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Section 107 Navigation Improvement Project  
Detailed Project Report and  
Environmental Assessment

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# Point Judith Harbor of Refuge and Point Judith Pond Narragansett, Rhode Island



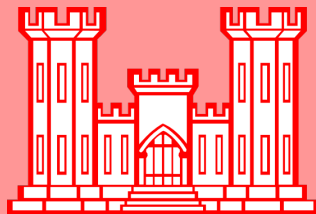
US Army Corps  
of Engineers <sup>®</sup>  
New England District

March 2020

**POINT JUDITH HARBOR OF REFUGE  
AND POINT JUDITH POND  
NARRAGANSETT, RHODE ISLAND**

**NAVIGATION IMPROVEMENT PROJECT**

**DETAILED PROJECT REPORT  
AND  
ENVIRONMENTAL ASSESSMENT**



**MARCH 2020**



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## EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), in partnership with the Rhode Island Coastal Resources Management Council (CRMC), undertook this feasibility study to evaluate the existing navigation conditions in Point Judith Harbor, Narragansett, Rhode Island. The study was conducted to determine the feasibility of Federal involvement in modifying the existing Federal Navigation Project (FNP) for the benefit of commercial fishing vessels. The study concludes that modifications to the existing project in the form of channel widening and channel extension would improve navigational efficiency and increase safety for the port's commercial fishing fleet.

The existing Federal Navigation Project consists of a harbor of refuge located seaward of the inlet and protected by three large stone rubblemound breakwaters, jetties and revetments to control the inlet, and an inner harbor in Point Judith Pond consisting of channels and anchorage areas. The lower area of Point Judith Pond includes the state operated Port of Galilee which serves New England's third largest fishing port and the ferry services that connect Block Island with the mainland. The entrance and interior channels that serve the port have a design depth of 15 feet at mean lower low water (MLLW). Above Galilee a 6-foot channel provides access to the remaining areas of the Pond to its head at Wakefield, about four miles upstream of the inlet.

The harbor's commercial fishing fleet has increased in size over the years as boats from other harbors have relocated to Point Judith and as larger vessels are added to the fleet to range further seaward in search of profitable catch. The State, which manages the port, has constructed new berthing areas over the past several years to meet increasing demand for use of the Port. The result has been that navigation delays and inefficiencies exist at the western and northern sides of the bulkhead where most of the fishing fleet is based. The western side of the bulkhead is the primary work area and offloading area for fish haul by the larger vessels in the fleet, and is where the facilities of the major fish buyers and fish processors are located. The heavy use of this area by many of the vessels in the harbor and the narrow federal channel width result in frequent and significant congestion delays for the larger fishing boats. Additional delays occur while vessels wait to offload catch. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays.

Delays also occur off the northern side of the bulkhead due to insufficient depths, since this area to the north of the bulkhead is without a dredged channel. This is the newest developed area of the port where smaller fishing boats have been relocated to make space for the larger boats along the west bulkhead berths. Tidal delays, congestion delays, grounding damages and excess haul-out costs are currently experienced by Point Judith fishermen due to inadequate depths in the approaches to the northern bulkhead berths. Without a dredged channel of adequate depth these delays and damages will continue to occur increase the operating costs of Point Judith fishermen, reducing net incomes and reducing overall economic efficiency.

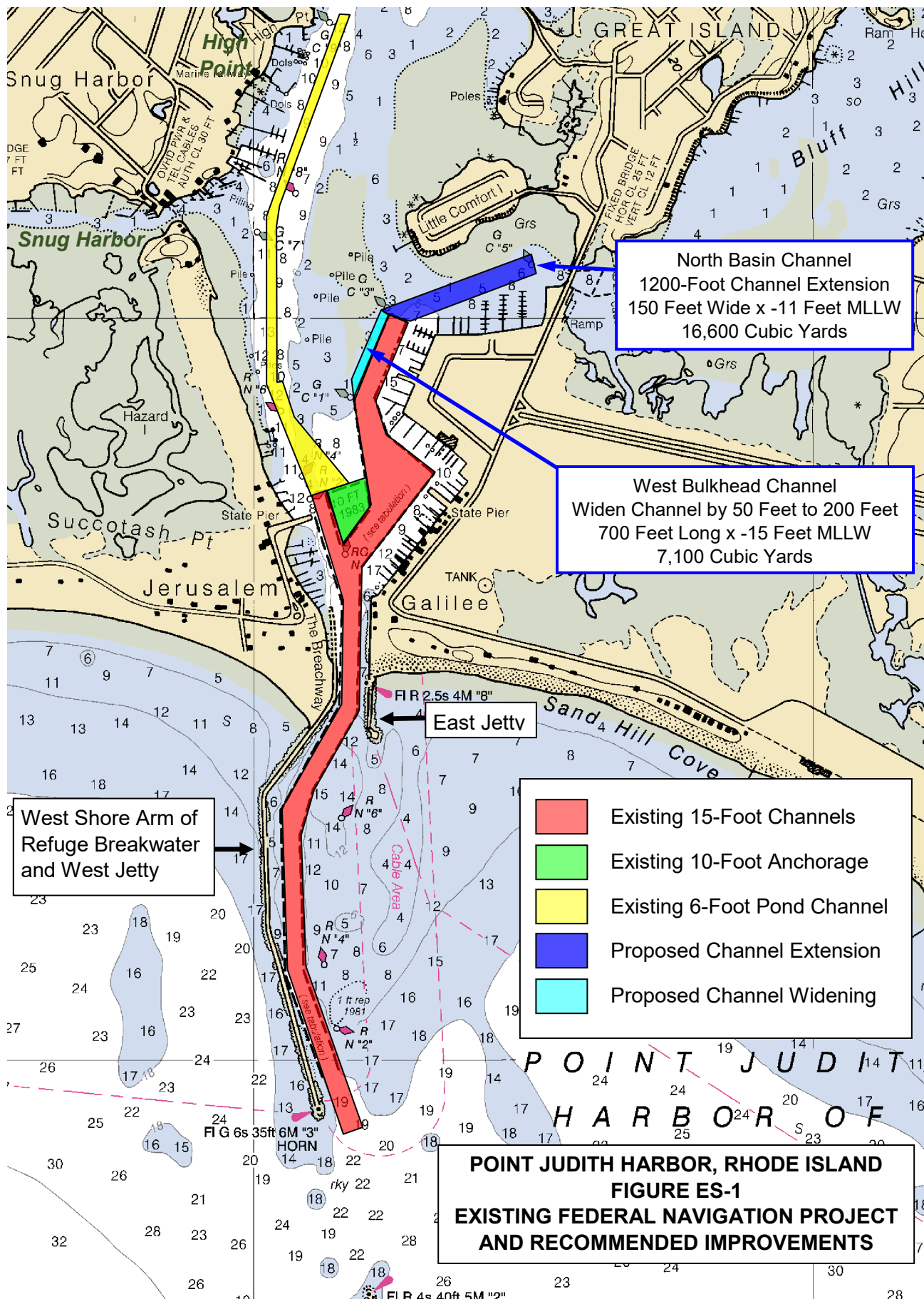
This study analyzed various alternatives for navigation channel improvement and the benefits that each alternative provides to the existing fleet. The existing FNP as designed and constructed more than 40 years ago, no longer provides for safe and efficient vessel operations at the port. Access to new or expanded navigation access needs to be made available to meet the existing and increasing demand. In order to improve current navigation conditions, USACE recommends modifying the existing channel to improve navigational safety and efficiency.

Alternatives were developed and evaluated to provide new or increased channel access into areas where fleet movement can be accommodated and potential growth considered. Channel widening along the western bulkhead, channel extension along the northern bulkhead, and anchorage expansion were all considered. After analyzing the alternatives, it was determined that a combination of two alternatives provides the optimum level of improvement that maximizes project benefits. The USACE recommended plan involves two components. First is to widen the existing 15-foot MLLW channel for about 700 feet along the western bulkhead by 50 feet (for a total width of 200 feet) to increase access and safety for the larger fishing boats now based in this area and for other boats transiting through this area (Plan A). Second is to extend the Federal channel about 1200 feet northeasterly into the port's north basin to access the newer north bulkhead area, at a depth of -11 feet MLLW (Plan B).

Combining both plans A and B as shown in Figure ES-1 would require dredging of about 23,700 cubic yards of material. Widening the west bulkhead channel would require removal of about 7,100 cubic yards, while extending the channel to the north bulkhead would require removal of about 16,600 cubic yards. The dredged material has been tested and determined to be clean sand suitable for beneficial use as beach nourishment. The material would be placed at a previously used nearshore bar nourishment area located about 2.5 miles southwest of the project location off Matunuck Beach. The dredging would be by a small mechanical bucket dredge or excavator with the material placed in scows and towed to the nearshore placement site. Future maintenance dredging of the completed improvements by the Federal government would be done concurrently with maintenance of the existing project features. Future maintenance would be contingent upon the availability of maintenance funds, the continued economic justification of the project, and the environmental acceptability of maintenance activities, as with the existing FNP.

The total estimated cost of design and construction for the recommended plan, based on price levels as updated in October 2019 (FY20), would be \$1,812,000. Annual benefits would be \$551,700 as compared to annual costs of \$91,600 resulting in a benefit to cost ratio of 6.0 to 1, and net annual benefits of \$460,100.

Escalating the design and implementation cost to FY2022 (December 2021) gives a fully funded cost of \$1,865,000. The non-Federal Sponsor would be required to provide ten percent of the cost of design and construction (\$186,500) up-front upon execution of a Project Partnership Agreement before project design can be completed, and a second ten percent (\$186,500) upon completion of construction. The total non-Federal share of project implementation is \$373,000. The total Federal share, 90 percent up-front, is \$1,678,500.





<b>TABLE ES-1</b> <b>SECTION 107 NAVIGATION IMPROVEMENT PROJECT SUMMARY</b> <b>RECOMMENDED PLAN PROJECTED COSTS</b> <b>Point Judith Harbor, Rhode Island – FY2020 Price Levels</b>	
General Navigation Feature Improvement Dredging - Cubic Yards	23,700
Construction Costs, including Contingencies (October 2019)	\$1,450,000
Planning, Engineering and Design	\$237,000
Construction Management	\$124,000
Total Project Costs	<u>\$1,812,000</u>
<b>Cost-Benefit Analysis (FY 2020 Price Levels)</b>	
Annual Cost	\$91,600
Annual Benefits	\$551,700
Annual Net Benefits	\$460,100
Benefit Cost Ratio	6.0
<b>Cost-Sharing – Design &amp; Implementation (FY22 Price Levels)</b>	
Fully Funded Project Cost (December 2021)	\$1,865,000
Federal Cost – 90%	\$1,678,500
Non-Federal Cost – Up-Front – 10%	\$186,500
Non-Federal Additional Contribution Post Construction	\$186,500
Total Non-Federal Cost Share	\$373,000

Federal involvement in navigation improvements at Point Judith Harbor is recommended. The District Engineer finds the proposed action would result in positive economic benefits to the commercial fishing fleet and the local economy, exceeding annualized costs. Based on the review and evaluation of the environmental effects of the proposed action as presented in the accompanying USACE January 2020 Environmental Assessment, the modification of the existing Federal Navigation Project is not a major Federal action significantly affecting the quality of the human environment. In making this determination the District Engineer has considered public and other comments on the Federal Action.

The USACE recommends that the existing Federal navigation project at Point Judith Harbor of Refuge and Point Judith Pond, Narragansett, Rhode Island, be modified under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Plan identified in this Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

The recommendations contained in this report reflect the information available at this time and current USACE Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are authorized for implementation funding.

# POINT JUDITH HARBOR, RHODE ISLAND

## SECTION 107 DETAILED PROJECT REPORT

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## **ENVIRONMENTAL ASSESSMENT**

Including Finding of No Significant Impact, and  
Clean Water Act Section 404(B)(1) Evaluation

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# **Navigation Improvement Project**

## **Detailed Project Report**

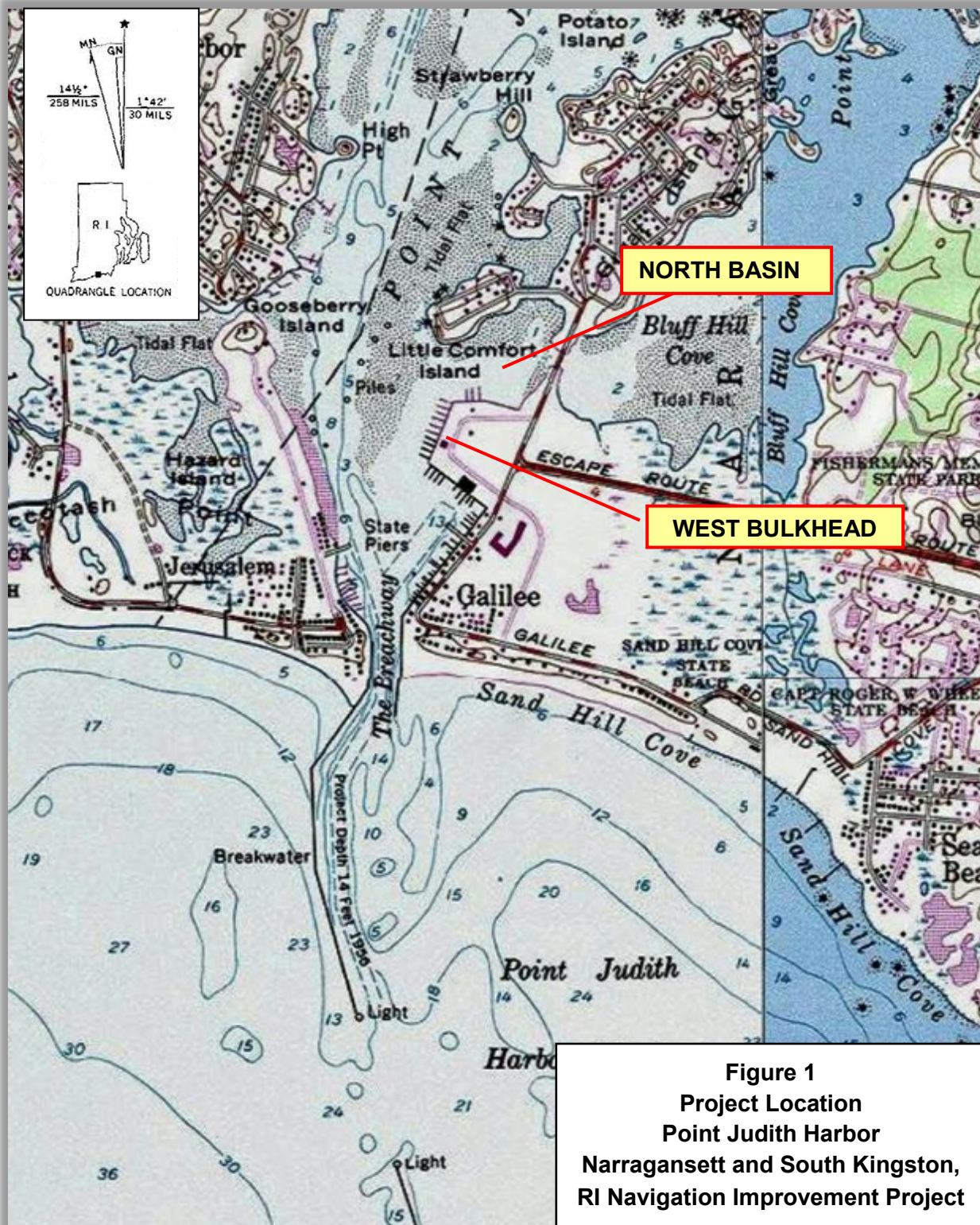
### **1 INTRODUCTION**

This study evaluates the justification for the U.S. Army Corps of Engineers (USACE) to participate in improving the existing navigation conditions in Point Judith Harbor, Port of Galilee, Rhode Island, to determine the feasibility of modifying the existing Federal Navigation Project (FNP) for commercial fishing vessels. The modification would increase the FNP's ability to accommodate safe and efficient vessel movement to the western and northern sides of the State Pier at the Port of Galilee. This measure would alleviate crowded conditions for the commercial fishing fleet at the berthing and offloading areas, and provide access to northern berthing areas built to accommodate increased demands for use of the facility. It would also improve transit efficiency and improve safe passage for the commercial fishing fleet that use the western and northern areas of the port.

The existing commercial and recreational vessels that use the facility have increased in number over the years. New berthing areas over the past several years were constructed to meet increasing demand for use of the Port. The result has been that navigation delays and inefficiencies exist at the western and northern sides of the bulkhead. The western side of the bulkhead is the primary work area and offloading area for fish haul, and contains major fish buyers and fish processors. The heavy use of this area by many of the vessels in the harbor and the narrow federal channel width result in frequent and significant congestion delays. Additional delays occur while vessels wait to offload catch. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays.

Delays also occur off the Port's northern bulkhead due to insufficient depths, since this northern area is without an improved channel. Tidal delays, congestion delays, grounding damages, and haul-out costs currently experienced by Point Judith fishermen due to inadequate channel width in the Federal channel from inadequate channel depth off the northern side of the bulkhead will continue to occur. These delays and damages increase the operating costs of Point Judith fishermen, reducing net incomes and reducing overall economic efficiency.

This Detailed Project Report (DPR) is the result of an engineering, economic and environmental feasibility study of navigation improvements in Point Judith Harbor at Narragansett and South Kingstown, Rhode Island. This study is limited to the southern portion of Point Judith Pond (see Figure 1), located on the central Rhode Island coastline, immediately inland from the Point Judith Harbor of Refuge. The harbor is about 40 miles south of the city of Providence. The harbor is home to the largest commercial fishing port in the state of Rhode Island and the fourth largest in New England after Boston, Gloucester and New Bedford.



A 1989 USACE DPR concluded that channel improvements to Point Judith Harbor were in the Federal interest, but local financing prevented implementation at that time. By letter of September 26, 2006 the Rhode Island Coastal Resources Management Council (CRMC) requested that the USACE revisit the feasibility and Federal interest in the improvements proposed in 1989 for improving the navigation conditions in Point Judith Pond. An initial appraisal and determination of Federal Interest was completed June 12, 2012, and approved by the North Atlantic Division on August 24, 2012. The Section 107 Fact Sheet was approved by the Assistant Secretary of the Army for Civil Works (ASA-CW) on October 17, 2012. A Feasibility Cost-Sharing Agreement was executed between the CRMC and the USACE on April 10, 2015. The principal Federal interests at Point Judith are improving the safety and efficiency of commercial navigation for vessels accessing the western and northern sides of the bulkhead at the Port of Galilee where grounding damages and tidal and congestion delays hinder vessel operations.

### **1.1 Study Authority**

This report is prepared and submitted under the authority and provisions of Section 107 of the 1960 River and Harbor Act, as amended. Section 107 of the River and Harbor Act of 1960 provides authority for the U.S. Army Corps of Engineers to improve navigation including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties and groins, through a partnership with non-Federal government sponsors such as cities, counties, tribes, special chartered authorities such as port authorities, or units of state government.

### **1.2 Project Study Costs**

The feasibility study was cost-shared 50/50 between the Sponsor and the U.S. Army Corps of Engineers, except for the first \$100,000 in study costs which is funded 100 percent by the Federal government. The feasibility study examines reasonable alternatives for the problems and needs and determines the best solution consistent with Federal policy. The solution must pass three criteria: economic feasibility, environmental impacts, and it must have a local partnership. The steps in the process are:

1. **Feasibility Study** - The Corps will conduct a Feasibility Study that is 100 percent federally funded up to \$100,000. Costs over the \$100,000 are cost shared with the non-Federal sponsor on a 50/50 basis. Any portion of the non-Federal share can be in the form of in-kind services within the scope of the study.
2. **Preparation of Plans and Specifications** - Detailed design and preparation of plans and specifications are treated as part of total project costs for purposes of cost sharing. The non-Federal cost share for these activities is collected with the design and implementation cost share.
3. **Non-Federal Share of Construction** - The non-Federal up-front share of design and implementation (final design and initial construction) of navigation projects with a design depth of 20 feet or less is 10 percent. The Sponsor is also responsible for an additional 10 percent after construction over a period of up to 30-years.



4. **Future Project Maintenance** - The U.S. Army Corps of Engineers is responsible for future project maintenance upon completion for project depths of 50 feet or less, subject to available funding. Funding for shallow draft project maintenance has been constrained in recent years

### 1.3 Project Location

Point Judith Pond is located on the southern coast of Rhode Island within the Towns of South Kingston and Narragansett, Washington County. The area is bordered to the east by Narragansett Bay, to the west by the Towns of Charlestown and Richmond, to the north by the Towns of Exeter and North Kingstown, and the south by Block Island Sound and the Point Judith Harbor of Refuge. The Towns of South Kingstown and Narragansett are each composed of several villages. The village of Wakefield can be found at the northern end of Point Judith Pond. The villages of Jerusalem and Galilee are located west and east, respectively, of the entrance to the Pond at the southern end. Galilee is located on the eastern shore and Jerusalem sits opposite it on the western shore. Located about 35 miles south of Providence, Rhode Island, the Pond is most easily accessed via U.S. Route 1 and state Route 108. Point Judith Pond and the surrounding location can be found on the U.S. Geological Survey Map entitled "Kingston, R .I.," or on the National Ocean Survey Chart #13219 entitled "Point Judith Harbor."

### 1.4 Scope of Study

This DPR summarizes the investigation of alternatives for providing navigation improvements at the lower end of Point Judith Pond. The steps in the study included a comprehensive inventory of applicable and available information, performance of topographic and hydrographic surveys, environmental testing and sampling, and preparation of base plans. Public officials have been contacted to provide information and seek input in the study process. Based on these efforts, planning objectives and constraints were developed and plans formulated. These plans were developed and evaluated in coordination with state authorities and the final alternative plans were selected for detailed study.

This report provides for the following:

- Identifying existing conditions and historical trends within the study area;
- Determining the navigational problems and needs of the area;
- Determining the most probable future condition without Federal improvements;
- Developing alternative improvement plans;
- Evaluating and comparing the engineering, economic, environmental, and social impacts of the alternative plans, with respect to the future condition; and
- Recommending improvements that are implementable, economically feasible, environmentally and financially acceptable, and socially beneficial.

The geographic scope includes:

- The lower portion of Point Judith Pond which includes the West Bulkhead and North Basin areas in the Port of Galilee,

- The natural channel area, on the west side of the Pond, from the State Pier in Jerusalem to High Point, including the Snug Harbor area,
- Areas of possible impacts beyond the immediate vicinity of Point Judith Pond, include the dredged material placement site and the areas from which resources are harvested by the commercial fleet.

## 1.5 Prior Studies and Improvements

Navigation improvement studies of the Point Judith area have occurred since 1873 when the first survey of navigation conditions was conducted by USACE. Early studies focused on providing a harbor of refuge by the construction of offshore breakwaters. Work was initiated on the first of three breakwaters in 1891.

*The River and Harbor Act of 1896* authorized a survey of Point Judith Pond for the purpose of securing a stable entrance to the pond. The natural outlet of the pond was a shallow stream navigable only at high tide. The survey report in 1897 recommended construction of an entrance to Point Judith Pond 300 feet wide with a central depth of eight feet and the dredging of a channel of the same depth for a distance of one mile to reach the natural eight foot depth in the pond. No Federal work was initiated, but in 1901 the town of South Kingstown began work on dredging a channel through the pond and cutting a channel through the beach separating the pond from the ocean. In 1902 the State of Rhode Island began construction of two jetties to protect the entrance through the beach. This initial entrance channel was 75 feet wide and seven feet below mean low water (MLW).

The River and Harbor Act of 1909 authorized a preliminary examination of Point Judith Pond for the purpose of providing a navigable channel into the pond, but the findings of the report were that Federal funding was not justified.

In 1934 the State of Rhode Island performed additional work in Point Judith Pond. The work involved extending and rebuilding the east jetty, dredging a 35 acre basin to a depth of 12 feet below MLW inside the entrance, constructing state piers at the villages of Jerusalem, in South Kingstown, and Galilee, in Narragansett, constructing bulkheads along the basin, and dredging a channel north to Wakefield at the head of the pond.

In 1944 another Federal study of possible improvements to Point Judith Pond was authorized, and in 1946 the Board of Engineers for Rivers and Harbors recommended the following work which was authorized in 1948 and completed two years later:

*“A channel into Point Judith Pond 15 feet deep and 150 feet wide...to a point 100 feet north of the state pier at Jerusalem with a branch 15 feet deep and 200 feet wide...extending to a point 100 feet north of the state pier at Galilee; an anchorage basin just inside the entrance 10 feet deep with an area of about 5 acres; sand arresting structures...at the entrance; a channel 6 feet deep and 100 feet wide from the -15 foot west branch channel to the vicinity of Wakefield with an anchorage basin 6 feet deep and about 5 acres in area at the upper end.”*

In the 1960's, the U.S. Congress provided authority for conducting a feasibility study on navigation improvements at Point Judith. It was later determined during the study that the project would qualify under the Continuing Authorities Program. Funds were provided to complete and submit a Detailed Project Report on the findings, under authority of Section 107 of the River and Harbor Act of 1960, as amended. The report, completed in 1976, recommended extending the existing 15-foot deep east channel 1,400 feet to the north. The project was constructed and in 1977 this 150-foot wide channel provided improved access to the commercial piers along the state bulkhead at Galilee (see Figure 2).

## 1.6 Study Participants and Coordination

The preparation of this report required the cooperation of Federal agencies, state and local government agencies, elected officials of the state and local governments, local commercial fishermen, and interested individuals. Appendix A contains a record of public involvement, agency coordination, and project correspondence.

## 1.7 Project Sponsor

The project sponsor is the Rhode Island Coastal Resources Management Council (CRMC), which is the State's Coastal Zone Management authority. The Rhode Island Department of Environmental Management operates the Port of Galilee.



**Figure 2 - Point Judith Pond**

Looking Northwest from the Port of Galilee with Snug Harbor in the Background

## **1.8 Environmental Operating Principles**

The USACE has reaffirmed its commitment to the environment in a set of "Environmental Operating Principles". These principles foster unity of purpose on environmental issues and reflect a positive tone and direction for dialogue on environmental matters. By implementing these principles within the framework of USACE regulations, the USACE continues its efforts to evaluate the effects of its projects on the environment and to seek better ways of achieving environmentally sustainable solutions in partnership with stakeholders.

The seven "Environmental Operating Principles" are as follows:

1. Foster sustainability as a way of life throughout the organization.
2. Proactively consider environmental consequences of all USACE activities and act accordingly.
3. Create mutually supporting economic and environmentally sustainable solutions.
4. Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the USACE, which may impact human and natural environments.
5. Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
6. Leverage scientific, economic and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
7. Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

## **1.9 USACE Campaign Plan**

The U.S. Army Corps of Engineers Campaign Plan guides USACE policy decisions on how we organize, train, and equip our personnel; how we plan, prioritize, and allocate resources; and how we respond to emerging requirements and challenges and meet national priorities. The Campaign Plan is regularly updated and the current version of the plan covers the period of FY2018 to FY2022.

The USACE strategic plan effort towards improvement began in August 2006 with the "12 Actions for Change" and has evolved to four goals and associated objectives. Although the effort originally developed with a focus on missions that seek to manage risk associated with flooding and storm damage, the Campaign Plan Goals and Objectives are applied to all aspects of the USACE service to the nation including its civil works mission. USACE Campaign Plan Goals and Objectives are derived, in part, from the Commander's Intent, the Army Campaign Plan, and Office of Management and Budget guidance. The four goals are (1) Support National Security, (2) Deliver Integrated Water Resource Solutions, (3) Reduce Disaster Risk, and (4) Prepare for Tomorrow.

The goal and associated objectives most closely related to the study and recommendation of a navigation improvement project at Point Judith Harbor is:



## **Goal 2: Deliver Integrated Water Resource Solutions**

### Objective 2a – Deliver Quality Water Resources Solutions and Services

The Recommended Plan for navigation improvements at Point Judith Harbor meets this objective by delivering a project which, within the limits of Federal participation established by Congress, meets to the extent practicable the expectations of our partners and stakeholders in providing safe and efficient navigation for the commercial fleet operating from the Port of Galilee at Point Judith Harbor and Pond.

### Objective 2c – Develop the Civil Works Program to Meet the Future Needs of the Nation

The Recommended Plan for navigation improvements at Point Judith Harbor meets this objective by delivering a project which, within the limits of Federal participation established by Congress, provides sustainable system of channel improvements and improves coastal resilience through beneficial use of the dredged sand to nourish feeder bars off area beaches subject to erosion by coastal storms. The study and recommendation were conducted with stakeholder engagement and the public provided an opportunity to review and comment on the study and its recommendations through the NEPA process.

### Objective 2d – Manage the Life-Cycle of Water Resources Infrastructure Systems to Consistently Deliver Reliable and Sustainable Performance

The project has been formulated with the complete life-cycle in mind, with a consideration of the costs and impacts of both initial construction and future operations and maintenance, to determine the most cost-effective alternative solution to address problems and opportunities with navigation at Point Judith Harbor.

## **2 PROBLEM IDENTIFICATION**

This section discusses the project area and the reasons requiring navigational improvements. It establishes the planning objectives and constraints that direct subsequent planning tasks.

### **2.1 Problems and Needs**

The principal navigation issue at Point Judith is the existing Federal Navigation Project does not accommodate safe and efficient vessel movement to the western and northern sides of the bulkhead at the Port of Galilee. Given the regional demands from the commercial fishing fleet, navigation delays and inefficiencies have become problematic for the facilities. The western side of the bulkhead is the primary work area and offloading area for fish haul, and contains major fish buyers and fish processors. The heavy use of this area by many of the vessels in the harbor and the narrow width of the federal channel results in frequent and significant congestion delays. Additional delays occur while vessels wait to offload catch. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays. The lack of appropriate access to the unloading facilities has caused delays of up to 48 hours for some boats as they wait to unload their catch resulting in excess labor and fuel costs.

