

CONSTRUCTION

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CONSTRUCTION

STATE	PROJECT	PAGE
CALIFORNIA	AMERICAN RIVER COMMON FEATURES, NATOMAS BASIN, CA	1
FLORIDA	SOUTH FLORIDA ECOSYSTEM RESTORATION PROGRAM, FL (SFER)	7
GEORGIA	SAVANNAH HARBOR EXPANSION, GA	31
ILLINOIS	MELVIN PRICE LOCK AND DAM, IL & MO (DEFICIENCY CORRECTION)	39
	UPPER MISSISSIPPI RIVER RESTORATION, IL, IA, MN, MO & WI	45
IOWA	MISSOURI RIVER FISH AND WILDLIFE RECOVERY, IA, KS, MO, MT, NE, ND, SD and TRIBUTARIES	57
KENTUCKY	ROUGH RIVER LAKE, KY MAJOR REHABILITATION	63
MASSACHUSETTS	BOSTON HARBOR, MA	69
MICHIGAN	SAULT STE. MARIE NEW LOCK CONSTRUCTION, MI	75
NEW JERSEY	RARITAN RIVER BASIN, GREEN BROOK SUB-BASIN, NJ	81
OREGON	COLUMBIA RIVER AT THE MOUTH, OR & WA	87
PENNSYLVANIA	LOCKS AND DAMS 2, 3 AND 4, MONONGAHELA RIVER, PA 1/	93
SOUTH CAROLINA	CHARLESTON HARBOR (DEEPENING AND WIDENING), SC	99
TEXAS	CORPUS CHRISTI SHIP CHANNEL, TX	107
WASHINGTON	COLUMBIA RIVER FISH MITIGATION, WA, OR & ID	117
	MUD MOUNTAIN DAM, WA	131
MULTI-STATE	INNOVATIVE FUNDING PARTNERSHIPS 2/	135
	WRRDA 2014, SECTION 1043 NON-FEDERAL CONSTRUCTION OF FEDERAL PROJECTS 3/	136

1/ This activity receives funding from both the Construction account and the Inland Waterways Trust Fund.

2/Innovative Funding Partnerships: Funding will be used, in conjunction with funds voluntarily provided by non-Federal interests pursuant to 33 U.S.C. 701h and 33.U.S.C. 701h-1 in excess of the non-Federal sponsor's statutory cost share requirements, to accelerate the completion of construction of specifically authorized projects.

3/ WRRDA 2014 Section 1043 Non-Federal Construction of Federal Projects: Funding would be transferred to non-Federal sponsors who decide to construct a specifically authorized project on their own under Section 1043 of the Water Resources Reform and Development Act of 2014, as amended.

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APPROPRIATION TITLE: Construction – Local Protection, Flood and Storm Damage Reduction, Fiscal Year 2020

PROJECT NAME: American River Common Features, Natomas Basin, California (Continuing)

LOCATION: The Natomas Basin is located northeast of the point where the American River flows into the Sacramento River. It extends northward from the American River and includes portions of the City of Sacramento and the counties of Sacramento and Sutter. In addition to the American and Sacramento rivers, the Natomas Basin is bordered on the north by the Natomas Cross Canal and on the east by the Pleasant Grove Creek Canal and the Natomas East Main Drainage Canal. The Natomas Cross Canal and the Pleasant Grove Creek Canal are engineered channels that divert the runoff from a large watershed in western Placer, southern Sutter, and northern Sacramento counties around the Natomas Basin, and are contributors to the flows in the upper reach of the Sacramento River channel. The Natomas East Main Drainage Canal is an engineered channel along the eastern side of the Natomas Basin. Tributaries to the Natomas East Main Drainage Canal include Dry Creek, Arcade Creek, Rio Linda Creek, Robla Creek, and the Magpie Creek Diversion Channel.

The Natomas Basin is a mix of urban and rural areas north of Sacramento, roughly 85 square miles in size, encircled by these canals and by the American and Sacramento rivers. The communities of the Natomas Basin use an interconnected perimeter levee system to reduce their risk of flooding from these sources during high flows.

The Sacramento River watershed covers approximately 26,000 square miles in central and northern California. Shasta Dam impounds the upper Sacramento River watershed. Major tributaries of the Sacramento River include the Feather, Yuba, and American rivers. The American River Watershed covers about 2,100 square miles northeast of the City of Sacramento and includes portions of Placer, El Dorado, Alpine, and Sacramento counties. The American River watershed - includes Folsom Dam and Reservoir, inflowing rivers and streams, including the North, South, and Middle Forks of the American River, and the American River downstream to its confluence with the Sacramento River in the City of Sacramento. In the Sacramento area, the natural flood plain formed by the confluence of the Sacramento and American Rivers (prior to the introduction of levees) covered approximately 172 square miles (roughly 110,000 acres), approximately half of which is in the Natomas Basin. The flood plain now includes much of the developed portions of the City of Sacramento and all of the Natomas Basin. The work authorized as the American River Common Features, Natomas Basin project is hydraulically separable from other Corps projects in the area, including those that include the words "American River, Common Features" in their name.

DESCRIPTION: The Water Resources Reform and Development Act of 2014 authorized the construction of modifications of the ring levee system of the Natomas Basin. The work includes levee widening, and construction of seepage cutoff walls and seepage berms. For contracting and scheduling purposes, the Corps has divided the project into nine reaches, designated as Reaches A through I.

In advance of Federal authorization of this project, the non-Federal sponsors began to construct portions of the project, under the authority in Section 104 of the Water Resources Development Act of 1986 (P.L. 99-662). They proceeded to address the identified levee embankment and foundation seepage and stability deficiencies, levee height deficiencies, and erosion deficiencies along the entire length (5.3 miles) of the Natomas Cross Canal (NCC) south levee, and 13 miles of the Sacramento River east levee extending south from the NCC. As of the end of FY 2018, the Non-Federal Sponsors have completed all of that work, primarily in Reaches B, C, and D of the project. At this time, they do not plan to construct other portions of the project.

AUTHORIZATION: Water Resources Reform and Development Act of 2014, P.L. 113-121, Section 7002(2).

REMAINING BENEFIT-REMAINING COST RATIO: 3.4 to 1 at 7 percent.

Division: South Pacific

District: Sacramento

American River Common Features, Natomas Basin, CA

TOTAL BENEFIT-COST RATIO: 3.4 to 1 at 7 percent.

INITIAL BENEFIT-COST RATIO: N/A

BASIS OF BENEFIT-COST RATIO: Costs and Benefits are from the latest available evaluation approved in October 2014 at October 2013 price levels.

SUMMARIZED FINANCIAL DATA		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost	\$ 836,806,000		Entire Project	30	TBD
Estimated Non-Federal Cost	450,588,000				
Cash Contributions	386,219,000	<u>4/</u>			
Other Costs	64,369,000				
Total Estimated Project Cost	\$ 1,287,394,000				
Authorized Cost (plus inflation)	1,292,226,000				
Maximum Cost Limit (Section 902)	1,521,682,000				
Allocations to 30 September 2016	34,465,000	<u>3/</u>			
Allocation for FY 2017	52,650,000				
Allocation for FY 2018	20,550,000				
Allocation for FY 2019	64,650,000				
Allocations through FY 2019	172,315,000	<u>2/</u>	21		
Estimated Unobligated Carry-In Funds	0	1/			
President's Budget for FY 2020	59,000,000		28		
Programmed Balance to Complete after FY 2020	605,491,000				
Un-programmed Balance to Complete after FY 2020	0				

1/ Unobligated Carry-in Funding: The actual unobligated balance from FY 2018 into FY 2019 for this project is \$35,090,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

2/ PED costs of \$6,000,000 are included in this amount.

3/ Allocations of \$18,465,000 transferred from the American River Common Features WRDA 96/99 project to fund PED and a Post Authorization Change Report (PACR) on the American River Common Features, Natomas Basin, California project.

4/ Non-Federal Cash contributions will be adjusted by the amount of credit that will ultimately be granted the Sponsors subsequent to the Section 104 credit determination.

PHYSICAL DATA: The principal features of the recommended modification to the existing ring levee system include widening of about 41.9 miles of existing levee, installation of about 34.8 miles of soil bentonite cutoff wall, installation of about 8.3 miles of seepage berms and bridge remediation at State Route 99.

JUSTIFICATION: The flood of 1986 (flood of record) nearly caused numerous levee failures in the Natomas Basin. Other floods, including the 1997 flood, have had similar effects. The flood waters in both of these events significantly eroded the levees in places, but passed without a full levee failure. The Corps repaired the levees following those floods. The improvements authorized under this project would significantly reduce the risk of a levee breach in a future flood, but would not eliminate that risk, or the risk of overtopping. However, in absence of these improvements, these levees would remain at significant risk of a full levee failure.

Levee failure in the Natomas Basin along the American River, Sacramento River, Natomas Cross Canal, Pleasant Grove Creek Canal or Natomas East Main Drainage Canal could result in flooding of more than 55,000 acres, affecting approximately 100,000 residents, with damages of up to \$8 billion. There are approximately 23,000 structures in the Natomas Basin that would be flooded with a levee failure. Most of these are residential but the area includes commercial structures as well. The flooding of some of these commercial structures would have very significant consequences relating to environmental and regional economic impacts (gas and oil products, agricultural chemicals, electricity generation and transmission, transportation systems, etc.).

The American River Common Features, Natomas Basin project consists of levee improvements to reduce risks associated with seepage and instability for the 42 miles of levee surrounding the Natomas Basin, and would decrease the probability of flood damage to about a 1 in 67 chance in any given year. The population at risk and the population affected are both 100,000, and the risk depth is approximately 15 feet but goes up as high as 25 feet. Risk warning times depend on location of a levee failure. Failure of a levee adjacent to a highly urbanized area would give the population that lives nearby the failure location only minutes to react and seek safety. With a levee failure, the egress route out of the Natomas Basin also would quickly become impassable because of flooding.

Average annual benefits, all flood risk management are estimated to be \$371,000,000.

FISCAL YEAR 2019: The TOTAL unobligated dollars are being applied as follows:

Activity	Amount
Reach I, Contract 1 Close out	\$500,000
Reach D Construction (Season 1) S&A	\$4,000,000
Reach H Construction (Season 1) EDC and S&A	\$2,000,000
Reach B/Riverside Canal Construction Contract Award	\$51,440,000
Reaches E, Design Work	\$500,000
Reach A Design Work	\$500,000
Reach H Contract Award	\$40,800,000
Total	\$99,740,000

Division: South Pacific

District: Sacramento

American River Common Features, Natomas Basin, CA

FISCAL YEAR 2020: The budgeted amount plus carry-in funds will be applied as follows:

Activity	Amount
Reach D Construction (Season 2) EDC and S&A	\$2,000,000
Reach H Construction (Season 2) EDC and S&A	\$4,500,000
Reach B/I-5 Construction & S&A	\$10,500,000
Reach B/Riverside Canal EDC and S&A (Season 1)	\$1,500,000
Design of Levee Windows (Gap)	\$250,000
Reaches E, Real Estate	\$1,000,000
Reach A Design Work	\$ 250,000
Reach E Contract Award	\$39,000,000
Total	\$59,000,000

NON-FEDERAL COST: In accordance with the cost sharing and financing concepts reflected in the Water Resources Development Act of 1986, as amended, the non-Federal sponsor must comply with the requirements listed below.

	Payments During Construction, including Potential Credits	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
Requirements of Local Cooperation		
Provide lands, easements, rights of way, and dredged or excavated material disposal areas.	\$46,567,000	
Modify or relocate utilities, roads, bridges (except railroad bridges), and other facilities, where necessary for the construction of the project.	\$17,802,000	
Pay 30 percent of the costs allocated to flood risk management to bring the total non-Federal share of flood risk management costs to 35 percent, but no less than 5 percent of the costs allocated to flood risk management, and bear all costs of operation, maintenance, repair, rehabilitation and replacement of flood risk management features.	\$386,219,000	\$5,973,000
Total Non-Federal Costs	\$450,588,000	\$5,973,000

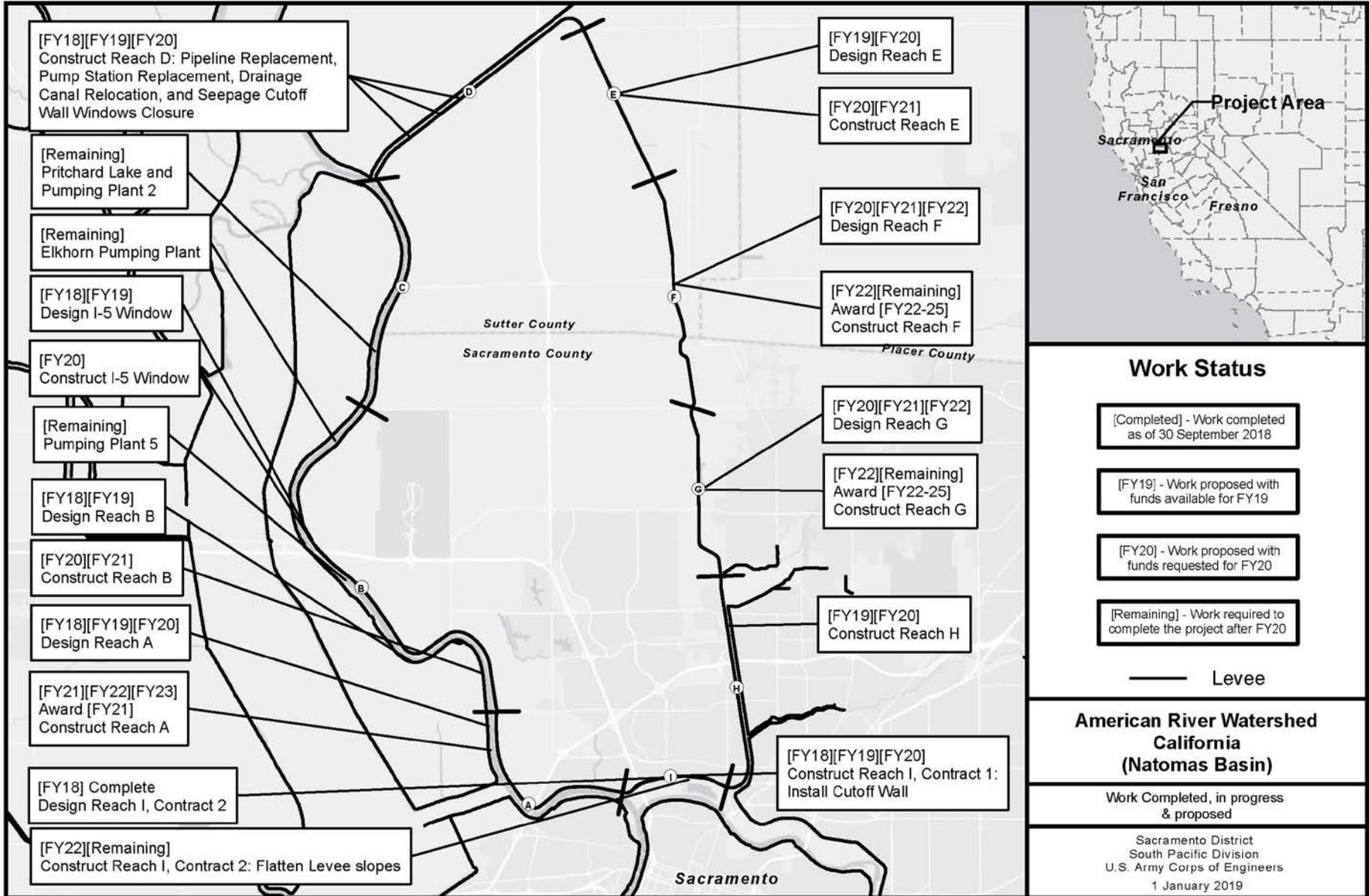
The non-Federal sponsor has also agreed to make all required payments with project construction.

STATUS OF LOCAL COOPERATION: The non-Federal sponsors are the State of California Central Valley Flood Protection Board (CVFPB) and the Sacramento Area Flood Control Agency (SAFCA). The Project Partnership Agreement (PPA) was signed in August 2016. The project is authorized for construction by the Water Resources Reform and Development Act of 2014 at a total first cost of \$1,147,280,000. The cost sharing for construction of the project will be 65 percent Federal and 35 percent non-Federal in accordance with WRDA 1996. The Non-Federal cost as listed in Summarized Financial Data includes potential Section 104 credit in the amount of \$325,000,000 for work completed by the non-Federal sponsors on the project (primarily in Reaches B, C, and D). In accordance with the PPA, if the Federal Government determines that the non-Federal sponsors' contributions, including work for which Section 104 credit is afforded, could exceed its required cost share, the Federal government may, at its sole discretion, acquire any remaining LERRDs; or, subject to the availability of funds and a final accounting of project costs, the Government would be authorized to reimburse the non-Federal sponsors up to the extent that their contributions exceed the required non-Federal share of the total project cost.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal cost estimate of \$836,806,000 is the same as the last estimate presented to Congress (FY 2019).

STATUS OF ENVIRONMENTAL IMPACT STATEMENT COMPLIANCE: An Environmental Impact Statement/Environmental Impact Report (EIS/EIR) was filed with the Environmental Protection Agency in October 2010 and a Record of Decision (ROD) was filed in May 2011.

OTHER INFORMATION: Funds to initiate preconstruction engineering and design were appropriated in FY 2014 and funds to initiate construction were appropriated in FY 2016. An estimated \$23,978,000 in project costs are to mitigate adverse effects on fish and wildlife, resulting from the construction of the authorized project's levee improvements.



APPROPRIATION TITLE: Construction – Aquatic Ecosystem Restoration, Fiscal Year 2020

PROJECT NAME: South Florida Ecosystem Restoration Program, Florida (SFER) (Continuing)

LOCATION: The South Florida Ecosystem Restoration (SFER) Program stretches from the southern Orlando area southward across the Everglades, the Florida Keys, and the contiguous and near-shore waters of South Florida, and across South Florida from east to west including portions of the drainage areas of the Indian River Lagoon and the Caloosahatchee River, as well as population centers along the southeast and southwest coasts. The project area is defined by the political boundaries of the South Florida Water Management District (SFWMD), and includes all of the Everglades. It encompasses an area of approximately 18,000 square miles, which includes all or part of 18 counties in the southeast part of the state of Florida. Principal areas include the Kissimmee River Basin, Lake Okeechobee, Everglades Agricultural Area, Upper East Coast, Lower East Coast, Big Cypress Basin, Water Conservation Areas, Everglades National Park, Southwest Florida, Florida Bay and the Florida Keys.

DESCRIPTION: The objective of the SFER Program is to restore, protect and preserve the South Florida ecosystem, including the Everglades, while providing for other water related needs of the region. The SFER Program includes the Central and Southern Florida (C&SF) Project, the Kissimmee River Restoration Project, the Everglades and South Florida (E&SF) Restoration Project, and the Modified Waters Deliveries Project. The completed C&SF Project includes 1,000 miles of canals, 720 miles of levees and several hundred water control structures, which provide water supply, flood damage reduction, water management and other benefits to south Florida. Under SFER, numerous C&SF projects— including West Palm Beach Canal (C-51), C-111 (South Dade), Comprehensive Everglades Restoration Plan (CERP), and Manatee Pass Through Gates— were or are being undertaken to address adverse environmental impacts caused in large part by the C&SF flood project's modification of historic Everglades flows. The Everglades National Park receives virtually its entire source of water (other than direct rainfall) from the Central and Southern Florida Project.

C-111 South Dade: The C-111 (South Dade) effort will help restore natural hydrologic conditions in Taylor Slough within Everglades National Park by providing immediate improvement in flow between upper Everglades Marsh Water Conservation Area 3a and Everglades National Park which directly improves habitat for endangered species. The Project Cooperation Agreement (PCA) for the C-111 (South Dade) separable element was executed with the South Florida Water Management District in January 1995. A PCA amendment was executed in August 2014.

Picayune Strand Restoration Project: The CERP Picayune Strand (Southern Golden Gate Estates) Restoration Project will restore and enhance 55,247 acres of wetlands (cypress/freshwater marsh and wet prairie) in an abandoned real estate development, formerly known as Southern Golden Gates Estates, and adjacent public lands that were drained in the early 1960s. The purpose of this project is to restore natural and beneficial sheetflow of water to the Ten Thousand Islands National Wildlife Refuge, historical overland waterflows to the South, while maintaining flood control measures for areas to the North and the West. The restoration will improve the functionality of habitat for the Florida Panther, Smalltooth Sawfish, Manatee and Wood Stork and the water quality of coastal estuaries by moderating the large salinity fluctuations caused by freshwater point discharge of the Faka Union Canal as well as wetland/upland mosaic habitat west of the Everglades. The project will also aid in protecting the City of Naples eastern Golden Gate wellfield by improving groundwater and aquifer recharge. The project includes a combination of spreader basins, levees, canal plugs, road and tram removal and pump stations for the Prairie, Merritt, Faka Union and Miller Canals. The Picayune Strand Project Implementation Report (PIR), which is a component of the Comprehensive Plan, was completed in December 2004. A Chief's Report on the PIR was signed on September 15, 2005. Construction was initiated with funds provided by the non-Federal sponsor and continues with appropriated funds. Specifically, the local sponsor, South Florida Water Management District, completed construction of some of the road demolition and plugging of the Prairie canals. The remaining construction of 3 pump stations (with capacities of 800, 2,650 and 1,200 cubic feet per second), road removal and plugging of canals is being constructed by the Corps. FY 2009 regularly appropriated and American Recovery and Reinvestment Act (ARRA) funds were used to award the first pump station, the Merritt pump station, in October 2009, construction is complete and the feature was transferred to the sponsor in FY 2016. The second pump station

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

(Faka Union) was awarded on November 22, 2010, physical construction was completed in FY 2016, and transferred to the sponsor in FY 2018. The construction contract for the Miller Pump station was awarded in September FY 2013 and completed physical construction in FY 2018 with Operational Testing and Monitoring Period and transfer to the sponsor in FY 2019. A Post Authorization Change Report to address increased costs for the project, which are due to design changes determined to be necessary to meet project objectives and increases in the cost of supplies and materials for construction of the pump stations was finalized and the project was reauthorized in the WIIN Act 2016.

Indian River Lagoon: The CERP Indian River Lagoon (IRL) feasibility study was initiated in 1996. This study evaluated potential modifications to the C&SF Project for ecological restoration of Indian River Lagoon ecosystem. A final feasibility report, which included components of the CERP, was submitted to HQUSACE in FY 2002. The Project Implementation Report (PIR), required by WRDA 2000, for Indian River Lagoon South was completed August 2004 and recommended a plan in Martin, St. Lucie, and Okeechobee Counties that will reduce the damaging effects of watershed runoff, reduce high peak discharges, reduce nutrient loads, provide water quality benefits to control salinity, pesticides, and other pollutants presently discharged to the estuary, restores 117 acres of wetlands including seagrass, restores and improves the functionality of habitats for the Wood Stork, Green Sea Turtle and West Indian Manatee, and provide water supply for agriculture to offset reliance on the Floridian Aquifer. The plan includes 170,000 acre-feet of reservoir storage (C-44 Reservoir, C-23/24 North/South Reservoirs and C-25 Reservoir), and storm water treatment areas (C-44 West/East, C-23, C-24, and C-25), and provides storage on 92,000 acres of natural storage areas (Allapattah, Palmar, and Cypress Creek). A Chief's Report on the PIR was signed August 4, 2004. The project moderates unnatural salinity changes which cause detrimental effects to estuarine communities. The authorized project also includes steps to remove up to 7,900,000 cubic yards of muck from the St. Lucie River and Estuary. Construction of the intake canal of the C-44 Reservoir and STA component was initiated in July 2011 and was completed in July of 2014. Construction of the C-44 Reservoir was initiated in the 4th quarter of FY 2015. Construction of the C-44 stormwater treatment area (initiated in 2014) and pump station (initiated in 2015) is being implemented by the non-federal sponsor.

Caloosahatchee River (C-43) West Basin Storage Reservoir: The C-43 Project Implementation Report, which is a component of the Comprehensive Plan, was completed in September 2007. However the final report was on hold pending a decision on the CERP land valuation policy, which was resolved in August 2009. A final report was prepared based on current CERP land valuation guidance and submitted to Headquarters November 17, 2009. The PIR recommended a selected alternative plan that provides approximately 170,000 acre-feet of above-ground storage volume in a two-cell reservoir with normal pool depths when the reservoir is full; pool depths vary from 15 feet at the southeast corner to 25 feet at the northwest corner. The recommended plan improves functional fish and wildlife habitat in the Caloosahatchee River Estuary. The portion of the Everglades ecosystem directly affected by the Caloosahatchee River (C-43) and Estuary provides habitat for 21 federally-listed endangered or threatened species, including the Florida panther, Everglades snail kite, wood stork, manatee, eastern indigo snake, Audubon's crested caracara and five species of sea turtles. The Chief's Report was signed in March 2010 and a Supplemental Chief's Report was signed in January 2011 to clarify cost sharing requirements on recreational features. The Record of Decision was signed and transmitted to Congress on April 13, 2011. The purpose of the Caloosahatchee River (C-43) West Basin Storage Reservoir Project is to contribute to the restoration of the Caloosahatchee Estuary as part of a comprehensive plan for restoring the south Florida ecosystem. The project encompasses 10,700 acres. The non-Federal sponsor is constructing this project to advance realization of benefits by reducing damaging discharges to the Caloosahatchee Estuary and the Corps is currently providing oversight of construction.

Kissimmee River Restoration: Local water resource development of the Kissimmee River began in the late 1800's. In the 1960's, the river was channelized as part of the C&SF Project. Although the project has provided for navigation and reduced flood damages as intended, it also resulted in long-term degradation of the natural ecosystem. The 103-mile river that historically meandered across and inundated about 35,000 acres of wetlands over a broad flood plain was reduced to a 56-mile canal that has successfully contained almost all flows since its completion. The channelization coupled with the modifications of the Lower Basin tributary watersheds and efficient control of floodwaters and regulation of inflows from the Upper Basin significantly altered hydrologic characteristics of the ecosystem. Project formulation and scoping was based on the most cost-effective plan that would meet fish and wildlife resources objectives for restoring ecological integrity. Completion of the project will result in the restoration of 52 miles of river; 27,000 acres of wetlands; improved water quality characteristics for the Kissimmee River;

and restored conditions for over 300 fish and wildlife species. Funds to initiate construction for the Kissimmee River Restoration were appropriated in FY 1993. The Project Cooperation Agreement was signed with the South Florida Water Management District March 22, 1994. Construction was initiated in FY 1997. The Kissimmee Basin includes 3,000 square miles stretching from Orlando to Lake Okeechobee in central Florida. The Kissimmee River Restoration project involves the ecosystem restoration of the historic floodplain to re-establish wetland conditions by implementing the following: modifications to the operation of the upper chain of lakes; modification of various structures; enlargement of canals 36 and 37; backfilling 22 miles of canal 38; excavation of about nine miles of new river channel; removal of two water control structures and locks, flood proofing of developments around the lakes and land acquisition of over 100,000 acres. It restores 110,000 acres of riverine wetland system including beakrush wet prairies, broadleaf march, hardwoods, cypress strands and sawgrass and restores/improves the functionality of habit for the Wood Stork, Caracara, Snail Kite and Bald Eagle. The project also includes acquisition of fee title for lands within the 5-year-floodplain and acquisition of flowage easements for lands between the five-year-flood line and the 100-year-flood line. A Post Authorization Change Report was authorized in the Water Resources Development Act of 2018 providing crediting authority for actions taken and proposed to be performed by the non-Federal sponsor that were integral to implementation of the project. The Kissimmee Basin Modified Water Control Plan (KBMWCP) Environmental Impact Statement effort will include an operational and structural analysis of the post-Kissimmee River Restoration operations for the existing and new structures in the Upper and Lower Kissimmee Basins.

Central Everglades Planning Project: The Central Everglades Planning Project (CEPP) Project Implementation Report, which is a component of the Comprehensive Everglades Restoration Plan, was completed in July 2014. The Chief's Report was signed on December 23, 2014. The Record of Decision was signed and transmitted to Congress on August 31, 2015. The purpose of the project is to improve quantity, quality, timing, and distribution of water flows to the Northern Estuaries, Central Everglades, and Florida Bay while increasing water supply for municipal and agricultural users. The recommended plan is anticipated to beneficially affect more than 1.5 million acres in the St. Lucie and Caloosahatchee Estuaries, WCA 3A, WCA 3B, Everglades National Park, and Florida Bay and would redistribute existing treated water in a more natural sheetflow pattern, providing an average of approximately 210,000 acre-feet per year of additional clean freshwater flowing into the central portion of the Everglades. This increase in freshwater flow to the Everglades is approximately two-thirds of the additional flow estimated to be provided by the Comprehensive Everglades Restoration Plan. The recommended plan is also anticipated to reduce the number and severity of undesirable, high-volume discharges from Lake Okeechobee, improving salinity in the St. Lucie and Caloosahatchee Estuaries. The additional water flowing into northern WCA 3A and ENP will help to restore pre-drainage vegetative communities and habitat for fish and wildlife while providing incremental improvement of natural processes critical for the development of peat soils and tree islands, which are essential features of the Everglades ridge and slough landscape. Increased flows to Florida Bay will improve salinities, resulting in greater abundance and diversity of sea grasses and other estuarine plant and animal species. Recreational benefits provided by the recommended plan include enhanced outdoor recreation opportunities and improved access to Everglades' marshes for tourists and Floridians.

Biscayne Bay Coastal Wetlands: The Biscayne Bay Project Implementation Report, which is a component of the Comprehensive Plan, was completed in August 2011. The final PIR and Environmental Impact Statement (EIS) were approved at the Civil Works Review Board in September 2011. The Chief's Report was signed on May 2, 2012. The Record of Decision was signed and transmitted to Congress on September 19, 2012. The purpose of the Biscayne Bay Coastal Wetlands project is to contribute to the restoration of Biscayne Bay and adjacent wetlands as part of a comprehensive plan for restoring the south Florida ecosystem. The project will also help restore saltwater wetlands and the near shore bay through the re-establishment of optimal salinity concentrations for fish and shellfish nursery habitat. This plan will rehydrate coastal wetlands and reduce damaging point source freshwater discharge to Biscayne Bay. This will also improve functional fish and wildlife habitat in Florida Bay and Biscayne Bay, by rehydrating coastal wetlands and reducing wasteful point source freshwater discharge. The project provides habitat for 21 federally-listed endangered or threatened species, including the West Indian Manatee, Florida Panther, Cape Sable Seaside Sparrow, and the American Crocodile. The Recommended Plan encompasses a footprint of approximately 3,761 acres and includes features in three of the projects four sub-components (hydrologic distinct regions of the study area): Deering Estate, Cutler Wetlands, and L-31 East Flow Way. Prior year appropriations were used to design and award a contract for two culverts on L-31 East Flow Way on September 28, 2016.

AUTHORIZATION: Flood Control Acts of 1948, 1954, 1960, 1962, 1965, and 1968; Authorization in 1970 under Section 201 of the Flood Control Act of 1965, and the Water Resources Development Acts (WRDA) of 1986, 1988, 1990, 1992, 1996, 1999, 2000, and 2007; the Water Resources Reform and Development Act (WRRDA) of 2014; Water Infrastructure Improvements for the Nation Act 2016 (WIIN Act); and the WRDA of 2018. The Modified Water Deliveries to Everglades National Park was authorized under the Everglades Expansion Act of 1989 (PL 101-229). PL 101-229 specifically directs the Secretary of the Army, in consultation with the Secretary of Interior, to construct modifications to the C&SF Project to improve water deliveries to ENP. The Upper St. Johns River Basin was authorized under Flood Control Acts of 1948, 1954, 1958, 1965, Post Authorization Report 1984 and Water Resources Development Act 1986.

REMAINING BENEFIT-REMAINING COST RATIO: N/A; Ecosystem Restoration Project

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms. Incremental cost analysis (CE/ICA) was used to calculate the cost effectiveness of building the selected plans for each separable element within the SFER Program. For the CERP each of the projects highlighted in the Plan were further developed and analyzed in Project Implementation Reports and a CE/ICA was completed for each based on cost and environmental benefits. In addition, all projects recommended under the CERP alternative, undergo a Next Added Increment (NAI) analysis to determine what benefits the selected plan contributes to without regard to future CERP projects. It also determines whether sufficient benefits will accrue to justify the cost of the project if no additional CERP projects (other than those already existing or authorized) are implemented.

INITIAL BENEFIT-COST RATIO: The initial benefit-cost ratio for the entire project is not applicable because environmental benefits have not been quantified in monetary terms.

BASIS OF BENEFIT-COST RATIO: N/A; Ecosystem Restoration Project

SUMMARIZED FINANCIAL DATA			ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost (CoE)		\$8,132,361,000		C-51 West Palm Beach	100	April 2017
Programmed Construction	\$7,508,370,000			C-111 (South Dade)	93	TBD
Un-programmed Construction	\$623,991,000			CERP	29	TBD
				Kissimmee	92	TBD
Estimated Federal Cost (Other Federal Agencies)		\$506,083,000		C-43 West Basin Storage Reservoir	15	TBD
Programmed Construction	\$506,083,000			Picayune Strand	84	TBD
Un-programmed Construction	\$0			Indian River Lagoon South	22	TBD
Estimated Total Federal Cost		\$8,638,444,000		C-111 Spreader Canal	90	TBD
Programmed Construction				Site1 Impoundment	30	TBD
Un-programmed Construction	\$8,014,453,000 \$623,991,000			Mod Waters Deliveries	99	TBD
				Biscayne Bay Coastal Wetlands	38	TBD
Estimated Non-Federal Cost		\$7,413,757,000		Broward County Water Preserve Area	1	TBD
Programmed Construction	\$7,083,583,000			Melaleuca Eradication	100	July 2013
Cash Contributions	\$4,676,697,000			Manatee Pass Gates	100	September 2012
Other Costs	\$2,406,886,000			Seminole Big Cypress	100	March 2017
Un-programmed Construction	\$330,174,000			Ten Mile Creek	100	May 2016
Cash Contributions	\$175,490,000			Lake Okeechobee: Water Retention and Phosphorus Removal	100	February 2015
Other Costs	\$154,684,000			Western C-11 Basin	100	September 2005
				Florida Keys: Carrying Capacity	100	December 2004
				E Coast Canal	100	September 2004
				Tamiami Trail: Western Culverts	68	TBD

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

SUMMARIZED FINANCIAL DATA (Continued)

		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Total Estimated Programmed Construction Cost	\$15,098,036,000		Southern CREW	90	TBD
Total Estimated Un-programmed Construction Cost	\$954,165,000		Lake Trafford	95	TBD
Total Estimated Project Cost	\$16,052,201,000		Misc. Completed Works	100	October 1992
Allocations to 30 September FY 2016	\$2,463,001,000				
Allocations for FY 2017	\$114,500,000				
Allocation for FY 2018	\$109,427,000				
Allocation for FY 2019	\$104,565,000				
Allocations through FY 2019	\$2,791,493,000	1/ 2/ 3/ 5/			37%
Estimated Unobligated Carry-In Funds	\$0	4/			
President's Budget for FY 2020	\$63,255,000				38%
Programmed Balance to Complete after FY 2020	\$4,653,622,000	6/			
Un-programmed Balance to Complete after FY 2020	\$623,991,000				

1/ \$(11,429,000) reprogrammed from the project. \$6,449,000 reprogrammed to the project.

