the draft report.

Feasibility Scoping Meeting (FSM).

The purpose of the FSM is to bring the USACE vertical team, the non-Federal sponsor, and resource agencies together to reach agreement on the problems and solutions to be investigated during the feasibility study and the scope of analysis required.

The FSM should be held upon completion of steps 1 and 2 of the planning process (i.e.; Step 1 - Identification of Problems and Opportunities; Step 2 – Inventory and Forecast Resource Conditions) and preliminary plan formulation and evaluation. The FSM is also related to the NEPA scoping process (see ER 200-2-2) which determines the scope of issues to be addressed and identifies the significant issues related to a proposed action. In general, the district should convene a FSM after the NEPA scoping process and the preliminary plan formulation and evaluation have been accomplished and the district is prepared to focus and tailor the feasibility study on key alternatives, to further define the depth of analysis required and to refine study/project constraints.

FSM documentation should include, as a minimum, a detailed description of identified problems and opportunities, statements of specific planning objectives and constraints, a detailed description of future without project conditions, a description of applicable management measures, the results of preliminary plan formulation and evaluation (i.e.; screening), and the results of preliminary coordination and public involvement. Issues that need to be resolved should be identified and fully documented and the district should present its analysis of options considered. FSM documentation will address the general evaluation

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guidelines presented in Exhibit G-1 to the extent possible at this early stage of the study. Exhibit G-4 is an expanded outline of the information to be included in FSM documentation and addresses the level of detail required. Technical work products that support the FSM documentation (e.g.; surveying & mapping, hydraulics & hydrology, average annual damage computations, etc.) should have been subject to technical review (ITR). Although ITR issues may not have been fully resolved, a status report discussing significant ITR concerns and how these concerns will be resolved must be provided as part of the FSM material. The transmittal of the FSM material to Headquarters should include a document that explains what actions have been taken to address any issues identified by Headquarters in the reconnaissance guidance memorandum.

Upon completion of the process outlined in this exhibit, Headquarters will issue the FSM Guidance Memorandum. The guidance memorandum will identify any changes in the conduct of remaining feasibility study activities agreed to by the USACE vertical team and will be used to revise the PMP, if necessary.

Alternative Formulation Briefing (AFB).

The AFB was established to save time and costs in the preparation and review of feasibility and general reevaluation reports, and to facilitate Headquarters participation in plan formulation. The purpose of the AFB is to confirm that the plan formulation and selection process, the tentatively selected plan, and the definition of Federal and non-Federal responsibilities are consistent with applicable laws, statutes, Executive Orders, regulations and current policy guidance. The goal is to identify and resolve any legal or policy concerns that would otherwise delay or preclude Washington-level approval of the draft report, and to allow the districts to release the draft report to the public concurrent with the Headquarters policy compliance review of the draft report.

An AFB should be held when the District is prepared to present the results of the alternative formulation, evaluation and comparison of plans and has identified a tentatively selected plan. The AFB is concerned with the adequacy of the formulation, evaluation and comparison of alternative plans (steps 3 through 5 of the planning process), the reasonableness of the costs, benefits, and impacts of the final array of plans, and the proper application of cost sharing and other legal and policy requirements in arriving at the tentatively selected plan. The AFB should also provide a current description of problems and opportunities, planning objectives and constraints, and the without-project condition (steps 1 and 2 of the planning

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process). Issues that need to be resolved should be identified and fully documented and the districts should present their analysis of options considered and its tentatively recommended solution.

AFB documentation should provide all information that is pertinent to the formulation, evaluation, comparison, and selection of the tentatively recommended plan. The AFB documentation will address the general evaluation guidelines presented in Exhibit G-1. Exhibit G-5 is an expanded outline of the information to be included in AFB documentation and addresses the level of detail required. Conceptually, AFB documentation would be comparable to a draft report that is about 75 percent complete. Although not required, if the draft report is available, that report may serve as the AFB documentation. Technical work products that support the AFB documentation (e.g.; surveying & mapping, hydraulics & hydrology, environmental/NEPA documentation, average annual damage and benefit computations, cost estimates, etc.) should have been subject to independent technical review (ITR). Although ITR issues may not have been fully resolved, a status report discussing significant ITR concerns and how these concerns will be resolved must be provided as part of the AFB material. The AFB material must also include a document stating how concerns identified in the Headquarters FSM guidance memorandum have been addressed.

Upon completion of the process outlined in this exhibit, Headquarters will issue the AFB Guidance Memorandum. The AFB Guidance Memorandum will be used by the District to complete all required detailed analyses and prepare the draft feasibility report/NEPA document. Subject to the district presenting its resolution of issues from the AFB Guidance Memorandum and Headquarters approval, the draft feasibility report/NEPA document will be distributed for the required 45-day public review concurrent with transmittal of the draft report to Headquarters for policy compliance review.

Issue Resolution Conferences / In-Progress Reviews (IRCs/ IPRs). The purpose of an IRC is to involve the USACE vertical team in the early identification and resolution of potential problems (technical/policy/legal) that could delay study progress. The purpose of an IPR is to provide the USACE vertical team and others, as needed, an update of study findings and progress. IRCs and IPRs can be held at any time during the study process at the request of any USACE vertical team member (i.e.; District, Division or Headquarters) or the ASA(CW). Documentation should be developed to provide the background and facts appropriate to the purpose and scope of the IRC/IPR. Issues that need to be resolved should be identified and fully documented and the District should present its analysis of options considered and its recommended solution. Prior to an IRC/IPR, the District should have completed and documented independent technical review

Exhibit G- 3. Procedures for Conducting Feasibility Scoping Meetings, Alternative Formulation Briefings, and Issue Resolution Conferences/In-Progress Reviews for Feasibility and Post Authorization Studies and Reports

appropriate to the stage of the study. Upon completion of the process outlined in this exhibit, Headquarters will provide guidance for the resolution of issues or future study activities in the form of an IRC/IPR Guidance Memorandum.

Procedures for Conducting FSMs, AFBs, and IRCs/IPRs.

Document Transmittal. The documentation required for an FSM, AFB, or IRC/IPR is defined in this exhibit and in Exhibits G-4 and G-5. The District will submit 10 copies of documentation to the respective Headquarters MSC Regional Integration Team and two copies to the MSC. The transmittal memorandum will identify and discuss any policy issues requiring resolution and/or significant or potential issues that the MSC/District believes could affect the outcome of the project. Copies of previous Headquarters guidance memoranda, the District's compliance memorandum, and appropriate ITR documentation should be enclosed.

Document Review and Discussion of Issues. Headquarters will review the FSM, AFB, or IRC/IPR documentation and produce policy compliance review comments (see Appendix H) appropriate to the situation. The target time for providing formal, written Headquarters policy review comments is 30 days after receipt of complete documentation. Policy review comments will be transmitted to the District and MSCs with required actions identified to achieve issue resolution. At a minimum, the District will be required to provide formal written responses to the Headquarters policy review comments stating how the issues will be resolved.

The next step in the process is for the USACE vertical team, the non-Federal sponsor, and others as necessary (e.g.; ASA(CW), resource agencies) to discuss the comments and responses and reach consensus on the appropriate actions that will be taken to resolve the issue. The form of this discussion may be a telephone conference, videoconference, or a face-to-face meeting as appropriate. The appropriate MSC RIT should be contacted to discuss the form of the discussion and a range of proposed dates for the discussion and will confirm the acceptability of the final date with other Washington level offices. When deciding the form of the discussion, consideration should be given to the need for a project site visit. A project site visit should be part of the AFB, unless there are extenuating circumstances. If a site visit would be useful but is not practical, slides and/or a video should be presented.

Discussions of policy issues will be chaired by the MSC and should be structured to

Exhibit G- 3. Procedures for Conducting Feasibility Scoping Meetings, Alternative Formulation Briefings, and Issue Resolution Conferences/In-Progress Reviews for Feasibility and Post Authorization Studies and Reports

encourage the surfacing and discussion of concerns and development of consensus on resolution of issues. The sponsor and appropriate Federal and State agencies should be encouraged to participate fully in all discussions. The District participants should be prepared to address the policy issues raised by Headquarters review. Discussions and required actions will be recorded and will be the basis of the draft guidance memorandum developed at the conference.

Headquarters Guidance Documentation. In coordination with the Office of Water Project Review and Headquarters Communities of Practice (CoPs), as appropriate, the respective MSC RIT will be responsible for finalizing the guidance memorandum. The final guidance memorandum will be transmitted to the MSC within 14 calendar days following the discussion of the issues. All subsequent documents submitted for Headquarters review shall be accompanied by a document indicating how compliance with previous Headquarters guidance has been achieved. The FSM Guidance Memorandum will be used to revise the PMP to incorporate the changes agreed to at the meeting. The revised PMP, as a result of the FSM or other IRCs/IPRs, will be followed during the conduct of the feasibility study and will be a primary tool for the review of subsequent products (AFB pre-conference documentation, draft or final report). Outstanding policy and ITR issues must be resolved before subsequent products are forwarded to HQUSACE.

Exhibit G-4. Items to be Addressed in Feasibility Scoping Meeting (FSM) Documentation

1. Study Background.

- a. Study Authority. Include the full text of the study resolution(s) or other authority.
- b. Location. Include a map(s).

2. Future Without Project Condition Problems, Opportunities, Goals, Objectives, and Constraints. Present the results of steps 1 and 2 of the planning process as generally described in Appendix E, paragraph E-3. Specifically identify any key assumptions regarding forecasted without-project conditions. For the project purpose(s) being studied, provide specific information to describe and quantify the problem in accordance with the applicable evaluation procedures presented in Appendix E. Following are references to the specific analyses and information required to describe the problem for several project purposes:

- Urban Flood Damage Reduction. Appendix E, paragraph E-18.
- Deep Draft Navigation. Appendix E, paragraph E-9.
- Ecosystem Restoration. Appendix E, paragraph E-32.

3. Formulation and Evaluation of Preliminary Plans. The FSM documentation will present the results of initial plan formulation, step 3 of the planning process (Appendix E, paragraph E-3).

a. Identification of Management Measures. A management measure is a feature (a structural element that requires construction or assembly on-site) or an activity (a nonstructural action). Management measures are the building blocks of alternative plans. The FSM documentation will describe the full range of management measures that have been considered to address the identified problems and opportunities. Descriptions of management measure will include their purpose, location, composition (e.g., materials, methods), and physical properties (i.e.; scale/sizing) to the extent possible at this early stage of the study. All applicable measures should be considered, including those beyond the authority of the Corps to implement.

b. Evaluation of Management Measures. For each measure identified, discuss its potential to contribute to the planning objectives and its consistency with the planning constraints. Identify measures that will be eliminated from further consideration and document the reasons (e.g.; cost, effectiveness). Identify measures that can be combined to form alternative plans. Identify measures that must be combined due to dependency. Identify measures that are mutually exclusive. Assess the Federal interest in identified potential solutions to the problems based on consistency with Administration budget policy, specific USACE policies for each project purpose (see Appendix E), and Federal laws, regulations, and Executive Orders. Indicate who (i.e.; Corps, other Federal agency, non-Federal interests) has responsibility for addressing

<p>Exhibit G-4. Items to be Addressed in Feasibility Scoping Meeting (FSM) Documentation each problem identified.</p>
<p>c. <u>Plans To Be Studied Further</u>. Identify the conceptual plans that will be studied further and describe the future work that will be accomplished to develop and evaluate preliminary plans.</p>
<p>4. Policy issues or questions to include analysis of options and proposed recommendation(s). A list of sensitive policy areas which require vertical team coordination with MSCs/HQUSACE is enclosed as Exhibit G-6.</p>
<p>5. Independent technical review documentation completed to date, including status of unresolved issues and how they will be resolved</p>
<p>6. List of future study/project milestones and completion dates</p>
<p>7. Proposed Changes to the PMP. Provide a narrative discussion of changes that need to be made to the PMP as a result of the findings of the study to date. Explain significant changes in the scope, schedule, or cost of specific tasks.</p>
<p>8. Headquarters Guidance Memoranda from Reconnaissance Phase or most recent IRC/IPR.</p>
<p>9. Compliance memorandum indicating how compliance with Reconnaissance or most recent IRC/IPR Guidance has been achieved.</p>
<p>The FSM documentation should include but is not limited to the above items. It should include other information pertinent to the project or specific issues.</p>

<p>Exhibit G-5. Items to be Addressed in Alternative Formulation Briefing (AFB) Documentation</p>
<p>1. <u>Study Background.</u></p> <ul style="list-style-type: none">a. Study Authority. Include the full text of the study resolution(s) or other authority.b. Location. Include a map(s).
<p>2. <u>Current Description of Future Without Project Condition Problems, Opportunities, Goals, Objectives, and Constraints.</u> Present the current, updated results of steps 1 and 2 of the planning process as generally described in Appendix E, paragraph E-3. Specifically identify any key assumptions regarding forecasted without-project conditions. For the project purpose(s) being studied, provide specific information to describe and quantify the problem in accordance with the applicable evaluation procedures presented in Appendix E. Following are references to the specific analyses and information required to describe the problem for several project purposes:</p> <ul style="list-style-type: none">- Urban Flood Damage Reduction. Appendix E, paragraph E-18.- Deep Draft Navigation. Appendix E, paragraph E-9.- Ecosystem Restoration. Appendix E, paragraph E-33.
<p>3. <u>Formulation and Evaluation of Alternative Plans.</u> The AFB documentation should confirm that all reasonable alternatives, including non-structural measures and measures beyond the authority of the Corps to implement, have been systematically formulated and evaluated in accordance with the P&G.</p> <ul style="list-style-type: none">a. Plan Formulation, Evaluation, and Comparison. Summarize the screening of applicable management measures, development and evaluation of preliminary plans, and the iterations of plan formulation that led to the final array of detailed plans (steps 3, 4, and 5 of the planning process (Appendix E, paragraph E-3). Tell the plan formulation story.b. For the final array of plans provide:<ul style="list-style-type: none">(1) Descriptions of the physical features and LERRD requirements. Include maps and sketches.(2) Implementation costs in appropriate Code of Accounts format to include preconstruction engineering and design, LERRD requirements, construction, and operation, maintenance and repair costs. Implementation costs include mitigation. Identify contingencies. Identify economic cost (e.g.; interest during construction).(3) Description of models and assumptions used to estimate benefits and costs.(4) Environmental mitigation requirements including associated LERRD requirements. Document justification for mitigation measures (Appendix C, paragraph C-3)(5) Discussion of major areas of risk and uncertainty, to include key assumptions regarding forecasted future with-project conditions. Address the sensitivity of project justification to key with- and without-project assumptions

Exhibit G-5. Items to be Addressed in Alternative Formulation Briefing (AFB) Documentation
<ul style="list-style-type: none"> c. Identify the NED, NER or Combined plan d. Identify the Tentatively Recommended Plan. Provide rationale and justification for selection of the plan if it is not the NED/NER/Combined Plan. e. For the Tentatively Recommended Plan provide: <ul style="list-style-type: none"> (1) Allocation of costs to project purposes (2) Apportionment of Federal and non-Federal costs (3) A description of Federal and non-Federal implementation responsibilities.
<p>4. Policy issues or questions to include analysis of options and proposed recommendation(s). A list of sensitive policy areas which require vertical team coordination with MSC/HQUSACE is enclosed as Exhibit G-6.</p>
<p>5. Status of environmental compliance actions, coordination, and NEPA documentation.</p>
<p>6. Independent technical review documentation completed to date, including status of unresolved issues and how they will be resolved.</p>
<p>7. Identification of any legal issues and status of legal review certification.</p>
<p>8. Status of engineering activities. In general, sufficient engineering analysis should be complete to have a reasonably certain estimate of project scope, benefits, and costs. Identify any incomplete items of work that could have a significant effect on project scope, benefits, or costs and an assessment of the likely effect.</p>
<p>9. Identification of any LERRD issues and status of real estate activities. In general, the Real Estate Plan (ER 405-1-12, Chapter 12) should be sufficiently complete so as to have a reasonably certain estimate of project LERRD requirements and, for cost shared projects, a reasonably certain description of the nature and scope of the non-Federal sponsor's responsibilities and estimated LERRD credit amount. Identify any incomplete items of work that could have a significant effect on project scope, benefits, or costs and an assessment of the likely effect.</p>
<p>10. Status of all applicable environmental compliance coordination activities and resource agency views, if known.</p>
<p>11. List of future study/project milestones and completion dates.</p>
<p>12. Status of M-CACES cost estimate.</p>
<p>13. Headquarters Guidance Memoranda from FSM or most recent IRC/IPR.</p>
<p>14. Compliance memorandum indicating how compliance with FSM or most recent IRC/IPR</p>

Exhibit G-5. Items to be Addressed in Alternative Formulation Briefing (AFB) Documentation
guidance has been achieved.
15. Status of non-Federal sponsor support.
Note: The AFB documentation should include but is not limited to items 1 to 15. It should include other information pertinent to the project or specific issues.

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
MSC/HQUSACE

GENERAL PROJECT INFORMATION:

Project Name: State, County, River Basin/Waterbody under Study

Project Description: Need project description with general details, such as a fact sheet attached. For GRRs, if project is the same as authorization attach a summary, if different provide a description of what differs from original authorization, the authorizing language, and dimensions to give perspective of the change in scope and scale. If there was an authorizing report, state at what level it was approved (i.e., OMB, ASA(CW), HQUSACE). Include date of approval. If no prior reports, give a more detailed description.

Cost Sharing: Describe the cost sharing for the project to be constructed. Describe whether the cost sharing follows general law or if there is other special cost sharing for the project.

Has a NEPA document been completed? If no, coordination through vertical team required. Provide complete description of issues.

Will the NEPA Documentation be more than 5 years old at the time of PCA signing or construction initiation? If yes, coordination through vertical team required. Provide complete description of issues.

Will the ESA Findings be more than 3 years old at the time of PCA signing or construction initiation? [Note: Findings refers to Corps documentation and/or US Fish and Wildlife Service's opinions and recommendations]. If yes, coordination through vertical team required. Provide complete description of issues.

Is ESA coordination complete? If no, coordination through vertical team required. Provide complete description of issues.

If an EIS/EA was completed for the project, has the Record of Decision/Finding of No Significant Impact been signed? If no, coordination through vertical team required. Provide complete description of issues.

Is the proposed project consistent with the ROD/FONSI? If no, coordination through vertical team required. Provide complete description of issues.

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
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Have there been any changes in Federal environmental laws or Administration or Corps policy since original project authorization that make updating necessary? [e.g., change to the Clean Air Act status for the project area...going from attainment to non-attainment] If yes, coordination through vertical team required. Provide complete description of issues.

Is there a mitigation plan for fish and wildlife, flood damage, cultural and historic preservation and/or recreation? If yes to any or all, coordination through vertical team required. Identify and describe what is being mitigated and cost shared. Describe the authority for the cost sharing.

Are the mitigation plan(s) that are now being proposed the same as the authorized plan? If no, coordination through vertical team required. Provide complete description of issues.

Is there an incremental analysis/cost effectiveness analysis of the fish and wildlife mitigation features based on an approved method and using an accepted model? If no, coordination through vertical team required. Provide complete description of issues.

Is it expected that the project's fully funded cost would exceed the cost limit of Section 902 of WRDA 1986? (Note: for hurricane and storm damage reduction projects there are two separate 902 limits, one for initial project construction and one for periodic renourishment.) If yes, coordination through vertical team required. Provide the authorized project cost, price level, and current and fully funded project cost estimates and price levels.

Does the project involve HTRW clean-up? If yes, coordination through vertical team required. Provide complete description of issues.

Does the work involve CERCLA covered materials? If yes, coordination through vertical team required. Provide complete description of issues.

Are the project purposes now being proposed different than the authorized project? (Note: different than specifically noted in authorization or noted in Chief's report and is it measured by project outputs.) If yes, coordination through vertical team required. Provide complete description of issues.

Are there any proposed scope changes to the authorized project? If yes, coordination through vertical team required. Describe the authority that would enable the project to proceed without additional Congressional modification.

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
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Is Non-Federal work-in-kind included in the project? (Note: Credit to a non-Federal sponsor for work-in-kind must be based upon having an existing authority. Need to identify the authority and if not a general authority such as Sec 215, provide a copy of the authority.) If yes, coordination through vertical team required. Provide complete description of issues.

Does project have work-in-kind authority? (Note: If there is no existing authority, as determined in conjunction with District Counsel, the only other vehicle is to propose work-in-kind and rationale in the decision document and submit to HQUSACE for specific Congressional authorization.) If no, coordination through vertical team required. Provide complete description of issues.

Are there multiple credit authorities (e.g., Sec. 104 & 215) including LERRDS, Work-In-Kind and Ability to Pay? (Note: See App. B of ER 1165-2-131. Describe the authority for work-in-kind and if authority exists, the PM should submit a completed App. B through the vertical team.) If yes, coordination through vertical team required. Provide complete description of issues.

Is an Ability to Pay cost sharing reduction included in the proposed project? If yes, coordination through vertical team required. Fully describe the proposal, citing how this authority is applicable. Include a table showing the cost sharing by project purpose and expected Ability to Pay reductions.

Is the recommended plan different from the NED plan? If yes, coordination through vertical team required. State whether plan is less costly than NED plan, more costly with the same cost sharing the same as NED plan (exception), more costly with all costs exceeding the cost of the NED plan at 100% non-Federal cost, or if ASA(CW) has already granted an exception.

Was a standard accepted Corps methodology/model used to calculate NED benefits? If no, coordination through vertical team required. Provide complete description of methodology/model used and issues.

Are there non-standard benefit categories? [Reference ER 1105-2-100]. If yes, coordination through vertical team required. Provide complete description of non-standard benefit category and procedure/model used to estimate the benefits.

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
MSC/HQUSACE

NAVIGATION COMPONENT (INLAND OR HARBOR)

For projects with a navigation component, answering yes to any of the following questions will require coordination through the vertical team. A complete description of the issues will need to be provided in each case.

Is there land creation?

Is there a single owner and/or beneficiary which is not a public body? (Public body as defined by Section 221 of WRDA 1970)

For harbor projects, will removals or deep draft utility relocation be necessary?

Are there proposals for Federal cost sharing of Local Service Facilities (e.g., dredging of non-Federal berthing areas) work?

Is there sediment remediation proposed under Sec. 312 authority? (i.e., Section 312 of WRDA 1990 as amended by Section 205 of WRDA 1996)

Is there dredged material placement on beaches where the use is not the least costly environmentally acceptable plan?

Will the dredged material be used for ecosystem restoration where the recommended plan is not the least costly environmentally acceptable plan?

Does the project have recreation navigation benefits?

Does the project involve inland navigation harbor development?

Can the resale or lease of lands used for disposal of excavated material recover the cost of the improvements?

Will acquisition of land outside the navigation servitude be necessary for construction of the improvements (either the project or non-Federal facilities that will use or benefit from the project) and will this permit local entities to control access to the project. (The latter case is assumed to exist where the proposed improvement consists of a new channel cut into lands.)

FLOOD DAMAGE REDUCTION COMPONENT

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
MSC/HQUSACE

For projects with a flood damage reduction component, answering yes to any of the following questions will require coordination through the vertical team. A complete description of the issues will need to be provided in each case.

Is the project for protection of a single property or beneficiary?

Is the project producing land development opportunities/benefits? (If land creation benefits are expected to occur, describe whether special cost sharing should apply.)

Is there any recommendation to cost share any interior drainage facilities?

Are there any windfall benefits that would accrue to the project sponsor or other parties? (If windfall benefits are expected to occur, describe whether special cost sharing should apply.)

Are there non-structural buyout or relocation recommendations? If yes list the authority and describe what is proposed.

Are the reallocation studies likely to change the existing allocated storage in lake projects?

HURRICANE AND STORM DAMAGE REDUCTION COMPONENT

For projects with a hurricane and storm damage reduction component, answering yes to any of the following questions will require coordination through the vertical team required. A complete description of the issues will need to be provided in each case.

Does the project provide for protection of privately owned shores?

Does the project provide for protection of undeveloped lands? Does the project provide for protection of Federally owned shoreline at Federal cost? (If yes, describe what is to be protected and who bears the federal cost)

Does the project involve tidal or fluvial flooding, i.e.; is it clear what the project purpose is and has the project been formulated as a hurricane and storm damage reduction or flood damage reduction project?

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
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Is there any recommendation to cost share any interior drainage facilities?

Is recreation > 50 percent of total project benefits needed to justify the project?

Are there any parking or public access issues (no public access or none provided within
½ mile increments)?

Are easements being provided to ensure public use and access?

Is there a Section 934 of WRDA 86 extension of the period of authorized Federal
participation?

Are there any Section 111 of Rivers and Harbors Act of 1958, as amended, proposals?

ECOSYSTEM RESTORATION COMPONENT

For projects with an ecosystem restoration component, answering **no** to any of the following
questions will require coordination through the vertical team. A complete description of the
issues will need to be provided in each case.

Has the project been formulated using cost effectiveness and incremental analysis
techniques?

Was "IWR Plan" used to do cost effectiveness/incremental analysis?

Are all the benefits aquatic?

Has the significance of the habitat been clearly identified? Describe the basis for
determining the significance.

Are all the proposed recreation features in accord with ER 1105-2-100, Appendix E,
Exhibit E-3?

Has the restoration project been formulated for biological/habitat values as opposed
to, for example, water quality?

For projects with an ecosystem restoration component, answering **yes** to any of the following
questions will require coordination through the vertical team. A complete description of the

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with
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issues will need to be provided in each case.

Is the project purpose for restoration of cultural or historic resources as opposed to ecosystem restoration?

Is there mitigation authorized or recommended?

Are there recommendations for other than restoring a degraded ecosystem ([e.g., creating new habitat where it has never been])?

Is the project on non-public lands?

Does the project involve land values > 25% of total project cost?

Are there recommendations to include water quality improvements?

Is the monitoring and adaptive management period proposal beyond 5 years after completion of construction?

Does the proposal involve land acquisition in other than fee title?

Are there recommendations for non-native species?

Does the project propose the use of navigation servitude?

RECREATION COMPONENT

For projects with a recreation component, answering yes to any of the following questions will require coordination through the vertical team. A complete description of the issues will need to be provided in each case.

Is the cost of proposed recreation development > 10 % of the Federal project cost without recreation, (except for nonstructural flood damage reduction and hurricane and storm damage projects)? Describe the proposal and whether ASA(CW) approval has been granted.

Does the proposal involve land acquisition in other than fee title?

Are there recreation features located on other than project lands?

Exhibit G-6. Sensitive Policy Areas Which Require Vertical Team Coordination with MSC/HQUSACE
<p>Does the project involve/provide for waterfront development?</p> <p>Does the project involve the need to reallocate authorized storage (Sec III, App E, ER 1105-2-100)?</p> <p>Does the project include non-standard recreation facilities? (refer to ER 1105-2-100, Appendix E, Exhibit E-2)</p>
<p><u>WATER SUPPLY COMPONENT</u></p> <p>For projects with a water supply component, answering yes to any of the following questions will require coordination through the vertical team. A complete description of the issues will need to be provided in each case.</p> <p>Does the project use non-standard pricing for reallocated storage?</p> <p>Are there exceptions to model contract/agreement language?</p>

g. Feasibility Report

(1) Content

(a) Feasibility phase procedures and study results shall be documented in a feasibility report. Report requirements are generally the same regardless of whether or not Federal action is recommended. The following requirements are generally applicable to all reports. Requirements for NEPA are in Appendix C.

(b) The report will present the recommended plan and, if applicable, the degree of and rationale for departure from the NED Plan, the NER Plan, or the Combined NED/NER Plan and the sponsor's preference, if none of these are the recommended plan. Should the District Commander find that the NED Plan, the NER Plan or the Combined NED/NER Plan or a justifiable departure is not acceptable to the sponsor, a locally preferred plan may be considered for Federal participation. If there is no acceptable plan, the study should be terminated and guidance obtained from the appropriate RIT.

(c) As required by Section 904 of the WRDA of 1986, the report shall address the

following matters in the formulation and evaluation of alternative plans:

(1) Enhancing national economic development (including benefits to particular regions that are not transfers from other regions);

(2) Protecting and restoring the quality of the total environment;

(3) The well-being of the people of the United States;

(4) The prevention of loss of life; and

(5) The preservation of cultural and historical values.

(d) In accordance with Section 905 of the WRDA of 1986, the report will also describe, with reasonable certainty, the economic, environmental, social, and engineering (including hydrologic and geologic information) benefits and costs of the recommended and alternative plans. A nonstructural alternative to the recommended plan will be described, including Federal and non-Federal participation, when the recommended plan does not have significant non-structural features. The report will also describe the purposes, scope, scale, public acceptability, and Federal and non-Federal participation for the recommended plan. The report will document that the affected states, other non-Federal interests, and Federal agencies have been consulted in the development of the recommended plan. In accordance with the provisions of Section 905 of the WRDA of 1986, benefits to Indian tribes, if any, shall be considered in the analyses and documented in the report.

(e) In accordance with Section 928 of the WRDA of 1986, any report describing a project having recreation benefits will include a brief description of the competing facilities and their existing and expected future use with and without the proposed project. For clarity and ease of understanding a tabular display of the facilities with uses by categories may be desirable. The impact description should distinguish between them and describe the impacts on peak versus average use in the with and without proposed project conditions.

(f) The report will include, for the recommended plan, a discussion of the uncertainty associated with significant cost features and how this uncertainty is expected to be reduced during the future project development.

(g) A preliminary draft PCA is not to be included in the report.

(h) The report shall also include a discussion of PCA responsibilities. The discussion should demonstrate that all parties have a complete understanding of the ultimate requirements for

implementation of the plan. If the non-Federal sponsor is in basic agreement with the appropriate model PCA, so state. If the non-Federal sponsor has requested special conditions different than provisions in the model, and these conditions are agreed to by HQUSACE and ASA(CW) at the IRC or in the subsequent PGM, these conditions should be included in the report along with the reporting officers recommendation. A preliminary financing plan and statement of financial capability are also required to establish implementability as required by the P&G. [ER 1165-2-131](#) contains guidance on the development of PCAs; Appendix D contains guidance on financial plans and statements.

(i) Provisions which address non-Federal responsibilities for hazardous substances in, on, or under project lands and encourage responsible management of hazardous substances by ensuring that Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) costs do not become a cost of constructing, operating, maintaining, repairing, replacing and rehabilitating Federal projects must be included in the report.

(j) For alternatives which include impoundment(s), the report shall address the requirements of Section 1202 of the WRDA of 1986 by including information on the consequences of failure, and geologic or design factors which could contribute to the possible failure of such facility.

(k) An ability to pay analysis shall be included for projects addressing flood control or agricultural water supply as required by Section 103 (m) of the WRDA of 1986 in accordance with ER 1165-2-121 and in the Federal Register (60 FR 5133, January 26, 1995). The 1995 rule maintains the two tests included in ER 1165-2-121 but adds a third test designed to provide a reduction for unusually high non-Federal per capita construction costs.

(l) The text of the report shall contain the major subject matter elements (not necessarily to be used as headings) presented in Exhibit G-7 (Feasibility Report Content).

(a) The report cover shall contain a concise title which shall be the official report title, and indicate: the type of report; whether the report contains an EA or an EIS; whether the report is a draft or final; the name of the District and Division; and the month and year.

(b) A title sheet on the District's letterhead stating the official report title shall be included as the first page inside the front cover.

(c) A syllabus shall be placed immediately after the title sheet when there is an EIS and a project is being recommended for authorization. A sentence shall be included as follows: "The requirements of Section 404(r) of Public Law 92-500, as amended, have been met."

(d) A table of contents including tables, figures, and any appendixes will be placed after

the syllabus.

(e) An EA or EIS will be included.

(f) Appendixes may be used when information must be a part of the report and cannot be relegated to supporting documentation. These appendixes may be bound in a separate volume but are an integral part of the report.

Exhibit G-7. Feasibility Report Content
1. Study Authority. Include the full text principle resolution(s) or other authority.
2. Study Purpose and Scope. State whether the report is an interim or final response to study authority.
3. Concise Discussion of Prior Studies, Reports and Existing Water Projects.
4. Plan Formulation. (Include the results of public involvement). <ul style="list-style-type: none"> a. Assessment of water and related land resources problems and opportunities specific to the study area: <ul style="list-style-type: none"> 1. Existing conditions 2. Future without project conditions; and 3. Concise statement of specific problems and opportunities b. Planning Constraints c. Alternative plans <ul style="list-style-type: none"> 1. Measures that address identified problems and opportunities 2. Reasons for selecting and combining measures to formulate alternative plans that meet identified problems and opportunities 3. Screening of alternative plans; and, 4. Reformulation of alternative plans, as necessary. d. Presentation and evaluation of final array of alternative plans e. Trade-off analysis f. Selection of the final plan, to include rationale for selection and a discussion of sensitivity analysis and risks and uncertainties.
5. Description of Selected Plan <ul style="list-style-type: none"> a. Plan components; including mitigation, b. Design and construction considerations, c. LERRD considerations, d. Operation and maintenance considerations, e. Plan accomplishments; and, f. Summary of economic, environmental and other social effects.
6. Plan Implementation <ul style="list-style-type: none"> a. Institutional requirements;

Exhibit G-7. Feasibility Report Content
b. Division of plan responsibilities, cost sharing and other non-Federal responsibilities; and, c. Views of non-Federal sponsor(s) and any other agencies having implementation responsibilities
7. Summary of Coordination, Public Views and Comments
8. Recommendations (including disclaimer).