The narrowness of the FNP's East Branch Channel, opposite the West Bulkhead, causes the larger vessels (60 to 95 feet in length) to often run aground as they attempt to maneuver into offloading facilities, berths, and around other vessels. Inadequate depths in the North Basin and the natural channel area between Jerusalem and High Point (see Figure 1) cause tidal delays and grounding damages to those vessels accessing these areas.

The Point Judith Pond commercial fishing fleet has already maximized the available berthing and offloading space. Due to the increasing demands for use of the Port of Galilee facilities over the past several years, the State of Rhode Island and local authorities completed improvement work to the bulkhead. This work included the addition of several new offloading facilities, and the addition of piers to the West Bulkhead and North Basin areas. State and local authorities completed the berthing dredging needed in conjunction with this work.

The need at Point Judith is to make modifications to the existing federal channels and/or provide new channels to alleviate the commercial fleet's navigation problems. The larger, deeper draft vessels now utilizing Point Judith Pond as a base of operations must be better accommodated if the commercial operators at Point Judith are to continue to be competitive in the New England region fish industry. If accommodations are not made, the existing commercial fleet will continue to experience delays, groundings and berthing difficulties reducing the efficiency of commercial fishing operations.

For improving navigation conditions USACE has tentatively selected a plan that recommends modifying the existing channels and dredging a new channel to enhance the navigation routes and allow vessels to safely reach berthing and offloading areas. This study analyzes the alternatives for channel improvement and the benefits that each alternative provides to the existing fleet.

## 2.2 Existing Conditions

**General Description** – Point Judith Pond is a tidal lagoon approximately 4 miles long and more than a mile wide. The Point Judith Harbor area includes an federally constructed 770-acre offshore Harbor of Refuge protected by three breakwaters and an anchorage and berthing area in lower Point Judith Pond (see Figures 2 and 3). The anchorage and berthing area is located between the communities of Galilee and Jerusalem and is the site of several state owned piers and the U.S. Coast Guard Station Point Judith. The entrance to the Pond begins with passage through the Harbor of Refuge. The protected waters of Point Judith Pond are generally less than 5 feet deep, except the areas that are designated as Federal navigation channels. The area has several islands, most of which have been developed as residential summer communities. This area of southern Rhode Island is composed of rocky coasts and long beaches lying between low headlands on the coast, and inland low-lying areas bordering saline ponds and salt marshes that characterize the area.

Figure 3 shows the existing Federal navigation project in Point Judith Pond. It consists of a 15-foot deep (mean lower low water - MLLW) 150-foot wide entrance channel from the Point Judith Harbor of Refuge through the breachway into the Pond, a west channel 15 feet deep

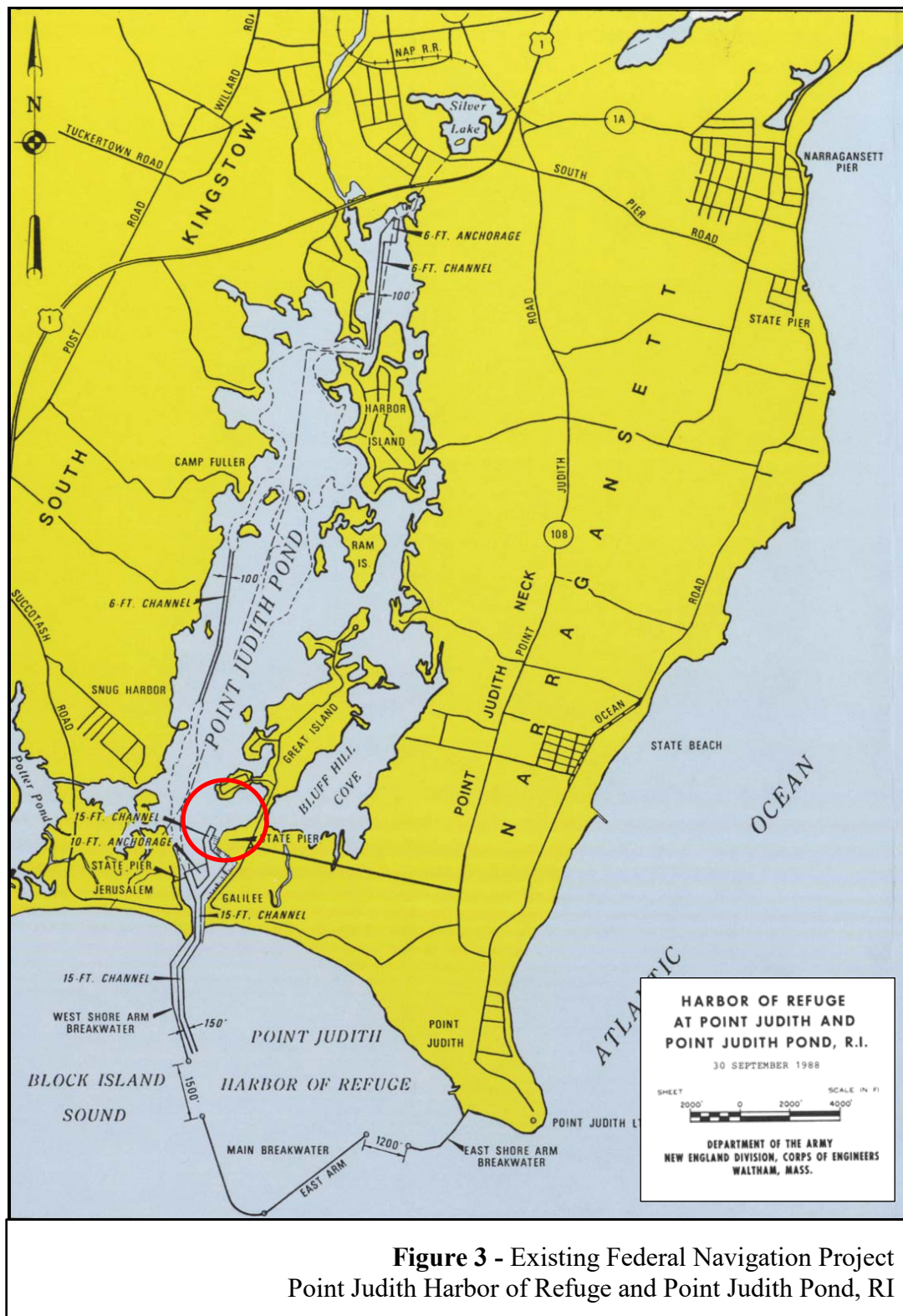
and 150 feet wide to a point 100 feet north of the state pier at Jerusalem, an east channel 15 feet deep and 200 feet wide to a point 100 feet north of the state pier at Galilee, continuing west and north to a 15-foot deep 150-foot wide channel along the West Bulkhead. Between the east and west channels is a 10-foot deep 5-acre anchorage. A 6-foot deep 100-foot wide channel extends north from High Point in Snug Harbor approximately 4,900 feet to Turner Cove. The same size channel also extends from the north side of Harbor Island approximately 1,800 feet to a 6-foot deep anchorage in Wakefield.

**Land Uses & Facilities** - The dominant land use in the Port of Galilee area is commercial. The villages of Jerusalem and Galilee, located near the southern entrance to the pond, contain most of the service facilities available for commercial and recreational boating activities. The commercial properties include restaurants, stores and lodgings at the harbor. Almost all available building frontage has been utilized on both sides of the lower Point Judith Pond area. State and local authorities continue to seek new ways of commercially developing the area to meet the needs of a fishing industry that lacks sufficient access to the berthing and offloading facilities. Commercially, the Point Judith fishing fleet has a considerable advantage over other commercial fishing communities due to the proximity of these villages to the prime fishing areas of Georges Bank and the protection afforded to them by the Harbor of Refuge.

Jerusalem contains docking space and has a state-constructed pier. The State of Rhode Island has invested resources so that Galilee has become a leader in the state's commercial fishing industry. Galilee has seen the most in the way of development. The Port of Galilee contains a state constructed pier, sustains several charter fishing vessels, and provides a base for one of the ferries that run to Block Island. Commercial fishing vessels and shore processing operations have been relocating to Point Judith from surrounding Rhode Island and Connecticut harbors for several years. Point Judith's largest fish processors are the Town Dock Company, Handrigan's Seafood, and Seafreeze Shoreside. Several smaller processors are also located in the Point Judith area: Ocean State Lobster Co., Narragansett Bay Lobster Co., Fox Seafood, Osprey Seafood, and Sea Fresh America. The Local Catch Inc. is a Community Supported Fishery (CSF), which is like a farm share, but for fish (NOAA, 2017).

At the two state constructed piers in Galilee and Jerusalem, the State of Rhode Island installed a bulkhead along the Galilee waterfront in 1934. The bulkhead and adjacent area contain piers for berthing space, and fish packing and processing houses to service the large commercial fleet that use the port.

Between 1978 and 1985 Point Judith's commercial fish landings increased by 200 percent in comparison to the State's 126 percent increase. By 1985, Point Judith ranked fourth in New England commercial fish landings behind only Gloucester, MA, New Bedford, MA, and Rockland, ME. With the increased value of fish as a natural resource and the location Point Judith affords to the fishing grounds, local interests and the State of Rhode Island continue their efforts to maximize the available anchorages and berthing space in the Point Judith area. NOAA's commercial fishing statistics for 2016 rank Point Judith third in New England for both pounds of catch landed and dollar value of catch behind New Bedford and Gloucester.



Galilee's fishing success over the years has been due to the Point Judith Fisherman's Cooperative and their shore-side facilities that are based in the village. A Federal channel on the eastern edge of the Pond services the charter boat fleet and Block Island Ferry and the commercial fishing fleet. Galilee also has a diversified recreational economy, where small boating services, marinas, beaches and other tourist attractions are available.

Repair facilities for boats are located at High Point in the village of Snug Harbor. To reach these facilities vessels must use the naturally existing channel that runs from Jerusalem to High Point (see Figure 1). Due to a lack of depth and width in this natural channel and a mean tidal range of 2.8 feet, large offshore vessels often risk grounding out trying to reach the 12-foot deep marine repair facilities at High Point.

**Recreation/Tourism** - The Point Judith Pond area is in one of state's busiest tourist areas and provides access to some of Rhode Island's best recreational fishing. As an active tourist destination, the area contains many shops, restaurants, sport fishing boats, sightseeing tour boats, beaches and a motel. East Matunuck State Beach, Sand Hill Cove Beach and Scarborough State Beach are nearby and attract large numbers of summer tourists. In 2010, the year round population of Narragansett was recorded to be about 15,868.

The Block Island Ferry at Point Judith provides a critical link to Block Island, a popular tourist destination, transporting visitors, residents, and supplies to the island year-round. The ferry runs eight to nine trips per day to Block Island in the summer months, tapering somewhat in the fall and spring, and provides a few trips each day in the winter. The ferry's mainland terminal is located along the Galilee west bulkhead.

**Economic Conditions** – Appendix C contains the Economic Assessment of the proposed Federal Action. The Town of Narragansett is located in Washington County, on the southern coast of Rhode Island. In 2010, the town had a population of 15,868 and contained 9,470 housing units (US Census Bureau, 2010 US Census). Between 2000 and 2010, the population decreased while the number of housing units increased, with a population in 2000 of 16,361 and 9,159 housing units (US Census Bureau, 2000 Census). The median family income in Narragansett in 2010 was \$65,842 (US Census Bureau, 2010 Census). This is slightly higher than the median family income in Rhode Island of \$56,423.

In 2017, Narragansett had a labor force of 9,044 and an unemployment rate of 3.0% (Rhode Island Department of Labor and Training, Local Area Unemployment Statistics). This compares favorably with the state, which had a 2017 unemployment rate of 4.4%. Rhode Island was hit hard by the economic downturn of 2008-2009, from which it has only recently started to recover. Unemployment in the state peaked at 11.2% in 2010, and remained above 10% through 2012. Throughout this period, unemployment in Narragansett was consistently several points lower than the state average (Rhode Island Department of Labor and Training, Local Area Unemployment Statistics). In terms of total wages, the largest employment sectors in Narragansett in 2015 were Government (19 establishments, \$12,910,585 total wages), Food Services and Lodging (75 establishments, \$7,910,482 total wages), Retail Trade (48 establishments, \$4,504,509 total wages), and Health Care/Social Services (39



establishments, \$4,185,754) (Rhode Island Department of Labor and Training, Quarterly Census of Employment & Wages, 2015).

Commercial fishing is a major industry in Rhode Island. The Point Judith Pond area is the largest commercial fishing port in the state and one of the larger fishing ports in the country. It plays a significant role in the economy of Narragansett and the wider regional area. The economic impact of the industry extends beyond the fishermen to include the many fish buyers, fish processors, suppliers, and vessel repair businesses related to Point Judith fishing activity. The Federal channel at Point Judith supports the significant economic activity of the harbor. The Federal project is also used extensively by the Block Island Ferry, a critical supply and transport link from the mainland to Block Island.

Point Judith is one of the larger fishing ports in the country in terms of both pounds landed and value. In 2016, Point Judith was ranked 18th in the nation in terms of pounds landed and 15th in the nation in terms of value, with 53.4 million pounds landed valued at \$55.7 million (2016 National Marine Fisheries Service, latest available data). The most valuable species landed are squid, scallop, scup, lobster, summer flounder, herring and clam. Point Judith lands more squid than any port in the United States, and more scup in terms of poundage than any other east coast port. Other significant species landed at the port include Jonah crab, yellowtail flounder, hake, sea bass and skates. A seasonal longline fishery for tuna also operates out of the port, as well as various charter fishing vessels.

**Vessel and Fleet Presence** – The geographical location of Point Judith Pond provides prime commercial fishing access to Block Island Sound, Rhode Island Sound, the Nantucket Shoals and the Continental Shelf. As a primary center for the region’s commercial activity, Point Judith Pond supports a fleet of commercial and recreational craft. As the largest commercial fishing port in Rhode Island, it includes 40 piers, most used for commercial berthing, five fish buyers/processors, repair facilities, and several fuel, bait, and ice suppliers in support of the industry. The harbor also contains a State Pier, a terminal for the Block Island Ferry, and a US Coast Guard facility. The fish piers and berths are controlled by the State of Rhode Island Department of Environmental Management. The largest fishing vessels in the harbor berth at slips along the west and south sides of the bulkhead. The western side of the bulkhead contains the main pier for unloading catch to one of the larger fish processing plants. The northern side of the bulkhead, just south of Little Comfort Island, contains 132 vessels at slips, including lobster boats, charter fishing and party boats, and several small draggers. There is a state boat ramp located east of the northern bulkhead area, east of Great Island Road in Bluff Hill Cove. The boat ramp is used heavily by recreational boaters in the summer months. Boats launched at the ramp typically transit the area north of the bulkhead to exit the harbor.

Currently, the commercial fleet at Point Judith Harbor consists of 273 vessels, of which 230 are fishing vessels and 43 are charter fishing or party vessels. The fishing vessels range in draft from three to fourteen feet, with 90 percent of the vessels having drafts between five and twelve feet. In comparison, in the late 1980’s there were 196 commercial vessels assigned berths in the Port of Galilee. Of these, 151 were commercial fishing vessels. The other 45

boats were comprised of charter, sport fishing, party and excursion vessels. The commercial fleet consists of onshore and offshore lobster boats and draggers. Larger steel hulled vessels have, generally, become the standard for the offshore fleet, especially with the passage of the Fisheries Conservation and Management Act (1976). Nearly half the fleet is made up of large offshore draggers. The State of Rhode Island has been committed to the task of increasing the amount of permanent berths available for the fleet (for example, increased from 74 in 1974 to 151 in 1985). The deeper draft boats encounter navigational difficulties and increased wait times to access adequate offloading facilities. The state completed various docking and bulkhead improvements in order to continue the development of Galilee as a successful fishing port but delays continue to exist.

The segment of the commercial fleet using the western and northern bulkhead areas at Galilee (the areas under consideration for improvement) consists of 181 vessels as of September 2016, including 138 commercial fishing vessels and 43 charter fishing vessels. This is the segment of the fleet that would potentially benefit from the proposed improvements.

The Block Island Ferry and the Coast Guard vessels operate out of the southern end of the harbor. Ferry operations include five vessels in the peak summer months, reducing to one vessel in the middle of winter. The U.S. Coast Guard keeps two to four vessels at Point Judith, and periodically uses the boat ramp in Bluff Hill Cove to launch its smaller vessels. These smaller vessels then transit the area north of the bulkhead and have drafts of less than 4 feet, which is shallower than the commercial fishing vessels that use the area.

**Port Operations** –The State Pier at the Port of Galilee, part of Point Judith Harbor, has undergone continuous improvement and expansion over several decades to support the commercial capabilities of the port area. The work involved bulkhead and pier improvements on the West Bulkhead and North Basin areas. Improvements made by the Point Judith Fishermen's Cooperative in the West Bulkhead area that involved new offloading facilities has alleviated the demand for offloading facilities and berthing space in the area; however, it does not alleviate the navigation problems that exist in the East Branch Channel nor provide for a navigable channel in the North Basin area, or to Snug Harbor's repair facilities.

The expansion of the developed commercial harbor facilities along the north side of the port, upstream and easterly of the existing 15-foot Federal channel allowed the State to shift smaller inshore fishing vessels, with shallower drafts, into the newer berth areas, and allowed the use of the West bulkhead slips along the existing Federal channel to try and accommodate the increased, larger offshore boats.

Ships using the West Bulkhead and North Bulkhead areas have problems with adequate channel depth and width, congestion, and groundings particularly at lower tidal stages. The larger vessels that are now using the West Bulkhead slips have difficulty with the federal channel's current width. This part of the federal channel doubles as a maneuvering area for craft transiting to and from the access ways between the berth slips. In the North Bulkhead area, the natural depths reduced by shoaling are not adequate to provide access for commercial craft using the north bulkhead area even with the State's efforts to shift the

smaller draft vessels to the north bulkhead area to accommodate the current and expanding fleet that use the facility.

### **2.3 Without Project Condition**

The “*Without Project Condition*” is the expected condition if the Federal government takes no action to improve the navigation capabilities in the Point Judith Pond area. In this case, the congestion delays, grounding damages and haul-out costs currently experienced by Point Judith fishermen from inadequate channel width in the Federal channel will continue to occur. Additionally, tidal delays and grounding damages from inadequate channel depth off the northern side of the bulkhead will continue to occur. These delays and damages increase the operating costs of Point Judith fishermen, reducing their net incomes and reducing overall economic efficiency.

Continuing to operate the port in this manner, would result in negative long-term issues from the expected significant reductions in navigation efficiency. Vessel groundings, collisions and tidal delays will continue to plague the commercial fleet as a result of inadequate channel width and depth. The larger vessels will continue to experience problems accessing the repair facilities at High Point in Snug Harbor and will need to travel to other ports for repair work. The navigational problems will intensify and hinder the local fishing industry's efficiency as the fleet continues to grow in vessel size and number. There will be overcrowding of vessels, and the port will not be able to accommodate the increasing demand for space utilization, thereby the State and region would experience an adverse economic loss.

There are other considerations of the *Without Project Condition* that should be identified. Fish catch is difficult to predict and will continue to be so as the fleet at Point Judith has had a history of flexibility in harvesting any species of fish, depending on the market and availability. Furthermore, the state has invested in shorefront improvements thereby reflecting the determination that fish availability does not appear to be at risk. Access to the fishing grounds appears to be unrestricted at this time and will only be regulated by market conditions in the form of net returns. It is expected that the market will continue to be relatively stable as experienced over the last ten years (see Economic Appendix Table C-1). The fleet is expected to experience pressure for greater facility access and safe navigation based on its past record by fishermen continuing to fish those species of fish that are marketable and seeking to open up new markets for underutilized fish.

There are no plans for improvement of the port's channels by non-Federal interests and it is not expected to occur. The State of Rhode Island has focused its efforts and available funding on the improvement of shorefront infrastructure and is depending on federally assisted channel dredging. The State completed its improvements to the port's shore facilities over a period of many years (since the 1980s). The State has now again requested Federal assistance in modifying the existing Federal channel to improve access to the port's facilities. Such improvements would carry significant cost for a small harbor such as Point Judith, in excess of \$1.5 million. As these channel improvements have been proposed for twenty-five years, the most likely non-Federal alternative would be a continuation of existing conditions if

Federal assistance in implementing the project were not available. Federal maintenance of the existing USACE Federal navigation project would continue regardless of the issues facing the Port of Galilee.

Point Judith is a small commercial fishing port of relatively shallow draft. This is not a large commercial cargo port. There are no pilots. Vessel masters decide their schedules based on their loaded drafts in and out, the varying range of the tide, and the condition of the channel (dimensions, shoaling, sea states, weather, etc.), among other factors. Traffic generally follows the tide, with resulting delays for larger fishing boats. Underkeel clearance is limited to about two feet for most vessels and would continue, though some of the largest boats need additional clearance in heavier sea states. All of these conditions will continue to exist and constrain future operation and development of the port. Fishing boat masters fully utilize the available channel depths and tides to bring their catch to the dockside processors as quickly as possible while it remains fresh and commands its best value. No increases in catch are proposed or would occur as a result of any channel improvements as the fisheries engaged in by Point Judith's fishing fleet are tightly controlled by Federal and state resource agencies.

At Galilee the commercial port area is now fully developed and improving navigational access to those facilities would increase operational efficiency for the fishing fleet. Any additional commercial port facility improvements, if any were built, would need to occur on the western shore or further up into Point Judith Pond and would require the state to acquire new lands which are now developed for other purposes (marinas, shipyards, residential).

The most likely future condition with navigation at Point Judith Harbor and the Port of Galilee is a continuation of the existing conditions which have constrained operations at the west and north bulkhead areas for more than two decades.

### **2.3.1 Impacts of Climate Change**

Continuing climate change will impact the Atlantic coast, including Rhode Island and the Point Judith area in ways that will affect navigation. The combination of rising sea levels and subsidence of the continental margin will contribute to increased inundation of coastal areas during storm events, particularly when coupled with high astronomical tides. An analysis of sea level change and its impact on the port is contained in the Design Appendix D.

There are no bridges or overhead utilities that cross the port or channel areas seaward. So seal level change will not impact vessel operations from a vertical clearance standpoint. The jetties controlling the Pond inlet were recently repaired, but will need monitoring, as any significant increase in sea levels may require additional armor stone to increase the top elevation of these structures. The main and shore arm breakwaters of the Harbor of Refuge will similarly require monitoring and possibly additional repairs and increased top elevation.

## **2.4 Planning Objectives and Constraints**

### **2.4.1 Planning Objectives**

Planning Objectives are the desired results of the planning process that will solve the identified problems and typically result in the desired changes between the without- and with-

project conditions. Planning objectives serve to eliminate from consideration alternatives and considerations that will not solve the identified problem.

State and local objectives for the project area include the continued development, management and success of the lower Point Judith Pond area as a base for commercial fishing. The Federal objective of water and related land resources project planning is to contribute to National Economic Development (NED) consistent with protecting the Nation's environment, pursuant to national environmental statutes (National Environmental Policy Act), applicable executive orders, and other Federal planning requirements. This requirement involves:

- Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities in ways that contribute to this objective.
- Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the Nation. Contributions to NED include increases in the net value of those goods and services that are marketed, and also of those that may not be marketed.

Planning objectives that have been identified to specifically address the navigation problems and needs of Point Judith Harbor and Pond are shown below. The period of analysis begins with the estimated completion of construction of a project in 2020.

- Reduce the cost of commercial fishing boat operations in Point Judith Harbor and Pond during the 50 year period of analysis beginning in 2020.
- Contribute to safer conditions for the commercial fishing fleet in Point Judith Harbor and Pond during the 50 year period of analysis beginning in 2020.
- Reduce projected without-project tidal delays and channel congestion for commercial navigation at the state fish pier facilities at the Port of Galilee in Point Judith Harbor and Pond during the 50 year period of analysis beginning in 2020.

#### **2.4.1 Planning Constraints**

Planning Constraints are the parameters that limit the implementation of a proposed plan or plans to allow for improvement of the navigation conditions in support of the commercial and recreational industries at Point Judith.

- The major or primary constraint at Point Judith Pond is the natural conditions. Point Judith Pond is a tidal lagoon that is relatively shallow across most of its area and the logical areas for navigation improvement within this lagoon are the places that currently handle deep draft vessels. The areas are the ports of Galilee, Jerusalem and Snug Harbor. The High Point repair facilities at Snug Harbor (see Figure 1) would require extensive channel dredging to make them accessible. Jerusalem, a potential site for commercial or other development is not scheduled for improvement by state authorities.
- Another constraint is the nature of the material to be dredged and the limitations that places on suitable placement alternatives. The material to be dredged for the proposal channel improvements at Point Judith is clean sandy material determined suitable by the USACE, Environmental Protection Agency (EPA) and state for beneficial use as

nourishment material for beaches or nearshore littoral bar systems. While the material could be placed in open water, Federal and state resources agencies prefer the beneficial use of such material. The Coastal Zone Management policies of Rhode Island, like most other states, prefer such uses, as do USACE policies, where little to no additional cost results. Beneficial uses for the dredged material were investigated and considered in project planning.

### **3 FORMULATION OF PLANS**

The formulation of alternatives for navigation improvement at Point Judith considered the needs and problems of the study area. An alternative must be considered reasonable and designed to achieve the planning objectives, and are developed with regard to the planning constraints previously identified (Section 2.3, Planning Objectives and Constraints). State and local sponsor objectives are essential considerations in the evaluation of alternative plans.

#### **3.1 Plan Formulation Rationale**

The formulation of alternative plans is based on a standard set of criteria. Each of the alternative plans must:

- be complete so that it provides and accounts for necessary investments or other actions to ensure the realization of the planned effects;
- be effective to alleviate the specified problems and achieve the specified opportunities;
- be efficient, demonstrating a cost effective means of alleviating the specified problems and realizing the specified opportunities;
- be acceptable by state and local entities and the public, and;
- be compatible with existing laws, regulations, and public policies.

Each alternative is considered on the basis of its effective contribution to the planning objectives, and the selection of a specific plan is based on technical, economic, and environmental criteria that allows for a fair and objective appraisal of the impacts and feasibility of alternative solutions.

Technical criteria require that the plan have the dimensions necessary to accommodate the expected vessel use, sufficient navigation area to provide for maneuvering of boats, and allow for development or continued use of shore facilities. All plans must contribute to navigational efficiency and be complete within themselves.

Economic criteria require that the benefits of the navigation improvement exceed the economic costs and that the scope of the project is such to provide maximum net benefits.

Environmental criteria require that the tentatively selected plan preserve and protect the environmental quality of the project area. This includes the identification of impacts to the natural and social resources of the area and the minimization of expected impacts that adversely affect the surrounding environment. It also includes the assessment of impacts that are incurred during the construction of the proposed navigation improvements and those activities attracted to the area after plan implementation.



## 3.2 Management Measures

Management measures can be identified and evaluated as the basis for formulating alternative plans to solve the navigation problems in Point Judith Pond. These management measures are categorized as either structural or non-structural.

Structural measures are those that involve the construction of features that would, to varying degrees, meet the planning objectives developed for Point Judith Pond. These include channel improvements such as deepening and widening existing channels, and extending channels to access additional port areas. Deeper channels would reduce or eliminate tidal delays and the risk of grounding. Wider channels would reduce or eliminate channel congestion and assist in maneuvering for facility access and egress. Channel extensions to newer port areas would provide both types of benefits for fishing boats based in those areas.

Given the limited nature of the improvements under consideration for this Section 107 CAP small navigation project more costly structural solutions such as relocation of port facilities to areas with deeper navigation access were not considered. The Galilee (east) side of the harbor, and the Jerusalem (west) shore already accessed by the existing 15-foot channel are now fully developed. Acquisition of private lands for public commercial port development in these areas would also be far more costly than channel modifications at Galilee.

Nonstructural measures involve those that would achieve the same planning objectives, but without resorting to structural improvements. An example of a nonstructural measure applicable to small fishing harbors involves the transfer of commercial fishing vessels to neighboring ports having capacity to sufficiently accommodate additional vessels at existing facilities. Another example of a nonstructural measure for a small fishing harbor would be use of tidal navigation to avoid dredging. These are discussed in the general consideration of alternatives below.

## 3.3 Analysis of Alternatives Considered

### 3.3.1 General Considerations and Non-Structural Alternatives

Navigation improvement alternatives were developed and analyzed during the early stages of the planning study. These alternatives included both structural measure (various dredging options) and nonstructural measures, including the possibility of transferring larger commercial fishing vessels to neighboring ports.

Fleet Transfer: The transfer of some of the larger fishing vessels to nearby harbors is contingent on the ability of these harbors to provide adequate protection, capacity, and efficiency of operation. It is not likely that any commercial operators would permanently transfer their vessel if other alternative sites does not have the capacity to provide adequate features and facilities. Point Judith is the state's largest fishing port, and the region's third largest. Point Judith has extensive berthing and offloading facilities, multiple fish/seafood processing plants and buyers, fueling and provisioning facilities, and shipyards for repair of vessels.

USACE planning efforts determined that harbors in the vicinity of Point Judith do not meet the necessary qualifications of an "adequate" fishing port. Nearby harbors, such as Wickford, Rhode Island, suffer from overcrowding and shoaling problems. Other ports cannot handle the potential influx of deep draft vessels due to their lack of adequate berthing space. Another major issue with transfer of portions of the fishing fleet to alternate ports is that none of the nearby ports have the service capability that is found for commercial boats at Point Judith. There are no fish processing facilities, provisioning facilities, or other shore support at these other harbors necessary for the size of the fishing fleet and boats operating from Point Judith. The Port of Galilee alone in southern Rhode Island presently provides the fishermen with the best offloading and fish processing facilities in the area. The closest port that could meet the service and facility needs of Point Judith's commercial fishing fleet is New Bedford Harbor, MA, which is 70 miles by highway and 45 miles by sea from Point Judith; too great a distance to be practicable.