2/ \$(3,733,000) rescinded from the project.

3/ \$(26,500,000) transferred to the Flood Control and Coastal Emergencies account. The Short Term Supplemental Public Law 115-123 funding allocated to the Kissimmee River Restoration project (\$995,643) is not accounted for in this Civil Works J-sheet.

4/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$18,485,626 (Loxahatchee River Watershed Restoration Project continue PIR \$60,522; Lake Okeechobee Watershed Project continue PIR \$1,018,703; Western Everglades Restoration Project continue PIR \$1,646,500; Indian River Lagoon South C23/24 Plans and Specs \$3,500,000; Broward County Water Preserve Area C-11 Impoundment Plans and Specs \$3,017,886; Picayune Strand Restoration Project Road Removal and Tieback levee contract \$5,000,000; CERP Planning Level Activities Program Management \$731; Kissimmee River Restoration Project continue construction \$4,120,246; and Everglades and South Florida programmatic continue fiscal close out \$121,038). There was an additional \$234,409 of unobligated funds that are committed within the Corps for scheduled ongoing requirements in FY 2019. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2020 from prior appropriations for use on this effort is \$0.

5/ PED costs of \$560,616 are included in this amount.

6/ For programmed work only; remaining work is un-programmed pending a decision to construct these features.

PHYSICAL DATA:

Pumping Plants	42	Each
Floodway Control & Diversion Structures	292	Each
Recreation	9	Each
Relocations		
Highway Bridges	2	Each
Railroads Bridges	58	Each
Canals		
New River Channel	17	Each
Water Control Structures Removal	2	Each
Locks	25	Each
Canals	1,057	Miles
Levees	844	Miles
Bridge	8	Each

JUSTIFICATION:

Average annual damages are an estimated \$110,580,000 without the Central and Southern Florida (C&SF) project and \$22,536,000 with the C&SF project. Damages attributable to urban property are 16.7 percent and 83.3 percent are attributable to rural property. The proportion of average annual damages prevented is 36.8 percent to existing development and 63.2 percent to future development.

Average annual benefits of the C&SF Project, excluding restoration projects are as follows:

Annual Benefits	Amount
Flood Control	\$235,213,000
Municipal and Industrial Water Supply	\$25,664,000
Agricultural Water Supply	\$27,614,000
Recreation	\$11,109,000
Fish and Wildlife	\$238,000
Area Redevelopment	\$3,012,000
Total	\$302,850,000

The Everglades National Park receives virtually its entire source of water (other than direct rainfall) from the C&SF Project. The pumping rate for irrigation of 590 square miles would yield approximately 917,850 acre-feet per year for agricultural use. Recurrent drought conditions with resultant low flows require supplemental irrigation to ensure adequate crop yields.

C&SF restoration projects connect state and federal preserve lands for plant and animal species; enhance wetland and other habitats; enhance water quality, including moderating unnatural salinity changes which cause detrimental effects to estuarine communities; reduce seepage losses from the natural system .

The Corps is working in stages to restore natural hydrological conditions in Everglades National Park (ENP). Public Law 90-483 and Public Law 101-229 (Everglades National Park Protection and Expansion Act) authorized modifications to the C&SF project for environmental restoration in the C-111 basin and Shark River Slough.

FISCAL YEAR 2019: The total appropriated amount, plus carry in funds, will be applied as follows:

Non-CERP

C-111 South Dade

Project Oversight	\$	1,108,000	
Complete Combined Operational Plan and fiscally close out current authorized project	\$	1,423,000	
Continue Post Authorization Report	\$	340,000	
C-111 South Dade Sub-Total	\$	2,871,000	

Non-CERP TOTAL **\$ 2,871,000**

CERP

CERP Indian River Lagoon South

Complete and close out continuing contract for construction on the CERP Indian River Lagoon South C-44 Reservoir	\$	53,657,000	
Oversight of Sponsor Construction on Indian River Lagoon South C-44 Pump Station	\$	500,000	
C23/24 North Continue Design Plans and Specifications (Carry-in from FY2018)	\$	3,500,000	4\
Initiate and fully fund to completion construction of C-44 Bank Stabilization	\$	26,000,000	
CERP Indian River Lagoon South Sub-total	\$	83,657,000	

CERP Picayune Strand Restoration Project

Complete Construction of Miller Pump Station	\$	700,000	
Remove road north of the Tie Back Levee (Carry-in from FY2018)	\$	5,000,000	4\
Project Oversight	\$	1,500,000	
CERP Picayune Strand Restoration Project Sub-Total	\$	7,200,000	

CERP Caloosahatchee C-43 WBSR - Construction Oversight **\$ 1,100,000**

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

CERP Loxahatchee River Watershed (Project Implementation Report) – Continue study (Carry-in from FY2018)	\$	1,247,000	4\
CERP Lake Okeechobee Watershed (Project Implementation Report) – Complete Study (Carry-in from FY2018)	\$	1,019,000	4\
CERP Western Everglades (Project Implementation Report) – Continue Study (Includes Carry-in from FY2018)	\$	2,600,000	4\
CERP Biscayne Bay Coastal Wetlands			
Contract 4 - L-31 East Flow Way design	\$	100,000	
Contract 5 - L-31 East Flow Way Pump Station design	\$	820,000	
CERP Biscayne Bay Coastal Wetlands Project Subtotal	\$	920,000	
CERP Broward County Water Preserve Area –			
North Mitigation Are A Berms Construction Oversight	\$	155,000	
C-11 Impoundment Plans and Specifications (Carry-in from FY2018)	\$	3,018,000	
CERP Broward County Water Preserve Area Project Subtotal	\$	3,173,000	4\
CERP Central Everglades Planning Project-			
Complete PPA South Validation Study	\$	1,475,000	
Everglades Agricultural Area Reservoir Follow-up Report	\$	270,000	
CERP Central Everglades Planning Project-Subtotal	\$	1,745,000	
CERP Design			
Adaptive Assessment and Monitoring	\$	3,750,000	
Interagency Modeling Center	\$	1,200,000	
Public Outreach	\$	5,000	
Information & Data Management	\$	200,000	
RECOVER	\$	1,000,000	
Program Management (Includes Carry-in from FY2018)	\$	2,001,000	4\
CERP Design Sub-Total	\$	8,156,000	
CERP Sub-Total	\$	110,817,000	
Subtotal: Central and Southern Florida	\$	113,688,000	
Kissimmee:			
Work in Kind and Lands, Easements, Rights-of-ways, Relocations, and Disposal	\$	850,000	4\
Area review, monitoring and crediting; Project Oversight	\$	7,870,000	

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

Ongoing construction contract funding for S-69 Weir and C-37 Embankment Armoring		
Kissimmee Sub-Total:	\$	8,720,000
Everglades & Southern Florida		
Lake Okeechobee Water Retention and Phosphorus Removal		
Refund of excess non-Federal sponsor payment and fiscally close out project	\$	522,000
Everglades and South Florida Programmatic	\$	121,000
Fiscal Close Out (Carry-in from FY2018)		4\
Everglades & Southern Florida Sub-Total	\$	643,000
South Florida Ecosystem Restoration FY 2019 Total plus carry-in	\$	123,051,000

FISCAL YEAR 2020: The budgeted amount plus carry-in funds will be applied as follows:

Non-CERP

C-111 South Dade

Post Authorization Change Report Complete

\$ 200,000

Non-CERP TOTAL

\$ 200,000

CERP

CERP Indian River Lagoon South

Construction Management and Engineering and Design for CERP Indian River Lagoon South C-44 Reservoir

\$ 7,000,000

Oversight of Sponsor Construction on Indian River Lagoon South C-44 Pump Station

\$ 500,000

CERP Indian River Lagoon South Sub-total

\$ 7,500,000

CERP Caloosahatchee C-43 WBSR - Construction Oversight

\$ 1,500,000

CERP Picayune Strand

Initiate construction of road removal West of Miller Blvd

\$ 6,500,000

Initiate construction of road removal East of Miller Blvd

\$ 5,100,000

Initiate construction of Southwest Protection Features

\$ 24,000,000

Complete Southwest Protection Features Plans and Specs

\$ 1,000,000

Project Oversight

\$ 1,500,000

CERP Picayune Strand Sub-total

\$ 38,100,000

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

CERP Central Everglades Planning Project		
PPA South – Initiate Design (Plans and Specs)	\$	3,000,000
CERP Biscayne Bay Coastal Wetlands		
Complete Plans and Specs for L-31 East Flow-way Contract 5	\$	4,000,000
CERP Design		
Adaptive Assessment and Monitoring	\$	4,000,000
Interagency Modeling Center	\$	750,000
Public Outreach	\$	5,000
Information & Data Management	\$	200,000
RECOVER	\$	1,000,000
Program Management	\$	2,000,000
CERP Design Sub-Total	\$	7,955,000
CERP Sub-Total	\$	62,055,000
Subtotal: Central and Southern Florida	\$	62,255,000
Kissimmee:		
Work in Kind and Lands, Easements, Rights-of-ways, Relocations, and Disposal Area review, monitoring and crediting; Project Oversight	\$	1,000,000
South Florida Ecosystem Restoration FY 2020 Total	\$	63,255,000

NON-FEDERAL COST: In accordance with the cost sharing and financing concepts reflected in specific authorizing legislation and the Water Resources Development Act of 1986, 1996, 2000 and 2007, Water Resources Reform and Development Act of 2014 and the Water Infrastructure Improvements for the Nation Act 2016 (WIIN Act) as applicable, the non-Federal sponsor must comply with the requirements listed in the Summarized Financial Data for each separable element (See OTHER INFORMATION).

STATUS OF LOCAL COOPERATION: Assurances of local cooperation have been accepted from the local sponsor, the South Florida Water Management District, for all works authorized under the Central and Southern Florida (C&SF) project. The Design Agreement for the Comprehensive Everglades Restoration Plan (CERP) was executed with the South Florida Water Management District on May 12, 2000.

The Kissimmee Project Cooperation Agreement which reflects the cost sharing outlined in House Document 102-286 dated April 7, 1992 was executed with the South Florida Water Management District (SFWMD) in March 1994. The local sponsor will be required to provide a cash contribution for project costs in excess of land credit (reflecting credit for lands, easements, rights of way, relocations, and disposal areas).

The CERP Master Agreement was executed on 13 August 2009 between the Corps and the South Florida Water Management District. A Project Partnering Agreement (PPA) was executed on the CERP: Picayune Strand project in August 2009 with the South Florida Water Management District. The CERP Design Agreement was amended on 13 August 2009 to reflect authority to balance cost share of design and construction activities across CERP projects.

A Project Partnership Agreement was executed with SFWMD for the Indian River Lagoon South Project in September 2010. An amendment to the PPA for the Indian River lagoon – South project was executed in August 2014.

A PPA was executed on the CERP: C-43 West Basin Storage Reservoir project in June 2016 and PPAs were executed on the CERP: Biscayne Bay Coastal Wetlands and CERP: Broward County WPA projects in August 2016. A PPA amendment was executed for CERP: Biscayne Bay Coastal Wetlands in March 2018.

In August 2009, five Pre-Partnership Credit Agreements (PPCA) were executed with the South Florida Water management District: Picayune Strand, Indian River Lagoon South, C-43 Caloosahatchee River West Basin Storage Reservoir, C-111 Spreader Canal, and the Biscayne Bay Costal Wetlands projects. A PPCA was executed for the CERP: Central Everglades Planning Project in May 2016.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal (Corps cost estimate for the Corps' share of the overall restoration effort) cost estimate of \$8,132,361,000 is an increase of \$21,236,000 from the latest estimate (\$8,111,125,000) presented to Congress (FY 2018). The changes include the following:

Item	Amount
Price Escalation on Construction Features	\$192,780,000
Design Changes and Other Estimating Adjustments	(\$76,979,000)
Schedule Changes	(\$94,565,000)
Total	\$21,236,000

STATUS OF ENVIRONMENTAL IMPACT STATEMENT:

The latest Programmatic Environmental Impact Statements for Central and Southern Florida project was the Comprehensive Review Study in April 1999. NEPA documents have also been completed for the following projects: Indian River Lagoon South, Picayune Strand, Site 1 Impoundment, Melaleuca Eradication, C-111 Spreader Canal, Caloosahatchee River (C-43) West Basin Storage Reservoir, Broward County Water Preserve Areas, Biscayne Bay Coastal Wetlands, and Central Everglades Planning Project.

The final Environmental Impact Statement for the Kissimmee project was filed with EPA on April 5, 1992. A supplement to the Environmental Impact Statement was integrated into the Upper Basin project modification report.

NEPA documents were completed prior to execution of the PCA for East Coast Canal Structures, Tamiami Trail Culverts (Western Culverts), Western C-11, Seminole Big Cypress, Southern CREW, Lake Okeechobee Water Retention & Phosphorus Removal, 10-Mile Creek, and Lake Trafford.

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

The Programmatic Environmental Impact Statement for the Upper St. Johns River Basin Project was approved September 4, 1986. The Three Forks Marsh Supplemental Environmental Impact Statement was approved January 2004.

OTHER INFORMATION: The C&SF project was originally authorized and designed as a flood control project in response to the maximum flood of record in 1947. The 1947 flood frequency averages 1 in 25 years over the project area, with an average duration of 70 days. Minor floods occur almost yearly in the project area and major floods occur frequently. This situation is aggravated by wet antecedent conditions followed by heavy seasonal rainfall. The average degree of protection provided by the completed project is about a 10-year flood frequency protection. Approximately 2,853,700 acres are protected. This encompasses 2,765,100 agricultural acres and 88,600 urban acres. The present value of property subject to flood damages is about \$12.3 billion. Residential, commercial, industrial, public, and agricultural property types are located within the project area. Funds to initiate preconstruction planning and construction on the Central and Southern Florida project were appropriated in FY 1950.

Under Public Law 90-483 (River and Harbor Act of 1968), additional project features for the purpose of water supply were added to the Central and Southern Florida project. The storage capacity of the entire project is 2,953,000 average annual acre-feet divided into approximately 1,600,000 acre-feet for urban use by 2020 and 740,000 acre-feet for agricultural use by 2020.

The Water Resources Development Act (WRDA) of 1992 authorizes the Chief of Engineers to review the Central and Southern Florida (C&SF) project to determine whether modifications to the existing project are advisable at the present time due to significantly changed physical, biological, demographic, or economic conditions, with particular reference to modifying the project or its operation for improving the quality of the environment, improving protection of the aquifer, and improving the integrity, capability, and conservation of urban water supplies affected by the project or its operation. The central organizing theme of the Comprehensive Restudy was the restoration of the South Florida ecosystem while accommodating other demands for water and related land resources in south Florida. Recognizing the complexity of ecological restoration and the extensive interaction between the ecosystem and other uses of water and related land resources, oversight of the reconnaissance level study effort was provided by the interagency South Florida Ecosystem Restoration Task Force, which continues to provide policy guidance, interagency coordination, and facilitate appropriate agency participation. WRDA 1992 also authorized the Kissimmee River Restoration project as two separate projects known as the "Lower Basin" at a cost of \$426,885,000 and the Kissimmee River Headwaters known as the "Upper Basin" at a cost of \$92,210,000, subsequently directing that a single Project Cooperation Agreement be executed for the combined projects.

The Water Resources Development Act of 1996 (Section 528) required that a Comprehensive Restudy feasibility report be submitted to Congress, along with a Programmatic Environmental Impact Statement, in July 1999. The Final Integrated Feasibility Report and Programmatic Environmental Impact Statement were submitted to Congress on July 1, 1999. The report recommended a Comprehensive Everglades Restoration Plan (CERP). WRDA 1996 authorized implementation of the Everglades and South Florida (E&SF) Restoration Project in order to provide immediate, independent, and substantial ecosystem restoration, protection and preservation benefits. The authorization permitted implementation of nine projects that were justified on the basis of those benefits.

The Water Resources Development Act of 1999 authorized two pilot projects that were part of the CERP for \$29,000,000.

The Water Resources Development Act of 2000 authorized CERP as a conceptual framework for modifications and operational changes to the C&SF Project, providing specific authorization for 10 projects totaling \$1,100,000,000 (including \$100,000,000 for adaptive assessment and monitoring programs) and 4 pilot projects totaling \$69,000,000, and allowed for implementation of projects under a programmatic authority, not to exceed \$206,000,000. The Energy and Water Appropriations Act of FY 2000, Public Law 106-50 appropriated the first funds to initiate design of elements of the CERP.

The Water Resources Development Act of 2007 provided authorization for the following three CERP projects: Picayune Strand, Indian River Lagoon South and Site 1 Impoundment. It also provided a new authorized project cost for the Hillsboro and Lake Okeechobee ASR Pilot and the Caloosahatchee ASR Pilot projects; and a provision for the establishment of Section 902 limits for the Programmatic Authority projects. The Water Resources Development Act of 2007 amended authorization for the Everglades and South Florida Restoration (E&SF) Seminole Big Cypress project to increase the Federal share of project costs from \$25 million to \$30 million and increase the E&SF program from \$75 million to \$95 million.

The Water Resources Reform and Development Act of 2014 provided authorization for the following four CERP projects: Broward County Water Preserve Areas, Biscayne Bay Coastal Wetland (Florida), C-111 Spreader Canal Western Project, and Caloosahatchee River (C-43) West Basin Storage Reservoir.

The Water Infrastructure Improvements for the Nation Act (WIIN Act) of 2016 provided authorization for the CERP: Central Everglades Planning Project and reauthorized the CERP: Picayune Strand Project.

The Water Resources Reform and Development Act of 2018 provided authorization for Kissimmee River Restoration project which provided crediting authority to the Corps for actions taken and proposed to be performed by the non-Federal sponsor that were integral to implementation of the project.

Modified Water Deliveries to Everglades National Park Project: The Everglades National Park Protection and Expansion Act, signed December 13, 1989, authorized construction of works required to take steps to improve water deliveries to Shark River Slough in Everglades National Park, construction of flood mitigation works for the residential area in the East Everglades, and acquisition of 107,600 acres of privately owned wetlands in the East Everglades. The purpose of the project is to improve the conveyance of water between Water Conservation Areas (WCA) north of ENP and the Shark River Slough within the Park. The Department of the Interior and the State of Florida acquired the lands included in the ENP expansion area and the Secretary of the Army has responsibility for constructing all project modifications. PCAs were executed with the South Florida Water Management District September 1994 and executed the first amendment in July 2001 for the Modified Water Deliveries Project to implement modifications to the C&SF Project to improve water deliveries into Everglades National Park. (Federal: \$417,000,000; Non-Federal: \$156,000)

PCA Amendment No. 2 was executed August 2008 for Tamiami Trail Modification. PCA Amendment No. 3 was executed in August 2017 to except from the definition of the project the unconstructed features, while still achieving the project's authorized purposes and benefits. Under the initial implementation plan, funds were appropriated to the National Park Service and transferred to the Corps of Engineers for this purpose. From FY 2006 to FY 2008, Congress provided funding for this project to both the National Park Service and the Corps of Engineers. All subsequent funding is expected to be provided through National Park Service appropriations. The construction of the final project roadway components, the Tamiami Trail bridge and roadway raising, was initiated in FY 2010 and completed in December 2013. The final feature to be implemented to complete physical construction on the full project was completed in 2018.

C-51 West Palm Beach Canal: The West Palm Beach Canal (C-51) project improves the quality of water entering Loxahatchee North West River & Lake Worth Lagoon as well as reducing freshwater pulse flows which adversely affect habitat in Lake Worth Lagoon. This project was funded to completion in FY 2016 and physically completed in August 2017. Project was fiscally closed out in FY 2018. (Federal: \$338,065,000; Non-Federal: \$30,232,000.

Site 1 Impoundment: The Project Implementation Report (PIR) for Site 1 Impoundment, which is a component of the Comprehensive Plan, was completed in August 2006. A Chief's Report on the PIR was signed on December 19, 2006. In August 2010, a Project Partnership Agreement was executed with SFWMD and the Phase 1 construction contract was awarded using ARRA funds. The purpose of the project was to reduce water withdrawals and seepage losses from the natural system and provides habitat improvement, while shifting consumptive water demands off of Loxahatchee National Wildlife Refuge (NWR) and Lake Okeechobee, and restore and improve the functionality of the habitat for the Wood Stork and Snail Kite. It includes a 1,660-acre project footprint with an eight foot

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

deep above ground impoundment, pump station, discharge gated culvert, one combined service / auxiliary non-gated spillway and one auxiliary non-gated spillway, and a seepage control canal with an associated seepage pump station and overflow weir. An additional gated culvert structure is designed to control stages in L-36 Borrow Canal and North Springs Improvement District discharges into the Hillsboro Canal. Recreation features include boardwalks, viewing platforms, picnic shelters, canoe launches and information kiosks at one site within the footprint. This project was completed and transferred to the non-Federal sponsor in 2016. (Federal: \$177,494,000; Non-Federal: \$177,494,000).

C-111 Spreader Canal: The C-111 Spreader Canal Western Project Implementation Report, which is a component of the Comprehensive Plan, was completed in September 2009. The final PIR and Environmental Impact Statement (EIS) were approved at the Civil Works Review Board in December 2009. The Chief's Report was signed on January 31, 2012. The Record of Decision was signed on July 19, 2012 and transmitted to Congress on July 20, 2012. The purpose of this project is to improve the ecological function of Everglades National Park by creating a hydraulic ridge that will reduce drainage of the area by the C-111 Canal. It will consist of two above-ground detention areas, the approximately 590-acre Frog Pond Detention Area and an approximately 50-acre Aerojet Canal, which will serve to create a continuous and protective hydraulic ridge along the eastern boundary of Everglades National Park. Five additional features will be included that are intended to raise water levels in the eastern portion of the project area and restore wetlands in the Southern Glades and Model Lands. Major features of the detention areas include the construction of external levees and one approximately 225-cubic feet per second pump station for each detention area. Recreation components consist of a trailhead with parking, traffic controls, a shade shelter with interpretive board, and approximately 6.8 miles of multi-use levee trails atop impoundment levees. Restoration-compatible recreation includes hiking, biking, fishing, nature study, bird watching, state-managed hunts and equestrian use. This project was constructed by the non-Federal sponsor, with the exception of S-198. Funds were provided in FY 2016 to execute a Project Partnership Agreement. However, due to language in the Chief's Report to afford the non-Federal sponsor credit for the work performed a takings analysis must be completed. The sponsor requested that execution of the PPA be delayed pending final determination of lands required for the project. (Federal: \$88,637,000; Non-Federal: \$88,637,000).

Broward County Water Preserve Areas: The Broward County WPA Project Implementation Report, which is a component of the Comprehensive Plan, was completed in April 2007. However, the final report was on hold pending a decision on the CERP land valuation policy, which was resolved in August 2009. The final report was modified to reflect updated CERP land valuation guidance as well as other policy updates required since 2007. The Chief's Report was signed on May 21, 2012. The Record of Decision was signed and transmitted to Congress on November 2, 2012. The purpose of the project is to improve the ecological function of the Everglades ecosystem by capturing and storing excess surface water runoff from the C-11 watershed and reducing excess releases to the WCA 3A/3B, and will minimize seepage losses during dry periods. This would include a foot print of approximately 7,990 acres based on the three components: C-11 Impoundment, WCA 3A/3B Seepage Management Area (SMA), and C-9 Impoundment, as well as recreation features. This will also improve functional fish and wildlife habitat in Water Conservation Areas (WCA) 3A/3B, and in Everglades National Park. The portion of the Everglades ecosystem directly affected by the project provides habitat for five federally-listed species: West Indian manatee, Florida panther, wood stork, snail kite and Eastern indigo snake. Overall, an ecological lift of approximately 166,211 average annual habitat units will occur due to improved hydro periods and hydro patterns in the project area. Overall, approximately 563,000 acres in Water Conservation Area 3 and 200,000 acres in the greater Everglades will benefit from project implementation. The project includes a combination of canals, levees, water control structures, pumps, bridges and buffer marsh. Recreation features include 14 miles of improved trail surface, parking areas with ADA accessible waterless toilets, walkway to canoe launch facilities, and information kiosk, shaded benches, footbridges, trash receptacles and signage. Prior year appropriations were used to design and award a contract for the North Mitigation Area A berm in September 2017. (Federal: \$529,185,000; Non-Federal: \$529,185,000.)

Everglades and South Florida (E&SF) Restoration Project: The E&SF Restoration projects include the following separable elements: East Coast Canal Structures, Western C-11 Basin, Seminole Big Cypress, Ten Mile Creek, Tamiami Trail (Western Culverts), Florida Keys Carrying Capacity, Lake Okeechobee Water Retention and Phosphorus Removal, Southern CREW, and Lake Trafford; each project must meet the following criteria: be within the C&SF Project and its

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

near shore waters; provide immediate, independent, and substantial ecosystem restoration, protection, and preservation benefits; cost less than \$25 million in Federal funds; be consistent with the Governor's Commission's Conceptual Plan; and have a local sponsor to contribute a minimum of 50 percent of the total project cost. A Feasibility Cost Share Agreement (FCSA) was executed December 1998 for Florida Keys Carrying Capacity. PCAs were executed January 7, 2000 for East Coast Canal Structures, Tamiami Trail Culverts, Western C-11, Seminole Big Cypress, Southern CREW, Lake Okeechobee Water Retention and Phosphorus Removal, 10-Mile Creek, and Lake Trafford. Local sponsors include: South Florida Water Management District (SFWMD), Seminole Tribe of Florida, and the Florida Department of Community Affairs (DCA). East Coast Canal Structure, Western C-11 Basin, Florida Keys Carrying Capacity Study, Lake Okeechobee Water Retention and Phosphorus Removal have been completed. The local sponsors for the Tamiami Trail, Southern CREW, and Lake Trafford projects have elected to complete those projects independent of additional Federal funding. The Enacted Energy and Water Development Appropriations Act of 2010 included a general provision to increase the Everglades and South Florida Ten Mile Creek federal funding cap by \$3.5 million, an increase from \$25 million to \$28.5 million, to complete a Post Authorization Change Report (PACR) and continue preventative maintenance. The PACR would evaluate options to address project design deficiencies and identify cost effective remedies. The 2016 Consolidated Appropriations Act deauthorized this project as of May 2016 the constructed facility has been transferred to the South Florida Water Management District. The Seminole Tribe Water Conservation Project located on the Big Cypress Reservation consists of building conveyance canals that will feed newly constructed impoundments. The impoundments function as natural habitats while improving water quality. The water flows from the Big Cypress Reservation and into the Big Cypress National Preserve. The Seminole Big Cypress project completed in FY 2018. (Federal: \$98,500,000; Non-Federal: \$151,156,000.)

Melaleuca Eradication: A Project Partnership Agreement was executed with SFWMD for Melaleuca Eradication and Other Exotic Plants in July 2010. Melaleuca Eradication was fiscally closed out on August 31, 2016. (Federal: \$2,330,000; Non-Federal: \$2,330,000).

Manatee Pass Gates: A PCA amendment was executed for Manatee Pass Thru Gates in February 2015 to facilitate fiscal close-out of this construction activity. Manatee Pass Gates was fiscally closed out on July 24, 2017. (Federal: \$15,269,000; Non-Federal: \$2,086,000.)

SUMMARIZED FINANCIAL DATA- Separable Elements

C&SF C-111 South Dade

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$142,131,000	\$0
Pay one-half of the cost of the project assigned to flood control and bear a percentage of costs of operation, maintenance, repair, rehabilitation, and replacement of flood control facilities.	\$25,300,000	\$2,119,000
Subtotal Non-Federal Costs:	\$167,431,000	\$2,119,000
Estimated Federal Cost (CoE) Programmed Construction 7/	\$167,431,000	\$167,431,000
Estimated Total Federal Cost Programmed Construction	\$167,431,000	\$167,431,000
Estimated Non-Federal Cost Programmed Construction	\$167,431,000	\$167,431,000
Cash Contributions	\$25,300,000	
Other Costs	\$142,131,000	
Total Estimated Programmed Construction Cost		\$334,862,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$334,862,000

7/ Fed cost includes \$131,000 for Independent External Peer Review which is included in the total project cost, but is not to be cost shared with the local sponsor.

SUMMARIZED FINANCIAL DATA- Separable Elements

CERP Indian River Lagoon South

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$1,026,369,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$712,232,000	\$6,145,000
Subtotal Non-Federal Costs:	\$1,738,601,000	\$6,145,000
Estimated Federal Cost (CoE) Programmed Construction	\$1,738,601,000	\$1,738,601,000
Estimated Total Federal Cost Programmed Construction	\$1,738,601,000	\$1,738,601,000
Estimated Non-Federal Cost Programmed Construction	\$1,738,601,000	\$1,738,601,000
Cash Contributions	\$712,232,000	
Other Costs	\$1,026,369,000	
Total Estimated Programmed Construction Cost		\$3,477,202,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$3,477,201,000

SUMMARIZED FINANCIAL DATA- Separable Elements

CERP Caloosahatchee River (C-43) West Basin Storage Reservoir

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$74,966,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$328,076,000	\$1,500,000
Subtotal Non-Federal Costs:	\$403,042,000	\$1,500,000
Estimated Federal Cost (CoE) Programmed Construction	\$375,538,000	\$375,538,000
Estimated Federal Cost (OFA) Programmed Construction	\$27,504,000	\$27,504,000
Estimated Total Federal Cost Programmed Construction	\$403,042,000	\$403,042,000
Estimated Non-Federal Cost Programmed Construction	\$403,042,000	\$403,042,000
Cash Contributions	\$328,076,000	
Other Costs	\$74,966,000	
Total Estimated Programmed Construction Cost		\$806,084,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$806,084,000

Division: South Atlantic

District: Jacksonville

South Florida Ecosystem Restoration, FL

SUMMARIZED FINANCIAL DATA- Separable Elements

CERP Picayune Strand

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$177,495,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$138,919,000	\$2,950,000
Subtotal Non-Federal Costs:	\$316,414,000	\$2,950,000
Estimated Federal Cost (CoE) Programmed Construction 8/	\$278,329,000	\$278,329,000
Estimated Federal Cost (OFA) Programmed Construction	\$38,085,000	\$38,085,000
Estimated Total Federal Cost Programmed Construction	\$316,414,000	\$316,414,000
Estimated Non-Federal Cost Programmed Construction	\$316,414,000	\$316,414,000
Cash Contributions	\$138,919,000	
Other Costs	\$177,495,000	
Total Estimated Programmed Construction Cost		\$632,828,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$632,828,000

8/ Federal cost includes \$59,000 for Independent External Peer Review that is part of the total project cost, but is not to be cost shared with the local sponsor.

SUMMARIZED FINANCIAL DATA- Separable Elements

CERP Central Everglades Planning Project

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$39,813,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$1,470,249,000	\$5,625,000
Subtotal Non-Federal Costs:	\$1,510,062,000	\$5,625,000
Estimated Federal Cost (CoE) Programmed Construction	\$1,510,062,000	\$1,510,062,000
Estimated Total Federal Cost Programmed Construction	\$1,510,062,000	\$1,510,062,000
Estimated Non-Federal Cost Programmed Construction	\$1,510,062,000	\$1,510,062,000
Cash Contributions	\$1,470,249,000	
Other Costs	\$39,813,000	
Total Estimated Programmed Construction Cost		\$3,020,124,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$3,020,124,000

SUMMARIZED FINANCIAL DATA- Separable Elements

CERP Biscayne Bay Coastal Wetlands

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$84,795,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$21,061,000	\$936,500
Subtotal Non-Federal Costs:	\$105,856,000	\$936,500
Estimated Federal Cost (CoE) Programmed Construction	\$105,856,000	\$105,856,000
Estimated Total Federal Cost Programmed Construction	\$105,856,000	\$105,856,000
Estimated Non-Federal Cost Programmed Construction	\$105,856,000	\$105,856,000
Cash Contributions	\$21,061,000	
Other Costs	\$84,795,000	
Total Estimated Programmed Construction Cost		\$211,712,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$211,712,000

SUMMARIZED FINANCIAL DATA- Separable Elements

Kissimmee River

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement Costs
Provides lands, easements, rights of way, and modify or relocate buildings, utilities, roads, bridges, and other facilities	\$261,000,000	\$0
Cash Contribution/Work-In-Kind/Bear 50% off costs of operation, maintenance, repair, rehabilitation and replacement	\$112,451,000	\$477,000
Subtotal Non-Federal Costs:	\$373,451,000	\$477,000
Kissimmee River Lower Basin		
Estimated Federal Cost (CoE) Programmed Construction 9/	\$317,162,000	\$317,162,000
Estimated Total Federal Cost Programmed Construction	\$317,162,000	\$317,162,000
Estimated Non-Federal Cost Programmed Construction	\$269,657,000	\$269,657,000
Cash Contributions	\$106,167,000	
Other Costs	\$163,490,000	
Total Estimated Programmed Construction Cost		\$586,819,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$586,819,000
9/ Federal cost for the Lower Basin includes \$51,000 for Independent External Peer Review which is included in the total project cost, but is not to be cost shared with the local sponsor.		

SUMMARIZED FINANCIAL DATA- Separable Elements (Continued)

Kissimmee River Upper Basin

Estimated Federal Cost (CoE) Programmed Construction	\$56,289,000	\$56,289,000
Estimated Total Federal Cost Programmed Construction	\$56,289,000	\$56,289,000
Estimated Non-Federal Cost Programmed Construction	\$103,794,000	\$103,794,000
Cash Contributions	\$6,284,000	
Other Costs	\$97,510,000	
Total Estimated Programmed Construction Cost		\$160,083,000
Total Estimated Un-programmed Construction Cost		\$0
Total Estimated Project Cost		\$160,083,000

10/ Kissimmee project cost shared 50/50. Federal cost for the Upper Basin includes \$50,000 for Independent External Peer Review which is included in the total project cost, but is not to be cost shared with the local sponsor.

APPROPRIATION TITLE: Construction - Channels and Harbors (Navigation), Fiscal Year 2020

PROJECT NAME: Savannah Harbor Expansion, Georgia (Continuing)

LOCATION: The Savannah Harbor is a 33-mile long, 42-foot deep shipping channel along the Savannah River that separates Chatham County, Georgia to the south and Jasper County, South Carolina to the north. The Georgia Ports Authority (GPA) operates the Garden City Ocean Terminal facility located 19.5 miles upstream from the Atlantic Ocean.