(g) Displays, such as maps, graphs, tables, drawings, photographs, and other graphics shall be used to facilitate the presentation of information.

h. Supporting Documentation. The following supporting documentation will be prepared and reproduced separately for technical review of feasibility studies, and shall contain the technical information prescribed by the Division Commander. This documentation is not an integral part of, and shall not duplicate descriptive material contained in the feasibility report or appendixes. However, it shall be provided in a logical readable format.

(1) Engineering design data will be provided to supplement the plan formulation and the plan selection process. The material shall contain, as applicable, a description of the existing and modified hydrology and hydraulics of the detailed plans; geotechnical and other technical data; designs; and the results of geologic investigations pertinent to plan implementation and related public safety. High-volume technical data, such as boring logs, and back-up data for alternatives that were eliminated during plan formulation is not to be included. If any of this work has been contracted out, it shall be so acknowledged.

(2) Description of formulation process showing justification of each separable project element and the scale of the project that maximizes net benefits.

(3) Detailed economic data and any derivations from that data to support plan formulation, forecasts, and detailed explanations of benefits should be provided. Describe the with and without project physical, biological and economic conditions of the study area and how each category of benefits was computed.

(4) Supplemental environmental material required by the applicable environmental protection statutes such as correspondence with other Federal agencies regarding actions taken to comply with the Fish and Wildlife Coordination Act, the Endangered Species Act and The National Historic Preservation Act.

(5) Any other specific subject matter of a complex, voluminous or unique nature necessary to support planning; e.g., cost estimates should be summarized as much as possible. A

few copies of the complete data package should be prepared for interested readers.

(6) The revised and updated Policy Compliance Checklist that was initiated with the 905 (b) report. This list should be a living document that is updated and completed more fully at each stage of the project, including both the draft and final report submittals.

i. Report Recommendations.

(1) When a project is authorized by Congress, the recommendations contained in the feasibility report become the basis for proceeding with the project as a Federal undertaking. Authorizing legislation normally references the "recommendations" of the Chief of Engineers, which are derived from the recommendations of the District Commander. The provisions of the recommendations thus provide a legislative basis that will not change unless modified by Congress through applicable general legislation or by specific legislative action for the particular authorization in question. Accordingly, the wording of recommendations, incorporated by reference in the authorizing act, has the force of law for the project, and therefore requires special attention.

(2) Federal laws and policies applicable to all plans recommended for implementation as a Federal project need not be cited in the recommendations section as a requirement of local cooperation or a requirement of the Federal Government. Exhibit G-8 lists the most commonly applicable laws and policies. In writing report recommendations care must be taken to ensure that a law, or section of law, is not erroneously made applicable to the entire project when in fact it is applicable to only a portion, or particular aspect or purpose of the project.

(3) The recommendation(s) shall be prefaced with an appropriate statement, in the first person, indicating that the District Commander has given consideration to all significant aspects in the overall public interest. Those aspects considered shall include environmental, social, and economic effects; engineering feasibility; and any other elements bearing on the decision.

(4) The recommendation(s), in first-person, active voice, shall contain the following, as applicable:

(a) A clear reference to the plan being recommended for implementation, including appropriate mitigation;

(b) A phrase stating that the plan is being recommended "with such modifications thereof as in the discretion of the Commander, HQUSACE, may be advisable";

(c) A listing of local cooperation requirements, which shall be prefaced by a statement

that the non-Federal sponsors shall, prior to implementation, agree to perform the required items of cooperation.

Exhibit G-8. Federal Laws and Policies Applicable to all Recommended Plans	
Title of Public Law	US CODE
Abandoned Shipwreck Act of 1987	43 USC 2101
American Indian Religious Freedom Act	42 USC 1996
Agriculture and Food Act (Farmland Protection Policy Act) of 1981	7 USC 4201 et seq.
American Folklife Preservation Act of 1976, As Amended	20 USC 2101
Anadromous Fish Conservation Act of 1965, As Amended	16 USC 757 a et seq.
Antiquities Act of 1906, As Amended	16 USC 431
Archeological and Historic Preservation Act of 1974, As Amended	16 USC 469
Archeological Resources Protection Act of 1979, As Amended	16 USC 470
Bald Eagle Act of 1972	16 USC 668
Buy American Act	41 USC 102
Civil Rights Act of 1964 (Public Law 88-352)	6 USC 601
Clean Air Act of 1972, As Amended	42 USC 7401 et seq.
Clean Water Act of 1972, As Amended	33 USC 1251 et seq.
Coastal Barrier Resources Act of 1982	16 USC 3501-3510
Coastal Zone Management Act of 1972, As Amended	16 USC 1451 et seq.
Comprehensive Environmental Response, Compensation and Liability Act of 1980	42 USC 9601
Conservation of Forest Lands Act of 1960	16 USC 580 mn
Contract Work Hours	40 USC 327
Convict Labor	18 USC 4082
Copeland Anti-Kickback	40 USC 276c
Davis Bacon Act	40 USC 276
Deepwater Port Act of 1974, As Amended	33 USC 1501
Emergency Flood Control Funds Act of 1955, As Amended	33 USC 701m
Emergency Wetlands Resources Act	16 USC 3901-3932
Endangered Species Act of 1973	16 USC 1531
Estuary Program Act of 1968	16 USC 1221 et seq.
Equal Opportunity	42 USC 2000d
Farmland Protection Policy Act	7 USC 4201 et seq.
Federal Environmental Pesticide Act of 1972	7 USC 136 et seq.
Federal Water Project Recreation Act of 1965, As Amended	16 USC 4601
Fish and Wildlife Coordination Act of 1958, As Amended	16 USC 661
Flood Control Act of 1944, As Amended, Section 4	16 USC 460b

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Exhibit G-8. Federal Laws and Policies Applicable to all Recommended Plans	
Title of Public Law	US CODE
Food Security Act of 1985 (Swampbuster)	16 USC 3811 et seq.
Hazardous Substance Response Revenue Act of 1980, As Amended	26 USC 4611
Historic and Archeological Data Preservation	16 USC 469
Historic Sites Act of 1935	16 USC 461
Jones Act	46 USC 292
Land and Water Conservation Fund Act of 1965	46 USC 4601
Magnuson Fishery Conservation and Management Act	16 USC 1801
Marine Mammal Protection Act of 1972, As Amended	16 USC 1361
Marine Protection, Research and Sanctuaries Act of 1972	33 USC 1401
Migratory Bird Conservation Act of 1928, As Amended	16 USC 715
Migratory Bird Treaty Act of 1918, As Amended	16 USC 703
National Environmental Policy Act of 1969, As Amended	42 USC 4321 et seq.
National Historic Preservation Act of 1966, As Amended	16 USC 470
National Historic Preservation Act Amendments of 1980	16 USC 469a
Native American Religious Freedom Act of 1978	42 USC 1996
Native American Graves Protection and Repatriation Act	25 USC 3001
Native American Religious Freedom Act of 1978	16 USC 469a
National Trails System Act	16 USC 1241
Noise Control Act of 1972, As Amended	42 USC 4901 et seq.
Rehabilitation Act (1973)	29 USC 794
Reservoir Salvage Act of 1960, As Amended	16 USC 469
Resource Conservation and Recovery Act of 1976	42 USC 6901-6987
River and Harbor Act of 1888, Sect 11	33 USC 608
River and Harbor Act of 1899, Sections 9, 10, 13	33 USC 401-413
River and Harbor and Flood Control Act of 1962, Section 207	16 USC 460
River and Harbor and Flood Control Act of 1970, Sections 122, 209 and 216	33 USC 426 et seq.
Safe Drinking Water Act of 1974, As Amended	42 USC 300f
Shipping Act	46 USC 883
Submerged Lands Act of 1953	43 USC 1301 et seq.
Superfund Amendments and Reauthorization Act of 1986	42 USC 9601
Surface Mining Control and Reclamation Act of 1977	30 USC 1201-1328
Toxic Substances Control Act of 1976	15 USC 2601
Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, As Amended	43 USC 4601 et seq.
Utilization of Small Business	15 USC 631, 644
Vietnam Veterans	38 USC 2012

Exhibit G-8. Federal Laws and Policies Applicable to all Recommended Plans	
Title of Public Law	US CODE
Water Resources Development Act of 1974, As Amended	88 Stat 12
Water Resources Development Act of 1976, Section 150	90 Stat 2917
Water Resources Development Act of 1986	33 USC 2201 et seq.
Water Resources Development Act of 1988	33 USC 3301 note
Water Resources Development Act of 1990	33 USC 3301 note
Water Resources Development Act of 1992	33 USC 3301 note
Water Resources Development Act of 1996	33 USC 3301 note
Watershed Protection and Flood Control Act of 1954, As Amended	16 USC 1001 et seq.
Wild and Scenic Rivers Act of 1968, As Amended	16 USC 1271 et seq.
Wilderness Act	16 USC 1131
Walsh-Healy	41 USC 35 et seq.
Executive Orders	
11593, Protection and Enhancement of the Cultural Environment, May 13, 1979	36 FR 8921; May 15, 1971
11988, Floodplain Management, May 24, 1977	42 FR 26951; May 25, 1977
11990, Protection of Wetlands	42 FR 26961; May 25, 1977
11514, Protection and Enhancement of Environmental Quality, March 5, 1970, as amended by Executive Order 11991, May 24, 1977	
12088, Federal Compliance with Pollution Control Standards, October 13, 1978	
12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, February 11, 1994	
Other Federal Policies	
Council on Environmental Quality Memorandum of August 11, 1980: Analysis of Impacts on Prime and Unique Agricultural Lands in Implementing the National Environmental Policy Act	
Council on Environmental Quality Memorandum of August 10, 1980: Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory.	
Migratory Bird Treaties and other international agreements listed in	

Exhibit G-8. Federal Laws and Policies Applicable to all Recommended Plans	
Title of Public Law	US CODE
the Endangered Species Act of 1973, as amended, Section 2(a)(4)	

j. Reporting for Fish and Wildlife.

(1) General. Feasibility reports shall describe specific considerations given to fish and wildlife conservation and other environmental resources during the study. All factors which the reporting officer considered as contributing to the justification of the expenditures recommended for mitigation, conservation and restoration features shall be explicitly described. Specifically, the report shall:

(a) Describe fish and wildlife resource features included in the recommended plan, including the basis for justification, consistent with guidance set forth in this section;

(b) Include appropriate letters and reports furnished by the FWS/NMFS and State agencies;

(c) Describe recommendations furnished by the FWS/NMFS and affected States in compliance with the FWCA and Section 7 of the ESA, discuss specifically how each recommendation was addressed in appropriate alternative plans, and provide reasons for adoption or non-adoption of each recommendation;

(d) Include, as appropriate, provisions for monitoring mitigation features included in the recommended plan;

(e) Describe consideration given to the protection and conservation of wetland resources, including the establishment of wetlands in connection with recommended plans that include the disposal of dredged material, as set forth in [ER 1165-2-27](#);

(f) Include the necessary letters of intent from agencies and non-Federal sponsors participating in fish and wildlife mitigation features; and,

(g) Describe how such features will be operated, managed and funded.

(2) Mitigation. Reports seeking authorization or approval of any water resources development project shall contain either a determination that such project will have negligible adverse impacts on fish and wildlife; or, a recommendation with a specific plan to mitigate fish and wildlife resource losses created by such project.

(3) PCA Environmental Compliance Checklist. The checklist of environmental compliance (in www.hq.usace.army.mil/inet/functions/cw/cecwa/branches/guidance/chklst.htm) contains information which must be addressed in documentation accompanying Project Cooperation Agreements.

k. Disclaimer. Draft and final feasibility reports recommending authorization or implementation funding, accompanying public notice, correspondence which may be disseminated apart from those documents, and HQUSACE endorsements shall all include the following paragraph immediately following each reporting officer's recommendations:

"The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding." However, prior to transmittal to the Congress, the sponsor, the States, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

l. Provision of Current Estimates of Project Benefits. Benefit-cost ratio computations, where required in support of funding requests, will be developed based on the benefits in the latest approved detailed economic analysis, annualized at the specified discount rates, if necessary. Appendix D provides the requirements and procedures to update project benefits.

m. Maintenance of Project Justification Documentation. Records documenting the data, conduct, analyses and results of Feasibility studies recommending project authorization, and similar information for any subsequent re-evaluations, shall be maintained in files until either project construction is completed or the project is deauthorized. Documentation will be in sufficient detail to support the basis used to compute benefits and costs.

n. Fact Sheets. The Division Commander shall submit a fact sheet in the Corps of Engineers word processing standard (currently Microsoft WORD) by e-mail to the appropriate RIT when the Division Commander's public notice is issued. The fact sheet format is furnished in Exhibit G-9. A map in electronic format showing the location and the recommended plan of improvement shall be included.

G-10. NEPA Documentation. The documents which must be prepared as documentation of the NEPA process are required at the same time that the feasibility report is prepared. The EA or EIS, as appropriate, may either be a self supporting document combined with and bound within the feasibility report or integrated with the report. The EIS should be integrated with the report

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unless complex environmental impacts preclude this alternative. Detailed guidance on the organization and content of the EIS for each of the cases is in Appendix C, 40 CFR Parts 500-1508, and [ER 200-2-2](#). The Division Commander is delegated the authority to determine the most appropriate presentation. This authority may be further delegated to District commanders.

Exhibit G-9. General Investigation Study Fact Sheet

(Date) _____

SUMMARY OF CORPS FEASIBILITY REPORT
(or SUMMARY OF CORPS POST AUTHORIZATION CHANGE REPORT)

1. Name of Report: (Complete Name)
State(s): _____ Congressional District(s): _____
2. Type of Report: (Name from budget category and class/interim or final)
3. Location of Study Area: (Brief narrative sentence with reference to nearest city)
4. Authority for Report: (Cite legislation or committee resolutions)
5. Dates of Corps Reports:
 - a. Division Engineer's Report/Public Notice or Post Authorization Change Report
 - b. Chief of Engineers' Report
6. Problems and Opportunities Identified in Study: (Brief narrative of those stemming from the study authority and those from the planning process and an indication of any recent events or conditions which highlight the problems or opportunities.)
7. Alternative Plans Considered. (Brief narrative description of the final array of alternative plans considered to alleviate the problems and take advantage of the opportunities in the planning area.)
8. Description of Recommended Plan. (Brief narrative in non-technical terms without detailed quantitative data.)
9. Physical Data on Project Features. (Brief description of each significant component and expected performance/outputs from those features.)
10. New Policy Directions Recommended

Exhibit G-9. General Investigation Study Fact Sheet

11. Views of States, Non-Federal Interest and other Countries. (Discuss views and indicate responses to proposed CoE report and final EIS; give date and type of support from non-Federal interests for recommended cost sharing.)

12. Views of Federal and Regional Agencies. (Discuss any unresolved issues associated with the Reporting Officer's recommendations/proposed CoE report/ Final EIS; as applicable.)

13. Status of NEPA Document:

14. Estimated Implementation Costs: (Month/Year price level)

Federal (Agency/Purpose)	Cost-sharing
_____	_____
_____	_____
_____	_____
Non-Federal (State/sponsors)	
_____	_____
_____	_____
_____	_____
Total _____	

15. Description of Non-Federal Implementation Costs: (Briefly describe the nature of non-Federal costs identified in item 14 and separately list any other significant non-Federal costs identified in the report.)

16. Estimated Annual O&M Costs: (month/year price level)

Federal (Agency/Purpose)	Cost-sharing
_____	_____
_____	_____
_____	_____
Non-Federal (State/sponsors)	
_____	_____
_____	_____
_____	_____

Exhibit G-9. General Investigation Study Fact Sheet

Total _____

17. Description of non-Federal O&M Costs: (Briefly describe the nature of the non-Federal O&M costs.)

18. Estimated Effects:

Account Effects	Average Annual Equivalent Beneficial Effects (\$1000)	Average Annual Equivalent Adverse Effects (\$1000)
NED (include employment and incidental)	_____	_____
Total	_____	_____

Project economic life: (years)

Benefit-cost ratio: (Current discount rate)

NED plan recommended?: (Yes/No) (If no, describe NED plan and reasons why this plan was not selected.)

19. Direct Beneficiaries: (Identify major direct beneficiaries of the project. Use general terms unless there are definable, limited beneficiaries.)

(Items 20 and 21 are to be completed only if report is a modification of an authorized project, or requires authorization and/or construction of elements not included in the features being recommended.)

20. Relationship to Other Plans: (Brief narrative description of how recommended plan fits into related plans. Include status of other plans, e.g.. not authorized, completed, under construction, preconstruction planning and engineering.)

21. Cumulative Funds Expended to Date on Previous/Related Project(s): (Show Federal and non-Federal expenditures for each project identified.)

22. Current Status of Chief of Engineers Report: (To be completed by HQUSACE)

SECTION III - Post-Authorization Changes

G-11. Purpose. This section provides guidance for making changes to uncompleted authorized projects.

G-12. Definitions.

a. Authorized Project. An authorized project means a project specifically authorized by Congress for construction, generally through language in an authorization or appropriation act, or a project authorized pursuant to Section 201, of the Flood Control Act of 1965.

b. Changes in Price Levels. For purposes here changes in price levels are changes in the general level of money prices in the economy, or in sectors of the economy. Changes in price levels may be measured by appropriate price indices, or by observation of changes in particular unit prices, as appropriate.

c. Changes in Scope. Changes in scope are increases or decreases in the outputs for the authorized purposes of a project. Outputs are the projects physical effects which (usually) have associated benefits (hence, project purpose). Change in the degree of reduction in flood stages is a change in a project outputs. It would be a change in scope if it resulted from formulation, or from design changes. Changes in the value of outputs (benefits) resulting from price level changes, or from other purely economic phenomena, are not considered changes in scope.

G-13. Approval Authorities.

a. Approval Authority Delegated to Division Commander. Division commanders may approve changes to authorized projects, or elements thereof, if such changes meet all of the criteria listed below. Such changes shall be reported to HQUSACE through the Project Review Board process. Division commanders should submit doubtful or controversial cases to HQUSACE (RIT) for a determination of the proper approval authority, reports, and report processing.

(1) For projects authorized by the WRDA of 1986, and subsequent legislation, an increase in total project cost no greater than increases in price level changes and cost of modifications required by subsequent legislation. For projects authorized prior to the WRDA of 1986, an increase in total baseline project cost estimate no greater than increases in price level changes and the cost of modifications required by subsequent legislation.

(2) Increase or decrease in scope no greater than 20 percent of the scope authorized by Congress. If the scope can be defined by several parameters, (for example, storage capacity, outputs, environmental impacts) and the change in any one parameter exceeds 20 percent, the change must be approved by the Commander USACE.

(3) Change in the location or the design of the project to the extent that the location and magnitude of the impacts of the change are determined to be insignificant compared to the impacts assessed for the authorized project.

(4) Change does not add or delete a project purpose, except deletion of water quality where the benefits attributed to water quality are less than fifteen percent of the total project benefits, pursuant to Section 65, of the WRDA of 1974.

b. Approval Authority Reserved by the Commander USACE. Any change to an authorized, uncompleted project that does not meet all of the criteria listed in paragraph G-13a and which does not require authorization by Congress pursuant to one or more of the criteria in paragraph G-13c shall be approved by the Director of Civil Works, HQUSACE, or specifically delegated by the Director to the Division Commander for approval.

c. Changes Requiring Authorization by Congress. The Chief of Engineers' discretionary authority to approve changes to authorized projects must not be abused. Changes in scope, including reduction in scope, beyond those listed in paragraph G-13a. should serve as an alert that the change may exceed the Chief of Engineers' discretionary authority. After review, the Commander USACE, in consultation with the ASA(CW), will determine whether the change can be made under discretionary authority or whether additional Congressional authorization is required. In addition, the following always require authorization by Congress:

(1) Addition or deletion of a project purpose, unless permitted under existing general authorities as discussed in paragraph G-14.

(2) Where Section 906(b) of WRDA 1986, as amended, is used as the authority to mitigate damages to fish and wildlife resulting from a water resources project:

(a) acquisition of lands, or interests therein, by condemnation for projects on which at least 10 percent of the physical construction of the project was complete as of 17 November 1986; and

(b) acquisition of water, or interests therein, by condemnation.

(3) Change in the local cooperation requirements specifically referenced in the

authorizing language, unless required by:

- (a) Subsequent legislation; or,
- (b) Addition of a project purpose within the general authority of the Chief of Engineers.

(4) Exceedence of the \$10 million Federal cost, exclusive of price level changes, if the project was authorized under Section 201, prior to 22 October 1976; or \$15 million Federal cost if authorized under Section 201, as amended by Section 131, of the WRDA of 1976, on or after 22 October 1976.

- (5) Deepening of navigation channels.

(6) For projects authorized by WRDA '86 and subsequent authorizations, an increase in total project cost, exclusive of price level changes, of more than twenty percent of the total project cost stated in the authorizing legislation.

G-14. Authority and Procedures for Additional Project Purposes.

a. Water Supply.

(1) Legislative Authority. The Water Supply Act of 1958 allows the addition of water supply as a project purpose without the approval of Congress, if such modification does not seriously affect the purpose for which the project was authorized, surveyed, planned, or constructed, or which would not involve major structural or major operational changes

(2) Procedures for Implementation of Legislative Authority.

(a) The Chief of Engineers, in consultation with the ASA(CW), shall determine whether addition of water supply is within discretionary authority to approve or must be transmitted to Congress for authorization.

(b) A deletion of water supply specifically authorized by Congress as a project purpose requires authorization by Congress. The deletion of water supply added by the Chief of Engineers under the Water Supply Act of 1958 may be approved by the Chief of Engineers prior to the initiation of construction of the project.

b. Water Quality.

- (1) Legislative Authorities. There is no general authority available for adding water

quality to an authorized project. Section 65 of the WRDA of 1974, provides a reporting process for the deletion or modification of water storage in reservoir projects for the regulation of stream flow to improve water quality. The provision applies to all authorized projects not funded for construction on the date of enactment of the act (7 March 1974).

(2) Procedures for Deletion or Modification of Reservoir Storage Under the Authority of Section 65. The purpose of Section 65, Public Law 93-251, is to delineate authorities and procedures for modifying projects not funded for construction which included authorized reservoir storage for water quality, when the Administrator, EPA, determines that such storage is no longer required, or is required in a reduced amount. Such determinations are made by the Administrator pursuant to Section 102(b), Public Law 92-500. The provisions of Section 65 are not applicable if the benefits allocated to water quality exceed 25 percent of the total project benefits. In such cases, deletion or modification of water quality storage will require authorization by Congress. Where water quality benefits are equal to or greater than fifteen percent, but less than 25 percent of the total project benefits, deletion or modification of water quality storage requires Congressional approval. ASA(CW) will obtain approval for such recommended changes by resolutions from the Senate Committee on Environment and Public Works, and the House Committee on Public Works and Transportation. If water quality benefits are less than 15 percent of the total project benefits, deletion or modification of water quality storage can be approved by the Division Commander for the Chief of Engineers.

(a) Required Field Coordination. Pursuant to Section 102(b), Public Law 92-500, reports recommending a project with reservoir storage allocated to stream flow regulation for water quality shall be coordinated with the appropriate regional office of EPA prior to submission to HQUSACE. Views of the EPA regional administrator will be included with report submission and be fully considered by the reporting officer in developing recommendations.

(b) Reallocation of Reservoir Storage for Water Quality. When a project is modified to delete or reduce the amount of reservoir storage allocated to water quality, the deleted or reduced amount may be reallocated to other authorized purposes of the project, as appropriate. Reallocation to a new purpose may require Congressional authorization.

(3) Procedures for Deletion or Modification of Reservoir Storage Not Subject to the Authority of Section 65. Completed projects and projects which were funded for construction on or before 7 March 1974, are not subject to the reporting requirements of Section 65 of Public Law 93-251. In these cases, when the Administrator, EPA, pursuant to Public Law 92-500, determines that water quality storage is no longer required, or is required in a reduced amount, the reporting requirements will follow those required by the purpose that will be utilizing the deleted water quality storage space. Should the project modification reducing water quality

storage involve more than one other purpose, a report to Congress under Section 216 or other outstanding study authority might be necessary, depending on whether the modification exceeds the Chief of Engineers' discretionary authority.

c. Recreation

(1) Legislative Authorities.

(a) Public Law 89-72, Federal Water Project Recreation Act, 9 July 1965, as amended.

(b) Section 4, Public Law 534, Flood Control Act of 1944, December 22, 1944, as amended by Section 207 of the River and Harbor and Flood Control Act of 1962, and Section 234 of the River and Harbor and Flood Control Act of 1970.

(c) Section 103(c)(4) and Section 926, WRDA of 1986.

(2) Procedures for Implementation of Legislative Authorities on Lake Projects. The following discussion provides guidance on procedures for processing of changes in recreation or features at lake projects.

(a) Recreation Not Authorized as a Project Purpose.

(1) Where joint costs are not to be allocated such change shall be approved by HQUSACE, in consultation with ASA(CW).

(2) If recreation was not specifically authorized by Congress for the project, and is added to the project, such change will require authorization by Congress if project joint costs are allocated to the added purpose. After initiation of construction, project joint costs are normally not allocated to recreation unless storage is added or reallocated to that purpose. Costs may not be reallocated without authorization by Congress.

(b) Recreation Authorized as a Project Purpose but No Local Assurances Provided at Time of Authorization.

(1) Projects authorized prior to the Federal Water Project Recreation Act-Uniform Policies, but not yet under construction, require cost sharing in accordance with that act, unless authorizing legislation specified other requirements.

(2) If the District Commander is unable to enter into an agreement for recreation prior to initiation of construction, only minimum facilities for public health and safety may be provided

where public use warrants. Provision for such minimum facilities should be included in post-authorization planning documents.

(3) If an agreement is entered into for development of recreation prior to initiation of construction, the scope shall be approved by HQUSACE.

(c) Recreation Authorized as a Project Purpose For Which Local Assurances Were Provided at the Time of Authorization. If the project is unjustified with the level of recreation benefits expected to be realized with provision of only minimum facilities, preconstruction planning should be terminated and HQUSACE notified.

(3) Procedures for Implementation of Legislative Authorities on Non-Lake Projects. The following discussion provides guidance on changes in recreation features at non-lake projects.

(a) Recreation Not Specifically Authorized as a Project Purpose. Division commanders shall process the addition of recreation as a change for HQUSACE approval.

(b) Fish and Wildlife Enhancement Not Specifically Authorized as a Project Purpose. District commanders shall consider the addition of fish and wildlife enhancement as a change for HQUSACE approval.

(c) Recreation or Fish and Wildlife Enhancement Specifically Authorized as Project Purpose. Deletion of recreation or fish and wildlife enhancement as project purposes shall be processed as a change for authorization by Congress if joint costs previously allocated to these purposes are to be reallocated to other purposes.

d. Low-flow Augmentation For Purposes Other Than Water Quality.

(1) Legislative Authority. Section 102(b), Public Law 92-500 Federal Water Pollution Control Act Amendments of 1972, 18 October 1972 (33 U.S.C. 1251).

(2) Procedures for Implementation of Legislative Authority.

(a) Low-flow augmentation storage for purposes other than water quality may be added as a project purpose if determined feasible by the Chief of Engineers. Recommended changes which include the addition of such storage shall be reported and processed in accordance with paragraph G-13.

(b) Reports recommending deletion of water storage for streamflow regulation for

project purposes other than water quality low-flow augmentation shall be processed to Congress for authorization.

e. Provision for Future Hydroelectric Power at Authorized Dams.

(1) Legislative Authority. Section 4 of the Flood Control Act of 1938, Public Law 75-761, as amended.

(2) Procedures for Implementation of Authority. To facilitate later installation of hydroelectric power at projects constructed by the Department of the Army, penstocks and other similar facilities (collectively, "minimum facilities") may be included in the initially constructed projects on the recommendations of the Chief of Engineers and the Federal Energy Regulatory Commission (FERC), and with the approval of the ASA(CW). Recommendations to include the addition of such facilities must be reported to HQUSACE for approval by the ASA(CW). Recommendations shall be coordinated with FERC at the field level, and a report must contain technical, and economic justification, analyses of environmental impacts, and an assessment of anticipated interest accruing on the investment to a projected power-on-line date. The additional costs of minimum facilities will be reimbursed to the Corps of Engineers. Army policy is for these costs to be reimbursed during construction. If future facilities are developed under a FERC license, the costs of minimum facilities will be reimbursed to the Corps of Engineers prior to the start of construction of the future facilities. The costs to be reimbursed shall be the costs incurred by the Federal government for installation of the minimum facilities, with interest.

f. Endangered Species.

(1) Legislative Authority.

(a) Endangered Species Act of 1973, Public Law 93-205, as amended.

(b) Fish and Wildlife Coordination Act of 1958, Public Law 85-624, as amended.

(c) Water Resources Development Act of 1986, Public Law 99-662, Section 906.

(2) Procedures for Implementation of Legislative Authority.

(a) Section 7 of the Endangered Species Act requires the Fish and Wildlife Service or the National Marine Fisheries Service to issue a biological opinion following consultation with the Corps of Engineers. The Chief of Engineers is authorized to acquire lands for the preservation and conservation of habitat for endangered and threatened species using the project

land acquisition authorities. The Act (Section 7(b)) states that Federal agencies shall not make any irreversible or irretrievable commitments of resources to the project which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures defined in the biological opinion.

(b) The scope and extent of the land requirement will influence the decision of whether land acquisition for endangered and threatened species requires approval by ASA(CW).

(c) Factors to be considered are:

(1) Status of project.

(2) Amount of land required by the terms of the biological opinion.

(3) Authorization, acquisition, habitat comparability, and status of land that may be authorized for fish and wildlife mitigation.

(4) Completion of biological opinion features required by the Endangered Species Act.

(5) Alternatives.

(d) All cases involving land acquisition for endangered and threatened species will be coordinated early with HQUSACE and approved by the Chief of Engineers.

(e) Project modifications, exclusive of land acquisition, will be considered under the general guidance for changes.

g. Fish and Wildlife Mitigation.

(1) Legislative Authority. Section 906(b), Public Law 99-662, the Water Resources Development Act of 1986, 17 November 1986.

(2) Procedures for Implementation of Legislative Authority.

(a) After consultation with appropriate agencies, the Secretary is authorized to mitigate damages to fish and wildlife resulting from any water resources project under his jurisdiction. Mitigation may include acquisition of lands, except that acquisition may not be by condemnation in the case of projects completed or at least 10 percent completed on 17 November 1986. Further, acquisition of water, or interests therein, cannot be by condemnation under this authority.

(b) This authority does not apply to measures that cost more than \$7,500,000 or 10 percent of the project cost, whichever is greater. No more than \$30,000,000 may be obligated in any year under this authority.

(c) Costs for implementation and operation, maintenance, and rehabilitation for mitigation measures will be allocated among authorized project purposes and will be cost shared accordingly.

(d) Mitigation which requires condemnation of land for projects at least ten percent complete as of 17 November, 1986, or condemnation of water rights requires Congressional authorization.

h. Applicability of FWCA and ESA to Postauthorization Activities.

(1) FWCA Applicability. The FWCA applies to postauthorization activities if the activity meets the threshold test outlined in Section 2(a) of the FWCA, i.e., the authorized plan is modified or supplemented, and these changes relate to Federal construction which would divert, modify, impound, or otherwise control a waterway.

(2) Section 2(b) Report and Section 2(e) Funding. Sections 2(b) and (e) of the FWCA normally apply during post-authorization activities for Federal projects where the Section 2(a) threshold test has been met.

(a) Mandatory Compliance. Section 2(b) of the FWCA is mandatory when changes to the authorized plan meets the Section 2(a) threshold test and the proposed changes to the authorized plan or project require a report to Congress, or the approval of the Chief of Engineers, or above.