Tidal Navigation: Tidal navigation is presently practiced by most of the fishing fleet at Point Judith. Larger fishing boats in particular must pay close attention to the tides which vary throughout the day, month and year. New England experiences a semidiurnal tide; in general there are two high tides and two low tides every 24 hours and 50 minutes. The highs and lows (and therefore range of the tide) can vary considerably from one tidal cycle to the next. Experienced fishermen understand the tides in the areas they operate in and pay attention to the tide charts. Even so, the effects of storms, waves, swells, surges, currents, winds and other factors all contribute to uncertainties in navigating shallow coastal waters and harbors. Groundings can occur when deeper draft boats are operated without sufficient underkeel clearance to account for these conditions and the effect on a boat's hull in the water and sail area (cross section exposed to the wind) above the water.

Fishing boats leave the harbor loaded down with provisions, ice, fuel, and bait, and return to the harbor loaded down with catch on ice. When loaded draft, plus a reasonable underkeel clearance for sea and channel conditions, exceeds the available controlling depth in the channel, then groundings can occur. The only solution short of dredging is to delay the channel transit, which costs the boat time, and if inbound fuel and labor. Significant delays inbound can result in spoilage of catch and reduction in the ex-vessel value of the catch.

At Point Judith the state Sponsor and the commercial fleet have requested the USACE to examine channel improvement, including deepening and widening to alleviate tidal delays and groundings. Further reliance by the fleet on tidal navigation would fail to address the problems experienced by the fleet.

### **3.3.2 Structural Alternatives**

The Port of Galilee has made improvements to benefit commercial interests to the North Basin area, located between the West Bulkhead and Little Comfort Island, and is extensively developed. A tidal flat links the main pond to Bluff Hill Cove. A channel extension into the North Basin would provide necessary access to the state constructed docks. Improvements to the east branch channel would provide easier access to the offloading facilities and docks that were added to the West Bulkhead.

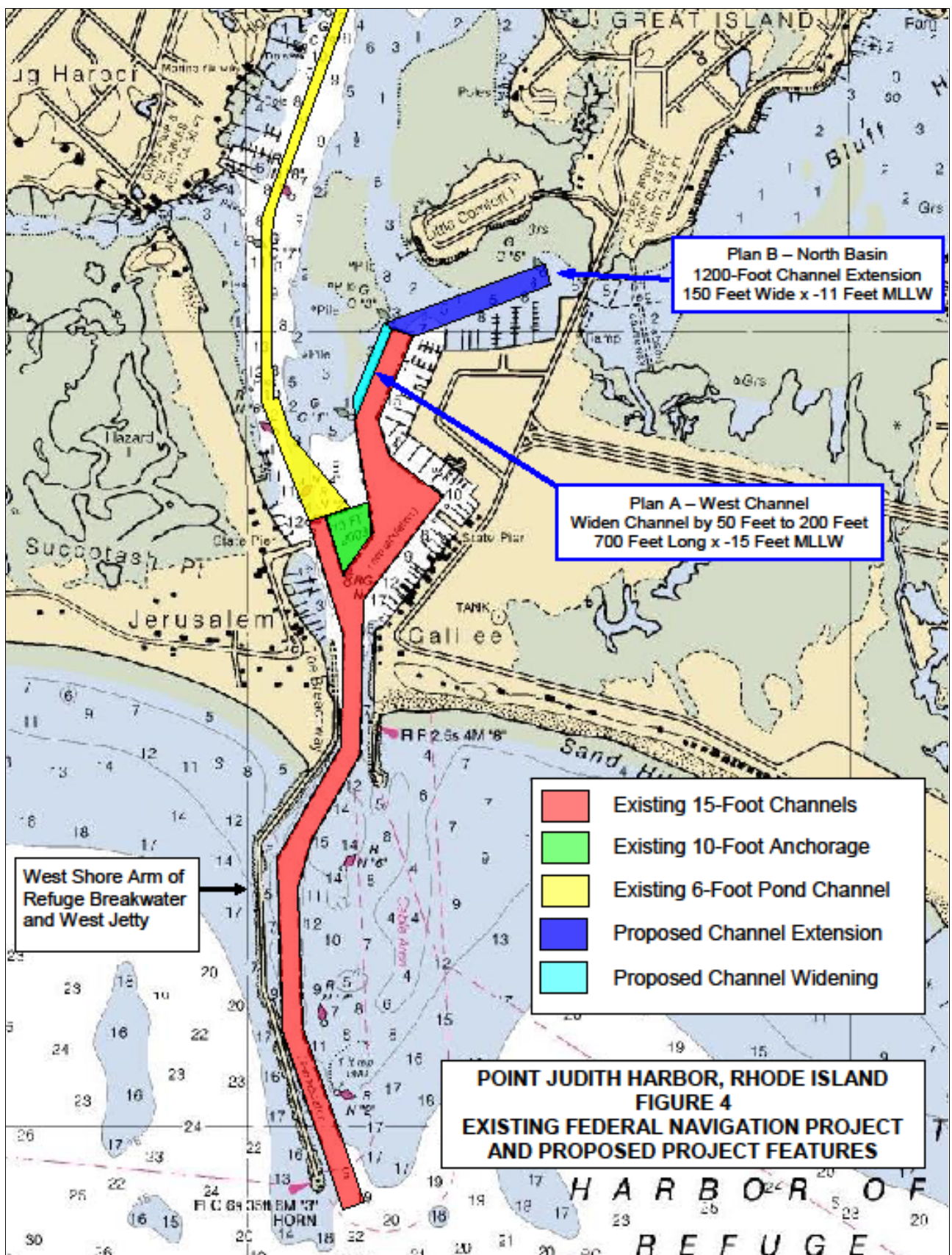
Three reasonable alternatives for navigation improvement were analyzed in this study to meet these planning considerations and includes a Plan A, Plan B, and a combined Plan A and B. Figure 4 shows the location of the alternative plans. Two additional alternatives were evaluated and eliminated from further consideration (see Section 3.4).

**(1) Plan A – West Bulkhead Expansion** – This preferred alternative for navigation improvement near the West Bulkhead proposes to widen the existing 15-foot deep channel from 150 feet to 200 feet. This alternative supports the State of Rhode Island’s development and management of the Point Judith area. Based on the vessel size and the amount of congestion in the area it was determined that widening the channel by 50 feet would provide proper clearance for these large vessels to maneuver to the berths, the offloading docks, and around other vessels. The West Bulkhead area has been the focus of development by the State of Rhode Island. The State replaced an outdated dock with a larger one that provided an offloading and berthing area for 20 deep draft vessels. The construction of this dock displaced 36 smaller boats that were relocated to facilities in the North Basin.

The deeper draft vessels continue to encounter navigational difficulties in the east branch channel opposite the West Bulkhead. These navigation problems are evidenced by the grounding and tidal delays experienced by boats attempting to access this area. The largest class of offshore fishing vessels berthed along or offloading at the west bulkhead have lengths of up to 95 feet. For safe turning into and from the slips and berths these boats would require at least 150 feet of clear channel width, or about 1.5 times their length, for safe turning and maneuvering, and yet boats still ground on the opposite bank with the current 150-foot channel width when attempting to turn with the tide running. The channel is heavily used by boats accessing the west and north bulkheads so additional width to maintain traffic flow is also required. One-way traffic for smaller boats accessing the north basin area to pass while larger boats are maneuvering would add 50 to 60 feet (about three times their average vessel beam of 16 to 20 feet) to the safe channel width. After consulting with the port operators and vessel owners it was determined that a 200-foot channel width along the west bulkhead would be adequate to resolve the present problems.

Depths of 12, 13, 14, and 15 feet were evaluated to aid in determination of the USACE tentatively selected plan. This alternative provides the dimensions necessary to accommodate the expected vessel use at the West Bulkhead and allows for sufficient area for maneuvering boats, and accommodates the need for continued use of shore facilities. It does not meet the need for access to the North Basin berthing areas. Quantity estimates for Plan A are shown below in Table 1 in cubic yards (CY).

**(2) Plan B – North Basin Extension** – The preferred alternative for navigation improvement into the North Basin proposes to dredge a new channel 11 feet deep and 150 feet wide. The North Basin has been the focus of development by the State of Rhode Island. There are five permanent docks that provide berthing space for smaller fishing and recreational charter and party boats. The State has extended the bulkhead area and two piers to accommodate 68 additional boats. The USACE proposed improvement plan consist of dredging a Federal channel into this area to provide access to these piers.



For safe, two-way traffic to occur, a channel width of 150 feet is needed based on the size of the vessels that use this area. This improvement alternative also includes dredging the channel to a depth that allows for safe under-keel clearance based on the squat, pitch and roll of these vessels. Five channel depths of 8 to 12 feet, were evaluated to determine the most economical configuration. This alternative provides the dimensions necessary to accommodate the expected vessel uses for the North Basin where there currently is none. It allows for sufficient area for maneuvering boats, and accommodates the need for continued use of shore facilities. It does not meet the need for access to the West Bulkhead berthing areas. Quantity estimates for Plan B are shown below in Table 1.

**(3) Plans A & B Combined – West Bulkhead Expansion & North Basin Extension** - This combination of the preferred alternatives for widening the FNP near the West Bulkhead and extending the channel into the North Basin involves widening by 50 feet the existing 15-foot deep Federal channel opposite the West Bulkhead in Galilee, and extending this channel 1200 feet into the North Basin area at a depth of 11 feet and a width of 150 feet. This would provide the existing commercial fleet with safe access to existing docking areas, at all tidal stages, thereby increasing operational efficiency.

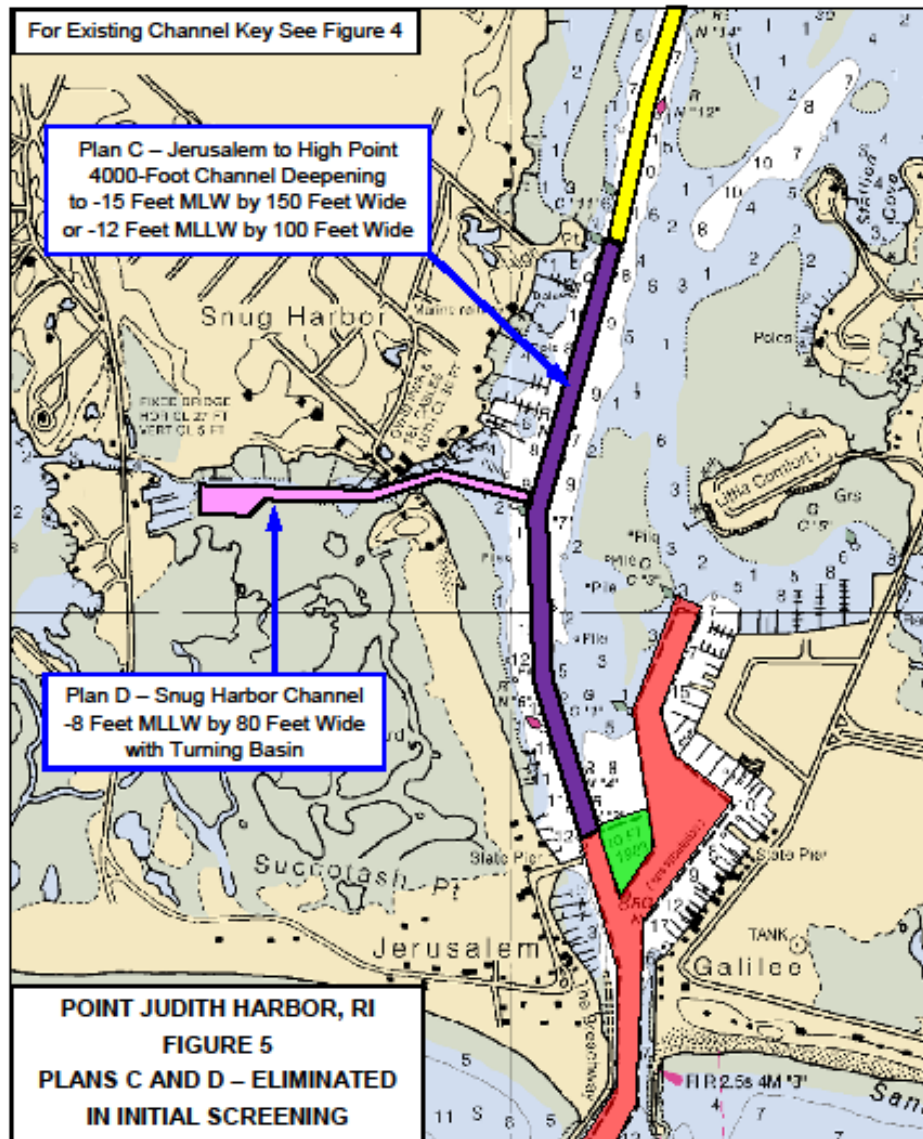
Table 1 – Quantity Estimates (in Cubic Yards) for Plans A and B			
Plan and Depth	Required Removal	Overdepth Allowance	Total Cubic Yards
West Bulkhead Channel Widening			
12-Foot Channel	1,600	1,000	2,600
13-Foot Channel	2,200	1,400	3,600
14-Foot Channel	3,600	1,600	5,200
15-Foot Channel	5,200	1,900	7,100
North Basin Channel Extension			
8-Foot Channel	1,600	2,000	3,600
9-Foot Channel	3,600	3,300	6,900
10-Foot Channel	6,900	4,300	11,200
11-Foot Channel	11,200	5,400	16,600
12-Foot Channel	16,600	6,300	22,900

### 3.4 Alternatives Considered and Eliminated From Further Analysis

Two other alternatives were initially evaluated to improve navigation within the project area but rejected from further analysis. These include alternatives to provide (1) improved channel access on the west side of the harbor in South Kingstown above the Jerusalem State Pier to High Point, and (2) to provide a channel into Snug Harbor in South Kingstown via the Gooseberry Inlet, a tributary of Point Judith Pond located between the Jerusalem State Pier and High Point. These two plans are shown in Figure 5.



**Plan C – Jerusalem – High Point Channel** – Originally identified as “Plan C” in the 1989 DPR, the Jerusalem High Point Channel alternative is an alternative with two depth options. The existing FNP provides for a 6-foot channel above the Jerusalem State Pier, generally 100 feet wide, extending about 3.8 miles northerly up the Pond to the village of Wakefield at the head of navigation. This plan would provide for a deeper channel from the Jerusalem State Pier, past Snug Harbor and up to High Point, a distance of about 4,000 feet, in order to access the boat yards and marinas that are mostly located above the Snug Harbor entrance. Channel dimensions of -12 feet MLLW by 100 feet wide, and -15 feet MLLW by 150 feet wide were considered in 1989 and briefly re-examined for this study.



The existing Federal channel for upper Point Judith Pond is 6 feet deep, making access difficult for the deep draft boats attempting to reach the repair facilities below High Point. These repair facilities generally have approach depths of 12 feet. Deeper draft boats



travelling above the Jerusalem state pier must make the transit at higher tide stages. To make the repair yards and marinas more accessible to the commercial fleet the 6-foot Federal channel would need to be deepened. The 12-foot deep option would provide safe passage for the inshore fishing fleet and for some of the offshore fishing vessels, and would require the removal of about 64,200 CY of material (1989 estimate). The 15-foot deep option would provide safe passage to High Point for the entire Point Judith commercial fishing fleet and would require the removal of about 179,100 CY of material (1989 estimate).

This plan was evaluated in the original project review and rejected from further consideration at this time because the benefits would be primarily recreational, accruing to the customers of the marinas below High Point and in Snug Harbor. Commercial benefits would be minor and involve reducing tidal delay for infrequent transits to the upper shipyards at High Point and Snug Harbor. Projects with primarily recreational benefits are not a priority for the federal government under the USACE's Civil Works programs.

**Plan D – Snug Harbor Branch Channel** – Another alternative originally considered in the 1962 report and 1989 DPR and rejected from further consideration upon initial screening in this study was to dredge a branch channel leading westerly off the Pond channel into Snug Harbor in South Kingstown via the Gooseberry Island Inlet with an anchorage/ turning basin at its upper end below the Succotash Road Bridge. There is no existing authorized Federal channel into Snug Harbor. However this project feature was authorized in 1962 as part of the multi-purpose hurricane protection and navigation improvement. That multipurpose project was never constructed and was deauthorized in 1976. For this analysis a channel depth of 8 feet was evaluated, the same as the 1962 project. The plan would also require deepening that portion of the 6-foot channel between the Jerusalem State Pier and the Snug Harbor entrance below High Point to at least 8 feet. In 1962 this improvement was estimated to require the removal of about 140,000 CY of material.

This plan of improvement was eliminated from detailed consideration because Snug Harbor does not provide berthing space and offloading facilities that are needed for commercial boats. Benefits to be gained would be almost exclusively recreational, accrued to the users and owners of the several marinas and residential docks that line Snug Harbor. As projects with primarily recreational benefits are not a priority for the federal government under the USACE's Civil Works programs, this plan was eliminated from further consideration.

### **3.5 Dredged Material Management Alternatives**

Appropriate suitable placement of the dredged material can impact project cost and engineering feasibility, due to the distance and location associated with the placement, special handling of the dredged material, the method of dredging required by the placement method, and the need for any containment or treatment of the dredged material. The material to be dredged at Point Judith is clean sand (see accompanying USACE 2020 Environmental Assessment (2020 EA), Section 6.2, Sediment Characteristics). A suitability determination was prepared based on sediment test results and was concurred in by the USACE, EPA and

the State of Rhode Island. Three reasonable alternatives exist for placement of the material: ocean placement, upland placement, and beneficial reuse of the material:

- Ocean Placement – The only available ocean placement site in Rhode Island is the EPA-designated Rhode Island Sound Disposal Site (RISDS). This site is approximately 10 miles southeast of Point Judith. This site is not the preferred placement site for this dredging project because ocean placement increases the overall project cost and has the disadvantage of removing sand from the littoral system. USACE policy is to maximize beneficial use of dredged material where appropriate and a closer location that allows for the material to remain in the littoral system through nearshore placement is the best placement option.
- Upland Placement – An upland dewatering site behind Escape Road has been used for material placement in past improvement and maintenance dredging efforts. The material was hydraulically pumped to the site and dewatered and then trucked offsite to be used for upland fill. This option is a constraint because this site would not accommodate the amount of material to be dredged and there are negative environmental impacts from the removal of the sandy material from the littoral system. Further, a portion of this site has been restored to salt marsh, and much of the remainder is now used for parking.
- Beneficial Use – The project provides opportunity to evaluate beach nourishment and nearshore placement. These are considered actions that provide beneficial reuse of the dredged material and are generally considered to have positive environmental benefits and generally have the least adverse effects from the proposed navigation improvement. Two nearby beaches, East Matunuck State Beach to the west of the Breachway and Roger Wheeler State Beach to the east of the Breachway, are potentially available to accept sandy dredged material. The beaches off of the Matunuck shore to the west of the project are also candidates to receive the dredged sand as beach nourishment but require a longer distance to pump the material (up to three miles). The addition of booster pumps add significant cost increase to the project. The closest nearshore placement option is about two miles west of the Point Judith Breachway and offers a significant benefit to the project. The site was used in 2009 and 2010 for the placement of sandy material from maintenance dredging of the existing project.

### **3.6 Results of Initial Screening of Alternatives**

The four plans address the planning objectives in varying ways. While all four plans would improve navigation safety, reduce tidal delays and channel congestion by providing improved channel dimensions, only two of those plans, A and B, which improve access to the facilities on the Galilee side of the harbor, have significant benefits to the commercial fishing fleet. Plans C and D which improve the Jerusalem side of the Harbor and Snug Harbor have primarily recreational benefits and have little benefit to the commercial fleet. Only Plans A and B address the planning objectives.

The four plans are each complete within themselves. No additional work is required for any plan to generate its evaluated benefits relative to the without-project condition. Plans A and B

are effective in that they meet the planning objectives while also yielding net economic benefit for the commercial fishing fleet. Those two plans are efficient in that increment depth optimization has identified the channel depths for each that produce the maximum net benefit. Beneficial use of the dredged sand from each plan also contributes to effectiveness and efficiency. Plans A and B are acceptable to the state Sponsor, local community, port users, and regulatory agencies as they contribute to the viability of the commercial fishing industry and maximize beneficial use of the dredged material for nourishment purposes.

Plans C and D are not effective or acceptable, as they do not address the needs of the commercial fishing fleet at Point Judith. Those two plans are also not efficient as they fail to yield sufficient commercial navigation benefits to justify further consideration.

### **3.6.1 System of Accounts**

The Principals and Guidelines for Water and Related and Resource Implementation Studies (P&G) require all studies to consider the impact of various alternatives with respect to four accounts, National Economic Development, Environmental Quality, Regional Economic Development and Other Social Effects.

National Economic Development (NED): Plans A and B both produce net NED benefits (benefits greater than the costs of the improvements) by contributing to improvement in the efficiency of navigation. Combining those two plans maximizes net NED benefits. Plans C and D do not produce net commercial NED benefits.

Environmental Quality (EQ): All four plans involve dredging to improve navigation access and would beneficially use the dredged material for nourishment of nearshore feeder bars located off eroding beaches. Dredging results in disturbance to the harbor bottom and a temporary loss of benthic biota and other minor impacts. Placement of the dredged material will bury benthic biota in the nearshore placement site. All of these impacts will be temporary and are not considered significant. Beneficial use of the dredged material keeps sand in the littoral system and is preferred over placement in ocean placement sites.

Regional Economic Development (RED): The benefits of port infrastructure improvements typically extend beyond the NED benefits which are measured on the vessel and at the dock in terms of operational efficiencies (crew time, fuel, repairs, etc.), costs of transporting cargo and passengers, and changes in ex-vessel value of catch landed. More economic activity on the water generally means more activity shore side for provisioning ships, servicing ships, offloading and processing, marketing, buying and transporting catch, operating and maintain shore facilities, operating the port, and other activities. These are examples of the RED benefits that could be expected to accrue to the region from harbor improvements. All of the plans considered would yield RED benefits, as all would improve the efficiency of navigation. But only Plans A and B could be expected to generate sufficient RED benefits to justify their cost with respect to commercial navigation, as only these plans address the needs of the commercially developed port areas. Plans C and D would principally benefit existing recreational facilities which would be able to service deeper draft pleasure craft with the deepened channels to High Point and into Snug Harbor.

Other Social Effects (OSE): Other Social Effects include those that extend beyond economic development and environmental quality to include impacts to the community, human health and safety, energy conservation, and cultural resources impacts. Those working in the fishing fleet, those who provision and service the boats and shore facilities, and those who process, transport and distribute their catch are members of the community to which their employment contributes. Infrastructure improvements that improve the efficiency of port operations and navigation safety will have a positive effect on the community as a whole. Improving safety of vessel and port operations, and helping to ensure timely delivery and freshness of catch contribute to human health and safety. Dredging of clean sandy material and beneficial use of that material for nourishment of nearshore feeder bars, as concurred in by EPA and the state, would not have any adverse effect on human health and safety. Improving navigational efficiency would contribute to energy conservation by saving the fishing fleet at sea time and fuel.

The results of cultural resource investigations and coordination with state and tribal cultural resource officials have concluded that dredging and dredged material placement under Plans A and B will have no significant impact on historic or archaeological resources.

## **4 COMPARISON OF DETAILED PLANS**

### **4.1 General Comparison**

There are three alternatives to improve navigation within the Federal channel and consists of a Plan A, a Plan B, and a combined Plan A & B. Table 2 summaries the three alternatives and the expected results from implementation with respect to the project purpose and need. Each differs in benefits, costs, and the amount of material dredged and are discussed in this section. Figure 4 shows the locations of the proposed alternatives Plan A and Plan B.

Combining Plans A and B would provide enhancement to the non-Federal work completed in Galilee. Subsurface analysis indicates that the removal of rock or ledge is not required for any plan evaluated. The dredged material for Plan A and Plan B is clean sand suitable for beach or nearshore bar nourishment. The material would be placed at one of two previously used nearshore bar placement sites off Matunuck Beach or Moonstone Beach, both located west of the inlet, approximately 2.5 and 3.5 miles respectively. These sites have been used in the past for placement of material from the maintenance dredging of the existing FNP.

Preliminary screening of the several alternatives and depth options was carried out to determine the optimal depth for each and the combination of alternatives that would yield the greatest net economic benefits. This analysis is summarized here and described in greater detail in Appendix C – Economic Assessment. Cost estimates for each depth increment of each alternative and each combination of alternatives were prepared in October 2017. Annual costs of each increment and combination were compared to the annual benefits estimated for each based on FY18 (1<sup>st</sup> Quarter) price levels and interest rates. This preliminary screening optimization is shown below in Table 3 and in Appendix C.

<b>Table 2</b> <b>Description of Navigation Improvement Plans for Point Judith Pond, RI</b>		
	<b>Proposed Action</b>	<b>Resulting Project Condition</b>
<b>Plan A West Bulkhead Expansion</b>	Widens the upper reach of the existing 150-foot wide Federal channel by 50 feet (to 200 feet wide), opposite the West Bulkhead in Galilee.	Provides the necessary channel width for the larger commercial vessels to overcome tidal delays, and avoid groundings on the western side of the channel only.
<b>Plan B North Basin Extension</b>	Extends the existing 150-foot wide Federal channel, opposite the West Bulkhead in Galilee, into the North Basin area to reach new berthing and offloading facilities constructed by the State of Rhode Island.	The channel would be 150 feet wide and 11 feet deep, and extend about 1,200 feet into the North Basin area to allow access to berthing areas for deeper draft vessels.
<b>Plans A &amp; B Combined</b>	Combines Plan A widening of the upper reach of the existing 150-foot wide Federal channel by 50 feet (to 200 feet wide), opposite the West Bulkhead in Galilee, and the Plan B extension of the existing 150-foot wide Federal channel opposite the West Bulkhead in Galilee into the North Basin area to reach new berthing and offloading facilities.	Provides for adequate navigational access to the improved on-shore facilities that support the regional fishing industry.

In total for the three alternatives, 29 different variations of channel depths and combinations were compared to determine which variation would optimize net economic benefits and be the Feasibility level Selected Plan, pending review of potential environmental effects and public review. The numerous variations included widening the West Bulkhead in 1-foot increments from 12 feet to 15 feet deep, extending the North Basin in 1-foot increments from 8 feet to 12 feet and all possible combinations of these increments. At this level of analysis of the variations, several assumptions were made to evaluate the projected costs. These assumed:

- Mobilization and Demobilization were estimated based on a distance of 400 miles.
- Abbreviated Risk Analysis utilized in the project development stage resulted in contingencies of 32% for construction, 14% for PED, and 18% for S&A.
- Initial Planning, Engineering, and Design (PED) and Supervision and Administration (S&A) amounts were 10% and 4%, respectively, of the contract cost.



Table 3 – Preliminary Screening and Optimization of Alternatives		
Alternative and Depth Increment	Net Annual Benefits	Benefit-Cost Ratio
West Bulkhead Widening – 12 feet	\$32,427	1.61
West Bulkhead Widening - 13 feet	\$41,989	1.77
West Bulkhead Widening - 14 feet	\$48,540	1.86
West Bulkhead Widening - 15 feet	\$48,729	1.83
North Basin Extension - 8 feet	\$176,649	4.01
North Basin Extension - 9 feet	\$266,606	5.19
North Basin Extension - 10 feet	\$297,091	5.22
North Basin Extension - 11 feet	\$309,652	4.95
North Basin Extension - 12 feet	\$300,401	4.43
West Channel 12 Feet – North Channel 8 Feet	\$253,530	4.76
West Channel 12 Feet – North Channel 9 Feet	\$343,387	5.74
West Channel 12 Feet – North Channel 10 Feet	\$373,971	5.73
West Channel 12 Feet – North Channel 11 Feet	\$386,533	5.44
West Channel 12 Feet – North Channel 12 Feet	\$377,282	4.92
West Channel 13 Feet – North Channel 8 Feet	\$263,091	4.84
West Channel 13 Feet – North Channel 9 Feet	\$352,949	5.80
West Channel 13 Feet – North Channel 10 Feet	\$383,533	5.78
West Channel 13 Feet – North Channel 11 Feet	\$396,095	5.49
West Channel 13 Feet – North Channel 12 Feet	\$386,844	4.97
West Channel 14 Feet – North Channel 8 Feet	\$269,642	4.80
West Channel 14 Feet – North Channel 9 Feet	\$359,599	5.74
West Channel 14 Feet – North Channel 10 Feet	\$390,083	5.72
West Channel 14 Feet – North Channel 11 Feet	\$402,645	5.45
West Channel 14 Feet – North Channel 12 Feet	\$393,394	4.94
West Channel 15 Feet – North Channel 8 Feet	\$269,831	4.69
West Channel 15 Feet – North Channel 9 Feet	\$359,689	5.60
West Channel 15 Feet – North Channel 10 Feet	\$390,273	5.60
West Channel 15 Feet – North Channel 11 Feet	\$402,835	5.34
West Channel 15 Feet – North Channel 12 Feet	\$393,684	4.86

Once a Selected Plan was identified, cost engineering further refined the analysis to better estimate project costs. The refined analysis assumed:

- Mob/demob distance of 200 miles resulting in a \$368,000 cost, adjusted based on review of similar sized dredge projects in New England over the last several years.
- Abbreviated Risk Analysis was revised to utilize the "Feasibility (Recommended Plan)" project development stage which resulted in contingencies of 27% for construction.
- PED and S&A amounts were refined to be 12% and 15%, respectively.