DESCRIPTION: The project will involve deepening Savannah Harbor to 47 feet. This will require dredging and subsequent placement of 24 million cubic yards of sediments. Approximately 13 million cubic yards of sediment will be dredged from the Inner Harbor (Garden City Terminal from Stations 103+000 to 0+000) and deposited in existing upland Dredge Material Containment Areas (DMCAs) and about 11 million cubic yards of sediment would be dredged from the Entrance Channel (Stations 0+000 to -97+680B) and deposited in the Ocean Dredged Material Disposal Site (ODMDS) or an existing DMCA. Dike raising of DMCAs would be performed to provide disposal capacity used for the deepening new work materials within the footprint of the existing DMCAs. All work is programmed; however, no funding is included in the Summarized Financial Data to implement Section 1319 of the Water Infrastructure Improvements for the Nation Act. The total cost of the project construction is shared 75 percent Federal and 25 percent non-Federal, except for Navigation Aids (\$5,902,000) that will be funded by the U.S. Coast Guard and dredging of non-Federal berths (\$3,306,000) that will be funded at 100 percent non-Federal expense. Specifically, the construction involves the following:

- a. Channel Deepening: Extending the existing entrance channel 7.1 miles from Stations -60+000B to -97+680B and deepening to -49 feet Mean Lower Low Water (MLLW) from the new ocean terminus to Station -14B+000B, then deepening to -47 feet MLLW from Station -14B+000B to Station 0+000 and, deepening the inner harbor to -47 feet MLLW from Station 0+000 to 103+000;
- b. Bend Wideners: Widening bends on the entrance channel at one location (Stations -23+000B to -14+000B) and in the inner harbor channel at two locations; (Stations 27+700 to 31+500, and Stations 52+250 to 55+000);
- c. Meeting Lanes: Constructing two meeting areas (Stations 14+000 to 22+000 and Stations 55+000 to 59+000);
- d. Turning Basin: Deepening and enlarging the Kings Island Turning Basin to a width of 1,600 feet;
- e. DMCA: Restoring dredged material volumetric capacity in existing DMCAs;
- f. Mitigation: The mitigation plan includes: 1) Construction of a fish passage at the New Savannah Bluff Lock and Dam in Augusta, Georgia (This activity will not occur in Fiscal Year (FY) 2020); 2) Construction of a series of flow re-routing features in the estuary to include a diversion structure, cut closures, removal of a tidegate structure, and construction of a rock sill and submerged sediment berm; 3) Acquisition and preservation of 2,245 acres of wetlands; 4) Restoration of approximately 29 acres of tidal brackish marsh; 5) Installation of an oxygen injection system; 6) Construction of a raw water storage impoundment for the City of Savannah, Georgia industrial and domestic water treatment facility; 7) Construction of a boat ramp; 8) One-time payment to Georgia Department of Natural Resources (GA DNR) for a Striped bass stocking program; 9) Removal and recovery of the remains of a Civil War ironclad; 10) Up to ten years of monitoring of the mitigation features; and, 11) Adaptive management to modify features if necessary.

AUTHORIZATION: Section 101(b) (9) of the Water Resources Development Act (WRDA) of 1999, Section 7003 (1) of the Water Resources Reform and Development Act (WRRDA) of 2014, dated 15 May 2014; and Section 1401 (6) of the Water Resources and Development Act of 2018, dated 24 October 2018.

REMAINING BENEFIT-REMAINING COST RATIO: 5.4 to 1 at 7.0 percent

TOTAL BENEFIT-COST RATIO: 3.6 to 1.0 at 7.0 percent

INITIAL BENEFIT-COST RATIO: 3.3 to 1 at 7.0 percent (FY 2014)

BASIS OF BENEFIT-COST RATIO: Chief's Report, dated 17 August 2012, at 1 Oct 2012 price levels; Post Authorization Change Report dated November 10, 2016.

SUMMARIZED FINANCIAL DATA		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Appropriation Requirement (Corps)		\$732,800,000	NAVIGATION		
			Inner Harbor Channel	0	TBD
Estimated Appropriation Requirement (USCG)		\$ 5,902,000	Turns and Bends		
			Kings Island Turning Basin		
			Long Island Meeting Area		
Estimated Total Appropriation Requirement		\$738,702,000	Oglethorpe Meeting Area		
Future Non-Federal Reimbursement		\$101,100,000	Outer Harbor Channel	100	17 May 2018
Estimated Federal Cost (Ultimate)		\$637,602,000	14A Dike Raise	100	10 Jul 2017
			Final Dike Raises	0	TBD
Estimated Non-Federal Cost		\$391,128,000	MITIGATION		
			Raw Water Storage Impoundment	100	26 Jun 2018
Cash Contributions		\$310,197,500	Fish Passage at NSBLD	0	TBD
LERRDs		\$211,000	CSS <i>Georgia</i>	95	30 Sep 2020
Reimbursements		\$77,413,500	Dissolved Oxygen Plants	93	30 Apr 2019
Navigation		\$3,306,000	Flow Re-Routing	40	TBD
			McCoy's Cut and Rifle Cut, w/ Diversion Structure	25	14 Oct 2019
Total Estimated Project Cost		\$1,028,730,000	Sediment Basin Work	50	TBD
Authorized Cost (plus inflation)		\$1,028,730,000	Tide Gate Removal	100	30 Dec 2017
Maximum Cost Limit (Section 902)		\$1,222,680,000	Embankment Removal	100	30 Dec 2017
			Broad Berm and Fill	0	TBD
			Boat Ramp	0	TBD
			Marsh Restoration	0	TBD
			MONITORING		
			Pre-Construction	100	7 Oct 2014
			During Construction	50	TBD
			Post-Construction	0	TBD
			ADAPTIVE MANAGEMENT		
			Entire Project	50	TBD

Division: South Atlantic

District: Savannah

Savannah Harbor Expansion, GA

SUMMARIZED FINANCIAL DATA (continued)		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PHYSICAL PCT COMPLETION CMPL SCHEDULE
Allocations to 30 September 2016	\$94,799,000			
Allocation for FY 2017	\$44,241,000			
Allocation for FY 2018	\$84,760,000			
Allocation for FY 2019	\$101,120,000			
Allocations through FY 2019	\$324,920,000	<u>1/ 2/ / 4/ 5/</u>	44.3	
Estimated Unobligated Carry-In Funds	\$0	<u>3</u>		
President's Budget for FY 2020	\$130,280,000		62.1	
Programmed Balance to Complete after FY 2020	\$277,600,000			
Unprogrammed Balance to Complete after FY 2020	0			

- 1/ \$10,385,188 reprogrammed to the project: \$3,254,000 during preconstruction engineering and design (PED) phase and \$7,291,000 during Construction phase
- 2/ -\$19,000 rescinded from the project.
- 3/ Estimated Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 is \$0. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.
- 4/ PED costs of \$22,409,000 are included in this amount.
- 5/ The amount shown includes \$250,000 provided in Further Continuing and Security Assistance Appropriations Act, 2017, P.L. 114-254, December 2016.

PHYSICAL DATA: The Savannah Harbor Expansion project consists of the following features:

REAL ESTATE:

- Acquire 2,397 acres for project feature construction and mitigation.

NAVIGATION, PORTS and HARBORS:

- Deepen the approximately 38 miles of navigation channel
- Bend Wideners: Widen the channel at 3 bends: Jones Island Range to the north; Lower Flats Range to the north; Fort Jackson Range to the north.
- Meeting Areas: Long Island Meeting Area - 8,000 foot; Oglethorpe Meeting Area - 4,000 foot
- Turning Basin: Deepen and enlarge Kings Island Turning Basin to 1,600 feet x 1,600 feet.
- DMCA: Restore confined dredged material containment capacity in existing containment areas (15 Million Cubic Yards (MCYs)).

CULTURAL RESOURCES PRESERVATION:

- CSS *Georgia* Civil War Ironclad removal, recovery, conservation and curation.

FISH and WILDLIFE FACILITIES:

- Fish Passage at New Savannah Bluff Lock & Dam.
- Flow re-routing features: a diversion structure, cut closures, removal of a Tide Gate structure, and construction of a rock sill and submerged sediment berm.
- Raw Water Storage Impoundment, 97 million gallon capacity.
- Construct a boat ramp and restore embankment at the location of the Tide Gate removal site.
- Restore approximately 29 acres of tidal brackish marsh.
- Construct two dissolved oxygen injection system plants, one near Georgia Power's Plant McIntosh and one on Hutchinson Island.
- Payment to GA DNR for Striped bass stocking.

MITIGATION MONITORING & ADAPTIVE MANAGEMENT:

- Pre-Construction Monitoring for 1 year.
- Monitoring during Construction for approximately 84 months.
- Post-Construction Monitoring for 10 years.
- Adaptive management to modify features during and after construction.

JUSTIFICATION: The project supports national goals to improve navigation and infrastructure along U.S. east coast ports needed as a result of the expansion of the Panama Canal with the maximum allowable draft increased from -40 to -50 feet, thereby allowing larger Post-PanaMax (PPM) vessels to transit the Canal and call on U.S. east coast ports. PPM vessels carry up to three times the cargo of ships currently transiting the Panama Canal from 4,800 Twenty-Foot Equivalent Units (TEUs) to 12,600 TEUs per ship. Currently, PPM vessels requiring a drafting capability of more than -42-feet must transit the 33-mile Savannah Harbor channel during high tide windows created by the river's 7-foot tides. As the frequency of these PPM vessels increases, transportation inefficiencies, vessels waiting on the tide and light loading practices, will steadily increase unless the Savannah Harbor channel is deepened. Currently, nearly one-third of the vessels that call on Garden City Ocean Terminal are PPM. The Port of Savannah is the 4th largest container port in the United States (U.S.) and the fastest growing container port in the Nation for the last 10 years. The Garden City Ocean Terminal along the Savannah River Channel must be prepared to accept PPM vessels

without current limitations of light loading practices and movement only during high tides. Major imports include retail consumer goods, machinery, appliances and electronics, major exports include kaolin clay, chemicals, fabrics, resins and rubber, forest and agricultural products and manufactured equipment.

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Inner Harbor Dredging Reach A	\$45,000,000
Environmental Monitoring	\$4,000,000
Inner Harbor Dredging Reach C	\$29,520,000
1S Marsh Restoration	\$22,600,000
Total	\$101,120,000

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be applied as follows:

Environmental Monitoring	\$4,000,000
Inner Harbor Dredging Reach D	\$42,140,000
Inner Harbor Dredging Reach E	\$31,340,000
Sediment Basin Rock Weir and Broad Berm Fill	\$52,800,000
Total	\$130,280,000

NON-FEDERAL COST: In accordance with the cost sharing and financing concepts reflected in the Water Resources Development Act of 1986, as amended, the non-Federal sponsor must comply with the requirements listed below:

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
Provide lands, easements, rights of way, relocations, and dredged material disposal areas.	\$211,000	\$0
Pay approximately 25 percent of the costs allocated to general navigation facilities during construction.	\$310,197,500	\$0
Reimburse an additional 10 percent of the cost of general navigation features allocated to commercial navigation within a period of 30 years following completion of construction, as may be reduced by credit allowed for the value of lands, easements, rights of way, relocations, and dredged material disposal areas provided for commercial navigation.	\$77,413,500	\$0
Dredging of Non-Federal Berths (100% Non-Federal)	\$3,306,000	
Annual operation and maintenance - Dissolved Oxygen Plants and Channel Extension		\$5,400,000
Total Non-Federal Costs	\$391,128,000	\$151,000

Division: South Atlantic

District: Savannah

Savannah Harbor Expansion, GA

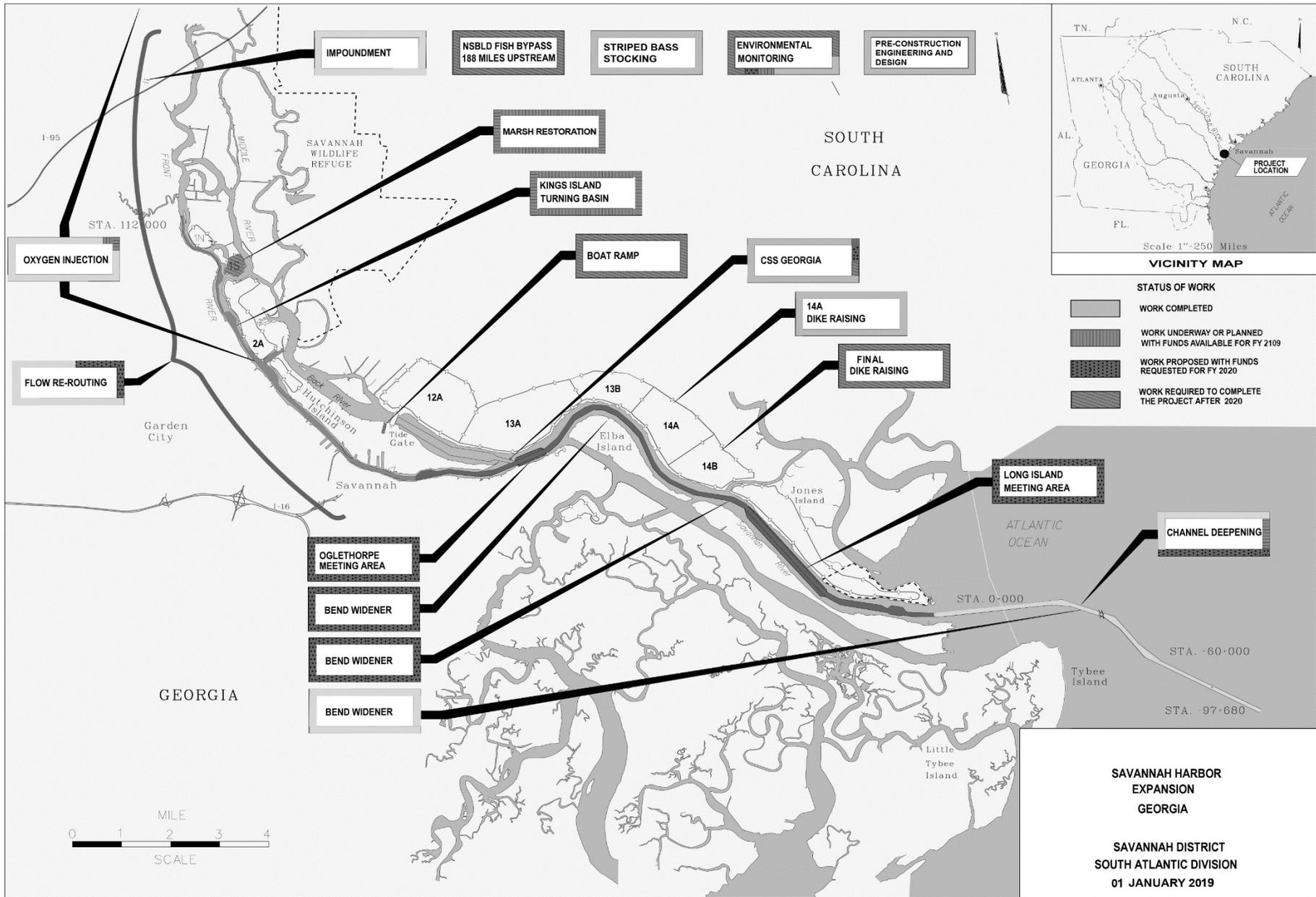
The non-Federal sponsor has also agreed to make all required payments concurrently with project construction.

STATUS OF LOCAL COOPERATION: The GPA and the Georgia Department of Transportation (GDOT) are the Construction Phase sponsors. A Construction Project Partnership Agreement was executed 8 October 2014 which allows the Non-Federal Sponsors to immediately provide their funds, up to the current estimate of the Non-Federal Sponsors' share, to start of construction. The sponsor funding and credit to date totals \$269,685,000 (\$191,000,000 of this provided in October 2014 and another \$30,000,000 provided in March 2016). The sponsors are expected to provide the remainder of their estimated cash contribution of the Total Project Cost Escalated to the Mid-Point of Construction, \$68,000,000, during FY 2019. In accordance with the terms of PPA, the sponsors are required to maintain \$24,000,000 in escrow for adaptive management. Sponsor funds will be exhausted in FY 2019 and are being used to initiate and complete the CSS *Georgia* Recovery; initiate and complete Entrance Channel Dredging; initiate and complete the Dissolved Oxygen Injection System construction; initiate and complete the DMCA 14A Dike Raising; initiate and complete the Raw Water Storage Impoundment; and initiate the McCoy's Cut Area Work construction.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal (Corps) cost estimate of \$732,800,000 is the same as presented to Congress in FY 2019.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: A Record of Decision was issued on 26 October 2012.

OTHER INFORMATION: None.



Division: South Atlantic

District: Savannah

Savannah Harbor Expansion, GA

APPROPRIATION TITLE: Construction – Locks and Dams (Navigation), Fiscal Year 2020

PROJECT: Melvin Price Lock and Dam, Illinois and Missouri (Deficiency Correction) (Completion)

LOCATION: Melvin Price Lock and Dam (L&D) is located in Madison County, Illinois, and St. Charles County, Missouri, in the vicinity of Alton, Illinois, at approximately river mile 200.8 above the mouth of the Ohio River.

DESCRIPTION: The project is part of the Upper Mississippi River Navigation System. The project includes one 1,200-foot main lock; one 600-foot auxiliary lock (see Other Information); a gated dam with 9 tainter gates, an overflow dike; removal of most of the old structure; relocation/abandonment of the Burlington-Northern Railroad bridge, and a visitors center. Mitigation land was provided to compensate for wildlife losses due to creation of a new pool for the two-mile distance downstream of the old structure. The construction of the lock and dam extended the pool approximately 2 miles downstream of the old lock and dam, which raised the water surface elevation along a segment of the Wood River Levee. As a result, that portion of the levee experiences increased underseepage. A deficiency correction report was completed in 2012. Design was initiated and subsurface exploration revealed that the identified solution would not be feasible. A supplemental report to the deficiency correction which incorporated risk assessment guidelines and followed Flood Risk Management/Levee Safety regulations was approved in August, 2017. An Interim Operation Plan (IOP) has been developed and is implemented, as needed, to mitigate risk during high water events until the deficiency correction is finally constructed.

AUTHORIZATION: Internal Revenue Code of 1954, amendment, Title I – Replacement of Locks and Dam 26 (PL 95-502); Water Resources Development Acts of 1986, 1990, 1992, and 1996; and the Consolidated Appropriations Act, 2001, PL 106-554.

REMAINING BENEFIT-REMAINING COST RATIO: The remaining benefit-remaining cost ratio for the entire project is not applicable because the project was not funded on the basis of its benefit-cost ratio (BCR). This project was funded on the basis of being a completion.

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for the entire project is not applicable because the project was not funded on the basis of its BCR. This project was funded on the basis of being a completion.

INITIAL BENEFIT-COST RATIO: The initial benefit-cost ratio for the entire project is not applicable because the project was not funded on the basis of its BCR. This project was funded on the basis of being a completion.

BASIS OF BENEFIT-COST RATIO: The basis of the benefit-cost ratio for the entire project is not applicable because the project was not funded on the basis of its BCR. This project was funded on the basis of being a completion.

SUMMARIZED FINANCIAL DATA (Deficiency Correction)		ACCUM PCT OF EST FED COST	STATUS (1 JUL 2018)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost			Underseepage Measures		2023
Programmed Construction	\$31,309,000				
Unprogrammed Construction	0				
Estimated Non-Federal Cost	\$0				
Cash Contribution	0				
Other	0				
Total Estimated Project Cost	\$39,459,000				
Authorized Cost (plus inflation)	N/A				
Maximum Cost Limit (Section 902)	N/A				
Allocations to 30 September 2016	\$15,302,000				
Allocation for FY 2017	20,000				
Allocation for FY 2018	50,000				
Allocation for FY 2019	0				
Allocation through FY 2019	15,372,000	^{1/2/3/5/6/}	41		
Estimated Unobligated Carry-In Funds	0	^{4/}			
President's Budget for FY 2020	24,087,000		100		
Programmed Balance to Complete after FY 2020	0	^{8/}			
Unprogrammed Balance to Complete after FY 2020	62,000	^{7/}			

^{1/} \$1,000,000 reprogrammed to the project.

^{2/} \$0 rescinded from the project.

^{3/} \$0 transferred to the Flood Control and Coastal Emergencies (FCCE) account.

^{4/} Estimated Unobligated Carry-in Funding: The actual unobligated balance from FY 2018 into FY 2019 for this project is \$0. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort are \$0. This amount will be used to perform work on the project as follows: N/A.

^{5/} \$8,150,000 of the funds were used to support the Interim Operations Plan (IOP).

^{6/} PED costs of \$0 are included in this amount.

^{7/} For unprogrammed work only; \$1.5M of the FY 2015 allocation was appropriated for reimbursement to City of Alton for development of recreation facilities associated with the original project, not the Deficiency Correction. \$62,000 in recreation reimbursement to the City of Alton is remaining.

^{8/} The Programmed Balance to Complete represents the Deficiency Correction project only.

PHYSICAL DATA: The project includes one 1,200-foot lock; one 600-foot auxiliary lock (authorized separately); a gated dam with nine tainter gates; an overflow dike; and a visitor's center. The project also included removal of most of the old structure and the relocation/abandonment of the Burlington Northern Railroad Bridge.

JUSTIFICATION: After the new Melvin Price L&D was placed in operation, a substantial increase in the underseepage on adjacent Wood River Levee was observed. Investigations have shown that the normal operating pool levels for Melvin Price have resulted in constant head against the levee, resulting in the increase in uncontrolled underseepage. Additional underseepage controls were included in the original design for the Melvin Price project, but that design has been determined to be insufficient. The Wood River Levee is authorized as a flood risk management structure. However, it now serves a dual purpose since being integrated into the Melvin Price navigation project as a saddle dam to ensure operating pool is maintained. Failure of the Wood River Levee adjacent to Melvin Price L&D will result in potential life loss, economic and environmental consequences as well as disruption to the shipping on the Mississippi River north of St. Louis. A LRR was prepared to address corrective measures for this uncontrolled underseepage condition. The LRR was approved in August 2012 and recommended a cutoff wall with relief wells to control the underseepage. Refinement of the Interim Operations Plan (IOP) and newly obtained field information revealed that the selected alternative would not be feasible. A Limited Baseline Condition Risk Assessment Report for the Upper Wood River Levee was finalized in July 2015. A Supplemental Report, approved on August 28, 2017, was prepared to re-evaluate alternatives and identify the most cost effective solution for this reach. The average annual waterborne commerce tonnage (2004-2011) was 64,000,000 tons valued at approximately \$10,000,000,000. Grains, chemicals, petroleum, and coal account for 90 percent of this traffic. Because of the small size of the locks, multiple lockages were required to pass a complete tow measuring 1,200 feet in length. The average delay to tows at the old Locks No. 26 was approximately 10.5 hours. Based on the Master Plan Study, a single lock 110 feet wide by 1,200 feet long would have an estimated capacity of 94,000,000 to 100,000,000 tons per year. A lock with a length of 1,200 feet allows tows to lock through as a single unit, thus eliminating the delays and congestion from double locking. Future tow sizes are expected to remain at 110 feet wide by 1,200 feet long. Total transportation charges for commodity movements by inland water range between 40 and 60 percent lower than least cost alternative modes. More than 60 percent of traffic is grain, the bulk of which is for export.

The deficiency correction project is justified as a least cost solution.

FISCAL YEAR 2019: None.

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be used to fully fund the project and will be applied as follows:

Planning, Engineering and Design	\$1,160,000
Project Mitigation	\$1,850,000
Physically and Fiscally Complete Construction – relief wells	\$21,077,000
Total	\$24,087,000

NON-FEDERAL COST: None. The deficiency correction portion of the project will be constructed at 100 percent Federal cost.

STATUS OF LOCAL COOPERATION: The original Lock & Dam 26 Replacement project (Melvin Price) was authorized and funded at 100 percent Federal cost. The uncontrolled underseepage of Wood River Levee is caused by operations of the original project. Therefore, costs for the underseepage correction measures are to be 100 percent Federal.

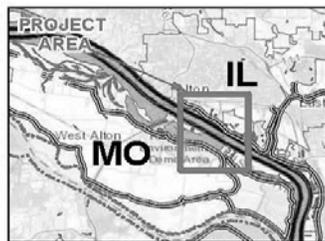
COMPARISON OF FEDERAL COST ESTIMATES: The current Programmed Federal cost estimate of \$31,309,000 is \$2,691,000 less than the previous cost estimate of \$34,000,000 presented to Congress (FY 2016). This decrease is due to design changes.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: An Environmental Assessment was completed as part of the Supplemental Report that was approved in August 2017.

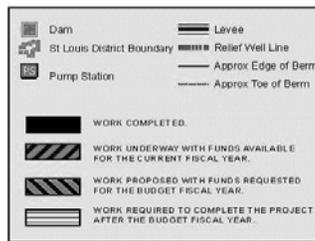
OTHER INFORMATION: Funds to initiate actions for the deficiency correction were provided in FY 2010.

The total project cost (including comparison paragraph above) was certified December 15, 2016. Serious underseepage, with the conveyance of some soils material, is occurring during normal operating conditions under Wood River Levee adjacent to the upper pool of the Melvin Price Locks and Dam.

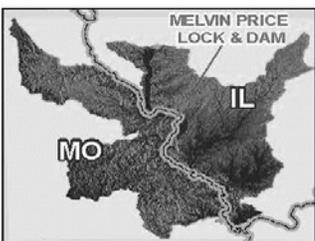
MELVIN PRICE LOCK & DAM, IL & MO CONSTRUCTION



Legend



Location in District



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APPROPRIATION TITLE: Construction - Aquatic Ecosystem Restoration, Fiscal Year 2020

PROJECT NAME: Upper Mississippi River Restoration, Illinois, Iowa, Minnesota, Missouri, and Wisconsin (Continuing)

LOCATION: The program is authorized for those river reaches having commercial navigation channels on the Upper Mississippi River, Illinois River, Minnesota River, St. Croix River, and Kaskaskia River in the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The following counties are included: (Illinois) Jo Daviess, Carroll, Whiteside, Rock Island, Mercer, Henderson, Hancock, Adams, Pike, Calhoun, Jersey, Madison, St. Clair, Monroe, Randolph, Jackson, Union, Alexander, Pulaski, Brown, Cass, Schuyler, Fulton, Mason, Peoria, Tazewell, Woodford, Marshall, Putnam, Bureau, LaSalle, Grundy, Will; (Iowa) Allamakee, Clayton, Dubuque, Jackson, Clinton, Scott, Muscatine, Louisa, Des Moines, Lee; (Wisconsin) St. Croix, Pierce, Pepin, Buffalo, Trempealeau, La Cross, Vernon, Crawford, Grant; (Minnesota) Anoka, Hennepin, Scott, Dakota, Ramsey, Washington, Goodhue, Wabasha, Winona, Houston; (Missouri) Clark, Lewis, Marion, Ralls, Pike, Lincoln, St. Charles, St. Louis, Jefferson, Ste. Genevieve, Perry, Cape Girardeau, Scott, Mississippi.

DESCRIPTION: The purpose of the Upper Mississippi River Restoration (UMRR) program is to address adverse impacts to the aquatic ecosystem of the Upper Mississippi River, which were caused by many factors, including changes in the river due to construction and maintenance of the inland navigation system. The UMRR Program is a continuing authority program, as amended by WRDA of 1999. Projects are designed to help preserve and improve fish and wildlife habitat on the Upper Mississippi River System (UMRS) and counteract the effects of backwater sedimentation through dike construction to limit sedimentation of prime habitat and dredging to restore aquatic habitat; provide water level control and optimal food growth for waterfowl; decrease wind generated disturbances, thereby reducing turbidity; alter the flow of water to side channels and backwaters to decrease flows of sediment-laden water during high water and to increase dissolved oxygen levels during low water; and increase the diversity and abundance of mast (nut) producing trees and prairies to benefit wildlife. Long-Term Resource Monitoring provides scientific information for more informed management of the UMRS ecosystem. The cost of projects implemented under this program is either funded at 100 percent Federal expense or is shared with a non-Federal sponsor, and the cost-share percentage has varied over time from the original 25 percent to the current 35 percent (See Non-Federal Costs).

AUTHORIZATION: Fiscal Year 1985 Supplemental Appropriations Act, P.L. 99-88; Water Resources Development Act (WRDA) of 1986, PL 99-662, Section 1103; WRDA of 1990, P.L. 101-640, Section 405; WRDA of 1992, P.L. 102-580, Section 107; WRDA of 1999, P.L. 106-53, Section 509; and the WRDA of 2007, P.L. 110-114, Section 3177.

REMAINING BENEFIT-REMAINING COST: The remaining benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms. Projects within the Upper Mississippi River Restoration project are selected for design and construction based on continued assessment of habitat restoration and enhancement opportunities as determined by the involved Federal and non-Federal partners.

INITIAL BENEFIT-COST RATIO: The initial benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

BASIS OF BENEFIT-COST RATIO: The basis for the benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

SUMMARIZED FINANCIAL DATA		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)
Estimated Federal Cost Programmed Construction	\$1,319,321,000	\$ 1,325,661,000	Status in project listing
Unprogrammed Construction	\$ 6,340,000		
Estimated Non-Federal Cost Programmed Construction		26,066,000	
Cash Contribution	\$ 26,066,000		
Other Costs	0		
Unprogrammed Construction	0		
Total Estimated Programmed Construction Cost		\$ 1,345,387,000	
Total Estimated Unprogrammed Construction Cost		\$ 6,340,000	
Total Estimated Project Cost		\$1,351,727,000	This program is subject to an annual appropriation limit of \$33,170,000.
Allocations to 30 September 2016		\$537,941,000	<u>1/</u> <u>2/</u> <u>3/</u> <u>4/</u>
Allocations for FY 2017		\$ 33,165,000	
Allocation for FY 2018		\$ 33,170,000	
Allocation for FY 2019		\$ 33,170,000	
Allocations through FY 2019		\$ 637,446,000	48
Estimated Unobligated Carry-in Funds		0	<u>5/</u>
President's Budget for FY 2020		\$ 33,170,000	51
Programmed Balance to Complete After FY 2020		\$ 648,705,000	
Unprogrammed Balance to Complete After FY 2020		\$6,340,000	<u>6/</u>

1/ Allocations include Supplemental Appropriations of \$5,801,500 (FY's 1985, 1986, 2008, and 2009)

2/ \$3,373,309 reprogrammed to/from the project.

3/ \$626,182 rescinded from the project.

4/ Includes ARRA funding of \$14,847,000 in FY 2009; (\$918,000) in FY 2010; (\$8,000) in FY 2011; (\$315,000) in FY 2012; and (\$107,000) in 2013.

5/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 for this project was \$300,325. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

6/ This work is un-programmed pending a decision to construct these features.

JUSTIFICATION: Implementation of the UMRR program is essential to the continued viability of the ecosystem of the Upper Mississippi River. Habitat rehabilitation and enhancement projects help reduce the negative effects of navigation features on the system's backwater and side channels. Projects are selected for design and construction based on continued assessment of habitat restoration and enhancement opportunities as determined by the involved Federal and non-Federal partners and following the project sequencing process adopted in 2003. Long-Term Resource Monitoring provides data to indicate trends in key environmental parameters, analyzing sedimentation and other UMRS resource problems, and provides the data necessary to evaluate how restoration projects implemented under this program mitigate for the environmental impacts of Corps-constructed navigation improvements.

FISCAL YEAR 2019 and 2020: While amounts between projects may be adjusted within the total program in response to changed conditions and consistent with priorities and capability, the total FY 2019 appropriations amount, plus carry-in, and the FY 2020 budgeted amount will be applied as follows:

Feasibility Studies:

<i>State</i>	<i>Site</i>	<i>Project</i>	<i>Presumed FY 2019 Funding</i>	<i>FY 2019 Description</i>	<i>FY 2020 Funding</i>	<i>FY 2020 Description</i>	<i>Status (Jan 2019) % Project Complete</i>	<i>Scheduled Completion 8/</i>
MN	5	Bass Lake Ponds, Marsh, & Wetland Habitat	234,331	Complete Feasibility			80	(May 19)
MO	35	Harlow Island, MO	300,000	Complete Feasibility			30	(Sep 19)
IA	48	Lower Pool 10 Islands, IA	300,000	Continue Feasibility	350,000	Complete Feasibility	15	(Nov 20)
IL	72	Rip Rap Landing, IL	80,000	Continue Feasibility	75,000	Continue Feasibility	25	(Aug 22)
IA	79	Steamboat Island, IA	444,271	Continue Feasibility	300,000	Complete Feasibility	50	(Apr 21)
MO	86	West Alton, MO Islands			340,000	Initiate Feasibility	2	(Sep 23)
MN	95	Reno Bottoms, MN	200,000	Initiate Feasibility	300,000	Continue Feasibility	10	(Sep 21)
IL	92	Oakwood Bottoms, IL	213,738	Continue Feasibility	310,000	Continue Feasibility	7	(Nov 20)
IL	96	Yorkinut Slough, IL			325,000	Initiate Feasibility	1	(Dec 23)
IA	TBD	Lower Pool 13, IA	400,000	Continue Feasibility	425,000	Continue Feasibility	10	Mar 22
IA	TBD	Green Island, IA	100,000	Initiate Feasibility	450,000	Continue Feasibility	0	Nov 22
IL	TBD	Pool 12 (Forestry), IL			400,000	Initiate Feasibility	0	Nov 23

Design and Construction:

<i>State</i>	<i>Site</i>	<i>Project</i>	<i>Presumed FY 2019 Funding</i>	<i>FY 2019 Description</i>	<i>FY 2020 Funding</i>	<i>FY 2020 Description</i>	<i>Status (Jan 2019) % Project Complete</i>	<i>Federal Balance to Complete after FY 2020</i>	<i>Scheduled Completion 7/</i>
MN	5	Bass Lake Ponds, Marsh, & Wetland Habitat	4,600,000	Initiate & Complete Design/Initiate Construction	100,000	Continue Construction	15	\$100,000	(Sep 22)
IA	8	Beaver Island, IA	5,900,000	Continue Construction	2,955,000	Continue Construction	15	\$14,161,000	(Sep 23)
MO	18	Clarence Cannon NWR, MO	6,130,000	Continue Construction	1,500,000	Continue Construction	55	\$14,677,000	(Dec 24)
IA	22	Conway Lake, IA	556,630	Continue Construction	300,000	Continue Construction	20	\$9,046,000	(Oct 22)
MO	35	Harlow Island, MO			425,000	Initiate Design	5	\$36,734,000	(Sep 27)
IA	36	Harpers Slough, IA	\$25,000	Complete Project Repairs					
IA	37	Huron Island, IA (Multiple Stages)	275,000	Continue Construction	100,000	Continue Construction	80	\$100,000	(Sep 21)
IL	40	Keithsburg Division, IL (Multiple Stages)	457,622	Initiate Design	2,550,000	Complete Design/Initiate Construction	30	\$24,742,000	(Sep 24)
IA	48	Lower Pool 10 Islands, IA			100,000	Initiate Design	3	\$16,471,000	(Nov 24)
WI	49	McGregor Lake, WI	200,000	Complete Design.	5,950,000	Initiate Construction	15	\$4,800,000	(May 22)
IL	55	Piasa and Eagles Nest Islands, IL	413,732	Initiate Design	335,000	Continue Design	10	\$25,831,000	(Sep 26)
IL	59	Pool 12, IL (Multiple Stages)	220,000	Continue Construction	50,000	Complete Construction	90	\$0	(Sep 20)
IL	70	Rice Lake, IL	50,000	Re-vegetation and Closeout Project			95	\$0	(Sep 19)
IA	79	Steamboat Island, IA			50,000	Initiate Design	10	\$12,486,000	(Apr 25)
MO	82	Ted Shanks, MO	450,000	Continue Construction	300,000	Complete Construction	95	\$0	(Oct 20)
IL	91	Crain's Island	425,000	Initiate Design	3,330,000	Complete Design/Initiate Construction	30	\$32,448,000	(Sep 25)

Other:

<i>Project</i>	<i>Presumed FY 2019 Funding</i>	<i>FY 2020 Funding</i>	<i>Description</i>
Adaptive Management	200,000	200,000	Implementation of a regional adaptive management strategy to use scientific monitoring to promote lessons learned across all projects.
Habitat Evaluation/Monitoring	975,000	1,125,000	District Project Management, Project evaluation reports (PER) and Fish and Wildlife support to the district.
Long Term Resource Monitoring	4,920,000	5,000,000	Collection of base monitoring data by six biological monitoring stations, quality assurance and data processing for all samples collected.
Model Certification/ Regional HREP	100,000	100,000	Certification of new models needed for use in formulation of feasibility reports for HREP projects.
Public Outreach	50,000	50,000	Undertake efforts to ensure the public and stakeholders in the region are informed of the restoration efforts funded under this program.
Regional Program Management	1,050,000	1,200,000	Regional program management including coordination (policy, fiscal and management) with Corps and ASA(CW) and the three Corps Districts and five states. This also includes development and maintenance of a regional program and project database, implementation of the strategic plan, regional meeting support and development of the Report to Congress.
Regional Project Sequencing	450,000	375,000	Development of the habitat needs assessment and identification/evaluation and the prioritization of the next generation list of habitat projects.
Science in Support of Restoration/Management	3,750,000	3,800,000	Data collection, research and analysis in support of habitat restoration projects and policy development.
Total	33,470,325	33,170,000	

7/ Scheduled completion dates are based on minimal execution delays and an efficient funding stream.

