



Port of New Orleans Access Channel Deepening Feasibility Study



Draft Feasibility Report

April 2020

Cover Page

DRAFT FEASIBILITY REPORT

of the

Deepening of the Port of New Orleans Access Channel

Parish: Orleans

Lead Agency: U.S. Army Corps of Engineers, New Orleans District

Cooperating Agencies: U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
U.S. Geological Survey
U.S. Department of Agriculture-National Resource
Conservation Agency

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Abstract: This draft feasibility report documents the analysis of proposed actions related to the navigational project to increase the access channel to PONO. Alternatives, including the proposed tentatively-selected plan and the No Action Alternatives, are discussed.

Executive Summary

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division (MVD), Regional Planning and Environment Division South (RPEDS), prepared this Draft Feasibility Report (DFR) and Draft Environmental Assessment (DEA) for the Port of New Orleans Access Channel Deepening Feasibility Study (PONO). The non-Federal sponsor (NFS) is the Port of New Orleans (PORT). A Feasibility Cost Sharing Agreement was executed on February 27, 2019. The report and the Tentatively Selected Plan (TSP) reflect sponsor, agency, stakeholders, and public input. It presents solutions to deepen the access channel and reduce shipping and transportation cost to the PORT. The NFS is in support of the plans, with the inclusion of optimization of the plan.

Study Area: The study area is the access channel in front of the PORT's Container Port on the Mississippi River between river mile (RM) 98.3 to RM 100.6 above the Head of Passes (AHP). This reach of the Mississippi River is adjacent to the Uptown neighborhood of New Orleans, Louisiana.

Problem: The harbor access channel depth is currently authorized at a depth less than the authorized depth of the Mississippi River Ship Channel (MRSC) deep draft channel. This results in harbor access depth issues that affect vessel loading and potentially necessitates the need for alternate cargo offloading methods. This also prohibits deeper draft vessels from accessing the PONO.

Planning Objectives/Constraints: The primary goal is to improve the economic benefits to the nation through the PORT.

The planning objectives are:

- Reduce transportation cost related to the limiting depth of the PORT from RM 98.3 to RM 100.6.

The planning constraints for the study area are:

- Avoid or minimize impacts to riverine and hurricane risk reduction system adjacent to the port.
- Avoid or minimize disruptions to port services.
- Avoid or minimize wharf stability issues at the PORT.
- Avoid or minimize impacts to downstream navigational features. (Harvey Lock).

Alternatives Considered: The planning process went through several iterations and evaluated management measures and subsequently alternatives of ranging depths and lengths of dredging.

Table ES-1. Economic Comparison of Final Array

Port of New Orleans Deepening					
FY 2020 Price Level					
Average Annual Benefits and Costs (2.75%)					
Access Channel Alternative	Alternative 2 (40' LWRP)	Alternative 2a (43' LWRP)	Alternative 3 (45' LWRP)	Alternative 3a (48' LWRP)	Alternative 4 (50' LWRP)
First Cost of Construction	\$5,457,488	\$5,918,257	\$6,885,191	\$8,451,087	\$8,909,315
Interest During Construction	\$74,532	\$80,824	\$94,029	\$115,414	\$121,672
Total Investment	\$5,532,020	\$5,999,081	\$6,979,220	\$8,566,501	\$9,030,987
Average Annual Construction Cost	\$206,641	\$223,941	\$260,405	\$320,851	\$339,863
Average Annual Increm. O&M	\$126,642	\$126,642	\$138,257	\$259,183	\$391,530
Total Average Annual Cost	\$333,283	\$350,583	\$398,662	\$580,034	\$731,393
Total Average Annual Benefits	N/A*	\$1,859,116	\$3,893,117	\$26,979,887	\$35,860,251
Net Excess Benefits	N/A*	1,508,578	\$3,494,455	\$26,399,853	\$35,128,251
B/C Ratio	N/A*	5.3	9.8	46.5	49.0

Based on the economic analysis of the final array (Table ES-1), the National Economic Development (NED) plan is Alternative 4 (50 feet access channel).

TSP/NED Plan: Per USACE Guidance, TSP navigational projects should be the plan that maximizes net benefits, which is also called the NED plan. In order to determine which alternative is the NED plan, the costs and benefits for the Final Array of Alternatives are compared. The alternative with the greatest net benefits is the apparent NED plan, and thus, the TSP.

The TSP identified from the final array is Alternative 4 (50 feet).

Alternative 4: 50 foot Depth

Phase I PONO Construction:

- a. Dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 50 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.
- b. Dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 2 (Nashville “B”) to a depth of 35 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.
- c. Dredge the 100 feet wide berthing areas within the remainder of the study limits to a depth of 35 feet below the LWRP with 2 feet advance dredging and an additional 2 feet for over depth permitted.

Phase I PONO O&M: Maintain the 100 feet and 160 feet berthing areas within the study limits in accordance with the depths, advance dredging, over depths, and limits for the Phase I PONO Construction.

USACE Construction:

- a. Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 50 feet below the LWRP, with 2 feet advance dredging an additional 2 feet for over depth permitted.
- b. Dredge the approach channels in the remainder of the study limits to a depth of 35 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.

USACE O&M: Maintain the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 50 feet below the LWRP. The remainder of the study limits will be maintained to a depth of 35 feet below the LWRP. Both depths will be authorized to have an additional 2 feet depth for advance maintenance and an additional 2 feet depth for over depth permitted.

Assume Phase II initial construction and O&M will commence 5 years after the completion of Phase I as follows:

Phase II PONO Construction: Dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 50 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.

Phase II PONO O&M: Annually maintain the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49, to a depth of 50 feet below the LWRP and the remainder of the study area with 100 feet wide berthing to a depth for 35 feet below the LWRP. Both depths will be authorized to have an additional 2 feet depth for advance maintenance and an additional 2 feet depth for over depth permitted.

USACE Construction: No additional construction required for Phase II.

USACE O&M: Remains the same as Phase I.

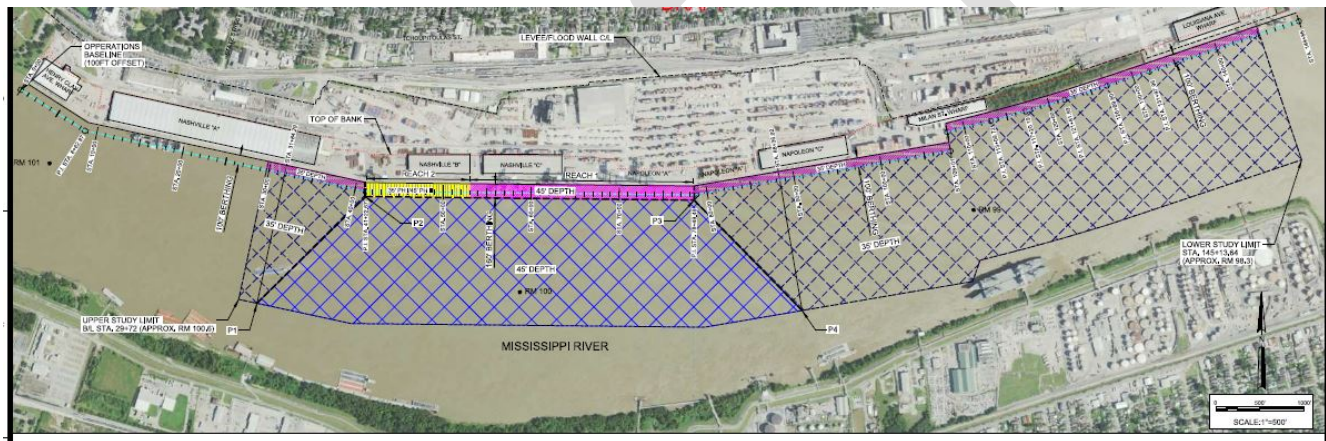


Figure ES-1. Alternative 4 TSP/NED Alternative.

Due to a possible slope stability issue from station 68+00.00 to 79+00.00 (Napoleon A Wharf) at the 50 feet depth, there could be a 20 percent reduction in the Average Annual Benefits due to this section being limited to existing depth. This reduction will also affect Alternative 3a (48 feet) as well. Even with this reduction, the Excess Net Benefits of Alternative 4 will exceed Alternative 3a without the 20 percent reduction. Therefore, Alternative 4 (50 feet LWRP) is the TSP/NED plan. Table ES-2 provides an economic comparison of the TSP/NED plan.

Table ES-2. Average Annual Benefits and Cost of TSP/NED

Alternative 4 FY 20 Price Level Average Annual Benefits and Costs (2.75%)	
First Cost of Construction	\$8,909,315
Interest During Construction	\$121,672
Total Investment	\$9,030,987
Average Annual Construction Cost	\$339,863
Average Annual Increm. O&M	\$391,530
Total Average Annual Cost	\$731,393
Total Average Annual Benefits	\$35,860,251
Net Excess Benefits	\$35,128,251
B/C Ratio	49.0

Summary of Environmental Impacts: The extent of impacts on important resources appear to be insignificant. Overall, project related impacts would be temporary in nature and confined primarily to previously dredged water bottoms. All dredging alternatives would have similar, minimal impacts. A draft Finding of No Significant Impact (FONSI) is attached.

Risks and Uncertainties: Risk and uncertainty are intrinsic in water resources planning and design. This section describes various categories of risk and uncertainty pertinent to the study. Risk and uncertainty will be further considered during feasibility-level design and analysis.