Based on preliminary screening, the west bulkhead channel widening at a depth of -15 feet MLLW and the north basin channel extension at a depth of -11 feet MLLW were chosen for detailed development. For the west bulkhead channel widening the difference in net annual benefits between the 14-foot and 15-foot channel depths was minimal. However as this segment of the plan is for widening of an existing channel, a one foot difference in depth would require some marking of the split in channel depth to prevent grounding of larger fishing boats at lower tide stages. The cost for the USCG or local interests to provide such aids to navigation was not included in the analysis. The 15-foot depth is the selected plan for the 15-foot channel widening. A description of the plan elements including the combined plan is provided below in Table 4.

<b>Table 4</b> <b>Point Judith Pond - Summary of Detailed Plans</b>			
Federal Plan Description	<u>Plan A</u> West Bulkhead Widening Alone	<u>Plan B</u> North Basin Extension Alone	<u>Plans A &amp; B</u> Combined
Channel Depth (Feet MLLW)	15	11	15 & 11
Channel Length (Feet)	700	1,200	700 & 1200
Channel Width (Feet)	50	150	50 & 150
Dredge Quantity (Cubic Yards)	7,100	16,600	23,700
Construction Duration (Weeks)	3	3	4

This final array of plans was carried forward for detailed development and evaluation. Cost estimates were updated and refined in March 2018, April 2019, and October 2019. The economic benefits of these plans and increments were again compared to the cost estimates to determine net outputs. This process is described in the following sections.

## 4.2 Project Costs

The costs and annual charges are directly related to the volume of material to be removed, increasing as the dredging depth increases. The 2018 estimates were reviewed and certified by the USACE Cost Engineering Center of Expertise in May 2018. This estimate was further updated by NAE to FY20 price levels using cost indexing. Construction costs presented are from the October 2019 update. Table 5 compares the construction and annual costs associated with each of the plans. The combined plan cost for Plan A and B together is less than the sum of the individual plans. The combined plan is able to spread the mobilization/ demobilization costs over the total of both dredging plans, which results in reduced total contingencies, and additional efficiencies in Planning, Engineering and Design (PED) and Construction Management (CM) costs over the sum of the separate plans. Each of the plans evaluated is small in scope to the point that PED costs are the same for all plans, as whether alone or combined all work would fit on a single drawing, have a single dredging line item, and result in no difference in the cost of design investigation or bid document preparation. Similarly the

minor nature of the improvements and the short construction duration result in CM costs that are the same for the three plans. The cost of CM activities from award through mobilization to arrival at the project site, and post-construction will likely be greater than actual inspection costs during dredging. The resulting total first cost of design and implementation is the amount cost-shared with the non-Federal Sponsor. No new aids to navigation would be required. Appendix E, Cost Engineering, provides a more detailed cost breakdown.

Annual costs include interest and amortization of the implementation cost plus the annualized cost of future increases in project operation and maintenance. Interest and amortization (I&A) is based on the interest rate for the current Federal fiscal year, 2-3/4 percent amortized over 50 years in the case of navigation projects, or a factor 0.03704. To compute I&A the cost of interest during construction must first be added to the project first cost. Construction of the project, given its limited scope and straightforward method is estimated to take about one month, increased to three to four months to cover mobilization and demobilization.

<b>Table 5</b> <b>Point Judith Pond – Costs of Detailed Plans</b>			
Cost MDX Certified May 2018 Price Levels Updated Oct 2019	Plan A West Bulkhead Widening Alone	Plan B North Basin Extension Alone	Plans A & B Combined
Mobilization/Demobilization	\$403,000	\$403,000	\$403,000
Dredging and Placement	\$214,000	\$511,000	\$716,000
Contingencies (29%)	<u>\$181,000</u>	<u>\$270,000</u>	<u>\$332,000</u>
Subtotal	\$798,000	\$1,184,000	\$1,451,000
Planning, Engineering and Design	\$237,000	\$237,000	\$237,000
Construction Management	<u>\$124,000</u>	<u>\$124,000</u>	<u>\$124,000</u>
Total First Costs	\$1,159,000	\$1,545,000	\$1,812,000
Construction Timeline (months)	3	3	4
Interest During Construction (IDC)	\$2,000	\$3,000	\$4,000
<b>Total Implementation Cost</b>	\$1,161,000	\$1,548,000	\$1,816,000
<b>ANNUAL COSTS</b>			
Interest & Amortization (0.03704)	\$43,000	\$57,300	\$67,300
Increased Maintenance Dredging	<u>\$7,300</u>	<u>\$17,400</u>	<u>\$24,300</u>
<b>Total Annual Charges</b>	\$50,300	\$74,700	\$91,600
Plan A - Widen the 15-foot West Bulkhead Channel by 50 feet to a total 200 feet for about 700 feet. Plan B - Extend the West Bulkhead Channel into North Basin at 150 feet wide by 11 feet deep for about 1,200 feet. IDC - Calculation of interest on the cost of construction over the construction period. Increase in annual cost of additional O&M dredging outside the existing Federal Navigation Project.			

The frequency of USACE navigation channel maintenance in the lower pond is not expected to increase with the construction of any of the proposed alternatives. Sedimentation has not been a major issue because of a strong flushing action in the lower pond. There have been only two maintenance dredging actions in the 40 years after the last USACE navigation improvement effort in 1977. These actions occurred in 2006-2007 and 2009-2010. A total of 67,516 CY of material were removed during these two actions. That represents an annual shoaling average of 2,046 CY over the 33 year period between 1977 and 2010. This equals 2.84% of the 1977 improvement volume of 72,000 CY.

The combined (A+B) plan of improvement would require removal of about 23,700 cubic yards. A shoaling rate equal to three percent of that amount annually would result in accumulation of about 710 CY each year, or about 14,200 CY every 20 years or 17,800 CY every 25 years. Any maintenance of the improved areas would occur concurrent with the existing FNP and is expected to utilize the same nearshore placement site.

### 4.3 Project Benefits

This section summarizes the benefits of (1) widening the West Bulkhead, (2) extending the channel into the North Basin, and (3) and combining the two plans and the various combinations of those two strategies. Table 6 summarizes the breakdown of annual project benefits for the three alternative plans providing varying degrees of commercial benefits to commercial boating interests. Commercial benefits were derived from reductions in congestion and tidal delays, including vessel damage cost, lost labor cost, increased fuel consumption cost and increased ordinary maintenance cost to the fishing fleet. Appendix C contains a discussion in greater detail and includes the annual benefits of Plan A by one foot channel depths between 12 to 15 feet and Plan B by one foot channel depths between 8 to 12 feet (see Table C-17 for alternatives screening which uses costs at FY18 price levels). Benefits in Table 6 below were updated to FY20 price levels.

Table 6 Point Judith Pond Annual Benefits of Detailed Plans			
COMMERCIAL BENEFITS	Plan A West Bulkhead Widening Alone	Plan B North Basin Extension Alone	Plans A & B Combined
Delays - Fishing Vessels	\$65,400	\$312,500	\$377,900
Delays – Charter Vessels	\$10,000	\$102,000	\$112,000
Grounding and Haul-out Cost Savings	<u>\$42,000</u>	<u>\$19,800</u>	<u>\$61,800</u>
<b>Total All Benefits</b>	\$117,400	\$434,300	\$551,700
Plan A - Widen the 15-foot West Bulkhead Channel by 50 feet to a total 200 feet for about 700 feet. Plan B - Extend the West Bulkhead Channel into North Basin at 150 feet wide by 11 feet deep for about 1,200 feet.			

#### 4.4 Comparison Summary

Table 7 provides a summary of annual project benefits compared to annual project costs for the alternative plans where Plan A widens the existing -15-foot MLLW West Bulkhead channel by 50 feet to a total 200 feet for about 700 feet and Plan B extends the existing West Bulkhead channel into North Basin at 150 feet wide by -11 feet MLLW for about 1,200 feet. Appendix C outlines the analysis in greater detail. Each project segment is separately justified based on a benefit-cost ratio greater than 1:1 and the combination of the two plans maximizes net annual benefits.

Plans A and B, and the combination of the two, have been developed consistent the USACE Environmental Operating Principals and in a manner which meets to goals of the USACE Campaign Plan with respect to water resources infrastructure and the civil works program. The plans have been formulated to meet the planning objectives for this project by improving the safety and efficiency of commercial fishing fleet operations at Point Judith Harbor. All dredged material would be used beneficially for nearshore feeder bar nourishment off area beaches promoting efficient use of public resources. Plans A and B also meet the plan formulation criteria of completeness, effectiveness, efficiency, and acceptability and are compatible with existing laws, regulations, and policies.

Plans A and B and their combination all produce net NED commercial navigation benefits, will have no significant impact on environmental quality, promote regional economic development through improved port operations, and have an overall positive impact from the perspective of other social effects.

Table 7 Point Judith Pond Projected Economic Impacts			
COMMERCIAL BENEFITS	Plan A	Plan B	Plans A & B Combined
	West Bulkhead Widening Alone	North Basin Extension Alone	
Annual Benefits (FY 2020)	\$117,400	\$434,300	\$551,700
Annual Costs (Oct 2019)	\$50,300	\$74,700	\$91,600
Net Benefits	\$67,100	\$359,600	\$460,100
<b>Benefits to Costs Ratio</b>	2.3	5.8	6.0

## 5 ASSESSMENT AND EVALUATION OF DETAILED PLANS

This section summarizes the analyses for the alternatives selected for detailed study based on their impacts on the environment, existing navigation, and social and cultural resources of the study area. The economic costs and benefits of project implementation have also been analyzed.

### 5.1 Environmental Impacts

The proposed Federal action has been reviewed under the authorities of the National Environmental Policy Act and all applicable Federal environmental laws, regulations, Executive Orders and Executive Memorandums. The NEPA analysis (see 2020 Final EA) outlines the expected impacts to habitats and environmental resources from dredging and at the placement sites. This section summarizes the expected environmental effects from dredging and placement of dredged material.

#### Dredged Material Suitability

The materials to be dredged have been sampled and tested for physical and chemical parameters and subjected to tier III biological testing. All materials have been found to be clean sandy and suitable for placement as nearshore feeder bar nourishment. This would avoid the higher costs associated with hauling the material to the Rhode Island Sound ocean disposal site further south of the project and would keep the sand in the littoral system. There are no questions of hazardous, toxic, or radioactive waste (HTRW) associated with the project. A Suitability Determination was prepared covering the sampling and testing process and results and determining that the material was suitable for the intended beneficial use (see Appendix J). The EPA and state have concurred in this determination.

#### Summary of Expected Environmental Effects of Dredging

Dredging would result in the removal of sub-tidal benthic habitat and temporary increases in turbidity. The loss of non-motile benthic organisms from the project area during dredging is unavoidable, however, the area would likely be recolonized by similar species within a matter of months. Motile species such as lobsters, crabs and finfish should be able to avoid the area during dredging operations and are expected to return after the dredging is finished. Dredging will be scheduled between October 1 and January 31, to avoid impacting marine resources (winter flounder). No significant impacts to Submerged Aquatic Vegetation is anticipated as a result of the proposed project. Lobster resources inhabiting the channel jetties and rocky nearshore habitats of Point Judith Pond and shellfish in the pond should not be significantly impacted by the project. No significant shellfish beds are located in the area proposed to be dredged. Temporary short-term impacts to fish resources in the project area are anticipated but not considered significant.

Sediments in the North Basin are finer than those in the West Bulkhead channel area and have a greater turbidity generating potential. The small size of the project and use of the hydraulic dredge however, minimizes the potential for turbidity impacts. Deepening and widening the North Basin has the potential to increase tidal flushing in the area of Bluff Hill Cove. The West Bulkhead plans should not affect the current hydrodynamics of these areas. The NEPA



review of the proposed project provides additional information on the projected impacts of construction at the dredge sites.

#### Summary of Expected Placement Impacts

The closest nearshore placement option is located off of the Matunuck shoreline and is about two miles east of the Point Judith Breachway. The site, located to the west of East Matunuck State Beach, was used in 2009 for the placement of sandy material from maintenance dredging. The site was selected over other nearshore locations because the beach areas directly inshore from the site experience substantial erosion and because the littoral drift of sand is from west to east. Placement in the feeder bars offshore of this beach should provide some nourishment value to the beach as the spring and summer seas carry material back onshore.

No eelgrass is located in or adjacent to the nearshore site. Placing sandy material at the proposed nearshore placement site should not have significant long-term effects on the benthic communities at the site. No significant shellfish or lobster resources are located in the nearshore site. Direct impacts to fish resources at the nearshore placement site are expected to be minimal. Any fish in the vicinity of the placement site would be either expected to avoid the areas of disturbance, be smothered by the material, or be exposed to elevated turbidity for brief periods. Elevated suspended sediment levels should be short-term and localized to the placement site area since the material to be placed at the site is sand. Benthic organisms buried at the nearshore placement site will temporarily eliminate a forage area for fish. Recolonization by benthic species from adjacent areas and new recruitment is expected to occur in a relatively short period of time. The proposed dredging and nearshore placement of the sediment for sacrificial beach nourishment will occur during the period of October 1 through January 31. This window minimizes the presence of aquatic resources in the project area and takes advantage of the lower levels of natural, environmental stresses placed on species that may be resident in the work areas. USACE made the preliminary determination that the proposed project is not likely to adversely impact any state or Federally-listed threatened or endangered species. Several listed marine mammals may occur as transient species in the general area, but are unlikely to occur within the shallow depths of the dredging or placement areas.

#### Summary of the NEPA Evaluation - Finding of No Significant Impact (FONSI)

A NEPA evaluation (EA and FONSI) was prepared for the proposed action. A Clean Water Act Section 404(b)(1) Evaluation was also prepared. Based on the findings the District Engineer has determined that the environmental effects, as presented in the accompanying 2020 EA, for the improvement dredging of Point Judith Harbor is not a major Federal action significantly affecting the quality of the human environment. All comments received during the public review period have been considered. The FONSI will be finalized when signed by the District Engineer at the conclusion of all reviews and approval of the report.

## 5.2 Economic Impacts

The expected economic impacts from construction and operation of the alternatives were evaluated by determining costs and benefits. The cost estimates and annual costs, listed in Table 5 and described fully in Appendix E are based on several factors including the quantity and type of dredged material, mobilization and demobilization costs, equipment costs, project design (engineering and supervision) and administrative costs and contingencies. Charges for interest during construction (IDC) are based on varying construction durations and are computed for the purpose of comparing benefits to costs. IDC charges are not included in the cost apportionment.

Costs and benefits are based on a 50 year evaluation period, starting in 2022, and presented in annual terms using the FY20 Federal interest rate for water resources projects of 2-3/4 percent. The benefits of the proposed plans of improvement have been based on the following assumptions (see Appendix C for descriptions):

- Elimination of tidal delays would result in decreased labor and fuel costs for harvest of the existing catch.
- Increasing the channel depth and length would reduce grounding damage and provide maneuverability and access to existing as well as new facilities built by the state and local interests.

For the widening of the 15-foot west bulkhead channel reach, net annual benefits between the incremental depths increased only several hundred dollars foot by foot, declining as depths increased. This is due to the numbers of ships in each class decreasing as ship size increases. A closer examination required sensitivity analysis which examined increasing or decreasing the anticipated benefits by 5 and 10 percent, and by examining increasing the percentage of the fleet that would benefit from the channel improvements. In all cases the 15-foot channel depth for the widened segment consistently produced the greatest net annual benefits.

Further, from a practical and navigation safety view, widening a 15-foot channel at a depth shallower than 15 feet would not be optimal. To avoid groundings of longer ships the split depth would need to be marked by buoys at an additional initial and annual cost. Keeping the widened channel at a single depth would avoid those additional costs.

The benefits to the existing commercial fleet would occur immediately following the implementation of these improvements. The navigation improvements will not affect harvest rates or prices for the commercial fish market. There will be benefits resulting from a reduction in harvesting costs for the existing level of catch.

## 6 SELECTION OF A PLAN

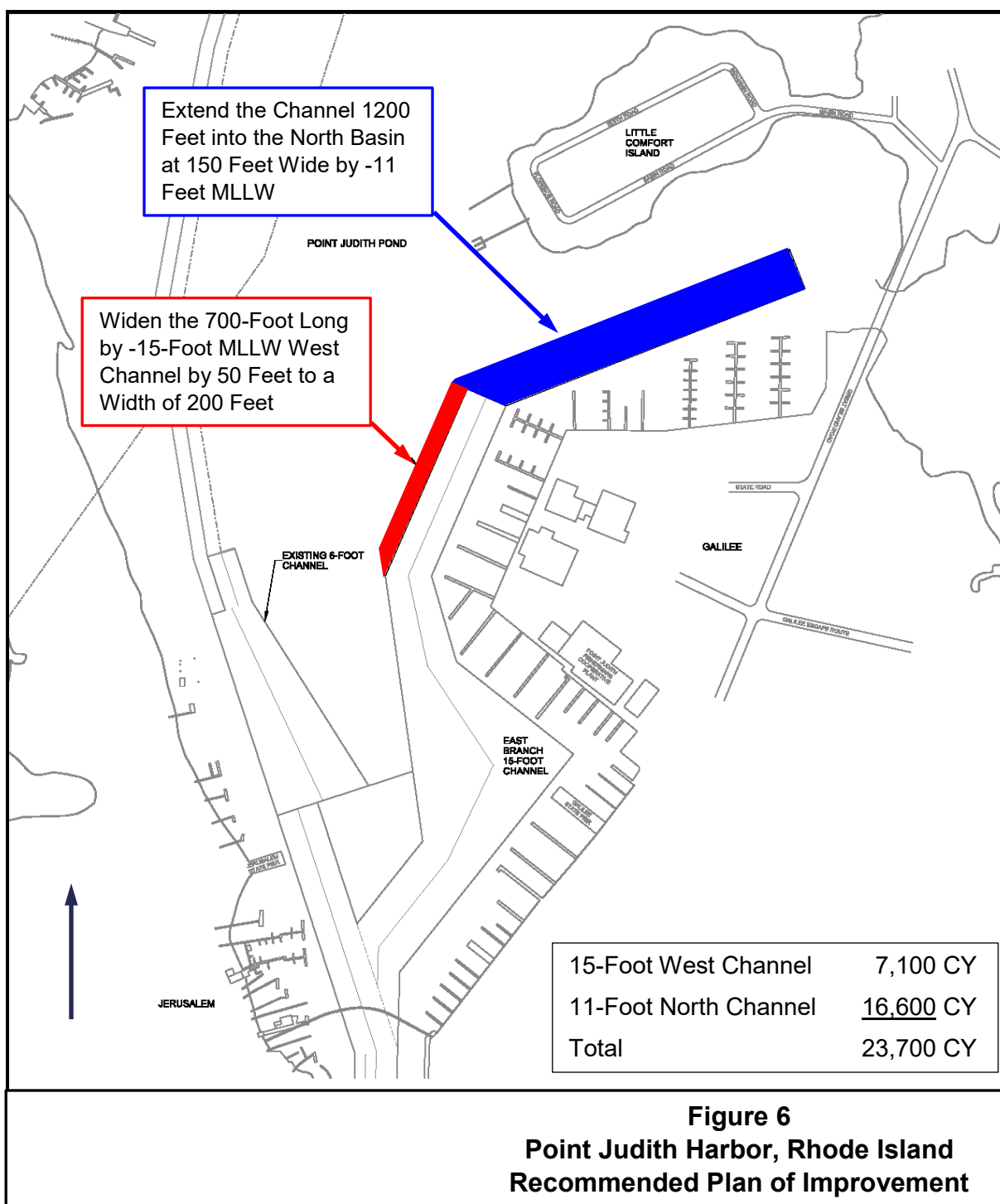
### 6.1 The Selected Plan

The Selected Plan for navigation improvements, shown in Figure 6, consists of combining Plan A and Plan B by dredging each improvement channel to the depths that provide the best benefits to costs ratio (BCR). The plan also complements the State of Rhode Island's improvement work at the Port of Galilee. The Selected Plan is based on consideration of economic efficiency, minimization of environmental impacts, navigational safety and the needs of state government and local stakeholders. The combination of Plans A & B result in the greatest net benefits, and is the preferred National Economic Development (NED) plan. This plan provides the most favorable improvement method for meeting the project objective of reducing navigation hazards and delays.

This plan would widen the -15-foot MLLW West Bulkhead channel to the west by 50 feet (to a total width of 200 feet) over a distance of approximately 700 feet, and then extend this same channel to the northeast approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of -11 feet MLLW. The project would involve the dredging of about 23,700 CY of material, of which 7,100 CY would be from widening the West Bulkhead channel and an estimated 16,600 CY from the expansion of the channel into the North Basin area. The dredging would be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel.

The dredged material from this navigation improvement project would be beneficially placed at one of two previously used near-shore bar nourishment areas, both located west of the Point Judith inlet. Sites offshore of either Matunuck Beach, 2 miles west, or Moonstone Beach 3.5 miles west would be used. Material would be placed at a depth of 15 to 18 feet MLLW. The dredging would be by mechanical dredge and scows able to operate in shallow draft areas in the channel and nearshore placement sites. USACE work estimates are based on a 10 cubic yard bucket dredge or excavator, two or more scows of about 500 CY capacity, and a tug to tow the scows to the nearshore bar nourishment sites. Small survey and workboats would also be used. All construction equipment would be waterborne plant. No onshore staging would be required. The contractor would be responsible for securing shore side access for personnel and fuel according to their specific needs.

All work at the dredging and placement sites would be subtidal within the waters of the United States. The 2020 EA that accompanies this report addresses in detail the expected impacts to the environmental resources in the project area that would be affected by dredging and placement. Section 5.1 in this report summarizes the expected environmental effects of the proposed action.



The total annual benefits in fuel and time cost savings for each project alternative are weighed against the costs of each alternative to determine the benefit-cost ratio. The benefit-cost ratio of each alternative is determined by dividing its total annual benefits by its total annual costs. A project is considered economically justified if it has a benefit to cost ratio of 1.0 or greater.

The alternative that maximizes net annual benefits, and with the greatest BCR is the alternative chosen for the National Economic Development (NED) plan. Over a 50-year analysis period, the Selected Plan is the NED plan based on the highest net annual benefits of \$460,100 and a benefit to cost ratio of 6.0:1 (at updated FY2020 price levels which take recent fuel prices and bidding climate into account).

Assuming that a Project Partnership Agreement (PPA) could be executed during FY 2020, and Federal and sponsor funds for project design and implementation were available in FY 2020, then design efforts would be carried out in FY20-FY21, and the earliest that a contract could be awarded for construction would be summer 2021 for work in the October 2021 – February 2022 dredging season. To provide a fully-funded estimate of project costs needed for budgeting by the Government and the sponsor, costs have been escalated to the mid-point of construction assumed as December 2021. Project design and implementation costs for the recommended combined plan in both the current fiscal year and at the fully-funded level are shown below in Table 8.

<b>Table 8</b> <b>Point Judith Harbor and Pond – Cost of Recommended Combined Plan</b>		
Cost MDX Certified May 2018 Price Levels Updated Oct 2020	Project First Cost Oct 2020	Fully-Funded Project Cost Dec 2021
Mobilization/Demobilization	\$403,000	\$417,000
Dredging and Placement	\$716,000	\$742,000
Contingencies (27%)	<u>\$332,000</u>	<u>\$336,000</u>
Subtotal	\$1,450,000	\$1,494,000
Planning, Engineering and Design	\$237,000	\$243,000
Construction Management	<u>\$124,000</u>	<u>\$128,000</u>
Total First Costs	\$1,812,000	\$1,865,000

## 6.2 Implementation Responsibilities

### Cost Apportionment

For harbor improvements with a design depth of 20 feet or less, local interests are required to provide cost-sharing of ten percent of the cost of design and construction up-front upon execution of a Project Partnership Agreement (PPA). The remaining 90 percent up-front share of the first cost of design and construction is the Federal contribution. A further additional non-Federal contribution of ten percent of the cost of design and construction is payable at the conclusion of construction and can be paid over a period of up to 30-years with interest. These cost sharing requirements are as specified in the Water Resources Development Act of 1986 (Public Law 99-662), as amended. Table 9 below provides the cost-sharing responsibilities for design and implementation of the Recommended Plan.

Table 9 Cost Apportionment for the Recommended Plan			
FY 2022 Price Levels	Total Fully Funded Cost	Federal Share	Non-Federal Share
First Cost of Design and Construction	\$1,865,000	\$1,678,500	\$186,500
Post-Construction Additional Contribution		-----	\$186,500
Total Cost Allocation	\$1,865,000	\$1,678,500	\$373,000

### **Federal Responsibilities**

The Federal government will be responsible for final design investigations, preparation of plans and specifications, contract advertisement and award, supervision and inspection of the work, and management during design and construction. The Federal government will be responsible for project compliance with Federal environmental laws and regulations, including the National Environmental Compliance Act (NEPA), consistency with the Coastal Zone Management Act (CZM), and compliance with the Clean Water Act (CWA). Federal responsibility includes only the dredging and future maintenance of the authorized Federal channels, and does not include any berthing facilities, shoreline protection, or site work at upland placement areas. State coastal zone management consistency concurrence and water quality certification would be requested early in the design effort when more detailed project drawings become available. RI CRMC, the state's coastal zone management agency is the project sponsor, and RI DEM the state's water quality certification agency is the port operator. Discussions with both state agencies indicate no significant issues exist with the timely issuance of the required state approvals for the project.

### **Non-Federal Responsibilities**

The following is a list of some of the items of local cooperation required for projects authorized under Section 107. The non-Federal sponsor must provide assurance that they intend to meet these items prior to project authorization. The Project Partnership Agreement (PPA) will detail these and other requirements of the Government and the Sponsor for implementation and future maintenance of the project.

1. Provide without cost to the United States, all necessary lands, easements, rights of way, relocations, and dredged material placement and borrow areas (LERRD) necessary for completing, inspecting, operating, maintaining, repairing, rehabilitating, or replacing the project. This project consists solely of dredged general navigation features and will be constructed using waterborne dredging plant and placement of the dredged materials will be in nearshore waters. The proposed FNP features cover an area of 5.04 acres, all of which is subtidal. This nearshore disposal site is also entirely subtidal. All work areas are subject to the Federal government's navigation servitude. Therefore no LERRDs are required from the Sponsor for initial construction. At this time it is assumed that future



operation and maintenance of the project will be accomplished in the same manner. However should different construction methods be used for future O&M Sponsor provision of LERRDs may be required.

2. Hold and save the United States free from all damages arising from construction, operation, maintenance, repair, replacement, and rehabilitation of the project, except for damages due to the fault or negligence of the United States or its contractors;
3. Assume full responsibility for all non-Federal costs associated with the project. Current law requires that the non-Federal sponsor provide at least 10 percent of the first cost of design and construction of General Navigation Facilities not exceeding 20 feet in depth up-front, and provide an additional 10 percent after completion of initial construction of the project.
4. Agree to be responsible for total project costs in excess of the Federal cost limit of \$10 million in accordance with Section 107 of the River and Harbor Act, as amended.
5. Not use funds from other Federal programs, including any non-federal contribution required as a matching share therefore, to meet any of the non-Federal sponsor's obligations for the project unless the Federal agency providing the funds verifies in writing that such funds are authorized to be used to carry out the project;
6. Provide, maintain and operate without cost to the United States, an adequate public landing open and available to use for all on an equal basis. The state pier and other state and municipal facilities around the harbor are adequate to satisfy this responsibility for both the existing FNP and for the recommended improvement.
7. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project lands, easements, and rights-of-way or the addition of facilities which might reduce the outputs produced by the project, hinder operation and maintenance of the project, or interfere with the project's proper function;
8. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, (42 U.S.C. 1962d-5b) and Section 101(e) of the WRDA 86, Public Law 99-662, as amended, (33 U.S.C. 2211(e)) which provide that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;
9. Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence are required, to the extent and in such detail as will properly reflect total cost of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local governments at 32 CFR, Section 33.20;
10. Perform, or ensure performance of, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands,

- easements, or rights-of-way that the Federal government determines to be necessary for the initial construction, operation and maintenance of the project;
11. Assume, as between the Federal government and the non-Federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way required for the initial construction, or operation and maintenance of the project;
  12. Agree, as between the Federal government and the non-Federal sponsor, that the non-Federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability;
  13. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended, (42 U.S.C. 4601-4655) and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for operation, and maintenance of the project including those necessary for relocations, the borrowing of material, or the placement of dredged or excavated material; and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;
  14. Comply with all applicable Federal and state laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled “Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army”; and all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.), and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c));

### **6.3 Risk Informed Decision-Making**

The Sponsor and the public must be informed of the risks associated with the formulation, evaluation and recommendation of a plan of improvement for Point Judith Harbor. While the comprehensive history of past Civil Works studies, improvements and maintenance in this harbor allow reasoned evaluation of proposed improvements, there will always be some level of risk, mainly dealing with project costs. The contingency risk analysis performed as part of the cost estimate sought to capture these risks and their potential impacts on cost and implementability. The following are some of the risks captured in the contingency analysis.

- With construction limited to late fall to mid-winter for environmental resource impact reasons, severe weather can play a role in construction delays when tugs towing scows cannot transit the coast to the nearshore placement site.
- While sediment sampling and subsurface investigations have shown all material encountered to be clean sand material, the work is in an area influenced by glaciation and characterized by ground moraine and outwash plain deposits. It is possible that

other materials such as gravel and small boulders will be encountered. These materials can be removed by the mechanical bucket dredge plant that would be used to dredge the project features and can be placed in the nearshore site, but may slow production somewhat if encountered.