NON-FEDERAL COSTS: In accordance with the cost sharing and financing concepts reflected in Section 906(e) of the Water Resources Development Act of 1986 and amended by Section 509(e) and Section 221 of the Water Resources Development Act of 1999, the non-Federal sponsor must comply with the requirements listed below.

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
Pay 25 percent of the first costs allocated to fish and wildlife enhancement for the following projects:		
Baldwin Backwater, IL	624,000	
Banner Marsh, IL	1,780,000	
Batchtown, IL	200,000	
Blackhawk Park, WI	77,000	
Bussey Lake, IA	162,000	
Cuivre Island, MO	479,000	
Osborne Channel, IL 8/	190,000	
Peoria Lake, IL	1,072,000	
Princeton, IA	54,000	
Swan Lake, IL	262,000	
Subtotal	\$ 4,900,000	\$ 0
Pay 35 percent of the first costs allocated to fish and wildlife enhancement for the following projects		
Alton Pool Side Channel 8/	231,000	
Ambrough Slough, WI	166,000	
Emiquon, IL 8/	7,779,000	
Horseshoe Lake, IL 8/	2,037,000	
Kaskaskia Oxbows 8/	350,000	
Pool Slough, IA, MN	175,000	
Rice Lake, IL	7,280,000	
Smith Creek, IA	300,000	
Rip Rap Landing	2,848,000	
Subtotal	\$ 21,166,000	\$ 0
Total Non-Federal Construction Costs	\$ 26,066,000	\$ 0

8/ Inactive Projects

STATUS OF LOCAL COOPERATION: A Project Agreement is required only for projects that are not located on lands managed as a national wildlife refuge. The non-Federal sponsors have agreed to make all required payments concurrently with project construction.

COMPARISON OF FEDERAL COST ESTIMATE: The current Federal cost estimate of \$1,325,661,000 is an increase of \$54,450,000 from the latest estimate (\$1,271,211,000) presented to Congress (FY 2019) due to adjustments for inflation, design changes on unconstructed projects, and the addition of Reno Bottoms, Yorkinut Slough, Green Island and Lower Pool 13 to the program in FY 2019.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: National Environmental Policy Act compliance is accomplished prior to implementation of each individual project.

OTHER INFORMATION: Funds to initiate construction were appropriated in FY 1985. The Water Resources Development Act of 1999, P.L. 106-53, amends the previous authority to increase annual appropriation limits available to the project; requires submission of a report to Congress on a 6 year cycle which began in December 2004 to evaluate projects, accomplishments, systemic habitat needs, and identifies any needed changes to the project authorization; and authorized an independent technical review committee through FY 2009.

This project was authorized in Section 1103, WRDA 1986 as amended in Section 405, WRDA 1990, Section 107, WRDA 1992, and Section 509, WRDA 1999, Section 3177, WRDA 2007 as the Upper Mississippi River System Environmental Management Program (Section 3177, WRDA 2007). Since 2006, this program has been budgeted and funds appropriated under the name Upper Mississippi River Restoration, IL, IA, MN, MO & WI.

The following projects have been delayed (inactive) due to prioritization or lack of a non-Federal sponsor:

<i>Project</i>	<i>Site</i>	<i>% Complete</i>	<i>Project</i>	<i>Site</i>	<i>% Complete</i>
Boston Bay, IL	12	1	North & Sturgeon Lakes, MN	51	30
Clear Lake (Finger Lake Dredging), MN	20	1	Pool 24 Island, MO	60	2
Emiquon, IL	90	30	Pool 25 Island, MO	94	3
Glades Godar Wetlands, IL	33	2	Schenimann Chute, MO	88	15
Horseshoe Lake, IL	89	1	Snyder Slough, WI	74	1
Kaskaskia River Oxbows, IL	93	1	Weaver Bottoms, MN	85	2
Lake Winneshiek, WI	43	10	Wilkinson Island, IL	87	5
Lock and Dam 3 Fish Passage, MN/WI	45	20			

The following projects have been deferred and are not currently anticipated to be resumed.

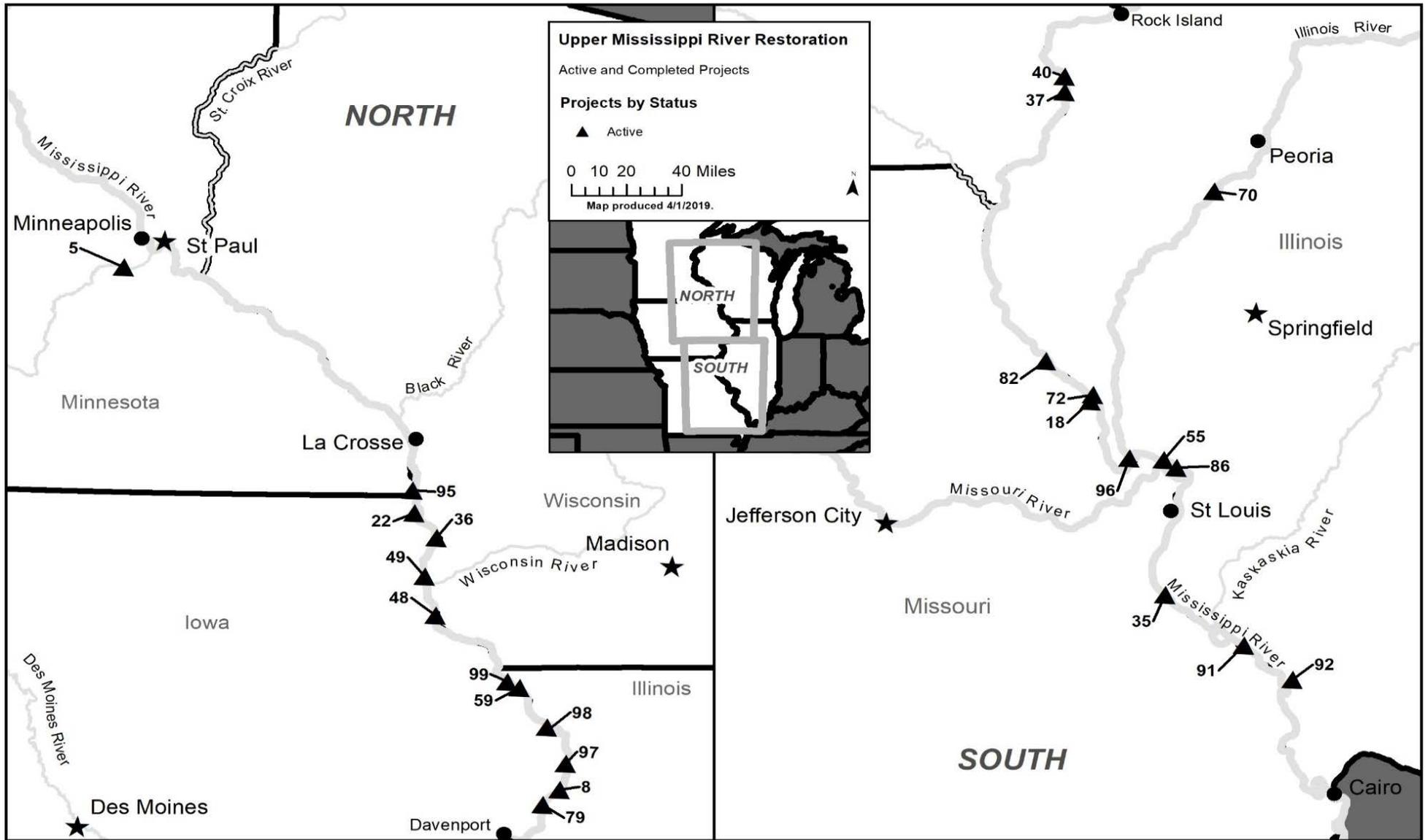
<i>Project</i>	<i>Site</i>	<i>% Complete</i>
Alton Pool Side Channel, MO	N/A	2
Angle Blackburn Islands, MO	N/A	1
Baldwin Backwater Protection, IL	N/A	1
Delair Division, IL	25	5
Glades Wetlands	32	1
Norton Woods, MO	N/A	2
Osborne Side Channel, IL	N/A	3
Red's Landing Wetlands	69	2
Salt Lake/Ft Chartres S.C., IL	30	7
Sandy Chute, MO	N/A	2
Smith Creek, IA	N/A	1
Stone Dike Alteration, IL/MO	N/A	10
Turkey River Bottoms, IA/WI	84	1
Turner Island & Chute, IL	N/A	2

The following projects are Unprogrammed projects and will not be initiated:

<i>Project</i>	<i>Site</i>	<i>% Complete</i>
Establishment Chute, MO	N/A	1
Jefferson Barracks Side Channel, IL	N/A	1
Least Tern, MO	N/A	5
Whitewater Dike, MN	N/A	0

The following projects have been completed:

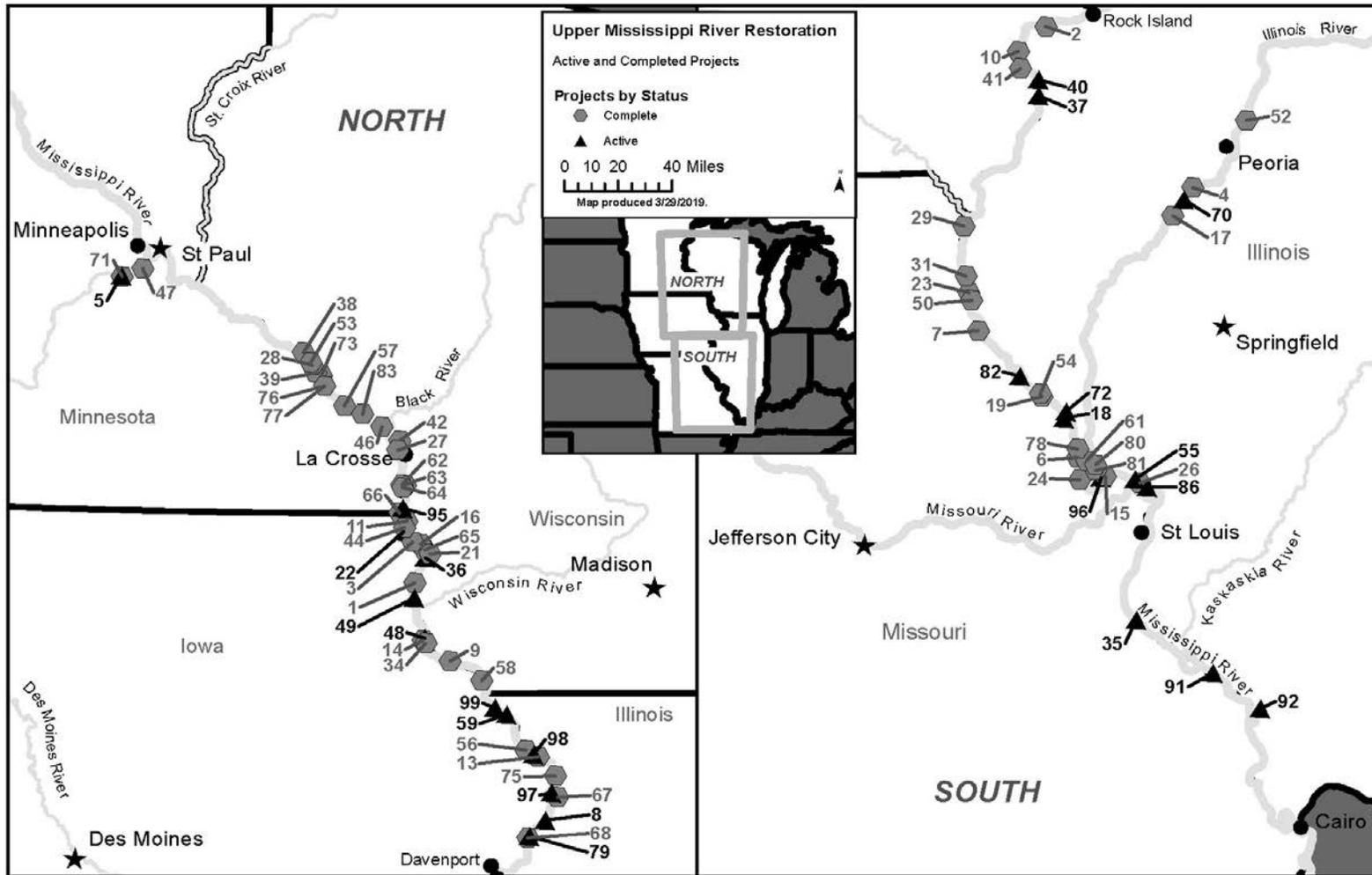
<i>Project</i>	<i>Site</i>	<i>Date of Completion</i>	<i>Project</i>	<i>Site</i>	<i>Date of Completion</i>
Ambrough Slough, WI	1	(Sep 04)	Long Meadow Lake, MN	47	(Nov 06)
Andalusia Refuge, IL	2	(Dec 94)	Monkey Chute, MO	50	(Aug 89)
Miss. River Bank Stabilization	3	(Sep 99)	Peoria Lake, IL	52	(Sep 97)
Banner Marsh, IL	4	(Dec 03)	Peterson Lake, MN	53	(Jun 96)
Batchtown Management Area, IL	6	(Aug 16)	Pharrs Island, MO	54	(Jun 92)
Bay Island, MO	7	(Nov 94)	Pleasant Creek, IA	56	(Jan 03)
Bertom McCartney Lake, WI	9	(Jun 92)	Polander Lake, MN	57	(Nov 00)
Big Timber, IA	10	(Jun 95)	Pool 11 Islands, WI/IA	58	(Sept 07)
Blackhawk Park, WI	11	(Nov 90)	Pool 25 and 26 Islands, MO	61	(Sept 17)
Brown's Lake, IA	13	(Sep 94)	Pool 8 Isl, Phase I, WI	62	(Jun 93)
Bussey Lake, IA	14	(Jun 96)	Pool 8 Isl, Phase II, WI	63	(Sep 99)
Calhoun Point, IL	15	(Aug 11)	Pool 8 Isl, Phase III, WI	64	(Jul 12)
Capoli Slough, WI	16	(Sep 17)	Pool 9 Island, WI	65	(Jun 95)
Chautauqua Refuge, IL	17	(Dec 03)	Pool Slough, IA	66	(Apr 07)
Clarksville Refuge, MO	19	(Apr 90)	Potters Marsh, IL	67	(Jul 96)
Cold Springs, WI	21	(Aug 94)	Princeton, IA	68	(Dec 01)
Cottonwood Island, MO	23	(Dec 99)	Rice Lake, MN	71	(Nov 98)
Cuivre Island, MO	24	(Jul 99)	Small Scale Drawdown, WI	73	(Sep 97)
Dresser Island, MO	26	(Sep 91)	Spring Lake, IL	75	(Sep 01)
East Channel, WI, MN	27	(Jun 97)	Spring Lake Islands, WI	76	(Jul 06)
Finger Lakes, MN	28	(Jul 94)	Spring Lake Peninsula, WI	77	(Nov 94)
Fox Island, MO	29	(Sep 16)	Stag & Keaton Is., MO	78	(Sep 98)
Gardner Div.(Long Island Div), IL	31	(Jan 98)	Stump Lake, IL	80	(Nov 98)
Guttenberg Waterfowl Ponds, IA	34	(Oct 90)	Swan Lake, IL	81	(May 15)
Harpers Slough, IA	36	(Sep 18)	Trempealeau NWR, WI	83	(Sep 99)
Indian Slough, WI	38	(Jun 94)			
Island 42, MN	39	(May 87)			
Lake Odessa, IA	41	(Sep 17)			
Lake Onalaska, WI	42	(Jul 90)	Economic Impacts of Recreation Study		(Sep 92)
Lansing Big Lake, IA	44	(Nov 94)	Habitat Needs Assessment		(Sep 00)
Long Lake, WI	46	(May 00)	Traffic Monitoring		(Sep 90)



Division: Mississippi Valley

District: Rock Island

Upper Mississippi River Restoration, IL, IA, MN, MO, and WI



UMRR Active and Completed Projects	Status	Site #
Ambrough Slough	Complete	1
Andalusia Refuge	Complete	2
Mississippi River Bank Stabilization	Complete	3
Banner Marsh	Complete	4
Bass Ponds, Marsh, and Wetland	Active	5
Batchtown	Complete	6
Bay Island	Complete	7
Beaver Island	Active	8
Bertom McCartney Lakes	Complete	9
Big Timber	Complete	10
Blackhawk Park	Complete	11
Brown's Lake	Complete	13
Bussey Lake	Complete	14
Calhoun Point	Complete	15
Capoli Slough	Complete	16
Chautauqua Refuge	Complete	17
Clarence Cannon	Active	18
Clarksville Refuge	Complete	19
Cold Springs	Complete	21
Conway Lake	Active	22
Cottonwood Island	Complete	23
Cuivre Island	Complete	24
Dresser Island	Complete	26
East Channel	Complete	27
Finger Lakes	Complete	28
Fox Island	Complete	29
Gardner Division (Long Island Division)	Complete	31
Guttenberg Waterfowl Ponds	Complete	34
Harlow Island	Active	35
Harpers Slough	Complete	36
Huron Island	Active	37
Indian Slough	Complete	38
Island 42	Complete	39
Keithsburg Division	Active	40
Lake Odessa	Complete	41
Lake Onalaska	Complete	42
Lansing Big Lake	Complete	44
Long Lake	Complete	46
Long Meadow Lake	Complete	47
Lower Pool 10 Island and Backwater Complex	Active	48
McGregor Lake	Active	49

UMRR Active and Completed Projects	Status	Site #
Monkey Chute	Complete	50
Peoria Lake	Complete	52
Peterson Lake	Complete	53
Pharrs Island	Complete	54
Piasa - Eagle's Nest Islands	Active	55
Pleasant Creek	Complete	56
Polander Lake	Complete	57
Pool 11 Islands	Complete	58
Pool 12 Overwintering	Active	59
Pool 25 and 26 Islands	Complete	61
Pool 8 Islands Phase I	Complete	62
Pool 8 Islands Phase II	Complete	63
Pool 8 Islands Phase III	Complete	64
Pool 9 Islands	Complete	65
Pool Slough	Complete	66
Potters Marsh	Complete	67
Princeton Refuge	Complete	68
Rice Lake, IL	Active	70
Rice Lake, MN	Complete	71
Rip Rap Landing	Active	72
Small Scale Drawdown	Complete	73
Spring Lake, IL	Complete	75
Spring Lake Islands	Complete	76
Spring Lake Peninsula	Complete	77
Stag and Keaton Islands	Complete	78
Steamboat Island	Active	79
Stump Lake	Complete	80
Swan Lake	Complete	81
Ted Shanks	Active	82
Trempealeau	Complete	83
West Alton Missouri Islands	Active	86
Crains Island	Active	91
Oakwood Bottoms	Active	92
Reno Bottoms	Active	95
Yorkinut Slough, IL	Active	96
Lower Pool 13	Active	97
Green Island	Active	98
Pool 12 (Forestry)	Active	99
Produced March 11, 2019		

Division: Mississippi Valley

District: Rock Island

Upper Mississippi River Restoration, IL, IA, MN, MO, and WI

APPROPRIATION TITLE: Construction - Aquatic Ecosystem Restoration, Fiscal Year 2020

PROJECT NAME: Missouri River Fish and Wildlife Recovery, Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Tributaries (Continuing)

LOCATION: The Missouri River Main Stem and its tributaries.

DESCRIPTION: The Missouri River Fish and Wildlife Recovery Program includes activities that will enable Missouri River projects to meet authorized purposes and avoid jeopardizing the continued existence of three species listed under the Endangered Species Act (ESA): the Least Tern, Piping Plover and Pallid Sturgeon, as well as activities to mitigate for fish and wildlife habitat losses specifically resulting from the construction and operation of the Missouri River Bank Stabilization and Navigation Project (BSNP). Only funding of activities to avoid jeopardy per the 2018 Biological Opinion (BiOp) is being requested. The total cost of this program is funded at 100 percent Federal expense.

Actions with these funds include: shallow water habitat construction/development for the Pallid Sturgeon; emergent sandbar habitat sustainability for Nesting Tern and Plover; Pallid Sturgeon propagation support; population assessments for the three species; an integrated science monitoring and evaluation program to assess success of management actions for the species; and the development/implementation of an adaptive management strategy (Missouri River Recovery Management Plan), that includes US Fish and Wildlife Service (USFWS) and stakeholder participation in the Missouri River Recovery Implementation Committee (MRRIC), which will address cumulative effects of past actions and planned BiOp actions on the Missouri River.

AUTHORIZATION: All existing authorized Corps of Engineers projects along the Missouri River and tributaries - including the Water Resources Development Acts (WRDA) of 1986, 1988, 1999, & 2007; National Industrial Recovery Act of 1933; Flood Control Acts of 1938, 1944, 1954; River and Harbor Act of 1945; as amended.

REMAINING BENEFIT - REMAINING COST RATIO: The remaining benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

INITIAL BENEFIT-COST RATIO: The benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

BASIS OF BENEFIT-COST RATIO: The benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

SUMMARIZED FINANCIAL DATA:		ACCUM PCT OF EST FED COST	Status (1 Jan 2019) Entire Project	PERCENT COMPLETE TBD	PHYSICAL COMPLETION SCHEDULE TBD
Estimated Federal Cost	3,739,687,000				
Estimated Non-Federal Other Costs	0				
Total Estimated Project Cost	3,739,687,000				
Allocations to 30 September 2016	789,840,000				
Allocation for FY 2017	31,090,000				
Allocation for FY 2018	30,000,000				
Allocation for FY 2019	30,370,000				
Allocations through FY 2019	881,300,000	<u>1/2/3/5/</u>	24%		
Estimated Unobligated Carry-In Funds	8,129,000	<u>4/</u>			
President's Budget for FY 2020	17,775,000		24%		
Programmed Balance to Complete after FY2020	2,840,612,000				

1/ \$3,175,000 reprogrammed to the project.

2/ \$1,071,000 rescinded from the project.

3/ \$350,000 transferred to the Flood Control and Coastal Emergencies account.

4/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$7,315,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2020 from prior appropriations for use on this effort is \$8,129,000. This amount will be used to perform work on the project as follows: Complete construction of the Yellowstone Intake.

5/ PED costs of \$700,000 are included in this amount.

JUSTIFICATION: Fiscal Year 2020 funds for the Missouri River Recovery Program allow the Corps to avoid jeopardizing listed species, including pallid sturgeon, least tern and piping plover, and comply with the BiOp for operating the Missouri River projects for their eight authorized purposes. Only funding of activities needed to avoid jeopardy are being requested.

FISCAL YEAR 2019: The appropriated amount, plus carry-in funds, will be used for the following:

Program Management Activities	5,819,000
Integrated Science Program	6,230,000
Land acquisition	15,000
Shallow Water Habitat Construction	1,711,000
Interception-Rearing Complexes and Special Contracts	676,000
Missouri River Recovery Implementation Committee	2,211,000
Real Estate	31,000
Emergent Sandbar Habitat	600,000
Yellowstone Intake	<u>12,264,000</u>
Total	\$29,556,000

FISCAL YEAR 2020: The budgeted amount, plus carry-in funds, will be used for the following:

Integrated Science Program	3,000,000
Shallow Water Habitat Construction	7,525,000
Emergent Habitat Construction	5,000,000
Land acquisition	2,000,000
Legal Requirements	250,000
Complete Yellowstone Intake	<u>8,129,000</u>
Total	\$25,904,000

NON-FEDERAL COSTS: Not applicable

STATUS OF LOCAL COOPERATION: The 1986 and 1999 authorizing acts for the BSNP mitigation plan below Sioux City provides that the entire cost of the project, including all lands, easements, rights-of-way, relocations, and all operation and maintenance costs, be borne by the Federal Government, with no costs to either local or state governments. Therefore, there is not a non-Federal sponsor for the project.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal estimate of \$3,739,687,000 is the same as last presented to Congress (FY 2019).

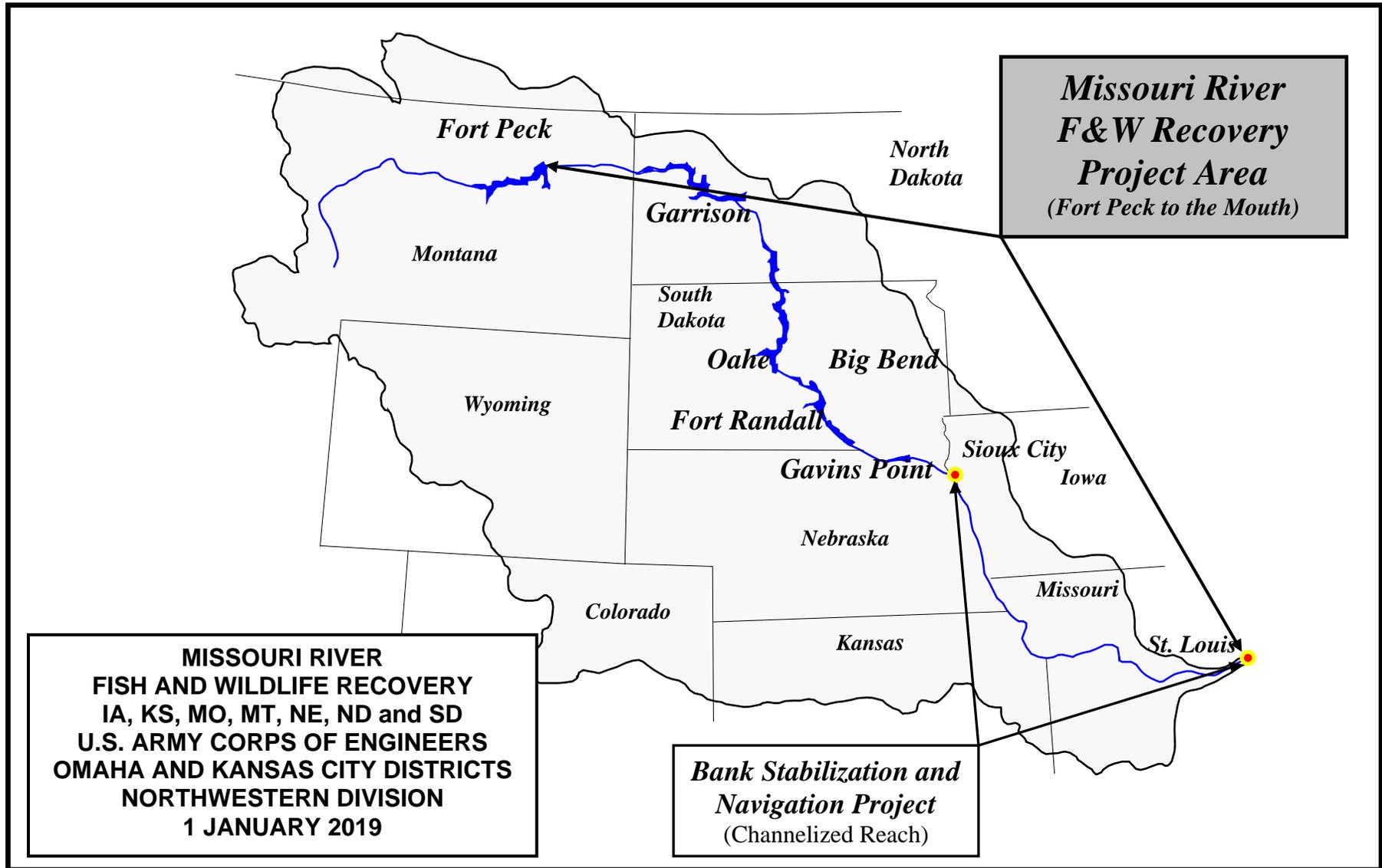
STATUS OF ENVIRONMENTAL IMPACT STATEMENT: The Missouri River Recovery Program is the umbrella program that integrates Corps' activities for compliance with the 2003 Biological Opinion, superseded by the 2018 Biological Opinion that covers operation of the Missouri River Mainstem Reservoir System and operation and maintenance of the Missouri River Bank Stabilization and Navigation Project. The original BSNP mitigation plan was authorized by WRDA 1986 based on a Report of the Chief of Engineers, dated April 1984. WRDA 1999 increased the acreage to be acquired for mitigation and a Report to Congress on the cost of this increase was submitted to Congress in January 2002. A Record of Decision was issued for this expanded BSNP mitigation plan in 2003 based on the Final Supplemental Environmental Impact Statement dated 2003. A Final Environmental Impact Statement was completed for the Lower Yellowstone Intake Diversion Dam Fish Passage Project in October 2016 and a Record of Decision was signed in December 2016. The Final Environmental Impact Statement for the Missouri River Recovery Management Plan was completed in August 2018 and the Record of Decision was signed in November 2018.

Division: Northwestern

District: Omaha/Kansas City

Missouri River Fish and Wildlife Recovery,
IA, KS, MO, MT, NE, ND, SD, and Tributaries

OTHER INFORMATION: Funds to initiate pre-construction engineering and design of the BSNP mitigation project were appropriated in FY 1990. Initial construction funds for the BSNP mitigation project were appropriated in FY 1992. Funding for the combined ESA and mitigation efforts, now known as Missouri River Fish and Wildlife Recovery, were first appropriated in FY 2005.



Division: Northwestern

District: Omaha/Kansas City

Missouri River Fish and Wildlife Recovery,
IA, KS, MO, MT, NE, ND, SD, and Tributaries

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APPROPRIATION TITLE: Construction – Dam Safety Seepage Correction, Major Rehabilitation, Fiscal Year 2020

PROJECT: Rough River Lake, KY Major Rehabilitation (Continuing)

LOCATION: The dam site is located on Rough River, 89.3 miles east of the confluence with the Green River, and about 60 air miles southwest of Louisville, KY.

DESCRIPTION: The Rough River Dam is part of a system of dams that reduce the risk of flood damage in the Green River Basin of Kentucky. Construction began in 1955 and the dam began full operation in 1960. The project is a 1,590 foot long earth filled embankment with a maximum height of 130 feet. It includes a gate-controlled outlet works on the right abutment and a 65-foot wide uncontrolled spillway near the left abutment.

The Dam Safety Modification Report (DSMR) was approved on March 7, 2013, and the approval to proceed with the design and construction of the Phase 2 cutoff wall was provided on February 10, 2017.

Per the DSMR, the project consists of two phases. Phase I consists of relocating Kentucky State Highway 79 from the crest of the dam to the upstream slope to allow for exploratory drilling and grouting of the rock foundation. This was accomplished by adding rock fill on the upstream slope of the dam. The exploratory drilling consisted of installing over 300 grout holes to depths as great as 250 feet to fill void space in the rock. This phase was completed in May 2017. Phase II consists of constructing a deep concrete cutoff wall through the embankment and into the rock foundation. The cost of this project is funded at 100 percent Federal expense. All work is programmed.

Phase II construction was approved in 2016. Phase II construction, specifically the cutoff wall, has been delayed as a result of concerns regarding the structural integrity of the existing outlet works conduit (a concrete pipe that runs through the dam). Consequently, several outlet works design measures are being evaluated and the Project Delivery Team (PDT) is currently working on a Supplement report to the approved 2013 DSMR. The emphasis on the supplemental DSMR is selection of a new outlet work measure.

Additionally, the current Tentatively Selected Plan (TSP), as described in the approved 2013 DSMR, is now considered incomplete. The PDT believes that the revised TSP will significantly increase the cost of the overall project. The PDT is evaluating modifications to the current TSP (which involves grouting and the installation of a cutoff wall) that include features of work to either modify the current outlet works, construct a new outlet works, or a combination of both. A TSP meeting was conducted in September 2018 and tentative concurrence was obtained from the vertical team on the modified TSP recommendation. The recommended modified TSP consists of a continuous cutoff wall with new outlet works through the left abutment. The new outlet works will consist of a control tower, tunnel, stilling basin, and associated features. The PDT is continuing to advance design of the modified TSP to the 30% level and the Supplemental Report will then undergo technical reviews with the final report scheduled for completion in September 2019. The PDT will then continue work on engineering and design for the plans and specs leading to the award of a construction contract.