Geotechnical: The slope stability analysis was conducted on the project area. For the slope under the wharf from station 68+00.00 to 79+00.00 (Napoleon A wharf), when the shoaling is cleared down to the riprap, the slope angle only produces a factor of safety of 1.19 at the 45 feet and 50 feet depth. To include the benefits for this section the PONO will have to provide their slope stability analysis for this section or correct the section to a stable factor of safety. If not done, the benefits could be reduced by approximately 20 percent because the section between station 68+00.00 and 79+00.00 will be limited to the existing condition.

Structures: Bracing of the wharf plies for the phase II of the deepening must be completed by the PORT. The berthing for that section cannot be deepened until the bracing is complete.

Cost: There is an uncertainty of the type and amount of material to be dredged, which could impact the duration the dredge has to dredge. Both of these factors will impact the cost of the construction and Operation and Maintenance (O&M) of the project. H&H show an increase in

shoaling in this area with the project. Contingencies are added to the construction and O&M cost.

Timeline: This DFR and the DEA are available for public review beginning April 27, 2020. The official closing date for the receipt of comments is May 27, 2020, which is 30 days from the date on which the notice of availability of this DFR and the DEA are mailed out for this review period. Comments may be mailed or emailed to:

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Section 1

Introduction

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division (MVD), Regional Planning and Environment Division South (RPEDS), has prepared this draft Feasibility Report (DFR) and draft Environmental Assessment (DEA) for the Port of New Orleans Access Channel Deepening Feasibility Study (PONO). It includes input from non-Federal sponsors, agencies, and the public.

1.1 STUDY SCOPE

The scope of the feasibility study includes evaluation of alternatives, including the no-action alternative, to provide deep draft access along the PONO at incremental depths between 40 feet Low Water Reference Plane (LWRP), 45 feet LWRP, and 50 feet LWRP for the next phase of construction. Per authority, the evaluation of alternatives was limited to a depth of the existing Mississippi River Ship Channel (MRSC), which is currently justified to 50 feet.

Implementation is driven by the need to safely dock New Panamax deep draft ships (ships with a draft deeper than 49 feet). The feasibility study will identify the depth that creates the greatest net benefits, up to a depth of 50 feet. At initiation, the project delivery team (PDT) recognized there was a need to evaluate phasing/sequencing of the PONO because of existing conditions and constraints.

1.2 STUDY AUTHORITY

Water Resources Development Act (WRDA) 2016, Section 1202(d) MISSISSIPPI RIVER SHIP CHANNEL, GULF TO BATON ROUGE, LOUISIANA. “The Secretary shall conduct a study to determine the feasibility of modifying the project for navigation, Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana, authorized by section 201(a) of the Harbor Development and Navigation Improvement Act of 1986 (Public Law 99–662; 100 Stat. 4090), to deepen the channel approaches and the associated area on the left descending bank of the Mississippi River between mile 98.3 and mile 100.6 Above Head of Passes (AHP) to a depth equal to the Channel.”

1.3 NON-FEDERAL SPONSOR

The Port of New Orleans (PORT) is the cost-sharing non-Federal sponsor (NFS) of the study. The study is 50 percent Federal funded. The Feasibility Cost Sharing Agreement (FCSA) was executed on February 27, 2019.

1.4 STUDY AREA AND MAP

The WRDA 2016, Section 1202 (d) identifies the study area as “the left descending bank of the Mississippi River between mile 98.3 and mile 100.6 AHP.” This reach of the river is adjacent to the Uptown neighborhood of New Orleans, Louisiana. It is anticipated that the

material from construction will be placed in the adjacent portion of the MRSC that exists at depths greater than 50 feet. The study area is shown on Figure 1-1.

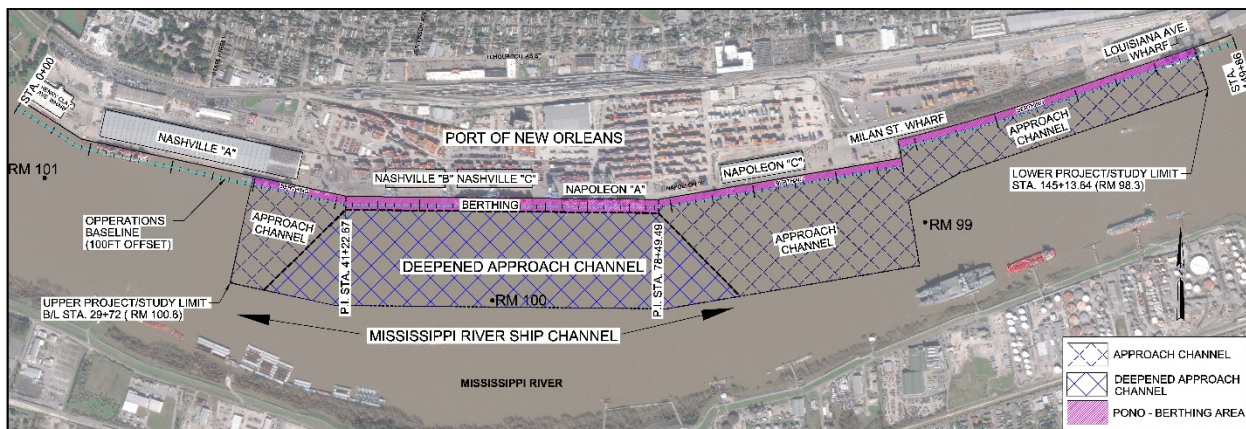


Figure 1-1. PONO Study Area

1.5 AUTHORIZED PORT AREA

The jurisdictional limits of the PORT are RM 115 AHP to RM 81.2 AHP. Within this reach, there are two components of the authorized project: (1) the main navigation channel of the MRSC; and (2) the approach channel to New Orleans Harbor Area, located between RM 104.5 AHP to RM 94.6 AHP (Figure 1-2). In this reach, the main navigation channel of the MRSC is authorized to a depth of 55 feet Mean Low Lower Water (MLLW) and width of 750 feet. It is considered naturally deep and wide, and does not require maintenance dredging to provide deep draft navigation access. Under the WRDA of 1986 the approach channel to the New Orleans Harbor is authorized to a depth of 40 feet Mean Low Gulf (MLG) beginning 200 feet from the face of the wharfs on the left descending bank of the river. This project feature was not implemented. The approach channel is maintained to a depth of 35 feet measured to MLG (conversion to LWRP is provided in contracts for dredging) beginning at a point 100 feet from the face of the wharfs on the left descending bank, as authorized in the River and Harbor Act of 1938 (1938 RHA). The Chief of Engineer's Report from 1983 and subsequent authority included authority to deepen the approach channel to 40 feet MLG. However, the 40 feet MLG authorized depth was not implemented due to the PORT's desire to limit their maintenance to the 100 feet from the front of the wharfs.



Figure 1-2. Current New Orleans Harbor Authorization Limits

1.6 PRIOR REPORTS, EXISTING WATER PROJECTS, AND ONGOING PROGRAMS

A number of studies and reports on water resources development in the study area have been prepared by the USACE, other Federal, state, and local agencies, research institutes, and individuals. Previous Federal and non-Federal studies have established an extensive database for this report. The more relevant studies, reports, and projects conducted in the area are described in the following paragraphs.

Letter from the Chief of Engineers “Mississippi River at and New Orleans, La” dated 19 April 1938 (1938 Chief’s Report): This report describes among other things dredging within the PONO, a channel depth of 35 MLG feet and maximum width of 1,500 feet, measured from a line generally 100 feet from the face of the left bank wharves, but not closer than 100 feet to the wharfs.

Letter from the Chief of Engineers “Mouth of the Mississippi River, La” dated 15 March 1939 (1939 Chief’s Report authorized under the 1945 RHA): This report describes that the existing projects for the Mississippi River, Baton Rouge to New Orleans; Mississippi River, South Pass; and Mississippi River, Southwest Pass be modified, combined and a project covering Mississippi River from New Orleans to the Head of Passes be added to provide a

single project, Mississippi River, Baton Rouge to the Gulf of Mexico with the following channel dimensions:

- Baton Rouge to New Orleans, 35 feet deep MLG by 500 feet wide
- Port limits of New Orleans, 35 feet deep MLG by 1,500 feet wide
- New Orleans to Head of Passes, 40 feet deep MLG by 1,000 feet wide

Letter from the Chief of Engineers “Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana” dated 17 July 1961 (1961 Chief’s Report): This report describes a channel 40 feet MLG deep and 500 feet wide from 0.1 mile below the Louisiana Highway Commission Bridge at Baton Rouge to the upper limits of the PONO, and also (within the main navigation channel) 40 feet MLG deep and 500 feet wide within the presently authorized approach channel) 35 feet MLG by 1,500 feet channel in the port limits.

The Feasibility Report titled Deep-Draft Access to the Ports of New Orleans and Baton Rouge, Louisiana, dated July 1981 (1981 Feasibility Report): This feasibility report presents the results of a re-evaluation of the existing Mississippi River navigation channel between Baton Rouge, Louisiana and the Gulf of Mexico. The report recommends deepening the Mississippi River navigation channel to a 55 feet MLLW depth from Baton Rouge to the Gulf of Mexico, with the exception of that portion of the project within South Pass (which was previously authorized to a depth of 30 feet MLLW) and within the authorized approach channel for the PORT, which was recommended and is authorized to a depth of 40 feet MLG (as distinguished from the authorized main navigation channel within the vicinity of the PONO, which was recommended in the 1981 Feasibility Report, and subsequently authorized, to be constructed to a 55 feet MLLW depth) .