- Point Judith is a large active commercial fishing port and debris, such as discarded cables, containers, broken traps and other gear are sometimes encountered in dredging operations. This material can also be readily removed by a bucket dredge and dredging specifications typically contain provisions specifying upland placement of such materials. The risk is that when encountered in significant quantity such debris can slow production. Design phase activities for the project will include additional side-scan or multi-beam surveys that will identify the presence and nature or any such debris.
- The economic benefit of this project has been measured in improved efficiency of vessel operations – fuel and labor savings, reductions in vessel damages, etc. Point Judith is an active stable port which has long held its place as a regional leader in ships, catch volume and catch value. Any risk that the projected benefits will not be achieved is low.
- Availability of competent responsive bidders can be an issue when funding for such small projects regionally in a particular year results in more work being advertised than the dredging industry can accommodate. In some years more remote small projects have failed to attract any responsive bidders. Given the low level of funding in the past several years for small harbor projects, and Point Judith's southern New England location, a lack of responsive bidders is not expected to be an issue for this project.
- Knowledge of potential environmental resource impacts from marine construction projects and the concern given species can change over time. If significant time passes between completion of the feasibility phase and project construction, then it is possible that changing resource concerns could change the work window for the project or make mitigation of impacts necessary. New species could be listed as threatened or endangered, or additional habitat could be noted as critical for fisheries resources or climate change could result in a change in species in the project area. At this time coordination with Federal and State resource agencies has not shown any concerns of this nature.
- On rare occasions previously unknown cultural resources can be encountered during construction. In such cases coordination with state and tribal historic preservation officials is re-initiated. Documentation of any finds is a minimum requirement. Depending on the nature of the resource encountered work may be delayed at least in part while coordination is pursued. Research and site investigations made during this study indicate that the potential for such resources in the project area is low.
- Federal funding for small harbor maintenance has been difficult to budget in recent years. Though under current law maintenance of the Federal Navigation Projects is eligible for 100% Federal funding, the budget situation has delayed maintenance of these projects. In recent years the State of Connecticut and municipalities in Massachusetts have contributed funds for the maintenance of small harbors. While we

cannot predict the situation with respect to future Federal budgets, the Sponsor should be aware that delays in Federal funding may delay necessary maintenance dredging.

## **6.4 Conclusion**

USACE has evaluated the data for the proposed Federal plan for improving navigation at Point Judith Pond. USACE will review, evaluate, and consider the comments and views of interested agencies, stakeholders, and the concerned public regarding the alternative plans. The potential consequences of each alternative will be evaluated on the basis of engineering feasibility, environmental impact and economic efficiency.

We find substantial benefits are to be derived by providing the commercial fishermen with reliable and improved access to the facilities and berthing areas in Point Judith Pond. The proposed Federal action was considered individually and cumulatively under the provisions of the National Environmental Policy Act and the action was determined not to have significant effects on the quality of the human environment. The proposed action also incorporates the provisions for protection and ensures compliance with other Federal environmental laws, regulations, Executive Orders and Executive Memorandum such as, for example, the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Water Act, etc. The USACE has concluded the proposed navigation improvements would cause a temporary disruption of the environmental resources present in the construction work area and immediately adjacent during dredging operations and no significant long term effects are anticipated. Due to the significant benefits attributable to the commercial fishing industry, any effects are considered to be offset by the improvement and the resulting overall economic growth of the region.

The Recommended Plan, a combination of Plans A & B, would result in the greatest economic net benefits and is therefore the NED Plan. The Recommended Plan widens the existing -15-foot MLLW West Bulkhead Channel by 50 feet (to a total width of 200 feet) over a length of about 700 feet, and extends this same channel northeasterly about 1,200 feet into the North Basin area at a width of 150 feet and a depth of -11 feet MLLW. It is proposed to beneficially place the dredged sand in the nearshore feeder bars off of Matunuck State Beach about two miles west of the Point Judith Breachway.

## 7 RECOMMENDATION

The USACE recommends that the existing Federal navigation project at Point Judith Harbor of Refuge and Point Judith Pond, Narragansett, Rhode Island, be modified under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Recommended Plan identified in this Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

The recommendations contained in this report reflect the information available at this time and current USACE Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are authorized for implementation funding.

1 APR 2020

Date

*William M Conde*

William M. Conde  
Colonel, Corps of Engineers  
District Engineer

**ENVIRONMENTAL ASSESSMENT  
FINDING OF NO SIGNIFICANT IMPACT AND  
CLEAN WATER ACT §404(b)(1) EVALUATION**

**POINT JUDITH HARBOR  
NARRAGANSETT, RHODE ISLAND**

**SECTION 107 NAVIGATION IMPROVEMENT PROJECT**



**PREPARED BY:**

**Environmental Resources Section, Planning Division  
U.S. Army Corps of Engineers, New England District  
Concord, Massachusetts**

**March 2020**

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# **ENVIRONMENTAL ASSESSMENT**

## **1.0 INTRODUCTION**

The purpose of this Environmental Assessment (EA) is to present information on the environmental features of the project area and to review design information to determine the potential impacts of the proposed Point Judith Section 107 navigation improvement project and potential alternatives to the project. This Environmental Assessment describes project compliance with the National Environmental Policy Act of 1969 (NEPA) and all appropriate Federal and State environmental regulations, laws, and executive orders. Methods used to evaluate the environmental resources of the area include biological sampling, sediment analysis, review of available information, and coordination with appropriate environmental agencies and knowledgeable persons. This report provides an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404(b)(1) Evaluation requirements.

## **2.0 STUDY AREA**

The Point Judith Pond and Point Judith Harbor of Refuge Federal Navigation Project (FNP) is located on the southern coast of Rhode Island within the Towns of South Kingstown and Narragansett, Washington County (Figure EA-1). The area is bordered to the east by Narragansett Bay, to the west by the Towns of Charlestown and Richmond, to the north by the Towns of Exeter and North Kingstown, and the south by Block Island Sound and the Point Judith Harbor of Refuge. The Towns of South Kingstown and Narragansett are each composed of several villages. The village of Wakefield can be found at the northern end of Point Judith Pond, while the villages of Jerusalem and Galilee straddle the entrance to the Pond at the southern end.

## **3.0 PURPOSE, NEED, AND AUTHORITY**

The purpose of this report is to provide an assessment of the potential environmental effects of the navigation improvement project proposed for the FNP at Point Judith Pond and Point Judith Harbor of Refuge (Figure EA-2). The proposed work would widen the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and then extend this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet. An estimated 7,100 cubic yards (CY) of material would be dredged from the widening of the West Bulkhead channel and an estimated 16,600 CY from the expansion of the channel into the North Basin area. In total, approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed by scow in nearshore waters off of the Matunuck shoreline in South Kingstown, RI (Figure EA-3).

The Point Judith Pond and Point Judith Harbor of Refuge FNP provides access to and from the ocean for a significant number of commercial and recreational vessels. The villages of Galilee and Jerusalem contain most of the service facilities available for commercial and

recreational boating activities. Jerusalem contains docking space as well as a State built pier. Galilee also contains a State built pier, charter fishing vessels, port for the primary subsistence ferry to Block Island, commercial fishing vessels, U.S. Coast Guard station, and shore seafood processing facilities. The proposed project is needed to provide increased efficiency in the transiting of the FNP as well as safer conditions for vessels underway.

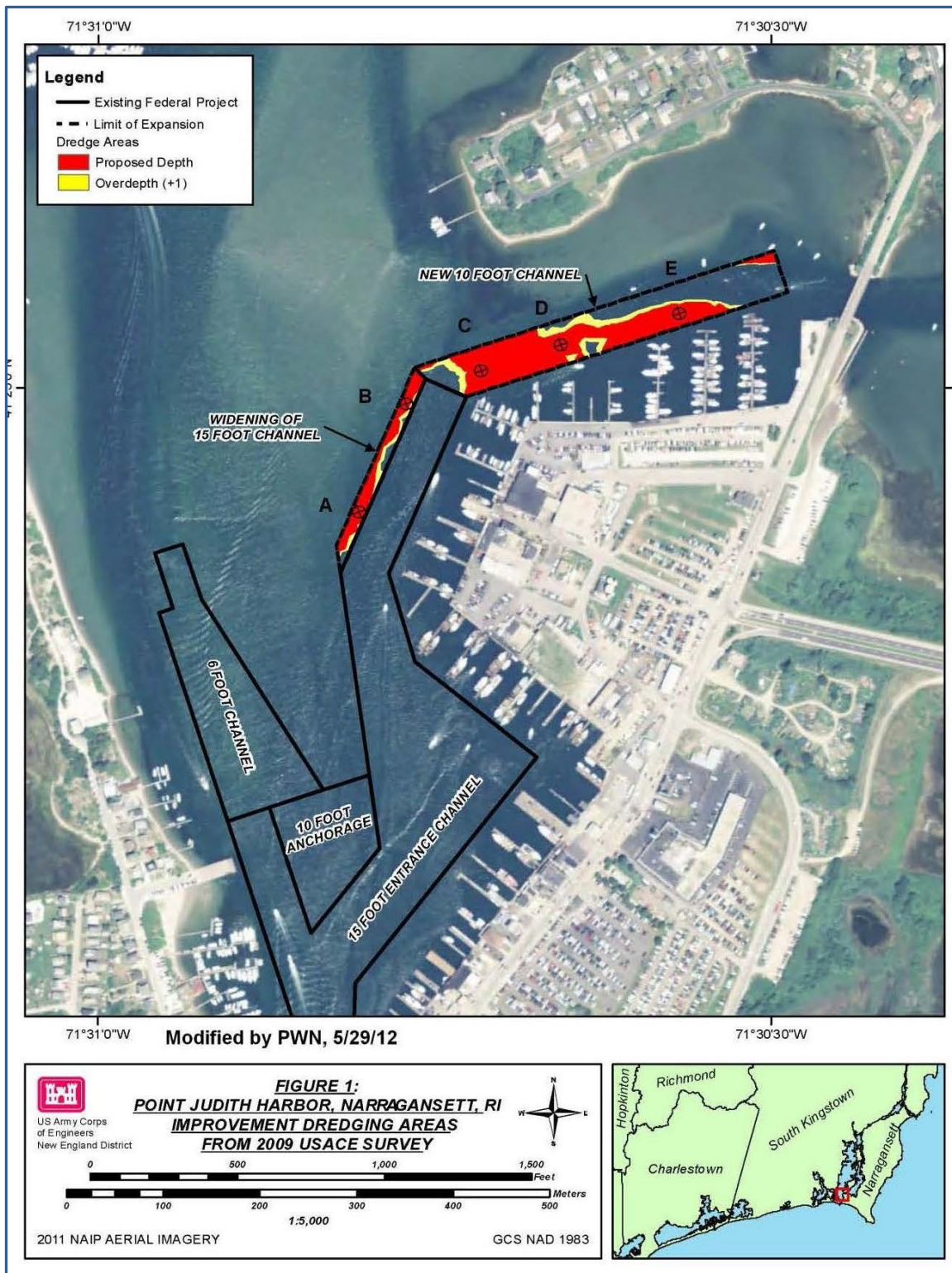
The Federally authorized project at Point Judith Harbor of Refuge and Pont Judith Pond was adopted by the River & Harbor Act of 1890, and further modified in 1892, 1902, 1905, 1907, 1910, 1919, 1948, 1961, 1962, and 1976. The authorized project consists of three breakwaters to create the Point Judith Harbor of Refuge, navigation channels and anchorage areas. The entrance channel begins on the inside of the West Shore Arm Breakwater in Point Judith Harbor of Refuge through the breachway and continues into the Pond and is 15 feet deep below MLLW, 150 feet wide, and is approximately one-half mile long before it splits into the west branch to the State Pier in Jerusalem and the east branch to the State Pier in Galilee. A 6.6 acre, 10-foot deep MLLW anchorage is located between the east and west branch navigation channels. The navigation channel continues north of the west branch and shallows to six feet deep MLLW and reduces in width to 100 feet. This channel continues for approximately four miles until it ends at a 0.6 acre, 6-foot deep MLLW anchorage in Wakefield. Since the original improvement, Point Judith Pond has been dredged several times. A summary of major improvements since 1950, conducted by the U.S. Army Corps of Engineers (USACE), are as follows:

- |             |   |
|-------------|---|
| 1950 – 1951 | Sand arresting works construction at the entrance to the pond by placing about 9,500 tons of stone. Dredged approximately 193,700 CY of material. |
| 1956        | Maintenance dredging of entrance channel and pond channel. Approximately 62,300 CY removed.   |
| 1959        | Maintenance dredging of approximately 62,500 CY of material.  |
| 1962        | Maintenance dredging for removal of 47,000 CY of shoal materials, restored to authorized 15-foot depth.   |
| 1971        | Maintenance dredging for removal of 19,800 CY of shoal materials restored authorized 15-foot depth.   |
| 1977        | Maintenance dredging for removal and side-casting of 72,000 CY of shoal material, restored to authorized 15-foot depth.                           |
| 2009        | Maintenance dredging for removal and near shore placement of 24,000 CY of shoal material, restored to authorized 15-foot depth.                   |

This Section 107 study is authorized under the continuing authority of Section 107 of the River and Harbor Act of 1960, as amended.

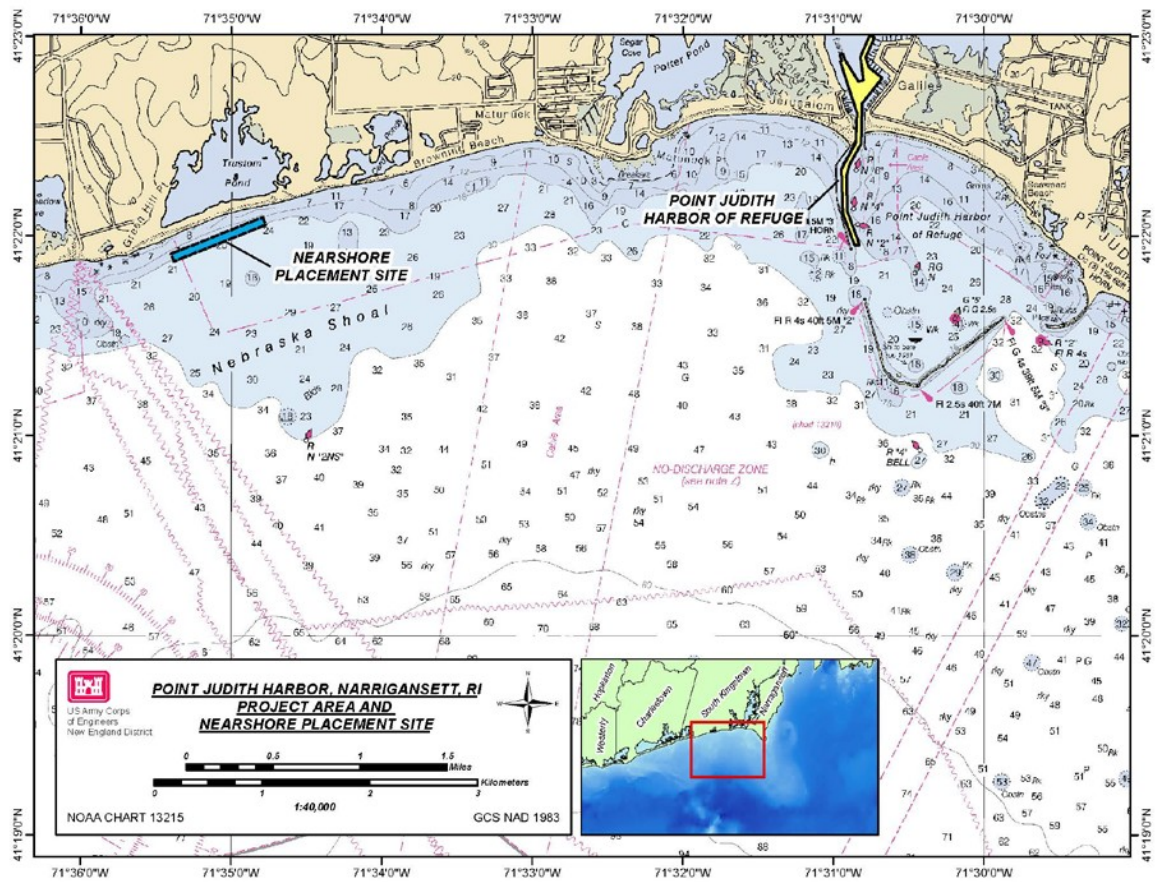






**Figure EA-2**  
**Proposed Improvement to the Point Judith Harbor of Refuge**  
**and Point Judith Pond Federal Navigation Project**





**Figure EA-3 – Proposed Location for Placement of Dredged Material from the Point Judith Harbor Navigation Improvement Project.**

## 4.0 PROJECT DESCRIPTION

The proposed project includes the widening of the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet. Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately two and a half miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of dredge material for beach nourishment. Construction will occur between October 1 and January 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete.

## 5.0 ALTERNATIVES

### 5.1 NO ACTION

The principal navigation issue at Point Judith is the lack of adequate access to the berthing and offloading areas for commercial fishing vessels. The Point Judith Pond commercial fishing fleet has maximized the available berthing and offloading space. The lack of appropriate unloading facilities has caused delays of up to 48 hours for some boats as they wait to unload their catch; resulting in excess labor and fuel costs. The need at Point Judith is to make modifications to existing channels and/or provide new channels to alleviate the commercial fleet's navigation problems. The larger, deeper draft vessels now utilizing Point Judith Pond as a base of operations must be better accommodated if the commercial operators at Point Judith are to continue to be competitive in the New England region fish industry.

If the federal government takes no action to improve the navigation capabilities in the Point Judith Pond area the existing commercial fleet will continue to experience delays, groundings and berthing difficulties reducing the efficiency of commercial fishing operations, and result in significant loss to the economy of the region and a reduced capability of the port to function for its intended purpose.

### 5.2 NON-STRUCTURAL ALTERNATIVES

Nonstructural measures involve those that would achieve the goals of the proposed federal action, but without resorting to structural improvements. In this case, the planning objectives include reducing the cost of commercial fishing and charter boat operations in Point Judith Pond, contributing to safer conditions for the commercial fishing fleet in Point Judith Pond, and reducing projected without-project tidal delays for commercial navigation.

USACE planning efforts determined that harbors in the vicinity of Point Judith do not meet the necessary qualifications of an "adequate" fishing port allowing them to serve as an alternative port for Point Judith. Nearby ports, such as Wickford, Rhode Island, suffer from overcrowding and shoaling problems. Other ports cannot handle the potential influx of deep draft vessels due to their lack of adequate berthing space. Another major issue with transfer of portions of the fishing fleet to alternate ports is that none of the nearby ports have the

service capability that is found for commercial boats at Point Judith. The Port of Galilee presently provides the fishermen with the best offloading and fish processing facilities in the area. The closest port that could meet this service is New Bedford, MA, which is 70 miles by highway and 45 miles by sea from Point Judith. The transfer of some of the larger fishing vessels to nearby harbors was considered on the ability of these harbors to provide adequate protection, capacity, and efficiency of operation. It is not likely that commercial operators would permanently transfer their vessel if the other alternative sites do not have the capacity to provide adequate features and facilities.

### 5.3 STRUCTURAL ALTERNATIVES

The Port of Galilee has made improvements to benefit commercial interests to the North Basin area, located between the West Bulkhead and Little Comfort Island, and is extensively developed. A tidal flat links the main pond to Bluff Hill Cove. A channel extension into the North Basin would provide necessary access to the state constructed docks. Improvements to the east branch channel would provide easier access to the offloading facilities and docks that were added to the West Bulkhead.

Three reasonable alternatives for navigation improvement were analyzed in this study to meet these planning considerations and includes a Plan A, Plan B, and a combined Plan A and B. Figure EA-4 shows the location of the alternative plans. Two additional alternatives were evaluated and eliminated from further consideration.

**(1) Plan A – West Bulkhead Expansion** – This preferred alternative for navigation improvement near the West Bulkhead proposes to widen the existing 15-foot deep channel from 150 feet to 200 feet. This alternative supports the State of Rhode Island’s development and management of the Point Judith area. Based on the vessel size and the amount of congestion in the area it was determined that widening the channel by 50 feet would provide proper clearance for these large vessels to maneuver to the berths, the offloading docks, and around other vessels. The West Bulkhead area has been the focus of development by the State of Rhode Island. The State replaced an outdated dock with a larger one that provided an offloading and berthing area for 20 deep draft vessels. The construction of this dock displaced 36 smaller boats that were relocated to facilities in the North Basin.

The deeper draft vessels continue to encounter navigational difficulties in the east branch channel opposite the West Bulkhead. These navigation problems are evidenced by the grounding and tidal delays experienced by boats attempting to access this area. The largest class of offshore fishing vessels berthed along or offloading at the west bulkhead have lengths of up to 95 feet. For safe turning into and from the slips and berths these boats would require at least 150 feet of clear channel width, or about 1.5 times their length, for safe turning and maneuvering, and yet boats still ground on the opposite bank with the current 150-foot channel width when attempting to turn with the tide running. The channel is heavily used by boats accessing the west and north bulkheads so additional width to maintain traffic flow is also required. One-way traffic for smaller boats accessing the north basin area to pass while larger boats are maneuvering would add 50 to 60 feet (about three times their average vessel beam of 16 to 20 feet) to the safe channel width. After consulting with the port operators and

vessel owners it was determined that a 200-foot channel width along the west bulkhead would be adequate to resolve the present problems.

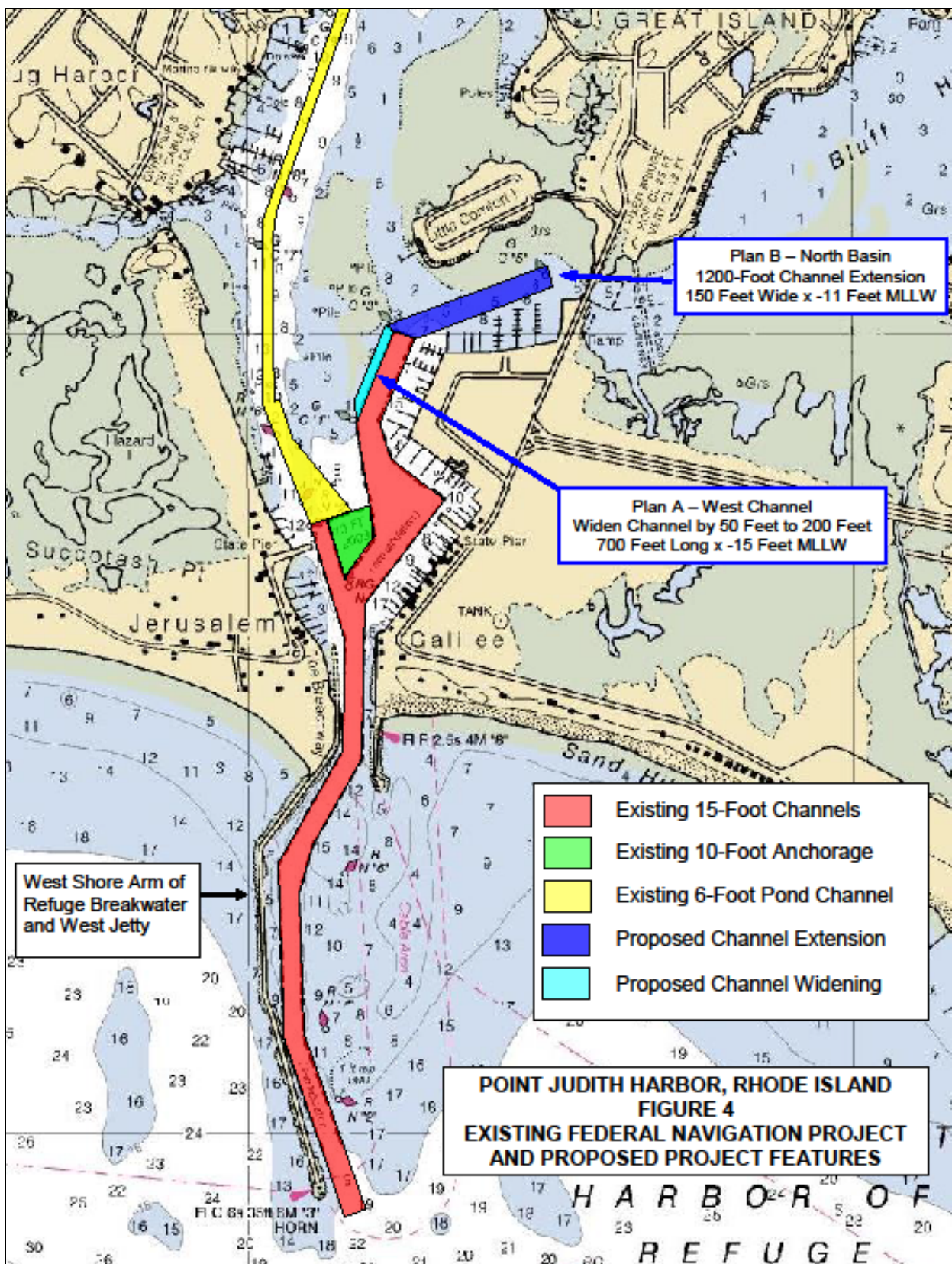
Depths of 12, 13, 14, and 15 feet were evaluated to aid in determination of the USACE tentatively selected plan. This alternative provides the dimensions necessary to accommodate the expected vessel use at the West Bulkhead and allows for sufficient area for maneuvering boats, and accommodates the need for continued use of shore facilities. It does not meet the need for access to the North Basin berthing areas. Quantity estimates for Plan A are shown below in Table 1 in cubic yards (CY).

**(2) Plan B – North Basin Extension** – The preferred alternative for navigation improvement into the North Basin proposes to dredge a new channel 11 feet deep and 150 feet wide. The North Basin has been the focus of development by the State of Rhode Island. There are five permanent docks that provide berthing space for smaller fishing and recreational charter and party boats. The State has extended the bulkhead area and two piers to accommodate 68 additional boats. The USACE proposed improvement plan consist of dredging a Federal channel into this area to provide access to these piers.

For safe, two-way traffic to occur, a channel width of 150 feet is needed based on the size of the vessels that use this area. This improvement alternative also includes dredging the channel to a depth that allows for safe under-keel clearance based on the squat, pitch and roll of these vessels. Five channel depths of 8 to 12 feet, were evaluated to determine the most economical configuration. This alternative provides the dimensions necessary to accommodate the expected vessel uses for the North Basin where there currently is none. It allows for sufficient area for maneuvering boats, and accommodates the need for continued use of shore facilities. It does not meet the need for access to the West Bulkhead berthing areas. Quantity estimates for Plan B are shown below in Table 1A.

**(3) Plans A & B Combined – West Bulkhead Expansion & North Basin Extension** - This combination of the preferred alternatives for widening the FNP near the West Bulkhead and extending the channel into the North Basin involves widening by 50 feet the existing 15-foot deep Federal channel opposite the West Bulkhead in Galilee, and extending this channel 1200 feet into the North Basin area at a depth of 11 feet and a width of 150 feet. This would provide the existing commercial fleet with safe access to existing docking areas, at all tidal stages, thereby increasing operational efficiency.





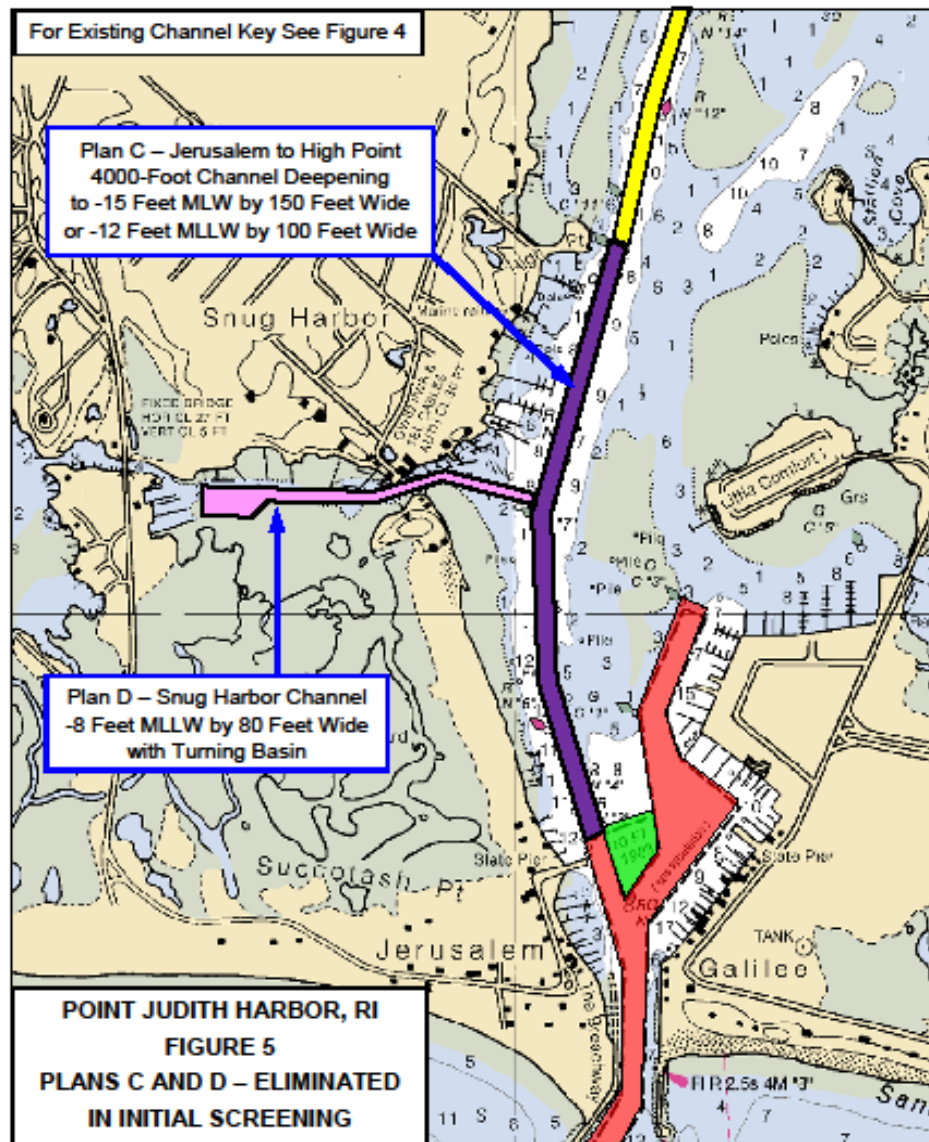
**Figure EA-4 – Alternatives (Plans A and Plan B) considered for the Point Judith Harbor Navigation Improvement Project.**

Table 1A – Quantity Estimates (in Cubic Yards) for Plans A and B			
Plan and Depth	Required Removal	Overdepth Allowance	Total Cubic Yards
West Bulkhead Channel Widening			
12-Foot Channel	1,600	1,000	2,600
13-Foot Channel	2,200	1,400	3,600
14-Foot Channel	3,600	1,600	5,200
15-Foot Channel	5,200	1,900	7,100
North Basin Channel Extension			
8-Foot Channel	1,600	2,000	3,600
9-Foot Channel	3,600	3,300	6,900
10-Foot Channel	6,900	4,300	11,200
11-Foot Channel	11,200	5,400	16,600
12-Foot Channel	16,600	6,300	22,900

### Alternatives Considered and Eliminated From Further Analysis

Two other alternatives were initially evaluated to improve navigation within the project area but rejected from further analysis. These include alternatives to provide (1) improved channel access on the west side of the harbor in South Kingstown above the Jerusalem State Pier to High Point, and (2) to provide a channel into Snug Harbor in South Kingstown via the Gooseberry Inlet, a tributary of Point Judith Pond located between the Jerusalem State Pier and High Point. These two plans are shown in Figure EA-5.