AUTHORIZATION: Flood Control Act (Public Law 761, 75th Congress, 28 June 1938)

REMAINING BENEFIT-REMAINING COST RATIO: Not applicable because this is a dam safety project.

TOTAL BENEFIT-COST RATIO: Not applicable because this is a dam safety project.

INITIAL BENEFIT-COST RATIO: Not applicable because this is a dam safety project.

BASIS OF BENEFIT-COST RATIO: Not applicable because this is a dam safety project.

SUMMARIZED FINANCIAL DATA

		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019) Entire Project	PERCENT COMPLETE 10	PHYSICAL COMPLETION SCHEDULE TBD
Original Project					
Actual Federal Cost	\$10,620,000				
Actual Non-Federal Cost	\$23,000				
Total Original Project Cost	\$10,643,000				
Project Modification					
Estimated Federal Cost	\$149,000,000				
Authorized Cost (plus inflation)	\$144,936,000				
Admin Maximum Cost Limit (Section 902)	\$172,367,000	4/			
Allocations to 30 September 2016	\$34,414,000				
Allocation for FY 2017	\$1,250,000				
Allocation for FY 2018	\$25,000,000				
Allocation for FY 2019	\$8,000,000				
Allocations through FY 2019	\$68,664,000	1/3/	46%		
Estimated Unobligated Carry-in Funds	\$27,000,000	2/			
President's Budget for FY 2020	\$50,000,000		80%		
Programmed Balance to Complete after FY 2020	\$30,336,000				
Unprogrammed Balance to Complete after FY 2020	\$0				

1/ \$372,999 reprogrammed to the project, including \$49,999 that was reprogrammed in FY 2017.

2/ Estimated Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$24,000,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2020 from prior appropriations for use on this effort is \$27,000,000. This amount will be used to perform work on the project as follows: award a construction contract for the cutoff wall and outlet works measure.

3/ PED costs of \$1,872,999 are included in this amount.

4/ For Dam Safety projects, this is an administrative equivalent to the Section 902 limit.

PHYSICAL DATA:

Division: Great Lakes and Ohio River

District: Louisville

Rough River Lake, KY (Dam Safety)

Dam: Earth core with rock fill, 1,590 ft in length.

Spillway: In a natural saddle, approx 900 ft southwest of the left abutment of the embankment, 65 ft wide, with design discharge capacity of 22,000 cfs.

Outlet Works: Intake structure with 3 slide gates, two 24 inch low flow bypass pipes, 12' x 12' semi-elliptical concrete conduit, and discharge bucket.

JUSTIFICATION: Rough River Dam is a Dam Safety Action Classification (DSAC) 2, which is defined by ER 1110-2-1156 as "High Urgency" where failure could begin during normal operations or be initiated by an event; or the incremental risk – combination of life or economic consequences with likelihood of failure – is high. The risk assessment cited the potential for seepage and piping failure modes and recommended action to remedy these potential risks.

FISCAL YEAR 2019: The TOTAL unobligated dollars are being applied as follows:

Complete the Supplement to the DSMR and initiate detailed design and development of plans and specs for the outlet works measure.	\$ 5,000,000
FY 2019 and prior-year unobligated funds to be carried over into FY 2020. Capability decreased due to concerns regarding structural integrity of the existing outlet works conduit during and after cutoff wall construction.	\$ 27,000,000
Total	\$ 32,000,000

FISCAL YEAR 2020: The budget amount plus carry-in funds will be applied as follows:

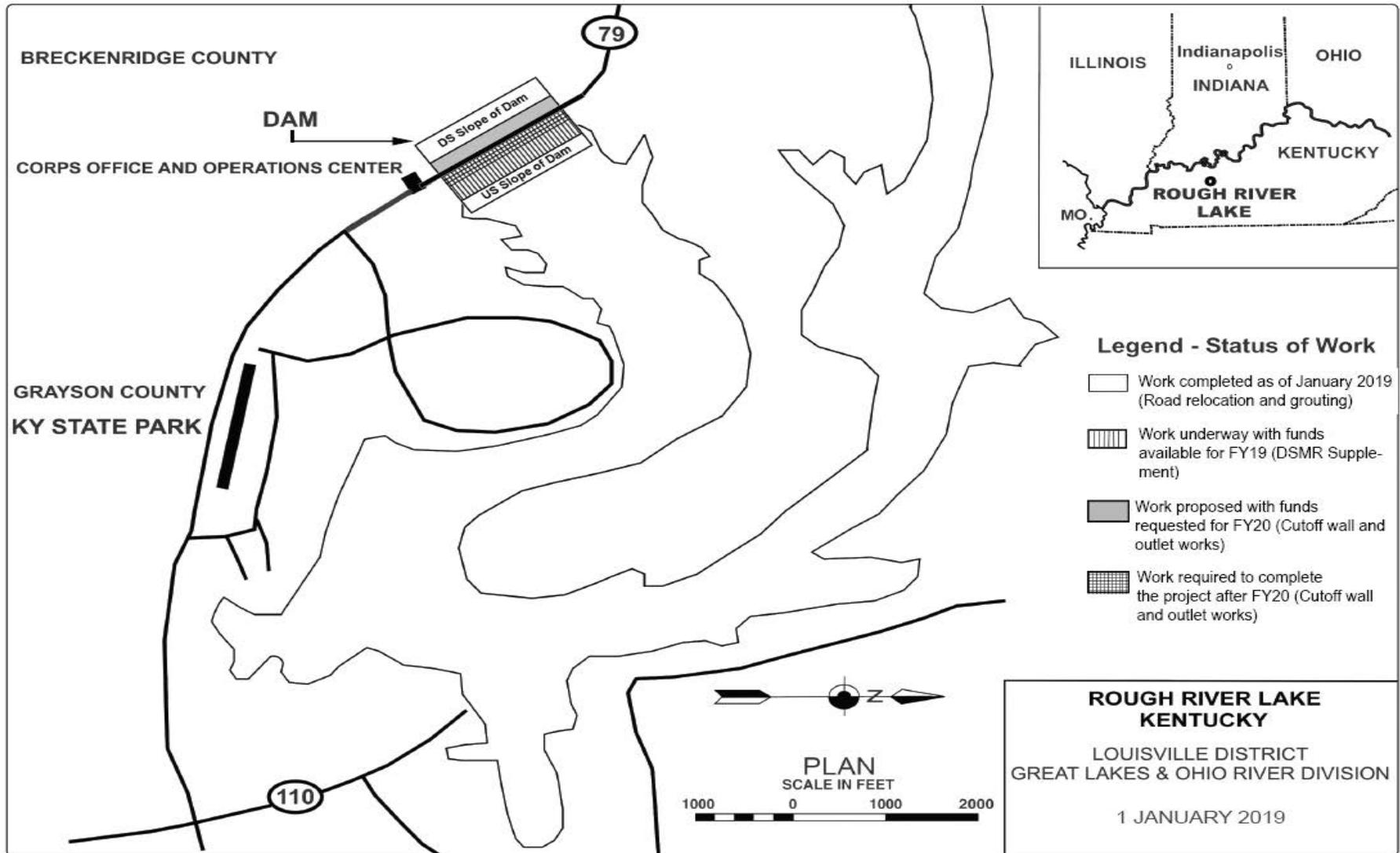
Continue detailed design and development of plans and specs for the outlet works measure.	\$ 3,000,000
Award a construction contract involving the cutoff wall and outlet works measure.	\$ 72,000,000
Engineering During Construction, Project Management, Construction Management	\$ 2,000,000
Total	\$77,000,000

STATUS OF LOCAL COOPERATION: None required.

COMPARISON OF FEDERAL COST ESTIMATE: The current Federal cost estimate of \$149,000,000 is the same as the latest estimate presented to Congress (FY 2019). However, the Corps expects that the total project cost estimate will increase significantly above this amount, due to the need for a new outlet works measure that is being proposed in the Supplement to the approved 2013 DSMR.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT COMPLIANCE: The Environmental Assessment was prepared in conjunction with the Dam Safety Modification Report and a Finding of No Significant Impact (FONSI) was signed by the District Commander in July 2012.

OTHER INFORMATION: Construction funds were first appropriated in FY 2008 utilizing "Dam Safety and Seepage/Stability Correction Program" funds.



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APPROPRIATION TITLE: Construction – Navigation, Fiscal Year 2020

PROJECT NAME: Boston Harbor, Massachusetts (Continuing)

LOCATION: Boston Harbor is located along the eastern shoreline of Massachusetts about 240 miles northeast of New York City.

DESCRIPTION: Boston Harbor is New England's largest port serving as the principal distribution point for the export and import of commerce for Massachusetts, New Hampshire and Vermont. Boston Harbor consists of entrance channels extending about three miles from Massachusetts Bay to President Roads, the main ship channel connecting the Roads to the inner harbor, anchorage areas in the Roads and lower inner harbor, and three principal deep-draft industrial tributaries in the Reserved Channel, Mystic River and Chelsea River. The project will deepen the Broad Sound North Entrance Channel to 51 feet; the President's Roads, the outer Main Ship and the Lower Reserved Channels to 47 feet; the Main Ship Channel between the Reserved Channel and Massport Marine terminal to 45 feet; and the Chelsea River and a small portion of the Mystic River Channel to 40 feet. All work is programmed except deepening of the Main Ship Channel between the Reserved Channel and Massport Marine terminal to 45 feet and deepening the Mystic River Channel to 40 feet, which require confirmation of terminal usage, and deepening the Chelsea River, which requires local commitments to berth dredging. The total estimated project cost is \$310,900,000 and will be shared 75 percent Federal and 25 percent non-Federal. All budgeted work is supported by the September 2013 Chief's Report for Boston Harbor Navigation Improvement Project, Massachusetts.

AUTHORIZATION: Section 7002 of the Water Resources Reform and Development Act of 2014, PL 113-121.

REMAINING BENEFIT-REMAINING COST RATIO: The remaining benefit–cost ratio for the entire project is 5.0 to 1 at 7 percent.

TOTAL BENEFIT-COST RATIO: The total benefit–cost ratio for the entire project is 4.4 to 1 at 7 percent.

INITIAL BENEFIT-COST RATIO: The initial benefit–cost ratio for the entire project is 4.1 to 1 at 7 percent (Fiscal Year (FY) 2017).

BASIS OF BENEFIT-COST RATIO: Benefit-cost ratios are based on the latest economic analysis contained in the Chief's Report for Boston Harbor Navigation Improvement Project, Massachusetts, dated 30 September 2013, and expressed at October 2012 price levels.

SUMMARIZED FINANCIAL DATA:		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2018)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost	233,200,000		Dredging	15	Dec 2021
			Rock Removal	0	Sep 2022
			Entire Project	0	Sep 2022
Estimated Non-Federal Costs	77,700,000				
Cash Contributions	77,500,000				
Other Costs	200,000				
Total Estimated Project Cost	310,900,000				
Authorized Cost (plus inflation)	324,300,000				
Maximum Cost Limit (Section 902)	386,500,000				
Allocations to 30 September 2016	4,324,200				
Allocation for FY 2017	18,225,000				
Allocation for FY 2018	58,000,000				
Allocation for FY 2019	37,183,000 5/				
Allocations through FY 2019	117,732,200 1/ 2/ 3/ 6/	35			
Estimated Unobligated Carry-in Funds	18,178,000 4/				
President's Budget for FY 2020	34,814,000	42			
Programmed Balance to Complete after FY 2020	52,253,800 7/				
Un-programmed Balance to Complete after FY 2020	28,400,000				

1/ \$94,999 reprogrammed from the project.

2/ \$901 rescinded from the project.

3/ \$0 transferred to the Flood Control and Coastal Emergencies (FCCE) account.

4/ Unobligated Carry-in Funding. The actual unobligated carry-in from FY 2018 to FY 2019 was \$5,375,400. This amount is part of the unobligated carry-in into FY 2020. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$18,178,000. This amount will be used to perform additional dredging and rock removal in FY 2020.

5/ The amount shown is the President's Budget amount for FY 2019 plus the FY 2019 work plan allocation.

6/ Preconstruction engineering and design costs of \$4,324,200 are included in this amount.

7/ For programmed work only; remaining work is un-programmed pending a decision to construct these features.

PHYSICAL DATA: The improvement project requires the removal of about 11 million cubic yards of dredged material and 1 million cubic yards of rock. The recommended plan involves placement of all the dredged material and rock at the Massachusetts Bay Disposal Site. However, it is the policy of the U.S. Army Corps of Engineers to use dredged material, where practicable, for beneficial use. Uses of the rock for offshore reef creation and shore protection will be investigated in partnership with the state during project design. Use of the dredged material to cap the former Industrial Waste Site in Massachusetts Bay will also be investigated in partnership with the U.S. Environmental Protection Agency and others during project design. None of these potential beneficial uses are

Division: North Atlantic

District: New England

Boston Harbor, MA

expected to increase project costs and will be done within budgeted authorized amount.

JUSTIFICATION: The improvement project will result in transportation cost savings by allowing cargo to shift from overland transport to ship transport and allowing the larger Post-Panamax vessels to operate more efficiently and experience fewer tidal and transit delays. Ships drawing 45-foot drafts now make 3 calls a week to Boston Harbor. In 2015, waterborne commerce totaled 17.2 million tons, of which approximately 70 percent were liquid petroleum products. The average annual benefits amount to \$103,496,000 all for commercial navigation.

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Activity	Amount
Dredging	\$ 23,180,400
Construction Management	\$ 800,000
Planning, Engineering, and Design	\$ 400,000
Total	\$ 24,380,400

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be applied as follows:

Dredging	\$ 51,492,000
Construction Management	\$ 1,000,000
Planning, Engineering, and Design	\$ 500,000
Total	\$ 52,992,000

NON-FEDERAL COSTS: In accordance with the cost sharing and financing concepts reflected in the Water Resources Development Act of 1986, as amended, the non-Federal sponsor must comply with the requirements listed below.

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation and Replacement cost
Provide lands, easements, rights of way, and perform all relocations determined by the Federal Government to be necessary for the construction, operation and maintenance of the project.	\$ 200,000	\$ 0
Pay 25 percent of the costs allocated to general navigation features with a depth in excess of 20 feet but not in excess of 50 feet during construction.	\$ 77,500,000	\$ 0
Reimburse an additional 10 percent of the costs of general navigation features allocated to commercial navigation within a period of 30 years following completion of construction, as reduced by a credit allowed for the value of lands, easements, rights of way, and relocations provided for commercial navigation.	\$ 31,090,000	\$ 0
Total Non-Federal Costs	\$ 108,790,000	\$ 0

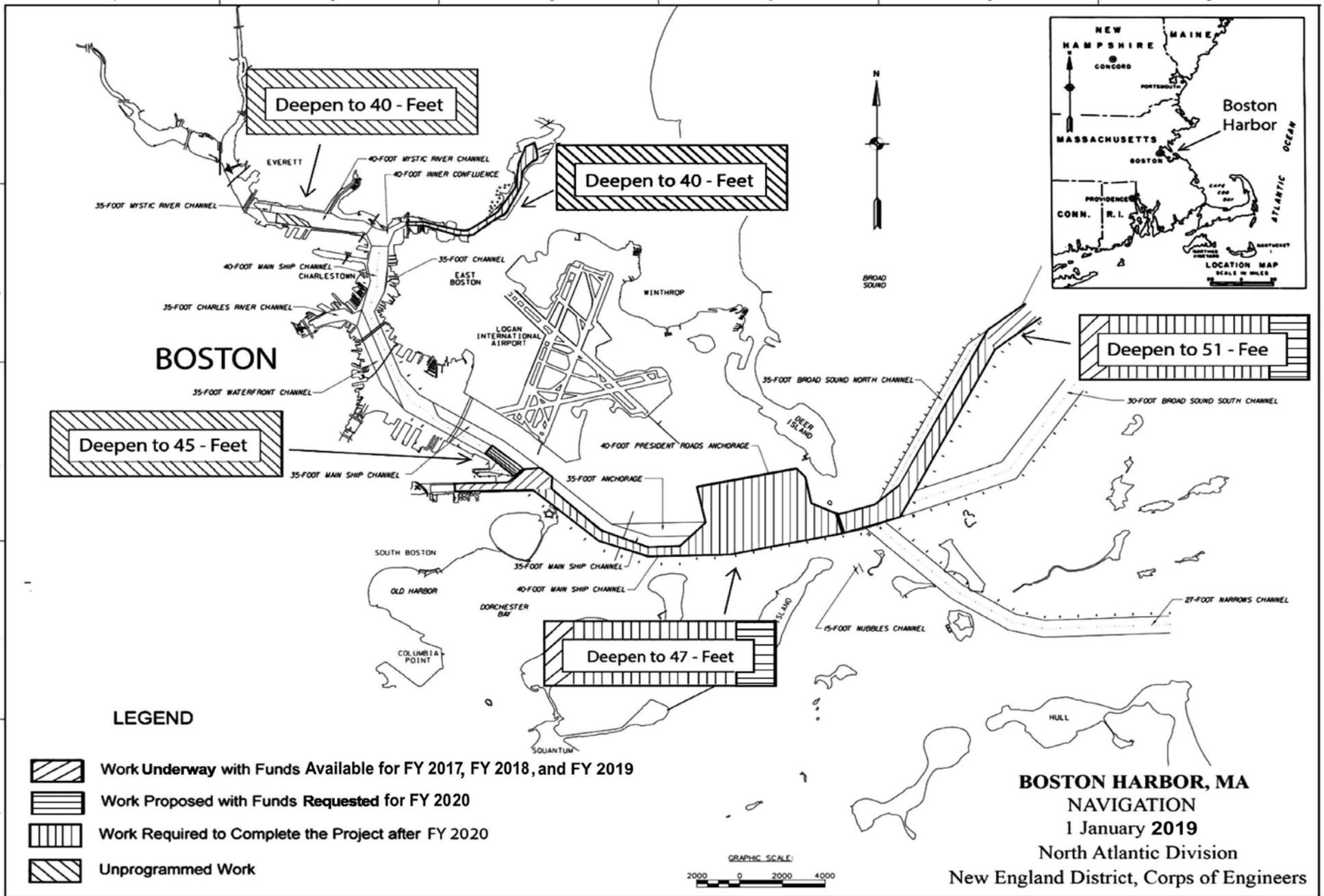
The non-Federal sponsor has also agreed to make all required payments concurrently with project construction and reimburse its share of construction costs allocated to general navigation features within a period of 30 years following completion of construction.

STATUS OF LOCAL COOPERATION: The sponsor for the project is the Massachusetts Port Authority (Massport) who administers harbor operations. Massport signed an agreement for design of the project on 19 May 2014. The Department of the Army signed a Project Partnership Agreement with Massport on September 11, 2017. Massport will obtain all state and local permits, as well as acquire all lands, easements and rights-of-way necessary for project construction.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal cost estimate of \$233,200,000 is an increase of \$3,600,000 from the latest estimate (\$229,600,000) presented to Congress (FY 2018). This increase is due to solely to price escalation on Construction Features.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: The Supplemental Environmental Impact Statement and Record of Decision were signed on 3 November 2014.

OTHER INFORMATION: Funds to initiate preconstruction engineering and design were appropriated in FY 2010. Funds to initiate construction were first appropriated in FY 2017. The first effort involves dredging all ordinary material to authorized depth and/or top of rock for deepening of the main ship channel into Conley Terminal. The removal of ordinary material is projected to cost \$209.1 million and is being accomplished using a continuing contract. The out year funding includes two fully funded contracts, one for rock removal to authorized depth and a third fully funded contract to deepen the Chelsea River channel, a segment in the Mystic channel, and a small segment of the Main Shipping Channel to the Massport Marine Terminal.



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APPROPRIATION TITLE: Construction – Locks (Navigation), Fiscal Year 2020

PROJECT: Sault Ste. Marie New Lock Construction, MI (Continuing)

LOCATION: The project is located on the St. Marys River at Sault Ste. Marie, Chippewa County, Michigan on Michigan's Upper Peninsula. The St. Marys River is the natural outlet of Lake Superior into Lake Huron. The cities of Sault Ste. Marie Michigan and Sault Ste. Marie Ontario, Canada flank the Soo Locks complex on both sides of the river.

DESCRIPTION: The existing Sault Ste. Marie locks complex consists of two canals and four locks. The North Canal includes the Davis and Sabin Locks and the South Canal, the MacArthur and Poe Locks. The Sabin Lock was removed from service in 1989 and the Davis Lock was removed from service for handling commercial traffic in 2011. All cargo vessels moving through the St. Marys River transit either the Poe (110' wide X 1,200' long) or the MacArthur (80' X 800') locks. Due to the Great lakes fleet containing many Class 10 vessels of length greater than 1,000', 71% of cargo travels on vessels that can only transit the Poe Lock. Per the Director's Report dated 29 June, 2018, the project would remove the obsolete Davis and Sabin locks and construct a new 110' x 1200' lock in their place, thereby adding a second lock capable of handling the large Class 10 vessels in case an accident or required maintenance forces the Poe Lock to close. The recommended cost of this project is \$922,432,000 at Fiscal Year (FY) 2019 price levels. This project was most recently authorized in Sec. 3091 of WRDA 2007 (P.L. 110-114) at 100% Federal cost. All work is programmed.

AUTHORIZATION: Section 1149 of WRDA 1986 (P.L. 99-662) as amended in Section 3091 of WRDA 2007 (P.L. 110-114) and Section 1401 of WRDA 2018 (P.L. 115-270)

REMAINING BENEFIT-REMAINING COST RATIO: 2.32 at the 7% rate

TOTAL BENEFIT-COST RATIO: 2.32 at the 7% rate

INITIAL BENEFIT-COST RATIO: 2.42 at the FY 2018 rate of 2.75%

BASIS OF BENEFIT-COST RATIO: Benefits are from the Soo Locks, St. Marys River, Sault Ste. Marie, MI New Soo Lock Economic Validation Study dated June 2018 at FY 2019 price levels.

SUMMARIZED FINANCIAL DATA				ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost		\$ 870,432,000			Downstream Deepening	100	Sep 2011
Estimated Non-Federal Cost		52,000,000			Upstream Deepening	0	Sep 2021
Cash Contributions	52,000,000		<u>6/</u>		Upstream Approach Walls	0	Sep 2022
Other Costs	\$0				Lock Chamber	0	TBD
Total Estimated Project Cost		922,432,000			Entire Project	3	TBD
Authorized Cost (plus inflation)		1,030,670,000					
Maximum Cost Limit (Section 902)		1,106,918,400					
Allocations to 30 September 2016		31,503,000					
Allocation for FY 2017		650,000					
Allocation for FY 2018		30,000					
Allocation for FY 2019		32,388,000					
Allocations through FY 2019		64,571,000	<u>1/ 2/ 3/ 5/</u>	7%			
Estimated Unobligated Carry-In Funds		0	<u>4/</u>				
President's Budget for FY 2020		75,333,000		15%			
Programmed Balance to Complete after FY 2020		730,528,000					
Un-programmed Balance to Complete after FY 2020		0					

1/ \$2,000,000 reprogrammed to the project.

2/ \$63,000 rescinded from the project.

3/ \$0 transferred to the Flood Control and Coastal Emergencies account.

4/ Estimated Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$14,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

5/ PED costs of \$21,611,000 are included in this amount.

6/ The State of Michigan entered into a contributed funds agreement on December 21, 2018 and provided \$52,000,000 contributed funds with no anticipation of reimbursement. Contributed funds will be applied to the ongoing PED efforts, Upstream Channel Deepening contract, the Upstream Approach Walls construction contract, and necessary supervision and administration.

PHYSICAL DATA: The Complex consists of the four navigation locks (MacArthur, Poe, Davis, and Sabin Locks), two hydropower units, and compensating works structure. The MacArthur Lock was completed in 1943 and has a length of 800 feet between the sills, a width of 80 feet, and a depth of 31 feet of water over the sills at low water datum. The Poe Lock was completed in 1968 and has a length of 1200 feet between the inner gates, a width of 110 feet, and a depth of 32 feet of water over the sills at normal lower pool. The Poe Lock holds back a head of 21.5 feet

Division: Great Lakes and Ohio River

District: Detroit

Sault Ste. Marie New Lock Construction, MI

(the difference between normal upper pool and normal lower pool). The Davis and Sabin locks are in inactive status and not operational. The St. Marys Falls Canal, also known as the Soo Locks, encompasses approximately 600 acres of land and water. In addition, there are two public parks on the site and a visitor center which is among the top three in the U.S. Army Corps of Engineers for visitors. The entire site is listed on the National Historic Register; all changes to the site must be coordinated with the National Park Service and the State Historic Preservation Office. The Soo Locks navigation season is limited from 25 March through 15 January, when the locks are closed to vessels for winter maintenance. Depending on maintenance and vessel traffic needs, the MacArthur Lock closes from about 15 December and opens in late March or early April.

JUSTIFICATION: The four main commodities transited through the existing locks are iron ore (taconite), coal, grain and limestone aggregate. From 2007 through 2017, an average of 72.5 million tons moved through the Soo Locks annually with these four commodities representing approximately 95% of that tonnage. Ten integrated steel mills in the Great Lakes region, eight in the U.S. and 2 in Canada, are dependent upon domestic taconite from mines in northern Minnesota and the Upper Peninsula of Michigan that transit the Soo Lock Complex. The eight U.S. steel mills account for 40% of domestic steel production, and 100% of the advanced high strength steel used for the manufacture of products like automobiles and appliances. An unscheduled Poe Lock closure of any duration during the navigation season, could result in significant regional and National economic impacts due to the idling of the steel plants. Multiple coal-fired power plants are reliant on coal shipments which transit the Soo Locks. Numerous USACE reports have identified the need for an additional Poe-sized lock at the project and several reports by outside agencies as well. "The Perils of Efficiency: An Analysis of an Unexpected Closure of the Poe Lock and its Impact", by the U.S. Department of Homeland Security, October 2015, discusses the impact of an unexpected six-month closure of the Poe Lock on the iron mining, integrated steel production, and steel manufacturing supply chain. The report addresses the challenges facing alternative modes of transportation to support the supply chain and found there is no single strategy which can compensate for the negative effect to the North American economy from a Poe Lock closure. The DHS report, estimated that a six-month closure of the Poe Lock would likely temporarily reduce gross domestic product by \$1.1 trillion and would result in a loss of an estimated 11 million jobs within the first year in the United States and up to 16 million jobs across North America. One of the mitigation strategies from the report is to construct a second Poe-sized lock at the Soo Locks to reduce the risk and the consequences of an extended unscheduled outage of the Poe Lock.

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Complete upstream deepening design	\$845,000
Initiate upstream channel deepening (award construction contract)	31,557,000
Total	\$ 32,402,000

FISCAL YEAR 2020: The budget amount plus carry-in funds will be applied as follows:

Continue upstream deepening construction	\$ 4,947,000
Continue lock chamber design	8,355,000
Initiate upstream approach wall construction (award contract)	62,031,000
Total	\$ 75,333,000

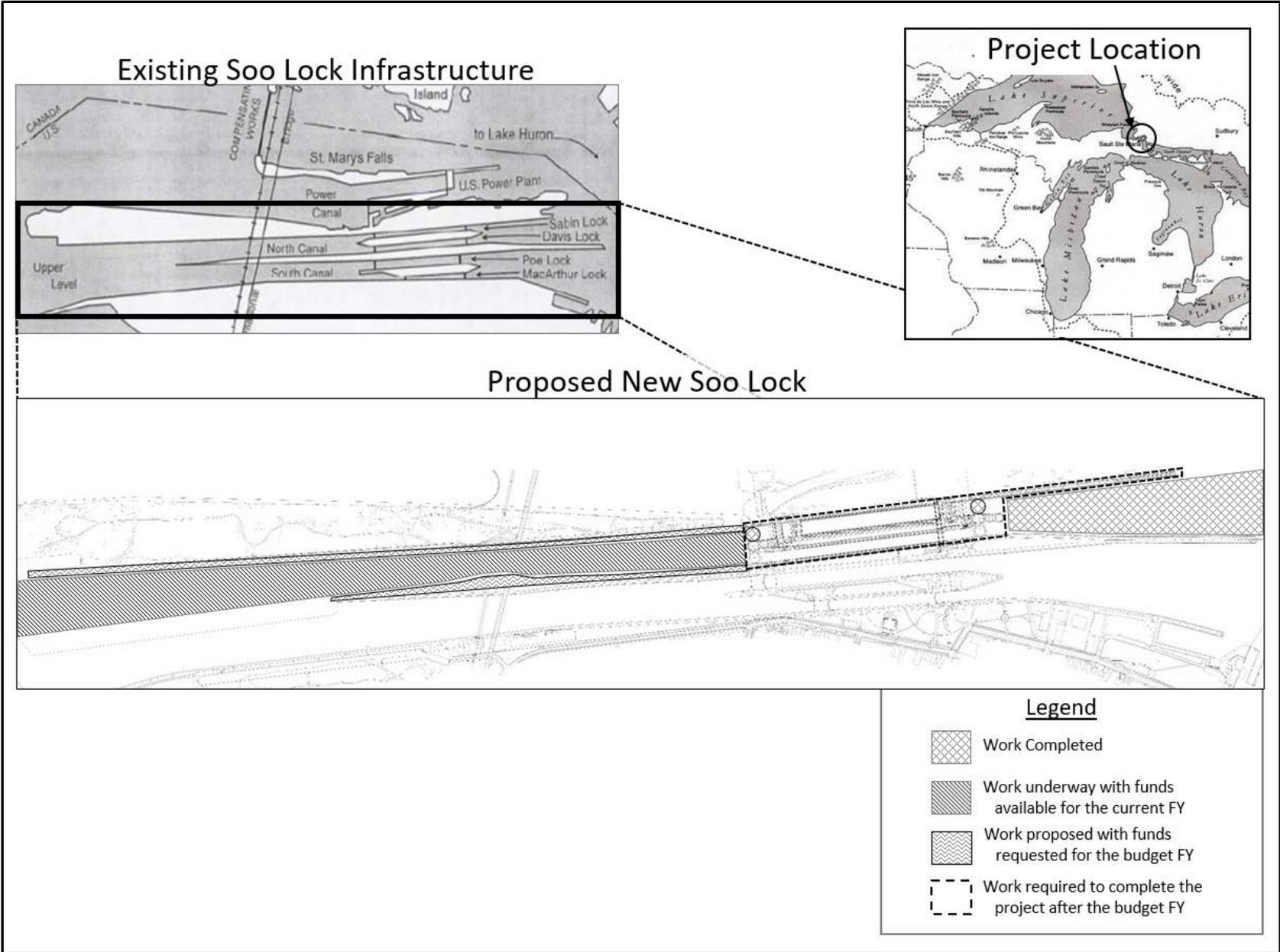
NON-FEDERAL COST: N/A. Sec. 3091 of WRDA 2007 (P.L. 110-114) amended the 1986 authorization to make the project cost 100% Federal.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal cost estimate of \$870,432,000 (at FY 2019 price levels) is a decrease of \$52,000,000 from the latest cost estimate presented to Congress (FY2018). This decrease accounts for the State of Michigan's contributed funds agreement with no reimbursement required or anticipated.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT COMPLIANCE: Environmental compliance for the project is covered by the Environmental Impact Statement for the Great Lakes Connecting Channels and Harbors Study, prepared in March of 1985, a subsequent Record of Environmental Consideration dated February 2000, an Information Bulletin made available in 2008, and an updated Record of Decision signed on 27 February 2009. As supporting documentation for the Directors Report signed 29 June, 2018, a Supplemental Information Report (SIR) of the project was conducted to determine the sufficiency of existing environmental documents. The SIR indicated that no significant new circumstances or substantial changes have been identified. When the project receives funds to continue construction efforts, an environmental compliance review will occur, accordingly.

OTHER INFORMATION: Funds to initiate preconstruction engineering and design were allocated in FY 2002. Concurrently, construction funds were allocated in FY 2002 to complete a Limited Reevaluation Report (LRR). The LRR was completed and submitted in 2005. Funds to initiate construction were allocated in FY 2010. Construction of the two coffer dams and downstream deepening were completed in 2011. Funding received since 2011 through 2018 were used to continue preconstruction engineering design and prepare an Economic Validation Study and Post Authorization Change request. Assuming efficient funding and the use of the continuing contract clause, construction is expected to be completed ten years after receipt of FY 2020 budget funds.

Although this project is 100% Federally-funded, the State of Michigan has provided USACE with \$52,000,000 through a contributed funds agreement which indicates no anticipation of reimbursement to support this project.



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APPROPRIATION TITLE: Construction - Flood and Storm Damage Reduction, Fiscal Year 2020

PROJECT NAME: Raritan River Basin, Green Brook Sub-Basin, New Jersey (Continuing)

LOCATION: The Green Brook Sub-Basin project area is located within the Raritan River Basin in north-central New Jersey in Middlesex, Somerset and Union Counties. It drains approximately 65 square miles of primarily urban and industrialized area. It includes the following communities: Dunellen, Middlesex Borough, Piscataway, South Plainfield, Bound Brook, Bridgewater, Green Brook, North Plainfield, Warren, Watchung, Berkeley Heights, Plainfield and Scotch Plains. The project area is divided into three sub-areas: the lower, upper, and Stony Brook portions of the sub-basin.

DESCRIPTION: The project plan was documented in a May 1997 General Reevaluation Report and consists of a system of levees, floodwalls, closure gates and pump stations in the lower portion of the basin, channel modifications and dry detention basins in the upper portion of the basin, and channel modifications in the Stony Brook portion of the basin.

Element 1a consists of levee segments U, R & T in the Bound Brook (Somerset County) portion of the lower basin. Started in FY 2000. Completed in FY 2015 at a total cost \$142.7 million (\$107 million Federal; \$35.7 million non-Federal).

Element 1b consists of Segments C, H, B & D in the Boro of Middlesex portion of the lower basin. Started in FY 2010. Current status as of the end of FY 2018: Completed: Segment B1 – Levees/Floodwalls and one pumpstation; Segment B2 – Floodwalls; Segment B3 – Levees/Floodwalls and wet well; at a total cost of \$87.2 million (\$65.4 million Federal; \$21.8 million non-Federal).

Element 1c consists of Segments E, F, G, P, Q, I, J & K in the remaining portions of the lower basin.

Element 2 consists of Segment O (Oakway) dry detention basin, Segment S (Skytop) dry detention basin, and Segment M (City of Plainfield), all of which are in the upper basin.

Element 3 consists of Segment L in the Stony Brook portion of the basin.

The New Jersey Department of Environmental Protection is the non-Federal sponsor. The cost of this project is shared 75 percent Federal and 25 percent non-Federal.

AUTHORIZATION: Water Development Act of 1986.

REMAINING BENEFITS-REMAINING COST RATIO: 1.5 to 1 at 7 percent.