The Report of the Chief of Engineers, titled Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana, dated April 9, 1983 (1983 Chief’s Report): This report substantially approves the recommendations of the 1981 Feasibility Report, and the findings conclusions and recommendations of the Board of Engineers, dated April 1, 1982, which identifies the following key features of the project:

- Enlargement of the existing channel in Southwest Pass from the Head of Passes (mile 0) to deep water in the Gulf of Mexico at about mile 22 Below Head of Passes (BHP) to a project depth of 55 feet MLLW and a bottom width of 750 feet; Enlargement of the existing channel in the Mississippi River from the Head of Passes (mile 0) to within the Port of Baton Rouge (mile 233.0 AHP) to a project depth of 55 feet MLLW and bottom width of 750 feet;
- A turning basin with a project depth of 55 feet MLLW, a bottom width of 1,600 feet, and length of 4,000 feet, at the end of the enlarged channel in Baton Rouge (mile 233.0 AHP to 233.8 AHP); (this turning basin has not been constructed and the reach between RM 233.0 AHP to RM 233.8 AHP is maintained to a depth of 40 feet MLG and width of 500 feet as described in the 1961 Chief’s Report).
- Enlargement of the existing 35-foot channel along the left bank of the Mississippi River at New Orleans (mile 86.7 AHP to 104.5 AHP) to a project depth of 40 feet MLG at the existing 1,500-foot bottom width (this feature of the project was not

implemented and the approach channel to the New Orleans Harbor is maintained to a depth of 35 feet MLG beginning 100 feet from the face of the wharves as described in the 1938 Chief's Report).

Mississippi River Ship Channel Gulf to Baton Rouge General Design Memorandum and Supplements (in chronological order of completion):

Design Memorandum No. 1 August 1983: This Design Memorandum recommends the following modifications for implementation of the project, as recommended in the 1983 Chief's Report:

- The enlargement of the existing Southwest Pass Bar Channel from a depth of 40 feet MLLW over a bottom width of 600 feet from RM 17.8 BHP to the Gulf of Mexico;
- The enlargement of the existing 40 feet MLLW channel in the SWP from RM 0 at Head of Passes (HoP) to RM 17.8 BHP to a project depth of 55 feet MLLW over a bottom width of 750 feet; The enlargement of the 40 feet MLLW channel from RM 0 at HoP and RM 233.0 to a project depth of 55 feet MLLW over a bottom width of 750 feet,
- The enlargement of 12 wharf areas of the Mississippi River in New Orleans Harbor between RM 86.7 AHP to RM 104.5 AHP from a depth of 35 feet MLG to a depth of 40 feet MLG.

Design Memorandum No. 1 Supplement No. 1 August 1986 (approved by Mississippi Valley Division Commander on 16 October 1987): This first supplement to the GDM recommends construction of a 45 feet MLLW deep channel from Venice, La through New Orleans Harbor up to RM 181 and the enlargement of berthing areas at 12 wharves of the Mississippi River in the New Orleans Harbor between RM 86.7 AHP to RM 104.5 AHP from a 35 feet MLG depth to a 40 feet MLG depth.

Design Memorandum No. 1 Supplement No. 2 December 1992: This supplement covers Phase 2 of construction of the MRSC for the construction of a 45 feet MLLW deep by 500 feet wide channel from RM 181 AHP to RM 232.4 AHP. It shows that Phase 2 was incrementally justified and provided design for dredging seven crossings to the project dimensions and implementation of training works in four of the seven crossings.

Integrated General Reevaluation Report & Supplement III to the Final Environmental Impact Statement, Mississippi River Ship Channel, Baton Rouge to the Gulf, Louisiana Project (2018): This document justifies deepening the MRSC from the Gulf of Mexico to Baton Rouge, LA to 50 feet MLLW.

Section 2

Problems and Opportunities (Purpose and Need)

2.1 SPECIFIC PROBLEMS AND OPPORTUNITIES

The 1983 Chief's Report identifies the navigation problems resulting from inadequate channel dimensions to accommodate deep draft vessels. The 1983 Chief's Report also identifies the need for dry bulk carriers and tankers to light load in order to navigate the channel and reach the ports along the Mississippi. Per the 1983 Chief's Report, "as smaller, obsolete vessels are replaced with larger and more efficient ships; the percentage of light-loaded traffic will increase under the existing channel dimensions. There is a need to achieve higher economic efficiencies and savings in transportation costs by providing larger navigation channels to the Port of Baton Rouge and the Port of New Orleans."

The 1983 Chief's Report led to the authorization to deepen the channel to 55 feet, and the implementation of the first and second phase of construction to deepen to 45 feet, with the exception of the access channel to the New Orleans Harbor, where the authorized depth remained at 40 feet.

Since the completion of the 1983 Chief's Report, projections of future vessels and fleet size indicate that fleet and future vessels will continue to grow larger; therefore, the problems and needs identified in the 1983 Chief's Report still apply. The current depths of the MRSC result in the need for ships to light load, which will be further exacerbated as the fleet and vessel size continues to grow. The 1981 Feasibility Report identifies the opportunity, "for a substantial savings in the transportation costs of the oceangoing cargo moving over the Mississippi River by the provision of larger access channels to the facilities in the river." As future vessel and fleet size continue to grow, the same opportunity exists today.

Vessels drafting greater than the constructed depth of the channel are already calling on the ports of Plaquemines, New Orleans, South Louisiana, and Baton Rouge (probably due to a combination of high water events and advanced maintenance dredging). The vast majority of these vessels are bulk carriers and, to a lesser extent, oil tankers. Data from Waterborne Commerce Statistics Center (WCSC) showing excess capacity for these vessels as well as conversations with the ports' personnel also point to bulk carriers and oil tankers as vessels that will be able to utilize the extra depth of a deeper channel. Vessels that could utilize extra depth are likely already calling on the four ports and are having to light-load to safely traverse the channel. With a greater depth, these vessels would be able to more fully utilize their capacity by loading more cargo, which would generate efficiencies in cost savings.

2.2 PLANNING GOAL AND OBJECTIVES

The primary goal is to improve the economic benefits at the PORT and to the nation.

The planning objective is:

- Reduce transportation cost related to the limiting depth of the PORT access channel from RM 98.3 AHP to RM 100.6 AHP.

2.3 PLANNING CONSTRAINTS

The planning constraints for the study area are:

- Avoid or minimize impacts to riverine and hurricane risk reduction system adjacent to the PORT.
- Avoid or minimize disruptions to PORT services.
- Avoid or minimize wharf stabilization issues at the PORT.
- Avoid or minimize impacts to downstream navigational features. (Harvey Lock).

2.4 EXISTING CONDITIONS

2.4.1 Study Area Existing Conditions

The study area is in open water of the Mississippi River, along the left descending bank between RM 98.3 and RM 100.6, which is maintained by USACE to 35 feet LWRP beginning 100 feet from the face of the wharf out 1500 feet into the channel. The PORT acquired a permit to dredge the container wharf area from RM 99.5 to RM 100.0 to 45 feet National Geodetic Vertical Datum of 1929 (NGVD 29) from the front of the wharfs to 1500 feet into the channel to allow deeper vessels to enter the port.

2.4.2 Future without Project Condition (FWOP)

In a letter dated 18 June 1987 from the USACE New Orleans District (CEMVN) District Engineer to the Board of Commissioners of the Port of New Orleans, the District Engineer concurred with a request from the Port of New Orleans to continue maintenance of the approach channel in the New Orleans Harbor Area to a depth of 35 LWRP feet beginning 100 feet from the face of the wharf, as authorized in the 1938 RHA. The District Engineer concluded that benefits from the deepening of the channel, would be realized irrespective of the fact that the larger berthing areas, as described in the 1983 Chief's Report, were not implemented. To date, the approach channel is maintained by CEMVN to a depth of 35 feet LWRP, beginning 100 feet from the face of the wharf, as described in the 1938 Chief's Report. The future without project condition is the PORT access channel remains at 35 feet LWRP depth up to 100 feet from the wharf between RM 98.3 to RM 99.5. Between RM 100.0 to 100.6 is naturally deep below 40 feet LWRP 100 feet from the wharf. Between RM 99.5 to RM 100.0 the PORT will likely maintain a 45 feet LWRP draft for the cargo container wharf.

There are deeper draft vessels visiting the PORT due to the stage of the river. When the river is low these ships have to light-load and the inefficiencies will continue to get worse if the access channel is not deepened. The assumptions made that affected the economic analysis can be found in the Economic Appendix C of this report.

Section 3

Formulate Alternative Plans

Plan formulation supports the USACE water resources development mission. A systematic and repeatable planning approach is used to ensure that sound decisions are made. The Principles and Guidelines describe the process for Federal water resource studies. It requires formulating alternative plans that contribute to Federal objectives. Alternative plans are a set of one or more management measures functioning together to address one or more planning objectives. A management measure is a feature or activity that can be implemented at a specific geographic site to address one or more planning objectives.

The initial plan formulation strategy was to focus on deepening the entire study area. These measures/alternatives were developed based on previous reports and studies, NFS information, new hydrology and hydraulics, geotechnical assessments, and professional judgment. This section also describes the plan formulation process to identify the TSP, which includes development of cost estimates and economic analysis.