**Plan C – Jerusalem – High Point Channel** – Originally identified as “Plan C” in the 1989 DPR, the Jerusalem High Point Channel alternative is an alternative with two depth options. The existing FNP provides for a 6-foot channel above the Jerusalem State Pier, generally 100 feet wide, extending about 3.8 miles northerly up the Pond to the village of Wakefield at the head of navigation. This plan would provide for a deeper channel from the Jerusalem State Pier, past Snug Harbor and up to High Point, a distance of about 4,000 feet, in order to access the boat yards and marinas that are mostly located above the Snug Harbor entrance. Channel dimensions of -12 feet MLLW by 100 feet wide, and -15 feet MLLW by 150 feet wide were considered in 1989 and briefly re-examined for this study.



**Figure EA-5.** Alternatives (Plan C and Plan D) considered for the Point Judith Harbor Navigation Improvement Project.

The existing Federal channel for upper Point Judith Pond is 6 feet deep, making access difficult for the deep draft boats attempting to reach the repair facilities below High Point. These repair facilities generally have approach depths of 12 feet. Deeper draft boats travelling above the Jerusalem state pier must make the transit at higher tide stages. To make the repair yards and marinas more accessible to the commercial fleet the 6-foot Federal channel would need to be deepened. The 12-foot deep option would provide safe passage for the inshore fishing fleet and for some of the offshore fishing vessels, and would require the removal of about 64,200 CY of material (1989 estimate). The 15-foot deep option would provide safe passage to High Point for the entire Point Judith commercial fishing fleet and would require the removal of about 179,100 CY of material (1989 estimate).



This plan was evaluated in the original project review and rejected from further consideration at this time because the benefits would be primarily recreational, accruing to the customers of the marinas below High Point and in Snug Harbor. Commercial benefits would be minor and involve reducing tidal delay for infrequent transits to the upper shipyards at High Point and Snug Harbor. Projects with primarily recreational benefits are not a priority for the federal government under the USACE's Civil Works programs.

**Plan D – Snug Harbor Branch Channel** – Another alternative originally considered in the 1962 report and 1989 DPR and rejected from further consideration upon initial screening in this study was to dredge a branch channel leading westerly off the Pond channel into Snug Harbor in South Kingstown via the Gooseberry Island Inlet with an anchorage/ turning basin at its upper end below the Succotash Road Bridge. There is no existing authorized Federal channel into Snug Harbor. However this project feature was authorized in 1962 as part of the multi-purpose hurricane protection and navigation improvement. That multipurpose project was never constructed and was deauthorized in 1976. For this analysis a channel depth of 8 feet was evaluated, the same as the 1962 project. The plan would also require deepening that portion of the 6-foot channel between the Jerusalem State Pier and the Snug Harbor entrance below High Point to at least 8 feet. In 1962 this improvement was estimated to require the removal of about 140,000 CY of material.

This plan of improvement was eliminated from detailed consideration because Snug Harbor does not provide berthing space and offloading facilities that are needed for commercial boats. Benefits to be gained would be almost exclusively recreational, accrued to the users and owners of the several marinas and residential docks that line Snug Harbor. As projects with primarily recreational benefits are not a priority for the federal government under the USACE's Civil Works programs, this plan was eliminated from further consideration.

#### 5.4 ALTERNATIVE DREDGING METHODS

Dredging methods that were considered for this project include hydraulic, hopper, and mechanical dredges. A hydraulic dredge pumps sediments via pipeline to an upland, beach, or an intertidal placement area. A hopper dredge uses a draghead and pump to suction sediments through an arm into hoppers within the dredge; when the hopper is full the dredge moves to the placement site where the material is released by opening the hopper doors. A mechanical dredge excavates material with a bucket-type apparatus and deposits it into a scow for transport to the placement site where it is released through an opening in the bottom of the scow.

A hydraulic dredge is generally used for sandy material that will be disposed of in an upland area or on a nearby beach, or for pumping any type of unconsolidated material into a confined (diked) disposal/dewatering area. As stated previously, a hydraulic dredge pumps sediments via pipeline. Since the material to be dredged from the project will be placed in a nearshore area approximately 2.5 miles from the project area, the hydraulic dredge was not selected as the dredge method of choice for this project.

A hopper dredge uses a suction pump similar to a hydraulic dredge to loosen and remove material from the bottom. The material is then deposited into hoppers aboard the dredge

vessel. When the hoppers are full, the suction arm is raised and secured to the vessel, which then travels to the disposal site and either dumps or pumps off the material from the hoppers. The dredge then returns to the dredging site to begin another cycle. Hopper dredges come in various sizes from a few hundred cubic yards bin capacity to several thousand yards capacity. In New England, hopper dredges are most often used to remove sandy materials from harbor entrance channels and deposit the material offshore of beaches to nourish littoral bar systems. In order to fill the hopper bins, the water component of the suctioned slurry is allowed to overflow the bins back into the harbor at the dredging site. Although the material at Point Judith Pond and Harbor of Refuge is predominantly sand, and intended for nearshore placement, this method is not considered the preferred alternative for dredging of the Federal project because the haul distance to the proposed nearshore disposal site (approximately 2.5 miles) would likely render use of a hopper dredge uneconomical. However, for the purpose of this report, it is assumed that a hopper dredge may be used and therefore will be considered as part of the evaluation.

Mechanical bucket dredging involves the use of a barge-mounted crane, hoe or cable-arm with a bucket to dig the material from the harbor bottom. Typical dredging buckets come in various sizes from five cubic yards to fifty or more cubic yards. The material is placed in a scow for transport to the disposal site by tug. For open-water or ocean disposal, a split-hull scow is usually used for ease of disposal and to minimize the discharge plume. Material is typically discharged at a dump buoy, or by using preset coordinates monitored by the tug. Mechanical dredging is a slow process, as the time to fill a scow with dredge material is dependent upon the size of the bucket and the speed of the crane. Since the material at Point Judith Pond and Harbor of Refuge is predominantly sand, and intended for nearshore disposal, this method is considered the preferred alternative for the dredging of the Federal project.

## 5.5 ALTERNATIVE DISPOSAL SITES

### 5.5.1 Ocean Disposal

The only available ocean disposal site in Rhode Island is the EPA-designated Rhode Island Sound Disposal Site (RISDS). RISDS is located in the Separation Zone between shipping channels in Rhode Island Sound and is approximately 10 miles southeast of Point Judith. This site was not selected as the preferred disposal site for this maintenance dredging project because ocean disposal increases the overall project cost and has the disadvantage of removing sand from the littoral system. In addition, the Corps of Engineers policy is to maximize beneficial use of dredged material where appropriate. Allowing the material to remain in the littoral system through nearshore placement is the best disposal option. Therefore, ocean disposal was not selected.

### 5.5.2 Upland Disposal

In past improvement and maintenance dredging efforts, an upland dewatering site behind Escape Road was used for material placement. The material was hydraulically pumped to the site and dewatered and then trucked offsite to be used for upland fill. This alternative was not considered as this site would not accommodate the amount of material to be dredged and would also remove the sandy material from the littoral system. In addition, a portion of this site has been restored to salt marsh. This site was not selected as the capacity is minimal and

using it would remove sand from the littoral system. No other upland disposal sites have been identified for potential use associated with this project.

### 5.5.3 Beach Nourishment

Two nearby beaches, East Matunuck State Beach to the west of the Breachway and Roger Wheeler State Beach to the east of the Breachway, are potentially available to accept sandy dredged material. However, while both beaches are State owned and managed, they both have heavy recreational use in the summer time. Placing sand on the beach would likely encourage the use of the area by the Federally Threatened piping plover, a shore bird. This would create a conflict in beach use, between nesting piping plovers and beach users. The concern that adequate protection for nesting piping plovers could not be afforded due to human use precludes the use of these sites. Therefore, they were not selected as the preferred placement alternative.

The beaches off of the Matunuck shore to the west of the project are also candidates to receive the dredged sand as beach nourishment. However, the longer distance required to pump the material (up to 2.5 miles) would necessitate the use of booster pumps at a significant increase in cost. Although this disposal option is viable, the increased cost over the Federal base plan (discussed below) would need to be borne by a local sponsor. The local sponsors for this project are unable to fund the additional cost associated with this disposal option, and therefore this alternative was dropped from further consideration.

### 5.5.4 Nearshore Disposal

The closest nearshore disposal option is located off of the Matunuck shoreline (Figure EA-3) and is approximately two and a half miles east of the Point Judith Breachway. The site, located to the west of East Matunuck State Beach, was used in 2009 for the placement of sandy material from maintenance dredging. The site was selected over other nearshore locations because the beach areas directly inshore from the site experience substantial erosion and because the littoral drift of sand is from west to east (meaning that any sand placed in the nearshore area would help down-drift beaches that experience similar erosion problems).

Side-scan survey of the area off of the Matunuck shoreline was conducted in 2005 to determine the best area for disposal of the dredged material from a geological and biological viewpoint. The results of the survey (Boothroyd et al., 2006) show that two large sand sheets, with an area of coarser sand and gravel located between and seaward of the sand sheets, exists just off the shoreline. The dredged material will be placed at the west end of one or both sand sheets in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of dredge material for beach nourishment. This option of nearshore disposal represents the Federal Standard as the least cost, environmentally acceptable alternative, and is being pursued as the selected alternative.

## 6.0 AFFECTED ENVIRONMENT

### 6.1. PHYSICAL ENVIRONMENT

#### 6.1.1 Dredge Site

Point Judith Pond is oriented perpendicular to the coast on a north-south axis. It is approximately four miles long and one mile wide. Freshwater input from the Saugatucket River averages  $33 \times 10^3 \text{ m}^3$  per tidal cycle. The physical oceanographic characteristics of the northern and southern portions of Point Judith are sufficiently different to merit separate discussion.

The southern portion of Point Judith Pond behaves like a well-mixed, open estuary (Licata, 1981). Tidal forces dominate in the lower pond and Harbor of Refuge. Tidal currents through the Breachway are typically one to three knots. These tidal currents carry an estimated 16,000 CY of sand into Point Judith Pond each year, making it necessary to dredge the harbor every 10-15 years (other private and State interests may also dredge the in the vicinity of the Federal channel). The flood tide delta includes the turning basin and the sand bars to the south and north of Little Comfort Island. Accumulation of sediment is most rapid in the turning basin. The ebb and tide currents have created a tidal delta along the Jerusalem shore and the west wall of the Harbor of Refuge in the main access channel. Sedimentation rates in areas other than these tidal deltas are low. Despite strong tidal flushing only five percent of the water in the southern portion of the pond is exchanged on each tide.

The influence of the tide is much weaker at the northern end of the pond. The water level rises and falls in a simple pumping motion, tidal currents are weaker and the area poorly flushed. A two-layered estuarine circulation pattern is established as saline water from the lower pond moves upward along the bottom and freshwater from Saugatucket River flows seaward along the surface.

The upper pond with its poor flushing and sluggish circulation is more prone to eutrophication and more likely to retain pollutants than the lower pond. Similar hydrologic patterns of restricted flushing occur in Bluff Hill Cove making this area susceptible to such impacts as well. The conservative circulation patterns in the northern pond and the more restricted coves are reflected in the increased organic matter in the bottom sediments. North of Harbor Island the organic content of sediments may exceed eight percent, a level that is considered typical of eutrophic waters (Friedrick, 1982).

#### 6.1.2 Disposal Site

Sidescan sonar survey results of the Matunuck nearshore area show an area comprised of two sand sheets, with an area of coarser sand and gravel between the two sand sheets, and seaward of the two sand sheets (Boothroyd et al., 2006 ; USACE, 2006). These two sand sheets are located adjacent to Roy Carpenters Beach and Trustom Pond.



## 6.2 SEDIMENT CHARACTERISTICS

### 6.2.1 Dredge Site

Sediments from the areas to be dredged were collected on December 14, 2015. Sediments were collected with a vibracore at 5 stations (Figure EA-2 – Stations A-E). All samples were analyzed for grain size distribution (Table EA-1B). Sediments from stations A and B were classified as fine sands with sandy material comprising between 93-96% sand. Sediments from Stations C, D and E were dominated by sandy material, however they had larger components of silt (9.6%, 20% and 15% respectively) than the other samples. The grain size analysis data is presented in Appendix G of this DPR and EA.

The sediments from stations A and B were excluded from chemical sampling as they were comprised of greater than 90% sand. Sediments from station C, D, and E were composited and analyzed for bulk chemistry. The composite sample was tested for metals (Table EA-2), petroleum hydrocarbons (PAHs) (Table EA-3), and polychlorinated biphenyl congeners (PCBs) (Table EA-4). The results of the chemical analysis indicate that the material contains low levels of contaminants. The chemistry data are also provided in Appendix G.

The composite sediment sample was also subjected to biological testing. A 10-day solid phase bioassay test using both *A. bahia* and *L. plumulosus* was performed. Mean survivability for the composite sample was 89% for *A. bahia* and 94 % for *L. plumulosus*, indicating that sediments do not contain contaminants in concentrations that would adversely affect fish and wildlife.

**Table EA-1B. Grain Size Distribution of Point Judith Sediments**

<b>Stations</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
% GRAVEL	0.9	1	1	0.2	0
% SAND	96.8	93.9	89.4	79.8	84.4
% SILT & CLAY	2.3	5.1	9.6	20	15.6

**Table EA-2. Total Metals and TOC Results  
for the Point Judith Composite (Comp 1)**

<b>Compound</b>	<b>Units</b>	<b>RISDS</b>	<b>COMP 1</b>
Arsenic, Total	µg/kg	2.8	1.5
Cadmium, Total	µg/kg	ND	0.14
Chromium, Total	µg/kg	9.6	10
Copper, Total	µg/kg	2.3	5.2
Lead, Total	µg/kg	6.2	4.7
Mercury, Total	µg/kg	ND	0.015
Nickel, Total	µg/kg	4.7	6.2
Zinc, Total	µg/kg	17	23
TOC	%	0.26	0.51
ND = non detect			

<b>Table EA-3. PAH Results for the Point Judith Composite (Comp 1)</b>			
<b>Compound</b>	<b>Units</b>	<b>RISDS</b>	<b>COMP 1</b>
Naphthalene	µg/kg	U	U
Acenaphthylene	µg/kg	U	U
Acenaphthene	µg/kg	U	U
Fluorene	µg/kg	U	U
Phenanthrene	µg/kg	20	29
Anthracene	µg/kg	J	J
Fluoranthene	µg/kg	13	54
Pyrene	µg/kg	J	54
Benz(a)anthracene	µg/kg	U	21
Chrysene	µg/kg	U	32
Benzo(b)fluoranthene	µg/kg	U	25
Benzo(k)fluoranthene	µg/kg	U	18
Benzo(a)pyrene	µg/kg	U	16
Indeno(1,2,3-cd)Pyrene	µg/kg	U	11
Dibenz(a,h)anthracene	µg/kg	U	10
Benzo(ghi)perylene	µg/kg	U	12

<b>Table EA-4. PCB Results for the Point Judith Composite (Comp 1)</b>			
<b>Compound</b>	<b>Units</b>	<b>RISDS Reference</b>	<b>COMP 1</b>
PCB 8	ug/kg	0.05 (U)	0.06
PCB 18	ug/kg	0.05 (U)	0.05 (U)
PCB 28	ug/kg	0.05 (U)	0.05 (U)
PCB 44	ug/kg	0.05 (U)	0.016
PCB 49	ug/kg	0.05 (U)	0.016
PCB 52	ug/kg	0.05 (U)	0.031
PCB 66	ug/kg	0.05 (U)	0.05 (U)
PCB 77	ug/kg	0.05 (U)	0.05 (U)
PCB 87	ug/kg	0.05 (U)	0.20
PCB 101	ug/kg	0.09	0.43
PCB 105	ug/kg	0.05 (U)	0.18
PCB 118	ug/kg	0.07	0.36
PCB 126	ug/kg	0.05 (U)	0.05 (U)
PCB 128	ug/kg	0.05 (U)	0.12
PCB 138	ug/kg	0.06	0.65
PCB 153	ug/kg	0.12	0.72 (J8)
PCB 170	ug/kg	0.05 (U)	0.26
PCB 180	ug/kg	0.07	0.81 (J8)
PCB 183	ug/kg	0.05 (U)	0.21
PCB 184	ug/kg	0.05 (U)	0.05 (U)
PCB 187	ug/kg	0.05 (U)	0.56
PCB 195	ug/kg	0.05 (U)	0.07
PCB 206	ug/kg	0.05 (U)	0.10
PCB 209	ug/kg	0.06	0.05 (U)

### 6.2.2 Disposal Site

The surficial sediments at the disposal site are composed of primarily of sand (Boothroyd et al., 2006). Underneath the surficial sand layer, a layer of coarser sand and gravel exists, before transitioning back to predominately sands at depth.

## 6.3 WATER QUALITY

Water quality in Point Judith Pond and the Harbor of Refuge is classified as SA. However, waters at the mouth of the Pond near the marinas and the Upper Pond near the mouth of the Saugatucket River are classified as SB. Class SA waters are designated for shellfish harvesting for direct human consumption; primary and secondary contact recreational activities; and fish and wildlife habitat. They shall be suitable for aquaculture uses, navigation and industrial cooling. These waters shall have good aesthetic value. Class SB waters are designated for primary and secondary contact recreational activities; shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They shall be suitable for aquaculture uses, navigation and industrial cooling. These waters shall have good aesthetic value (RIDEM, 2006).

## 6.4 AQUATIC RESOURCES

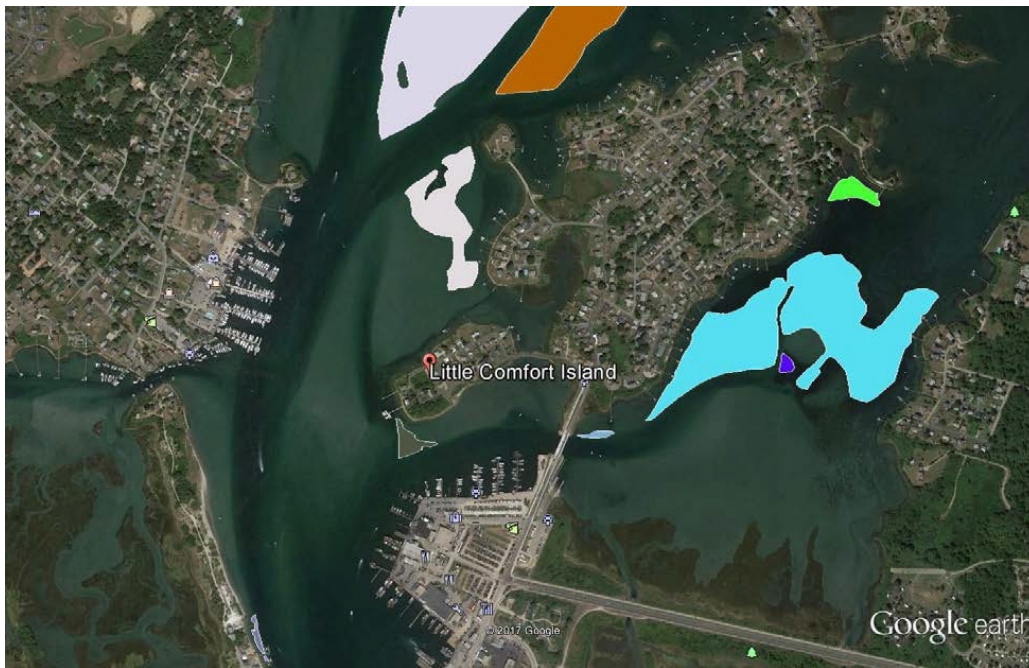
### 6.4.1 Dredge Site

#### General

Extensive salt marshes, tidal flats, open water areas, and eelgrass beds can be found within the Point Judith Pond. The Pond and Harbor also support important commercial and recreational interests such as a commercial fishing fleet, a recreational boating fleet, and ferry service to Block Island. A large number of piers, boat berths, boat landings, and marinas are mainly concentrated at the mouth of the Pond. A large number of private residences and commercial buildings are distributed around the Pond. There are also several indoor lobster pounds with water intakes from the Pond. The Galilee Bird Sanctuary is located in the southeast portion of the Pond.

#### Eelgrass

Eelgrass (*Zostera marina*) beds are located to the west and southwest of Little Comfort Island, to the west of Great Island, and within Snug Harbor (RIGIS, 2017) (Figure EA-6). No eelgrass beds have ever been documented in the navigation channel (USACE 2006; USACE 1994). Many species of fish and wildlife depend on eelgrass. Eelgrass beds provide protection for bay scallops, quahogs, blue crabs, and lobster. Tautog and other fish lay their eggs on the surface of eelgrass leaves, and young starfish, snails, mussels, and other organisms attach themselves to the plant.



**Figure EA-6 – Eelgrass Resources within Point Judith Pond (RIGIS, 2017)**

### Benthos and Shellfish

Benthic samples were collected on September 24, 2003 from the navigation channel in support of the maintenance dredging of the Federal Navigation Project (FNP) and were summarized by Pratt (2004). Two stations from that effort were located immediately adjacent to the proposed improvement effort. The benthos in these areas were dominated by Capitellid polychaetes (*Capitella* spp.) and amphipods (*Corophium* spp. and *Microdeutopus gryllotalpa*). No shellfish species were observed in these areas. As conditions in the pond have not dramatically changed since sampling, the benthic results from the 2003 sampling effort were considered valid.

The conclusions of the FNP benthic sampling effort were that the most abundant and diverse taxonomic groups in the area were polychaetes and amphipods. Additionally, the effort concluded that there were few commercial shellfish resources inhabiting the navigation channel, as only two juvenile hard clams *Mercenaria mercenaria* and three surf clams *Spisula solidissima*, were found in the navigation channel samples.

There are three types of commercially harvested species of shellfish in the Point Judith Pond (a) the soft shell clam (*Mya arenaria*), the bay scallop (*Argopectin irradians*) and the quahog (*Mercenaria mercenaria*) (Narragansett, 2016). The largest soft shell clam bed is located in the southeast portion of the pond in Bluff Hill Cove, while another smaller bed is located in the Crown Point area in the northern part of the pond, and other smaller beds are scattered near the beaches at the fringe of the intertidal area. A significant *Mercenaria mercenaria* bed, that is commercially harvested, is located between Crown Point and the Narrows.

Other commercial shellfish species that occur in low numbers in the pond are the oysters *Crassostrea virginica* and the mussels *Mytilus edulis*. According to past personal

communications from Rhode Island's shellfish biologist (Mr. Art Ganz, 2004), some lobsters *Homarus americanus* may migrate into Point Judith pond, however there is not an active fishery for them inside the pond. Lobsters may be abundant in the breakwaters and in the rocky portions of the nearshore zone.

### Fish

Point Judith Pond supports a typical productive nearshore fish assemblage (Narragansett, 2016). Estuarine forage fish such as silversides *Menidia menidia* and mummichog *Fundulus heteroclitus* are abundant. In warmer months of the year, the tautog *Tautoga onitis*, striped bass *Morone saxatilis*, bluefish *Pomatomus saltatrix*, utilize the pond for forage and cover.

Two species of anadromous fish, alewives *Alosa pseudoharengus* and blueback herring *Alosa aestivalis*, are known to transit through Point Judith Pond to spawn in the Saugatucket River. These species generally begin migration into the pond at the end of February/beginning of March, with peak migration in April, and migration is generally completed by the end of May. Migration of these species from upstream areas to sea generally begins in August, peaks during the months of September/October, and is complete near the end of November.

Winter flounder *Pseudopleuronectes americanus* is the most abundant demersal fish in Rhode Island coastal waters and has historically been an important fishery in Narragansett Bay and several salt ponds along the southwestern shore (Crawford, 1985). In Point Judith Pond, spawning occurs primarily in the upper pond on a gravel bar known as Rocky Island near the mouth of the Saugatucket River, and to a lesser extent near Gardner Island further south. Despite extensive sampling (Crawford, 1985), no evidence of spawning was found in other areas of the pond potentially suitable as spawning habitat. Routine plankton tows contained a few winter flounder larvae at the end of February in the Narrows, however none were found in the rest of the pond (Crawford, 1985). March and April plankton tows showed the larvae moving into the southern portion of the pond. The sampling results suggest that winter flounder spawn well within the upper portion of an estuary so that the larvae are less likely to be immediately flushed out to sea (Crawford, 1985). No flounder spawning areas were found in the navigation channel.

#### 6.4.2 Nearshore Disposal Site General

The offshore waters of Block Island Sound are home to a diversity of fish species including cod, cunner, flounder, skates, tautog and herring. Marine mammals are represented in the Block Island ecosystem by harbor seal communities on Point Judith, Newton Rock and possibly other remote rocky areas. Lobsters, surf clams, starfish, and crabs dominate the marine benthic community. Mussels, sea urchins and sea cucumbers also are resident benthic macrofauna. These species are allied with an abundant and diverse benthic microfauna population in the offshore environment (NOAA, et. al., 1999).

### Eelgrass

There are no eelgrass beds in the vicinity of the nearshore disposal site. Boothroyd et al, (2006) demonstrated that the site is a subtidal sand bottom that does not support vegetation.

## Benthos and Shellfish

The benthic community of the nearshore site was characterized in 2006. Van Veen grab samples were collected on March 22, 2006 within the boundary of the site. Visual inspection of the samples showed that the sediment in the area was homogenous fine sand.

A total of 23 taxa was identified in six samples from the site. The average number of taxa and average number of individuals in the grab samples was 11.2 and 167. Polychaetes and amphipods were the most abundant and diverse major taxa in the samples. Nine species of polychaete were recovered. These included species strongly associated with sandy beach habitats (*Magelona rosea*, *Paraonis fulgens*, and *Scololepsis squamata*) and species found on deeper sand habitats (*Nephtys picta* and *Spiophanes bombyx*). Seven species of amphipods were recovered. Most of the individuals were members of the family Haustoridae (*Acanthohaustorius millsi*, *Bathyporeia quoddyensis*, *Parahaustorius longimanus*, and *Protohaustorius deichmannae*). Haustorids are adapted for free burrowing in unconsolidated sandy sediments. They feed on organic particles suspended in interstitial water. *Synchelidium americanum* has similar habits. *Psammonyx nobilis*, a member of the family Lysianassidae, is a relatively large species that is less specialized for burrowing and is an opportunistic scavenger and predator.

The rare species (i. e., few individuals) found from other major groups include the bivalve molluscs *Tellina agilis* and *Mysella planulata*, which are generally found in silty sediment in near-by coastal ponds. No surf clams (*Spisula solidissima*) or hard clams (*Mercenaria mercenaria*) were found at this site.

## Fish

The fish species at the nearshore site are anticipated to be similar to those described above for Point Judith Pond.

## 6.5 WILDLIFE RESOURCES

The salt pond and offshore habitats of the Block Island Sound coastal ecosystem provide valuable habitat for a host of resident and migratory bird species. During the winter months, marine waters support seabird and waterfowl populations including loons and grebes, sea ducks (e.g., eiders and scoters), and diving ducks (e.g., goldeneye, bufflehead and scaup). Winter diving ducks and dabbling ducks such as scaup, American black duck and mallard also inhabit the area's salt ponds. Over 200 species of migratory birds use Block Island Sound resources during the spring and autumn months (NOAA, et. al., 1999).

Point Judith Pond supports a large diversity of wildlife. A variety of bird species can be found in the vicinity of Point Judith including gulls, wading birds, waterfowl (Canada geese, sea ducks, puddle ducks, diving ducks), raptors (osprey), and diving birds (common loon). Otters, muskrat and mink are also present in the area.