(b) Discretionary Compliance. In all other instances where Section 2(a) applies, compliance with Section 2(b) requirements would be discretionary. However, it is Corps policy to fund the FWS for its FWCA Section 2(b) activities associated with Corps studies and projects, consistent with procedures set forth in the 1980 Transfer Funding Agreement, as amended effective 21 September 1982. The following criteria are considered appropriate for District commanders to use for determining when Section 2(b) and (e) of the FWCA applies to postauthorization project activities. First, the proposed activity must meet the Section 2(a) threshold test. Second, a project document must be under preparation that requires approval by at least the Division Commander, or above, and any of the following factors exist:

(1) The acknowledgment by the Corps in the feasibility report, or accompanying NEPA

document, that sufficient uncertainty exists concerning impacts the recommended plan could have on fish or wildlife resources to warrant further investigations and analysis during postauthorization planning, engineering and design activities;

(2) Modification or supplementation of the authorized plans require the development of a supplement to the FEIS;

(3) New information or factors are identified during postauthorization project activities that appreciably change the extent to which the authorized project would or could impact upon fish and wildlife resources beyond what was documented in the feasibility report;

(4) The authorized project contains major fish and wildlife mitigation or enhancement features, and the further planning, siting, designing and construction of such features would benefit from involving the FWS, NMFS or State resources agencies in these activities; or,

(5) District and Division professional staff determine that continued involvement of the FWS, NMFS or State resources agencies during postauthorization project activities would better assure public and agency acceptance of the water resources development project, including authorized fish and wildlife features included in the project.

(6) The new or supplemented Section 2(b) report, planning aid letter, etc., shall accompany the project document throughout the decision-making process.

(4) ESA Applicability. Section 7 of the ESA is applicable for any project, or unit thereof, regardless of when the project was authorized or completed.

G-15. Authorized Maximum Cost of Projects.

a. Determining the Section 902 Limit.

(1) The maximum project cost limit imposed by Section 902 is a numerical value specified by law which must be computed in a legally supportable manner. It is not an estimate of the current cost of the project. The limit on project cost must be computed including an allowance for inflation through the construction period. This limit will then be compared to the current project estimate including inflation through the construction period. For beach nourishment projects authorized with an initial cost and a cost for future nourishment, there are two limits. There is a limit on initial construction the same as other projects, and a limit on total cumulative cost of nourishment.

(2) The authorized cost may be increased from the price level in the authorizing

document to include inflation. The construction component of the authorized cost will be updated to account for historical inflation using the Civil Works Construction Cost Index System ([EM 1110-2-1304](#)). The real estate component of the authorized cost will be updated to account for historical inflation based on changes to the Consumer Price Index, specifically, the unadjusted percentage changes reflected under the "Rent, residential" expenditure category.

(3) The maximum project cost includes the authorized cost (adjusted for inflation), the current cost of any studies, modifications, and action authorized by WRDA '86 or any later law, and 20 percent of the authorized cost (without adjustment for inflation). The cost of modifications required by law is to be kept separate and added to the other allowable costs. These three components equal the maximum project cost allowed by Section 902.

(4) Exhibit G-10 provides a detailed discussion of the method used to compute the maximum project cost allowed by Section 902. The method outlined in Exhibit G-10 for escalating the authorized cost to current price levels is based on the currently estimated project schedule which includes actual obligations to date. The Project Cost Fact Sheet in Exhibit G-11 should be used to display the Section 902 maximum cost limit and to compare the current project cost estimate to the maximum project cost limit. For projects involving beach nourishment, there are two limits. A maximum cost for the first placement, as well as a maximum cost for future nourishment will be computed following the procedure in Exhibit G-10.

b. Procedures When Cost Exceeds Limit. Upon determination that project cost estimates will exceed the maximum cost limitation, as determined in accordance with Exhibit G-10, work on the phase of the project underway at that time should continue until notification otherwise by HQUSACE, unless continuation of work will result in obligation of funds exceeding the authorized limitation. The determination of when to continue work on the project will be based generally on the criteria given in the matrix in Exhibit G-10. In general, work may continue on a separable element or a single contract if that unit of work will not incur obligations over the legal limitation. The intent will be to honor current PCA's and current contracts where possible. The computation sheets and the Project Cost Increase Fact Sheet will be submitted within 30 days after it is determined that the project cost exceeds the cost limit. When a firm estimate of the cost to complete the project is available, a report will be prepared and submitted.

Exhibit G-10. Maximum Cost of Projects
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<u>Background.</u>

Section 902 allows for increases due to modifications which do not materially alter the scope or function of a project. Project modifications may encompass further engineering and design refinements to project features that are identified in project authorizing documents, as

Exhibit G-10. Maximum Cost of Projects

well as the construction of new project features that are not identified in authorizing documents. In most instances further engineering and design refinements will be necessary to construct project features that are only generally described in authorizing documents. In such cases the maximum cost of the project can be increased by up to 20 percent to pursue the engineering and design refinements. However, in those instances where no further engineering and design refinements are necessary to construct the improvements in the authorizing documents, the amount specified in the authorizing legislation will be the maximum cost of the project, except for other cost adjustments appropriate under the law.

The total project cost is the cost of all work associated with preconstruction engineering and design and construction, including real estate and appropriate credit provisions of Section 104 of the WRDA of 1986 and Section 215 of Public Law 90-483. The cost of the entire project as authorized will be the cost used for comparison. If, subsequent to authorization, it is determined that a separable increment of the project is no longer desired and will not be built, the cost of that separable element should be included as a part of the project cost when computing the maximum cost. If the authorization is for a modification to a project authorized prior to the WRDA of 1986, only the cost of the identified modification is subject to the limitation of Section 902.

Cost Increase Indexes. The construction component of the authorized cost will be updated to account for historical inflation using the Civil Works Construction Cost Index System (CWCCIS) in [EM 1110-2-1304](#). The appropriate state index or average of two state indexes may be used. The same index method must be used for all subsequent adjustments to the authorized cost. The real estate component of the authorized cost will be updated to account for historical inflation based on changes to the Consumer Price Index as published monthly by the U.S. Department of Labor, Bureau of Labor Statistics, (BLS). Specifically, the unadjusted percentage changes reflected under the "Rent, residential" expenditure category from the tables containing the Consumer Price Index for All Urban Consumers: U.S. city average, will be used. For projects located in the metropolitan areas specifically identified in Table 17 of the BLS publication (Consumer Price Index for All Urban Consumers: Selected Areas), the percentage change reflected under the "Rent, residential" category will be the appropriate index. It is also permissible to use the index in Table 17 for a project proximate to, but not located in, a specifically identified area if, due to tangible market influences, it is more reasonable to do so. However, once a table is selected, it must be used for all subsequent adjustments to the authorized cost. Tables G-1 and G-2 provide worksheets for computing the historic cost increase indexes for both construction and real estate components of the authorized cost. Entries are needed from the date of the authorized cost to the current date. These tables will be added to each year as the current date becomes available. Use actual indexes from the referenced publications.

Project Cost Increase Computation. The steps to compute the maximum project cost are

Exhibit G-10. Maximum Cost of Projects

outlined below. The computation starts with the creation of a tabulation as in Table G-3. The table needs vertical columns for years starting with the year of the authorized estimate and continuing through the current year.

Maximum Cost Including Inflation Through Construction. Table G-4 would contain the computation of the maximum project cost, including inflation through the construction period.

Project Cost Limits for Beach Nourishment Projects. For all new project authorizations which include periodic nourishment as a part of project construction, the authorized cost will be given as an initial total cost, and an average annual cost for periodic beach nourishment over the life of the project. Projects thus authorized would be subject to two cost limits in accordance with Section 902. Projects authorized in P.L. 99-662 and in P.L. 100-676 are authorized at a single total cost. This cost, in most cases, includes an initial construction cost and the present worth of the cost of future nourishment. The present worth was computed at the appropriate Federal discount rate over a 50-year project life. For these projects, the cost number in the authorizing document will have to be examined to determine the amount which is for initial construction and the amount which is the present worth of future nourishment. These will then be used to compute two Section 902 limits.

1. The project first cost would be limited to the initial cost increased as allowable under Section 902. This would be a one time cost limitation like any other project, computed as discussed in the preceding paragraphs.

2. Total periodic nourishment cost would be limited by the total amount estimated for future nourishment, increased as allowable in accordance with this Appendix. The present worth amount for nourishment needs to be converted to a total cost over the life of the project. In general, the present worth computation is based on an average annual cost, which in turn is based on the estimated cost of each nourishment event divided by the years anticipated between events. The average annual cost (at the appropriate price level: Oct 97 or Oct 99) is to be multiplied by the years of project life. This cost is then used as the authorized cost of beach nourishment. It is the total cost to use in column f of Table G-3. In Table G-3, the current project cost would be the cost to date in the year it was expended, plus a current estimate of the nourishment required for the remainder of the project, at current price levels. The Section 902 limit would be computed using the procedure in the preceding paragraphs. The actual cost of each nourishment would be treated as a cost in the year in which it occurs. In this way, a cumulative record would be kept, and it would be readily apparent when total cost reaches the limit.

Project Cost Increase Fact Sheet. The Project Cost Increase Fact Sheet is a comparison of the project cost to the maximum project cost as limited by Section 902. The information in line 3 is from the computations described in the preceding paragraphs. The number in line 3e is the

Exhibit G-10. Maximum Cost of Projects

same as line 4 of Table G-4. Line 4 is the current total project cost estimate and must include all separable elements. This is the same as line 1b of Table G-4. It includes engineering and design, construction, supervision and administration, contract dispute settlements or awards, value of lands, easements and rights-of-way, utility and facility relocations, and dredged material disposal areas provided by the sponsor. This cost does not include costs for betterments, operation, repair, maintenance, replacement or rehabilitation. The current cost estimate may be the result of engineering and design studies, preparation of plans and specifications, or further adjustments to the project cost.

The Section 902 cost limit has been exceeded if the current estimate on line 4 exceeds the limit as shown on line 3e. The computation on line 5 allows a determination of the percentage of the current estimate increase over the authorized cost.

Cost Limitation Action Matrix. The matrix in Table G-5 will be used as a guide for determining what actions may be undertaken while waiting for new authorization for a project when the cost estimate exceeds the limit. The intent is to honor current PCAs and contracts to the extent possible.

Table G-1. CWCCIS Index(s)

	Total Allowed Inflation (g)								
	(b)	<u>Index</u> (c)	<u>Rate</u> (d)	<u>Yearly Inflat Rate</u> (e)	<u>Cumulative Inflation</u> (f)	<u>Cumulative Rate to Begin FY</u> (h)	<u>One Half Rate of Infl for FY</u> (I)	<u>Total Allowed Inflation for FY</u> (j)	
<i>Date of Price Level, Authorized Estimate:</i>									
<i>First Fiscal Year:</i>		_____	_____			_____	x	_____	=
<i>1st Quarter, 2nd Yr:</i>	_____								
<i>Second Fiscal Year:</i>		_____	_____			_____	x	_____	=
<i>1st Quarter, 3rd Yr:</i>	_____								
<i>Third Fiscal Year:</i>		_____	_____			_____	x	_____	=
<i>1st Quarter, 4th Yr:</i>	_____								
<i>Fourth Fiscal Year:</i>		_____	_____			_____	x	_____	=
<i>1st Quarter, 5th Yr:</i>	_____								
<i>Fifth Year:</i>			_____	_____		_____	x	_____	=

Notes:

- b. Enter the date of the authorized cost and the beginning date of following fiscal years.
- c. These entries are the fiscal years.

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d. These are the index numbers from the referenced publications and must all be expressed with the same base year (base year price equals 100).

e. This column equals the index at the beginning of the next year, divided by the index at the beginning of the year, minus one.

f. The cumulative inflation rate equals the index (column (d)) at the beginning of the year divided by the index of the first line of the table.

g. The allowed inflation rates equal the cumulative rate through the beginning of the FY (equals one for the first FY after project authorization) times one plus 1/2 of the rate of inflation for the FY. For the remaining balance, it equals the cumulative rate to the beginning of the next fiscal year.

h. These are the cumulative rates through the beginning of the FY. They are the amounts in column (f) one-half line above.

i. This is one plus 1/2 the rate of inflation during the fiscal year, $1 + 1/2 \times$ column (e).

j. The total inflation is the product of the last two entries.

k. The inflation rate for the remaining balance is the last entry in column (f).

Table G- 2 CPI Index(s)

			<u>Total Allowed Inflation (g)</u>					
		<u>Index</u>	<u>Yearly</u> <u>Inflat</u> <u>Rate</u>	<u>Cumulative</u> <u>Inflation</u> <u>Rate</u>	<u>Cumulative</u> <u>Inflation</u> <u>Begin FY</u>	<u>One Half</u> <u>Rate of Infla</u> <u>For FY</u>	<u>Total Allowed</u> <u>Inflation</u> <u>For FY</u>	
	(b)	(c)	(d)	(e)	(f)	(h)	(I)	
							(j)	
<i>Date of Price Level, Authorized Estimate:</i>	_____		_____					
<i>First Fiscal Year:</i>		_____	_____		_____	X _____	=	
<i>1st Quarter, 2nd Yr:</i>	_____		_____					
<i>Second Fiscal Year:</i>		_____	_____		_____	X _____	=	
<i>1st Quarter, 3rd Yr:</i>	_____		_____					
<i>Third Fiscal Year:</i>		_____	_____		_____	X _____	=	
<i>1st Quarter, 4th Yr:</i>	_____		_____					
<i>Fourth Fiscal Year:</i>		_____	_____		_____	X _____	=	
<i>1st Quarter, 5th Yr:</i>	_____		_____					
<i>Fifth Year:</i>		_____		_____		_____	X _____ =	

Notes:

- b. Enter the date of the authorized cost and the beginning date of following fiscal years.
- e. These entries are the fiscal years.
- f. These are the index numbers from the referenced publications and must all be expressed with the same base year (base year price equals 100).
- e. This column equals the index at the beginning of the next year, divided by the index at the beginning of the year, minus one.
- f. The cumulative inflation rate equals the index (column (d)) at the beginning of the year divided by the index of the first line of the table.
- g. The allowed inflation rates equal the cumulative rate through the beginning of the FY (equals one for the first FY after project authorization) times one plus 1/2 of the rate of inflation for the FY. For the remaining balance, it equals the cumulative rate to the beginning of the next fiscal year.
- h. These are the cumulative rates through the beginning of the FY. They are the amounts in column (f) one-half line above.
- i. This is one plus 1/2 the rate of inflation during the fiscal year, $1 + 1/2 \times$ column (e).
- j. The total inflation is the product of the last two entries.
- k. The inflation rate for the remaining balance is the last entry in column (f).

Table G- 3 Authorized Cost Increase Computation

<i>FY</i>	<i>Current Project Cost (Price Level)</i>			<i>Current Schedule (%)</i>		<i>Authorized Cost Schedule</i>		<i>Auth. Cost Inflat.</i>	
	<i>Total</i>	<i>Constr.</i>	<i>R.E.</i>	<i>Constr.</i>	<i>R.E.</i>	<i>Constr.</i>	<i>R.E.</i>	<i>Constr.</i>	<i>R.E.</i>
	<i>(a)</i>	<i>(b)</i>	<i>(c)</i>	<i>(d)</i>	<i>(e)</i>	<i>(f)</i>	<i>(g)</i>	<i>(h)</i>	<i>(I)</i>
99									
00									
01									
02									
03									
<i>Balance to Complete</i>									
<i>Total</i>				<i>100%</i>	<i>100%</i>				

Notes:

a. The total of column (a) is the current working estimate of project cost at the current price level, less the cost of any modifications

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required by law. The entries for all years from authorization to the current year are the actual obligations made that year. The balance to complete is the remaining cost at current price levels.

b. Column (b) is the construction component of the cost in column (a).

c. Column (c) is the real estate component of column (a). Column (b) plus column (c) must equal column (a).

d. Column (d) is the percent distribution of the construction cost in column (b). It must total 100 percent.

e. Column (e) is the percent distribution of the real estate cost in column (c). It must total 100 percent.

f. The total of column (f) is the construction component of the authorized cost, from the authorizing legislation. The yearly entries are the distribution of the total by the percentage distributions in column (d).

g. The total of column (g) is the real estate component of the authorized cost. The yearly entries are the distribution of the total by the percentage distributions in column (e). The total of column (f) and the total of column (g) must equal the cost in the authorizing legislation.

h. The entries in column (h) are the amounts in column (f) increased by the appropriate inflation factor which is derived from the Corps of Engineers CWCCIS index. Table G-1 would contain a computation of appropriate construction inflation factors .

i. The entries in column (i) are the amounts in column (g) increased by the appropriate real estate inflation factor, which is derived from the CPI index. Table G-2 would contain a computation of the appropriate real estate inflation factors.

Table G- 4 Maximum Cost Including Inflation Through Construction

Line 1:

- a. Current project estimate at current price levels:*
- b. Current project cost estimate, inflated through construction:*
- c. Ratio: Line 1b / Line 1a*
- d. Authorized cost at current price levels:
Columns (h) plus (I) from Table G-8.3*
- e. Authorized cost, inflated through construction:
Line c x Line d*

Line 2: Cost of modifications required by law:

*Line 3: 20 percent of authorized cost:
.20 x (Table G-8.3, Columns (f) + (g))*

*Line 4: Maximum cost limited by Section 902:
Line 1e + Line 2 + Line 3*

Notes:

- a. Line 1a is the current project cost estimate.*

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- b. Line 1b requires the current project cost estimate including inflation through the construction period. This is required each year by the annual budget guidance EC. This cost estimate will be developed by the appropriate cost engineering element. The ratio of this inflated project estimate to the current project estimate is used to inflate the totals of column (h) and (i) from Table G-1 to determine the authorized cost including inflation through the construction period.*
- c. Line 1c is the ratio of the current estimate including inflation through construction to the current estimate.*
- d. Line 1d is the authorized cost at current prices. It is the total of columns (h) and (i) from Table G-1.*
- e. Line 1e is the authorized cost including inflation through construction. It is computed as the authorized cost at current price levels times the ratio on line 1c.*
- f. Line 2 is the cost of any modifications required by law. This is the total cost and includes actual obligations and future obligations including inflation through construction.*
- g. Line 3 is 20 percent of the cost specified in the authorizing legislation. The authorized cost is the total of columns (f) and (g) in Table G-8.1.*
- h. Line 4 is the maximum project cost, including inflation through the construction period, allowed by Section 902. It is the total of lines 1e, 2, and 3.*

Exhibit G-11. Project Cost Increase Fact Sheet

1. *Name of Project*
 2. *Section and Law That Authorized or Modified the Project:*
 3. *Section 902 Limit on Project Cost:*
 - a. *Authorized project cost:(W/Price level)*
 - b. *Price level increases from date of authorized cost: **
 - c. *Current cost of modifications required by law: ***
 - d. *20% of line 3a:*
 - e. *Maximum project cost limited by Section 902:*
 4. *Current Project Cost Including Inflation Through Construction: ****
 5. *Computation of Percentage Increase:*
 - a. *Current estimate: (Line 4)*
 - b. *Less total of lines 3a, b, and c:*
 - c. *Subtotal:*
 - d. *Percent increase: (line 5c/3a)*
 6. *Explain cost indexes used in 3b; whether national or regional for real estate, and single state or two state average for construction.*
 7. *Explain increases in 3c; Legislation requiring the modification, and how accommodated.*
 8. *Explain reasons for cost changes other than inflation.*
 9. *Explain any changes in benefits and provide current BCR.*
 10. *Provide detailed explanation of the status of the project.*
- * *Line 1e from Table G-4, less the authorized cost.*
- ** *This includes cost of external credit under Section 104 of WRDA '86, for example. (Integral Section 104 credit is included in the authorized project cost on line 3a.) (See [ER 1165-2-29](#)).*
- *** *Line 1b from Table G-4.*

Table G- 5 Section 902 Cost Limitation Action Matrix

IMPLEMENTATION STATUS AT TIME ESTIMATED TOTAL COSTS EXCEED SEC 902 LIMIT

	<i>PRIOR TO EXECUTION OF THE PCA</i>	<i>PCA EXECUTED, BUT NO CONTRACTS AWARDED</i>	<i>ONE OR MORE CONTRACTS AWARDED, FUTURE CONTRACTS/FUTURE PCA's</i>	<i>UNDER CONSTRUCTION LAST CONTRACT</i>
<i>1. PROJECTS THAT HAVE ONE PCA, AND ONE CONTRACT</i>	<i>1/</i>	<i>1/</i>	<i>N.A.</i>	<i>3/</i>
<i>2. PROJECTS THAT HAVE ONE PCA, AND MULTIPLE CONTRACTS</i>	<i>1/</i>	<i>1/</i>	<i>2/</i>	<i>3/</i>
<i>3. PROJECTS THAT HAVE MULTIPLE PCA's AND MULTIPLE CONTRACTS</i>	<i>1/</i>	<i>1/</i>	<i>2/</i>	<i>3/</i>

- 1. Await new legislation before proceeding with executing the PCA or award of the first contract if a PCA has already been approved.*
- 2. Continue implementation of the project until implementation of the next PCA increment (or award of the next contract when the last PCA increment is already under construction) would require funds in excess of the 902 limit. Submit legislation to permit the authorization committees to consider inclusion of the legislative proposal in a biennial WRDA in time to prevent a break in project implementation whenever possible.*
- 3. If completion of the current contract(s) would require funds in excess of the 902 limit, conclude current contract activities in the most practical and cost effective manner consistent with public safety and to minimize any obligations that exceed the 902 limit.*

G-16. Processing Changes.

a. Post Authorization Change (PAC) Reports. Changes where an authority determination must be made by the Commander USACE, and changes where cost increases exceed the limit established by Section 902 of the WRDA of 1986, will be documented in a General Reevaluation Report, a Limited Reevaluation Report or an Engineering Documentation Report and submitted to HQUSACE (RIT). These reports will support the PCA and will be subsequently referred to as PAC reports. The PAC reports format below is a guide; the PAC reports will be reviewed by the RIT as a feasibility report seeking authorization. The reports will be reviewed by the ASA(CW) and coordinated with OMB as appropriate for submission to the Congress.

(1) Description of Authorized Project. Describe the authorized project, its location, functions, size, land requirements and local cooperation requirements.

(2) Authorization. Identify the authorization Act: section, public law, title, date and statute citation. Identify the House or Senate document number of the project document referenced in the authorization act.

(3) Funding Since Authorization. Provide a funding history, by fiscal year, indicating the category in which funds have been appropriated.

(4) Changes in Scope of Authorized Project. Give a description and rationale of any changes in project scope, using a subparagraph for each. Use tables for comparing authorized numbers with recommended numbers; and indicate percentage of change.

(5) Changes in Project Purpose. Describe and explain reasons for any changes in purposes from those authorized for the project.

(6) Changes in Local Cooperation Requirements. State and explain the reasons for any changes in the local cooperation requirements. Changes include any modification of the wording used in the recommendation language adopted by Congress in the authorization act, or in subsequent legislation applicable to the project, as may be modified by general legislation.

(7) Change in Location of Project. Briefly describe any changes in location of the project, or project elements, including the reasons for the changes. When the change in location requires additional land or change in estate to be acquired, the requirement should be addressed.

(8) Design Changes. Describe design changes and the reasons for the changes.

(9) Changes in Total Project First Costs. Provide a table showing a four column comparison of the estimated cost for the project being recommended, the project as authorized by Congress, the authorized project updated to current price levels, and the project last presented to Congress. In subparagraphs, itemize the reasons for the cost changes so that 100 percent of the cost increase since authorization is explained. Minor changes may be lumped in the table and in the narrative. The total increase due to changes in price levels may be shown under one subparagraph.

(10) Changes in Project Benefits. Provide a table showing a comparison of the benefits given in the project document, the benefits last reported to Congress, and the benefits based on reevaluations which have been done to support the recommended changes to the project. Summarize each type of benefit in a subparagraph, stating any changes in criteria or other factors such as use of current interest rate which resulted in significant changes in the benefit estimates. State the increase in benefits attributed to price level increases.

(11) Benefit-Cost Ratio. State the BCR for the recommended project and the authorized project at current price levels and the current interest rate. Also state the interest rate used in the authorizing document.

(12) Changes in Cost Allocation. Provide a table showing the allocation of cost among the project purposes for the authorized project and the recommended project. Give both the dollar amounts and percentages allocated to each purpose. Discuss any changes which are not the result of simply recomputing the cost allocation based on current benefit and cost estimates.

(13) Changes in Cost Apportionment. Provide a table showing the Federal and non-Federal costs of the authorized project and the recommended project, both at current price levels. Indicate Federal appropriations requirements and reimbursable costs.

(14) Environmental Considerations in Recommended Changes. Discuss any environmental effects of the recommended changes. State whether the EIS currently on file was determined to be adequate. Appropriate NEPA documentation will be included in the PAC or accompanying report.

(15) Public Involvement. Describe the public involvement and coordination effected in formulating the recommended changes to the project and discuss the impact of these activities on the recommendations.

(16) History of Project. Provide a history of the project since authorization including other studies accomplished, directions from Appropriations Committees, any litigation, relationship of project to basin plans and other pertinent information not found elsewhere in the report.

b. Reporting Changes in PB-3s and Justification Sheets. Changes in costs shall be reflected in PB-3s (Project Cost Estimates) and Budget Justification Sheets as soon as they have the concurrence of the Division Commander. New estimates of benefits, costs and project scope shall be footnoted until approved. For changes requiring authorization by Congress, the Budget Justification Sheets will also include information on the change in the "other information" paragraph. See the annual Budget EC for instructions on preparation of these documents.

G-17. Interest Rates for Changes. Interest rates used in formulating project changes through incremental analysis are as follows:

a. General Reevaluation Studies. For general reevaluation studies, use the current interest rate.

b. Limited Reevaluation Studies. For limited reevaluation studies, use the current interest rate.

c. Addition of mitigation. For the addition of mitigation, use of the rate applicable to the authorized project is permissible.

SECTION IV - Study and Project Deauthorization

G-18. Purpose. This section provides guidance for the implementation of Section 710, Water Resources Development Act of 1986 (WRDA of 1986) (study deauthorization), Section 1001, WRDA of 1986 (project deauthorization) and Section 52, WRDA of 1988 (project deauthorization).

G-19. Study Deauthorization

a. Annual Submission. Section 710, WRDA of 1986 requires an annual submission to Congress of a list of authorized but incomplete water resources studies which have not had funds appropriated during the preceding five full fiscal years.

b. Approved Study Data Base. Each Division shall submit electronically to HQUSACE (CECW-I) the consolidated Division approved study database by 15 November each year. The database should be updated through September 30 of the current year.

c. HQUSACE Responsibilities. The RITs will review the overall Division lists (which include all studies), prepare a list of those that meet the criteria for submission to Congress, and submit the list to ASA(CW) for submission to Congress. Following the submission to Congress a copy of the list will be provided to each Division.

d. Appropriate Funds. The list is not a recommendation for deauthorization, but rather a list of studies meeting the legal criteria for deauthorization. Congress has 90 days, after the submission, to appropriate funds for the studies on the list. Studies that are not funded during the 90-day period are no longer authorized.

G-20. Project Deauthorization. Section 1001 of the WRDA of 1986, as amended, provides for the deauthorization of water resources projects on which Federal funds for planning, design or construction have not been obligated for 7 fiscal years. Every two years, the Secretary of the Army is required to submit to Congress a list of projects that meet this eligibility criteria. Affected congressional delegations must be notified of the projects in their districts or states. The projects remain on the list for 30 months, after which they are automatically deauthorized if Federal funds have not been obligated during the 30-month period. Section 1001(c) requires publication of the lists of deauthorized projects in the Federal Register. The project deauthorization process is managed at HQUSACE by CECW-I and that office should be contacted for further information.

SECTION V - Flood Plain Management Services (FPMS)

G-21. The FPMS Program. The FPMS Program is authorized by Section 206 of the Flood Control Act of 1960.

G-22. Flood Plain Management Services. Flood plain management services cover the full range of information, technical services, and planning guidance and assistance on floods and flood plain issues within the broad umbrella of Flood Plain Management (FPM). They include:

a. General Technical Services. Flood and flood plain data are obtained and developed and interpreted.

b. General Planning Guidance. On a broader scale, assistance and guidance in the form of "Special Studies" are provided on all aspects of FPM planning, including the possible impacts of off-flood plain use changes on the physical, socioeconomic and environmental conditions of the flood plain.

c. Guides, Pamphlets and Supporting Studies.

(1) They are disseminated to states, local governments, Federal agencies, and private citizens to convey the nature of flood hazards and to foster public understanding of options for dealing with flood hazards.

(2) Supporting studies are conducted to improve methods and procedures for flood damage prevention, reduction, and abatement. Studies can also be undertaken to illustrate alternative ways of achieving FPM goals.

G-23. National Flood Insurance Program (NFIP) Support. The NFIP is administered by the Federal Emergency Management Agency (FEMA). The Corps provides technical support to the NFIP on a reimbursable basis.

a. Technical assistance and other support are provided for three components of the NFIP: the Flood Insurance Study (FIS) effort, the Limited Map Maintenance Program (LMMP), and the Community Assistance Program.

(1) The FIS and LMMP efforts require detailed hydrologic and hydraulic analyses to determine areas of flood hazards and the degree of flood risk. While FIS efforts are commu-

nity-wide or basin-wide studies, LMMP efforts generally are limited to analysis of a single stream or reach of stream.

(2) The Community Assistance Program assists local officials in the administration of the NFIP for their community. Program tasks include such activities as surveying elevation reference marks, performing community assessment visits, and conducting flood proofing workshops.

b. On a less frequent basis, special investigations are conducted. These investigations, which draw upon the Corps expertise in water resources planning and engineering, generally involve development or review of complex methodology, and are handled in a similar fashion as FIS efforts.

G-24. Management.

a. HQUSACE Role. The FPMS Program and related activities are managed in HQUSACE by CECW-I.

b. Division Commander. The Division Commander will provide guidance on the FPMS Program and related activities to their respective districts, monitor work, and initiate actions necessary to ensure proper implementation, coordination, and conduct of the Program. In addition, Division FPMS Program managers shall review and approve District's T&C estimates for Special Studies, collect and analyze Program data, provide consultation on Flood Plain Management methodology, and participate on FPMS Program related committees and task forces.

c. District Commander. The District Commander shall ensure appropriate organization and staffing to maintain contact with requesting agencies, and for timely, accurate and coordinated responses to requests for FPMS and for NFIP support. Multi-disciplinary expertise within the District shall be used.

G-25. FPMS Program Guidelines. As authorized by section 321 of the Water Resources Development Act of 1990 (PL 101-640), Technical Services and Planning Guidance are (1) provided to states and local governments without charge, and (2) offered to Federal agencies and private persons on a cost recovery basis.

a. Full Federal Cost. Within personnel and funding capabilities, requests for General Technical Services and Special Studies shall be honored from state, regional, or local governments or other non-Federal public agencies and from Indian tribes without charge. However, the requesting entity may provide voluntary contributions for the purpose of

expanding the scope of the requested services, as follows:

(1) The services or assistance must fall within the scope of the FPMS Program.

(2) A "Letter Agreement" similar to the agreements used for FPMS cost-recovery procedures must be executed with the requesting entity. Other types of agreement may be substituted for the "Letter Agreement" if both parties concur.

(3) Funds received as voluntary contributions must be handled in a similar fashion as those collected for FPMS cost-recovery purposes.

(4) Approval authority for the expanded services and the "Letter Agreement" is delegated to the MSC and may be further delegated to the District.

b. **Cost Recovery.** Requests for General Technical Services and Special Studies from Federal agencies and private persons shall be honored on a cost recovery basis within personnel capabilities.

(1) For cost recovery purposes, the term "private persons" is interpreted to mean all entities in the private sector, including but not limited to individuals, private institutions, sole proprietorships, partnerships, and corporations.

(2) Generally, services shall be provided on a first-come, first-served basis either after payment has been received or after arrangements have been made for reimbursement.

(a) Services shall be provided to private persons only after payment has been received.

(b) Services may be provided to Federal agencies on either a pay first or reimbursable basis.

c. **Quick Responses.** Certain limited requests for services from Federal agencies and private persons may be honored without charge. Services provided to Federal agencies and private persons without charge shall be limited to "Quick Responses" to walk-in or telephone requests, each of which require only ten minutes or less of work by one person to provide. They may include providing general information; on-hand data, materials, and publications; and brief explanations and/or advice on FPM measures, NFIP standards, and EO 11988 requirements. They normally will not include obtaining, developing, or interpreting flood or flood plain data.

d. Program related information and/or available, existing data may be exchanged between the Corps and Federal agencies or Private Persons without charge when it is mutually beneficial

to the parties involved. Note that this is an exchange rather than a provision of services.

e. Services shall be provided only upon request, and generally to entities outside the Corps. Requests for services from within the Corps shall normally be paid from applicable project or study funds rather than FPMS funds. Written requests shall normally be required for responses that take one person more than one day to provide. Generally, responses shall be by letter or by short report.

f. Requests for services that are available under other programs shall be directed to the appropriate source for assistance.

g. Requesters will be encouraged to become involved in FPM activities and to help reduce costs by furnishing field survey data, maps, and historical flood information.

h. Available data shall be used whenever practical. Utilization of data from all sources is encouraged, including hydrologic and hydraulic information developed by not only different elements within the Corps but also other agencies. When non-Corps data are used, the source of the data shall be acknowledged.

i. In establishing priorities for providing services, special consideration shall be given to areas where development pressures are the most significant and where the information is most likely to be used to solve flood related problems.

j. Services normally shall not involve extensive and detailed mapping.

k. Large area, long reach delineation, and floodway studies normally shall be confined to the study of non-Federal public lands, Indian tribal lands, or to areas of counties not mapped in detail under the NFIP. On request, reanalysis of floodways previously studied by the Corps shall be made if local conditions warrant.

l. In cases where assistance on flood warning and preparedness (including flood emergency evacuation) planning may require extensive involvement in plan preparation, the requester shall be informed at the outset that Corps efforts are intended only to support preparation of the plan, and that the plan and its implementation are the responsibility of the requester. Efforts shall be closely coordinated with the National Weather Service.

m. Services relating to flood control works and other flood damage mitigation measures, shall be limited as follows:

(1) Work shall not duplicate efforts which should or are being accomplished under other

Corps authorizations.