TOTAL BENEFIT-COST RATIO: 1.0 to 1 at 7 percent.

INITIAL BENEFIT-COST RATIO: 1.4 to 1 at 7 percent (FY 1998).

BASIS OF BENEFIT-COST RATIO: Benefits are from the analysis contained in the Final General Reevaluation Report (dated May 1997) at October 2016 price levels and the Level 1 Economics Update Report (dated August 2017) as updated in March 2018 for budget purposes.

Division: North Atlantic

District: New York

Raritan River Basin, Green Brook Sub-Basin, NJ

SUMMARIZED FINANCIAL DATA			ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost		492,037,000				
Programmed Construction	417,037,000			Element 1a	100	2015
Unprogrammed Construction	75,000,000			Element 1b	13	TBD
				Element 1c	0	TBD
				Element 2	0	TBD
Estimated Non-Federal Cost		164,012,000		Element 3	0	TBD
Programmed Construction	139,012,000			Entire Project	34	TBD
Cash Contributions	89,012,000					
Other Costs	50,000,000					
Unprogrammed Construction	25,000,000					
Cash Contributions	10,000,000					
Other Costs	15,000,000					
Total Estimated Programmed Construction Cost		556,049,000				
Total Estimated Unprogrammed Construction Cost		100,000,000				
Total Estimated Project Cost		656,049,000				
(plus inflation)		679,034,000				
Maximum Cost Limit (Section 902)		719,634,000				
Allocations to 30 September 2016		175,577,000				
Allocation for FY 2017		10,000,000				
Allocation for FY 2018		20,000,000				
Allocation for FY 2019		29,000,000				
Allocations through FY 2019		234,577,000	48	1/2/4/		
Estimated Unobligated Carry-in Funds		0		3/		
President's Budget for 2020		25,000,000	53			
Programmed Balance to Complete after FY 2020		157,460,000		-		
Un-programmed Balance to Complete after FY 2019		75,000,000				

PHYSICAL DATA

Element 1a is Bound Brook (Somerset County) portion lower basin. Element 1b is Boro of Middlesex portion of lower basin in Middlesex County. Element 1c includes all final portions remaining within the lower basin. Element 2 (Unprogrammed) is the upper basin, includes channel modifications, dry detention basins. Element 3 is the Stony Brook portion Authorized Cost of the basin.

1/ \$590,300 reprogrammed from the project in prior FYs.

2/ \$703,121 rescinded from the project.

3/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$2,000,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

4/ PED costs of \$ 23,998,000 are included in this amount.

JUSTIFICATION: The project area experiences flood damages periodically. Major flooding occurred during the April 15-17, 2007 Nor'easter and the September 16-18, 1999 Tropical Storm Floyd led to a designation of a Major Disaster Area. Eight deaths have been attributed to floods in the basin. In the April 2007 Nor'easter, 34 people were injured and there were more than 1,000 people evacuated from their residences. National Flood Insurance claims paid in Bound Brook totaled about \$19.8 million.

FISCAL YEAR 2019: The TOTAL unobligated dollars are being applied as follows:

Construction Management/ Engineering and Design	\$ 7,000,000	5/
Award Element 1b, Segment C1 (contracts 1 & 2)	\$24,000,000	6/
 Total	 \$31,000,000	

5/ Amount includes design services for Segments C & D.

6/ These two construction contracts may be combined into 1 construction contract since they are adjacent and contiguous areas. Construction cost estimate updated to reflect the current design for this project element. Contract 1 of Segment C1 was funded in FY 2018. However, due to real estate issues the funds were used instead to complete segment C2 contract 1. The \$24 million is new funding provided in FY 2019.

FISCAL YEAR 2020: The budget amount plus carry-in funds will be applied as follows:

Construction Management/ Engineering and Design	\$ 5,000,000	
Award Element 1b, Segments C2 (contract 2) & H (contract 1)	\$20,000,000	7/
 Total	 \$25,000,000	

7/ These two contracts may be combined into one contract.

NON-FEDERAL COSTS: In accordance with the cost sharing and financing concepts reflected in the Water Resources Development Act of 1986, the non-Federal sponsor must comply with the requirements listed below:

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair Rehabilitation, and Replacement Costs
Provide lands, easements, rights of way, relocations and borrow excavated or dredged material disposal areas.	\$ 81,109,111	
Pay 25 percent of cost associated with non-structural flood protection	\$ 51,191,705	
Pay 6 percent of the costs allocated to flood control, to bring the total non-Federal share of flood control costs to 25 percent, as determined	\$144,393,684	\$1,157,000
Division: North Atlantic	District: New York	Raritan River Basin, Green Brook Sub-Basin, NJ

under Section 103 (m) of the Water Resources Development Act of 1986 and bear all costs of operation, maintenance, repair, rehabilitation and replacement of flood control facilities.

Total Non-Federal Cost

\$276,694,500

\$1,157,000

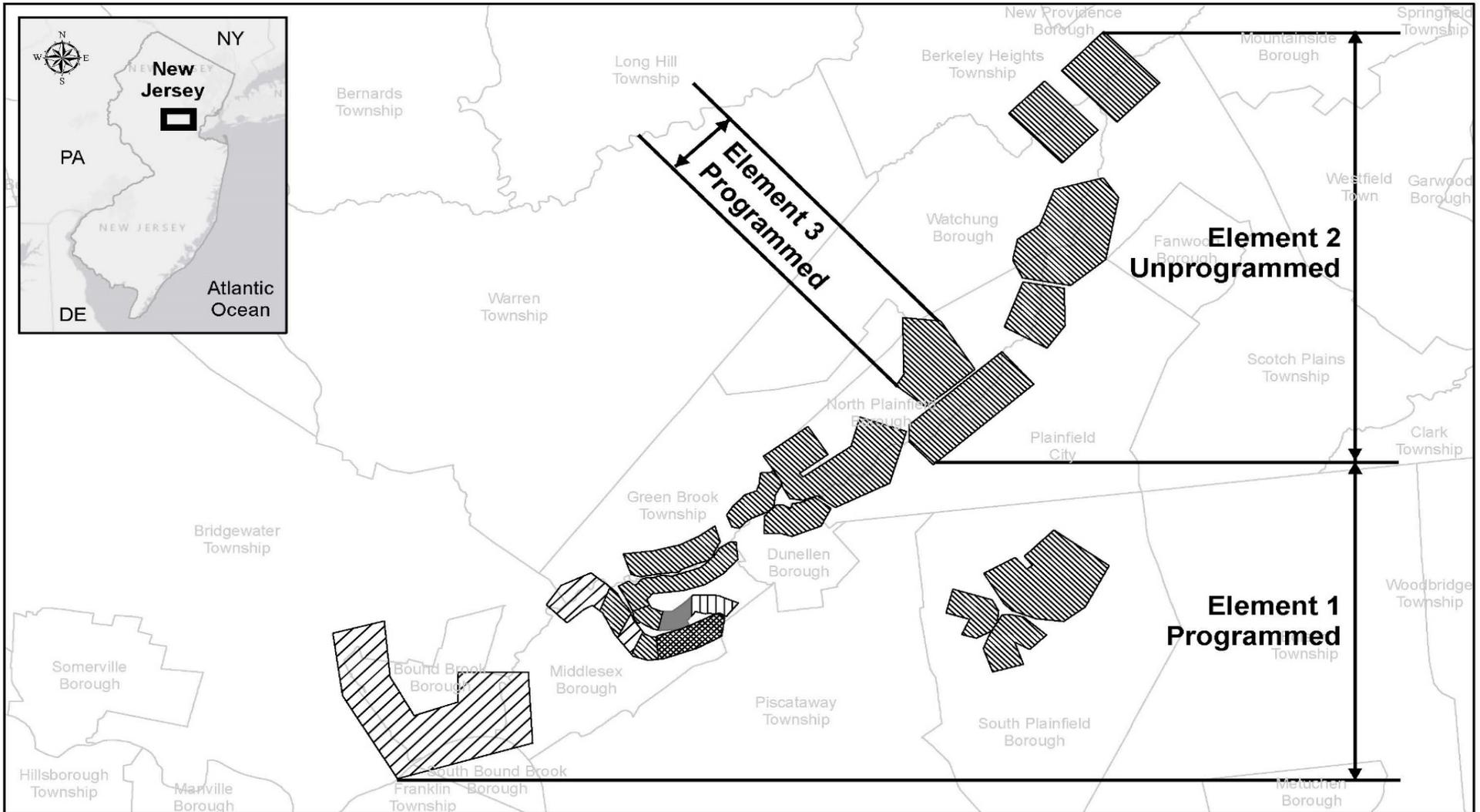
The non-Federal sponsor has also agreed to make all required payments concurrently with project construction.

STATUS OF LOCAL COOPERATION: The Project Cooperation Agreement was executed in June 1999 between the Department of the Army and the New Jersey Department of Environmental Protection.

COMPARISON OF FEDERAL COST ESTIMATE: The current Federal cost estimate of \$492,037,000 is the same as the latest estimate (\$492,037,000) presented to Congress (FY 2019). A validation study is currently underway and is scheduled to be completed by Sept 2019. Once this validation study is complete the cost estimate will be recertified and total project costs will be updated accordingly.

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: The final Environmental Impact Statement (EIS) was filed in August 1980. A Supplemental Environmental Impact Statement with the Final General Reevaluation Report was released in May 1997 and the Record of Decision was issued in July 1998.

OTHER INFORMATION: Funds to initiate preconstruction engineering and design were appropriated in FY 1988. Funds to initiate construction were appropriated in FY 1998.



Green Brook Flood Risk Management Project

New York District - North Atlantic Division

09 JANUARY 2019



**US Army Corps
of Engineers**®
New York District



Legend

-  WORK COMPLETED AS OF 30 SEPTEMBER 2018
-  ONGOING WORK AS OF 30 SEPTEMBER 2018
-  WORK PROPOSED WITH FUNDS AVAILABLE FOR FY 2019
-  WORK PROPOSED WITH FUNDS REQUESTED FOR FY 2020
-  WORK REQUIRED TO COMPLETE THE PROJECT AFTER FY 2020

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APPROPRIATION TITLE: Construction - Navigation (Major Rehabilitation), Fiscal Year 2020

PROJECT NAME: Columbia River at the Mouth, Oregon and Washington (Continuing)

LOCATION: The project is located at the entrance of the Columbia River to the Pacific Ocean and is about 120 miles downstream of Portland, OR and Vancouver, WA.

DESCRIPTION: Per the June 2012 Major Rehabilitation Report, the project will rehabilitate the Mouth of Columbia River (MCR) jetty system which consists of three rubble-mound jetties, with a total originally authorized length of 10.2 miles. The jetty system was constructed from 1885-1939 on massive tidal shoals to secure consistent navigation through the coastal inlet. The North Jetty is approximately 2.5 miles long, the South Jetty is approximately 6.6 miles long and the Spur Jetty 'A' is approximately 1.1 miles long. Rehabilitation has already taken place at Jetty A to stabilize the North Jetty root, and will now progress to the North Jetty and head stabilization at STA 101, concluding with the South Jetty. This project is funded at 100 percent Federal expense. All work is programmed.

AUTHORIZATION: River & Harbors Acts; 5 July 1884, 3 March 1905 and 3 September 1954. Public Law 98-63, 30 July 1983.

REMAINING BENEFIT - REMAINING COST RATIO: 1.13 to 1 at 7 percent. (This project is justified based on risk to human safety.)

TOTAL BENEFIT-COST RATIO: 1.07 to 1 at 7 percent.

INITIAL BENEFIT - COST RATIO: N/A

BASIS OF BENEFIT COST RATIO: Benefits are based on the June 2012 major rehabilitation report and a 2018 level 2 economic update.

SUMMARIZED FINANCIAL DATA		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
			Jetty 'A'	100%	Sept. 2017
			North Jetty	50%	Oct. 2019
			South Jetty	5%	TBD
Estimated Federal Cost		\$240,503,000			
Programmed Construction	240,503,000				
Un-programmed Construction	0				
Estimated Non-Federal Cost		0			
Total Estimated Programmed Construction Cost		240,503,000			
Total Estimated Project Cost		240,503,000			
Allocations to 30 September 2016		24,600,000			
Allocation for Fiscal Year (FY) 2017		21,900,000			
Allocation for FY 2018		11,000,000			
Allocation for FY 2019		28,000,000			
Allocations through FY 2019		85,500,000	<u>2/ 3/ 4/</u>	25%	
Estimated Unobligated Carry-in Funds		203,050	<u>5/</u>		
President's Budget for FY 20		36,000,000		35%	
Programmed Balance to Complete after FY 2020		119,003,000	<u>6/</u>		
Un-Programmed Balance to Complete after FY2020		0			

1/ No further mitigation requirements for this project are required.

2/ \$ 0 reprogrammed to the project.

3/ \$ 0 rescinded from the project.

4/ \$ 0 transferred to the Flood Control Emergencies account.

5/ Unobligated carry-in funding: The actual unobligated carry-in from FY 2018 to FY 2019 is \$203,050. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

6/ Preconstruction engineering and design costs of \$0 are included in this amount.

PHYSICAL DATA: The Rivers and Harbor Act of 1884 authorized construction of the South Jetty (first 4.5 miles) to attain a 30-foot deep navigation channel across the MCR bar. The Rivers and Harbor Act of 1905 authorized the extension of the South Jetty to 6.6 miles and construction of the North Jetty to 2.5 miles long to attain a 40-foot channel. Jetty A was authorized and constructed to 1.1 miles in length for channel stabilization in connection with the rehabilitation of the North Jetty. The purpose of this project is to assist in controlling the location and direction of the ebb tidal flow through the navigation entrance.

JUSTIFICATION: Continued deterioration, ongoing storm activity, and the continued loss of sand shoal material at the foundation of each of the three MCR jetties, has resulted in more frequent and costly emergency repairs. In the absence of action to address this concern, the jetties and sand shoals upon which they rest will further deteriorate, increasing the likelihood of a jetty breach, which could have a significant impact on access to the entrance of the navigation channel by commercial deep draft vessels using Columbia River port facilities and the U.S. Coast Guard Search and Rescue for Sector Columbia River.

Rehabilitation of all three jetties would also: (1) lessen wave heights and currents affecting the navigation channel thus improving safety; (2) decrease future O&M dredging; (3) decrease the need for O&M repairs; and (4) improve structural reliability of the jetties. The MCR jetty system is the most significant coastal navigation structure in the Pacific Northwest.

Functioning jetties at the MCR on a 5 year average from 2012 to 2016 support:

- 47 million tons of cargo ^{8/}
- 4,126 vessel crossings ^{8/}
- 1,344 vessel crossings requiring 30-foot draft or greater ^{8/}

The jetties also support:

- \$24,000,000,000 in international trade
- More than 40,000 maritime-related jobs
- \$1,080,000,000 total export related investments on the Columbia River since 2010. An additional \$5,150,000,000 investments planned. ^{9/}
- U.S. Coast Guard Search and Rescue activities

^{8/} Data from Waterborne Commerce of the United States, 2018

^{9/} ECONorthwest 2015

According to the Center for Economic Development and Research, the Columbia/Snake River navigation system is the number one export gateway for the Nation's wheat and barley exports. It is also the number one export gateway for west coast wood and mineral bulk exports and number one for automobile imports. Marine traffic passing the entrance of the Columbia River has increased by 44% from 32 million tons in 2003 to 46 million tons in 2012.

The Average Annual Benefits are: \$17,013,000

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, are being applied as follows:

Activity	Amount
South Jetty Construction Contract Initiation and Rock Procurement	\$26,000,000
North Jetty Contract Administration	\$2,203,050
Total	\$28,203,050

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be applied as follows:

Continue funding South Jetty Continuing Contract	\$36,000,000
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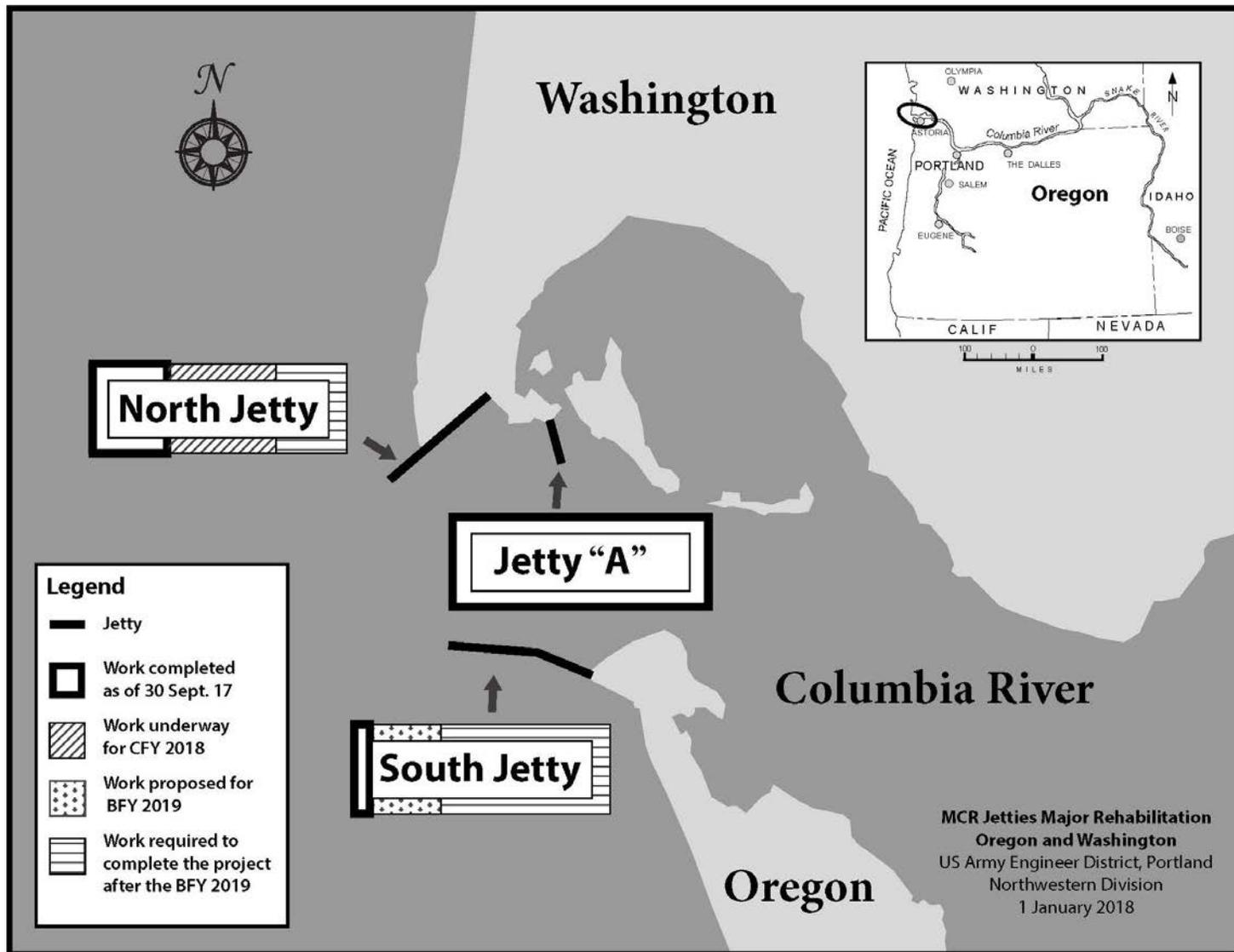
NON-FEDERAL COSTS: The MCR jetty system was authorized prior to the Water Resources Development Act of 1986, and was not subject to cost-sharing in that Act or subsequent law. Therefore, the Federal government will pay 100% of this project's costs.

STATUS OF LOCAL COOPERATION: The MCR jetty system is a 100% USACE owned and maintained project. There is no local cooperation required.

COMPARISON OF FEDERAL COST ESTIMATE: The current Federal cost estimate of \$240,503,000 is a decrease of \$35,077,000 from the last estimate of \$275,580,000 presented to Congress in FY 2019. This change includes the following item.

Item	Amount
Actual Costs for North Jetty lower than estimated	-\$35,077,000

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: An Environmental Impact Statement is not required. An Environmental Assessment was completed June 2012.



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APPROPRIATION TITLE: Construction – Locks and Dams (Navigation)

PROJECT: Locks and Dams 2, 3, and 4, Monongahela River, Pennsylvania (Completion)

LOCATION: These three Navigation facilities are located on the lower portion of the Monongahela River near the city of Pittsburgh, Pennsylvania. They are part of the Allegheny – Monongahela system and are located in Allegheny, Washington, and Westmoreland Counties. Measured from the Point in Pittsburgh, Locks and Dam 2 (Braddock) is at river mile 11.2, Locks and Dam 3 (Elizabeth) is at river mile 23.8, and Locks and Dam 4 (Charleroi) is at river mile 41.5. Six other navigation facilities situated upstream of Locks and Dam 4 provide a navigable waterway extending to Fairmont, West Virginia. At the Point in Pittsburgh, the Monongahela and Allegheny Rivers join to form the Ohio River.

DESCRIPTION: The authorized project per the Chief's report dated 1 June 1992 consists of a new gated dam and a rehabilitated auxiliary chamber floodway bulkhead structure at Braddock; new twin 84-by-720-foot locks and below-dam scour protection at Charleroi; raising pool 2 by a nominal five feet and lowering pool 3 by a nominal 3.2 feet; removal of Locks and Dam (L/D) 3; channel dredging; relocations; and bank stabilization. On 28 July 2014, the Headquarters, USACE, Change Control Board recommended deferment of construction of the Charleroi Locks Land Chamber until the mid 2050s. Construction began in Fiscal Year (FY) 1995 with the upgrade of the Locks 2 auxiliary chamber floodway bulkhead and relocations. Replacement of the dam at Braddock began in 1999 and is complete. Only one operational lock remains at L/D 4 (Charleroi). Efforts are now focused on the other new lock at Charleroi and remaining pool 2 relocations. After it completes that work, the Corps would remove L/D 3. All work is programmed. Existing Locks and Dams 2, 3, and 4 on the Monongahela River system have components that have been in service for nearly 100 years. The existing Braddock facility consists of a main lock with chamber dimensions of 110-by-720 feet, an auxiliary lock with chamber dimensions of 56-by-360 feet, and a 748-foot fixed-crest dam. The existing Elizabeth facility consists of locks with chamber dimensions of 56-by-720 feet and 56-by-360 feet and a 670-foot fixed-crest dam. The existing Charleroi facility consists of locks with chamber dimensions of 56-by-720 feet and 56-by-360 feet and a gated dam consisting of five 84-foot gated sections and a 43-foot fixed-weir section.

The cost of the project is evenly shared between construction appropriation and the Inland Waterways Trust Fund. All work is programmed.

AUTHORIZATION: Section 101, Water Resources Development Act of 1992 (P.L. 102 – 580)

REMAINING BENEFIT – REMAINING COST RATIO: The remaining benefit-remaining cost ratio for the entire project is not applicable because this project is funded in the FY 2020 Budget on the basis of being a completion.

TOTAL BENEFIT – COST RATIO: The total benefit-cost ratio for the entire project is not applicable because this project is funded in the FY 2020 Budget on the basis of being a completion.

INITIAL BENEFIT – COST RATIO: The initial benefit-cost ratio for the entire project is not applicable because this project is funded in the FY 2020 Budget on the basis of being a completion.

BASIS OF BENEFIT – COST RATIO: The basis of the benefit-cost ratio for the entire project is not applicable because this project is funded in the FY 2020 Budget on the basis of being a completion.

SUMMARIZED FINANCIAL DATA

SUMMARIZED FINANCIAL DATA		STATUS (12 Feb 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated General Appropriations Cost	\$1,400,648,000	Braddock Dam	100	Jul 04
Estimated IWTF Cost	0	Charleroi River Chamber Lock	47	Oct 23
		Dredging	18	Oct 20
Total Estimated General Appropriations Project Cost	\$1,400,648,000	Stilling Basin	0	Nov 22
		Relocations	55	Jun 23
		Remove L/D 3	0	Oct 23
		Entire Project	33.5	Oct 23

	General Appropriations		ACCUM PCT OF EST FED COST
Allocations to 30 September 2016	\$406,902,000		
Allocation for FY 2017	41,005,000		
Allocation for FY 2018	48,150,000		
Allocation for FY 2019	44,500,000		
Allocations through FY 2019	540,557,000	^{1/2/3/5/6}	38.6
Estimated Unobligated Carry-In Funds	19,292,000	^{4/}	
President's Budget for FY 2020	55,500,000	^{7/}	42.1
Programmed Balance to Complete after FY 2020	0		
Unprogrammed Balance to Complete after FY 2020	818,897,500	^{8/9/}	

^{1/} \$500,500 reprogrammed from the project in FY 2014. \$500,500 reprogrammed from the project in FY 2015. \$425,000 reprogrammed from project in FY 2018.

^{2/} \$0 rescinded from the project.

^{3/} \$13,668,000 transferred to the Flood Control and Coastal Emergencies account in FY 2011.

^{4/} Estimated unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 into FY 2019 is \$25,542,000, of which \$6,250,000 will be used in FY 2019. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$19,292,000. This amount will be used to perform work on the project as follows: Labor and ongoing contract contingency requirement.

^{5/} PED costs of \$12,542,000 are included in this amount.

^{6/} Includes \$68,262,000 American Recovery and Reinvestment Act of 2009 (ARRA) funds received.

^{7/} Funding from the general fund. An additional \$55,500,000 will be provided by Inland Waterways Trust Fund for a total of \$111,000,000 in FY 2020.

^{8/} In 2014, the Corps' Change Control Board (CCB) agreed to defer the construction of the landside lock chamber at Charleroi because over 90% of the project benefits could be achieved without the landside lock. There was no date associated with the term of deferment but the CCB did acknowledge that a PACR would be required if the landside lock chamber was pursued.

^{9/} The total project unprogrammed balance to complete is \$1,637,794,000 of which an additional \$818,897,500 will provided by the Inland Waterways Trust Fund. JUSTIFICATION: The Lower Monongahela River navigation system is an inland waterway used to transport cargo by water to and from areas in southwestern Pennsylvania and northeastern West Virginia. The Monongahela flows into the Ohio River at Pittsburgh. Therefore, this inland waterway helps to connect the commerce of the region to and from the Midwest and the Gulf coast. Between 2013 and 2017, an average of 14.0 million tons of cargo per year was shipped on the Lower Monongahela River. The primary commodity shipped was coal. The project will reduce the risk of closure of this inland waterway to navigation. Loss of this waterway would raise the cost of transportation for the companies that use it for shipments of products such as steam coal from the Bailey Enlow Coal Mine, the largest underground coal mine in the Nation; and shipments to the Clairton Coke Works, the largest steel coking plant in the Nation. The average annual benefits at 7 percent are as follows:

Annual Benefits	Amount
Commercial Navigation	\$ 39,729,000
Advanced replacement of shore side facilities	2,000,000
Eliminated cost of help boats	100,000
Flood damage reduction	500,000
Normal O&M reduction	1,000,000
Maintenance Savings	176,703,000
Total	\$ 220,032,000

The major risks associated with these facilities result from their deteriorated structural condition, and the difficulty of keeping them operational. The risk to navigation is becoming increasingly severe, as these facilities continue to deteriorate. There is a significant probability of structural failure and loss of navigation on the Monongahela River. The extreme structural deterioration of Locks and Dam 3 and Locks 4 is of paramount concern. The project involves replacement of Lock 4 and removal of Dam 3 because major repairs and rehabilitation will not prevent structural failure. The highest risks are at Elizabeth L/D 3 and at Charleroi L/D 4.

Locks 3 (Elizabeth) are highly unreliable. Dam 3 was recently reclassified from a DSAC 1 to a DSAC 4 due to the repairs made following the 2006 failure. These repairs appear to be functioning adequately but show signs of distress. Monitoring and observation of the dam have not indicated a need to perform more rigorous monitoring, investigation, or apply additional risk reduction measures at this time. Failure of Dam 3 would result in loss of navigation in pool 3, adverse impacts to multiple water intakes, and a potential failure of the only operational lock at the upstream Lock 4, Charleroi.

Lock 4 (Charleroi) is highly unreliable, over 80 years old, and in poor condition. The Charleroi Dam was classified as a DSAC 2 dam in 2009. The District is focusing resources on completing the new Charleroi River Chamber and the extension of the Dam's stilling basin as quickly as possible. Loss of downstream pool due to failure of Dam 3 would seriously affect the stability of the existing Lock 4 and potentially compromise the integrity of the dam. Lock 4 has a 56 foot wide chamber which slows down traffic on the lower Monongahela River. The remaining work on the project would address these concerns by completing a new 84 foot wide lock chamber at Lock 4 and removing Locks and Dam 3.

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Engineering During Construction and Supervision and Administration for the M22-M27, River Chamber Completion, Dredging, and Stilling Basin Contracts and Project Management	2,750,000
Land Acquisition	500,000
Stilling Basin	13,250,000
River Chamber Contract: Option 4	29,250,000
Contingency (Estimated)	5,000,000
Total	\$50,750,000

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be used as follows:

Engineering During Construction and Supervision and Administration for the M22-M27, River Chamber Completion, Dredging, and Stilling Basin Contracts and Project Management	14,500,000
Dredging	6,050,000
Pool 2 Relocations	3,150,000
River Chamber Contract: Option 5	15,330,793
Miscellaneous Minor Contracts	2,534,000
Pool 2 Clearing	808,500
Remove L/D 3	4,803,500
Pool 3 Relocations	3,109,750
Contingency (Estimated)	24,505,457
Total	\$74,792,000

NON-FEDERAL COST: In accordance with the cost-sharing requirements of Section 102, Water Resource Development Act of 1986, 50 percent of the total cost of construction will be derived from the Inland Waterways Trust Fund (IWTF). Funds received through the American Recovery and Reinvestment Act (ARRA) were not required to have a matching cost share from the IWTF.

Construction of this project requires modification to privately owned shore side facilities and submarine utility crossings, which were all constructed under Department of the Army permits pursuant to Section 10 of the Rivers and Harbors Act (RHA) of March 3, 1899. Municipal and/or Government facilities that meet the requirements of Section III of RHA 1958 have been determined, by the Chief of Engineers, to be adjusted at project cost. The estimated cost to non-municipal/non-government owners for adapting these facilities to new project conditions was \$111,000,000 in October 1992 dollars.

STATUS OF LOCAL COOPERATION: None required.

Division: Great Lakes and Ohio River

District: Pittsburgh

Locks and Dams 2, 3, & 4, Monongahela River, PA

COMPARISON OF FEDERAL COST ESTIMATES: The original fully funded project cost estimate was \$750,000,000 (October 1992). The current total project cost estimate is \$2,761,647,000 (May 2018). The estimate reflects lessons learned from past and ongoing construction activities associated with this project, as well as cost and schedule risks. The updated cost estimate includes sunk costs as well as the estimated cost to construct remaining project features. To achieve over 90% of project benefits, the project cost is estimated at \$1.23 billion (October 2017).

STATUS OF ENVIRONMENTAL IMPACT STATEMENT AND CLEAN WATER ACT COMPLIANCE: Final Environmental Impact Statement was filed with the Environmental Protection Agency on January 28, 1992. Director of Civil Works signed the Record of Decision on December 17, 1992. A Supplemental Environmental Impact Statement on Project Disposal and various other Environmental Assessments, all resulting in Findings of No Significant Impact has been completed pursuant to the National Environmental Policy Act. Changes since the last supplemental have been captured through the issuance of Public Notices under the Clean Water Act.

OTHER INFORMATION: Funds to initiate preconstruction engineering and design (PED) were first appropriated in FY 1992. Funds to initiate construction were first appropriated in FY 1995. Through FY 2018, the project has been allocated \$923.9 million. A disposal facility has been secured for the overall project. With allocations received through FY 2018, over 90 percent of the project benefits can be realized with an additional investment of \$111 million totaling \$1,034.9 million (\$923.9 million plus \$111 million) and still remain \$637.1 million (\$1,761 million minus \$1,123.9 million) below the 902 limit. The Summarized Financial Data amounts and descriptions on this Justification Sheet only reflect activities funded from the general fund (construction appropriation). Activities funded from the Inland Waterways Trust Fund are listed on a separate Justification Sheet titled, "NAV LRD Locks and Dams 2, 3 and 4, Monongahela River, PA (Pennsylvania) (IWTF) (FY 2020)"

APPROPRIATION TITLE: Construction - Channels and Harbors (Navigation), Fiscal Year 2020

PROJECT: Charleston Harbor (Deepening and Widening), South Carolina (Completion)

LOCATION: Charleston Harbor is located about midway along South Carolina's Atlantic coastline.

DESCRIPTION: The authorized plan consists of the following navigation improvements: (1) Deepen the existing entrance channel from a project depth of -47 feet to -54 feet Mean Lower Low Water (MLLW) and extend approximately three miles seaward from the existing location to a depth contour of -54-foot MLLW; (2) Deepen the inner harbor from an existing project depth of -45 feet to -52 feet MLLW from the Entrance Channel to the confluence of the Wando and Cooper Rivers, about two miles up the Wando River to the Wando Welch container facility and about three miles up to the Cooper River to the new Hugh K. Leatherman, Sr., Terminal, and to a project depth of -48 feet MLLW over the five mile reach leading from the Hugh K. Leatherman, Sr., Terminal to the North Charleston container facility; (3) Enlarge the existing turning basins at the Wando Welch, Hugh K. Leatherman, Sr., and North Charleston terminals; and (4) Widen selected channel reaches. The project sponsor is the South Carolina State Ports Authority (SCSPA).

AUTHORIZATION: Section 1401 of Water Infrastructure Improvements for the Nation Act of 2016

REMAINING BENEFIT - REMAINING COST RATIO: 10.0 at 7 percent.

TOTAL BENEFIT - COST RATIO: 3.1 at 7 percent.

BASIS OF BENEFIT - COST RATIO: Benefits are from the latest available evaluation in 13 November 2018 at FY 2019 price levels.

SUMMARIZED FINANCIAL DATA		ACCUM PCT OF EST FED COST	STATUS (1 JAN 2019)	PCT Cmpl	PHYSICAL COMPLETION SCHEDULE
Estimated Total Appropriation Requirement		\$345,430,000	EDC	0	TBD
Future Non-Federal Reimbursement	\$44,557,000		Env. Monitoring	0	TBD
Estimated Federal Cost (Ultimate)	\$301,522,000		EC Contract 1	0	FY 20
			EC Contract 2	0	FY 21
Estimated Non-Federal Cost		\$203,462,000	DI Contract	0	TBD
Cash Contributions	\$203,462,000		S&A	0	TBD
Total Estimated Project Cost		\$548,892,000			Entire Project 0 TBD
Authorized Cost (plus inflation)		\$557,454,000			
Maximum Cost Limit (Section 902)		\$657,992,000			

SUMMARIZED FINANCIAL DATA (Continued)	ACCUM PCT OF EST FED COST	STATUS (1 JAN 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Allocations to 30 September 2016	\$1,828,000	1/		
Allocation for FY 2017	\$17,500,000			
Allocation for FY 2018	\$49,000,000			
Allocation for FY 2019	\$41,415,000			
Allocations through FY2019	\$109,743,000	1/ 2/ 3/		
Estimated Unobligated Carry-In Funds	0	4/		
President's Budget for FY2020	\$138,040,078			
Programmed Balance to Complete after FY2020	0			
Unprogrammed Balance to Complete After FY2020	\$54,917,923	5/		

1/ \$150,000 reprogrammed to (from) the project.