## 6.6 ESSENTIAL FISH HABITAT

The 1996 amendments to the Magnuson-Stevens Fishery Conservation Management Act strengthen the ability of the National Marine Fisheries Service and the New England Fishery Management Council to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed "essential fish habitat", and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Managed species listed for the 10' x 10' square of latitude and longitude which includes Point Judith Pond and the Harbor of Refugee, and the nearshore disposal site are: Atlantic cod *Gadus morhua* (adult), haddock *Melanogrammus aeglefinus* (larvae), whiting *Merluccius bilinearis* (eggs, larvae, juveniles), red hake *Urophycis chuss* (eggs, larvae, juveniles, adults), winter flounder *Pleuronectes americanus* (eggs, larvae, juveniles, adults), windowpane flounder *Scophthalmus aquosus* (eggs, larvae, juveniles, adults), American plaice *Hippoglossoides platessoides* (larvae, juveniles, adults), ocean pout *Macrozoarces americanus* (eggs, larvae, juveniles, adults), Atlantic halibut *Hippoglossus* (eggs, larvae, juveniles, adults), Atlantic sea herring *Clupea harengus* (larvae, juveniles, adults), monkfish *Lophius americanus* (eggs, larvae), bluefish *Pomatomus saltatrix* (juveniles, adults), long finned squid *Loligo pealei* (juveniles, adults), Atlantic butterfish *Peprilus triacanthus* (juveniles), Atlantic mackerel *Scomber scombrus* (eggs, larvae, juveniles, adults), summer flounder *Paralichthys dentatus* (larvae, juveniles, adults), scup *Stenotomus chrysops* (eggs, larvae, juveniles, adults), black sea bass *Centropristus striata* (juveniles, adults), surf clam *Spisula solidissima* (juveniles, adults), spiny dogfish *Squalus acanthias* (juveniles, adults), king mackerel *Scomberomorus cavalla* (eggs, larvae, juveniles, adults), Spanish mackerel *Scomberomorus maculatus* (eggs, larvae, juveniles, adults), cobia *Rachycentron canadum* (eggs, larvae, juveniles, adults), sand tiger shark *Odontaspis taurus* (larvae), blue shark *Prionace glauca* (larvae, adults), dusky shark *Charcharinus obscurus* (juveniles), shortfin mako shark *Isurus oxyrhincus* (juveniles), sandbar shark *Charcharinus plumbeus* (juveniles, adults), and bluefin tuna *Thunnus thynnus* (adults).

The managed species listed above which are found in estuarine waters (>25 ppt) with shallow depths (Point Judith Pond average depth of six feet) (i.e., the area proposed for dredging) include red hake (eggs, larvae, juveniles, adults), winter flounder (eggs, larvae, juveniles, adults, spawning adults), windowpane flounder (eggs, larvae, juveniles, adults, spawning adults), ocean pout (eggs, larvae, juveniles, adults), long finned squid (juveniles, adults), Atlantic mackerel (eggs, juveniles, adults), summer flounder (juveniles, adults), scup (eggs, larvae, juveniles, adults), black sea bass (juveniles, adults), surf clam (juveniles, adults), king mackerel (eggs, larvae, juveniles, adults), Spanish mackerel (eggs, larvae, juveniles, adults), cobia (eggs, larvae, juveniles, adults), sandbar shark (adult), and bluefish (juveniles, adults).

The species listed above for Point Judith Harbor would be expected in the nearshore area also, with the exceptions of winter flounder eggs and larvae and juvenile summer flounder, as the nearshore placement area is adjacent to a high energy sand beach.

## 6.7 THREATENED AND ENDANGERED SPECIES

No threatened or endangered species under the jurisdiction of the National Marine Fisheries Service are known to permanently inhabit the project area. However, occasional transient species such as sea turtles, whales, and seals have the potential to occur in or near the project



area. Additionally, Atlantic sturgeon originating from any of the five listed Distinct Population Segments (DPSs) may be seasonally present off of Point Judith in the Atlantic Ocean. The Federally-listed threatened piping plover, under the jurisdiction of the U.S. Fish and Wildlife Service, is known to occur on beaches in the vicinity of the proposed project.

## 6.8 HISTORIC AND ARCHEOLOGICAL RESOURCES

This narrative is composed of material from *Historic and Architectural Resources of Narragansett, Rhode Island* (1991). Human presence in Rhode Island stretches back about 10 thousand years prior to the arrival of Roger Williams in 1636. Following a typical seasonal pattern, Native peoples lived along the coast harvesting fish and shellfish during the spring and summer, journeying inland during the winter months to favored hunting grounds. Later with the development of ceramic vessels and agriculture, the need for seasonal movement was replaced by the establishment of permanent camps along the coastal plain and fertile floodplain terraces along rivers.

Europeans in the 1500's encountered groups of Natives settled around semi-permanent villages led by chiefs called sachems. The Narragansetts were the predominant group in what is today's Rhode Island west of Narragansett Bay. In the 17<sup>th</sup> Century, the Narragansetts were the largest and most powerful tribe in New England with a population of 30,000 to 35,000. Roger Williams established a trading post near today's Wickford in 1637 that became known as Cocumscussoc.

The town of Narragansett was originally part of "Narragansett Country" that included Warwick, West Warwick, and Coventry. The Pettaquamscutt Purchase of 1658 transferred parts of North Kingstown, South Kingstown, Exeter, and Point Judith Neck. The peninsula between the Pettaquamscutt River and Narragansett was later transferred and known as Nancook or Boston Neck. In 1674, the colony of Rhode Island incorporated a portion of the area as "King's Towne" which included all the mainland settlements west of Narragansett Bay. Kingstown was divided into the townships of South Kingstown, including present-day Narragansett, and North Kingstown. The area of today's Narragansett remained a part of South Kingstown until 1901 when the town of Narragansett was chartered.

In the 18<sup>th</sup> Century, Point Judith Neck, the southernmost portion of Narragansett from the Little Neck area to the ocean, was divided into several holdings. These holdings were subdivided into small farms with houses spread out along Point Judith Road in the 19<sup>th</sup> Century. The road began as a crude path down the center of the Neck in the late 18<sup>th</sup> Century. By the mid-19<sup>th</sup> Century, Point Judith Neck had become home to a small community of fishermen, farmers, and laborers. Road improvements during this period included the construction of Ocean Road along the ocean shore in 1882; the extension of Point Judith Road; and the laying out of several roads between Point Judith and Ocean Roads. The first lighthouse at Point Judith, one of the most dangerous and exposed spots on the East Coast, was established in 1806. The present lighthouse tower is the third on the site and dates from 1857. The Point Judith Lighthouse is listed on the State and National Registers of Historic Places.

By the 20<sup>th</sup> Century, Point Judith Neck became a summer resort with its location closer to Narragansett Pier and the ocean and more easily accessible by automobile and harbor

improvements at Galilee. Ocean Road was modernized in 1905. Point Judith Road was paved in 1928 and later, widened in the 1930s. Beaches were established at Scarborough and Sand Hill Cove; a Coast Guard boathouse was constructed on the breachway at Galilee, followed by a Coast Guard station in 1935 at Point Judith. Today the Point Judith area has been transformed into a major tourist area with extensive development and seasonal occupation including the two villages of Galilee and Jerusalem.

Construction of the Point Judith Harbor of Refuge was initiated in 1890 when the project was authorized by Congress, and portions of the east and west jetties of the breakwater were completed before the end of the 19<sup>th</sup> Century. The project, however, was not completed until 1914 when the last of the breakwater's three sections, the central one, was completed. A permanent breachway to Point Judith Pond was created in 1910 when a new breachway, east of the earlier one, was excavated between Galilee and Jerusalem. The site of the old breachway follows the town line between Narragansett and South Kingstown.

A review of the Northern Shipwrecks Database indicates that approximately 12 shipwrecks are recorded for the Point Judith area, although none are located in the project area. According to Marlene and Don Snyder (*Rhode Island Adventure Diving II, 2003*), the construction barge *Samson* took on water and rolled over on its starboard side inside the east middle breakwater of the Point Judith Harbor of Refuge on October 5, 1991. The *Samson*, originally a 300-foot long barge used for transporting railroad cars, was converted into a construction barge by being cut in half. The vessel was on its way to the east breakwater to raise a Coast Guard signal light that had been toppled by Hurricane Bob. Currently the *Samson* rests in 30-35 feet of water and is located about 300-400 yards southwest from the tip of the middle breakwater's east opening, next to the wall. The wreck is designated on NOAA nautical chart number 13219.

Two wrecks are noted on NOAA nautical chart 13215 south of Browning Beach within Nebraska Shoal in deep water outside of the area of nearshore beach nourishment.

## 6.9 AIR QUALITY AND NOISE

### Air

Ambient air quality is protected by Federal and state regulations. The U.S. EPA has developed National Ambient Air Quality Standards (NAAQS) for certain air pollutants and air quality standards for each state cannot be less stringent than the NAAQS. The NAAQS determined by the EPA set the concentration limits that determine the attainment status for each criteria pollutant. EPA has identified seven specific pollutants (called criteria pollutants) that are of concern with respect to the health and welfare of the general public. The criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter 10 micrometers or less in aerodynamic diameter (PM<sub>10</sub>), particulate matter 2.5 micrometers or less in aerodynamic diameter (PM<sub>2.5</sub>), and lead (Pb). The entirety of Rhode Island is currently designated as attainment for the air pollutants listed above, with the exception of ozone. The entire state of Rhode Island is in nonattainment status for ozone.

### Noise

Point Judith Harbor is an active fishing port. The noise environment in the project area consists routinely of noise from motoring fishing and recreational vessels, noise from construction, maintenance, and loading/unloading efforts on the docks and piers immediately adjacent to the area, and typical noise associated with the marine environment (i.e., wildlife, water movement, and air movement).

## 6.10 RECREATION RESOURCES

Point Judith Pond, as well as the nearshore placement site, and their associated beaches, sand flats, marshes, open water areas are valuable ecological resources that are utilized by the public as recreational shellfishing and fishing areas, recreational boating areas (including boat launching), hiking areas, surfing areas, and public swimming areas. The aesthetic scenery provided by the areas not only benefit the residents of the coastal communities, but attracts tourists from around the world.

## 7.0 ENVIRONMENTAL CONSEQUENCES

### 7.1 PHYSICAL ENVIRONMENT

#### 7.1.1 Dredge Site

The area to be dredged is a shallow subtidal environment that will remain a shallow subtidal environment after dredging. The deepening of the subtidal area is not anticipated to negatively impact the tidal environment, the water currents or circulation patterns, or the sediment transport in the project area.

#### 7.1.2 Nearshore Placement Site

The sandy dredged material will be released at the nearshore placement site from a scow or barge. The water depths (approximately 15 to 18 feet MLLW) and the location of the nearshore site were chosen to allow the sandy material to move towards shore to nourish the beach adjacent to the site, with the material ultimately moving down the beach from west to east as part of the overall littoral movement (Boothroyd et al, 2006; USACE, 2006). Therefore, no significant long-term effects to the physical environment at the nearshore placement site are expected.

#### 7.1.3 No Action Alternative

Under the No Action Alternative, no changes to the physical environment of Point Judith Pond would occur.

### 7.2 SEDIMENT CHARACTERISTICS

#### 7.2.1 Dredge Site

The sediment characteristics at the dredging site are anticipated to remain similar to the existing conditions (i.e., predominately clean sandy material) after the dredging is performed.

### 7.2.2. Nearshore Placement Site

Sediment quality and composition at the nearshore placement site is not anticipated to change significantly. The dredge material from the Point Judith Harbor improvement area (predominately sands) is similar to that found at the disposal site. No significant changes or adverse effects to sediment quality are anticipated. Federal and State resource agencies reviewed the sediment sampling and analysis plan and the Rhode Island CRMC contracted for the sampling and testing as part of its in-kind contributions towards the feasibility study.

A suitability determination, supported by the sampling and testing, has reached the conclusion that the dredged material is suitable for nearshore disposal. Sediments from the areas to be dredged are similar in grain size and composition to those at the nearshore site (sand), and thus are well suited for disposal at that location. This determination will be coordinated with Federal and State resource agencies during review of the draft report.

### 7.2.3 No Action Alternative

Under the No Action Alternative, no disturbance of sediments in Point Judith Pond would occur.

## 7.3. WATER QUALITY

No significant adverse water quality impacts are anticipated from the dredging and disposal operations. The majority of the material to be dredged is sand. Sandy material is generally not associated with high levels of organic carbon or contaminants, and dredging of sandy material is not likely to result in the release of nutrients or decreases in dissolved oxygen. Sand would settle quickly, and any fines would be rapidly diluted at both the dredging and disposal sites. No significant release of chemical contaminants would occur and therefore no significant impacts to water quality are anticipated.

Under the No Action Alternative, no impacts to water quality in Point Judith Pond would occur.

## 7.4. AQUATIC RESOURCES

### 7.4.1 Dredge Site

#### Eelgrass

No submerged aquatic vegetation (SAV) is present in the project footprint and effects from suspended sediments on adjacent SAV areas are anticipated to be minimal as the material to be dredged is predominately sand which, when suspended in the water column, settles rapidly. There are SAV beds within approximately 150 feet of the top of the projected slope of the new channel. However, no significant impacts to the SAV are anticipated as a result of the proposed project.

#### Benthos/Shellfish

Dredging operations should have no more than minimal adverse impact on benthic resources in Point Judith Harbor. Most sedentary organisms associated with the bottom sediments in the

direct footprint of the dredged areas would be destroyed. However, most motile organisms, such as crabs and finfish, would most likely be able to avoid the dredge. Recolonization of dredged areas is expected and the post-dredging community should closely resemble the existing community. This conclusion is based on a wide range of scientific literature and accepted ecological principals regarding the succession of marine benthic communities. For example, Van Dalfsen et. al. (2000) concluded that in sand mining operations that resulted in only minor changes in sediment types, benthic recovery (defined as the recovery of the diversity, density, and biomass community metrics to levels found at the impact site before mining operations) was accomplished within a short time frame of 2 to 4 years. Conversely, operations that resulted in significant changes to sediment types took longer for the community metrics to resemble pre-mining metrics. Given that the activities proposed for this navigation improvement project are not anticipated to significantly alter the sediment type, this evaluation concludes that benthic recovery should occur within a relatively short timeframe. This evaluation of benthic recovery is supported by information presented in Connor and Simon (1979) (benthic recovery and dredging for oyster shell), Pagliai et. al. (1985) (benthic recovery and improvement dredging), Davoult and Richard (1986) (benthic recovery and sand mining), Newell et. al. (2004) (benthic recovery and sand mining), and Byrnes et al. (2004) (benthic recovery and sand mining). Although the reported timeframes for benthic recovery differ temporally amongst each individual project, the overarching theme that recovery does occur is constant. Therefore, this impact should be considered a non-permanent short-term impact.

While lobsters and shellfish resources inhabiting the direct footprint of the area to be dredged may be destroyed, lobster resources inhabiting the channel jetties and rocky nearshore habitats of Point Judith Pond and shellfish in the pond (as noted in Section 6.4.1) should not be significantly impacted by the project. As the material being dredged is mainly sand, significant levels of suspended sediments (and the effects of suspended sediments on lobster and shellfish resources) outside of the project footprint are not anticipated. Additionally, no significant shellfish beds are located in the area proposed to be dredged.

### Fish

Since the material to be dredged is predominantly sand, with a low silt content, only a small area in the vicinity of the dredging site is likely to be impacted by elevated concentrations of suspended sediments. Most fish are quite tolerant of short-term exposure to elevated suspended sediment levels and those in the project area are unlikely to be significantly impacted by this project (Stern and Stickle 1978, Barr 1987). Most fish are relatively motile and can avoid areas of disturbance, however some demersal fish, fish eggs, and non-motile larvae have the potential to be entrained in the dredge. While some fish resources may be removed by entrainment, the impact to fisheries resources in the system will be minor. Therefore, only temporary short-term impacts of suspended sediments in the vicinity of the dredge and the entrainment of a minor amount of fish resources are anticipated.

#### 7.4.2 Nearshore Disposal Site

### Eelgrass

No eelgrass is located in or adjacent to the nearshore site. Therefore, there will be no impacts to eelgrass resources.

### Benthos/Shellfish

Placing sandy material at the proposed nearshore disposal site should not have significant long-term effects on the benthic communities at the site. The benthic communities in the area (which, as noted in section 6.4.2, are typical near-shore sandy subtidal communities) will realize some mortality in the direct footprint of the disposal through burial. However, as stated above in the action area discussion, benthic communities are anticipated to recover over time. The deposition of the sandy material should not create significant suspended sediment impacts to adjacent areas as the material is expected to settle rapidly. No significant shellfish or lobster resources are located in the nearshore site, therefore, no more than minimal impacts to these resources in the project area are anticipated.

### Fish

Direct impacts to fish resources at the nearshore placement site are expected to be minimal. Any fish in the vicinity of the placement site would be either expected to avoid the areas of disturbance, be smothered by the material, or be exposed to elevated turbidity for brief periods. Since the material to be placed at the site is sand, elevated suspended sediment levels should be short-term and localized to the placement site area. In addition, burial of benthic organisms will occur at the nearshore disposal site and will temporarily eliminate a forage area for fish. However, recolonization by benthic species from adjacent areas and new recruitment is expected to occur in a relatively short period of time. Therefore, no adverse long-term impacts to the fish resources at the placement site are anticipated.

#### 7.4.3 No Action Alternative

Under the No Action Alternative, no disturbance of aquatic resources in Point Judith Pond would occur.

### 7.5 WILDLIFE RESOURCES

The project should have no significant adverse impact on waterfowl or other wildlife occurring in the vicinity of Point Judith Pond and the nearshore placement site. Some wildlife (mainly avifauna) may be temporarily displaced during dredging and disposal activities, however should be able to return to those areas once construction activities have ended.

Under the No Action Alternative, no disturbance of wildlife resources in Point Judith Pond would occur.

### 7.6 ESSENTIAL FISH HABITAT

The proposed dredging and nearshore placement of the sediment for sacrificial beach nourishment will occur during the period of October 1 through January 31. This window was selected to minimize the presence of aquatic resources in the project area and to take advantage of the lower levels of natural, environmental stresses placed on species that may be resident in the work areas. For example, winter flounder spawning, egg maturation and larval development will not be affected as the project will be completed outside of the peak time of these activities. Overall, there is a negligible potential for unacceptable adverse effects, including cumulative effects, of the proposed action on Essential Fish Habitat for any of the

managed species in the area. The dredged material is predominantly sand and has been found to be suitable for disposal at the nearshore disposal site. Minor but temporary impacts from the nearshore placement are expected. Recolonization of the impacted areas by benthic organisms removed by dredging or buried by disposal will occur as reproduction and dispersal of colonists occurs. Schooling life stages of finfish and migratory movements by motile invertebrates are not expected to be affected by the proposed project. Spawning, nursery and forage habitat for the managed species listed in Section 6.6 are not expected to be adversely affected by the proposed project.

The proposed project, if constructed, would require future periodic maintenance dredging (See Section 8). Due to the interval between initial construction and future maintenance dredging, a reevaluation of EFH effects may be warranted for future maintenance actions.

Under the No Action Alternative, no disturbance of EFH or managed species in Point Judith Pond would occur.

## 7.7 THREATENED AND ENDANGERED SPECIES

The Corps has made the preliminary determination that the proposed project is not likely to adversely impact any state or Federally listed threatened or endangered species. Several listed marine mammals may occur as transient species in the general area, but are unlikely to occur within the shallow depths of the dredging or placement areas. Coordination pursuant to the Endangered Species Act with NMFS and USFWS is ongoing.

The No Action Alternative would have no impact to threatened or endangered species in Point Judith Pond.

## 7.8. HISTORIC AND ARCHAEOLOGICAL RESOURCES

The current navigation improvement calls for widening the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet. Sediment sampling, including vibracores, indicated primarily sand within areas to be dredged.

Additionally, the dredged material will be placed at a previously utilized nearshore site off Matunuck below mean high water for beach nourishment purposes. Side scan sonar survey of the area in 2005 did not identify any areas of possible submerged historic properties (Boothroyd et al. 2006). Any cultural resources in this area would have likely been subject to erosional disturbances in the high-energy environment. Two wrecks depicted on the NOAA nautical chart are well to the south of the area proposed for beach nourishment. Dredged material will be placed relatively close to the beach areas to increase the potential for indirect nourishment to the beach areas.

Therefore, the proposed navigation improvement dredging of the Point Judith Harbor of Refuge, with nearshore disposal for beach nourishment at Matunuck, will have no effect upon any structure or site of historic, archaeological, or architectural significance as defined by the National Historic Preservation Act of 1966, as amended, and implementing regulations 36 CFR 800.



The RI State Historic Preservation Officer (SHPO) has previously reviewed and commented on the proposed navigation improvement study, by letter dated August 13, 1986, and concurred that the project will have no effect upon significant cultural resources. The Rhode Island State Historic Preservation Officer is expected to concur with this determination once again.

The No Action Alternative would have no impact historic or archaeological resources in Point Judith Pond.

## 7.9 AIR QUALITY AND NOISE

### Air

The improvement dredging of Point Judith Harbor is subject to Clean Air Act requirements. An air quality conformity analysis (Appendix I) was completed to demonstrate compliance. The conformity analysis details projected emissions that would result from the construction of the proposed project. These data are then compared to Federal and State air quality standards to determine impacts to air quality. It was determined that the direct and indirect ozone emissions, for which the entire State of Rhode Island is in nonattainment status, from the proposed project (0.61 tons/year for NO<sup>x</sup> and 0.09 tons/year for VOC) were considerably less than the conformity threshold value of 100 tons per year.

The project would have no long-term impacts on air quality. During construction, equipment operating on the site would emit pollutants including nitrogen oxides that can lead to the formation of ozone. In order to minimize air quality effects during construction, construction activities would comply with applicable provisions of the Rhode Island Air Quality Control Regulations pertaining to dust, odors, construction, noise, and motor vehicle emissions. This project therefore conforms to the Federal requirements for activities under the Clean Air Act within the Rhode Island State Implementation Plan.

The No Action Alternative would have no impact to air quality in Point Judith Pond.

### Noise

The noise associated with active dredging (i.e., noise from crane motors, electrical generators, tug boats, and workboats) will increase the volume of noise in the project area. However, noise levels are not anticipated to be significantly greater than the ambient noise throughout the harbor (e.g., fishing vessels, loading cranes, and forklifts). Additionally, the noise associated with the proposed project will be of limited duration and will only occur in the immediate vicinity of the dredge plant. Increased noise from the placement of dredged material at the nearshore site will be limited to that associated with tug boat maneuvering and will also be short in duration. Therefore, no more than minimal short-term effects to the noise environment are anticipated as a result of the proposed project.

The No Action Alternative would have no impact to the noise environment of Point Judith Pond.

## 7.10 RECREATIONAL RESOURCES

Minor impacts to recreation in the area may occur as a result of dredging activities. Recreational and commercial boating traffic may experience delays during periods of low tide as navigable water may be limited in the areas surrounding the dredge. Every effort will be made to accommodate vessel traffic in the harbor. Dredging and construction activities will occur during the late fall and winter months when vessel traffic is at a minimum.

The placement site was used previously with no significant impacts to recreation. Placement activities will occur nearshore and not directly on the beach and construction will occur in the fall and winter months. Therefore no impacts to the recreation use of the site are anticipated.

The No Action Alternative would have no impact to recreational resources in Point Judith Pond.

## 8.0. ENVIRONMENTAL JUSTICE & PROTECTION OF CHILDREN

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” require federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low-income populations in the U.S., including Native Americans. The Proposed Action will not have any disproportionately high or adverse impacts on minority or low-income populations, or any adverse short or long-term environmental justice impacts because the project is not located near any areas with these populations. The dredge area is in a heavily used harbor area with no adjacent residents and the placement area is adjacent to state owned beachfront property with no residences.

The No Action Alternative would have no impact to minority or low-income populations.

Executive Order 13045, “Protection of Children from Environmental Health Risks and Safety Risks,” requires federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children. The Proposed Action will not pose any significant or adverse short or long-term health and safety risks to children because access to the project area during construction will be limited as it will be occurring in the harbor and nearshore environment and therefore should not pose a risk to children.

The No Action Alternative would have no impact to children.

## 9.0 CUMULATIVE EFFECTS

Cumulative impacts are those resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Past and current activities in Point Judith Pond include the dredging of the project and navigation of the channel and anchorages. Past and current activities at the disposal site include recreational activities such as swimming and fishing. The proposed improvements and disposal activities may result in the expansion of either the commercial or recreational fleets within the pond. Reasonably foreseeable future actions include the continuation of periodic maintenance

dredging and navigation activities (i.e., recreational boating and commercial fishing fleet usage). Impacts from future maintenance dredging are anticipated to be similar to those documented in this Environmental Assessment.

Regionally, the improvement dredging of the project will assist the commercial fishery that exists in coastal Rhode Island. The dredging will provide shelter and safe navigation for existing commercial fishing vessels. This is essential for the continuance of the commercial fishing industry in Rhode Island. The cumulative impacts on marine resources from dredging will be short-term and minimal and should not contribute to any loss of regional resources.

Based on the impacts noted above, no significant cumulative impacts are anticipated as a result of the proposed project.

## **10.0 MEASURES TAKEN TO MINIMIZE ENVIRONMENTAL IMPACTS**

The following actions will be instituted to minimize potential adverse impacts from the proposed project.

1. The dredging contractor will be required to fully accommodate vessel traffic during dredging operations.
2. Dredging will occur from October 1 through January 31 to avoid potential impacts to spawning shellfish and spawning and early life stages of winter flounder.
3. Material will be placed in nearshore waters off of the Matunuck shoreline between the 15- 18' MLLW contour.

## **11.0 COORDINATION AND PUBLIC INVOLVEMENT**

Coordination has been conducted with the appropriate state and Federal agencies. A public notice was released concurrent with publication of the Draft Detailed Project Report and Draft Environmental Assessment for public and agency review. The public notice includes contact information for obtaining copies of the Environmental Assessment for the project. Copies of the public notices and coordination letters received are contained in Appendix A of the Main Report. Coordination has occurred with the following agencies and officials:

US Environmental Protection Agency –Region I  
US Fish and Wildlife Service  
NOAA – Fisheries (Habitat Conservation Division and Protected Resources Division)  
Rhode Island Department of Environmental Management  
Rhode Island Coastal Resources Management Council  
Rhode Island State Historic Preservation Commission  
Narragansett Tribe

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## 13.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

### **Federal Statutes**

1. *Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.*

Compliance: A Section 404(b)(1) Evaluation and Compliance Review have been incorporated into this report. A State Water Quality Certification, pursuant to Section 401 of the Clean Water Act, will be requested from the Rhode Island Department of Environmental Management.

2. *Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq.*

Compliance: Not applicable. This project is being evaluated under Section 404 (b) (1) of the Clean Water Act, not 103 of the MPRSA, as disposal is in the nearshore (33 CFR Part 338).

3. *National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.*

Compliance: Coordination with the State Historic Preservation Office to determine whether historic or archaeological resources would be affected by the proposed project signifies compliance with this Act.

4. *Preservation of Historic and Archaeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq. This amends the Reservoir Salvage Act of 1960 (16 U.S.C. 469).*

Compliance: Not applicable. Project does not require mitigation of historic or archaeological resources.

5. *Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.*

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) is complete. The Corps made the determination that impacts associated with the proposed project are not likely to adversely affect threatened or endangered species under the jurisdiction of the USFWS or NMFS.

6. *The Estuary Protection Act (16 U.S.C. 1221)*

Compliance: Not applicable, as this report is not being submitted to Congress.

7. *Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.*

Compliance: Coordination with the FWS, NMFS, and the Rhode Island Department of Environmental Management signifies compliance with the Fish and Wildlife Coordination Act.



8. *National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321 et seq.*

Compliance: Preparation of this report signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is issued.

9. *Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271 et seq.*

Compliance: Not applicable.

10. *Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1431 et seq.*

Compliance: A CZM consistency determination will be provided to the Rhode Island Coastal Resource Management Council for review and concurrence that the proposed project is consistent, to the maximum extent practicable, with the approved State CZM program.

11. *Clean Air Act, as amended U.S.C. 7401 et seq.*

Compliance: Public notice of the availability of this report to the Regional Administrator of the Environmental Protection Agency for review pursuant to Sections 176c and 309 of the Clean Air Act signifies compliance.

12. *Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.*

Compliance: Not applicable.

13. *Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-1.*

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

14. *Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.*

Compliance: No requirements for Corps of Engineers projects or programs authorized by Congress. The proposed navigation improvement project is included under the continuing authority of the Rivers and Harbors Act.

15. *Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 et seq.*

Compliance: Not applicable.

16. *Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.*

Compliance: Coordination with the National Marine Fisheries Service and preparation of an Essential Fish Habitat (EFH) Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act. Coordination is ongoing.

17. *Archaeological Resources Protection Act of 1979, as amended, 16 USC 470 et seq.*

Compliance: Not applicable. No archaeological resources are located in the project area.

18. *American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.*

Compliance: Must ensure access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. Coordination revealed no conflicts.

19. *Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170*

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

### **Executive Orders**

1. *Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971*

Compliance: Coordination with the State Historic Preservation Officer signifies compliance.

2. *Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.*

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a)(2).

3. *Executive Order 11990, Protection of Wetlands, 24 May 1977.*

Compliance: Public notice of the availability of this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. *Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.*

Compliance: Not applicable to projects located within the United States.

5. *Executive Order 12898, Environmental Justice, 11 February 1994.*

Compliance: Not applicable, the project is not expected to have a significant impact on minority or low income population, or any other population in the United States.

6. *Executive Order 13007, Accommodation of Sacred Sites, 24 May 1996*

Compliance: Not applicable unless on Federal lands, then agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

7. *Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.*

Compliance: This project would not create a disproportionate environmental health or safety risk for children and is therefore compliant with this Order.