(2) Detailed planning and design shall not be done.

(3) Work shall assess the likelihood of success and the identification of pros and cons of measures being considered, but shall not include detailed economic analysis.

n. In cases where the request for services may require a reconnaissance study or could result in a Federal project, the requester shall be advised that services will be terminated if either proves to be the case.

G-26. Program Guidelines for Support to the NFIP.

a. Unless otherwise directed by HQUSACE (CECW-I), reimbursable work in support of the NFIP shall be undertaken at the discretion of the field office performing the work.

b. At the request of FEMA, the field office shall prepare a Time and Cost (T&C) estimate only if there is an interest and capability to do the work. Once a T&C estimate is submitted to FEMA, the Corps has an obligation to perform according to the estimate. In deciding interest, special consideration should be given to locations where Corps studies are current or where studies are expected to be undertaken.

c. FIS and LMMP activities shall be performed based on the requirements described in FEMA's "Statement of Work" and "Guidelines and Specifications for Study Contractors," and the Corps "Instructions for Flood Insurance Studies." Community Assistance Program activities shall be accomplished using the guidance described in FEMA's "Community Assistance Program Manual". These documents are furnished to Division and District offices by HQUSACE (CECW-I). They are periodically reviewed and updated as Program requirements change. Program or study managers shall ensure that the latest guidance is followed during the execution of work.

d. Scopes of work. Scopes of work, time and cost estimates, completed studies, and other pertinent documents are normally coordinated by the performing districts with the requesting FEMA Regional offices. The respective Division offices have the option of conducting a final review and approval of these documents prior to their submission to FEMA.

e. When activities in support of the NFIP involve the study of areas where the Corps has ongoing or completed flood control studies, the appropriate (existing or proposed) levee, channel, and/or other capacities used in the flood control study should also be used in the technical analyses for FEMA.

f. Where the Corps has ongoing flood control studies or projects which could impact on existing NFIP flood maps, coordination is required with FEMA and with the local sponsor.

G-27. Funding.

a. Appropriations for Non-reimbursable FPMS Items. Funding for non-reimbursable FPMS items involves the justification of funds through the budgetary process, the establishment of work allowances for specific items, and the use of funds during the fiscal year.

(1) Divisions review and consolidate districts FPMS requirements and submit them to HQUSACE for review and incorporation as a line item under "Collection and Study of Basic Data" in the overall General Investigations (GI) Program.

(2) After appropriations have been made, Division commanders shall furnish to HQUSACE (CECW-I) a breakdown of FPMS funding requirements by item for each District.

(3) The FPMS item names and related Project Work Item (PWI) numbers to be used in the breakdown for work allowances are assigned below and shall be used by each District and Division.

<u>PWI Number</u>	<u>Item Name</u>	<u>Description</u>
082025	NFPC	Lump-sum amount to fund travel and other activities of the Corps National Flood Proofing Committee members.
082030	FPMS Unit	Lump-sum amount to fund liaison and administrative support by District staff.
082040	Technical Services	Lump-sum amount to fund the provision of general technical services to state and local governments by District staff including general information, hazard reports on spot locations, and general FPM planning guidance.
082045	Quick Responses	Lump-sum amount to fund limited services to Federal agencies and private persons that take

one person ten minutes or less to provide.

To be assigned by HQUSACE (CECW-I)	SS-(study name or name of significant work)	Individual amounts to fund significant work or special studies for state and local governments by district staff. Includes floodways, reach delineations, hurricane evacuation and flood warning and preparedness studies, and other significant or unique services.
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(4) Program Management. To ensure the most effective and economical application of available funds, division and district commanders are permitted to reallocate FPMS funds within limits during the fiscal year as set forth in Appendix A, [ER 11-2-201](#). Generally, reallocations shall be accomplished through adjustments to work allowances. DD Form 448 (Military Interdepartmental Purchase Request) shall not be used for the internal reallocation of FPMS funds unless specifically authorized by HQUSACE (CECW-I).

b. Cost Recovery for Reimbursable FPMS. Three different procedures shall be used to recover the cost of Technical Services and Planning Guidance provided to Federal agencies and private persons. Two involve the use of negotiated agreements and one involves the use of a non-negotiated "Fee Schedule".

(1) The five levels of fees contained in the following "Fee Schedule" will be used by each District to charge for general information taking more than ten minutes and for site specific technical assistance and advice taking up to one day to provide.

Table G-6. "Fee Schedule" of Standard Corps-wide Charges

<u>Level</u>	<u>Description of Work</u>	<u>Fee</u>
1	Basic information from readily available data that does not require technical evaluation or documentation and is transmitted by form letter.	\$25
2	Information from readily available data that requires minimal technical evaluation which is transmitted by form letter.	\$55
3	Information that requires some file search, brief technical evaluation, and documentation of results by a form letter or by a brief composed letter.	\$105
4	Information and assistance that requires moderate file search, brief technical evaluation, and documentation of results in a composed letter.	\$125
5	Information and assistance that require significant file search or retrieval of archived data, moderate technical evaluation, and documentation of results in a brief letter report.	\$325

(2) Two types of negotiated agreements ("Letter Requests" and signed agreements) will be used to recover the cost of responses that take more than a day to provide.

(a) A "Letter Request" will be negotiated to recover the cost of each response taking more than a day and generally up to one week to provide. However, if requested by the customer, the "Letter Request" may cover work taking more than a week. This will involve providing a description of work and a time and cost estimate to the customer who, in turn, will be required to send in a letter requesting the work and providing payment in full before the work is started.

(b) Signed agreements generally will be used to recover the cost of responses taking more than a week, but may also be used for responses taking less than a week if requested by the customer. The agreements will be in the form of a "Letter of Agreement" with a private person

and either an "Interagency Agreement" or "Memorandum of Agreement" with a Federal agency. They will involve negotiating the time and cost estimate and developing a statement describing the work to be done, setting a completion date, and stipulating how payment will be made (either in advance or by reimbursement). Each agreement will be signed (1) by the FPMS Program manager or other appropriate staff designated by the Commander of the office performing the work and (2) by the requesting party.

(3) To facilitate maximum cost recovery, the office doing the work will charge in accord with its specific cost requirements. Approximately 100% of the total costs of doing business will be recovered, including direct costs, benefits, technical indirect costs, and administrative overhead.

(4) As requests are received, the staff of the office performing the work will determine the appropriate procedure for recovering costs. Payments shall be received prior to the provision of services to private persons and either prior to or after the provision of services to Federal agencies. Funds should be handled in accordance with appropriate procedures.

c. Reimbursements for Support to the NFIP. Funding for reimbursable activities in support of the NFIP is accomplished under the general authority of annual interagency agreements with FEMA.

(1) Specific funds and the schedule for each FIS are documented in Project Orders to each Agreement which are executed at the HQUSACE level with FEMA. Letters authorizing the work and establishing the funding arrangements are prepared by HQUSACE (CECW-I) and transmitted to the appropriate Division.

(2) Funds for each Division or District's level of effort under the LMMP and Community Assistance Program are allocated by Project Orders to the respective Agreements which are executed at the HQUSACE level with FEMA. Letters establishing lump-sum funding are prepared by HQUSACE (CECW-I) and transmitted to the appropriate Division. Specific costs and schedules for individual tasks under these programs are negotiated between the FEMA regional office and the responding Corps Division or District. Tasks are authorized by letters from the FEMA Regional office to the Corps office doing the work.

G-28. Recording and Reporting Requirements.

a. For the FPMS Program. Each District shall furnish, for information, one copy of all bound and covered FPMS reports through the appropriate Division office to HQUSACE (CECW-I) within one week of completion/publication of the report.

b. For NFIP Support.

(1) Quarterly status reports are required for each FIS underway, and quarterly Check Point Summary reports are required from each District having FIS underway. Reports Control Symbol, RCS CECW-P-14 has been established for this reporting requirement. Details for preparing the reports are in the Corps "Instructions for Flood Insurance Studies." The reports shall be forwarded to reach HQUSACE (CECW-I), with a copy to the appropriate Division, as follows:

<u>Period</u>	<u>Due Date</u>
October-December	10 January
January-March	10 April
April-June	10 July
July-September	10 October

(2) FEMA has developed a web-based reporting system, "Monitoring Information on Contracted Studies" (MICS) for documenting progress throughout the flood mapping life cycle. The MICS system is being phased in at this time. The MICS system will include upward reporting capability eliminating the need for the quarterly reports specified in paragraph G-27b(1). Each District having FIS underway should contact the appropriate FEMA Regional Office to request permission to access the MICS system.

G-29. Coordination.

a. Coordination with states shall be in accord with the assignments in Exhibit G-12. Coordination with regional and local governments, other non-Federal public agencies, and Indian tribes, shall be in accord with District and Division boundaries.

b. To ensure proper state coordination, the Division Commander shall designate a lead District to be responsible for coordinating with the assigned states and to cooperate with other districts for the provision of requested services. If appropriate and agreeable to all involved parties, the lead District may serve as the single point-of-contact with the assigned state, provided that each District having jurisdiction within the state is properly represented and is involved, as warranted, in the provision of services.

c. Coordination with state and local governments for the provision of FPMS shall be accomplished at least once a year and well in advance of budget submissions to ensure that their needs and priorities receive appropriate consideration in the budgetary process.

d. NFIP Support. NFIP support activities shall be coordinated with FEMA, other Federal agencies, and state and local officials as required by FEMA's "Statement of Work" and "Guidelines and Specifications for Study Contractors," and the Corps "Instructions for Flood Insurance Studies."

G- 30. Publications.

a. Dissemination. Each District shall disseminate or make available to Federal, state, area-wide, and local planning agencies, libraries, universities, clearing houses, and others as appropriate, copies of all FPMS publications including guides, pamphlets, supporting studies, and reports as well as non-Corps publications furnished by HQUSACE (CECW-I) for dissemination.

b. Information Copy. Each District shall furnish, for information, one copy of all bound and covered FPMS reports through the appropriate Division office to HQUSACE (CECW-I) and one copy to CEHEC-IM-LP within one week after completion/publication of the report.

Exhibit G- 12. Division Assignments

CENAD -	<i>Connecticut Delaware District of Columbia Maine Maryland Massachusetts New Hampshire New Jersey New York Pennsylvania* Rhode Island Vermont Virginia</i>	CENWD -	<i>Idaho Kansas Missouri Montana Nebraska Oregon South Dakota Washington Wyoming</i>
CESAD -	<i>Alabama Florida Georgia North Carolina Puerto Rico South Carolina U.S. Virgin Islands</i>	CESWD -	<i>Arkansas Oklahoma Texas</i>
CELRD -	<i>Indiana Kentucky Michigan Ohio Tennessee West Virginia</i>	CESPD -	<i>Arizona California Colorado New Mexico Nevada Utah</i>
CEMVD -	<i>Illinois* Iowa Louisiana Minnesota* Mississippi* North Dakota Wisconsin*</i>	CEPOD -	<i>Alaska American Samoa Guam Hawaii Commonwealth of Northern Mariana Islands Trust Territory Pacific Islands (Palau only)</i>

* The following states are hereby reassigned for coordination and management when planning assistance is provided in support of the Coastal Zone Management (CZM) Act: Illinois, Minnesota, Wisconsin, and Pennsylvania to CELRD Mississippi to CESAD.

SECTION VI - Planning Assistance to States

G-31. Definitions.

a. Planning Assistance to States. The Planning Assistance to States (PAS) Program is also known as Section 22 Program.

b. Sponsor. Any non-Federal public body that agrees to cooperate with the Corps of Engineers on a planning study identified in the State Water Plan.

c. Drainage Basins. For the purposes of this Section, the term Drainage Basins includes coastal zones and lake shores, as well as riverine drainage areas or any portion thereof located within the boundaries of a state.

d. Planning Assistance. Any effort or service (rather than a grant) pertaining to the planning for water and related resources of a drainage basin or larger region of a state, for which the Corps of Engineers has expertise. The planning process can extend through the functional design process and the preparation of generic structural designs. However, in no case will the term planning assistance extend to the preparation of site-specific structural designs or construction specifications.

e. Lead Division. A Division assigned the primary responsibility for coordinating efforts, approving work requests and cost sharing agreements, and preparing budget data for a given state. Lead Division assignments are given in Exhibit G-11.

f. Coordinating District. A District with responsibility delegated from the Lead Division for detailed coordination with the single point-of-contact in a state government.

g. Performing District. A District that negotiates and executes an agreement with a local sponsor for a work request agreed to by the state single point-of-contact and the Coordinating District.

G-32. Guidelines for Corps Assistance.

a. Types of Agreements. Agreements for studies costing \$100,000 or less should be kept as simple as possible, using less formal "Letters of Agreement." More complicated studies and studies costing in excess of \$100,000 may have to use a more formal "Cost Sharing Agreement." In either case, every effort should be made to keep the negotiation and execution of agreements as simple as possible to conserve the limited Program funds.

b. Approval of Agreements. Once an Agreement has been negotiated, it should be

submitted to the PAS Program Manager in the Lead Division for approval. It is the Lead Division Program Manager's responsibility to ensure that the work requested meets the eligibility requirements and that the terms of the agreement comply with the provisions of this regulation.

c. General Guidance.

(1) Work items should be at least regional and comprehensive in scope or be a part of a regional, comprehensive study or effort being performed by the state.

(2) Planning assistance within one state may not be extended to areas of another state unless all of the involved states agree.

(3) The PAS Program will not be used to supplement efforts under other ongoing or pending Corps programs, such as feasibility studies.

(4) If a study under this Program identifies a potential construction project with Federal interest, the study should be immediately transferred to the appropriate GI study program, unless the state intends to pursue the project solely as a state project.

(5) Planning assistance may be funded under this program and provided to assist states in support of the Coastal Zone Management Act or in flood plain management activities when the primary purpose of the assistance is to supplement basin-wide or regional state planning for the coastal zone or flood plains.

(6) Planning assistance may include, among other activities, review and update of information previously developed by authorized studies that are not currently funded, provided that the assistance is required for preparation of the state water plan.

(7) Planning assistance may include the collection of new data, but only as an integral part of conducting a legitimate planning study. This should not be interpreted as authorizing the use of the PAS Program to conduct large data collection programs.

(8) Planning assistance may not be used to offset any required State contributions to Federal grants programs. Likewise, sponsors may not use any Federal grant funds as their share of a cost sharing agreement, except where the legislation authorizing the Federal grant program allows such use.

(9) Although the primary purpose of the PAS Program is to make Corps expertise available to the states, work may be contracted out under the following conditions: (a) when a

particular task is normally contracted out by the District for cost-effectiveness reasons, or (b) when a District has lost capability in order to respond to an emergency situation and contracting is necessary to meet the agreed-to schedule, or (c) when contracting out is necessary to meet predetermined District contracting goals.

(10) Because the PAS Program was established to provide Corps planning expertise to states, in-kind services will not be accepted for any portion of the sponsor's share of a cost sharing agreement.

(11) Because some work items may require several years effort or because limited funding may force work to be divided among two or more fiscal years, Performing districts and sponsors may write multi-year/multi-phase agreements. However, each phase should be accomplished within one year of the date the agreement for that phase was signed.

G-33. Program Coordination and Budget Development.

a. Budget Guidance. In March of each year, HQUSACE issues budget guidance to divisions and districts for the upcoming Budget Year (BY). Included in that guidance is a revised breakdown of funds for each Division for BY-1 and an initial breakdown for BY.

b. Invitation for Work Requests. In April of each year, Coordinating districts issue an invitation for work requests to state single points-of-contact for final priorities for BY-1, for specific requests for BY, and an initial estimate of potential work in BY+1.

c. Provide the Requested Budget Information. In May of each year, state single points-of-contact provide the requested budget information and an evaluation of work completed in BY-3.

d. Evaluations. In June of each year, Coordinating districts provide copies of work requests and prior year's evaluations from the states and the annual budget submittal for each state to the Lead Division. The budget submittal includes:

- (1) historical summary of work for BY-3,
- (2) summary of ongoing work in BY-2,
- (3) final priority listing of work requests for BY-1,
- (4) the budget request for BY, and

(5) an initial estimate of work likely in BY+1.

e. Budget Submittals. In July of each year, Lead divisions provide copies of the Coordinating District's budget submittals for each state and a prioritization of work within the Division's states for BY-1 and BY to HQUSACE (CECW-PB).

f. Budget Justification Sheets. HQUSACE (CECW-PB) uses the information submitted to prepare Budget Justification Sheets for OMB and Congress, and input for budget testimony of the Director of Civil Works. The PAS Program is included as a separate line item in the line item entitled "Cooperation with Other Federal Agencies, States, and Non-Federal Interests" under the General Investigations Appropriation.

G-34. Budget Execution and Program Accomplishment.

a. After appropriations have been made, Division coordinators shall furnish to HQUSACE (CECW-PB) a prioritized breakdown of PAS funding requirements by item for each District. .

b. Negotiating Agreements. Throughout the fiscal year, the Performing districts negotiate agreements for the current year and the upcoming fiscal year. As agreements are finalized, they are forwarded through the Coordinating District to the PAS Program Manager in the Lead Division.

c. CEFMS Work Item Numbers. CEFMS Work Item numbers (PWI numbers) are assigned by HQUSACE (CECW-PB) for each study when funds are allotted.

d. Monitor Progress. The PAS Program Manager in the Lead Division continues to monitor progress on each agreement and report any problems, excess funds, or need for additional funds, to HQUSACE as necessary.

SECTION VII - Other Planning Assistance

G-35. Purpose and Scope. This section provides information on various authorities by which the Corps may provide planning assistance to Federal agencies, states, Indian tribes and local units of government.

G-36. Authorities.

- Section 219, Flood Control Act of 1965, Public Law 89-298 - See paragraph G-37 for a description of this authority.
- Title III, Intergovernmental Cooperation Act of 1968, Public Law 90-577 – See paragraph G-37 for a description of this authority.
- Technical and Engineering Assistance on Shore and Streambank Erosion, Section 55, Water Resources Development Act of 1974, Public Law 93-251 – See paragraph G-39 for a description of this authority.
- Water Resources Management Planning Service for the Hudson River Basin, Section 49; and Technical Resource Service, Red River Basin, Minnesota and North Dakota, Section 50, Water Resource Development Act of 1988, Public Law 100-676 – See paragraph G-40 for a description of this authority.

G-37. General Reimbursable Work. The intent of the legislation authorizing reimbursable work for others is threefold: to encourage intra- and intergovernmental cooperation and coordination in the conduct of specialized or technical service; to avoid overlapping or duplication of special service functions among Federal agencies, states and local governments; and to make available specialized or technical services in areas of agency expertise. Planning assistance may be provided on a reimbursable basis for Federal agencies and for states and local units of government as set forth in [ER 1140-1-211](#).

G-38. Coastal Zone Management. The Coastal Zone Management Act establishes a national policy to preserve, protect, develop, and where possible, restore or enhance the resources of the U.S. coastal zone. It requires Federal agencies to cooperate and actively participate with states and local governments and regional agencies towards achieving integrated policy and action proposals for managing the coastal zone. Planning assistance may be provided to assist states in coastal management activities in several ways.

a. Available Data. Available data or other information collected in the course of ongoing research, surveys, or studies or regulatory activities should be furnished without cost to the state.

b. Special Data. Special data, information, or studies requested by the state which require significant additional effort in collection, compilation, interpretation, or analysis, including specific research projects, should be furnished by the Corps on a fully reimbursable basis. The state should be informed that requested data or studies will require reimbursement.

c. Special Coastal Zone Related Studies. Special coastal zone related studies may be conducted under the authority provided by Section 22 of Public Law 93-251 (See "Planning Assistance to States", Section VI) when the primary purpose is to complement comprehensive State planning for effective management of its coastal zone.

G-39. Technical and Engineering Assistance on Shore and Streambank Erosion. The purpose of this program is to provide technical and engineering assistance to non-Federal public interests in the development of structural and nonstructural methods for preventing damages attributable to shore and streambank erosion. For information on the provision of planning assistance under this program contact HQUSACE (CECW-CE).

G-40. River Basin Planning Assistance Programs. The Water Resources Development Act of 1988 established two separate planning assistance programs, Section 49 for the Hudson River Basin in New York and New Jersey, and Section 50 for the Red River of the North Basin, Minnesota and North Dakota. The purpose of these programs is to provide a full range of technical services for the development and implementation of state and local water and related land resources initiatives within those river basins within available funds.

G-41. Tribal Partnership Program.

a. Section 203 of WRDA 2000, Public Law 106-541, authorizes the Secretary of the Army, in cooperation with Indian tribes and the heads of other Federal agencies, to study and determine the feasibility of carrying out projects that will substantially benefit Indian tribes. The projects would be undertaken at sites primarily within Indian country, as defined in 18 U.S.C. 1151, or in proximity to Alaska Native villages. Section 203, titled the Tribal Partnership Program (TPP), also establishes cost sharing provisions, defines cooperation and consultation requirements, and authorizes appropriations.

b. Matters to be Studied. The statutory language for the TPP defines the matters to be studied to include flood damage reduction, environmental restoration and protection,

preservation of natural and cultural resources, and, “such other projects as the Secretary, in cooperation with Indian tribes and the heads of other Federal agencies, determines to be appropriate.” The TPP provides an opportunity to assist with water resources projects that address economic, environmental and cultural resources needs.

c. Federal funds may be used to prepare a reconnaissance study in accordance with guidance above. If it is determined that the outputs are not consistent with Army/Corps implementation and budgetary policy, no further studies should be undertaken and a recommendation as to an appropriate course of action should be made to the tribal interests. If it is determined that the outputs are consistent with Army/Corps implementation and budgetary policy, a cost sharing partner must be identified, the scope of the feasibility study would be defined and a Feasibility Cost Sharing Agreement (FCSA) would be negotiated.

d. Section 203 feasibility studies will be cost shared 50/50 and all the sponsor’s share may be provided as in-kind services. The use of other Federal agency funds for the non-Federal share of the feasibility study costs shall be guided by Article II.F. of the model FCSA, which requires approval of the use of those funds by the contributing agency.

e. Section 203 states that any cost sharing agreement for a study under this provision shall be subject to the ability of the non-Federal entity to pay. A draft Ability to Pay rule is currently being developed for coordination with the Office of the Assistant Secretary of the Army (Civil Works) and the Office of Management and Budget. When finalized, this rule will apply to section 203 studies. Until such time as the rule is final, reductions under the section 203 Ability to Pay provision cannot be applied.

f. In accordance with Section 203 (c), all activities undertaken under this authority must be coordinated with the Department of the Interior (DOI) to avoid conflicts and to consider the authorities and programs of DOI as well as other Federal agencies.

SECTION VIII - Flood Mitigation and Riverine Restoration

G-42. Authority. Section 212 of the WRDA of 1999 provides authority for the Secretary of the Army to implement projects that reduce flood hazards and restore the natural function and values of rivers and that meet other specific criteria without seeking individual authorization for each project. The U.S. Army Corps of Engineers sought this authority and referred to the proposal as Challenge 21. The Corps does not currently have appropriations to implement this program. However, the Corps is conducting studies using other authorities and may seek authorization for projects that meet the goals of this program.

G-43. Types of Improvements. As authorized the Flood Mitigation and Riverine Restoration program emphasizes the use of nonstructural approaches to preventing or reducing flood damages and coordination with FEMA and other Federal, State, and local agencies, and Native American (Indian) Nations. Projects carried out under this authority may have structural elements. In accordance with subparagraph (d) of Section 219 of the WRDA of 1999, projects must significantly reduce potential flood damages, improve the quality of the environment and be justified considering all costs and beneficial outputs.

G-44. Cost Sharing Requirements. Each project will require a non-Federal sponsor willing to provide 50 percent of the cost of a study and a minimum of 35 percent of the cost of implementation. The non-Federal interest will provide all land, easements, rights-of-way, dredged material disposal areas, and relocations necessary for the project, the value of which will be credited toward the non-Federal sponsor's share of the project cost. The non-Federal sponsor will also be responsible for all costs associated with the operation and maintenance of the project.

G-45. Funding Limits. Federal spending on an individual project is limited to \$30,000,000. The House and Senate Committees must be notified of each project proposed for implementation and must approve by resolution any project for which the Federal cost for construction exceeds \$15,000,000. Appropriation authority is limited to \$20,000,000 for FY 2001, \$30,000,000 for 2002, and \$50,000,000 for FYs 2003-2005. All projects must be fully funded within these limits.

This amendment was approved by William R. Dawson, CECW-P, (202)761-0115.

CECW-CP
DEPARTMENT OF THE ARMY
U. S. Army Corps of Engineers
Washington, DC 20314-1000

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APPENDIX H
POLICY COMPLIANCE REVIEW AND APPROVAL
OF DECISION DOCUMENTS

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Note: The HQUSACE, Civil Works Policy and Policy Compliance Division web site <http://www.usace.army.mil/cw/cecw-p/index.html> and the EKO web site should be consulted as needed for updated exhibits and other guidance.

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APPENDIX H

Policy Compliance Review and Approval of Decision Documents

H-1. Purpose. This appendix prescribes policy compliance review and approval procedures for the following decision documents: section 905(b) analyses, feasibility reports, limited and general reevaluation reports, post authorization change reports, and other reports supporting project authorization or budget decisions. This appendix applies to specifically authorized projects and programs, but does not supersede any requirements contained in the authorizing language for those projects and programs. Appendix F addresses requirements for the Continuing Authorities Program (CAP) projects. Separate guidance addresses the peer review requirements for the various decision documents and their supporting analyses (the phrase “peer review” in this appendix includes both Independent Technical Review and External Peer Review). ER 1165-2-502 addresses requirements for decision documents with review and approval authority delegated to the Major Subordinate Commands (MSCs).

H-2. General Requirements. Decision documents are prepared to document project evaluations and facilitate acceptance of the study conclusions and recommendations by the sponsor, public, state and local agencies, and the Federal government. Peer, policy, and legal compliance reviews are an integral part of the process for defining a justified and acceptable project and developing the appropriate and necessary decision and implementation documents. Approvals or decisions to forward recommendations to higher authorities occur only after peer, policy, and legal compliance reviews determine that the proposed study or project complies with existing professional practices, Administration policy, and Federal law.

a. Objective. The objective of policy compliance review is to: (1) confirm that the appropriate water resource problems and opportunities have been addressed; (2) confirm that the recommended solution warrants Corps participation, is in accord with current policies, can be implemented in accordance with environmental laws and statutes, and has a sponsor willing and able to fulfill the non-Federal responsibilities; and (3) appropriately represents the views of the Corps of Engineers, the Army, and the President. This review process is critical to achieve corporate agreement at all levels in the Corps of Engineers on the recommended project and to assure the non-Federal sponsor that the study will lead to District recommendations that HQUSACE will support and ASA (CW) and OMB will likely support. The review process is integrated with the report development process to avoid and minimize rework and delays that would likely occur if reviews were deferred to the tail end of the study phase.

b. Scope. Policy compliance review (1) determines the acceptability of the recommended plan and the supporting analyses, including the decision factors, criteria, assumptions, and methods used to select and define the recommended plan, the extent and nature of Federal interest, project implementation responsibilities, and related issues; (2) ensures a uniform application of policy and procedures nationwide; (3) identifies policy issues that must be resolved in the absence of established guidance or where judgment plays a substantial role; and

(4) ensures that the proposed action is consistent with the overall goals and objectives of the Civil Works program. Although policy compliance reviews do not routinely delve deeply into technical analyses, they may when necessary to determine the sources of apparent inconsistencies or counterintuitive results, or to simply confirm sensitive issues were handled appropriately.

c. Focus. Policy compliance review focuses primarily on the plan formulation, economic, environmental, social, cost sharing, legal, and real estate aspects of proposed solutions and significant alternatives. Engineering and life safety aspects are considered as well as other aspects known to be important to the decision-making process of the Chief of Engineers and the ASA(CW). The reviews consider the views expressed by interested parties at or in response to public reviews, meetings, and workshops. Reviews may also address the application of budget criteria and the appropriate approval of project implementation documents.

d. Roles and Responsibilities. Final policy and legal compliance reviews are performed by HQUSACE, unless this responsibility has been delegated. Policy and legal compliance are also critical parts of the District and Major Subordinate Command (MSC) QA/QC responsibilities. Each reporting officer is responsible for assuring that his/her decision document complies with all applicable statutory and policy guidance prior to forwarding the document to higher authority. General roles during the decision document review and approval process are described in the following paragraphs:

(1) Vertical Team. A key for success is early and continuous involvement by the entire vertical team, which includes key personnel from HQUSACE, MSC, District PDT, non-Federal sponsor, and ASA(CW). The District and MSC are encouraged to seek additional vertical team assistance or reviews whenever needed. Open, proactive, and positive communication enables early identification and resolution of concerns so delays may be avoided or minimized. Vertical teams are encouraged to communicate frequently with short and well-focused meetings, preferably face-to-face. Team members are encouraged to continually improve communication methods, such as more effective use of the internet, consistent with the needs and capabilities of the participating offices. The HQUSACE Planning Community of Practice (CoP) will develop and maintain the Planners Web Site to share key information, documents, and tools, such as the Civil Works Review Board (CWRB) schedule, CWRB After Action Report (AAR), and links to completed planning documents.

(2) Legal Review. District and Division Counsel are responsible for ensuring the legal sufficiency of each decision document. Legal review involves a critical examination of the decision document to ensure compliance with applicable laws, policies, and regulations. Legal review should begin early in the study process so that issues are identified and addressed promptly, with elevation to higher authority as appropriate. Legal certification is required prior to release of the draft decision document for public review, and legal review must continue as the final report is developed, with specific focus on changes in the decision document.

(3) Districts. Districts must ensure that their decision documents have been fully read by the project manager to ensure an integrated product wherein the main report is consistent with

the appendices. Districts review their products during product (report) development and engage independent and/or external reviews at key points to ensure technical, policy and legal compliance based on prior published guidance. The PDT is responsible for project success and for delivering a quality product in accordance with ER 5-1-11. District Engineers are responsible for ensuring the quality of their decision documents and fully documenting the quality control and quality assurance (QA/QC) actions, including technical, policy and legal compliance. Districts are responsible for developing documents in accordance with the procedures and policies set forth in all USACE engineering regulations and circulars. Districts are responsible for identifying policy-sensitive issues to the MSC for vertical team action as early as possible and, when warranted, will request waivers from policy and guidance through the MSC, Regional Integration Team (RIT) and ASA(CW) (see paragraph H-2g below). The leader of the District Planning CoP is responsible for certifying the policy compliance of each decision document by signing the peer review certification. District Counsel is responsible for the legal review of each decision document and signing a certification of legal sufficiency. Once the District submits a report to higher authority for review and approval, the District is responsible for providing briefings and supplemental information as needed to assist the review and approval process.

(4) Major Subordinate Commands (MSCs). MSCs (also referred to as Divisions) perform quality assurance and are responsible for vertical and horizontal coordination in accordance with ER 5-1-11. They provide on-going technical, policy and legal compliance support to their districts. Each MSC will establish a quality assurance program that ensures quality decision documents in accordance with technical, policy and legal requirements. Quality assurance is to be achieved through early, continuous involvement in the process. The MSCs will identify and refer policy-sensitive reports to the RIT and coordinate/facilitate the vertical team resolution of issues arising during the study, particularly in policy review actions. The MSCs generally host Feasibility Scoping Meetings (FSMs), Alternative Formulation Briefings (AFBs), other issue resolution conferences (IRCs) and in-progress reviews (IPRs). The MSC Planning Chiefs are responsible for documenting quality assurance for all planning phase products and for ensuring the resolution of all technical, policy, and legal issues. Division Engineers are responsible for ensuring policy and legal compliance, and documenting technical, policy and legal compliance for decision documents that have been delegated to MSCs for review and approval in accordance with ER 1165-2-502. MSC Counsel will support the District efforts to ensure the legal sufficiency of decision documents and help facilitate the early-on vertical team resolution of legal issues.