The plan formulation process utilized the best available information at this phase of the study to identify a TSP. However, during the final phase of this feasibility study, additional analyses will be completed to refine the design and cost estimates of the features included in the TSP. The revised design and costs will be incorporated into the final FR & EA.

3.1 MANAGEMENT MEASURES AND SCREENING

Management measures considered for providing a larger deep draft navigation access channel in the Mississippi River for the port from RM 98.3 AHP to RM 100.6 AHP for deep draft access to the PORT. Construction and Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R) measures considered for providing deep draft access were limited to existing dredging practices. The port access channel is dredged with a cutterhead dredge with disposal of dredged material into the channel, where it is displaced downstream.

3.1.1 Construction and OMRR&R

Construction for each depth considered the dredged quantities and the total construction cost (major [NED] cost).

Long term OMRR&R for each depth considered the annual dredged quantities and the incremental increase in OMRR&R annual cost for dredging of sediment.

3.1.2 Navigational Benefits

Navigation benefits (transportation cost savings) were considered under two scenarios: Current benefits (no growth scenario), and future transportation cost savings through reducing the need for light loading of vessels.

3.2 ADDITIONAL PROJECT CONSIDERATION – PROJECT DATUM

The current New Orleans Harbor project is maintained to a depth of 35 feet. To achieve a 35 feet depth, the current project has been historically dredged to an elevation of -35.0 feet MLG. USACE has developed a 2007 LWRP and proposed the 2007 LWRP to be used as a reference for low water from Mississippi River Mile 320 to 13.4 AHP. The use of the 2007 LWRP was approved by USACE Mississippi Valley Division on 10 Dec 2007. As a result, the current USACE maintenance dredging to elevation -35.0 feet MLG, will be changed to a 35 feet depth below the 2007 LWRP using the vertical datum North American Vertical Datum of 1988 (NAVD 88) (2009.55 feet) in 2020/2021. Note that this will not be a MLG to NAVD 88 datum conversion, as it will simply be a 35 feet depth below the LWRP at the NAVD 88 datum. At this location, the 2007 LWRP is at elevation 0.6 foot NAVD 88; therefore, a 35 feet depth below the LWRP is elevation -34.4 feet NAVD 88. The new authorized project would be to the authorized depths below the 2007 LWRP using the vertical datum NAVD 88 (2009.55 feet). It should be noted the LWRP will be periodically updated due to changes to river conditions, annual stage elevations, and any effects from sea level rise. If this new project is authorized, the LWRP will continuously be updated to the most current LWRP elevation developed by USACE for the life of the project. Figure 3-1 shows the 2007 LWRP elevations.

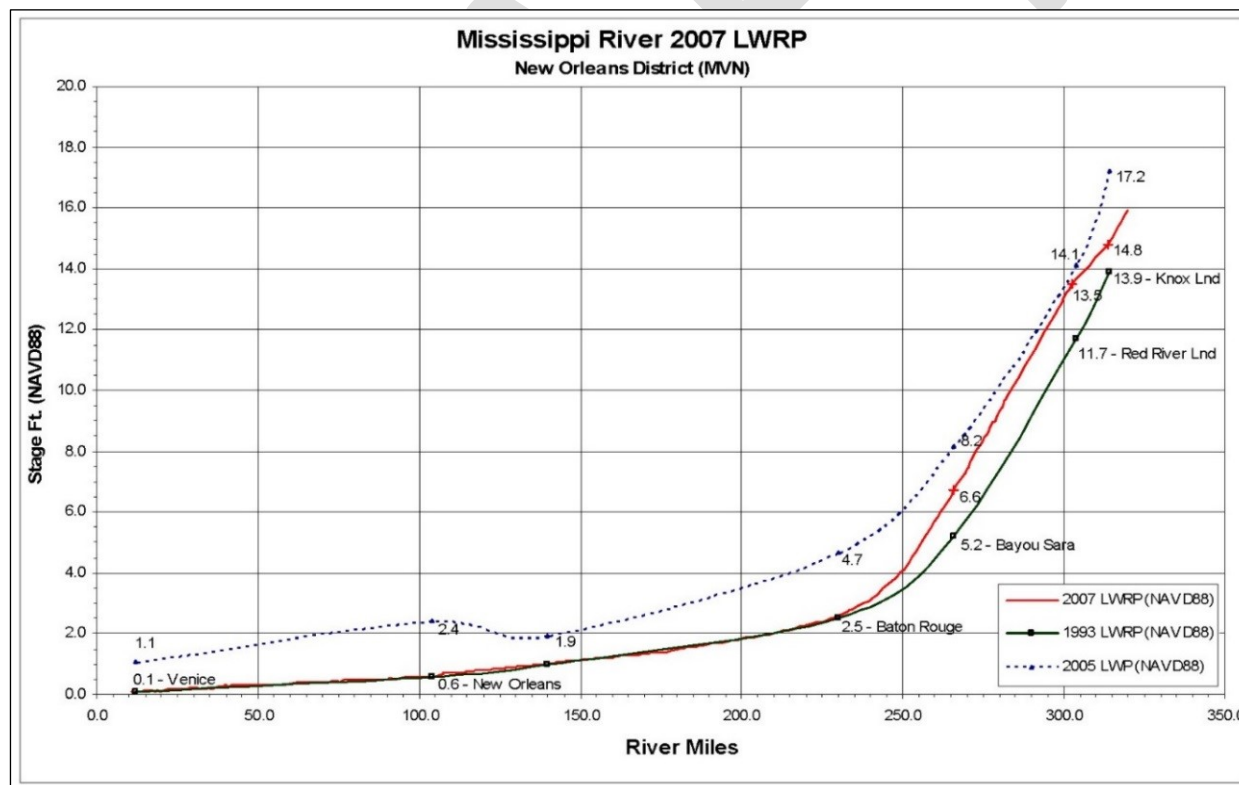


Figure 3-1. 2007 LWRP Elevations – NAVD 88

3.3 DEVELOPMENT OF INITIAL ARRAY OF ALTERNATIVE AND SCREENING

The feasibility study will investigate an array of alternatives that deepen the PORT Access Channel from 35 feet LWRP to 50 feet LWRP from RM 98.3 to 100.6, as shown in Figure 3-2.

3.3.1 The initial array of alternatives:

- Alternative 1: No action
- Alternative 5: Dredge the entire study area to 45 feet LWRP
- Alternative 6: Dredge the entire study area to 50 feet LWRP
- Alternative 7: Dredge the entire study area to 55 feet LWRP
- Alternative 8: Dredge the entire study area to 45 feet LWRP in phases, as the port makes the wharfs structurally safe for the depth
- Alternative 9: Dredge the entire study area to 50 feet LWRP in phases, as the port makes the wharfs structurally safe for the depth
- Alternative 10: Dredge the four main docking areas to 50 feet LWRP and the rest of the study area to 45 feet LWRP

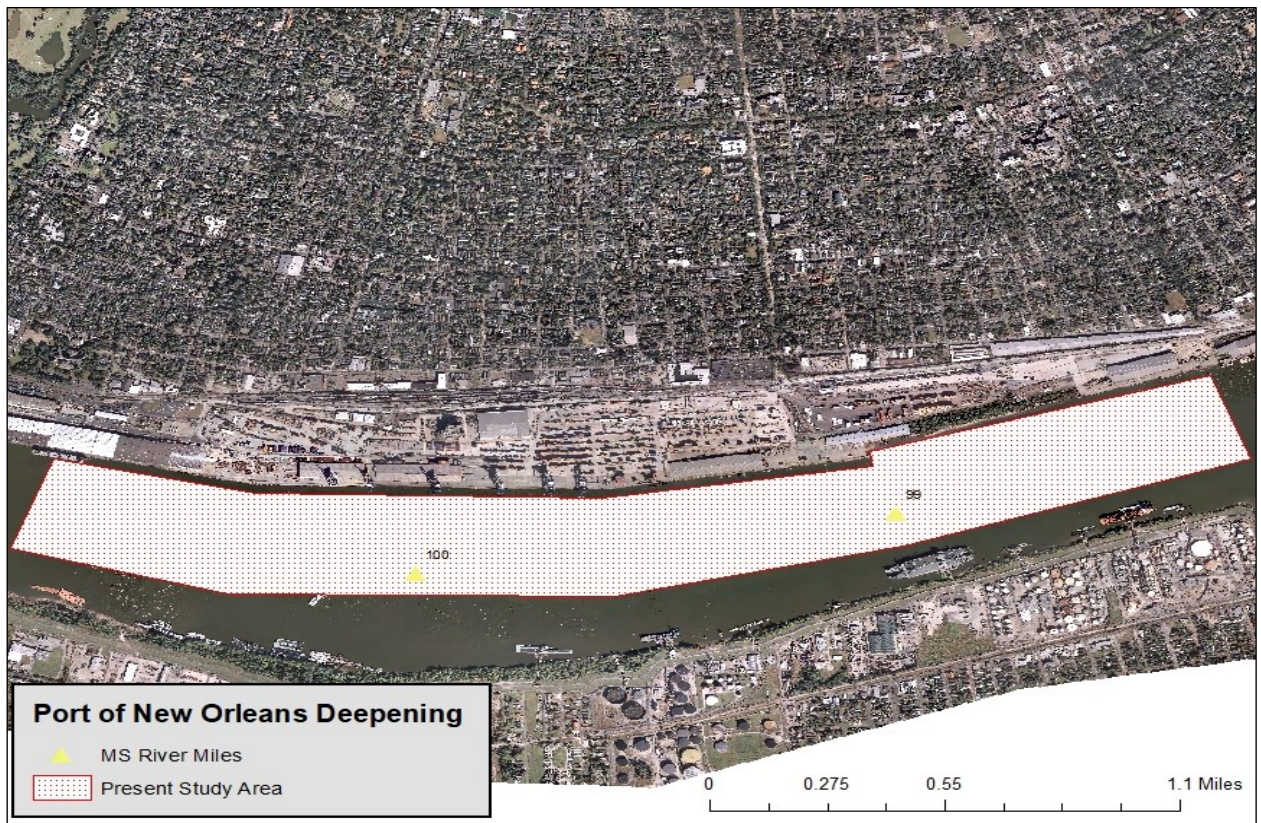


Figure 3-2. Initial Array of Alternatives

The 55 feet LWRP alternative was screened out due to effectiveness because the Mississippi River Ship Channel is only authorized to 50 feet LWRP with the 2018 GRR and therefore the ships coming in should not exceed the 50 feet draft.