2/ \$0 rescinded from the project.

3/ \$0 transferred to the Flood Control and Coastal Emergencies account.

4/ Estimated unobligated Carry-in Funding: The actual unobligated balance from 2018 into 2019 for this project is \$45,364,867. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into Fiscal Year 2020 from prior appropriations for use on this effort is \$0. This amount will be used to perform work on the project as follows: N/A.

5/ Represents funds advanced by the non-Federal sponsor pursuant to P.L. 114-322 in excess of their statutory cost share based on current government estimates.

PHYSICAL DATA: The project includes deepening and widening select reaches of the Charleston Harbor Federal Navigation project; enlarging of the Wando Welch Terminal Turning Basin, North Charleston Terminal Turning Basin, and the Hugh K. Leatherman, Sr., Terminal Turning Basin; dike raising at the Daniel Island and Clouter Creek Upland Disposal Sites; and a 3-mile extension of the entrance channel. The deepening and widening is expected to produce approximately 40 million cubic yards of dredged material, including 9 million cubic yards of consolidated material from the entrance channel reaches. The consolidated (rock) dredged material will be placed to expand the containment berm of the Ocean Dredged Material Disposal Site (ODMDS) and creation of artificial reefs. Additional mitigation costs include the purchase and preservation of 665 acres of wetlands to account for indirect impacts to existing freshwater wetlands.

JUSTIFICATION: Latest commercial tonnage as reported by the Waterborne Commerce Statistics Center for Fiscal Year 2017 was 27 million short tons of cargo. The major commodity imported and exported is manufactured equipment and machinery. Per United States Department of Commerce/Bureau of the Census, the Fiscal Year 2017 value of waterborne commerce through Charleston was \$70 billion. Navigation concerns for Charleston Harbor include three main problems; insufficient Federal channel depths, difficult currents, and restrictive channel widths and turning basins. Federal channel depths are insufficient for efficient transit of larger ships to port terminals; this can result in light loading of ships, waiting offshore for favorable tide conditions, or both. These inefficiencies force vessel operators to forego potential transportation cost savings available from the economies of scale associated with larger ships. Post Panamax Generation II and III vessels are expected to call at the port in the future. Existing disposal sites are available and with improvements they can accommodate the new work dredged material expected from the project.

Division: South Atlantic

District: Charleston

Charleston Harbor, SC

With the Panama Canal Expansion and the continuing global shift to larger vessels, the South Carolina State Ports Authority is actively preparing to efficiently handle fully-loaded Post-Panamax ships. The SCSPA is currently constructing a new container terminal, Hugh K. Leatherman, Sr., Terminal, and supporting infrastructure.

Annual Benefits	Amount
Transportation Cost Savings	\$169,627,000
Total	\$169,627,000

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Activity	Amount
Award Lower Harbor Construction	
Contract – Segment 1	\$86,779,867
Total	\$86,779,867

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be applied as follows:

Activity	Amount
Physically and Fiscally Complete Construction	
Award Lower Harbor Construction	
Contract – Segment 2	57,608,539 7/
Award Upper Harbor Construction	
Contract – Segment 3	45,699,539 7/
Award Daniel Island Middle Cell Ditching and Diking	
Improvements Contract	6,492,000 7/
Award Clouter Creek Placement Area	
Improvements Contract	8,053,000 7/
S&A	6,537,000 7/
Environmental Monitoring	13,650,000 7/
Total	\$138,040,078

6/ Pending an amendment to the Project Partnership Agreement (PPA), these activities will be 100% Federally funded in FY2020. Environmental monitoring will occur for 5 years post-construction completion.

NON-FEDERAL COST: In accordance with the cost sharing and financing concepts reflected in the Water Resources Development Act of 1986, the non-Federal sponsor must comply with the requirements listed below:

	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
Provide Lands, Easements and Rights of Way	\$1,500,000	0
Pay 25 percent of the costs allocated to general navigation facilities during construction for project depths to 50 feet below mean low water and pay all costs for general navigation features for project depths 50 feet below mean low water. Additionally, pay all costs for incremental maintenance below 50 feet below mean low water.	\$203,462,000	\$263,000
Reimburse an additional 10 percent of the costs of general navigation features allocated to commercial navigation within a period of 30 years following completion of construction, as reduced by a credit allowed for the value of lands, easements, rights of way, and relocations provided for commercial navigation.	\$44,557,000	
Local Service Facilities (LSF) Berthing Areas and Bulkhead Construction	\$27,707,000	
Total Non-Federal Costs	\$275,726,000	\$263,000

The non-Federal sponsor has also agreed to make all required payments concurrently with project construction and, for general navigation, reimburse its share of construction costs within a period of 30 years following completion of construction.

STATUS OF LOCAL COOPERATION: The South Carolina State Ports Authority (SCSPA) is the non-Federal sponsor. The Project Partnership Agreement was executed on 19 July 2017. The SCSPA is able to meet their financial commitment and willing to contribute both the non-Federal and Federal share of the Project costs by an accumulation of cash before and during construction. SCSPA is a state agency that generates revenues through assessment of port fees to shipping firms that use their facilities. The SCSPA has a positive cash flow and exercises sound management practices. The SCSPA, at their own risk, has acquired the land necessary for wetland mitigation for the project.

Future non-Federal reimbursement payments are scheduled to begin: TBD.

Division: South Atlantic

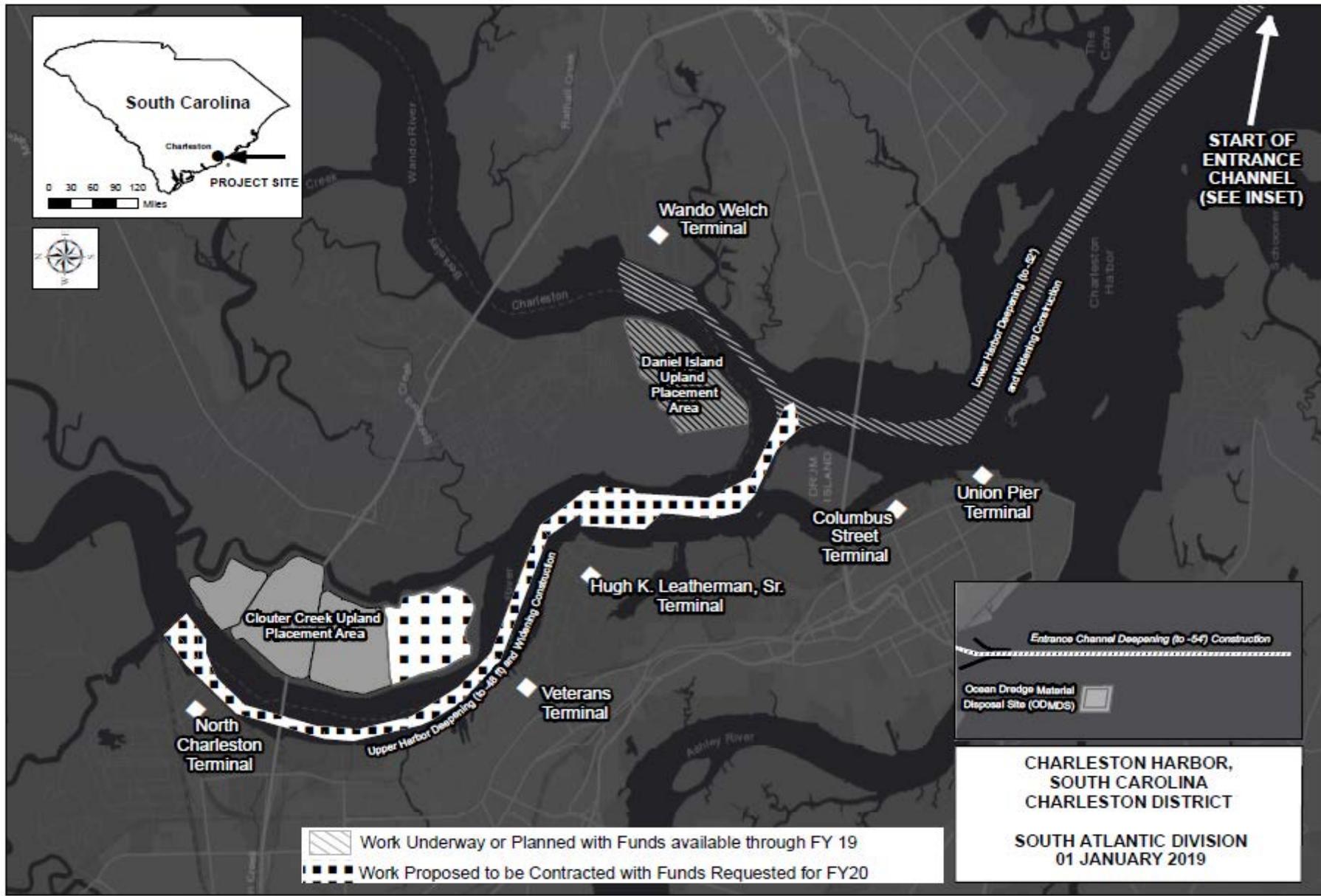
District: Charleston

Charleston Harbor, SC

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal (Corps) cost estimate of \$345,430,000 is the same as the latest estimated presented to Congress (the fully funded cost at the FY 2020 price levels) .

STATUS OF ENVIRONMENTAL IMPACT STATEMENT COMPLIANCE: The final EIS record of decision (ROD) was signed on 12 JAN 2016 by the ASA (CW) and includes all significant environmental compliance items.

OTHER INFORMATION: The Project Final Integrated Feasibility Report and Environmental Impact Statement (FR/EIS) was transmitted to Congress on 12 January 2016 and the Project was authorized for construction on 16 December 2016 by Section 1401(1)6 of the Water Resources Development Act of 2016 (WRDA 2016), Public Law 114-322. The Design Agreement for the Pre-construction Engineering and Design (PED) Phase was executed on 16 December 2015.



Division: South Atlantic

District: Charleston

Charleston Harbor, SC

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APPROPRIATION TITLE: Construction - Channels and Harbors (Navigation) Fiscal Year 2020

PROJECT NAME: Corpus Christi Ship Channel, TX (Continuing)

LOCATION: The project is located in Corpus Christi Bay on the southern portion of the Texas coast, in Nueces and San Patricio counties, 180 miles southwest of Galveston and 132 miles north of the mouth of the Rio Grande.

DESCRIPTION: The project provides for deepening the existing Corpus Christi Ship Channel from 47 feet to 54 feet Mean Lower Low Water (MLLW) and widening the channel to 530 feet. Barge lanes 200 feet wide and 14 feet deep MLLW will also be constructed on each side of the main channel across Corpus Christi Bay. An approximate 1.4 mile, 41 feet deep MLLW and 400 feet wide channel was added to the existing 47 feet deep MLLW La Quinta Channel to provide access to a proposed container terminal. Construction was completed on the La Quinta extension in December 2013. Dredged material were placed in existing upland disposal sites, existing open bay disposal sites, and used to create seven beneficial use sites for various aquatic plant and marine habitat. The project also includes constructing two ecosystem restoration sites.

AUTHORIZATION: Section 1001(40), Water Resources Development Act (WRDA) 2007, as amended by Section 7003, Water Resources Reform Development Act (WRRDA) of 2014

REMAINING BENEFIT-COST RATIO: 3.5 to 1 at 7 percent

TOTAL BENEFIT-COST RATIO: 2.65 to 1 at 7 percent

INITIAL BENEFIT-COST RATIO: 2.6 to 1 at 4.375 percent (Fiscal Year (FY) 2009)

BASIS OF BENEFIT-COST RATIO: Benefits and costs for the La Quinta Extension, and Main Channel with Barge Lanes portions of this project are from the Corpus Christi Ship Channel Deepening and Barge Shelves Limited Reevaluation Report dated December 2015 at October 2015 price levels and approved 21 December 2015. A total project Benefit-Cost Ratio (BCR) calculation was produced in a 29 June 2017 Memorandum, subject: Corpus Christi Ship Channel, Texas, Channel Improvement Project.

SUMMARIZED FINANCIAL DATA

La Quinta Separable Element

Federal Cost		\$ 43,191,000
Non-Federal Cost		\$ 12,933,000
Cash Contributions	\$ 12,933,000	<u>2/</u>
Total Element Cost		\$ 56,124,000

Main Channel with Barge Lanes Separable Element

Estimate Federal Cost		\$ 277,168,000
Estimated Non-Federal Cost		\$ 156,676,000
Cash Contributions	\$ 132,505,000	
Other Costs	\$ 24,171,000	<u>1/</u>
Associated Costs		\$ 16,310,000
Total Estimated Elements Cost		\$ 450,154,000

Project Summary

Estimated Federal Cost		\$ 320,359,000
Estimated Non-Federal Cost		\$ 169,609,000
Cash Contributions	\$ 145,438,000	
Other Costs	\$ 24,171,000	<u>1/</u>
Associated Costs		\$ 16,310,000
Total Estimated Project Cost		\$ 506,278,000

Authorized Cost (plus inflation)	\$422,149,000
Maximum Cost Limit (Section 902)	\$492,795,000

1/ Other costs include real property interests and relocations.

2/ Includes costs for PA13 DMDF work

ACCUM
PCT OF EST
FED COST

STATUS
(1 Jan 2019)

PCT
CMPL

PHYSICAL
COMPLETION
SCHEDULE

La Quinta	100%	Nov 2013
Main Channel	0%	TBD
Entire Project	12%	TBD

SUMMARIZED FINANCIAL DATA (Continued)		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Allocations to 30 September 2016	\$ 47,877,000				
Allocation for FY 2017	0				
Allocation for FY 2018	22,886,000				
Allocation for FY 2019	71,849,000				
Allocations through FY 2019	\$142,612,000	<u>1/ 2/ 3/ 5/</u>	45%		
Estimated Unobligated Carry-In Funds	\$ 0	<u>4/</u>			
President's Budget for FY 2020	\$ 53,313,000		61%		
Programmed Balance to Complete after FY 2020	\$124,434,000	<u>6/</u>			
Un-programmed Balance to Complete after FY 2020	\$ 0				

1/ \$822,000 reprogrammed to/from the project: \$146,000 during PED phase and \$676,000 during Construction phase.

2/ \$129,000 rescinded from the project.

3/ \$14,988,000 transferred to the Flood Control and Coastal Emergencies account.

4/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$27,521,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

5/ PED cost of \$1,563,000 for La Quinta Separable Element are included in this amount.

6/ For programmed work only; Remaining work is un-programmed pending a decision to construct these features.

PHYSICAL DATA:

La Quinta Channel Extension and Ecosystem Restoration Separable Element:

Navigation:	Channel Improvements	1.5 miles
Beneficial Use of Dredged Material:	Pelican Island (bird habitat)	2 sites
	Aquatic Plant and Marine Habitat	4 sites
	Offshore Underwater Berm	1 site

Main Channel with Barge Lanes Separable Element:	Main Ship Channel	34.0 miles
	Barge Lanes	10.2 miles

JUSTIFICATION: The Port of Corpus Christi is the sixth largest port in the U.S. and third largest on the Texas Gulf Coast (2016 tonnage) with an average commerce tonnage of 81.9 million. Construction of the project will create several hundred acres of shallow water habitat through the bay system and protect 1,200 acres of existing sand flats and wetlands and 45 acres of sea grass beds. A Dredged Material Management Plan is being prepared to document the availability of dredged material placement capacity required for both the existing LaQuinta project and the new work project, including construction of the main channel and barge lanes, once completed, for a period of 50 years. Benefits are based on Corpus Christi Ship Channel Deepening and Barge Shelves Limited Reevaluation Report dated December 2015 at October 2015 price levels at a discounted rate of 7 percent. The average annual benefits for La Quinta Channel Extension, Main Channel with Barge lanes are as follows:

Annual Benefits	Amount
La Quinta Channel Extension and Ecosystem Restoration Element: Navigation	\$15,537,000
Main Channel with Barge Lanes Element: Navigation -Main Channel	\$97,299,000
Navigation - Barge Lanes	\$1,472,000
Total	\$114,308,000

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Continue contract award for Entrance Channel, the first of seven anticipated contracts for the Main Channel and Barge Lanes	\$ 39,235,000
Initiate contract 2 award for Lower Bay Part 1 and 2	33,000,000
Initiate contract 3.2 award for Lower Bay Part 2, pkg 2	22,500,000
Planning, Engineering, and Design	1,235,000
Construction Management	2,000,000
Mitigation for LaQuinta	1,400,000
Total	\$ 99,370,000

FISCAL YEAR 2020: The Budget amount plus carry-in funds will be applied as follows:

Complete contract 2 award for Lower Bay Part 1 and 2	\$ 27,813,000
Complete contract 3.2 award for Lower Bay Part 2, pkg 2	9,500,000
Initiate and Complete contract 3.3 award for Lower Bay Part 2, pkg 3	13,000,000
Planning, Engineering, and Design	1,000,000
Construction Management	2,000,000
Total	\$ 53,313,000

NON-FEDERAL COST: In accordance with the cost sharing and financing concepts reflected in the Water Infrastructure Improvements for the Nation (WIIN) Act of 2016, the non-Federal sponsor must comply with the requirements listed below:

Requirements of Local Cooperation	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
La Quinta Channel Extension and Ecosystem Restoration Separable Element:		
Provide lands, easements, rights-of-way, and excavated or dredged material disposal areas.	\$ 0	
Modify or relocate, utilities, roads, bridges (except railroad bridges) and other facilities, where necessary for the construction of the project.	\$ 0	
Pay a percentage of the costs allocated to navigation improvements, to mitigate the project's adverse environmental impacts, and to pay a portion of the cost of operation, maintenance, and replacement of the project.	\$12,933,000	\$1,229,000
General Navigation Features – Deep Draft 25%	\$8,182,000	
Mitigation Features – Deep Draft 25%	\$263,000	
General Navigation Features – Shallow Draft 10%	\$1,282,000	
Mitigation Features – Shallow Draft 10%	\$50,000	
Ecosystem Restoration Features (35%)	\$3,156,000	
Total La Quinta Channel Extension Element	\$12,933,000	\$1,229,000

Requirements of Local Cooperation (continued)	Payments During Construction and Reimbursements	Annual Operation, Maintenance, Repair, Rehabilitation, and Replacement Costs
Main Channel Element with Barge Lanes Separable Element:		
Provide lands, easements, rights-of-way, and excavated or dredged material disposal areas.	\$5,111,000	
Modify or relocate, utilities, roads, bridges (except railroad bridges) and other facilities, where necessary for the construction of the project.	\$19,060,000	
Pay a percentage of the costs allocated to navigation improvements, to mitigate the project's adverse environmental impacts, and to pay a portion of the cost of operation, maintenance, and replacement of the project.	\$132,505,000	\$5,729,000
General Navigation Features – 50%	\$60,625,000	
General Navigation Features – 25%	\$71,781,000	
General Navigation Features – 10%	\$99,000	
Work in Kind		
Total Main Channel Element with Barge Lanes	\$156,676,000	\$5,729,000
Total Non-Federal Costs (Excludes Associated Costs)	\$169,609,000	\$6,958,000

The non-Federal sponsor has also agreed to make all required payments concurrently with project construction and, for general navigation, reimburse its share of construction costs within a period of 30 years following completion of construction.

STATUS OF LOCAL COOPERATION: The Project Partnership Agreement (PPA) for the La Quinta Channel Separable Element was executed in October 13, 2009. The Project Partnership Agreement (PPA) for the Main Channel and Barge Lane Elements with the ability for the NFS to accelerate funds was executed on September 9, 2017.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal cost estimate of \$320,359,000 is an increase of \$57,325,000 from the latest estimate (\$263,034,000) presented to Congress (FY 2019). This change includes the following items.

Item	Amount
Price Escalation on Construction Features	\$26,841,000
Post Contract Award or Other Estimating Adjustments (based on revised contract one award)	\$30,484,000
Total	\$57,325,000

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: The Final Environmental Impact Statement (FEIS) for channel widening and deepening was filed with Environmental Protection Agency April 2003. The Record of Decision for this FEIS was signed on October 1, 2007. Endangered Species consultation was updated in 2009. This updated consultation was included in the La Quinta Channel LRR completed in November 2009. ESA consultation was again updated in 2015 for the current LRR report.

OTHER INFORMATION: The non-Federal sponsor for the existing project, the Port of Corpus Christi Authority (PCCA), has actively participated throughout the planning process. Construction of the La Quinta Channel Extension and Ecosystem Restoration Features were completed in December 2013. Subsequent to construction of the La Quinta Channel Extension, the PCCA deepened the La Quinta Channel Extension from the authorized depth of 41 feet MLLW to 47 feet MLLW under the authority of section 204(f) of WRDA 1986, as amended, with the Secretary assuming maintenance upon completion. The PCCA deepening work was completed in September 2014.

In 2012 a 902 limit analysis concluded that the anticipated total project cost was greater than the authorized 902 limit. Subsequently, a Limited Reevaluation Report recommending an increase in the projects authorized cost was completed in December 2012 and approved in February 2013. Updated costs were authorized in WRRDA 2014. In December 2015, another Limited Reevaluation Report was completed, calculating a Remaining Benefit to Remaining Cost Ratio (BCR) of 2.67 at a 7% discount rate.

Port Corpus Christi continues to be the economic engine for the nation and region requiring continuous improvements and maintenance to its ship channel and waterways. The PCCA received 2012 federal TIGER grant to support \$50 million in rail improvements, which was completed in 2017. Construction, at an estimated cost of \$1 billion, is underway by TxDOT to replace the Port's Harbor Bridge which will accommodate larger ships and the cargos they carry. In addition to multiple billion dollar expansions of existing Port related refinery and chemical manufacturing industries, an estimated \$50 billion in new Port related industries are in operation, nearing construction completion, under construction or announced. Examples of new Port industries include a \$1.2 billion hot briquetted iron steel plant for export and a \$20 billion LNG project for liquefaction and export, both sited on the La Quinta Channel Extension; an international chemical company completing construction of a \$900 million plastics manufacturing plant sited on the Port's Inner Harbor ship channel; and the announcement a \$1.3 billion chemical manufacturing plant is being planned to be permitted for construction. The initial \$70 million phase of the Port's multi-purpose cargo and container terminal project is scheduled for construction in 2018 to handle a variety of containerized and other bulk cargo including refining modules, wind turbine components, and serve the military as the Port is a Military Strategic Seaport.

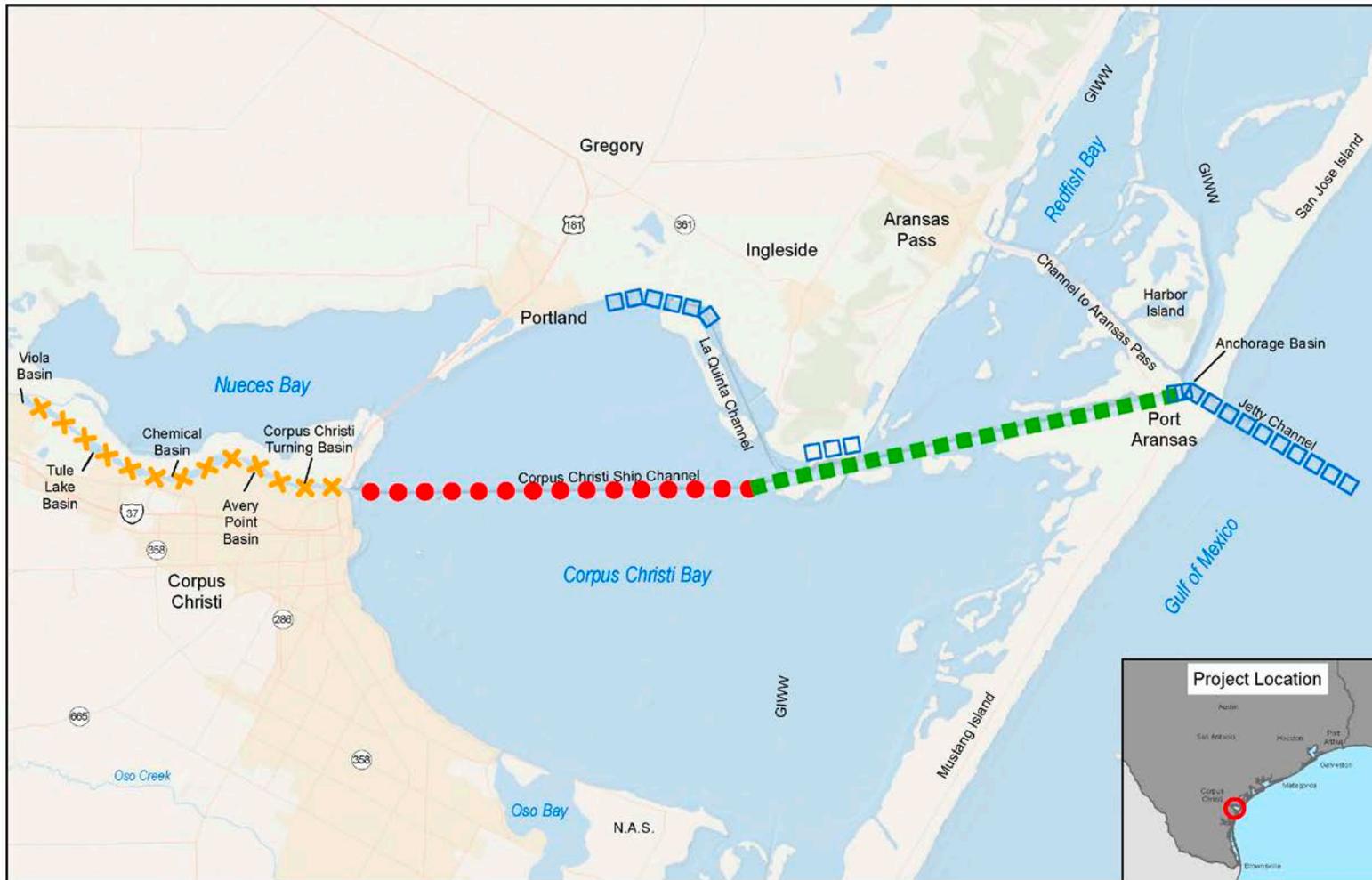
Existing crude and petroleum product industry improvements include a recently completed \$30 million ship dock, and construction of three additional public and private, liquid oil dock and terminal projects within the inner harbor at approximately \$300 million. Currently, an additional six liquid oil dock and terminal projects

Division: Southwestern

District: Galveston

Project: Corpus Christi Ship Channel, TX

are under permitting, final engineering and/or in construction. Existing and new terminal facilities are designed and/or constructed to accommodate a deeper channel and larger ships. The infrastructure servicing these facilities outside the Port area, i.e. pipelines, tanks, road etc., are valued in the billions of dollars. The Port estimates about \$130 million to be expended at its bulk material terminal to support nearly doubling in tonnage in the next 5 to 10 years. In addition, the Port's two major grain exporters located in the inner harbor both have planned major expansions. The Port is also home to three major constructors of offshore oil production facilities, where they continue to build, integrate, and ship channel tow the largest offshore oil rigs in the world, with upcoming deployments of three major multi-billion projects, requiring the private channel dredging to improve (beyond currently Federally maintained) the limits of the ship channel for the rig's safe transit.



- Work to be Completed with FY18 Funds
 - Work Proposed with Funds Available for FY19
 - Work Proposed with Funds Available for FY20
 - ✕ Work Required to Complete the Project After FY20
- Base Map Source: ESRI



**CORPUS CHRISTI
SHIP CHANNEL, TX**
January 1, 2019
U.S. ARMY CORPS OF ENGINEERS
GALVESTON, TEXAS

Division: Southwestern

District: Galveston

Project: Corpus Christi Ship Channel, TX

APPROPRIATION TITLE: Construction - Aquatic Ecosystem Restoration, Fiscal Year 2020

PROJECT NAME: Columbia River Fish Mitigation, Washington, Oregon, & Idaho (Continuing)

LOCATION: Lower Columbia, Snake and Willamette Rivers.

DESCRIPTION: The Columbia River Fish Mitigation program is funded at 100 percent Federal cost and is comprised of efforts by the Corps to address the Endangered Species Act (ESA) Biological Opinion (BiOp) Reasonable and Prudent Alternative (RPA) actions identified in the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) 2014 Federal Columbia River Power System (FCRPS) BiOp and the 2008 Willamette River BiOps issued by NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS). In addition, the Corps entered into the 2008 Columbia River Fish Accords that represent a commitment to improve passage of Pacific Lamprey (Lamprey) at the lower Snake and lower Columbia River dams; these actions are not included under the BiOp.

The BiOp RPA actions address the effects of the operation and maintenance of the Corps' FCRPS and Willamette River projects in order to avoid jeopardy of ESA-listed species and adverse modification of designated critical habitat.

The BiOp on the FCRPS was issued in 2000 and was remanded by the Court to NOAA Fisheries. A new BiOp was issued in 2004 which was also remanded. A subsequent BiOp was issued in 2008, which was also remanded and supplemented in 2010. On August 2, 2011, the U.S. District Court ruled that the 2008/2010 Supplemental BiOp remain in place through 2013, and NOAA Fisheries issued the 2014 FCRPS Supplemental BiOp on January 17, 2014 to correct the 2008/2010 Supplemental BiOp's reliance on post-2013 measures that the court concluded were unidentified and not reasonably certain to occur. On May 4, 2016 the U.S. District Court of Oregon remanded the 2014 BiOp and ordered a new BiOp by 31 December 2018. The Court also ordered the Corps and Bureau of Reclamation to continue to implement all RPA actions in the 2014 BiOp until the new 2018 BiOp is complete. Current RPA actions include adult and juvenile fish passage improvements, as well as avian predation management and salmon survival research and development.

Biological Opinions for the Willamette River Basin were issued in July 2008 by both NOAA Fisheries and the USFWS. RPA actions include adult and juvenile fish passage improvements and research, monitoring and evaluation to provide information necessary to make informed adaptive management decisions in addition to tracking and documenting progress made toward achievement of RPA measures.

AUTHORIZATION:

FCRPS and Pacific Lamprey: 1933 Federal Emergency Administration of Public Works; 1935, 1945 and 1950 River and Harbor Acts; 1937 Bonneville Project Act; 1938, 1948, 1950 and 1954 Flood Control Acts; Section 906(b)(1) of Water Resources Development Act (WRDA) 1986; Section 511 of WRDA 1996, as amended by Section 582 of WRDA 1999 and Section 5025 of WRDA 2007.

Estuary Research, Monitoring, and Evaluation: The authorized cost of estuary actions under Section 511(a) of WRDA 1996 is increased in the FY 2015 Appropriations Bill.

Willamette River: 1938, 1948, 1950, 1954, and 1960 Flood Control Acts; 1937 Bonneville Project Act; Section 101(a)(25) of WRDA 1996, as amended by Section 344 of WRDA 1999.

Division: Northwestern

District(s): Portland/Walla Walla

Columbia River Fish Mitigation, WA, OR, & ID

REMAINING BENEFIT-REMAINING COST RATIO: The remaining benefit-remaining cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

INITIAL BENEFIT-COST RATIO: The initial benefit-cost ratio for this project is not applicable because environmental benefits were not quantified in monetary terms.

BASIS OF BENEFIT-COST RATIO: The basis of benefit-cost ratio is not applicable to this project because environmental benefits were not quantified in monetary terms.

SUMMARIZED FINANCIAL DATA	ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT COMPL	PHYSICAL COMPLETION SCHEDULE
<u>Total Project Summary</u>				
Estimated Federal Cost (Corps of Engineers)	2,786,105,000		Entire Project	80% TBD
Estimated Other Federal Costs [Bonneville Power Administration (BPA)]	9,670,000	6/	FCRPS Lamprey Willamette River	94% 100% 60% TBD 2019 TBD
Total Estimated Project Cost	2,795,775,000	6/		
Allocations to 30 September 2016	2,062,439,000	9/ 10/		
Allocation for FY 2017	70,300,000			
Allocation for FY 2018	70,000,000			
Allocation for FY 2019	46,000,000			
Allocations through FY 2019	2,248,739,000	1/ 2/ 3/ 5/	79%	
Estimated Unobligated Carry-In Funds	0	4/		
President's Budget for FY 2020	21,602,000		81%	
Programmed Balance to Complete after FY 2020	515,764,000			
Un-programmed Balance to Complete after FY2020	0			
<u>FCRPS</u>				
Estimated Federal Cost (Corps of Engineers)	1,984,118,000			
Estimated Other Federal Costs (BPA)	9,670,000			
Total Estimated Project Cost	1,993,788,000	6/ 7/		
Allocations to 30 September 2016	1,824,760,000	8/ 10/		
Allocation for FY 2017	45,520,000			
Allocation for FY 2018	45,419,000			
Presumed Allocation for FY 2019	28,975,000			
Allocations through FY 2019	1,944,674,000	5/	97%	
Estimated Unobligated Carry-In Funds	0	4/		
President's Budget for FY 2020	8,992,000		98%	
Programmed Balance to Complete after FY 2020	30,452,000	7/		
Unprogrammed Balance to Complete after FY 2020	0			
Division: Northwestern	District(s): Portland/Walla Walla		Columbia River Fish Mitigation, WA, OR, & ID	

Pacific Lamprey

Federal Cost	53,179,000		
(Corps of Engineers)			
Other Federal Costs (BPA)	0		
Total Project Cost	53,179,000	<u>6/ 7/ 9/</u>	
Allocations to 30 September 2016	43,632,000		
Allocation for FY 2017	5,117,000		
Allocation in FY 2018	4,430,000		
Presumed Allocation for FY 2019	0		
Allocations through FY 2019	53,179,000	<u>5/</u>	100%
Estimated Unobligated Carry-In Funds	0	<u>4/</u>	
President's Budget for FY 2020	0		
Programmed Balance to Complete after FY 2020	0		
Unprogrammed Balance to Complete after FY 2020	0		

Willamette River

Estimated Federal Cost	749,025,000		
(Corps of Engineers)			
Other Federal Costs (BPA)			
Total Estimated Project Cost	749,025,000	<u>6/ 8/</u>	
Allocations to 30 September 2016	194,047,000		
Allocation for FY 2017	19,663,000		
Allocation for FY 2018	19,607,000		
Presumed Allocation for FY 2019	17,025,000		
Allocations through FY 2019	250,342,000	<u>5/</u>	31%
Estimated Unobligated Carry-In Funds	0	<u>4/</u>	
President's Budget for FY 2020	12,610,000		33%
Programmed Balance to Complete after FY 2020	486,073,000	<u>7/</u>	
Un-programmed Balance to Complete after FY 2020	0		

1/ \$31,465,000 reprogrammed to the project (\$886,000 reprogrammed from the project FY 2016).