(5) HQUSACE. HQUSACE reviews products at various points in the planning phase to confirm policy and legal compliance, and ensure nationwide consistency. The HQUSACE team assists the MSC and PDT throughout the project delivery process. HQUSACE is responsible for establishing technical, policy, and legal compliance requirements for specific projects, and providing final compliance documentation for Washington-level decision makers, generally the Chief of Engineers, ASA(CW), OMB, and Congress. The HQUSACE team is responsible for confirming the policy and legal compliance planning products; supporting the resolution of issues requiring HQUSACE, ASA (CW) or OMB decisions; continuously evaluating the overall project development process, including the peer review and policy compliance processes

(including responsibilities delegated to MSCs); and recommending appropriate changes when warranted. Key HQUSACE roles include:

(a) Regional Integration Teams (RITs), Civil Works and Military Programs Directorates, HQUSACE. RITs, as project execution team leaders, serve as the designated point of contact for all civil works activities, represent the MSC and District in Washington, and receive all official correspondence. Each RIT is responsible for the various planning management actions necessary to process decision documents to the appropriate and ultimate decision maker, usually the Chief of Engineers, the ASA(CW), or the Congress. This includes facilitating timely Washington-level processing of decision documents, advising the field on Washington-level processes and the status of actions in Washington, leading the resolution of policy and planning issues, consulting with the field, coordinating ASA(CW) participation in issue resolution conferences, checking District and MSC submittals for completeness, and issuing project guidance memoranda.

(b) Office of Water Project Review (OWPR), Policy and Policy Compliance Division, HQUSACE. OWPR (aka CECW-PC) performs HQUSACE policy compliance reviews for decision documents for projects requiring new authorization or modification of existing authorizations, and other decision documents that MSCs can not approve under delegated authority (see ER 1165-2-502). OWPR assists vertical teams throughout the study process to identify and resolve issues early so that final reports can be approved or cleared in a timely manner by HQUSACE, ASA(CW), and OMB as needed. OWPR participates with the RITs in IRCs, IPRs and other efforts to resolve outstanding issues. OWPR is also responsible for documenting and/or ensuring that the Districts document the resolution of peer review issues. OWPR, with the RIT planner, also schedules and arranges the District Engineer presentations of final reports to the CWRB. HQUSACE policy compliance review teams include members from the HQUSACE Office of Counsel and the Real Estate, Engineering and Construction, and other CoPs as needed. The Policy Branch (CECW-PB) and the Planning CoP assist as needed to help resolve issues, clarify existing policies and procedures, and to adapt or develop policies and procedures when warranted. OWPR will appoint a review manager for each arriving decision document to lead the review team and serve as the team's point of contact. The review team's coordination with the vertical team will generally be conducted through the RIT planning manager.

(6) Office of the Assistant Secretary of the Army (Civil Works). ASA(CW) has oversight responsibility for assuring that the authorization, implementation, and budgeting of projects is consistent with applicable laws and policies. As appropriate, ASA(CW) will be involved in resolving policy issues and approving exceptions to or waivers of policy. For certain proposals ASA(CW) may be directly involved in the policy compliance review and may choose to participate in IRCs and IPRs.

e. Review, IRC and IPR Procedures. General procedures and requirements for HQUSACE policy/legal compliance reviews, IRCs and IPRs are presented in Exhibit H-1. Further requirements for FSM, AFB, and draft and final report reviews are addressed below.

f. Issue Papers. District planning elements are expected to be knowledgeable of water resources policies and procedures and to apply that knowledge, including basic research of USACE guidance, before elevating issues to higher authority. When a District or MSC identifies a policy or procedural issue or uncertainty during the planning phase that warrants HQUSACE assistance, the District will prepare an issue paper that concisely describes the issue, the desired outcome, and any pertinent background information; identifies applicable guidance, interprets the guidance; and recommends a solution or course of action, if possible, for HQUSACE review. Issue papers involving legal concerns should be supported by a legal opinion signed by District Counsel. The issue paper and any supporting legal opinion should be provided to the MSC and forwarded to the RIT to coordinate the issue resolution. Depending on the nature of the issue, the RIT, vertical team, OWPR, and HQUSACE Planning CoP will determine whether additional information, coordination, ASA(CW) involvement, or an IRC (see Exhibit H-1) is necessary to resolve an issue.

g. Policy Waivers. A District may request an exception to policy, preferably after informal vertical team coordination, in a memorandum to the MSC and RIT supported by an issue paper (see above) that explains the need and rationale for the exception. The RIT will coordinate the HQUSACE review of the request and, if warranted, forward the request to ASA(CW) to approve or disapprove. The District and/or MSC may be asked to brief HQUSACE and ASA(CW) staff regarding the request.

h. Compliance Memorandum. Each submittal for HQUSACE policy compliance review will include a memorandum that summarizes how the District complied with previous guidance issued by the MSC or HQUSACE specifically for the current project. The memorandum will reference the previous guidance memoranda, reference each required action, briefly describe the changes in the analyses and/or presentation to fulfill each required action, and state the location (paragraph and page number) within the submittal materials for each action taken. A useful compliance memorandum will allow reviewers and interested decision-makers to quickly find and confirm that appropriate actions were taken to resolve the concerns. It also provides key portions of the Documentation of Review Findings that OWPR forwards with the final Report of the Chief of Engineers.

H-3. Reconnaissance Phase. Certification of the reconnaissance phase signifies that the proposed feasibility study would likely comply with current policies, the scope and nature of the water resource problem(s) warrant Federal participation in a feasibility study, and a non-Federal entity has the appropriate interest, authority and capabilities to fulfill non-Federal responsibilities for the feasibility, design, and construction phases. The Feasibility Cost Sharing Agreement (FCSA) may not be executed until the reconnaissance phase is certified and any requirements specified in a contingent certification are met. Reconnaissance phase certification should occur within six to twelve months of initiating the reconnaissance phase. FCSA execution concludes the reconnaissance phase. For reconnaissance studies recommending no further Federal action, see paragraph H-7.

a. Reconnaissance Study Schedule and Cost Changes. The MSCs are authorized to

approve study schedule and cost changes. Section 905(b) of WRDA 1986 states the duration of the reconnaissance study should normally be no more than twelve months, and in all cases limited to eighteen months.

b. Reconnaissance Phase Certification. Within six months, but no more than twelve months, of initiating the reconnaissance phase, the District Engineer will sign the Section 905(b) Analysis and provide it with the sponsor's letter of intent (LOI) to the MSC. MSCs are encouraged, but not required, to accept submittal materials informally and electronically, and should advise the Districts on acceptable methods of transmittal. The LOI should state that the sponsor is ready, willing, and able to execute the FCSA. The MSC will review the analysis and supporting materials to assess policy and legal compliance, and provide comments and/or guidance, as warranted, via e-mail to the district within thirty days of receiving the 905(b) analysis and LOI. The MSC will coordinate any aspect that does not clearly comply with law and/or policy with the RIT prior to certification. If warranted by the scope or impact of the issues, the MSC may request HQUSACE participation in an IRC to resolve those issues and establish any requirements that would allow certification (see the IRC procedures in Exhibit H-1). If the MSC determines that policy compliance can not be achieved, it must disapprove the analysis, defer certification, or, if warranted, seek an exception from policy from HQUSACE and ASA(CW). Once the MSC determines that the analysis and LOI are policy compliant, it may certify the reconnaissance phase. Certification may be contingent upon specific requirements. The MSC must forward the certification memorandum and analysis to the RIT, and release the analysis to the public or delegate the release to the District Engineer.

c. Project Management Plans (PMPs). The MSC will encourage the PDT to request PCX involvement early in the development of the PMP and subsequent PCX review of the PMP before FCSA negotiations are completed. The MSC, assisted by the PCX as needed, will ensure that the PMP is consistent with current guidance on policies and procedures for decision documents before the PMP is approved. The PMP does not need to be forwarded to HQUSACE unless specifically requested or as needed to assist the MSC and/or District. Following initial approval, each PMP should be posted on the District's website for access by the public or higher authority.

d. Feasibility Cost Sharing Agreement (FCSA). The authority to approve a FCSA, including any deviations thereto and the authority to execute such agreement, will follow the authorities and procedures outlined in the implementation memo for the model FCSA. The FCSA may not be executed until the reconnaissance phase is certified or the requirements specified in the contingent certification are met. A model FCSA is displayed on the CECW-P web page under the link titled, "Project Cooperation Agreement Models."

H-4. Feasibility Phase through the Draft Report Stage.

a. Feasibility Study Schedule and Cost Changes. The MSCs are authorized to approve study schedule and cost changes.

b. Project Study Issue Checklist. The Project Study Issue Checklist in Exhibit H-2

includes many of the more frequent and sensitive policy areas encountered in studies.

The checklist was created to emphasize the District's responsibility for achieving policy compliance and to facilitate the early identification and resolution of technical, policy and legal issues via the vertical team. The District will prepare a draft checklist early in the feasibility phase, preferably within the first three months of initiation and always prior to the FSM. The District will include an updated checklist in each submittal of study documents for policy compliance review (the FSM, AFB, draft report and final report) to help identify potential issues for resolution. When the District identifies an issue as sensitive, it should immediately engage the vertical team to resolve the concern. If an issue can not be resolved by simple coordination, the resolution effort should be supported with an issue paper in accordance with paragraph H-2.f.

c. Feasibility Scoping Meeting (FSM). The purpose of the FSM is to bring the vertical team, the non-Federal sponsor, and resource agencies together to agree on the problems and solutions to be investigated and the scope of analyses required. An FSM will address the problems, opportunities, and needs; refine study constraints; identify the key alternatives; and further define the scope, depth, and methods of analyses required. The FSM will use the IRC procedures outlined in Exhibit H-1. An FSM should normally occur upon completion of steps 1 and 2 of the planning process (see paragraphs 2-3a and 2-3b, ER 1105-2-100); after preliminary plan formulation, evaluation and screening (i.e., identification of the alternatives to be analyzed in detail); and after the NEPA scoping meeting (see ER 200-2-2). The FSM pre-conference submittal requirements are listed in Exhibit H-3. For overall study efficiency, PDTs are encouraged to begin writing their draft feasibility reports prior to the FSM, rather than creating separate documents for the FSM and AFB.

d. Alternative Formulation Briefing (AFB). The purpose of the AFB is to confirm that the plan formulation and selection process, the tentatively selected plan, and the definition of Federal and non-Federal responsibilities are consistent with applicable laws, statutes, Executive Orders, regulations and current policy guidance. The goal is to obtain a HQUSACE endorsement of the tentatively selected plan, to identify and resolve any legal or policy concerns that would otherwise delay or preclude Washington-level approval of the draft report, and to obtain HQUSACE approval to release the draft report and NEPA document to the public concurrent with the HQUSACE policy compliance review of the draft report. An AFB should be held when the District is prepared to present the formulation, evaluation and comparison of alternative plans (steps 3 through 5 of the planning process); the costs, benefits, and impacts of the final array of plans; the plan selection rationale; the tentatively selected plan; the cost apportionment; and any known significant issues. The AFB will use the IRC procedures outlined in Exhibit H-1. The AFB pre-conference submittal requirements are listed in Exhibit H-4. If an adequate draft report is available for review, the draft report review requirements below may be fulfilled in the AFB. The AFB and the resulting AFB PGM will address the policy compliance and public reviews of the draft report and NEPA document. The District will use the AFB PGM as a supplement to existing guidance to further complete the decision document.

e. Draft Report Submittal. HQUSACE policy compliance review and approval of the draft report and supporting materials is required prior to public release of the draft report and NEPA document unless a prior AFB PGM or other HQUSACE guidance approved concurrent

HQUSACE and public reviews, or deferred further compliance reviews to the final report. Review and approval prior to public release are necessary to ensure that resulting sponsor and public expectations regarding Federal support can be reasonably fulfilled. See Exhibit H-5 for the submittal requirements. The review and issue resolution process will use the procedures outlined in Exhibit H-1. The resulting PGM will specify the requirements for releasing the documents for public review if public release is still pending and completing the final report.

f. Draft Environmental Impact Statement (EIS) Filing. Following HQUSACE approval to release the draft report and supporting materials to the public, the District Engineer will circulate the draft report and preliminary draft EIS or draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI), as appropriate, to agencies, organizations and members of the public known to have an interest in the study. If an EIS is appropriate, five copies of the preliminary draft EIS and report will be mailed to Director, Office of Federal Activities (A-104), Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460 for filing after distribution has been accomplished. Review comments should be accepted from the public, agencies and others for a minimum of 45 days (for EIS, or 30 days for EA) after the Notice of Availability (NOA) is published in the Federal Register. Public hearings should generally be held during the public review to solicit the views of key stakeholders and others in areas likely to be impacted by the tentatively selected plan. The District Engineer should provide written responses to significant comments received in writing during the review. All significant comments and the Districts responses should be documented in the feasibility report. Since the NOA is generally published in the Federal Register on the Friday of the week after EPA receives the preliminary draft EIS, District schedules should allow two weeks for filing the draft EIS.

H-5. Feasibility Phase Final Report Stage. The Division Engineer's submittal of the final report initiates a series of Washington-level actions that would ideally culminate in the authorization of the recommended project. Requirements for the major actions are summarized in the paragraphs that follow. Key milestones with typical dates relative to the arrival of the MSC submittal in the RIT are listed in Exhibit H-12.

a. Submittal of Final Reports Requiring Authorization. Final decision documents recommending the authorization of new projects and/or modification of existing projects must be transmitted to HQUSACE for review and approval prior to the execution of design agreements or project cooperation agreements (PCAs), and the subsequent obligation and expenditure of funds for design or construction. The procedures below apply to the submittal of all final Corps of Engineers Civil Works feasibility reports and post authorization reports that require new authorization or the modification of existing authorization by the United States Congress. See paragraphs H-6 and H-7 for the processes for other types of reports.

(1) District Transmittal. Once the District Engineer signs the recommendations in the final decision document, the District should forward the final report, final NEPA document, and related materials (see Exhibit H-7) to the MSC. The District Engineer's signature is for the recommendation and does not constitute the project decision in accordance with ER 2-2-200. Therefore, the ROD or FONSI should not be signed at or before this time. The District should

retain between 12 and 50 copies of the report and NEPA documentation for the State and Agency (S&A) Review discussed in later paragraphs. The number of report copies will vary depending upon the project's purpose, features and location. Contact the RIT planner or CECW-PC to determine the number of copies that will be required. Note, although the EIS is identified as "final" at this stage of processing, it should be made clear to all those requesting a copy that it is an *"Interim Document under Agency Review - Subject to Revision"* and will become the agency's final EIS when it is filed after OWPR review.

(2) Final Report Submittal Package. The Division Engineer's Transmittal Letter will provide the submittal package to HQUSACE for review as described in paragraph 3 of Exhibit H-1 and will enclose the items listed in Exhibit H-7. A Division Engineer's Public Notice announcing the completion of the final feasibility report is no longer required, but may be used at the MSC's discretion. Model text for both the transmittal letter and notice are presented in Exhibit H-6. Note that models for the draft ROD and the draft Report of the Chief of Engineers are presented in Exhibits H-8 and H-9, respectively.

(3) Supporting Information. The Report Summary and briefing slides required in Exhibit H-7 should be updated annually and forwarded to the RIT by November 30 to reflect the October, current year, price level and other changes. The initial and updated versions are necessary to support various briefings, decision-related meetings, and hearings both within HQUSACE and with or before ASA (CW), OMB, other agencies, Congressional staff, and Congressional committees during the authorization process. The updates should continue until the project is authorized or is no longer pursued at the Washington-level. The report summary and slides should be provided and maintained in the current Corps of Engineers standard for electronic files, currently Microsoft Word and PowerPoint. Supporting maps, artwork, and photos can be provided in industry standard format (jpg or gif).

(a) Report Summary. The Report Summary will follow the standard outline in Exhibit H-11. The Report Summary will concisely and comprehensively summarize the feasibility study, the NEPA document, and the recommended plan. As such, the Report Summary should not exceed ten pages. It will provide insights to the key problems and opportunities, risks and uncertainties, assumptions and other important considerations that underlie the recommendation. The standard format will result in consistent reporting across studies, making cross-comparisons more possible. The Report Summary also replaces the Project Fact sheet, and serves as the basis for the District Engineer Briefing (below).

(b) ASA(CW)/OMB Briefing Slides. The District Engineer will e-mail a file of electronic (Microsoft PowerPoint) slides listed in Exhibit H-10 for feasibility-level reports which recommend Federal action to the HQUSACE RIT concurrent with the Division Engineer's transmittal of the final report to HQUSACE, and provide updated slides to the RIT when requested. The HQUSACE RIT will use the file primarily to brief ASA(CW) and OMB staffs as needed during the Washington-level processing of the final report, particularly for briefing OMB. The file will be a summary version of the District Engineer's Civil Works Review Board (CWRB) briefing slides with generally no more than a dozen slides.

b. Civil Works Review Board (CWRB). The MSC and District Engineers will present the final results and recommendations for all Civil Works feasibility and post authorization reports that recommend new or additional Congressional authorization to the CWRB in HQUSACE. The CWRB briefing is the corporate checkpoint for determining that the final decision and NEPA documents, and the proposed Report of the Chief of Engineers are ready to release for State and Agency (S&A) Review as required by the Flood Control Act of 1944, as amended (33 U.S.C. 701-1).

(1) Scheduling. Approximately six months before the final report package is submitted to HQUSACE, the District Engineer shall notify the MSC and RIT to schedule a briefing of the CWRB. The briefing will be held no less than 21 calendar days after HQUSACE receives the Division Engineer's Transmittal Letter and prior to issuance of the Final Report of the Chief of Engineers. The briefing will be held before the S&A Review process is initiated. For expediency, exceptions regarding the timing of the S&A Review process may be considered in cases where there are no outstanding review concerns and no known controversies associated with the project. To obtain such an exception, the District Engineer must submit a request through the MSC Division Engineer to the Director of Civil Works (DCW) for action.

(2) Members. The Deputy Commander will chair the CWRB. This level of involvement emphasizes to the Corps and the public the importance placed on the vertical team process in developing water resources projects. For each briefing, the CWRB will consist of five voting members. Three Board members will serve permanently on every panel: the CWRB Chair, the DCW, and the Leader of the Planning Community of Practice (CoP). Two additional Board members will be drawn specifically for each panel: one RIT leader (not from the presenting MSC); and one additional CoP leader from Engineering, Operations, Real Estate or another area as appropriate. The Office of the Chief Counsel will serve in an advisory role for all reports.

(3) Attendance. The appropriate HQUSACE, MSC, and District staff will attend. The project sponsor should attend and present its views on the project. The peer review team leaders (Independent Technical Review and External Peer Review) and other key stakeholders should be invited. Representatives from OWPR, the policy compliance review team, the RIT, and other HQUSACE offices will attend, as appropriate. Representatives from ASA (CW) and the Office of Management and Budget (OMB) will be invited. If travel is not practical, the MSC and/or District should contact OWPR regarding participation via video-teleconference.

(4) Agenda. Following presentations by the District Engineer, Division Engineer, OWPR, the non-Federal sponsor, and other guests, the CWRB will determine whether the report should be issued for S&A Review, and whether other instructions are warranted. A sample agenda is presented in Exhibit H-13.

(a) District Engineer Briefing. The District Engineer will address the report recommendations, the rationale for plan selection, the benefits and costs, NEPA compliance, cost sharing, and how all peer and policy review comments were addressed and resolved. The District Engineer will address the systems perspective and how risk and uncertainty were considered in the study. The District Engineer will also provide an overview of the public

involvement process, including any peer review, the major concerns expressed and how they were resolved. The District Engineer shall cover the topics listed in Exhibit H-14.

(b) Division Engineer Briefing. The Division Engineer will present the rationale for issuing the Division Engineer's Transmittal Letter, certification of legal and policy compliance, the expected response to the draft Report of the Chief of Engineers, and any MSC Quality Assurance or other observations. The Division Engineer and/or the HQUSACE RIT leader will summarize the QA/QC efforts, specifically the certifications of technical, legal and policy compliance. They should discuss the peer review process and results, including the involvement of the Planning Centers of Expertise, and any significant and/or unresolved technical, legal or policy compliance concerns.

(c) OWPR Briefing. Upon receiving the MSC submittal materials, the OWPR policy compliance review team will briefly assess the compliance of the materials with previous guidance (PGMs) to identify any obvious concerns that may warrant delaying the S&A Review. The OWPR review team manager will summarize these and any other significant policy and legal concerns to the CWRB, including their significance and the steps needed to resolve each one. The review manager will recommend whether or not the report and the proposed Chief's Report should be released for S&A Review. As indicated below, the full policy compliance review of the final report will continue concurrently with the S&A Review.

(5) CWRB Decision. If the CWRB decision is not a simple approval to release the final report for S&A Review and file the FEIS with EPA, OPWR will record the decision and, if necessary, the RIT will issue a guidance memorandum to the MSC and District. OWPR will include the CWRB decision and instructions, if any, in the Documentation of Review Findings.

(6) After Action Reports (AARs). To facilitate lessons learned, the District will prepare a brief AAR of the CWRB meeting on outcomes and decisions reached, and any follow-on actions required. The AAR will be furnished to the Division Engineer, the RIT, and OWPR within 30 calendar days of the CWRB briefing. CECW-PC will place the AAR in the Planners Web Site with a link to the presentations made at the briefing.

c. State and Agency Review. The S&A Review by pertinent agencies is required by Executive Order 12372, Public Law 78-534, as amended, and Public Law 85-624. HQUSACE shall administer the S&A Review with the assistance of the District. OWPR will provide a coordination package to the District to initiate the S&A Review as soon as possible after the CWRB briefing, consistent with the CWRB decisions. OWPR will provide a mailing list, signed transmittal letters, and the proposed Report of the Chief of Engineers to the District with instructions for mailing copies of the report to the State and Federal agencies for S&A Review. The District will date and mail the transmittal letters and enclosures according to the written HQUSACE instructions. (Keep copies to verify the dates.) The transmittal letters will explain the current status of the report and FEIS and direct any comments to the DCW. OWPR will contact any agencies or governor's offices that do not respond by the end of the review period. OWPR will identify any State or Agency comments that warrant a response and the RIT planner will coordinate with the MSC and District to draft response letters for signature by the Chief,

Planning and Policy Division at HQUSACE, CECW-P.

d. EIS Filing. Following CWRB approval, OWPR will provide signed transmittal letters for the District to circulate the final report, FEIS, and the proposed Report of the Chief of Engineers to interested parties for public review and to file these documents with EPA pursuant to regulations of the President's Council on Environmental Quality (CEQ) for implementing NEPA (see ER 200-2-2, paragraph 17, and 40 CFR Parts 1500-1508). (District should make copies of the transmittal letters before mailing.) The letter to interested parties explains the current status of the report and FEIS, directs comments to CECW-P, and states the official closing date for the receipt of comments is 30 days from the date that the notice of availability of the FEIS appears in the Federal Register, which may be somewhat later than 30 days from the date of the letter. The review period may be extended upon request (see paragraph 19a, ER 200-2-2). Concurrent with mailing the documents for S&A Review, the District will date the letter to interested parties with the day it is postmarked and distribute the documents to groups and individuals known to have an interest in the study or who provided comments on the draft EIS but were not included on the S&A Review mailing list. The report appendices circulated with the draft report and EIS need not be circulated with the final report and final EIS. After allowing adequate time for delivery to the interested parties, the District will date the second transmittal letter and file the documents with EPA. EPA generally publishes a notice of availability of the FEIS in the Federal Register on the Friday of the week following EPA's receipt of the FEIS. Due to the timing of the notice of availability in the Federal Register, the review of the FEIS generally ends a couple weeks after the S&A Review. The Division Engineer will issue any needed responses to comments received from interested parties.

e. Final Report Policy Compliance Certification.

(1) OWPR Review. The S&A review and filing of the FEIS, as appropriate, with the EPA shall be concurrent with OWPR's final policy compliance review. This review will confirm compliance and provide a basis for advising the Chief of Engineers about forwarding the recommendations to ASA(CW), OMB, and ultimately Congress. This will be a final checkpoint on the need for an ASA(CW) policy exception, and if needed an exception would be concurrently coordinated by OWPR. The final Chief's Report would not be signed until the exception is approved by ASA(CW). This review will concentrate on the compliance of the final report with the latest PGM and any changes in the documents since the previous OWPR review. Should policy issues be identified, OWPR will work with the RIT and reporting officers to resolve these issues to finalize the report. If the final decision document is not in compliance, an IRC may be requested to resolve remaining issues related to the project or supporting documentation. If, after an IRC or other discussions, compliance cannot be agreed upon, OWPR may advise the DCW to return the report with corrective guidance to the reporting officer. OWPR will issue the Documentation of Review Findings and certify policy compliance, when the final document adequately complies with policy. The Documentation of Review Findings will include a summary of the S&A and NEPA reviews.

(2) Final Report and FEIS Revisions. If the CWRB action or OWPR review requires minor revisions (with insignificant impacts) to the plan as recommended by the Division and

District Engineers, these changes and impacts shall be noted in the final feasibility report. If major revisions are necessary to the recommended plan and revisions are variants of the plan or are within the range of alternatives considered and discussed in the draft EIS, an addendum to the final report and FEIS will be prepared by the District, as required. It will be identified as an "*Addendum to the Final Feasibility Report and Final EIS - Environmental Consequences of the Modifications Recommended by the Headquarters, U.S. Army Corps of Engineers – (project name)*." The format shall include an abstract on the cover page; recommended changes to the Division/District Engineer's proposed plan; rationale for the recommended changes; environmental consequences of the recommended changes; and the name, expertise/discipline, experience, and role of the principal preparer(s) of the addendum. If the CWRB or OWPR requires a major revision or a new alternative to the recommended plan with significant impacts which were not discussed in the draft EIS, a supplement to the draft EIS will be required. After consultation with the RIT, OWPR, and the Division Engineer, the District Engineer will prepare and circulate the supplement to the draft EIS in accordance with CEQ implementing guidance (40 CFR 1502.9). The supplement together with incoming letters of comment and Corps responses to substantive issues shall be incorporated into the existing final report and EIS with a minimum of page changes or revisions to reflect the modified or new proposed plan. OWPR will review its proposed action in light of the comments received prior to taking final action on the report and EIS.

f. Final Report Recommendation Package. After the S&A review, FEIS review, and the final feasibility report policy compliance certification have been completed, the HQUSACE RIT will prepare a recommendation package for processing to obtain signature of the Report of the Chief of Engineers. The recommendation package will include the items listed in Exhibit H-15. OWPR will finalize the Chief of Engineers Report for the Chief's signature and the ROD for signature by the ASA (CW). The RIT will forward the package and schedule briefings for the Director of Civil Works and/or the Chief of Engineers, as needed. The RIT will notify the MSC and District of any briefings so that they have the opportunity to participate.

g. Chief of Engineers Approval. Once the Chief of Engineers signs the report signifying approval of the project recommendation, the Chief of Staff signs the notification letters forwarding the Report of the Chief of Engineers (Chief's Report) to the chairpersons of the Senate Committee on Environment and Public Works, and the House of Representatives Committee on Transportation and Infrastructure. The signed Chief's Report is then returned to the RIT. The RIT submits a copy of each of the following to ASA (CW): the Chief's Report, the final feasibility report and FEIS, the body of draft letters transmitting the report to OMB and Congress under the ASA(CW) signature, the unsigned draft ROD, all State and Agency review letters and any CECW responses to those letters, ASA(CW)/OMB briefing slides, Report Summary, and Documentation of Review Findings. In addition, the RIT will e-mail ASA(CW) staff the electronic versions (scanned signed documents and text files for unsigned letters) of each of these documents, except the final feasibility report and FEIS.

h. ASA(CW) Approval. The ASA(CW) will review the documents provided by the RIT to determine the level of administration support for the Chief of Engineers recommendation. The ASA(CW) will formally submit at least one copy of the report to OMB per Executive Order

12322, 17 September 1981. The submittal will include the report, NEPA documentation, draft ROD (if a final EIS has been filed), appendices, Documentation of Review Findings, and the draft transmittal letters to Congress. The submittal to OMB should normally occur within 180 calendar days of the Division Engineer's transmittal letter to HQUSACE. OMB will review the recommendation to determine its relationship to the program of the President. OMB will then provide a letter to ASA(CW) either clearing the release of the report to Congress subject to whatever changes OMB deems necessary or objecting to the release. If there are no OMB objections, the ASA(CW) will then provide guidance on necessary revisions and direct the DCW to prepare the report for transmittal to Congress. In accordance with OMB instructions, ASA(CW) will provide the DCW with guidance on necessary actions which could range from revising the recommendation, revising the final report, redoing part of the study, to terminating the study outright. The ASA(CW) and OMB may request briefings to aid their decision-making. The RIT normally provides these briefings and any other supplemental information that ASA(CW) or OMB may need, assisted as needed by the vertical team. If the needed information is not readily available in HQUSACE, the District may be asked to provide it. Note that paragraph G-8c.(9) of Appendix G, "Planning Reports and Programs," requires that the District retain adequate funding to support the Washington-level review activities.

i. Review of Changes to Report Recommendations. Depending on the extent of changes in the recommendations it may be necessary to provide an opportunity for the sponsor, state(s), interested Federal agencies, and other parties to review and comment on the changes prior to transmitting the report to Congress and signing the ROD. Changes involving significant environmental impacts may require additional NEPA documentation in accordance with 33 CFR 230. In such circumstances, HQUSACE or ASA(CW) may allow additional time for further comment before finalizing their respective recommendations. Notification and scheduling requirements will be determined on a case-by-case basis since the need for coordination will vary with the degree of change.

j. Transmittal to Congress. After OMB provides its views on the relation of the recommended project with the programs of the President, the ASA(CW) will sign the ROD if the project has not yet been authorized and will transmit with any modifications that may be needed the Report of the Chief of Engineers, the state and agency review letters, the ROD, and the final feasibility report/EIS to Congress. The District will then notify the sponsor, state(s), and interested agencies and other parties of the Report of the Chief of Engineers and the ROD. When Congress has authorized construction prior to receiving the ASA(CW) recommendations, the Director of Civil Works will sign the ROD and forward a copy to ASA(CW) to include in the transmittal to Congress. In this case the ROD should only address the project as authorized by the Congress and not attempt to provide any additional justification of the Congressional action.

H-6. Post-Authorization Decision Documents.

a. Modification of Existing Authorizations. Decision documents that recommend the modification of existing project authorizations, other than raising the cost limit established by Section 902 of WRDA 1986, or that lack delegated approval authority will utilize the review and approval process described above for feasibility reports. PAC reports recommending an increase

in a cost limit established by Section 902 of WRDA 1986 will follow the review and approval procedures outlined in ER 1165-2-502. The MSC will forward the final report, with the peer review and legal review certifications, to the RIT for submittal to ASA(CW) for review and coordination with OMB as appropriate for submission to Congress.

b. Projects Authorized without a Report. The requirements described above in paragraphs H-1 through H-5 apply to reports for projects or project modifications authorized without the benefit of a Secretary-approved feasibility-level report and without contingent actions, except that a Chief of Engineers Report and the S&A Review will generally not be necessary. The MSC submittal requirements in Exhibit H-7 will apply, except for the report mailing list and the Draft Proposed Report of the Chief of Engineers.

c. Projects Authorized Contingent upon Completion of a Chief of Engineers Report. The requirements described above in paragraphs H-1 through H-5 apply to reports for projects or project modifications authorized subject to the completion of a Chief of Engineers Report, except that the transmittal letters, Report Summary, Chief of Engineers Report and briefing slides will describe the contingent authorization language. The MSC submittal requirements in Exhibit H-7 will apply.

d. Projects Authorized Subject to a Determination by the Secretary of the Army. The requirements previously described in paragraphs H-1 through H-5 apply to reports for projects or project modifications authorized subject to a determination by the Secretary, except that a Chief of Engineers Report and S&A Review will generally not be necessary. A Report of the Director of Civil Works will recommend and forward the final report to the ASA(CW). The MSC submittal requirements in Exhibit H-7 will apply, except for the report mailing list and the Draft Proposed Report of the Chief of Engineers.

e. Delegated Post-Authorization Decision Document Approval Authorities. ER 1165-2-502 provides guidance on the delegated review and approval of post-authorization decision documents. The submittal of MSC approved documents to the RIT for budget clearance should comply with the annual budget guidance and include a copy of the Decision Document Checklist described in ER 1165-2-502. Submittal requirements to support PCA actions are addressed in ER 1165-2-131.

H-7. Reports Recommending No Further Federal Action.

a. The MSC or District, if delegated by the MSC, will release a public notice to all interested parties, including the Congressional delegation(s), the MSC, and the RIT, that the reconnaissance or feasibility-level study report recommends no further Federal action.

b. The public notice will include language stating, "If this study receives no additional funding for a period of five years, the Secretary will include it on the list of incomplete studies provided to Congress in accordance with Section 710 of WRDA 1986. Each study in the list will no longer be authorized if it is not funded within 90 days after the list is provided to the

Congress.”

c. Within 15 working days of receipt of the District Engineer's appraisal or report recommending no Federal action, the MSC will notify the RIT in writing of the intent to publish a public notice. This written notification will also include an evaluation of the reconnaissance report and recommendation(s) by the MSC and two copies of the 905(b) analysis or report for information.

d. In those cases where an IRC is held, the resulting guidance memorandum will address, if warranted, any additional specific report processing requirements.

e. HQUSACE will prepare an annual report for transmittal to Congress summarizing all reconnaissance and feasibility reports recommending no further Federal action for that year.