3.3.2 Intermediate Array of Alternatives

In August 2019 the NFS reduced the project area to the area between RM 99.5 to RM 100.5 due to the fact that the downstream wharfs need replacing or new construction and would cost too much to consider at this time. After this request, the Project Delivery Team (PDT) revised the alternatives to this intermediate array of alternatives:

- Alternative 3: Dredge between RM 99.5 to RM 100.5 to 45 feet LWRP
- Alternative 4: Dredge between RM 99.5 to RM 100.5 to 50 feet LWRP
- Alternative 11: Dredge between RM 99.5 to RM 100.5 to 45 feet LWRP and phase in the dredged depth to 50 feet LWRP as the PORT makes the wharfs stable to that depth

In October of 2019, Geotechnical Branch, when reviewing the PORT's dredging permit, discovered that the slope stability under the wharfs was below the factor of safety. The PORT was informed and they are restoring the slope stability angle by clearing out the shoaled material under the wharfs back to their original riprap. The section from station 68+00.00 to 79+00.00 will still be slope unstable, at the 45 feet and 50 feet depth, with an unsatisfactory factor of safety (1.19). The PORT will have to either provide adequate slope stability analysis or correct the slope to the correct factor of safety (1.30). The area of concern is shown in Figure 3-3.

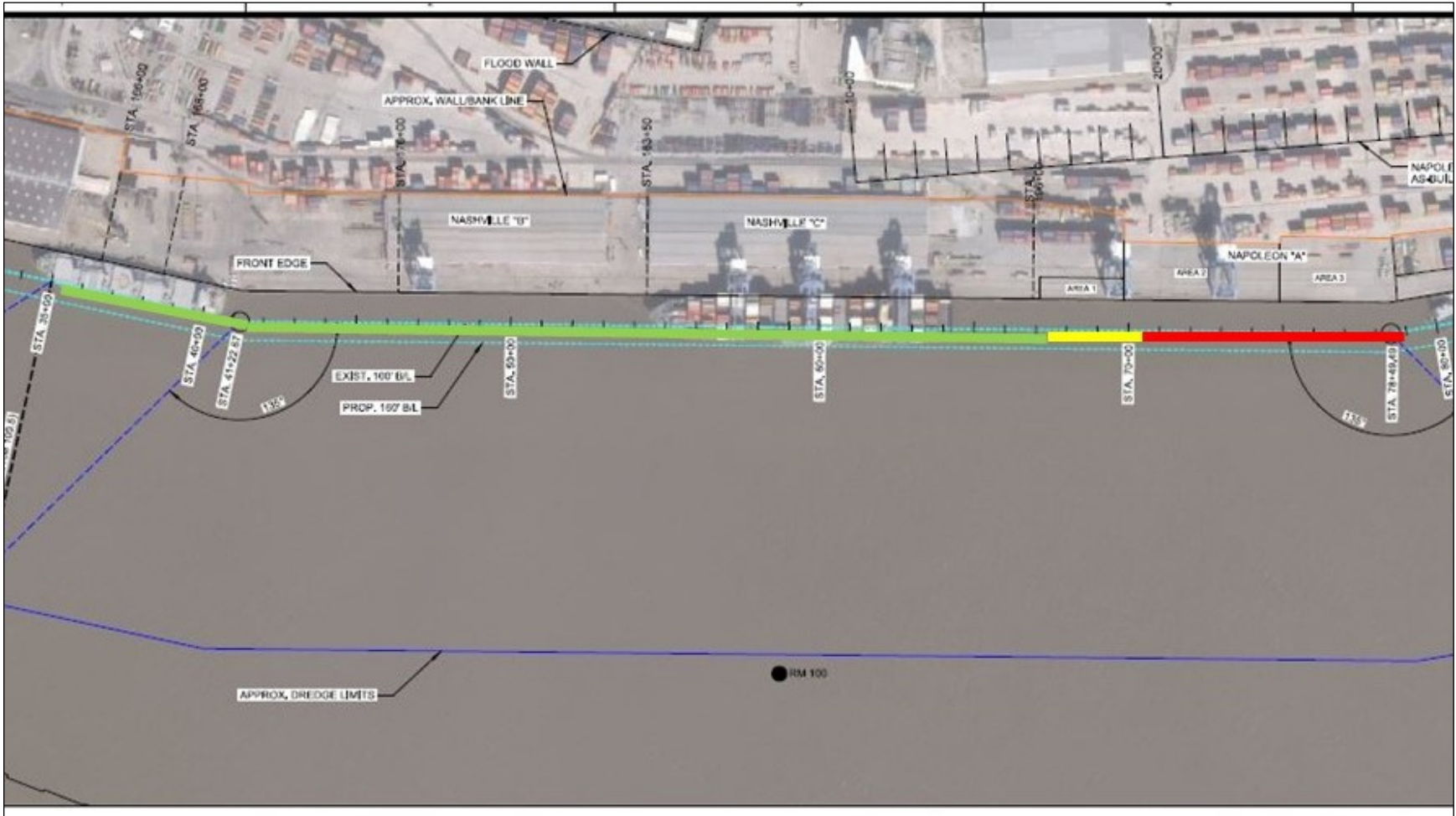


Figure 3-3. Slope Stability Stationing

3.4 FINAL ARRAY OF ALTERNATIVES

In December 2019 the alternatives were revised again due to upgrades the PORT was performing then and will perform in the future on the wharfs to make them stable at the 50 feet LWRP depth. As the PDT assessed the alternatives it was decided that alternative 11, the phased alternative, needed to be applied to all the alternative depths. Also, Economics wanted to find the benefit tipping point, so the 40 feet LWRP, 43 feet LWRP, and 48 feet LWRP alternatives were added to the final array. This Final Array of alternatives is provided in Table 3-1.

3.4.1 No Action

Maintain the channel at the existing depth of 35 feet LWRP from wharfs to 1,500 feet out into the river channel.

3.4.2 Alternative 2

Phase I: Dredge to deepen the approach channel between base line (B/L) Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 40 feet from the wharf to 1,500 feet out into the river channel and the rest of the study area stays at 35 feet from the wharfs to 1,500 feet out into the river channel. PORT dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 40 feet, as shown in Figure 3-4.

Phase II: No additional construction required for USACE. The PORT dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 40 feet.

3.4.3 Alternative 2a

Phase I: Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 43 feet from the wharf to 1,500 feet out into the river channel and the rest of the study area stays at 35 feet from the wharfs to 1,500 feet out into the river channel. PORT dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 40 feet, as shown in Figure 3-4.

Phase II: No additional construction required for USACE. The PORT dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 43 feet.

3.4.4 Alternative 3

Phase I: Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 45 feet from the wharf to 1,500 feet out into the river channel and the rest of the study area stays at 35 feet from the wharfs to 1,500 feet out into the river channel. PORT dredge the 160 feet wide berthing area (between B/L Station 41+22.67

and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 45 feet, as shown in Figure 3-4.

Phase II: No additional construction required for USACE. The PORT dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 45 feet.

3.4.5 Alternative 3a

Phase I: Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 48 feet from the wharf to 1,500 feet out into the river channel and the rest of the study area stays at 35 feet from the wharfs to 1,500 feet out into the river channel. PORT dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 40 feet, as shown in Figure 3-4.

Phase II: No additional construction required for USACE. The PORT dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 48 feet.

3.4.6 Alternative 4

Phase I: Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 50 feet from the wharf to 1,500 feet out into the river channel and the rest of the study area stays at 35 feet from the wharfs to 1,500 feet out into the river channel. PORT dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 50 feet, as shown in Figure 3-4.

Phase II: No additional construction required for USACE. The PORT dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 50 feet.