2/ \$3,407,000 rescinded from the project.

3/ \$200,000 transferred to the Flood Control and Coastal Emergencies account.

Division: Northwestern

District(s): Portland/Walla Walla

Columbia River Fish Mitigation, WA, OR, & ID

4/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$1,805,436 (\$334,900 FCRPS; \$3,097 Willamette River; \$922,843 Pacific Lamprey; and \$544,596 unallocated). As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$0.

5/ PED costs are included in this amount.

6/ BPA will directly reimburse U.S. Treasury an estimated \$1,936,022,000 for work attributable to hydropower under this program (\$1,633,409,000 for FCRPS, \$42,899,000 for Pacific Lamprey, and \$259,714,000 for Willamette River).

7/ See Other Information.

8/ Allocation for FY 2014 includes net reprogramming into the project of \$1,473,000.

9/ Reflects revocation of \$600,000 from Lamprey allocations prior to FY 2013 due to reimbursement of A/E liability settlement on a design funded with ARRA funds.

10/ Allocations thru FY 2014 include \$28,064,000 made from FY 1988 thru 1990 to address FCRPS improvements for juvenile salmon migration, referred to as the Columbia River Basin Fish Bypass Program in Congressional Reports, prior to the establishment of the Columbia River Fish Mitigation program.

PHYSICAL DATA:

FCRPS

Lower Granite Lock & Dam
 Juvenile fish bypass system
 Juvenile fish transport facilities
 Barge moorage
 Fish transport barges
 Spillway flow deflectors
 Spillway weir
 Juvenile passage monitoring facilities
 Adult fish ladders
 Adult passage monitoring facilities

Little Goose Lock & Dam
 Juvenile fish bypass system
 Adult fish ladders
 Spillway flow deflectors
 Spillway weir
 Juvenile fish transport facilities

Lower Monumental Lock & Dam
 Juvenile fish bypass system
 Juvenile fish transport facilities
 Spillway flow deflectors
 Spillway weir
 Juvenile passage monitoring facilities
 Adult fish ladders

The Dalles Lock & Dam
 Tailrace spill wall
 Spillway improvements
 Sluiceway surface passage
 Adult fish ladders

McNary Lock & Dam
 Juvenile fish bypass system
 Juvenile fish transport facilities
 Juvenile passage monitoring facilities
 Spillway flow deflectors
 Spillway weirs
 Adult fish ladders
 Adult passage monitoring facilities

John Day Lock & Dam
 Juvenile fish bypass system
 Juvenile passage monitoring facilities
 Spillway flow deflectors
 Spillway weirs
 Adult fish ladders
 Mitigation hatcheries

Ice Harbor Lock & Dam
 Juvenile fish bypass system
 Spillway flow deflectors
 Spillway weir
 Juvenile passage monitoring facilities
 Adult fish ladders

Bonneville Lock and Dam
 Juvenile fish bypass system
 Independent station service
 Juvenile fish monitoring facilities
 Corner collector surface passage
 Spillway flow deflectors
 Sea lion barriers
 Adult fish ladders
 Adult passage laboratory
 Adult passage monitoring facilities
 Sluiceway surface passage

Mitigation Analysis
 Gas abatement
 Adult passage
 Turbine Passage
 Project passage efficiency and survival studies
 Prototype facility studies
 Delayed & multiple bypass mortality studies
 Temperature impacts

Lower Columbia River estuary
 Avian Predation Reduction
 Estuary Studies

Pacific Lamprey

Lower Granite Lock & Dam
Minor Adult Ladder Modifications

McNary Lock & Dam
Minor Adult Ladder Modifications
South Shore Adult Ladder Entrance
JBS Raceway Tail Screens

Bonneville Lock and Dam
Cascade Island Lamprey Passage Structure
WA Shore Adult Ladder Flume System
Adult Count Station Picketed Lead Modifications
Minor Adult Ladder Modifications

Little Goose Lock & Dam
Minor Adult Ladder Modifications
Adult Ladder Entrance Modifications

John Day Lock & Dam
North Adult Fish Ladder
Adult Lamprey Trap
Minor Adult Ladder Modifications

The Dalles Lock and Dam
Minor Adult Ladder Modifications

Lower Monumental Lock & Dam
Minor Adult Ladder Modifications
Adult Ladder Entrance Modifications

Ice Harbor Lock & Dam
Minor Adult Ladder Modifications
Adult Ladder Entrance Modifications
Turbine Cooling Water Intake Screens

Mitigation Analysis
JSATs Juvenile Lamprey Tag
Adult Passage Studies
Juvenile Passage and Success Studies

Willamette River (By Sub-Basin)

North Santiam River
Adult Passage
Juvenile Downstream Passage
Temperature Control
Research, Monitoring and Evaluation

South Santiam River
Adult Passage
Juvenile Downstream Passage
Temperature Control
Research, Monitoring and Evaluation

Middle Fork Willamette River
Adult Passage
Research, Monitoring and Evaluation

McKenzie River
Juvenile Downstream Passage
Research, Monitoring and Evaluation

System Wide
Configuration and Operation Plan
System wide Research, Monitoring and Evaluation

JUSTIFICATION: The NOAA Fisheries has listed salmon and steelhead as threatened/ endangered and has issued BiOp(s) on operation of the FCRPS issued 1992, 1993, 1995, 1998, 2000, 2004, 2008, the 2010 Supplemental BiOp which includes the Adaptive Management Implementation Plan and amendments, and the 2014 FCRPS Supplemental BiOp. The current scope of this project has been adjusted to be in accord with biological opinions and specific dates for Reasonable and Prudent Alternative (RPA) actions identified in the BiOp(s). The Mitigation Analysis, begun in FY 1991, is contributing to a regionally collaborative process for analyzing the RPA actions and their efficacy for avoiding jeopardy of ESA-listed species and adverse modification of designated critical habitat.

In response to Section 582 of WRDA 1999 and in recognition of the effects of the hydropower system operations on the Columbia River estuary and concomitant impacts on salmonids, efforts began in FY 2001 to conduct monitoring, research, and evaluation of habitat and avian predation issues in the estuary. From FY 2008 to FY 2013, under the authority of Section 906b of WRDA 1986, the Corps initiated actions to relocate a portion of the Caspian Tern colony in the estuary to reduce predation on migrating juvenile salmonids. Starting in FY 2014, avian predation actions are being funded under the authority of Sec 511(c) of WRDA 1996. This authority was further amended by WRDA 2007, Section 5025, to increase the funding cap for research and development from \$10 million to \$25 million and to increase the funding cap for avian predation from \$1 million to \$10 million. The research and development authority (511a) was further amended to \$43.4 million in the 2015 Omnibus.

Willamette River: Separate Biological Opinions on the Willamette River were issued by NOAA Fisheries and the USFWS in July 2008. The Corps has initiated actions to comply with the most urgent BiOp requirements and is additionally completing the Willamette River Configuration and Operations Plan and associated BiOp compliance 5-year strategic plan to further recommend appropriate structural and operational changes to the Willamette River Basin to address impacts on listed species resulting from the operation of the 13 Dams in the basin. These plans will inform the cost estimate to comply with the BiOps.

Fiscal Year 2019 and Fiscal Year 2020 funds, plus carry-in funding, will be applied to address the highest priority actions to comply with the 2014 FCRPS Supplemental BiOp requirements and the NOAA Fisheries and USFWS 2008 BiOps for the Willamette River Basin. No funds are included for conservation measures or for work that will require additional authorization to complete. Current execution plans are for funds to be applied on major measures as follows (Specific amounts are tentative. See "Other Information" below):

FCRPS				
Project	Presumed FY 2019 Allocation	FY 2019 Activity	FY 2020 Budget	FY 2020 Activity
FCRPS Systemwide <u>11/</u>	\$8,057,800	FCRPS NWP Post Construction Performance Standard Evaluations (\$1,500,000) FCRPS NWP Bonn/JDA/TDA Forebay Temp (\$50,000) FCRPS NWP Court Ordered Maximum Spring Spill Evaluations (\$250,000) FCRPS NWP BiOp NEPA Requirements (\$4,548,408) FCRPS NWP Programmatic Requirements (\$599,392) FCRPS NWP Monitoring of Avian Predators (\$270,000) FCRPS NWW Snake River Fall Chinook System Survival (\$35,000) FCRPS NWW Life and Property Safety Initiatives (\$110,000)	\$8,262,000	Maximum Spring Spill Evaluations (\$4,727,000) EIS and supporting NEPA documentation (\$3,000,000) Program oversight, evaluation, and reporting (\$530,000) Forebay temperature monitoring (\$5,000)

		FCRPS NWW Inland Avian Predation (Caspian Terns) (\$110,000) FCRPS NWW Programmatic Requirements (\$250,000) FCRPS NWW Snake River Adult Sockeye Initiatives (\$275,000) FCRPS NWW Post Construction Performance Standard Evaluations (\$60,000)		
Bonneville	\$3,750,000	FCRPS NWP Bonn 2 FGE FCRPS NWP BONN FOG-Bulkheads FCRPS NWP Bonn PIT Feasibility	\$150,000	PIT tag detection prototype analysis and implementation
McNary	\$3,250,000	FCRPS NWW McNary Spillway Weir Permanence Phase 1 and 2 FCRPS NWW McNary Outfall Avian Water Cannon Deficiency Correction	\$50,000	Complete spillway weir permanence improvements
Lower Granite	\$4,202,000	FCRPS NWW Lower Granite Juvenile Fish Facility Completion Contract FCRPS NWW Prototype Spillway PIT Monitoring System (Lower Granite) Spillway PIT – Post Construction Monitoring FCRPS NWW Post Construction Performance Standard Evaluations (JBS)	\$250,000	Complete juvenile facility bypass improvements Complete surface passage modifications
The Dalles	\$2,000,000	FCRPS NWP The Dalles Auxiliary Water Supply	\$0	
Lower Columbia River Estuary	\$3,236,000	FCRPS NWP Estuary Avian Predation (Cormorants) FCRPS NWP Sheepy Island Reconstruction - CATS EIS FCRPS NWP Estuary Habitat Studies (511a)	\$30,000	East Sand Island avian predator (cormorant) monitoring

Division: Northwestern

District(s): Portland/Walla Walla

Columbia River Fish Mitigation, WA, OR, & ID

Lower Monumental	\$575,000	FCRPS NWW Lower Monumental Juvenile Bypass Deficiency Correction	\$50,000	Complete and closeout outfall primary bypass expansion joint contract
Little Goose	\$175,000	FCRPS NWW Little Goose Adult Ladder Temperature Mitigation FCRPS NWW Little Goose Fully Automated TSW	\$0	
Ice Harbor	\$100,000	Turbine Survival	\$200,000	Turbine survival
John Day	\$439,200	FCRPS NWP John Day Mitigation Alternatives Study FCRPS NWP John Day Adult PIT Monitoring FCRPS NWP John Day Avian Wires	\$0	
Subtotal	\$25,785,000		\$8,992,000	

Pacific Lamprey

Project	Presumed FY 2019 Allocation	FY 2019 Activity	FY 2020 Budget	FY 2020 Activity
Lamprey	\$923,000	Close out remaining actions	\$0	
Subtotal	\$923,000			

Willamette River

Project	Presumed 2019 Allocation	Activity	FY 2020 Budget	FY 2020 Activity
Willamette River System Wide	\$7,320,000	WRFM NWP Research to Determine Direction (Systemwide) Program Coordination High Head Bypass	\$12,600,000	Research, Monitoring and Evaluation
McKenzie River	\$8,675,000	WRFM NWP Cougar Downstream Fish Passage (McKenzie) - Complete Design of (Downstream Fish Passage at Cougar Dam)	\$0	
North Santiam River	\$3,000,000	WRFM NWP Detroit Downstream Fish Passage (North Santiam)	\$0	

Division: Northwestern

District(s): Portland/Walla Walla

Columbia River Fish Mitigation, WA, OR, & ID

Middle Fork Willamette River	\$1,302,000	WRFM NWP Fall Creek Adult Fish Facility – Phase II (Middle Fork Willamette)	\$0	
South Santiam River	\$800,000	WRFM NWP Foster Fish Weir (South Santiam) WRFM NWP Foster Fish Facility	\$10,000	Adult Upstream Passage (Foster)
Subtotal	\$21,097,000		\$12,610,000	

Grand Total	\$47,805,000		\$21,602,000	
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11/ FCRPS System Wide funds no longer required for the Maximum Spring Spill Biological Evaluation (\$12,300,000)- funds have been reallocated in part, to FY19 activities : for example, FCRPS NWP Bonn 2 FGE, FCRPS NWP BONN FOG-Bulkheads, FCRPS NWW McNary Spillway Weir Permanence Phase 1 and 2, FCRPS NWP Bonn PIT, Feasibility, FCRPS NWP John Day Avian Wires, FCRPS NWP Bonn/JDA/TDA Forebay Temp, FCRPS NWP Estuary Habitat Studies (511a), and FCRPS NWP Sheepy Island Reconstruction – Estuary Caspian Tern EIS.

NON-FEDERAL COST: Costs eventually determined to be allocable to power are reimbursable. The dams being modified and analyzed are a part of the FCRPS. BPA, the Federal Power Marketing Agency, establishes system rate levels adequate to recover all capital investment costs for generating projects (including Corps generating projects) within a 50-year period and to repay annual OM&R and interest expenses. BPA submits an annual financial statement to Congress, as required by law, on repayment and periodically recommends rate adjustments as required for meeting repayment obligations.

STATUS OF LOCAL COOPERATION: None required.

COMPARISON OF FEDERAL COST ESTIMATE: The total Federal cost estimate of \$2,795,775,000 remains unchanged from the last estimate presented to Congress (FY 2019).

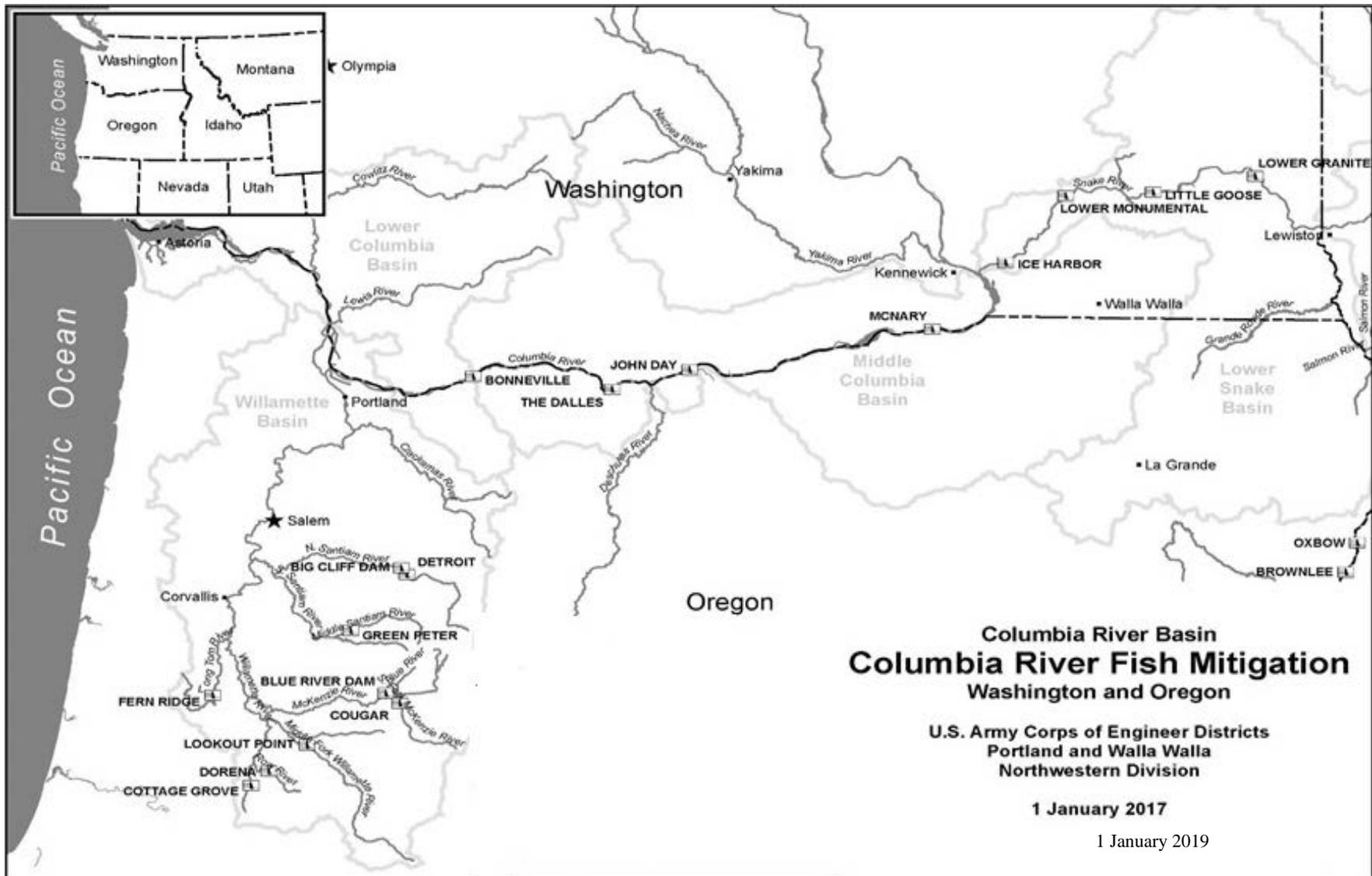
STATUS OF ENVIRONMENTAL IMPACT STATEMENT: On 4 May 2016 the United States District Court for the District of Oregon issued an Opinion and Order ruling that the FCRPS Action Agencies must prepare a comprehensive Environmental Impact Statement (EIS) addressing all reasonable alternatives. On 6 July 2016 the Court issued an Order of Remand with the deadline to complete the Final EIS established by the Court is March 26, 2021 with a Record of Decision issued on or before September 24, 2021.

OTHER INFORMATION: Funds to initiate construction were appropriated in FY 1988.

Pacific Lamprey: As a result of the May 2008 Columbia Basin Fish Accords, increased efforts to investigate and improve juvenile and adult Pacific lamprey passage and survival at the FCRPS dams was initiated in FY 2009 with the goal to complete significant improvements by 2018. Allocations through FY 2018 include actions conducted prior to signing the Fish Accords. However, funds in excess of \$51 million were allocated during the accord period (2008-2018). The FY 2018 enacted Budget amount included sufficient funding to complete Lamprey passage improvements.

FCRPS: The total project cost estimate reflects anticipated remaining FCRPS BiOp RPA actions to avoid jeopardy to ESA listed species and adverse modification of designated critical habitat, cost and schedule risk, and escalation factors.

Willamette River: Actions and costs necessary to avoid jeopardy to ESA-listed species and adverse modification of designated critical habitat in the Willamette River Basin were evaluated and a compliance strategy was developed in FY 2015. Future actions to address RPA requirements for upstream and downstream passage in the main stem Middle Fork Willamette River are not included in the total cost estimate as feasibility has not been determined at this time. Actions to address fish passage in the main stem Middle Fork Willamette River will be contemplated at a future date, beyond 2021, and will be informed by a review of the biological assumptions in the Configuration and Operations Plan in FY 2019 and FY 2021, the performance of the downstream passage facilities at Cougar and Detroit dams, and through continuing research in this sub basin addressing the uncertainty, feasibility and biological benefit of actions.



Division: Northwestern

District(s): Portland/Walla Walla

Columbia River Fish Mitigation, WA, OR, & ID

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APPROPRIATION TITLE: Construction – Aquatic Ecosystem Restoration, Fiscal Year 2020

PROJECT NAME: Mud Mountain Dam, Washington (Completion)

LOCATION: Mud Mountain Dam is located at river mile 29.6 on the White River, six miles upstream and southeast of Enumclaw, WA, and 38 miles southeast of Tacoma, WA, in western Washington State. When the original flood damage reduction project was built in 1948, a fish passage trap and haul facility was constructed six miles downstream of the Mud Mountain Dam near Buckley, WA, adjacent to a privately owned barrier structure.

DESCRIPTION: The fish collection facility currently collects salmon, including Endangered Species Act (ESA) listed anadromous fish, to be trucked upstream around Mud Mountain Dam. The current facility is deteriorated and unsafe. Chinook salmon, steelhead, and bull trout were listed under the Endangered Species Act (ESA) and are being impacted by the current facility. After the listing, several river basins in the Puget Sound including the White River basin also experienced dramatic and significant increase in pink salmon return numbers (a non-listed species). The significant increase in the volume of fish at the trap and haul facility is further impacting survival of ESA listed species. In October 2014, the National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) that included a reasonable and prudent alternative (RPA) with direction to replace the existing fish trap and barrier structure due in large part to the extreme overcrowding and stress related mortality caused by non-listed fish on ESA listed fish. The new facility would increase the capacity for fish trap and haul thereby reducing impacts to endangered species by separating the thousands of endangered fish from the hundreds of thousands of non-listed fish. The design and execution document and letter report for the proposed new fish passage facility was completed and approved in Fiscal Year (FY) 2015.

AUTHORIZATION: Flood Control Act of 1936, PL 74-738

REMAINING BENEFIT-REMAINING COST RATIO: The remaining benefit-remaining cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

TOTAL BENEFIT-COST RATIO: The total benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

INITIAL BENEFIT-COST RATIO: The initial benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

BASIS OF BENEFIT-COST RATIO: The basis of benefit-cost ratio for the entire project is not applicable because environmental benefits were not quantified in monetary terms.

SUMMARIZED FINANCIAL DATA:		ACCUM PCT OF EST FED COST	STATUS (1 Jan 2019)	PCT CMPL	PHYSICAL COMPLETION SCHEDULE
Estimated Federal Cost	185,085,000		Design	100	Sep 2017
Estimated Non-Federal Cost	0		Trap and Haul Barrier	0 4	2020 2020
Total Estimated Project Cost	185,085,000				
Authorized Cost (plus inflation)	185,085,000		Entire Project	23	2023
Maximum Cost (Section 902)	N/A				
Allocations to 30 September 2016	25,234,000				
Allocation for FY 2017	16,400,000				
Allocation for FY 2018	43,600,000				
Allocation for FY 2019	84,156,840				
Allocations through FY 2019	169,390,840	<u>1/</u> <u>2/</u> <u>3/</u> <u>5/</u>	92%		
Estimated Unobligated Carry-In Funds	14,793,000	<u>4/</u>			
President's Budget for FY 2020	15,694,160				
Programmed Balance to Complete after FY 2020	0		100%		
Unprogrammed Balance to Complete after FY 2020	0				

1/ \$6,950,142 reprogrammed to the Fish Passage project

2/ \$2,000 rescinded from the Fish Passage project.

3/ \$0 transferred to the Flood Control and Coastal Emergencies account.

4/ Unobligated Carry-in Funding: The actual unobligated carry-in from FY 2018 to FY 2019 was \$4,636,000. As of the date this justification sheet was prepared, the total unobligated dollars estimated to be carried into FY 2020 from prior appropriations for use on this effort is \$14,793,000. This amount will be used to perform work on the project as follows: Continuing Construction Contract, Supervision/Administration and Engineering during Construction.

5/ PED estimated costs of \$21,050,000 are included in this amount.

PHYSICAL DATA: Fish Barrier and Trap and Haul Facility. The existing fish barrier will be removed and a new fish barrier structure with hydraulically actuated gates will be constructed in the same footprint. An existing fish trap and haul facility would be replaced with a new facility.

JUSTIFICATION: Operation of the Mud Mountain Dam flood damage reduction project includes upstream migratory fish passage that is currently provided at the fish trap and haul facility at Buckley, WA, six miles downstream of Mud Mountain Dam. The trap and haul facility is co-located with a privately owned barrier structure. The trap and haul facility is over 60 years old and the barrier is over 100 years old. Both features of the fish passage facility are in a severe state of deterioration, are unsafe to operate and maintain, and do not provide sufficient fish passage to protect endangered species. In addition to the deteriorated state of the fish passage facility, there has been a dramatic and significant increase in pink salmon (a non-listed species) that are arriving at the fish facility and are additionally impacting the passage of the endangered species. The October 2014 BiOp cites the fish passage facility as a cause

Division: Northwestern

District: Seattle

Mud Mountain Dam, WA

of jeopardy for the listed species addressed therein. Replacing the trap and haul facility will accommodate a greater number of fish and minimize injuries to Endangered Species Act (ESA) listed anadromous fish and is essential to avoid jeopardy and adverse modification of critical habitat for listed species. A letter report was completed and approved in FY 2015 that outlined basic features of the least cost alternatives to meet ESA requirements.

FISCAL YEAR 2019: The total appropriated amount, plus carry-in funds, will be used as follows:

Continue Construction	\$67,999,840
Construction Management	6,000,000
Total	\$73,999,840

FISCAL YEAR 2020: The budget amount, plus carry-in funds, will be applied as follows:

Physically and Fiscally Complete Construction	\$18,487,160
Construction Management	12,000,000
Total	\$30,487,160

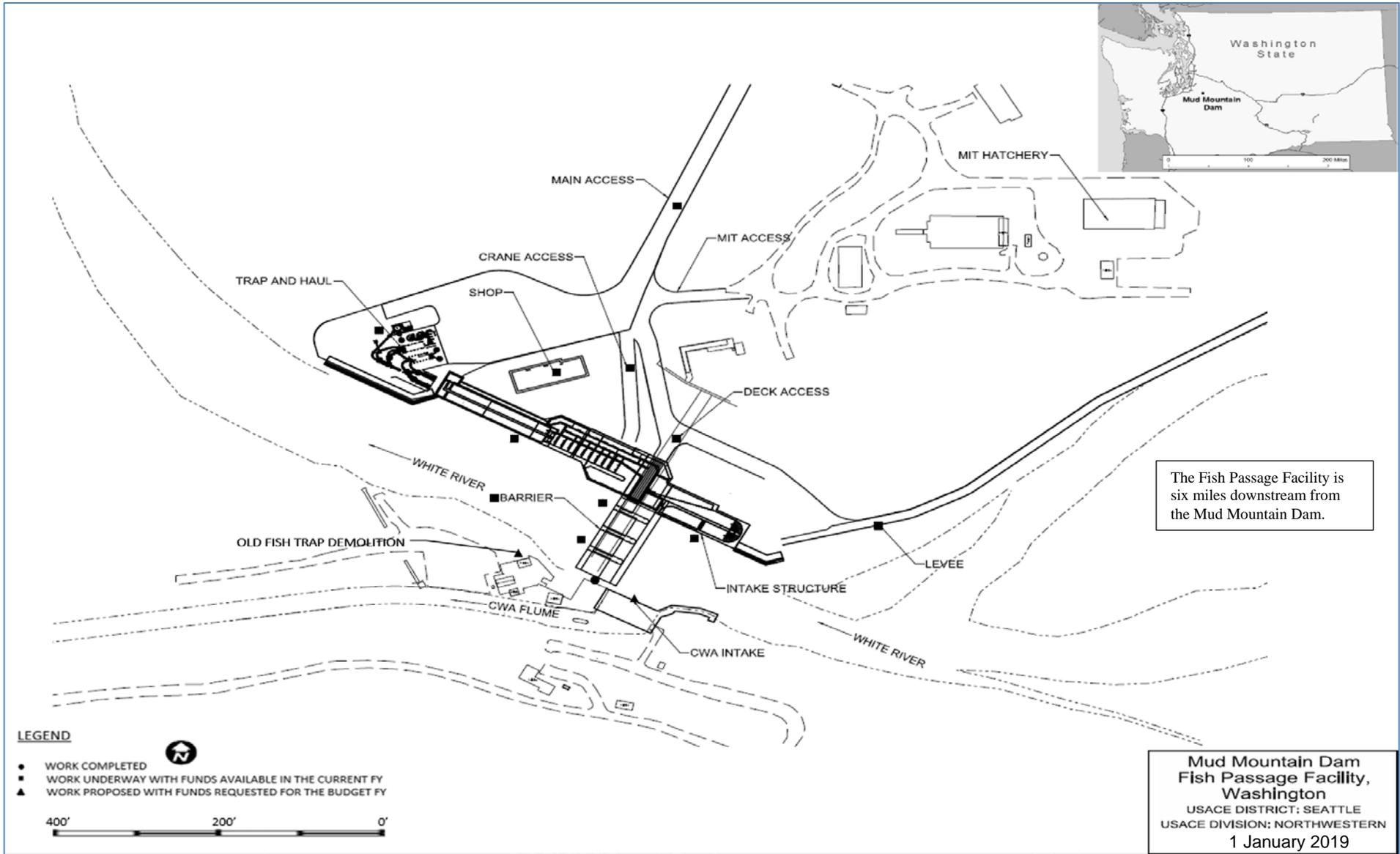
NON-FEDERAL COSTS: N/A. Fish trap and haul improvements are a Federal cost.

STATUS OF LOCAL COOPERATION: N/A.

COMPARISON OF FEDERAL COST ESTIMATES: The current estimated Federal cost of \$185,085,000 is unchanged from the last estimate presented to Congress (FY 2018).

STATUS OF ENVIRONMENTAL IMPACT STATEMENT: An Environmental Assessment (EA) for the Dam Safety Assurance Program was completed in June 1986 with an additional EA and Finding of No Significant Impact (FONSI) was completed in June 1999. An EA and draft FONSI for the replacement of the barrier dam was completed in October 2007. A programmatic Biological Assessment under the ESA for the operations and maintenance of Mud Mountain Dam, as well as the replacement of the barrier dam, was completed in June 2005. An EA for Mud Mountain Dam Upstream Fish Passage was completed in May 2015.

OTHER INFORMATION: Design of the MMD fish passage improvements were initiated when Congress added \$500,000 in FY 2002 for "the design of fish passage facilities." A BiOp was issued in FY 2014, and a Letter Report, and Execution Document were completed in FY 2015, which are the basis for the proposed construction.



APPROPRIATION TITLE: Construction, Fiscal Year 2020

PROJECT NAME: Innovative Funding Partnerships

Allocation in FY 2016 \$000	Allocation in FY 2017 \$000	Allocation in FY 2018 \$000	Allocation in FY 2019 \$000	Budgeted Amount in FY 2020 \$150,000,000
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AUTHORITIES: 33 U.S.C.701h: (Contributions by States, political subdivisions, and other non-Federal interests)
33 U.S.C. 701h-1 (Contributions by States and political subdivisions for immediate use on authorized flood-control work; repayment)
33 U.S.C. 2325a (Authority to accept and use materials and services.)
33 U.S.C. 2280(b) (Contributions by Non-Federal interests.)

DESCRIPTION: Funding will be used, in conjunction with funds voluntarily provided by non-Federal interests pursuant to 33 U.S.C. 701h, 33.U.S.C. 701h-1, 33 U.S.C. 2325a, and 33 U.S.C., 2280(b) in excess of the non-Federal sponsor's statutory cost share requirements, to accelerate the completion of construction of specifically authorized projects. The execution of an agreement providing for the USACE's acceptance of these funds does not constitute any commitment to budget or appropriate funds for a project in the future.

In recent years, non-federal sponsors have increasingly begun to take advantage of these authorities to accelerate the completion of construction of their projects. For example, the state of Florida provided \$100 million towards the construction of the Herbert Hoover Dike rehabilitation project; the Port of Tampa used a combination of funds provided by the state of Florida, the Army Corps of Engineers, and private users of the port for a major improvement; and the South Carolina Ports Authority has advanced funds to accelerate the completion of its harbor deepening project. Similarly, the Fargo Moorhead Diversion Authority has entered into an agreement that limits the amount of Federal funding that will be provided for the project, with the sponsor undertaking work in excess of its cost share. Innovative Funding Partnerships builds on this progress and will help to complete projects where non-federal sponsors are seeking to use these authorities to construct projects faster.

DESCRIPTION OF WORK FOR FY 2020: The Assistant Secretary of the Army for Civil Works will select projects where non-Federal interest have voluntarily agreed to provide additional funding for construction and consider them for funding under the Innovative Funding Partnership line item. To be eligible for this funding, non-federal sponsors must have a firm agreement in place to provide additional funding towards the construction of their project. In addition, non-federal sponsors must demonstrate a financing plan that fully funds the construction of the project when combined with the amount of funding they propose to be provided from the Innovative Funding Partnerships program. Other factors that may be considered in the selection of projects for funding may include, among other factors, total funding provided by the non-federal sponsor to accelerate completion of the project, ability to accelerate completion, and economic return to the Nation or significance of risk to public safety addressed. Funding will be used to accelerate completion of construction of specifically authorized projects where non-Federal interests have provided funds in excess of their required non-Federal cost share.

HQUSACE

Innovative Funding Partnerships

APPROPRIATION TITLE: Construction, Fiscal Year 2020

PROJECT NAME: WRRDA 2014 Section 1043 Non-Federal Construction of Federal Projects

Budgeted
Allocation
in FY 2020
\$150,000,000

AUTHORIZATION: Authorized by the Water Resources Reform and Development Act (WRRDA) of 2014, Section 1043(b), Non-Federal Implementation Pilot Program, and amended by the America's Water Infrastructure Act of 2018, Title 1- Water Resources Development, Section 1137, which increased the number of projects under the pilot program from 15 to 20.

DESCRIPTION: Funds construction projects under Section 1043 (b) of WRRDA 2014, as amended. Section 1043(b) authorizes the establishment and implementation of a program to evaluate the cost effectiveness and project delivery efficiency of allowing the 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. The purposes of the program are to identify project delivery and cost saving alternatives that reduce the backlog of authorized Corps of Engineers projects; evaluate the technical, financial and organizational efficiencies of a non-federal interest carrying out the design, execution, management and construction of one or more projects; and evaluate alternatives for the decentralization of the project management, design, and construction for authorized Corps of Engineers water resources projects. The Budget proposes to extend the program's authorization which currently expires on June 10, 2019 and to provide \$150 million for Fiscal Year 2020.

DESCRIPTION OF WORK FOR FY 2020: After public notice, the Assistant Secretary of the Army for Civil Works will select authorized Civil Works water resources development projects in accordance with Section 1043(b) criteria for implementation under Section 1043(b). For each selected project, funding provided for Section 1043(b) and any unobligated funding on the project (less funding retained for the costs of Corps of Engineers responsibilities) will be provided to the non-Federal project partner under the terms of the project partnership agreement, and the project partner will manage the project. Normal project cost sharing will apply.