H-8. Decision Documents Prepared by Sponsors. For a decision document prepared by a non-Federal interest, such as under the authority of Section 211 of WRDA 1996, the District should encourage the non-Federal interest to utilize the review and approval processes described in this appendix in order to receive timely input on the adequacy of their report and maximize the opportunity for approval by the Secretary. If the non-Federal interest chooses some other path, the District should expect to conduct peer, policy and legal reviews of the final decision document, or possibly some interim product, and to provide the results of their reviews to the MSC and RIT along with advice on whether the report should be approved. The MSC will endorse the District's findings with its own views on approval and advise the RIT regarding the adequacy of the District's reviews. The RIT will engage an OWPR policy and legal compliance review, and forward the results to ASA(CW) with summary advice regarding the consistency of the document with technical, policy and legal requirements, and a recommendation to approve or not approve the report. The District will retain responsibility for fulfilling the NEPA requirements, including any necessary scoping meetings, public reviews, filings with EPA, executing a FONSI, and/or providing the draft ROD for HQUSACE or ASA(CW) signature, as appropriate. A report prepared by non-Federal interests may still require a Chief's Report (i.e., Section 203 reports), so a CWRB and follow-on procedures may be necessary.

This amendment was approved by Mr. Raleigh H. Leef, CECW-P, (202)761-1380.

Exhibit H-1
Issue Resolution Conference Procedures

1. Exhibit Purpose. This exhibit describes procedures and requirements for conducting In-Progress Reviews (IPRs) and Issue Resolution Conferences (IRCs) in conjunction with feasibility and post-authorization studies generally covered in ER 1105-2-100. IRCs include the Reconnaissance Review Conference (RRC), Feasibility Scoping Meeting (FSM), the Alternative Formulation Briefing (AFB), and Feasibility Review Conference (FRC).

2. General.

a. IRC/IPR Purpose. The primary purpose of an IRC is to involve the vertical team (non-Federal sponsor, District, MSC, HQUSACE and, when needed, ASA(CW)) to identify, discuss and resolve issues to ensure an orderly completion of the study and Washington-level acceptance of the final report recommendations. Issues can involve existing and potential technical, policy, legal, and procedural concerns. The purpose of an IPR is to update the vertical team and others on study findings and progress.

b. Participation. The District, Division, and HQUSACE will participate in all IRCs and many IPRs. HQUSACE may invite ASA(CW). The District should invite the peer review team leader. The District should strongly encourage the non-Federal sponsor, resource agencies, and major stakeholders to participate in all IRCs and IPRs.

c. Timing/Scheduling.

(1) Meetings. IRCs and IPRs can be held at any time during the study process at the request of any vertical team member. The FSM and AFB are held at particular times in the study process as described in subparagraphs H-4.c and H-4.d. An RRC or FRC will only be held when there are extraordinary concerns with the reconnaissance appraisal or draft feasibility report, respectively. Upon submittal of read-ahead or review materials for an IRC or IPR, the MSC will coordinate with the District and the HQUSACE RIT to select the appropriate forum and propose potential dates. The RIT will coordinate within HQUSACE and with ASA(CW) as needed to confirm the date, forum, and Washington-level participation. The date will be contingent upon complete submittals, timely review, and timely responses to review concerns. Review and other pre-conference materials should generally be provided to HQUSACE a minimum of about six weeks before the conference (see paragraph 4 below).

(2) HQUSACE Reviews. Policy compliance review actions at HQUSACE should generally be scheduled for a minimum of 30 days, unless an alternate period is specifically approved by the RIT and OWPR. The 30-day period begins when OWPR receives the appropriate number (see below) of complete reports and accompanying document copies, and ends when OWPR presents the policy review concerns in a memorandum to the RIT. About a week should be allowed for the PDT to receive the comment memorandum, prepare responses to

the comments, and provide those responses to the RIT. About three to five days should be allowed for the HQUSACE review team to assess the responses prior to the issue resolution conference (IRC).

d. Forum. The forum of the IRC or IPR may be a telephone conference, videoconference, or a face-to-face meeting as appropriate. The forum selection should, consider the need for a project site visit. A project site visit should normally occur with the FSM or AFB. If a site visit would be useful but is not practical, slides and/or a video of the site should be presented.

3. Pre-Conference Submittals. Prior to each conference, the District will simultaneously provide the MSC and RIT with a memorandum that identifies the conference objectives, notes any concerns that warrant special attention, and lists and encloses the required pre-conference submittal materials. To ensure a focused, productive and conclusive meeting, the pre-conference materials will include the background and facts appropriate to the purpose and scope of the requested IRC or IPR. The vertical team will use the information to identify the staff that should participate and to help set the agenda.

a. Review and Report Submittal Memorandum. The transmittal memorandum forwarding pre-conference materials and decision documents for HQUSACE policy compliance support or review shall be addressed as shown below and shall cite the six-digit Project Work Item (PWI) number assigned by the financial management system. Copies of supporting materials will be cited in and copies enclosed with the transmittal memorandum. The District will furnish a copy of the transmittal memorandum and all enclosures concurrently to the MSC. The PDT should coordinate with the MSC District Support Team lead to determine the MSC submittal requirements. Mail report submittals for HQUSACE to:

Director of Civil Works
ATTN: CECW-xxD (or CEMP-xxD) (identify the appropriate RIT)
US Army Corps of Engineers
441 G. Street, N.W.
Washington, D.C. 20314-1000

To avoid the radiation requirement for all incoming mail to the HQUSACE office building and for a quicker delivery, use the mailing location below:

7701 Telegraph Road
Alexandria, Virginia 22315-3860

b. **Submittal Materials.** See paragraph H-4.c and the exhibits referenced therein for the required submittal materials for FSMs, AFBs, and draft report reviews. The MSC should coordinate the submittal content for other IRCs with the HQUSACE RIT. The content will depend on the scope and nature of the issues to be resolved. For any issue warranting MSC or HQUSACE involvement, the District should analyze and document the issue and proposed solution in an issue paper in accordance with paragraph H-2.f. Materials prepared specifically for an IRC should be concise and focused on the items requiring discussion and/or agreement.

c. **IPR Submittal Materials.** Pre-conference IPR documentation should include background information on the study; the status of major study activities, including peer, policy and legal reviews; and issue papers on any significant policy, process, or other issues that could affect the outcome of the study.

d. **Peer Review of Submittal Materials.** Peer review appropriate to the stage of the study should be completed and documented prior to an IRC. Technical work products that support the submitted documentation (e.g.; surveying & mapping, hydraulics & hydrology, average annual damage computations, etc.) should have been subject to peer review to confirm technical/analytical adequacy and compliance with policy. Early in the study phase, all peer review issues may not have been fully resolved. In this situation, a status report discussing significant peer review concerns and how these concerns have been or will likely be resolved must be submitted. Later in the study when Washington-level acceptance of the selected plan or draft report, the peer review activities should be generally completed for all supporting technical work products, including the documentation of those investigations and analyses. All peer review activities should be fully completed before a final report is submitted. District certification of peer review should include the certification of internal supervisory review of the report (i.e., branch chief signatures of technical and policy compliance) as well as the review team certification of technical and policy compliance.

4. **HQUSACE Policy Compliance Review.** OWPR will provide the HQUSACE policy compliance review, unless approval authority has been delegated to an MSC. MSCs will generally not conduct substantive policy compliance review of documents submitted for OWPR review, unless there is a need to address unusual and significant QA/QC issues. Following receipt of the District's complete submittal package for review, OWPR will assign a review manager and team. OWPR may assign the review manager role to an MSC when appropriate, but would retain responsibility for issuing review documents. The team may include subject matter experts from a District (usually outside the home District), MSC, or Planning Centers of Expertise, subject to need and availability. An incomplete submittal package will generally delay the initiation of review until all required items are provided by the District. (The RIT planner will check the submittal for completeness and facilitate follow on actions at HQUSACE.) OWPR will issue a comment memorandum within 30 calendar days to the RIT, which will transmit the review comments simultaneously to the District and MSC along with any additional instructions for achieving issue resolution. The District will provide a written response for each comment stating how the issue will be resolved. The District will forward the responses simultaneously to the MSC and the RIT, generally within a week, and no less than

three working days before the conference. The review team will immediately assess the responses in order to identify: (1) concerns that require further consultation within HQUSACE prior to the conference; (2) issues that must be included in the conference agenda for discussion and/or resolution; and (3) reviewers who should attend the conference. FSM procedures will differ slightly in that the comments and responses will be exchanged informally.

5. Conference. The next step is to convene the IRC to address and resolve any concerns remaining after OWPR's assessments of the responses. The MSC will normally host and chair IRCs and IPRs. The meetings should encourage a full discussion and understanding of the various concerns and their eventual resolution. The sponsor and appropriate Federal and State agencies should be encouraged to participate fully. The District participants should be prepared to address the policy issues raised by the HQUSACE review. The MSC will designate someone to record major discussion points and all required actions during the conference as electronic text, summarize all required actions before the end of the conference, and e-mail the text to the HQUSACE and MSC participants immediately after the conference. If possible, a draft PGM or MFR should be provided to participants before they leave the meeting in order to ensure a common understanding of the required actions and facilitate the timely completion of the conference PGM or MFR. FSM procedures will differ somewhat in that the FSM will generally follow a site visit and consist of a PDT briefing with issues addressed in a workshop format.

6. Post-Conference Guidance. The final product of an IRC and IPR will be a project guidance memorandum (PGM) from the HQUSACE RIT or a memorandum for the record (MFR) from the MSC. PGMs generally approve advancing the study, subject to specific District actions and sometimes further determinations by the MSCs. PGMs may deny or defer approval until adequate information is provided to resolve specific issues. In general, the HQUSACE RIT will issue a PGM for an AFB, FRC, or other IRC with significant policy or procedural issues. The MSC, subject to HQUSACE concurrence, will generally issue an MFR for a FSM, IPR, or IRC with less significant issues. The PGM or MFR should be issued within two weeks of the IRC or IPR, and will document the review comments and issues, significant discussion points, actions required to resolve the issues, and other decisions. The District will forward the PGM or MFR to the peer review team and will revise the PMP as needed to incorporate changes resulting from actions required in the PGM or MFR. In general, actions required in the PGM or MFR should be completed before subsequent products are forwarded to HQUSACE.

During the final report review and approval process, OWPR will compile all PGMs and the final report policy compliance assessment results into the Documentation of Review Findings that will be forwarded to ASA(CW) with the final report. The Documentation of Review Findings will demonstrate that the decision document has received policy and legal compliance review and that the document complies with all legal and policy requirements. Documentation of Review Findings will normally not include the FSM or IPR MFRs.

Exhibit H-2 - Project Study Issue Checklist

This list includes sensitive policy areas that require vertical team coordination – preferably, early in the study process. The list should be filled out based on knowledge available at the time about the selected or most likely selected plan. Any items that will not be known or addressed until later in the study should be marked as “Pending.” For items that are not applicable, such as questions about existing project aspects when there is no existing Federal project, enter “NA” for not applicable. Any non-pending response with an asterisk (*) requires coordination and issue resolution through the vertical team using an issue paper as outlined in paragraph H-2.f. All issues need to be resolved before requesting approval of the decision document.

(Insert Name of Study or Project)

1. Will the report clearly articulate how the selected plan will be consistent with each of the Chief of Engineers Actions for Change for Applying Lessons Learned during Hurricanes Katrina and Rita issued 24 August 2006? YES___ NO___*.
2. Will the report clearly articulate how the selected plan will be consistent with each of the USACE Environmental Operating Principles? YES___ NO___*.
3. Has a NEPA document been completed? YES___ NO___*.
4. Will the NEPA Documentation be more than 5 years old at the time of PCA signing or construction initiation? YES___* NO___.
5. Will the ESA Findings be more than 3 years old at the time of PCA signing or construction initiation? [Note: Findings refers to Corps documentation and/or US Fish and Wildlife Service’s opinions and recommendations] YES___* NO___.
6. Is ESA coordination complete? YES___ NO___*.
7. If an EIS/EA was completed for the selected plan, will anything prevent signing the Record of Decision (ROD) or Finding of No Significant Impact (FONSI)? YES___* NO___.
8. Is the selected plan consistent with the ROD/FONSI? YES___ NO___*.
9. Have there been any changes in Federal environmental laws or Administration or Corps policy since original project authorization that make updating necessary; e.g., change to the Clean Air Act status for the project area...going from attainment to non-attainment? YES___* NO___.
10. Are the feasibility-level planning, selection and justification of mitigation plans for fish and wildlife, induced flood damages, cultural or historic preservation, or recreation incomplete or deferred to the PED Phase? YES___* NO___.
[Issue papers must describe what is being mitigated, the likely mitigation plan, the likely cost of mitigation, and why the analyses are being deferred.]
11. For reevaluations that conclude further authorization is unnecessary, are the proposed mitigation plan(s) for fish and wildlife, induced flood damages, cultural or historic preservation, or recreation the same as the previously authorized plan? YES___ NO___*

12. Is there an incremental analysis/cost effectiveness analysis of proposed fish and wildlife mitigation features based on an approved method and using an accepted model?
YES ___ NO ___*.
13. Were cost risk analysis methods applied to develop contingencies for the estimated total project costs (see Engineering and Construction Bulletin issued 10Sep07)? YES ___ NO ___*
14. Was the peer (technical) review of the cost estimates duly coordinated with the cost estimate center of expertise and addressed in the review documentation and certification?
YES ___ NO ___*
15. Would the selected plan cause the previously authorized project's fully funded cost to exceed the cost limit of Section 902 of WRDA 1986? [Note: for coastal storm damage reduction projects there are two separate 902 limits, one for initial project construction and one for periodic renourishment] YES ___* NO ___ [Issue paper must provide the authorized project cost, price level, and current and fully funded project cost estimates and price levels].
16. Does the selected plan involve HTRW clean-up? YES ___* NO ___.
17. Does the selected plan involve CERCLA covered materials? YES ___* NO ___.
18. Are the proposed project purposes different than the previously authorized project? [Note: different than specifically noted in authorization or noted in Chief's report and is it measured by project outputs] YES ___* NO ___.
19. Are there any scope changes proposed for the previously authorized project? YES ___* NO ___ [Issue paper must describe the authority that would enable the project to proceed without additional Congressional modification].
20. If the selected plan includes crediting a non-Federal entity for in-kind services provided either before or after authorization, has a request for a Secretary determination of credit eligibility been forwarded to HQUSACE? [Note: In order to credit a non-Federal sponsor for in-kind services, the credit must be based upon a particular Congressional authority and ASA(CW) must approve a credit eligibility request before the services are provided. The issue paper must describe the scope of the in-kind services, the schedule for providing the services, the authority for providing credit, the status of the request for ASA(CW) approval, and the resulting elements of the non-Federal cost-share (LERRD, cash and credit). If the credit is based on an existing authority, the issue paper must include a copy of the authority if it is not a general authority such as Sec 215. If there is no existing authority to credit the in-kind services, as determined by Counsel, the issue paper should present the rationale for recommending such credit in the decision document for specific Congressional authorization.] YES ___ NO ___*.
21. Would the project cost sharing involve reimbursement to the sponsor? [Note: The issue paper must identify the circumstances and authority for recommending reimbursement.] YES ___* NO ___.
22. Is an Ability to Pay cost sharing reduction included in the selected plan? [If yes, fully describe the proposal in the issue paper, citing how this authority is applicable. Include a table showing the cost sharing by project purpose and expected Ability to Pay reductions.] YES ___* NO ___.

23. Is a Locally Preferred Plan recommended without an exception granted by ASA(CW) to recommend plan different from the NED, NER or NED/NER Plan prior to the release of the draft decision document for public review? [Note: if this answer is yes, then a series of questions arise that will need to be addressed in the issue paper...is plan less costly than NED plan, is the plan more costly with the same cost sharing the same as NED plan (exception), is plan more costly with all costs exceeding the cost of the NED plan at 100% non-Federal cost, or has ASA(CW) already granted an exception] YES ___* NO ____. Remarks:

24. Was a standard accepted Corps methodology/model used to calculate NED benefits? YES ___ NO ___*.

25. Are non-standard benefit categories used to select or justify the recommended plan? YES ___* NO ___.

26. Was the planning effort conducted in a systems/watershed context and was this reflected in the presentation of the without-project conditions, problem and opportunity statements, and the plan formulation, evaluation and selection? YES ___ NO ___*.

27. Were the alternatives formulated, evaluated, and selected using the four P&G evaluation accounts – NED, EQ, RED, and Other Social Effects? YES ___ NO ___*.

28. Did the planning effort collaborate with other Federal, state, Tribal, and local entities to develop solutions that integrate expertise, policies, programs, and projects across public entities? YES ___ NO ___*.

29. Were the types and degrees of risk and uncertainty clearly characterized for the selected plan and were the various adjustments included in the selected plan to reduce risk and uncertainty also described clearly? YES ___ NO ___*.

Navigation Component (Inland or Harbor)

30. Is there a navigation component (inland or harbor) in the selected plan? YES ___ NO ____. If Yes, answer each of the following questions for the selected plan:

31. Is there land creation? YES ___* NO ___.

32. Is there a single owner and/or beneficiary which are not a public body? [Public body as defined by Section 221 of WRDA 1970] YES ___* NO ___.

33. Are there proposals for Federal cost sharing of Local Service Facilities [e.g., dredging of non-Federal berthing areas] work? YES ___* NO ___.

34. Is there sediment remediation proposed under Sec. 312 authority? [i.e., Section 312 of WRDA 1990 as amended by Section 205 of WRDA 1996] YES ___* NO ___.

35. Is there dredged material placement on beaches where the use is not the least costly environmentally acceptable plan? YES ___* NO ___.

36. Will the dredged material be used for ecosystem restoration where the recommended plan is not the least costly environmentally acceptable plan? YES ___* NO ___.

37. Are there recreation navigation benefits? YES ___* NO ___.

38. Does the selected plan involve inland navigation harbor development? YES ___* NO ___.

39. Can the resale or lease of lands used for disposal of excavated material recover the cost of the selected improvements? YES ___* NO ___.

40. Will acquisition of land outside the navigation servitude be necessary for construction of the proposed improvements (either the project or non-Federal facilities that will use or benefit from the project) and will this permit local entities to control access to the project? [The latter case is assumed to exist where the proposed improvement consists of a new channel cut into lands.] YES ___* NO ___.

Flood Damage Reduction Component

41. Is there a flood damage reduction component in the selected plan? YES ___ NO ___. If Yes, answer each of the following questions for the selected plan:

42. Is the selected plan for protection of a single property or beneficiary? YES ___* NO ___.

43. Would the selected plan produce land development opportunities/benefits? [Issue paper must describe whether special cost sharing should apply.] YES ___* NO ___.

44. Is there any recommendation to cost share any interior drainage facilities? YES ___* NO ___.

45. Are there any windfall benefits that would accrue to the project sponsor or other parties? [Issue paper must describe whether special cost sharing should apply.] YES ___* NO ___.

46. Are there non-structural buyout or relocation recommendations? YES ___* NO ___.

47. Is the selected plan likely to change the existing allocated storage in lake projects? YES ___* NO ___.

48. Do the proposed changes to the project include any significant risks to public safety related to uncontrolled flooding? YES ___* NO ___.

49. Have all the public safety issues related to uncontrolled flooding been fully resolved with the district/MSC Dam Safety Officers? YES ___ NO ___*.

50. Have all the changes in residual public safety risks related to uncontrolled flooding been communicated to the public and incorporated into their emergency response plan? YES ___ NO ___*.

Coastal Storm Damage Reduction Component

51. Is there a coastal storm damage reduction component in the selected plan? YES ___ NO ___. If Yes, answer each of the following questions for the selected plan:

52. Does the selected plan protect privately owned shores? YES ___* NO ___.

53. Does the selected plan protect undeveloped lands? YES ___* NO ___.

54. Does the selected plan protect Federally owned shoreline at Federal cost? [If yes, describe what is to be protected and who bears the Federal cost.] YES ___* NO ___.

55. Does the selected plan involve tidal or fluvial flooding; i.e., is it clear what the project purpose is and has the project been formulated as a coastal storm damage reduction project or flood damage reduction project? YES ___* NO ___.

56. Is there any recommendation to cost share any interior drainage facilities?
YES ___* NO___.
57. Is recreation more than 50% of total project benefits needed to justify the project?
YES ___* NO___.
58. Are there any parking or public access issues [no public access or none provided within 1/2 mile increments]? YES ___* NO___.
57. Are easements being provided to ensure public use and access? YES___ NO___*.
59. Is there a Sec. 934 of WRDA 1986 extension of the period of authorized Federal participation? YES ___* NO___.
60. Are there any Sec. 111 of Rivers and Harbors Act of 1958, as amended proposals?
YES ___* NO___.
61. Do the proposed changes to the project include any significant risks to public safety related to uncontrolled flooding? YES ___* NO___.
62. Have all the public safety issues related to uncontrolled flooding been fully resolved with the district/MSC Dam Safety Officers? YES___ NO___*.
63. Have all the changes in residual public safety risks related to uncontrolled flooding been communicated to the public and incorporated into their emergency response plan?
YES___ NO___*.

Aquatic Ecosystem Restoration Component

64. Is there an aquatic ecosystem restoration component of the selected plan? YES___ NO___.
If Yes, answer each of the following questions for the selected plan:
65. Has the selected plan been formulated using cost effectiveness and incremental analysis techniques? YES___ NO___*.
66. Was "IWR Plan" used to do cost effectiveness/incremental analysis?
YES___ NO___*.
67. Are the restoration features justified by aquatic habitat restoration benefits (exclude preservation and enhancement benefits, and terrestrial habitat benefits)? YES___ NO___*.
68. Is the project purpose for restoration of cultural or historic resources as opposed to ecosystem restoration? YES ___* NO___.
69. Is mitigation authorized or recommended? YES ___* NO___.
70. Are there recommendations for other than restoring a degraded aquatic ecosystem [e.g., creating new habitat where it has never been]? YES ___* NO___.
71. Is the significance of the habitat clearly identified using the categories and criteria defined in Section 3.4.3 of Principles and Guidelines and in paragraph 16.b of EP 1165-2-502? YES___ NO___*.
72. Has the restoration project been formulated for biological/habitat values as opposed to, for example, water quality? YES___ NO___*.

73. Is the selected plan on non-public lands? YES ___* NO ___.
74. Does the selected plan involve land acquisition where the value exceeds 25% of total project cost? YES ___* NO ___.
75. Are all the proposed recreation features in accord with ER 1105-2-100, Appendix E, Exhibit E-3? YES ___ NO ___*.
76. Are there recommendations to include water quality improvement? YES ___* NO ___.
77. Is the monitoring & adaptive management period proposal beyond 5 years after completion of construction? YES ___* NO ___.
78. Does the selected plan involve land acquisition in other than fee title? YES ___* NO ___.
74. Are there recommendations for non-native species? YES ___* NO ___.
79. Does the selected plan propose the use of navigation servitude? YES ___* NO ___.
80. Does the recommendation include monitoring costs greater than 1% of the total first cost of aquatic ecosystem restoration? YES ___* NO ___.
81. Does the recommendation include adaptive management costs greater than 3% of the total first cost of aquatic ecosystem restoration, excluding monitoring costs? YES ___* NO ___.

Recreation Component

82. Is there a recreation component of the selected plan? YES ___ NO ___. If Yes, answer each of the following questions for the selected plan:
83. Is the cost of proposed recreation development more than 10 % of the Federal project cost without recreation [except for nonstructural flood damage reduction and coastal storm damage projects]? YES ___* NO ___. [Issue paper must describe the proposal and whether ASA(CW) approval has been granted.]
84. Are there recreation features located on other than project lands? YES ___* NO ___.
85. Does the selected plan involve/provide for waterfront development? YES ___* NO ___.
86. Does the selected plan involve the need to reallocate authorized storage (see Section III, Appendix E, ER 1105-2-100)? YES ___* NO ___.
87. Does the selected plan include non-standard recreation facilities (refer to ER 1105-2-100, Appendix E, Exhibit E-2)? YES ___* NO ___.

Water Supply Component

88. Is there a water supply component of the selected plan? YES ___ NO ___. If Yes, answer each of the following questions for the selected plan:
89. Does the component include features other than Corps reservoir storage space for M&I water supply? YES ___* NO ___.
90. Do the outputs meet other needs other than M&I water supply, such as agricultural water supply? YES ___* NO ___.
91. Does the selected plan use non-standard pricing for reallocated storage? YES ___* NO ___.

92. Are there exceptions to model contract/agreement language? YES ___* NO___.

Concurrences

Project Manager	_____	Date:_____
District Planning and Policy CoP leader	_____	Date:_____
District Counsel	_____	Date:_____
DDE (PM)	_____	Date:_____
MSC Planning and Policy CoP Leader	_____	Date:_____
MSC Counsel	_____	Date:_____

Exhibit H-3. Feasibility Scoping Meeting Pre-Conference Submittals

The FSM submittal materials should include the following:

1. Report Text. Present a complete outline of the anticipated decision document (see Appendix G, Exhibit G-4, Feasibility Report Content). Include preliminary drafts of report text for all items in the outline from item 1 through item 5.d.(4) in Exhibit G-4. The analyses for items 5.d.(2), (3), and (4) should be complete through the preliminary screening of alternatives, i.e.; a tentative identification of the plans for more detailed analysis. The District should describe the future work that will be accomplished to develop and evaluate preliminary plans. In addition, the District should include draft text for item 8 that covers the results of the NEPA Scoping Meeting and the results of other preliminary coordination and public involvement efforts. Additional report outline topics may be presented depending on the availability of information. Identify any information gaps in the above items and note the status of pending analyses and results. The draft document sections should address the respective general evaluation guidelines presented in Appendix G, Exhibit G-1 to the extent possible at this stage of the study.
2. Documentation. The following documentation should be concise and focus on issues requiring HQUSACE buy-in:
 - a. Policy and Procedure Issues. The District will complete and include the Project Study Issue Checklist shown in Exhibit H-2. The submittal will identify checklist and other issues that need to be resolved, and present an analysis of options and proposed solutions in an issue paper (see paragraph H-2.g.). The District may include issue papers to address any other concerns related to the study or project implementation.
 - b. Peer Review. Describe the status of peer review activities and present the peer review documentation completed to date, including the status of unresolved issues and the most likely resolution.
 - c. Schedule. List the future study/project milestones and completion dates.
 - d. Project Guidance Memoranda. Provide a copy of the most recent PGM issued by the MSC or HQUSACE, even if it is from the Reconnaissance Phase or an IPR.
 - e. Compliance Memorandum. Include the reconnaissance approval or guidance memorandum, and a memorandum documenting the District's compliance with any PGMs resulting thus far from feasibility phase IRCs (see paragraph H-2.f).
 - f. Other Information. Include other information pertinent to understanding the topics above or other issues that may affect the project.
3. Copies. Provide eight (8) hard copies of the draft report text (item 1 above) and one (1) hard copy of each of the other items listed above to the HQUSACE RIT. Contact the DST for MSC submittal requirements.

Exhibit H-4. Alternative Formulation Briefing Pre-Conference Submittals

The AFB submittal materials should provide all information that is pertinent to the formulation, evaluation, comparison, and selection of the tentatively recommended plan. The AFB documentation will address the general evaluation guidelines presented in Appendix G, Exhibit G-1. Conceptually, AFB documentation would be comparable to a draft report that is about 75 percent complete. Specifically, the submittal materials should include the following:

1. Report Text. Present a complete outline of the anticipated decision document (see Appendix G, Exhibit G-4, Feasibility Report Content). Include drafts of report text for outline items 1 through 5.g, 7.b, 7.c, and 8 in Exhibit G-4. Except for items 7.c and 8, the supporting analyses should be complete. The sponsor and agencies views will be preliminary, pending the upcoming public review. The draft text for item 8 would cover the results of the NEPA Scoping Meeting and the results of other coordination and public involvement efforts to date. Additional report outline items may be presented if available. The outline should identify any information gaps in the above items and note the status and expected results of any pending analyses. The full draft report, if available, it should be submitted in lieu of the outline and text listed above.

2. Documentation. The following documentation should be concise and focus on issues requiring HQUSACE buy-in:

a. Policy and Procedure Issues. The District will complete and include the Project Study Issue Checklist shown in Exhibit H-2. The submittal will identify checklist and other issues that need to be resolved, and present an analysis of options and proposed solutions in an issue paper (see paragraph H-2.f.). The District should include issue papers to address any other concerns related to the study or project implementation.

b. Environmental Compliance. Present the status of environmental compliance actions, coordination, and any NEPA or other documentation that has been drafted (see Exhibit G-8).

c. Peer Review. Describe the status of peer review activities and present the review documentation completed to date, including the status of unresolved issues and the most likely resolution. Technical work products that support the submittal materials (e.g.; surveying & mapping, hydraulics & hydrology, environmental/NEPA documentation, average annual damage and benefit computations, cost estimates, etc.) should have been subjected to peer review. The documentation should address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist. It should also address the heightened review of real estate costs.

d. Legal Review. Identify any legal issues and status of legal review certification.

e. Status of Engineering Activities. In general, sufficient engineering analysis should be complete to have a reasonably certain estimate of project scope, benefits, and costs. Identify any incomplete items of work that could cause significant risks/uncertainties for the project scope, benefits, or costs, and assess the likely consequences. Describe the status of the M-CACES cost

estimates, cost risk analysis, and project risk management plan.

f. Status of Real Estate. Identify any LERRD issues and the status of real estate activities, and include a copy of the draft Real Estate Plan (REP), even if it is incomplete. In general, the REP (ER 405-1-12, Chapter 12) should be sufficiently complete so as to have a reasonably certain estimate of project LERRD requirements and, for cost shared projects, a reasonably certain description of the nature and scope of the non-Federal sponsor's responsibilities and estimated LERRD credit amount. Identify any incomplete items of work that could cause significant risks/uncertainties for the project scope, benefits, or costs, and assess the likely consequences.

g. Schedule. List the future study/project milestones and completion dates.

h. Project Guidance Memoranda. Provide a copy of pertinent PGMs or MFRs.

i. Compliance Memorandum. Include the FSM MFR and a memorandum documenting the District's compliance with any PGMs resulting from feasibility phase IRCs or IPRs (see paragraph H-2.f). If no FSM was held, provide the reconnaissance approval or guidance memorandum.

j. Other Information. Include other information pertinent to understanding the topics above or other issues that may affect the project.

3. Copies. Provide eight (8) hard copies of the draft report text (item 1 above) and one (1) hard copy of each of the other items listed above to the HQUSACE RIT. Contact the DST for MSC submittal requirements.

Exhibit H-5. Draft Report Policy Compliance Review Submittals

The draft report submittal materials should include the draft decision document and preliminary draft NEPA document. Specifically, the submittal materials should include the following:

1. Draft Decision Document and Preliminary Draft NEPA Document. Provide the draft decision document and the preliminary draft NEPA document. Both documents and the appendices should be essentially complete, except for the results of the pending public review. The report will address the general evaluation guidelines presented in Exhibit G-1. The sponsor and agencies views will be preliminary, pending the upcoming public review. The report text for public and agency involvement should cover the results of the NEPA Scoping Meeting and the results of other coordination and public involvement efforts to date. Supporting analyses should be complete.

2. Documentation. The following documentation should be concise and focused on issues requiring HQUSACE buy-in:

a. Policy and Procedure Issues. The District will complete and include the Project Study Issue Checklist shown in Exhibit H-2. The submittal will identify checklist and other issues that need to be resolved, and present an analysis of options and proposed solutions in an issue paper (see paragraph H-2.f.). The District should include issue papers to address any other concerns related to the study or project implementation.

b. Environmental Compliance. Present the status of environmental compliance actions and related coordination (see Appendix G, Exhibit G-8).

c. Peer Review. Provide the peer review certification(s) and the review documentation for the draft decision document, preliminary draft NEPA document, and the supporting analyses. Peer review should be complete for all supporting technical work products. Identify any unresolved review issues and the expected path to resolve these issues. The documentation should address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist. It should also address the heightened review of real estate costs.

d. Legal Review. Provide the District counsel's legal review certification. Identify any unresolved legal issues.

e. Engineering Activities. Provide the engineering documentation, including the M-CACES cost estimate, cost risk analysis, and project risk management plan.

f. Schedule. List the future study/project milestones and completion dates.

g. Project Guidance Memoranda. Provide a copy of pertinent PGMs or MFRs.

h. Compliance Memorandum. Include a memorandum documenting the District's compliance with the AFB PGM and/or subsequent PGMs resulting from feasibility phase IRCs or IPRs (see paragraph H-2.h).

i. Other Information. Include other information pertinent to understanding the topics above or other issues that may affect the project.