Table 3-1. Final Array of Alternatives

Alternatives	Alternative 1 (35 ft LWRP) No Action	Alternative 2 (40 ft LWRP)	Alternative 2a (43 ft LWRP)	Alternative 3 (45 ft LWRP)	Alternative 3a (48 ft LWRP)	Alternative 4 (50 ft LWRP)
Rest of the Study Area	35 ft deep from the front of the wharfs to 1,500 ft into the channel.					
Phase I						
From Station 41+22.67 to 78+49.49	35 ft deep from the front of the wharfs to 1,500 ft into the channel.	40 ft deep from 160 ft in front of the wharfs to 1,500 ft into the channel.	43 ft deep from 160 ft in front of the wharfs to 1,500 ft into the channel.	45 ft deep from 160 ft in front of the wharfs to 1,500 ft into the channel.	48 ft deep from 160 ft in front of the wharfs to 1,500 ft into the channel.	50 ft deep from 160 ft in front of the wharfs to 1,500 ft into the channel.
From Station 53+00.00 to 78+49.49	35 ft deep from the front of the wharfs to 1,500 ft into the channel.	40 ft deep from the front of the wharf to 160 ft into the channel.	43 ft deep from the front of the wharf to 160 ft into the channel.	45 ft deep from the front of the wharf to 160 ft into the channel.	48 ft deep from the front of the wharf to 160 ft into the channel.	50 ft deep from the front of the wharf to 160 ft into the channel.
Phase II						
From Station 41+22.67 to 53+00.00	35 ft deep from the front of the wharfs to 1,500 ft into the channel.	40 ft deep from the front of the wharf to 160 ft into the channel.	43 ft deep from the front of the wharf to 160 ft into the channel.	45 ft deep from the front of the wharf to 160 ft into the channel.	48 ft deep from the front of the wharf to 160 ft into the channel.	50 ft deep from the front of the wharf to 160 ft into the channel.

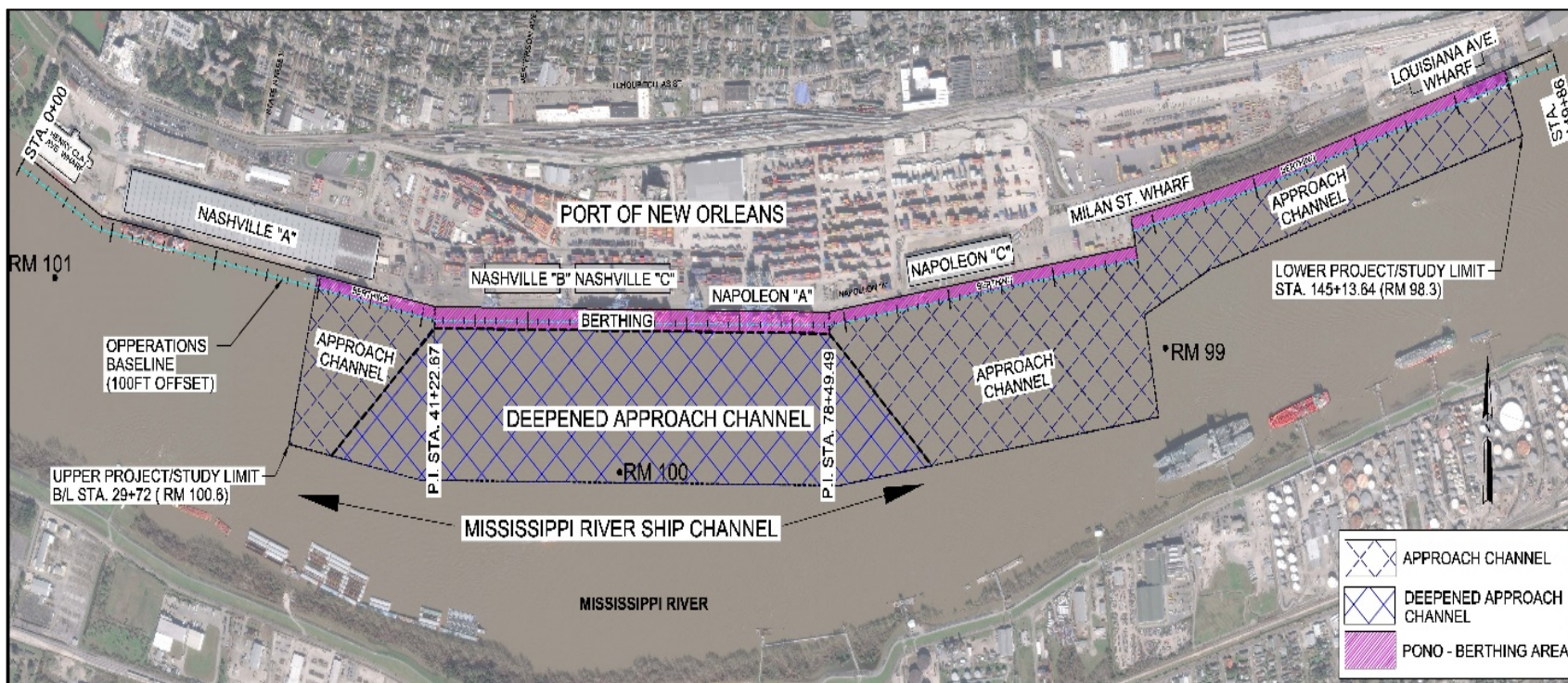


Figure 3-4. PONO All Alternatives Final Array of Alternatives Cost Estimates

In addition to evaluating each plan for completeness, effectiveness, efficiency, and acceptability, the decision criteria that will be used to evaluate and compare plans include:

- Estimated cost
- Incremental economic benefits
- Environmental impacts

3.5 ESTIMATED FIRST CONSTRUCTION COST COMPARISON

The cost estimates were developed for both the first construction cost and the annual maintenance cost for the PORT Access Channel on the Mississippi River. Construction cost estimates assumed the continuation of current dredging practices.

For the PORT Access Channel, the construction and disposal methods used in Phase I and Phase II of the project to deepen the portions of the port access channel to the current depths were used to develop the first construction cost for each alternative in the final array, as shown in Table 3-2.

Table 3-2. First Construction Quantities and Cost

Alternative 1		
	Construction Quantities (CY)	Construction Cost
Total	None	None
Alternative 2		
	Construction Quantities (CY)	Construction Cost
Total	125,000.00	\$5,457,488
Alternative 2a		
	Construction Quantities (CY)	Construction Cost
Total	321,500	\$5,918,257
Alternative 3		
	Construction Quantities (CY)	Construction Cost
Total	500,000.00	\$6,885,191
Alternative 3a		
	Construction Quantities (CY)	Construction Cost
Total	785,500.00	\$8,451,087
Alternative 4		
	Construction Quantities (CY)	Construction Cost
Total	1,000,000.00	\$8,909,315

3.6 ESTIMATED OPERATION AND MAINTENANCE COST COMPARISON

The comparison of alternatives for economic analysis is based on the incremental difference between current annual Operation and Maintenance (O&M) cost, and anticipated O&M cost for each alternative. Table 3-3 shows the difference in the estimated annual cost from the current OMRR&R cost based on a 5 year average of recent operations expenditures for the current dredging.

Table 3-3. Operation and Maintenance (O&M) Cost Comparison

Alternative 1		
	O&M Hours	O&M Cost
Total	0	\$0
Alternative 2 (40')		
	O&M Hours	O&M Cost
Phase I	222.5	\$126,642
Total		\$126,642
Alternative 2a (43')		
	O&M Hours	O&M Cost
Phase I	222.5	\$126,642
Total		\$126,642
Alternative 3 (45')		
	O&M Hours	O&M Cost
Phase I	224.5	\$138,257
Total		\$138,257
Alternative 3a (48')		
	O&M Hours	O&M Cost
Phase I	242.5	\$259,183
Total		\$259,183
Alternative 4 (50')		
	O&M Hours	O&M Cost
Phase I	268.5	\$391,530
Total		\$391,530

3.7 FINAL ARRAY ECONOMIC ANALYSIS AND COMPARISON

As with the previous assessment, shipping traffic and the economics functions were fed into the Harbor-Sim model and those results were tabulated and compared. More detailed costs were estimated based on construction, preconstruction engineering and design, construction management, real estate, relocations, and environmental and cultural mitigation, including all contingencies. Annualized costs and benefits were calculated and the BCR for each alternative was estimated. The economic results for each alternative are summarized in Table 3-4.

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Table 3-4. Economic Comparison of Final Array

Port of New Orleans Deepening FY 2020 Price Level Average Annual Benefits and Costs (2.75%)					
Access Channel Alternative	Alternative 2 (40')	Alternative 2a (43')	Alternative 3 (45')	Alternative 3a (48')	Alternative 4 (50')
First Cost of Construction	\$5,457,488	\$5,918,257	\$6,885,191	\$8,451,087	\$8,909,315
Interest During Construction	\$74,532	\$80,824	\$94,029	\$115,414	\$121,672
Total Investment	\$5,532,020	\$5,999,081	\$6,979,220	\$8,566,501	\$9,030,987
Average Annual Construction Cost	\$206,641	\$223,941	\$260,405	\$320,851	\$339,863
Average Annual Increm. O&M	\$126,642	\$126,642	\$138,257	\$259,183	\$391,530
Total Average Annual Cost	\$333,283	\$350,583	\$398,662	\$580,034	\$731,393
Total Average Annual Benefits	N/A*	\$1,859,116	\$3,893,117	\$26,979,887	\$35,860,251
Net Excess Benefits	N/A*	1,508,578	\$3,494,455	\$26,399,853	\$35,128,858
B/C Ratio	N/A*	5.3	9.8	46.5	49.0

Note: Benefits for alternatives at 43 ft and 45 ft are much smaller than those at 48 ft and 50 ft because these benefits pertain only to Nashville B. Benefits for alternatives at 48 ft and 50 ft pertain to Nashville B as well as Nashville C/Napoleon A.

These numbers are subject to change as we will be adjusting the fleet forecast as well as adding in the 2035 runs.

*Because all the docks in question are being utilized at a depth of 40 ft or greater (according to the empirical data from the PORT and Waterborne Commerce), there are no benefits associated with deepening when we look at the existing data.