3. Copies. Provide eight (8) copies of the draft decision document and preliminary draft NEPA document to HQUSACE. Provide one (1) copy of each of the other items listed above to HQUSACE. Contact the DST for MSC submittal requirements.

Exhibit H-6. Model Division Engineer's Transmittal Letter and Notice

Text for Division Engineer's Transmittal Letter

(Salutation)

I hereby submit the (subject report, specify) and concur with the findings and recommendations of the District Engineer (specify name). In addition, I confirm that the report complies with all applicable policy and laws in place at the time of its completion.

Division Engineer Signature Block

Attachments

Subject Report (15 copies)
Report Summary
Documentation and certification of Peer Review
Certification of legal review
PGM compliance document
(Any other pertinent supplemental documentation)

Text for Division Engineer's Notice

The text below is suggested for the body of a Division Engineers Notice to interested parties announcing the completion of a final feasibility report. Note that such notices are optional. The notice should not indicate that the public will be notified prior to final action, should HQUSACE materially modify the recommendation contained in the report.

The _____ District Engineer has completed the _____ feasibility report. I find the District Engineer's conclusions and recommendations to be in accord with current policy. I have submitted the District Engineer's report for Washington-level review. Comments on the report may be submitted during the next 30 days to the Director of Civil Works, 441 G Street, N.W., Washington D.C. 20314-1000. The report and the final NEPA document will soon be made available to the public.

Exhibit H-7. MSC Final Report Submittal Package

The MSC's final report submittal package will include one hard copy of each of the following items unless otherwise noted:

- Division Engineer's Transmittal Letter
- Division Engineer's Notice (if applicable)
- Final report with EIS or EA and appendices (15 copies)
- Draft ROD or draft FONSI (see Exhibit H-8) ¹
- Report mailing list
- Project Study Issue Checklist ¹
- Documentation and certification of peer review and, if applicable, EPR (10 copies) ²
- Legal review certification
- Value Engineer (VE) Statement (see ER 11-1-321)
- Sponsor's signed letter indicating support for the recommended plan
- Non-Federal Sponsor's Self-Certification of Financial Capability for Agreements
- Draft Proposed Report of the Chief of Engineers (see Exhibit H-9) ¹
- PGM Compliance Memorandum ¹
- Report Summary (see Exhibit H-11) ¹
- M-CACES cost estimate summary, cost risk analysis, and project risk management plan
- Project map (3 copies)
- ASA(CW)/OMB Briefing Slides (see Exhibit H-10) ¹

¹ E-mail electronic versions (Microsoft © WORD or POWERPOINT compatible) to the HQUSACE RIT when the paper copies are mailed.

² The documentation should address the PCX and Cost Engineering Directory of Expertise (DX) coordination and the application of the Cost Engineering DX technical review checklist. It should also address the heightened review of real estate costs.

Exhibit H-8. Model Record of Decision

RECORD OF DECISION

**WETWATER RIVER AT BIG CITY, STATE¹
FLOOD DAMAGE REDUCTION AND ECOSYSTEM RESTORATION²**

The final feasibility report and final Environmental Impact Statement (EIS), dated April 20XX, for the Wetwater River, Flood Damage Reduction and Ecosystem Restoration Feasibility Study addresses flood damage reduction and restoration opportunities in Big City, State. Based on the report, the reviews of other Federal, State, and local agencies, input from the public, and the review by my staff, I find that the plan recommended by the Chief of Engineers to be technically feasible, economically and environmentally justified, cost effective, in accordance with environmental statutes, and in the public interest^{3,4}.

The Final Feasibility Report and FEIS evaluated various structural and non-structural alternatives to address the flood damage reduction and ecosystem restoration needs of the Big City, State area. The recommended plan is the National Economic Development/National Ecosystem Restoration (NED/NER) plan and consists of a levee system and aquatic habitat with adaptive management. Specific flood damage reduction features include:

- Construction of 7.2 miles of raised and new levees;
- Construction of new discharge pipes for six existing pump stations; and,
- Construction of 12 sets of 6-foot by 6-foot concrete box culverts through the levees;

Ecosystem Restoration features include:

- Creation of 10 acres of aquatic habitat; and,
- Adaptive management of the aquatic habitat for a period of ten years to ensure outputs, as needed.

Mitigation features include:

- Creation of 10 acres of wetlands; and,
- Monitoring mitigation performance and impacts to wetlands for corrective action, if needed⁵.

In addition to a “no action” plan, six structural and two non-structural alternatives⁶ for flood damage reduction and six alternatives for ecosystem restoration are identified and discussed in the Corps of Engineers reports⁷. The flood damage reduction structural alternatives included levees of various heights and alignments with water control structures of various sizes. Nonstructural alternatives included relocation of structures and raising structures. The ecosystem restoration alternatives include three sizes of aquatic habitat at two sites. The North Levee alternative to protect against a flood event with a 0.02 percent chance of exceedence with 95 percent reliability with the restoration of 10 acres of aquatic habitat along the Wetwater River

is the NED/NER plan and is identified as the environmentally preferable alternative⁸.

The Draft Feasibility Report and DEIS were circulated for public review for 45 days on September 13, 20XX. A meeting was held October 6, 20XX to address agency comments. All comments submitted were responded to in the FEIS dated March 20XX. Additional comment letters were received on the FEIS. No objections to the project were expressed.

The Corps modified the FEIS to satisfy four of five Essential Fish Habitat conservation recommendations provided by National Marine Fisheries Service. The Corps did not concur with the recommendation to mitigate adverse impacts to freshwater marsh by creating at least two acres of new marsh for each acre destroyed. The selected plan will mitigate impacts by providing an equal or greater habitat value of damaged marshes, rather than trying to achieve a fixed ratio of acreages.

Consistent with reducing flood damages in an environmentally sustainable manner, the project will be designed, constructed and operated to avoid impacts to anadromous fish by limiting work in the Wetwater River to non-migratory periods and through the installation of screens on water control discharge facilities. The specific designs and operating plans will be formulated in consultation with an interagency fishery resource evaluation team. All practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan⁹.

Technical and economic criteria used in the formulation of alternative plans were those specified in the Water Resource Council's Principles and Guidelines. All applicable laws, executive orders, regulations and local government plans were considered in the evaluation of alternatives¹⁰. Based on review of these evaluations, I find that the (monetary and non-monetary) benefits outweigh the costs and any adverse effects. This Record of Decision completes the National Environmental Policy Act process.

Date

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Model ROD Instructions. Each ROD should include the minimal amount of information necessary to comply with 40 CFR Section 1505.2. Notes for the model include:

¹ The Final Feasibility Report, FEIS, Report of the Chief of Engineers, and the ROD should all use the identical project title

² Include all project purposes cited in the Report of the Chief of Engineers

³ The ROD must have a clear approval statement

⁴ The ROD must state what the decision is

(Footnotes continued from previous page)

⁵ If the selected plan includes monitoring, the ROD should state it; if it is required for mitigation, the ROD must state it

⁶ The ROD must identify all of the alternatives considered

⁷ The ROD should reference the decision document that discusses the alternatives in greater detail.

⁸ The ROD must identify the environmentally preferable alternative

⁹ The ROD must state whether all practicable means to avoid or minimize environmental harm have or have not been adopted, and if not, why

¹⁰ The ROD must state the considerations addressed in arriving at the decision

Exhibit H-9. Model Proposed Report of the Chief of Engineers

Proposed Report¹

CECW-PC (1105-2-10a)

SUBJECT: Wetwater River at Big City, State²

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on flood damage reduction and ecosystem restoration along the Wetwater River in the vicinity of Big City, State³. It is accompanied by the report of the XXX District Engineer and the Northwestern Division Engineer. These reports are in final response to a resolution by the Committee on Transportation and Infrastructure of the House of Representatives, adopted 19 May 2003⁴. The resolution requested a review of "the report of the Chief of Engineers on the Wetwater River, State and other pertinent reports, with a view to determining whether modifications of the recommendations contained therein are advisable in the interest of flood control, fish and wildlife conservation and restoration, and other related water resources purposes in the vicinity of Big City, State⁵." The Big City Levee, Wetwater River project was authorized by the Flood Control Act of 1936. Project construction of the Big City Levee was completed in 1968⁶. Preconstruction engineering and design activities, if funded, would be continued under the authority provided by the resolution cited above.

2. The reporting officers recommend authorizing a plan to reduce flood damages by increasing the height of the Big City Levee and restore the ecosystem by improving habitat for fish, wildlife and waterfowl in the vicinity of Big City, State. The recommended plan for reducing flood damages includes increasing the height of approximately 9,140 linear feet of levee about 5 feet, replacing stoplog structures, modifying drainage structures, replacing or modifying 3 pump stations, and relocating 4 utility crossing relocations. Unavoidable environmental impacts would be fully compensated for by the creation of approximately 1.2-acres of emergent wetland⁷. This mitigation feature would be monitored for up to five years to ensure its performance⁸. The recommended plan to restore the ecosystem consists of dredging 55 acres to create aquatic habitat and using the dredged material to create an island with 21 acres of riparian habitat in the Wetwater River above Memorial Bridge⁹. The recommended plan also includes post-construction monitoring and adaptive management for a period of ten years to ensure project performance⁸. Since the recommended plan would not have any significant adverse effects, no mitigation measures (beyond management practices and avoidance) or compensation measures would be required⁷. The recommended plan is the national economic development and national ecosystem restoration plan¹⁰. All features are located in State.

3. The Big City Flood Control District is the non-Federal cost-sharing sponsor for all features. Based on October 2006 price levels, the estimated total first cost of the plan is \$52,900,000, including \$32,900,000 for flood damage reduction and \$20,000,000 for ecosystem restoration^{11,12}. The Federal share of the total project cost would be about \$34,400,000 (65 percent) and the non-Federal share would be about \$18,500,000 (35 percent).

a. In accordance with the cost sharing provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 202 of WRDA 1996, the Federal share of the first costs of the flood damage reduction features would be about \$21,400,000 (65 percent) and the non-Federal share would be about \$11,500,000 (35 percent). The cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas is estimated at \$3,100,000. The total cost includes \$1,200,000 for environmental mitigation, \$200,000 for environmental monitoring, and \$1,000,000 for adaptive management¹³. Big City would be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction, a cost currently estimated at about \$190,000 per year. The OMRR&R estimate includes \$15,000 for monitoring and adaptive management beyond the construction phase¹⁴. In addition to the above, Big City would be fully responsible for performing the investigation, cleanup and response of hazardous materials on the project site. The cost of hazardous material work is estimated at approximately \$900,000 and is a non-Federal responsibility¹⁵. Also in addition to the above, Big City would be fully responsible for removing and relocating utilities and discharge pipelines on the project site that are non-compensable, at a cost estimated at approximately \$1,900,000.

b. In accordance with the cost sharing provisions of WRDA 1986, as amended by Section 210 of WRDA 1996, the Federal share of the first costs of the ecosystem restoration features would be about \$13,000,000 (65 percent) and the non-Federal share would be about \$7,000,000 (35 percent). The cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas is estimated at \$1,100,000. The total cost includes \$300,000 for environmental monitoring, and \$900,000 for adaptive management. Big City would be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction, a cost currently estimated at about \$140,000 per year. The OMRR&R estimate includes \$60,000 for monitoring and adaptive management beyond the construction phase.

4. Based on a 4.875-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be \$3,170,000, including OMRR&R¹⁶.

a. The total equivalent average annual flood damage reduction costs are estimated to be \$1,960,000, including OMRR&R. The selected plan is estimated to be 99 percent reliable in protecting portions of Big City, State from a flood which has a one percent chance of occurrence in any year (100-year flood). The selected plan would reduce average annual flood damages by about 81 percent and would leave average annual residual damages estimated at \$3,500,000. The equivalent average annual benefits are estimated to be \$18,200,000 with net average annual benefits of \$14,700,000. The benefit-cost ratio is approximately 7.5 to 1¹⁷.

b. The total equivalent average annual aquatic ecosystem restoration costs are estimated to be \$1,210,000, including OMRR&R. Cost effectiveness and incremental cost analysis techniques were used to evaluate the alternative plans to ensure that an efficient ecosystem restoration plan was recommended. The cost of the recommended aquatic ecosystem restoration features is justified by restoring 380 average annual habitat units on 55 acres of aquatic habitat and 120 average annual habitat units on 21 acres of riparian habitat. The plan would restore the habitats in the most cost-effective manner. The restored aquatic habitat would increase the habitat for the fall chinook salmon listed as endangered under the Endangered Species Act and would improve the aquatic habitat for other species in the Wetwater River for several miles downstream. The restored riparian habitat would increase scarce resting, nesting, feeding, and rearing habitat for migratory waterfowl, shorebirds, and neotropical migrant birds using the internationally significant Western Flyway¹⁸.

5. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan to reduce flood damages and restore the ecosystem for the Wetwater River at Big City, State be authorized in accordance with the reporting officers' recommended plan at an estimated cost of \$52,900,000 with such modifications as in the discretion of the Chief of Engineers may be advisable. My recommendation is subject to cost sharing, financing, and other applicable requirements of Federal and State laws and policies, including Section 103 of WRDA 1986, as amended by Section 202 of WRDA 1996, and WRDA 1986, as amended by Section 210 of WRDA 1996. The non-Federal sponsor would provide the non-Federal cost share and all LERRD. Further, the non-Federal sponsor would be responsible for all OMRR&R. This recommendation is subject to the non-Federal sponsors agreeing to comply with all applicable Federal laws and policies.

6. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects¹⁹. It does not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to Congress, the sponsor, the State, interested Federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

ROBERT L. VAN ANTWERP
Lieutenant General, U.S. Army
Chief of Engineers

Instructions. The order, structure, content, and level of detail of each sentence in the model serves a specific purpose and should be replicated to the extent possible. Other instructions are noted in the footnotes below.

¹ “Proposed Report” only appears on unsigned copies circulated for S&A Review and in conjunction with filing the final report and FEIS with EPA

² The Final Feasibility Report, FEIS, Report of the Chief of Engineers, and the ROD should all use the identical project title

³ State each recommended project purpose and the general project or study area

⁴ State whether the reports are an interim or final response to the study authorization, and identify the study resolution or section and act and its date that authorized the study

⁵ Quote the purpose and scope stated in the study authorization, unless it is a general authority; e.g., These reports were prepared under the authority of Section 216 of the 1970 Flood Control Act, which authorizes the Secretary of the Army to review the operation of projects constructed by the Corps of Engineers when found advisable due to significantly changed physical, economic or environmental conditions.

⁶ If the recommendation involves modifying an authorized project, state the project authorization, including modifications, and the status of implementation.

⁷ If mitigation is required, state the mitigation plan with a simple measure of scale of each significant feature; if mitigation is not required, state that mitigation is not required; the typical language is presented here even though mitigation normally would not be part of an NED/NER Plan.

⁸ All monitoring and adaptive management measures should be presented as feature and state the purpose and duration.

⁹ Summarize the features for each project purpose separately; also summarize features separately for work recommended under different authorities (such as design deficiency corrections under existing authority).

¹⁰ State whether the recommended plan is the NED, NER, NED/NER or Locally Preferred Plan.

¹¹ Present the total first costs and, if multipurpose, the first cost for each purpose.

¹² Present more than 2 or 3 significant digits for any first or annual cost/benefit estimate. Round all estimates under \$1 million to at least the nearest \$1,000, estimates under \$10 million to the nearest \$10,000; under \$100 million to the nearest \$100,000; under \$1 billion to the nearest \$1 million, etc.

¹³ Present the estimated costs for any construction phase mitigation, monitoring and adaptive management.

¹⁴ Present the rounded estimated costs for any OMRR&R monitoring and adaptive management.

¹⁵ Present any associated costs that are not included in the cost shared amount.

¹⁶ Paragraphs 3 and 4 are usually combined for single purpose projects.

¹⁷ Present the BCR to the nearest hundredth if it is between 0.90 and 1.10, otherwise only to the nearest tenth.

¹⁸ Present the significance of non-monetary outputs used to justify the recommended plan.

¹⁹ Following the completion of the policy, S&A and NEPA Reviews, and the resolution of all review issues, OWPR will edit this document as needed, add a paragraph addressing the reviews, and add the items of local cooperation.

Note: Paragraphs regarding the results of the Washington-level review (including environmental compliance) and the items of local cooperation are not included until after the completion of the final NEPA and State and Agency reviews.

Exhibit H-10. OMB Briefing Slides

The OMB Briefing slide file should include separate slides depicting:

- Study Title - Include the full project name and state. If the report recommends more than one project, furnish a project title slide and a set of the following slides (only one on the legislative authority is needed) for each project.
- Legislative Authority - Identify the study authority. If report is an interim, so state.
- Project Purpose
- Non-Federal Sponsor – Identify the sponsor.
- State Map and Project Location - State boundaries, state capital, and the location of project and major water features should be conspicuous. Nearby major population centers should also be indicated.
- Problem - An illustration, preferably a photograph, should depict the major water resources problems to be solved by the report recommendation. A list or graphical representation of significant problem and/or opportunity statements is acceptable if a photo is not available.
- Alternatives Considered. Include a word slide that lists structural and non-structural alternatives considered.
- Project Map - Provide a simple, multicolor map of the entire project. Schematics are acceptable, even preferable if done well.
- Recommended Plan Features - One or more slides of the significant project features (conceptual level) if they can not be illustrated on the Project Map.
- Economic Summary - Include total project cost, average annual costs, average annual benefits and the BCR (if applicable). Round all costs and benefits to the nearest \$1,000, and the BCR to one decimal place unless between 1.0 and 1.05. Show the price level and discount rate.
- Cost Apportionment – A simple table using the same format in the project summary.
- Deviation from NED Plan – If an LPP is recommended, show the incremental costs, benefits, and impacts.
- Environmental Compliance – Show whether an EA or EIS was prepared, the date of the FONSI or ROD if signed, and any significant environmental compliance issues.
- Public Involvement – Summarize the extent of public involvement and note any major public controversies or issues.
- Artist's Rendition - Annotate a photo to show the project design or an artist's rendition of completed project (optional).
- Project Implementation – List the remaining milestones such as the month and year for the design agreement execution, PCA execution, contract award, and construction completion.
- CWRB – Show the date, summarize the decision, and list any OMB attendees.

The project name and date should appear on each slide.

Exhibit H-11. Model Report Summary

REPORT SUMMARY
(Specify Study Name)

Feasibility Scoping Meeting:	DD MMM YYYY
Alternative Formulation Briefing:	DD MMM YYYY
AFB Guidance Memorandum:	DD MMM YYYY
Draft Report Guidance Memorandum:	DD MMM YYYY
Division Engineer Transmittal:	DD MMM YYYY
Received at CECW-PC:	DD MMM YYYY
CWRB Briefing:	DD MMM YYYY
30-Day S&A Review start:	DD MMM YYYY
30-Day S&A Review end:	DD MMM YYYY
FEIS filed with EPA:	DD MMM YYYY

STUDY INFORMATION

Study Authority. Include the full text of principal resolutions(s) or other authority.

Study Sponsor. Include the name(s) of the study sponsor(s).

Study Purpose and Scope. State whether the report is an interim or final response to the study authority. Succinctly identify the study purpose and scope.

Project Location/Congressional District. Include a concise description of the study area and project location (including clear maps with all key features identified) and identify the Congressional District(s).

Prior Reports and Existing Water Projects. Include a concise discussion of relevant prior studies, reports, NEPA documents and Endangered Species Surveys, existing water projects, and other key related activities. Also include relevant documents and projects undertaken by entities other than the Corps.

Federal Interest. Define the Federal interest, consistent with Army policies, based on an appraisal of the costs, benefits and environmental impacts of the recommended project alternative.

STUDY OBJECTIVES

Problems and Opportunities. Specify the key problems being addressed and the opportunities for alleviating them.

Planning Objectives. Statement of the intended purposes of the planning process; what alternatives are intended to achieve.

Planning Constraints. Restrictions that limit the extent of the planning process.

ALTERNATIVES

Plan Formulation Rationale. Strategies and approaches used to develop alternative plans.

Management Measures and Alternative Plans. Discussion of the measures, scales, and combinations used to develop alternative plans, and reformulation to refine the performance of alternatives (Tabular presentations to supplement discussion may be appropriate).

Final Array of Alternatives. Describe the plans that qualified for the final comparison, including the NED, NER or Combined Plan, and any Locally Preferred Plan. Discuss the rationale for eliminating alternative plans.

Comparison of Alternatives. Describe how the plans in the final array of alternatives compare in meeting the planning objectives and constraints. Cite key risks and uncertainties associated with the plans, and explain how these factors have been treated. Identify key tradeoffs among the alternatives (could be among outputs and effects, or against risks and uncertainties).

Key Assumptions. Identify key assumptions that underlie the analysis. Consider hydrologic, environmental, economic, and other assumptions key to the formulation and recommendation, including those related to analytic models used in the study.

Recommended Plan. Identify the selected plan, and describe the rationale supporting the selection. List the significant features with one or two measures of scale for each one.

Systems / Watershed Context. Describe how the Recommended Plan is integrated with other watershed purposes. Discuss agency partnerships and cooperation. Include which other agencies were invited to be formal Cooperating Agencies and those which accepted, and identify the responsible lead agency.

Environmental Operating Principles. Describe how the recommendation supports the USACE Environmental Operating Principles.

Peer Review. Describe how the plan and associated analyses were reviewed for quality, as well as any substantive peer review comments and their resolution.

EXPECTED PROJECT PERFORMANCE

Project Costs. Present all project costs by category (including construction elements by project purpose, LERRD, PED, construction management (E&D and S&A), deferred (periodic nourishment), associated non-Federal costs, and any other as applicable), and detail any cost allocation as applicable. Specify price level and discount rate applied. Follow the sample Table 1 format and level of detail. Separate “elements” should be presented for each project purpose.

Table 1 (Sample)

Cost Summary
 “Subject Study”
 (October 200x Price Levels)

<u>Construction Item</u>	<u>Cost</u>
Lands & Damages	\$ 900,000
Elements	
Relocations	\$ 6,600,000
Locks	163,100,000
Fish & Wildlife Mitigation	5,100,000
Channel Improvements	10,100,000
Cultural Resources Preservation	100,000
Monitoring	200,000
Buildings, Grounds, & Utilities	5,200,000
Permanent Operating Equipment	<u>2,500,000</u>
Subtotal	\$ 192,900,000
Preconstruction Engineering & Design (PED)	34,800,000
Construction Management (E&D, S&A)	<u>10,700,000</u>
 Total First Cost	 \$ 239,300,000
 HTRW Remedial Action*	 \$ 500,000

* Associated financial costs that are not part of the recommended Federal project but are a necessary non-Federal responsibility.

Equivalent Annual Costs and Benefits. List all project costs and benefits computed to an annual equivalent basis, including results of risk and uncertainty analyses. Distinguish between major categories of benefits (both within and between the four accounts, as appropriate: NED, RED, EQ, OSE), monetary and non-monetary benefits, and primary versus incidental benefits. Present net benefits and benefit/cost ratios where applicable. (Include benefit/cost ratio evaluated at a 7 percent discount rate per Executive Order 12893.) Follow the sample Table 2A and B formats to the extent possible. Benefits from Ecosystem Restoration studies do not require monetization, and should be displayed in the units used in the evaluation. Benefit/cost ratios are not required for NER projects. Combined Plans should list both NED and NER benefits and costs associated with the recommended plan:

Table 2A (sample NED)
Equivalent Annual Benefits and Costs
“Subject Study”
(October 200x Price Level, 50-Year Period of Analysis, 4.875 Percent Discount Rate)

Investment Costs	
Total Project Construction Costs	\$ 239,400,000
Interest During Construction	<u>36,600,000</u>
Total Investment Cost	\$ 276,000,000
Average Annual Costs	
Interest and Amortization of Initial Investment	\$ 17,800,000
<i>(additional annual costs, if applicable)</i>	1,600,000
OMRR&R	<u>2,600,000</u>
Total Average Annual Costs	\$ 22,000,000
Average Annual Benefits	\$ 35,600,000
Net Annual Benefits	\$ 13,600,000
Benefit-Cost Ratio	1.6 to 1
Benefit-Cost Ratio (computed at 7%) ¹	1.3 to 1

¹ Per Executive Order 12893

Table 2B (Sample Combined Plan) “Subject Study” Economic Costs And Benefits Of Recommended Plan ¹ (\$1,000)						
Item	FDR		Ecosystem		Total Costs	
	Allocated Costs	Benefits	Allocated Costs	Benefits	Allocated Costs	Benefits
Investment Cost						
First Cost	4,260		40,446		44,706	
Interest During Construction	271 ³		3,066 ⁴		3,337 ⁴	
Total	4,531		43,512		48,043	
Annual Cost						
Interest and Amortization	272		2,615		2,887	
OMRR&R ²	47		8		55	
Subtotal	319		2,623		2,942	
Annual Benefits						
Monetary (FDR)		577				577
Non-monetary (Ecosystem)				888 AAHU's		888 AAHU's
Net Annual FDR Benefits		258				258
FDR Benefit-Cost Ratio						1.8 to 1
FDR Benefit-Cost Ratio (at 7%) ⁵		x.x to 1				x.x to 1

¹Based on October 200x price levels, 5 5/8 percent rate of interest, and a 50-year period of analysis.

²Operation, Maintenance, Repair, Replacement, and Rehabilitation

³Two year period of construction assumed for J levee removal and construction of setback levee

⁴Three year period construction assumed for overall project

⁵Per Executive Order 12893

Cost Sharing. Show the apportionment of the first costs, including associated costs, between the Federal government and the non-Federal sponsor(s) using the format displayed in Table 3. Present all financial costs of the Project and describe how such costs will be shared with the non-Federal sponsor, including in-kind services, LERRDs, other credits, and any other applicable considerations.

Table 3 (Project Name) - Cost Sharing (October 200x Price Level)			
Item	Federal Cost	Non-Federal Cost	Total Cost
<u>Ecosystem Restoration (ER)</u>			
PED ¹	\$ xx,xxx,000 (65)	\$ x,xxx,000 (35)	\$ xx,xxx,000
LERR&D	\$ 0	\$ xx,xxx,000	\$ xx,xxx,000
<u>Ecosystem Restoration</u>	<u>xx,xxx,000</u>	<u>xx,xxx,000</u>	<u>xxx,xxx,000</u>
Subtotal	\$ xxx,xxx,000 (65)	\$ xxx,xxx,000 (35)	\$ xxx,xxx,000
ER Subtotal	\$ xxx,xxx,000 (65)	\$ xxx,xxx,000 (35)	\$ xxx,xxx,000
<u>Flood Damage Reduction (FDR)</u>			
PED	\$ x,xxx,000 (65)	\$ x,xxx,000 (35)	\$ x,xxx,000
LERR&D	\$ 0	\$ x,xxx,000	\$ x,xxx,000
Flood Damage Reduction ^{2,3}	xx,xxx,000	x,xxx,000	xx,xxx,000
Section xxx Credit	<u>x,xxx,000</u>	<u>(x,xxx,000)</u>	<u> </u>
Subtotal	\$ xx,xxx,000 (65)	\$ x,xxx,000 (35)	\$ xx,xxx,000
FDR Subtotal	\$ xx,xxx,000 (65)	\$ xx,xxx,000 (35)	\$ xx,xxx,000
Associated Costs ⁴		\$ x,xxx,000	
<u>Recreation</u>			
PED	\$ x,xxx,000 (50)	\$ x,xxx,000 (50)	\$ x,xxx,000
LERR&D	\$ 0	\$ xx,xxx,000	\$ xx,xxx,000
<u>Recreation</u>	<u>xx,xxx,000</u>	<u>-xx,xxx,000</u>	<u>xx,xxx,000</u>
Subtotal	\$ xx,xxx,000 (50)	\$ xx,xxx,000 (50)	\$ xx,xxx,000
Recreation Subtotal	\$ xx,xxx,000 (50)	\$ xx,xxx,000 (50)	\$ xx,xxx,000
Total Project	\$ xxx,xxx,000 (xx)	\$ xx,xx,000 (xx)	\$ xxx,xxx,000
Associated Costs	\$ 0 (0)	\$ x,xxx,000	\$ x,xxx,000
Total with Associated Costs	\$ xxx,xxx,000 (xx)	\$ xx,xx,000 (xx)	\$ xxx,xxx,000

¹Sponsor contributes 25% during the design phase and the remaining 10% the construction phase

²Non-Federal amount must be 5 percent or more in accordance with Section 103 of WRDA 1986

³If the Sponsor constructs a portion of the project under Section 104 of WRDA 1986, show separate lines for the completed Section 104 work and for the remaining work

⁴Non-creditable realocation, HTRW cleanup, or other costs

Project Implementation. Identify the non-Federal sponsor(s) for project implementation. Briefly state the institutional arrangements, the responsibilities of the various partners, and other information pertinent to implementation. Include plans for adaptive management and resource monitoring if applicable.

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R). Present summary of OMRR&R actions, costs, and responsibilities.

Key Social and Environmental Factors. Identify key social and environmental factors and consequences associated with the plan, and the influence these key factors had on the formulation of the alternatives and on the selection process. Describe cumulative effects where appropriate. Describe any mitigation actions associated with the plan, efforts taken to avoid/minimize adverse impacts, and commitments related to monitoring and management of mitigation actions.

Stakeholder Perspectives and Differences. Describe public involvement, review and consultation actions; describe key perspectives and differences among stakeholders based on comments received on the draft report and responses to those comments. Describe the views of Resource agencies and how concerns were addressed. Note actions that have been taken to resolve issues, and actions proposed to address any unresolved issues.

Environmental Compliance. Identify whether the NEPA document is an EA or EIS. State the status of the NEPA document and the FONSI or ROD. Identify any other significant, non-routine compliance controversies and the final resolution. Summarize the significant responses to the filing of the FEIS, if applicable, and the final resolution of issues. (The District should include a draft statement initially and provide a final version for HQUSACE to insert after the public/agency review of the FEIS is completed.)

State and Agency Review. Identify the dates S&A review began and ended. Identify the states and agencies that responded, identify any objections or issues that they expressed, and summarize the final resolution of any objections or issues. (To be inserted by HQUSACE after the S&A Review ends.)

Certification of Peer and Legal Review. State the dates of the certifications of the technical and legal adequacy of the final feasibility report. Summarize the involvement of the Cost Engineering DX in the approval of the total project cost estimate and similar efforts in the approval of the real estate cost estimates.

Policy Compliance Review. Summarize the final results of the HQUSACE policy compliance review process. (To be inserted by HQUSACE when the Documentation of Review Findings are completed.)

Exhibit H-12 . Washington-Level Milestones

<u>Action</u>	<u>Date*</u>
OWPR Preliminary Assessment	1 week
CWRB District Engineers Briefing	2 weeks
S&A Review, Interested Party, & EIS filing letters signed and sent to District	2.5 weeks
District sends letters/reports to State/agencies & files EIS	3 weeks
Notice of availability appears in Federal Register**	5 weeks
OWPR policy assessment	4 weeks
District responses to policy assessment concerns	5 weeks
IRC, if necessary (telephone or video)	6 weeks
S&A Review period ends (30 days)	7 weeks
NEPA review period ends (30 days)	9 weeks
District provides RIT draft responses to significant S&A Review comments	10 weeks
RIT issues response letters for significant S&A Review comments	10.5 weeks
MSC issues response letters for significant NEPA review comments	10.5 weeks
OWPR completes Documentation of Review Findings	11 weeks
OWPR provides final report package to RIT	11 weeks
RIT forwards final report package to DCW and Chief of Engineers	12 weeks
Chief signs Report of the Chief of Engineers	13-15 weeks
RIT forwards Report of the Chief of Engineers to ASA(CW)	14-16 weeks

* Typical cumulative durations relative to OWPR receipt of a complete final report package.

** The notice of availability is published in the Federal Register no earlier than the Friday of the week after EPA receives the FEIS, final report and proposed Report of the Chief of Engineers. The notice is the official start of the NEPA review of the FEIS.

Exhibit H-13. Sample Agenda for District Engineer's Briefing

- Welcome (RIT leader representing the presenting district)
- Introductions
- Project Briefing: District Engineer
- Division Engineer Briefing
 - Rationale for project support (transmittal letter)
 - Expected response to draft Report of Chief of Engineers
 - Other observations
- QA Briefing: Division Engineer / RIT SES
 - Certifications of technical, legal and policy compliance
 - Significant and/or unresolved technical, legal and policy compliance concerns
- Sponsor support: Local sponsor
- Policy Review Assessment: OWPR
- Summary of Project Briefing: District Engineer
- Lessons Learned / After Action Report: District Engineer
 - What was supposed to happen?
 - What did happen?
 - Why did it happen that way?
 - How will we improve next time?
- Lessons Learned (others, as applicable): MSC, OWPR, Local Sponsor, others
- Action: Director of Civil Works
- Close: CWRB Chair

Exhibit H-14. District Engineer's Briefing

- An overview of the report including the rationale for plan selection and the recommended plan (and the NED, NER or combined NED/NER plan if different);
- Description of how the plan is integrated with other watershed purposes;
- Description of how the recommendation supports the Environmental Operating Principles;
- How the Actions for Change for applying the lessons learned from Hurricanes Katrina and Rita were incorporated, particularly those dealing with robust design, risk and reliability;
- The district's compliance actions from the PGMs;
- The highlights and results of the District-level peer, legal and policy compliance reviews, including:
 - The substantive comments and responses and their resolution; and
 - The cost engineering and real estate cost estimate reviews;
- Substantive OWPR policy compliance review comments and responses and their resolution;
- An overview and the general outcome of the Public Involvement process, including any independent outside review, the major concerns that came about, and how they were resolved;
- Public and agency comments and responses on the draft NEPA documents;
- An assessment of the project delivery process, including:
 - The PDT membership and performance;
 - Type and frequency of meetings;
 - Lessons learned from the PDT and vertical team;
 - Recommended improvements and what will be done differently in the future; and,
- What would you do differently? (Anywhere in the process).

Exhibit H-15. Report of the Chief of Engineers Signature Package

The package recommending signature of the Report of the Chief of Engineers will include the following items:

- Report Summary
- OWPR Documentation of Review Findings
- Project map.
- Peer and legal review certifications
- Summary of agency and public comments
- Letter signed by the sponsor indicating support for the recommended plan
- Correspondence received from S&A Review and related CECW-P responses
- Mailing list-for the S&A Review
- Feasibility report, FEIS or EA/FONSI, appendices, and/or supporting documentation (addendums)
- Signature-ready Report of the Chief of Engineers
- Unsigned letters to the Chairman, Committee on Environment and Public Works, U. S. Senate, and the Chairman, Committee on Transportation and Infrastructure, U. S. House of Representatives, enclosing a copy of the Report of the Chief of Engineers in response to their requests for advance information for examination by their respective committees (to be signed by the Chief of Staff)

Q. Joint Application



JOINT APPLICATION FORM

For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water withdrawal.



New York State

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of Engineers (USACE)

APPLICATIONS TO 1. NYS Department of Environmental Conservation Check all permits that apply: <input type="checkbox"/> Stream Disturbance <input type="checkbox"/> Excavation and Fill in Navigable Waters <input type="checkbox"/> Docks, Moorings or Platforms <input type="checkbox"/> Dams and Impoundment Structures <input type="checkbox"/> 401 Water Quality Certification <input type="checkbox"/> Freshwater Wetlands <input type="checkbox"/> Tidal Wetlands <input type="checkbox"/> I am sending this application to this agency.		2. US Army Corps of Engineers Check all permits that apply: <input type="checkbox"/> Section 404 Clean Water Act <input type="checkbox"/> Section 10 Rivers and Harbors Act <input type="checkbox"/> Nationwide Permit(s) - Identify Number(s): _____ _____ Preconstruction Notification - <input type="checkbox"/> Y / <input type="checkbox"/> N <input type="checkbox"/> I am sending this application to this agency.		3. NYS Office of General Services Check all permits that apply: <input type="checkbox"/> State Owned Lands Under Water <input type="checkbox"/> Utility Easement (pipelines, conduits, cables, etc.) <input type="checkbox"/> Docks, Moorings or Platforms <input type="checkbox"/> I am sending this application to this agency.		4. NYS Department of State Check if this applies: <input type="checkbox"/> Coastal Consistency Concurrence <input type="checkbox"/> I am sending this application to this agency.	
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5. Name of Applicant (use full name)		Applicant must be: <input type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Lessee (check all that apply)
Mailing Address		
Post Office City		Taxpayer ID (If applicant is NOT an individual):
State	Zip Code	
Telephone (daytime)	Email	

6. Name of Facility or Property Owner (if different than Applicant)	
Mailing Address	
Post Office City	
State	Zip Code
Telephone (daytime)	Email

7. Contact/Agent Name	
Company Name	
Mailing Address	
Post Office City	
State	Zip Code
Telephone (daytime)	
Email	

8. Project / Facility Name		Property Tax Map Section / Block / Lot Number	
Project Location - Provide directions and distances to roads, bridges and bodies of waters:			
Street Address, if applicable		Post Office City	State NY Zip Code
Town / Village / City		County	
Name of USGS Quadrangle Map		Stream/Water Body Name	
Location Coordinates: Enter NYTMs in kilometers, OR Latitude/Longitude			
NYTM-E	NYTM-N	Latitude	Longitude

For Agency Use Only	DEC Application Number:	USACE Number:
----------------------------	-------------------------	---------------

JOINT APPLICATION FORM - PAGE 2 OF 2
Submit this completed page as part of your Application.

9. Project Description and Purpose: Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

Proposed Use: <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> Commercial	Proposed Start Date:	Estimated Completion Date:
Has Work Begun on Project? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, please specify.		

10. List Previous Permit / Application Numbers (if any) and Dates:

11. Will this project require additional Federal, State, or Local Permits including zoning changes? Yes No If yes, please list:

12. Signatures. If applicant is not the owner, both must sign the application.
I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than \$10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant _____	Printed Name _____	Title _____	Date _____
Signature of Owner _____	Printed Name _____	Title _____	Date _____
Signature of Agent _____	Printed Name _____	Title _____	Date _____

<u>For Agency Use Only</u>	DETERMINATION OF NO PERMIT REQUIRED		
_____	Agency Project Number _____		
(Agency Name)	has determined that No Permit is required from this Agency for the project described in this application.		
Agency Representative: Name (printed) _____	Title _____		Date _____
Signature _____	Date _____		



JOINT APPLICATION FORM - INSTRUCTIONS

Use this application to apply for Permits and Determinations from all of the listed state and federal agencies. This form is for all projects that affect streams, waterways, waterbodies, wetlands, coastal areas and sources of water withdrawal.



US Army Corps of Engineers (USACE)
New York District
Buffalo District

New York State

Department of Environmental Conservation (DEC)
Office of General Services (OGS)
Department of State (DOS)

Type or print clearly in ink. This Form has 2 pages. Incomplete, illegible or inaccurate information may delay processing and a final decision on your application. Individual Agencies may request that you submit additional information to complete your application. If you have any questions, contact the Agencies or check the Agency websites listed on Page 2 for further information.

PERMITS REQUESTED: You are responsible for obtaining all federal, state or local permits or other approvals. Check all Permits/Determinations you are applying for from the listed Agencies.

You must obtain separate authorizations or determinations of no permit required from each Agency in accordance with their jurisdiction prior to initiation of work.

APPLICANT / OWNER / CONTACT INFORMATION AND SIGNATURES: Signatures of the Applicant, Owner and Agent, where applicable, are required.

Applications by a Corporation must be signed by a member of the board of directors or a "high managerial agent" of the corporation as that term is defined in the § 20.20 of the Penal Law; a Partnership by a general partner; a Sole Proprietorship by the proprietor; a Limited Liability Company by member or manager in accordance with the LLC's articles of organization as filed with the Secretary of State.

Applications by a State Agency must be signed by a person duly designated by the commissioner or other agency head. Applications by Municipalities (counties, cities, towns and villages) and Public Corporations must be signed by the chief executive officer, the head of a subordinate agency or department, or a person duly designated by the chief executive officer.

Construction or work contractors may serve as a contact/agent on behalf of the applicant, but cannot be identified as the applicant or prospective permittee should a permit be issued.

PROJECT / FACILITY LOCATION INFORMATION: If you are able to supply accurate project location coordinates, please do so. Location Coordinates are expressed in New York Transverse Mercator (NYTM) units (i.e., UTM Zone 18 expanded to encompass the entire state) based on the North American Datum 1983, or Latitude and Longitude. Coordinates may be obtained from DEC's online Environmental Resource Mapper (www.dec.ny.gov/animals/38801.html), using the Identify  tool.

PROJECT DESCRIPTION AND PURPOSE: Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary.

REQUIRED APPLICATION ATTACHMENTS

Attach and submit the following to each involved Agency:

- LOCATION MAP** - A US Geological Survey (USGS) Quadrangle Map, or equivalent identifying the project location. The map should include wetlands, seasonally wet streams and ditches. An acceptable location map may be obtained from DEC's online Environmental Resource Mapper (<http://www.dec.ny.gov/animals/38801.html>), using the Printer  tool.
- PROJECT PLANS** - A sketch plan view and cross-section drawn to scale with dimensions given, or engineering drawings showing location and extent of work. Note from which direction the photographs required in (3) are taken.

- PHOTOGRAPHS** - At least 3 color photographs, taken from multiple directions, which clearly depict the site of the proposed activity without snow cover. Include any existing structures on the site and the area surrounding the site. Indicate the time and date when taken.

OTHER REQUIREMENTS

If applying to State Agencies: State Environmental Quality Review Act regulation (SEQR), 6 NYCRR Part 617) is applicable (see www.dec.ny.gov/regs/4490.html) -

- If the project is an Unlisted Action, submit a completed Part 1 of a Short Environmental Assessment Form. *
- If the project is a Type I Action, submit a completed Part 1 of a Full Environmental Assessment Form. *

If applying to NYS DEC - Complete the **Permission to Inspect Property Supplement** * to provide consent for DEC inspection. Failure to grant consent can be grounds for, and may result in, permit denial.

If applying to USACE/NYS DOS - If the project requires a federal permit and lies within or affects the Coastal Zone (see the DOS Coastal Area Maps at http://www.nyswaterfronts.com/maps_regions.asp) submit a completed Federal Consistency Assessment Form (available at www.nyswaterfronts.com/consistency_federal.asp) to NYS DOS with a copy to USACE.

For USACE Section 404 Clean Water Act permits and specific Nationwide permits - a 401 Water Quality Certification must be obtained from NYS DEC.

For projects within the Adirondack Park - To determine permitting applicability, contact -
NYS Adirondack Park Agency, 1133 NYS Rte 86, PO Box 99, Ray Brook, NY 12977 (518) 891-4050 www.apa.state.ny.us

SPECIAL SUPPLEMENTS AND REQUIREMENTS FOR SPECIFIC PERMIT APPLICATIONS

Applications for . . . must be accompanied by . . .

- **Dams and Impoundment Structures** Supplement D-1 *
- **Docks and Moorings** Supplement D-2 *
- **Water Withdrawal** Supplement WW-1 *
- **Long Island Well** Regional specific supplement *
- **Wild, Scenic and Recreational River Systems** Supplement WSR-1 *
- **Incidental Take** Supplement IT-1 *
- **Aquatic Vegetation, Aquatic Insect, and Fish Control** ... Category specific form available at NYS DEC offices and www.dec.ny.gov/chemical/8530.html . Submit applications to the NYS DEC regional office, Attn: Bureau of Pesticides.
- **USACE Section 404 Clean Water Act and DEC Freshwater Wetlands and DEC Tidal Wetlands** ... Applications to disturb a wetland or waterway by placing fill or performing mechanized land clearing, ditching, channelization, dredging, or excavation activities should provide a discussion of practicable alternatives considered to avoid, minimize and/or mitigate the proposed project impacts. Particular justification should be given as to why the alternatives are not suitable.
- **DEC Freshwater and Tidal Wetlands** ... Applications fees are required. Refer to: www.dec.ny.gov/permits/65153.html

* Forms are available at NYS DEC offices and at www.dec.ny.gov/permits/6222.html

JOINT APPLICATION FORM INSTRUCTIONS - PAGE 2 OF 2

SUBMISSION OF APPLICATION FORMS AND ATTACHMENTS

Separately mail the completed application to each involved Agency based on project location and permit(s) requested.

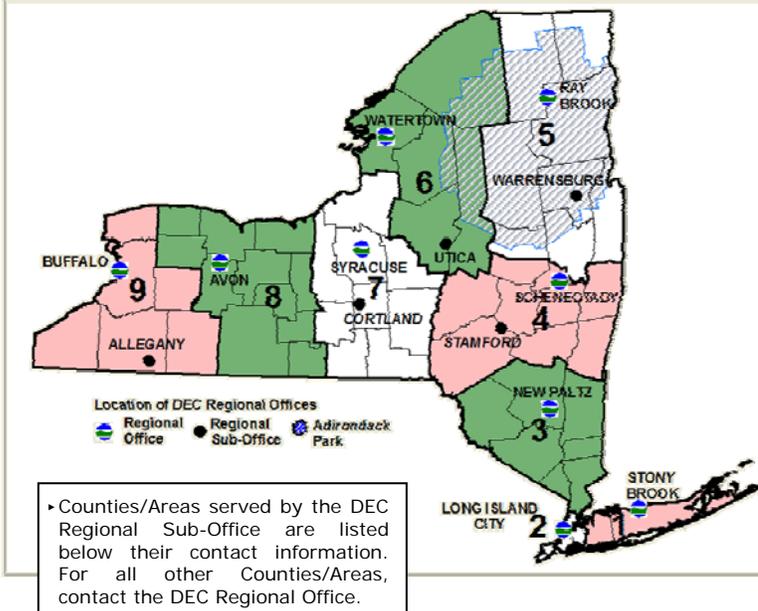
For DEC - Mail **3 copies** of: this Application, any supplemental forms, and all required attachments.

For Other Agencies - Mail **1 copy** of: this Application, any supplemental forms, and all required attachments.

Refer to each Agency's website for specifications on submitting documents on electronic media or via email.

AGENCY CONTACT INFORMATION

NYS Department of Environmental Conservation
www.dec.ny.gov



NYS DEC REGION 4 Sub-Office
 Regional Permit Administrator
 65561 State Highway 10
 Stamford, NY 12167-9503
 607-652-7741 fax: 607-652-2342
 email: r4dep@gw.dec.state.ny.us
 ▶ For Delaware and Otsego Counties, and Greene County towns within the NYC watershed

NYS DEC REGION 5
 Regional Permit Administrator
 PO Box 296
 1115 NYS Route 86
 Ray Brook, NY 12977-0296
 518-897-1234 fax: 518-897-1394
 email: r5dep@gw.dec.state.ny.us

NYS DEC REGION 5 Sub-Office
 Regional Permit Administrator
 232 Golf Course Rd
 Warrensburg, NY 12885-1172
 518-623-1281 fax: 518-623-3603
 email: r5dep@gw.dec.state.ny.us
 ▶ For Fulton, Saratoga, Warren, and Washington, Counties

NYS DEC REGION 6
 Regional Permit Administrator
 Dulles State Office Building
 317 Washington Street
 Watertown, NY 13601-3787
 315-785-2245 fax: 315-785-2242
 email: r6dep@gw.dec.state.ny.us

NYS DEC REGION 6 Sub-Office
 Regional Permit Administrator
 Utica State Office Building
 207 Genesee Street, Room 1404
 Utica, NY 13501-2885
 315-793-2555 fax: 315-793-2748
 email: r6dep@gw.dec.state.ny.us
 ▶ For Herkimer, and Oneida Counties

NYS DEC REGION 7
 Regional Permit Administrator
 615 Erie Blvd West, Room 206
 Syracuse, NY 13204-2400
 315-426-7438 fax: 315-426-7425
 email: r7dep@gw.dec.state.ny.us

NYS DEC REGION 7 Sub-Office
 Regional Permit Administrator
 1285 Fisher Avenue
 Cortland, NY 13045-1090
 607-753-3095 ext. 233
 fax: 607-753-8532
 email: r7dep@gw.dec.state.ny.us
 ▶ For Broome, Chenango, Cortland, Madison, Tioga and Tompkins Counties

NYS DEC REGION 8
 Regional Permit Administrator
 6274 East Avon - Lima Road
 Avon, NY 14414-9519
 585-226-5400 fax: 585-226-2830
 email: r8dep@gw.dec.state.ny.us

NYS DEC REGION 9
 Regional Permit Administrator
 270 Michigan Avenue
 Buffalo, NY 14203-2915
 716-851-7165 fax: 716-851-7168
 email: r9dep@gw.dec.state.ny.us

NYS DEC REGION 9 Sub-Office
 Regional Permit Administrator
 182 East Union, Suite 3
 Allegany, NY 14706-1328
 716-372-0645 fax: 716-372-2113
 email: r9dep@gw.dec.state.ny.us
 ▶ For Allegany, Cattaraugus, and Chautauqua Counties

US Army Corps of Engineers www.usace.army.mil

For DEC Regions 1, 2 and 3
US Army Corps of Engineers NY District
 ATTN: Regulatory Branch
 26 Federal Plaza, Room 1937
 New York, NY 10278-0090
 email: CENAN.PublicNotice@usace.army.mil

For DEC Regions 1, 2, Westchester County and Rockland County - (917) 790-8511
 For the other counties of DEC Region 3 - (917) 790-8411

For DEC Regions 4, 5
Department of the Army
 ATTN: CENAN-OP-R
NY District, Corps of Engineers
 1 Buffington Street
 Building 10, 3rd Floor
 Watervliet, NY 12189-4000
 (518) 266-6350 - Permits team
 (518) 266-6360 - Compliance Team
 email: cenan.rfo@usace.army.mil

For DEC Regions 6, 7, 8, 9
US Army Corps of Engineers Buffalo District
 ATTN: Regulatory Branch
 1776 Niagara Street
 Buffalo, NY 14207-3199
 (716) 879-4330
 email: LRB.Regulatory@usace.army.mil

Statewide **NYS Department of State**
 Division of Coastal Resources
 Consistency Review Unit
 One Commerce Plaza
 99 Washington Ave, Suite 1010
 Albany, NY 12231-00001
 (518) 474-6000
www.nyswaterfronts.com

Statewide **NYS Office of General Services**
 Real Estate Development - Land Management
 Corning Tower, 26th Floor
 Empire State Plaza
 Albany, NY 12242-0001
 (518) 474-2195
www.ogs.state.ny.us

R. Management Analysis

Appendix R

Harbor Management Plan - Management & Organization

Purpose

The Port of Rochester-Genesee River Harbor Management Plan (HMP) will facilitate management of the harbor and nearshore areas in conjunction with and outlined in New York State's Coastal Management Program. Current and potential harbor management issues addressed through the HMP are many, including the need for a management and organizational structure that can identify, facilitate, and execute solutions to issues within the Rochester Harbor Management Area (HMA) for positive community, environmental, and economic impact.

The purpose of this document is to explore management and organizational structure options that will best fit the unique requirements presented by the HMP. The Rochester Harbor Management Area is relatively unique due to the significant number of discrete stakeholders. A sampling of stakeholders includes the City of Rochester, Monroe County, the Towns of Irondequoit and Greece, recreational marinas, as well as various state and federal agencies, institutions, neighborhood associations, and other community organizations.

Management & Organizational Structure Comparative Analysis

Establishing management objectives was essential to the identification of organizational structures that could effectively manage and implement initiatives contained in the HMP. Objectives and initiatives critical to the successful management and implementation of the HMP include:

- Consensus building with regards to competing uses of waterfront harbor space and adjacent areas for recreation, economic development, and existing or future commercial endeavors.
- Leadership in dredging and water quality improvement initiatives to accommodate competing uses.
- Federal agency engagement necessary to facilitate compliance with various regulatory and governmental requirements.
- Resolution of law enforcement and public safety agencies jurisdictional concerns for effective resource use and stakeholder benefit.
- Facilitation of recreational boater education and safe navigation.

The potential effectiveness of an organizational structure was assessed through a comparative analysis, or benchmarking process. The comparative analysis began with a search for similar port/harbor or other HMP-relevant organizations. It quickly became clear that no examples exist that encompassed *all* of the unique qualities of the HMA. These unique qualities include: comparable level of activity for commercial entities, similar public interests, metropolitan

population, and economic development opportunities. However, this was not an unexpected finding given the wide variation of waterfront community history in the Great Lakes. The comparative analysis also sought to identify organizational structures with evidence of management success related to meeting the broad goals of the HMP.

As a result, the goal of the comparative analysis was modified from seeking to identify singular, successful organizational and management examples with *all* of the qualities previously identified to selection of an organizational structure with demonstrated success with key relevant complexities. The refined approach resulted in the identification of three organizational classifications that featured success with the broad goals of the HMP: 1) consensus building on wide-ranging challenges and interests, 2) a commercial history in freight and related services, and 3) positive economic development. Based on their ability to provide the best blend of characteristics considering the objectives of the HMP, the three management and organizational classifications evaluated were:

- Formally Structured Port Authorities
- City/County Port Organizations
- Harbor Economic Development Districts

In total, ten regional organizations were identified and evaluated based on fifteen HMP characteristics of interest. The regional organizations identified consisted of those shown in the table below.

Organizational Type	Regional Organizations Evaluated
Formally Structured Port Authority	Cleveland-Cuyahoga County Port Authority
	Erie-Western Pennsylvania Port Authority
	Port of Monroe/Monroe County, MI
City/County Port Organization	City of Sandusky, OH
	Lorain Port Authority/City of Lorain, OH
	Port of Green Bay/Brown County, WI
Harbor Economic Development Districts	Baltimore Inner Harbor Development (BDC)
	City of Syracuse, NY; Inner Harbor District
	ECHDC; "Inner & Outer Harbor;" Buffalo, NY
	Harbor Point, City of Utica, NY

The fifteen characteristics of interest when evaluating the organizational structures include (in no particular order):

- Structure created for a specific community economic improvement
- Organization created for improved water transportation opportunity
- The organization maintains financial sustainability
- Entity has a strong commercial freight tonnage interest
- Agency formed by inter-governmental & stakeholder interest

- Commercial economic development &/or redevelopment focus
- Skilled at Public-Private-Partnership (3P) initiatives
- Environmental restoration &/or sustainability interest
- Skilled at grant development & public funding support
- Harbor dredging & periodic harbor maintenance required
- Recreation, marina, tourism, & green space interest
- Ferry or water taxi experience
- Operates with a defined area of jurisdiction
- Organization board is made up of less than 10 members
- Staffed is compensated and full time

In summary, the characteristics centered around organizations having a strong freight/commercial history, consensus building on similar key factors identified during the Rochester HMP development, economic development experience, 3P skills, and grant success. Based on the characteristics identified above, the following management and organizational structure goals were determined to be most appropriate in identifying an organization tasked with the HMP implementation:

- Experienced government leadership is effective in dredging and law enforcement issues;
- A successful organization needs to have staff with related primary responsibilities;
- Certain goals were effectively achieved by all three organization classifications:
 - Broad stakeholder involvement;
 - Grant development supporting economic development and public interests;
 - Recognition of value of recreational, marina, green space, & tourism balance;
 - Importance of environmental/water quality improvement and sustainability;
- Direct agency board of less than ten members.

Among the three types of organizations, the pros and cons of each form were reviewed in the context of its potential effectiveness in implementing the HMP. The following summarizes the evaluation of each organization type, and a summary narrative of the important qualities associated with each organizational type is provided. The summary also provides guidance for the identification and selection of alternative organization structures considered appropriate for the implementation and sustainability of an effective HMP.

Formally Structured Port Authorities

Pros	Cons
<ul style="list-style-type: none"> • Strong central control • Deep draft freight focused • Strong commercial interests • Permanent paid staff • Navigation centric • Broad legislated powers 	<ul style="list-style-type: none"> • Less inclusive decision making • Reduced public benefit sensitive • Poor multi-mission effectiveness • Economic development challenged

Summary Observations: For the diverse necessities of implementation of the HMP, highly structured autonomous agencies such as formally structured port authorities are the least preferable based on the evaluation of benchmarked entities. Many governing boards are appointed, and in some cases, not representative of local community interests and priorities. The port authorities evaluated were able to overcome some of these deficiencies, but it took time to cultivate a culture of change, trust, and inclusion of other stakeholder input. The change generally resulted in higher costs to the port authority to secure buy-in for the larger, multi-mission needs typical of the HMP.

City/County Port Organizations

Pros	Cons
<ul style="list-style-type: none"> • Community-mix board representation • Moderate decision making speed • Permanent direction/shared staff • Budget sensitive & oversight • Balanced private/public interest 	<ul style="list-style-type: none"> • Diluted decision making • Conflicting objectives or solutions • Jurisdictional & mission conflicts • Funding priority challenged

Summary Observations: City/county port organizations present a middle ground relative to effectiveness of responding to and facilitating the needs of the HMP. The evaluated city/county port organizations were relatively effective in establishing, and subsequently prioritizing varied mission objectives. The recognition of the value of inclusiveness, broad stakeholder input, and solution options was obvious by the variation of approach to make progress. This likely derives from the experience of commission/board and staff interfacing with the community and through the local election processes. Because of the sensitivity to community involvement, they can create win-win solutions that frequently have a net positive benefit on a broader stakeholder group. Benefiting the HMP, the nature of a governmental organization affiliation allows expedition of decisions when necessary. The sustainability and continuity of a city/county port organization form appears to be most effective in delivering results that are built on consensus, because it's a local organization.

Harbor Economic Development Districts

Pros	Cons
<ul style="list-style-type: none"> • Economic development skilled & specialization • Agency formed by intergovernmental/ stakeholder interest • 3P astute • Public funding & grant supported • Common environmental interests for economic development • Narrow mission effective 	<ul style="list-style-type: none"> • Commercial navigation user weakness • Higher operating costs • Minimum financial flexibility except for core mission • Private sector developer interests • Weak, broad stakeholder input • Creation/potential for specialized taxing to support core mission

Summary Observations: A harbor economic development district is valuable when a specific core mission is identified. They are frequently built on an opportunity, need, or barrier that has negative implications to a greater community’s well-being if unaddressed. Organizational sustainability is usually very important, as the core mission usually requires long-term plans and stable funding streams. Although captured frequently as an economic development initiative, its initial base, or interest may be economic revitalization, tourism development, environmental remediation, and possibly other legacy issues of employment and social interest. These organizations frequently have special legislative recognition and powers to fund, plan, sustain, and obtain grants, all for the intended public benefit. The commission/board is generally governing as an independent agency of government, represented by regional private-sector interests and community representatives. Staffing is usually professionally skilled, well compensated, and focused on the long-term core mission. Evaluated examples were effective, but results were limited to narrow community issues with limited public opinion and involvement in solutions.

HMP Organization Alternatives & Supplemental Entities

Within the context of the needs and key findings identified in the HMP, output from the comparative analysis process outlined above provided examples of organization and management structures that showed success. However, these successes were accomplished in very different ways and with different methods and mission focus. A review of the pros and cons of the three organizational types considered facilitated the identification of characteristics unique to current conditions, stakeholder initiatives, and future necessities within the HMA.

Certain goals exist in the HMP that must be recognized while identifying an appropriate organization and management structure. The comparative analysis pointed to initial steps for the core starting point, built on what was indicated to be most applicable to the Rochester Harbor Management Area. The organizational structure selected for the Rochester HMP implementation must address the following qualities:

1. Stability and continuity is essential;

2. Financial capability and resources are important;
3. Relative jurisdiction and overall governmental influence;
4. Relative economic impact of decision making;
5. Prompt decision making when necessities dictate;
6. Multiple mission and multiple priorities associated with the HMP implementation.

Based on these qualities, two of the three management and organizational structures evaluated above were determined to be the most appropriate alternatives for further consideration: the Harbor Economic Development District and the City/County Port Organization. These structures and why they are likely the most appropriate for the Rochester HMP are discussed further below.

Stakeholder Advisory Council

Regardless of which management and organizational alternative is selected for the Rochester HMP, the creation of a Stakeholder Advisory Council (Council) is recommended since it is important to seek involvement from the large number of stakeholders in the HMA. The Council will undertake identifying possible solutions to many of the tough issues surrounding the HMP that require consensus building, diverse input, focus committees of "at large" stakeholder experts, and the requirement for developing unique solutions.

The HMP has a number of imperative key issues, as well as issues of broad common interest that, although important, will require time to arrive at a solution and may not be as critical or time sensitive as others. The Council will analyze and prioritize these issues in order to make meaningful, orderly progress. The Council can form committees, which can be well focused by stakeholders with appropriate experience. Or on another extreme, committees can have diverse experience with varied perspectives with a goal of broad inclusion to develop unique solutions.

An inclusive Stakeholder Advisory Council, with rotating leadership, will be an essential contributor to identification and prioritization of HMA issues. By utilizing the HMP as a guide, the Council can form working groups, special interest committees, skill set affiliations, and provide expertise toward technical and non-technical solutions. The Council's development of position statements, alternatives, recommendations, and implementation plans will be critical for the success of the broader functioning organization. The operational success of the Council has significant implications to greater regional economic vitality and public benefits to all using the Port of Rochester-Genesee River Harbor Management Area.

Alternative 1 - Harbor Economic Development District

A harbor economic development district addresses the six qualities that are essential to the implementation and sustainability of the Rochester HMP. As stated in the evaluation above, the core mission usually requires long-term plans and stable funding streams in order to address the primary goals of economic revitalization, tourism development, environmental remediation, and possibly other legacy issues of employment and social interest. The addition of the

stakeholder advisory council should address at least some of the shortfalls typically observed of this alternative management and organizational structure. As previously identified, a harbor economic development district is generally an independent agency of government represented by a commission/board, which is frequently composed of private-sector interests and members of the community. This often makes the management and organizational structure effective but narrow in scope. Staffing is typically composed of professional management for this alternative. This alternative may also require a legislative initiative for formal creation. The following summarizes the comparison of the six qualities identified above and the corresponding advantage of the harbor economic development district structure:

1. Stability & Continuity → primarily focused on long-term goals
2. Financial Capability & Resources → public funding & grant supported; potential for specialized taxing
3. Relative Jurisdiction & Overall Governmental Influence → independent government agency with jurisdiction likely limited to HMA
4. Relative Economic Impact of Decision Making → economic development focus for positive, macro HMA change
5. Prompt Decision Making → bureaucracy limited to organization itself
6. Multiple Mission & Multiple Priorities → multi-facet approach supportive to the priority of economic development

Alternative 2 - City/County Port Organization

A city/county port organization could also form the core organizational structure for HMP implementation and management. Appropriate adjustments are recommended to any potential standardized form of city/county government to address the unique HMP needs. Alternative 2 can effectively respond to the goals and qualities noted in the HMP. By addressing many of these goals and qualities at the outset, the potential for success at an early stage is greater. Early success generates immediate interest and results that can carry a high level of sustainable stakeholder interest in the value of the HMP. The significant geographic footprint and economic development initiatives within the HMA suggests the City of Rochester as a likely Alternative 2 port organization core entity. The following summarizes the comparison of the six qualities previously identified and the corresponding advantage of the city/county port organization structure:

1. Stability & Continuity → organization is fixed & predefined
2. Financial Capability & Resources → can provide support through budget & shared resources
3. Relative Jurisdiction & Overall Governmental Influence → has a large geographic footprint within the HMA

4. Relative Economic Impact of Decision Making → has a number of related ongoing endeavors & is in a position to be a vehicle for positive, macro HMA change
5. Prompt Decision Making → can lead with direct assets & leadership when quick action is required
6. Multiple Mission & Multiple Priorities → can engage the HMA stakeholders to increase effectiveness in identifying, planning, prioritizing, & managing

HMP Advisory Board: The city/county port organization would receive guidance through a HMP Advisory Board. The HMP Advisory Board would act as a typical “Board of Directors,” but without direct powers granted through formal or legislative action. The HMP Advisory Board (Board) would receive stakeholder input from the Stakeholder Advisory Council. The Board could establish an HMP agenda, establish priorities, and communicate with the city/county port organization core to facilitate needed action and cooperative directives to address harbor issues.

City and county governments can represent the majority of the Board. It is recommended to be structured in this way to acknowledge that stakeholder interest varies in weight by different public responsibility. The comparative analysis indicated the appropriate size for an effective Board should be ten members or less. The Board should also include several rotating “at large” stakeholder representatives from the larger Stakeholder Advisory Council.

In addition to providing guidance to the city/county port organization, Board members have a major implementation role that can result in direct HMA improvement. They have the local governmental control to move an agenda quickly and responsibly through acknowledgement and support for each other’s respective positions and capabilities, particularly in areas such as emergency management.

Conclusions

Based on the comparative analysis, the selected HMP management and organization plan needs to be inclusive and responsive to a wide variety of identified HMP issues. The organization must allow for varied degrees of responsiveness and management agility to address issues, those that are already identified and those that are as yet unidentified. Organizational strength and sustainability, along with capability to take quick action when appropriate, will be a key asset of the selected organization structure. As part of the anticipated municipal operation of the City’s new public marina, it is also recommended that the position of Harbormaster for that facility have a collateral responsibility for HMA traffic and surface waterfront coordination. The selected management and organizational structure, while cooperating with guidance and assistance from the Stakeholder Advisory Council and the Harbor Advisory Board (if applicable), will provide leadership and stability for implementation of the Port of Rochester-Genesee River Harbor Management Plan.