3.7.1 Final Array of Alternatives

The final array of alternatives were further evaluated to identify the TSP. The final array of alternatives were compared based on a variety of factors including economics, H&H impacts, and NFS coordination. As was done with the initial screening, the four evaluation criteria were used to evaluate and compare alternative plans:

- Completeness – Does the alternative plan account for all necessary investments/actions to realize the planning objectives?
- Effectiveness – Does the alternative plan contribute to achieving the planning objectives?
- Efficiency – Is the alternative plan cost effective and efficient (benefits exceed costs)?
- Acceptability – Is the alternative plan feasible from technical, environmental, economic, financial, political, legal, institutional, and social perspectives? Does the alternative plan satisfy government entities and the public?

3.7.2 System of Accounts

To facilitate the evaluation and display of effects of the alternative plans there are four Federal Accounts to consider and shown in Table 3-5:

- The national economic development (NED) account displays changes in the economic value of the national output of goods and services.
- The environmental quality account displays non-monetary effects on ecological, cultural, and aesthetic resources including the positive and adverse effects of ecosystem restoration plans.
- The regional economic development (RED) account displays changes in the distribution of regional economic activity (e.g., income and employment).
- The other social effects account displays plan effects on social aspects such as community impacts, health and safety, displacement, energy conservation, and others.

Table 3-5. Evaluation of the Four Accounts

Four Accounts	Alternative 2 (40' LWRP)	Alternative 2a (43' LWRP)	Alternative 3 (45' LWRP)	Alternative 3a (48' LWRP)	Alternative 4 (50' LWRP)
National Economic Development (NED)	Avg. Annual Benefits-\$0.00 Avg. Annual Costs-\$333,283 \$0.00 in net benefits. No BCR Ranked 5th	Avg. Annual Benefits-\$1.86M Avg. Annual Costs-\$350,583 \$1.51M in net benefits. 5.3 BCR Ranked 45th	Avg. Annual Benefits-\$3.9M Avg. Annual Costs-\$398,662 \$3.5M in net benefits. 9.8 BCR Ranked 3rd	Avg. Annual Benefits-\$27.0M Avg. Annual Costs-\$580,034 \$26.4M in net benefits. 46.5 BCR Ranked 2nd	Avg. Annual Benefits-\$35.9M Avg. Annual Costs-\$761,393 \$35.1M in net benefits. 49.0 BCR Ranked 1st
Environmental Quality (EQ)	Overall project related impacts would be temporary in nature and confined primarily to previously dredged water bottoms. All Dredging Alternatives would have similar minimal impacts. They are describe in the attached EA for this study.				
Regional Economic Development (RED)	Although RED may be used to further describe alternatives, and independent studies exist that point to real and tangible benefits to be gained, these are not considered in the NED decision process.				
Other Social Effects (OSE)	An Environmental Justice (EJ) Analysis has not been prepared for the PONO as EJ is not considered a relevant resource. According to the economic analysis, an increase in vessel traffic is not anticipated from the deepening of the PORT access channels. There would be no direct, indirect or cumulative impacts to EJ communities.				

3.8 IDENTIFYING THE TSP

Per USACE Guidance, the TSP Plan for navigational projects should be the plan that maximizes net benefits which is also called the NED Plan. In order to determine which alternative is the NED Plan, the costs and benefits for the Final Array of Alternatives were compared. The alternative with the greatest net benefits is the apparent NED Plan, and thus the TSP.

The TSP identified from the final array is the Alternative 4 (50 feet LWRP).

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Section 4

Tentatively Selected Plan

Based on the cost and benefit analysis of the final array of alternatives, the TSP is the NED Plan of the Alternative 4 (50 ft LWRP), as shown in Figure 4-1. Feasibility-level design will commence after the SMART Planning Agency Decision Milestone and will finish before a Final Report.

This plan is estimated to produce \$35.9 million in average annual benefits at an average annual cost of \$731,400, for a BCR of 49.0 at the current Federal Discount Rate (FDR) of 2.75 percent.

4.1 DESCRIPTION OF TSP/NED PLAN

This alternative is to provide an authorized depth of 50 feet below the NAVD88 (LWRP) for the approach channel and berthing area between B/L Station 41+22.67 and Station 78+49.49, including the upstream and downstream approach angles. The remaining areas within the study limits will remain at the current depth of 35 feet, below the NAVD 88 (LWRP). An additional depth of 2 feet for advance maintenance and an additional depth of 2 feet for over depth will be included in the authorization for each depth. Since the PORT has identified that the structural integrity of the Nashville “B” wharf cannot accommodate a berthing depth below a depth of 39 feet until structural remediation of the wharf is complete, the berthing area in front of the wharfs (identified as Reach 2 on the alternative drawings attached in ANNEX 4) will require this alternative to be a phased alternative. The scopes for Phase I and Phase II are:

4.1.1 50 feet Alternative Phase I

Phase I PORT Construction:

- d. Dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 1 (Nashville “C” and Napoleon “A”) to a depth of 50 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.
- e. Dredge the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49) identified as Reach 2 (Nashville “B”) to a depth of 35 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.
- f. Dredge the 100 feet wide berthing areas within the remainder of the study limits to a depth of 35 feet below the LWRP with 2 feet advance dredging and an additional 2 feet for over depth permitted.

Phase I PORT O&M: Maintain the 100 feet and 160 feet berthing areas within the study limits in accordance with the depths, advance dredging, over depths, and limits for the Phase I PORT Construction.

USACE Construction:

- c. Dredge to deepen the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 50 feet below the LWRP, with 2 feet advance dredging an additional 2 feet for over depth permitted.
- d. Dredge the approach channels in the remainder of the study limits to a depth of 35 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.

USACE O&M: Maintain the approach channel between B/L Station 41+22.67 and Station 78+49.49, including the interior of the upstream and downstream approach angles, to a depth of 50 feet below the LWRP. The remainder of the study limits will be maintained to a depth of 35 feet below the LWRP. Both depths will be authorized to have an additional 2 feet depth for advance maintenance and an additional 2 feet depth for over depth permitted.

4.1.2 50 feet Alternative Phase II

Assume Phase II initial construction and O&M will commence 5 years after the completion of Phase I as follows:

Phase II PORT Construction: Dredge the 160 feet wide berthing area identified as Reach 2 (Nashville “B”) to a depth of 50 feet below the LWRP, with 2 feet advance dredging and an additional 2 feet for over depth permitted.

Phase II PORT O&M: Annually maintain the 160 feet wide berthing area (between B/L Station 41+22.67 and Station 78+49.49, to a depth of 50 feet below the LWRP and the remainder of the study area with 100 feet wide berthing to a depth for 35 feet below the LWRP. Both depths will be authorized to have an additional 2 feet depth for advance maintenance and an additional 2 feet depth for over depth permitted.

USACE Construction: No additional construction required for Phase II.

USACE O&M: Remains the same as Phase I.

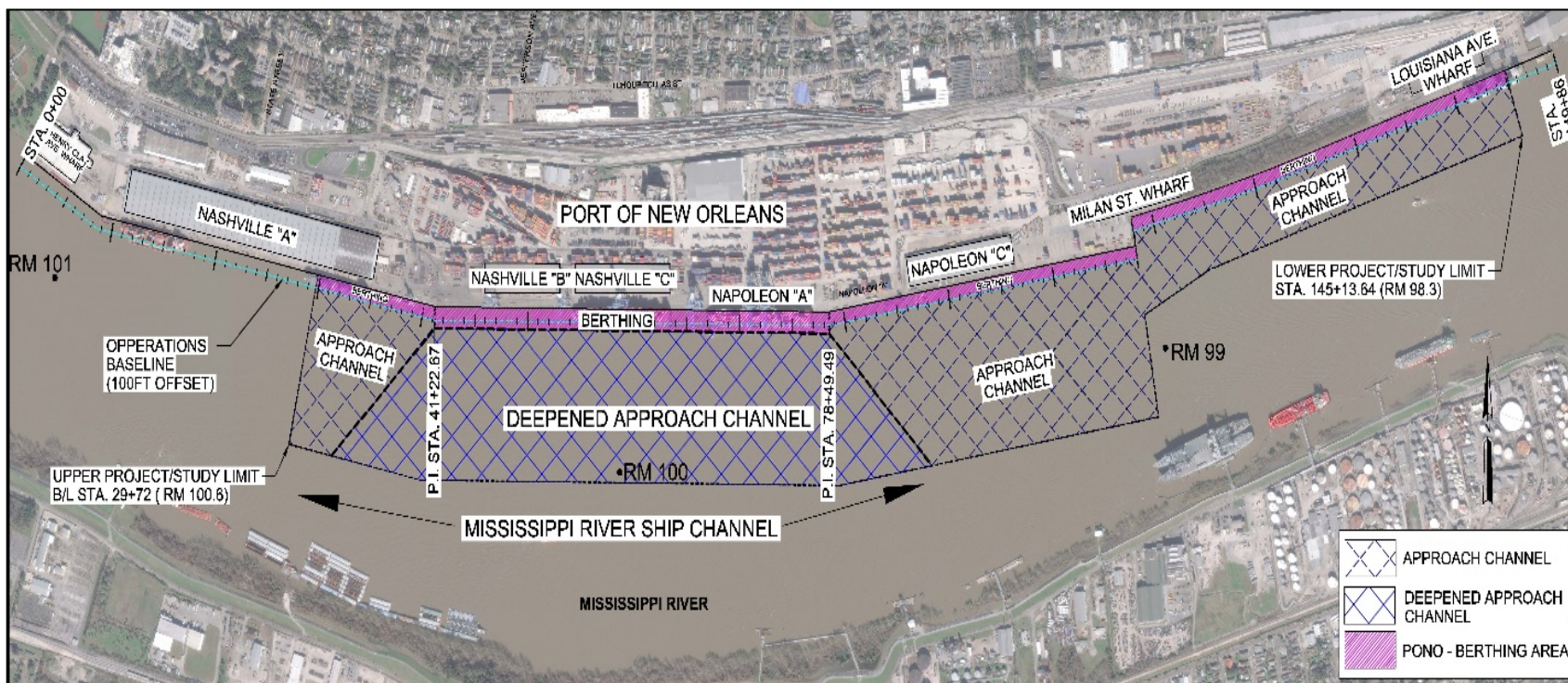


Figure 4-1. TSP/NED Alternative 4 (50 ft LWRP)

4.2 REAL ESTATE REQUIREMENTS ASSOCIATED WITH THE TSP

The Real Estate Plan, Appendix B, sets forth the real estate requirements and costs for the implementation and construction of the Tentatively Selected Plan (TSP) as described in more detail in the DFR and DEA for the PONO in Orleans Parish, Louisiana.

No acquisition of LERRD is necessary for the construction of this study. Dredging and disposal would be within the Mississippi River. We would invoke the Navigation Servitude to utilize navigable waters and lands below the ordinary or mean high water mark. Also, the Mississippi River is considered a water bottom of the State of Louisiana. The NFS is responsible for providing an authorization for entry for all areas under the jurisdiction of the State of Louisiana that are not in the ownership or jurisdiction of USACE or another Federal agency.

The TSP consists of:

Staging – Contractor’s vessel within the Mississippi River shall provide the staging area needed for construction of the study.

Dredging – Contractor’s vessel within the Mississippi River shall complete the dredging from Station 41+22.67 to 78+49.49. Dredge to deepen the approach channel to a depth of 50’ LWRP, starting 160’ out from the face of wharf to 1,500’ into the Mississippi River channel.

Disposal – Contractor will dispose dredged material in an adjacent portion of the Mississippi River where depths greater than 55’ LWRP exist.

Access Landing Barge – Contractor-furnished landing barge for personnel access positioned for access from working parking area to the barge docking. Contractor shall also provide area for worker parking.

Access Barge (in case of emergency) – the NFS annually provides right-of-entry on USACE projects for workers to access land in case of emergency. Barge is located within the PORT adjacent to the dredging area of the Mississippi River.

4.3 RELOCATIONS WITH THE TSP

No relocations are required by the TSP. Information on utility crossings in the project area can be found in the Engineering Appendix, Appendix A.

4.4 OPERATIONS, MAINTENANCE, REPAIR, REHABILITATION, AND REPLACEMENT

OMRR&R is currently under development.

4.5 BENEFIT ANALYSIS OF THE TSP

The greatest net benefits would be achieved by implementing Alternative 4 (50 feet LWRP).

Calculated at the Fiscal Year 20 Federal discount rate of 2.75 percent, total annual costs would be \$731,393 and the total average annual benefits are \$35,860,251. Total average annual benefits, minus total average annual cost, equals the average annual net benefits of the project. The TSP would have an average annual net benefit of \$35,128,251 and the benefit-to-cost (B/C) ratio would be 49.0 to 1.0 (Table 4-1).

Table 4-1. Economic Comparison of TSP/NED

Alternative 4 FY 2020 Price Level Average Annual Benefits and Costs (2.75%)	
First Cost of Construction	\$8,910,000
Interest During Construction	\$122,000
Total Investment	\$9,031,000
Average Annual Construction Cost	\$340,000
Average Annual Increm. O&M	\$392,000
Total Average Annual Cost	\$732,000
Total Average Annual Benefits	\$35,861,000
Net Excess Benefits	\$35,129,000
B/C Ratio	49.0

4.6 COST SHARING REQUIREMENTS

The non-federal share of construction costs is 25 percent of initial construction cost plus 10 percent of the initial construction cost paid over 30 years. The Federal share is the remainder of the shared project cost. The breakdown is shown in Table 4-2.

Table 4-2. Cost Share with non-Federal Sponsor

Description	Total	Federal	Non-Federal
Construction Elements (35 ft to 50 ft 25/75 Cost Share)			
Construction Cost, Preconstruction and Design, and Construction Management	\$6,190,200	\$4,470,700	\$1,719,500
* 10% Cash Contribution	\$687,800		\$687,800
Total Construction Cost	\$6,878,000	\$4,470,700	\$2,407,300
LERRD (100% non-Federal)			
Relocations	\$0	\$0	\$0
Real Estate	\$0	\$0	\$0
Total LERRD Cost	\$0	\$0	\$0
Local Service Facilities (100% non-Federal)			
Port Upgrades	\$2,032,000	\$0	\$2,032,000
Total Project Cost	\$8,910,000	\$4,470,700	\$4,439,300
Annual Incremental Annual O&M (35 ft to 50 ft 100% Federal)	\$392,000	\$392,000	\$0

* Note: For all depths, the non-Federal sponsor is required to provide an additional cash contribution equal to 10% of the General Navigation Feature (GNF) cost (\$687,800), to be paid over a period not exceeding 30 years.

4.7 RISK AND UNCERTAINTY

Risk and uncertainty are intrinsic in water resources planning and design. This section describes various categories of risk and uncertainty pertinent to the study. Risk and uncertainty will be further considered during feasibility-level design and analysis.

Geotechnical: The slope stability analysis was conducted on the project area and the slope under the wharf from station 68+00.00 to 79+00.00 (Napoleon A wharf). When the shoaling is cleared down to the riprap the slope angle only produces a factor of safety of 1.19 at the 45 feet and 50 feet depth. To include the benefits for this section the PORT will have to provide their slope stability analysis for this section or correct the section to a stable factor of safety. If not done, the benefits could be reduced by approximately 20 percent because the section between station 68+00.00 and 79+00.00 will be limited to the existing condition.

Structures: Bracing of the wharf plies for the phase II of the deepening must be completed by the PORT. The berthing for that section cannot be deepened until the bracing is complete.

Cost: There is an uncertainty of the type and amount of material to be dredged, which could impact the duration the dredge has to dredge. Both of these factors will impact the cost of the construction and Operation and Maintenance (O&M) of the project. H&H show an increase in shoaling in this area with the project. Contingencies are added to the construction and O&M cost.

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Section 5

Conclusion

5.1 RECOMMENDATION

The recommendation that follows is tentative, pending review and internal comments. The recommended plan is to deepen a portion of the PORT access channel to a depth of 50 feet below the LWRP as described herein. This recommendation is dependent on the PORT upgrading the Local Service Facilities between station 68+00 and 79+00 to address slope stability issues in that area, as described herein. If the PORT does not provide a stable slope by calculation or adjustment to correct the slope, my recommendation is to authorize a depth of 45 feet below LWRP between station 68+00.00 and 79+00.00. This could reduce the benefits by up to 20 percent to account for the depth reduction for this section.

CEMVN has assessed the environmental impacts of the recommended TSP for the PONO deepening on relevant resources in this draft FR and draft EA. The TSP would have only temporary impacts to these resources.

5.2 PATH FORWARD

The DEA is available for public review beginning April 27, 2020. The official closing date for the receipt of comments is May 27, 2020, which is 30 days from the date on which the draft EA will be mailed out during this review period. Comments may be mailed or emailed to:

U.S. Army Corps of Engineers
Attention: Project Management
CEMVN-PMR, Room 331,
7400 Leake Avenue
New Orleans, LA 70118
Email: PONOSTudy.publicreview@usace.army.mil

List of Preparers

This draft Feasibility Report and draft Environmental Assessment Statement, and associated Finding of no Significant Impact (FONSI) were prepared by Howard Ladner, Biologist, & Darren Flick, Planner, U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, MVN-PD; 7400 Leake Avenue, New Orleans, Louisiana 70118.

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List of Acronyms and Abbreviations

AHP	Above Head of Passes
B/C	Benefit to Cost
B/L	Base Line
CEMVN	USACE New Orleans District
DEA	Draft Environmental Assessment
DFR	Draft Feasibility Report
EA	Environmental Assessment
EJ	Environmental Justice
EQ	Environmental Quality
FCSA	Feasibility Cost Share Agreement
FDR	Federal Discount Rate
FONSI	Finding of No Significant Impact
FR	Feasibility Report
FWOP	Future With Out Project
GNF	General Navigation Feature
LERRD	Land, Easement, Right-of way, Relocation, and Disposal
LWRP	Low Water Reference Plane
MLG	Mean Low Gulf
MRSC	Mississippi River Ship Channel
NED	National Economic Development
NFS	Non- Federal Sponsor
NAVD88	North American Vertical Datum 1988
O&M	Operation and Maintenance
OMRR&R	Operations, Maintenance, Repair, Rehabilitation, and Replacement
OSE	Other Social Effects

PDT	Project Delivery Team
PED	Planning, Engineering and Design
PONO	Port of New Orleans Access Channel Deepening Feasibility Study
PORT	Port of New Orleans
RED	Regional Economic Development
REP	Real Estate Plan
RHA	Rivers and Harbors Act
RM	River Mile
RPDES	Regional Planning and Environment Division South
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
WRRDA	Water Resources Reform and Development Act
WCSC	Waterborne Commerce Statistics Center