8. *Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.*

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and USACE Tribal Policy Principles signifies compliance.

### **Executive Memorandum**

1. *Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.*

Compliance: Not applicable. This project does not involve or impact agricultural lands.

2. *White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.*

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies compliance.

**FINDING OF NO SIGNIFICANT IMPACT**  
**Point Judith Harbor Navigation Improvement Dredging Project**  
**Narragansett and South Kingstown, Rhode Island**

The proposed Point Judith Harbor navigation improvement project in Narragansett and South Kingstown, Rhode Island includes the widening of the existing -15- foot mean lower low water (MLLW) West Bulkhead Channel by 50 feet (for a total width of 200 feet) for a distance of approximately 700 feet, and extending this same channel approximately 1,200 feet northeasterly into the North Basin area at a width of 150 feet and a depth of -11 feet MLLW. Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull dump scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately two and a half miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of dredge material for beach nourishment. Construction will occur between October 1 and January 31 and is expected to take two to three months to complete.

The Environmental Assessment for the proposed project has reviewed all pertinent information regarding the proposed improvement dredging and disposal of dredged material from Point Judith Harbor, Narragansett and South Kingstown, Rhode Island. Biological impacts of the proposed work would consist of a temporary loss of benthic community at the dredging and disposal sites. However, these organisms will be replaced by recolonization of species from adjacent areas.

I find that based on the evaluation of environmental effects discussed in this document, the decision on this application is not a major federal action significantly affecting the quality of the human environment. Under the Council on Environmental Quality (“CEQ”) NEPA regulations, “NEPA significance” is a concept dependent upon context and intensity (40 C.F.R. § 1508.27). When considering a site-specific action like the proposed project, significance is measured by the impacts felt at a local scale, as opposed to a regional or nationwide context. The CEQ regulations identify a number of factors to measure the intensity of impact. These factors are discussed below, and none are implicated here to warrant a finding of NEPA significance. A review of these NEPA “intensity” factors reveals that the proposed action would not result in a significant impact—neither beneficial nor detrimental—to the human environment.

Impacts on public health or safety: The project is expected to have no effect on public health and safety.

Unique characteristics: There are no unique characteristics in this river that would be impacted by proposed improvement dredging.

Controversy: The proposed project is not controversial. State and federal resource agencies agree with the Corps impact assessment.

Uncertain impacts: The impacts of the proposed project are not uncertain; they are readily understood based on past experiences from this project and other similar Corps projects.

Precedent for future actions: The proposed project is an improvement of an existing authorized project. Future maintenance of the project will be required.

Cumulative significance: As discussed in the EA, to the extent that other actions are expected to be related to project as proposed, these actions will provide little measurable cumulative impact.

Historic resources: The project will have no known negative impacts on any pre-contact or historic period archaeological sites recorded by the State of Rhode Island.

Endangered species: The project will have no known positive or negative impacts on any State or Federal threatened or endangered species.

Potential violation of state or federal law: This action will not violate federal or state laws.

Measures to minimize adverse environmental effects of the proposed action are discussed in Section 10 of the EA and include seasonal restrictions to avoid estuarine resources.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that the Point Judith Harbor improvement dredging project in Narragansett and South Kingstown, Rhode Island is not a major Federal action significantly affecting the quality of the human environment. This project, therefore, is exempt from requirements to prepare an Environmental Impact Statement.

1 APR 2020

Date

*William M Conde*

William M. Conde  
Colonel, Corps of Engineers  
District Engineer

**CLEAN WATER ACT SECTION 404 (b)(1) EVALUATION  
U.S. ARMY CORPS OF ENGINEERS, NEW ENGLAND DISTRICT  
CONCORD, MA**

PROJECT: Improvement Dredging of Point Judith Harbor, Narragansett and South Kingstown, Rhode Island

PROJECT MANAGER: Mr. Mark Habel

Phone: (978) 318-8871

FORM COMPLETED BY: Mr. Todd Randall

Phone: (978) 318-8518

**PROJECT DESCRIPTION:**

The proposed project includes the widening of the existing -15-foot mean lower low water (MLLW) West Bulkhead Channel by 50 feet (for a total width of 200 feet) for a distance of approximately 700 feet, and extending this same channel approximately 1,200 feet northeasterly into the North Basin area at a width of 150 feet and a depth of -11 feet MLLW. Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull dump scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately two and a half miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of dredge material for beach nourishment. Construction will occur between October 1 and January 31 and is expected to take two to three months to complete.

**NEW ENGLAND DISTRICT  
U.S. ARMY CORPS OF ENGINEERS, CONCORD, MA**

**EVALUATION OF CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES**

PROJECT: Point Judith Harbor Federal Navigation Improvement Project

1. Review of Compliance (Section 230.10(a)-(d)).

- a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose;

<u>X</u>	<u>          </u>
YES	NO

- b. The activity does not appear to:
- 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

<u>X</u>	<u>          </u>
YES	NO

- c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);

<u>X</u>	<u>          </u>
YES	NO

- d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

<u>X</u>	<u>          </u>
YES	NO



## 2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Significant	Significant
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate		X	
2) Suspended particulates/turbidity		X	
3) Water		X	
4) Current patterns and water circulation		X	
5) Normal water fluctuations		X	
6) Salinity gradients		X	
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Threatened/ endangered species		X	
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web		X	
3) Other wildlife		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E).			
1) Sanctuaries and refuges		X	
2) Wetlands		X	
3) Mud flats	X		
4) Vegetated shallows	X		
5) Coral reefs	X		
6) Riffle and pool complexes	X		
d. Potential Effects on Human Use Characteristics (Subpart F).			
1) Municipal and private water supplies	X		
2) Recreational and commercial fisheries		X	
3) Water-related recreation		X	
4) Aesthetics		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves		X	

3. Evaluation and Testing (Subpart G).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

- |  |          |
|--|----------|
| 1) Physical characteristics.....   | <u>X</u> |
| 2) Hydrography in relation to known or anticipated sources of contaminants.....  | <u>X</u> |
| 3) Results from previous testing of the material or similar material in the vicinity of the project.....   | <u>X</u> |
| 4) Known, significant sources of persistent pesticides from land runoff or percolation.....  | _____    |
| 5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA).....   | <u>X</u> |
| 6) Public records of significant introduction of contaminants from industries, municipalities, or other sources.....   | _____    |
| 7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities | _____    |
| 8) Other sources (specify).....  | _____    |

List appropriate references.

Environmental Assessment for the Improvement Dredging of Point Judith Harbor,  
Narragansett, RI., April 2018

- b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

<u>X</u>	_____
YES	NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

- |  |   |       |
|--|---|-------|
| 1) Depth of water at disposal site.....  | X | _____ |
| 2) Current velocity, direction, and<br>variability at disposal site.....   | X | _____ |
| 3) Degree of turbulence.....   | X | _____ |
| 4) Water column stratification.....  | X | _____ |
| 5) Discharge vessel speed and<br>direction.....  | X | _____ |
| 6) Rate of discharge.....  | X | _____ |
| 7) Dredged material<br>characteristics<br>(constituents, amount,<br>and type<br>of material, settling velocities)..... | X | _____ |
| 8) Number of discharges per unit of<br>time.....   |   | _____ |
| .....  |   |       |
| 9) Other factors affecting rates and<br>patterns of mixing (specify).....  |   | _____ |

List appropriate references.

Environmental Assessment for the Improvement Dredging of Point Judith Harbor,  
Narragansett, RI.  
August 2016

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

X	_____
YES	NO

5. Actions To Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

X	_____
YES	NO

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

- |  |                 |                     |
|--|-----------------|---------------------|
| a. Physical substrate<br>(review sections 2a, 3, 4, and 5 above).                                      | <u>X</u><br>YES | <u>      </u><br>NO |
| b. Water circulation, fluctuation and salinity<br>(review sections 2a, 3, 4, and 5).                   | <u>X</u><br>YES | <u>      </u><br>NO |
| c. Suspended particulates/turbidity<br>(review sections 2a, 3, 4, and 5).                              | <u>X</u><br>YES | <u>      </u><br>NO |
| d. Contaminant availability<br>(review sections 2a, 3, and 4).   | <u>X</u><br>YES | <u>      </u><br>NO |
| e. Aquatic ecosystem<br>structure, function and<br>organisms(review<br>sections 2b and<br>c, 3, and 5) | <u>X</u><br>YES | <u>      </u><br>NO |
| f. Proposed disposal site<br>(review sections 2, 4, and 5).  | <u>X</u><br>YES | <u>      </u><br>NO |
| g. Cumulative effects on the aquatic<br>ecosystem.   | <u>X</u><br>YES | <u>      </u><br>NO |
| h. Secondary effects on the aquatic<br>ecosystem.  | <u>X</u><br>YES | <u>      </u><br>NO |

7. Findings of Compliance or Noncompliance.

- a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.

X                              
YES                      NO

1 APR 2020

Date

*William M Conde*

William M. Conde  
Colonel, Corps of Engineers  
District Engineer

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## **APPENDIX A**

### **PERTINENT CORRESPONDENCE**



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**POINT JUDITH HARBOR  
RHODE ISLAND**

**DETAILED PROJECT REPORT AND ENVIRONMENTAL ASSESSMENT**

**APPENDIX A  
PERTINENT CORRESPONDENCE**

**LIST OF PERTINENT CORRESPONDENCE**

**Part 1. Correspondence during Public Review of the Draft Feasibility Report/Environmental Assessment and Preparation and Review of the Final Feasibility Report/Environmental Assessment**

North Atlantic Division – Final Report Review Memorandum – 7 October 2019  
New England District – Final Report Transmittal to NAD – 29 August 2019  
RI Coastal Resources Management Council – Sponsor’s Letter of Support and Self Certification of Financial Capability – 3 April 2019  
U.S. Fish and Wildlife Service – ESA Letter to NAE – 31 January 2019  
U.S. Fish and Wildlife Service – FWCA Letter to NAE – 14 December 2018  
John Thompson, Narragansett Harbor Commission – Email to NAE – 22 October 2018  
New England District – News Release on Draft DPR/EA – 20 August 2018  
New England District – Public Notice for Public Review of Draft DPR/EA – 19 August 2018  
New England District – Public Notice Cover Letter – Draft DPR/EA – 19 August 2018  
New England District – Letter to Congressional Interests –Draft DPR/EA – 19 August 2018  
New England District – Letter to Governor Raimondo – Draft DPR/EA – 19 August 2018  
New England District – Letters to State Agencies – Draft DPR/EA – 19 August 2018  
New England District – Letters to Federal Agencies – Draft DPR/EA – 19 August 2018

**Part 2. Correspondence during Preparation of the Draft Feasibility Report and Draft Environmental Assessment**

New England District – AFB Memorandum to NAD – 22 August 2018  
U.S. Environmental Protection Agency – Email to NAE – 10 April 2018 – Suitability Concur  
National Marine Fisheries Service – Email Exchange with NAE on EFH – 20 March 2018  
U.S. Fish and Wildlife Service – ESA Letter to NAE – 8 January 2018  
National Marine Fisheries Service – ESA Not Likely to Adversely Affect Coordination Form Exchanged with NAE – 13 December 2017  
US Environmental Protection Agency – CAA Letter to NAE – 1 December 2017  
New England District – Coordination Letters to Agencies – 3 November 2017  
US Environmental Protection Agency, Region I  
National Marine Fisheries Service (EFH and FWCA Coordination)  
Rhode Island Historical Preservation and Heritage Commission – 29 June 2017  
New England District – Coordination Letter to RISHPO – 19 June 2017  
New England District – Funds Request to CRMC – 17 April 2015

New England District – FCSA Transmittal to CRMC – 13 March 2015  
North Atlantic Division – FCSA Approval Memo – 12 March 2015  
RI Coastal Resources Management Council – Study Support Letter – 1 October 2014  
New England District – FCSA Execution Request Memo to NAD – 26 October 2012  
Assistant Secretary of the Army (Civil Works) – Fact Sheet Approval – 17 October 2012  
RI Coastal Resources Management Council – Study Support Letter – 1 October 2012  
USACE North Atlantic Division – IAR Approval Memo – 24 August 2012  
New England District – Memo Transmitting CAP Fact Sheet to NAD – 10 July 2012  
New England District – Memo Transmitting Initial Appraisal to NAD – 12 June 2012  
Assistant Secretary of the Army (Civil Works) – Letter to Senator Reed – 23 October 2006  
Honorable Senator Jack Reed – Letter to ASA (CW) – 29 September 2006  
RI Coastal Resources Management Council – Study Request – 26 September 2006  
RI Department of Environmental Management – Letter to NAE – 17 October 2000  
RI Department of Environmental Management – Letter to NAE – 29 August 2000

## Part 1

Correspondence during Public Review of the Draft  
Feasibility Report/Environmental Assessment  
and during Preparation and Review of the Final  
Feasibility Report/Environmental Assessment

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**DEPARTMENT OF THE ARMY**  
**US ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION**  
**FORT HAMILTON MILITARY COMMUNITY**  
**302 GENERAL LEE AVENUE**  
**BROOKLYN NY 11252-6700**

CENAD-PD-C

07 October 2019

MEMORANDUM FOR Commander, New England District, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742

SUBJECT: Pt. Judith Harbor, Rhode Island – Continuing Authorities Program (CAP), Section 107 project (P2/CWIS#: 130481) - Submittal of draft Final Detailed Project Report and Environmental Assessment (DPR and EA) for Review and Approval.

1. References:

- a. Memorandum, CENAE-PDP, 29 August 2019, and submitted documents.
- b. Memorandum, CENAD-PD-P, 07 October 2019

2. The New England District requested review and approval of the Draft Final Detailed Project Report and Environmental Assessment for the Point Judith Harbor, Rhode Island, CAP Section 107 study (Reference 1.a.).

3. The North Atlantic Division has reviewed the package and provides the following comments that must be addressed prior to report approval (Reference 1.b.).

4. The point of contact for this action is Mr. Christopher Ricciardi, Ph.D.. He may be reached at: (347) 370-4534.

JOHN O'CONNOR, P.E.  
Civil Works Integration Division  
Continuing Authorities Program Manager



DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION  
FORT HAMILTON MILITARY COMMUNITY  
302 GENERAL LEE AVENUE  
BROOKLYN NY 11252-6700

CENAD-PD-P

7 October 2019

MEMORANDUM FOR: Chief, Civil Works Integration Division (Mr. Forcina)

SUBJECT: Submittal of draft Final Detailed Project Report and Environmental Assessment (DPR and EA) for Point Judith Harbor, Rhode Island – Continuing Authorities Program (CAP) Section 107 Project (PWI No.130481) for Review and Approval.

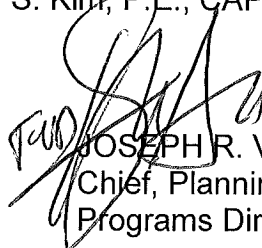
1. References:

a. CENAE-PDP Memorandum dated 29 August 2019 transmitting the subject draft final DPR, EA, and supporting documents and requesting review and approval.

b. CENAD-PD-C Email dated 4 September 2019 transmitting the documents and requesting concurrence with the subject report of August 2019.

2. As requested in References 1a and 1b, the North Atlantic Division Planning and Policy Division (CENAD-PD-P) has reviewed the draft Final DPR and EA for Point Judith Harbor, Rhode Island – CAP Section 107 Project and has prepared a series of comments to be addressed in advance of the finalization and approval of the report. These comments are included as an attachment to this memorandum. Please provide a response to all of the comments and a track changes version of the document(s) requiring revisions to ensure that the comments both provided formally and informally are adequately addressed.

3. Please direct any questions to Ms. Naomi Fraenkel, AICP, Navigation Planning Lead at (917) 359-2819 or Mr. Young S. Kim, P.E., CAP Review Manager at (347) 370-4514.

  
JOSEPH R. VIETRI  
Chief, Planning and Policy Division  
Programs Directorate

Cc: Chris Ricciardi, PhD/CWID DST

Attachment





DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

CENAE-PDP

29 August 2019

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers, ATTN: CENAD-PD-CID-P (Mr. Christopher Ricciardi), Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, New York 11252-8400

SUBJECT: Submittal of draft Final Detailed Project Report and Environmental Assessment (DPR and EA) for Point Judith Harbor, Rhode Island Section 107 Project (PWI No.130481) for Review and Approval.

1. Public Review and ATR of this report concluded in October 2018. Completion of the final report was delayed by other priority work in the District. The project addresses the need for commercial navigation improvements at Point Judith Harbor, a port operated by the state of Rhode Island, through widening and extension of the existing Federal channel. The Rhode Island Coastal Resources Management Council, a state agency, is the project sponsor.
2. NAE hereby requests review and approval of the enclosed final DPR and EA and approval to begin negotiation of Project Partnership Agreement with the sponsor.
3. Public review yielded a single comment concerning the potential for debris in the dredge area of this active port, an issue that would be addressed in drafting specifications for the work. ATR comments were non-substantive and were addressed in the final report. Given the delay in completion, limited nature of the improvements recommended, the lack of comments on the draft report, and the limited edits resulting from ATR, the District proceeded directly to finalizing the report.
3. The non-Federal sponsor has provided a letter of support for the project and their self-certification of financial capability, all included in the enclosed submittal package.
4. Additional information on this investigation can be obtained by contacting the Project Manager, Mr. Mark Habel, at (978) 318-8871 or [Mark.L.Habel@usace.army.mil](mailto:Mark.L.Habel@usace.army.mil).

7 Encls  
See Attached Submittal List

  
WILLIAM M. CONDE  
COL, EN  
Commanding

CENAE-PDP

SUBJECT: SUBJECT: Submittal of draft Final Detailed Project Report and Environmental Assessment (DPR and EA) for Point Judith Harbor, Rhode Island Section 107 Project (PWI No.130481) for Review and Approval.

**Final Draft Detailed Project Report (DPR) and Planning and Design Analysis (PDA)**

**Final Feasibility Phase Decision Document**

Submittal Pre-Brief Held with NAD and District: 29 May 2019

List of Final Report Submittal Items	
00	Transmittal Memo from NAE Commander to NAD Commander (Copy to CWID)
01	Listing of Report Changes since Draft – Track Change Version of Final Report
02	Final DPR/EA and Appendices, Including:
	Main Report
	Environmental Assessment and FONSI
	Appendix A – Public Involvement, Appendix B – Project History, Appendix C - Economics, Appendix D – Design, Appendix E – Cost, Appendix F – Real Estate, Appendix G – Sediment Testing, Appendix H – EFH, Appendix I – AQ RONA, Appendix J – Suitability Determination
03	Certification of District Quality Control
04	Certification of Agency Technical Review
05	Certification of Legal Sufficiency
06	Project Fact Sheet
07	Non-Federal Sponsor Letter of Support and Self-Certification of Financial Capability



State of Rhode Island and Providence Plantations  
**Coastal Resources Management Council**  
Oliver H. Stedman Government Center  
4808 Tower Hill Road, Suite 3  
Wakefield, RI 02879-1900

(401) 783-3370  
Fax (401) 783-3767

April 3, 2019

US Army Corps of Engineers  
Attn: Mr. Mark Habel  
696 Virginia Road  
Concord, MA 01742

**RE:** Point Judith Section 107 Navigation Improvement Project  
**Site Location:** Point Judith Harbor, Narragansett, RI  
**CRMC File No.** 2015-03-091

Dear Mr. Habel

The Rhode Island Coastal Resources Management Council (CRMC) along with the Rhode Island Department of Environmental Management (DEM) have reviewed the detailed draft project report and environmental assessment for the Point Judith Section 107 Navigation Improvement Project. Both Agencies concur with the recommended plan. In accordance with Rhode Island law, the CRMC will be the non-Federal Sponsor for the project, and we understand the responsibilities as the non-Federal sponsor. This understanding includes cost-sharing for design (recent estimate of \$163,000) and construction/implementation (D&I) of the project (estimated at \$350,000).

If you need anything additional please don't hesitate to contact Mr. Dan Goulet of our staff at (401) 783-3370.

Sincerely,

Grover Fugate  
Executive Director

Rhode Island Coastal Resources Management Council

**NON-FEDERAL SPONSOR'S  
SELF-CERTIFICATION OF FINANCIAL CAPABILITY  
FOR DECISION DOCUMENTS**

I, Grover Fugate, do hereby certify that I am the Executive Director of the Rhode Island Coastal Resources Management Council (the "Non-Federal Sponsor"); that I am aware of the financial obligations of the Non-Federal Sponsor for the Point Judith Harbor Navigation Improvement Project, Rhode Island (CRMC File No. 2015-03-091); and that the Non-Federal Sponsor will have the financial capability to satisfy the Non-Federal Sponsor's obligations for that project. I understand that the Government's acceptance of this self-certification shall not be construed as obligating either the Government or the Non-Federal Sponsor to implement a project.

IN WITNESS WHEREOF, I have made and executed this certification this 3 day of April, 2019.

BY:   
Grover Fugate, Executive Director  
Coastal Resources Management Council

DATE: 3 APRIL 2019





# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

New England Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087  
<http://www.fws.gov/newengland>

January 31, 2019

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2019)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact David Simmons of this office at 603-227-6425 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman  
Supervisor  
New England Field Office



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

New England Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087  
<http://www.fws.gov/newengland>



December 14, 2018

John R. Kennelly  
Department of the Army  
U.S. Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, MA 01742-2751

Re: Draft Detailed Project Report/Environmental Assessment for Federal Navigation Project at Point Judith Harbor, Narragansett, Rhode Island; TAILS # 2018-CPA-0131

Dear Mr. Kennelly:

This responds to your correspondence, dated September 19, 2018, notifying us that the Draft Detailed Project Report and Draft Environmental Assessment examining improvements to the Federal Navigation Project at Point Judith Harbor in Narragansett, Rhode Island (Project), have been completed and are being released for State and public review. You requested that we provide a Final Coordination Act Report or acknowledgement of no need for further consultation pursuant to section 2(b) of the Fish and Wildlife Coordination Act (FWCA).

The FWCA established an authority for the U.S. Fish and Wildlife Service (Service) to provide assistance to, and cooperate with, Federal agencies in minimizing impacts of projects on wildlife resources; however, the workload generated by the collective number of FWCA requests, and other correspondences we receive, exceeds our ability to address all requests. Although we are unable to provide a FWCA report at this time, we are unaware of any substantial impacts the Project would have on wildlife resources in the project area. This does not preclude future evaluation and recommendations by the Service, should the project description change.

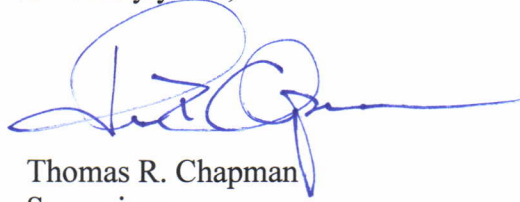
Many of the outcomes of a FWCA report can be achieved through consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (87 Stat. 884, as amended; 16 U.S.C 1531, et seq.) (ESA). Accordingly, please contact us if the Corps of Engineers determines a species listed under the ESA may be affected by the subject Project or may be present in the project area.

John R. Kennelly  
December 14, 2018

2

Thank you for your coordination. Please contact Ms. Cindy Corsair of this office at 401-213-4416 if we can be of further assistance.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'TRC', with a long horizontal flourish extending to the right.

Thomas R. Chapman  
Supervisor  
New England Field Office

cc: Todd Randall, Corps of Engineers  
Reading file  
ES: CCorsair:12-14-18:401-213-4416

**From:** [John Thompson](#)  
**To:** [CENAE-PD, NAE](#)  
**Cc:** [bluffhillcoveoysters@gmail.com](mailto:bluffhillcoveoysters@gmail.com)  
**Subject:** [Non-DoD Source] Dredge Comments Point Judith Pond  
**Date:** Monday, October 22, 2018 11:19:26 AM

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To whom it may concern:

I'd like to offer a few comments on the West Bulkhead/North Basin Dredging Project:

- 1) All solid waste should be segregated and disposed of properly, there may be an old motor engine block submerged in the North Basin area, and possibly the remains of a sunken wooden boat.
- 2) Significant sedimentation has occurred on the North side of the North Basin along Basin Road which leads to Little Comfort Island. This is due to the convergence of a flood tidal delta formed by water entering the channel at Galilee, and an ebb tidal delta formed by water passing under the Great Island Bridge from Bluff Hill Cove. This stagnation zone is further complicated by the fact that Basin Road effectively creates a dam so that seawater cannot circulate around Little Comfort as it would have prior to road construction. Additional dredging of this area is warranted as is a culvert being constructed under basin road to restore tidal conditions to their original state in this area. This restoration would improve circulation and thereby improve water quality and benthic habitat, since none of the adjacent houses are tied to a municipal waste water grid.
- 3) Some or all of the dredged material should be placed in the Harbor of Refuge between the jetty for the Channel to Point Judith Pond and the first groin at Roger Wheeler Beach. Hurricane Sandy removed approximately 80,000 cy of dune from this area. This sand was washed into Point Judith Pond and directly onto the flood tidal delta that is the subject of this project. This location is also closer than Matunuck, so it would cost less to relocate the dredged material in this area.

After Hurricane Carol in 1954, the ACOE laid a pipe from Point Judith Pond along this beach for several weeks to nourish the dune back to health, every few days, a section of pipe was removed to nourish the beach evenly.

Thank you for your consideration.

John Thompson  
Coastal Geologist  
Member  
Narragansett Harbor Commission  
Galilee Advisory Committee





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**US Army Corps of Engineers**  
**BUILDING STRONG®**

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Corps proposes improvement dredging for Point Judith Harbor Federal Navigation Project in Narragansett

*Posted 9/19/2018*

Release no. 18-083

**Contact**

Tim Dugan 978-318-8264

cenae-pa@usace.army.mil

**CONCORD, Mass.** – The New England District, U.S. Army Corps of Engineers, in partnership with the Rhode Island Coastal Resources Management Council, is proposing improvement dredging to the Point Judith Harbor Federal Navigation Project (FNP) in Narragansett, Rhode Island. The proposed project includes the widening of the existing 15-foot deep Mean Lower Low Water (MLLW) West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet.

Approximately 23,700 cubic yards of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet (MLLW) of water to allow the beneficial use of dredge material for beach nourishment. Construction will occur between Oct. 1 and Jan. 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete.

The existing commercial and recreational vessels that use the Point Judith Harbor FNP have increased in number over the years. New berthing areas over the past several years were constructed to meet increasing demand for use of the Port. The result has been that navigation delays and inefficiencies exist at the western and northern sides of the bulkhead. The western side of the bulkhead is the primary work area and offloading area for fish haul, and contains major fish buyers and fish processors. The heavy use of this area by many of the vessels in the harbor and the narrow federal channel width result in frequent and significant congestion delays. Additional delays occur while vessels wait to offload catch. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays.

The improvement dredging of Point Judith Harbor would increase the FNP's ability to accommodate safe and efficient vessel movement to the western and northern sides of the state

A-1-11

pier at the Port of Galilee. This measure would alleviate crowded conditions for the commercial fishing fleet at the berthing and offloading areas, and provide access to northern berthing areas built to accommodate increased demands for use of the facility. It also would improve transit efficiency and improve safe passage for the commercial fishing fleet that use the western and northern areas of the port.

The Rhode Island Coastal Resources Management Council is the local sponsor for the proposed work. This improvement project is authorized under the continuing authority of Section 107 of the River and Harbor Act of 1960, as amended.

The proposed work is being coordinated with the following agencies: U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; National Marine Fisheries Service; Rhode Island Department of Environmental Management; Rhode Island Coastal Resources Management Council; State Historic Preservation Office; Rhode Island Department of Administration, Office of Strategic Planning; Rhode Island National Heritage Program; and the Narragansett Tribe.

A draft Environmental Assessment for this work has been prepared and is available for review upon request. The material to be dredged has undergone physical and chemical analyses. Based on these data, the sandy material has been found suitable for placement at the nearshore site off of Matunuck Beach in South Kingstown.

The public notice, with more detailed information on the proposal, is available for review on the Corps website at <http://www.nae.usace.army.mil/Missions/PublicNotices.aspx> under Planning public notices.

Public comments on this proposed project should be forwarded no later than Oct. 19, 2018 to the U.S. Army Corps of Engineers, New England District, Planning Division (ATTN: Mr. Mark Habel), 696 Virginia Road, Concord, MA 01742-2751 or by email to [nae-pd-pn@usace.army.mil](mailto:nae-pd-pn@usace.army.mil).



US Army Corps  
of Engineers®  
New England District

696 Virginia Road  
Concord, MA 01742-2751

# Public Notice

In Reply Refer to: Mr. Mark Habel  
nae-pd-pn@usace.army.mil

Planning Division

Date: September 19, 2018

Comment Period Closes: October 19, 2018

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## 30 DAY PUBLIC NOTICE

### IMPROVEMENT DREDGING OF THE POINT JUDITH HARBOR FEDERAL NAVIGATION PROJECT NARRAGANSETT, RHODE ISLAND

Interested parties are hereby notified that the U.S. Army Corps of Engineers (Corps), New England District (NAE), plans to perform improvement dredging of the Federal navigation project at Point Judith Harbor, RI, involving work in the navigable waters of this District, under the provisions of Section 404 of the Clean Water Act of 1977 (P.L. 95-217) and to authorize such work in accordance with Title 33, Parts 335-338 of the Code of Federal Regulations. Attachment No. 1 lists pertinent laws, regulations, and directives.

**Project Description:** The proposed project will make improvements to the Point Judith Harbor Federal Navigation Project (FNP) in Narragansett, RI. The proposed project includes the widening of the existing 15-foot deep Mean Lower Low Water (MLLW) West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet (See Attachment No. 2). Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor (See Attachment No. 3). The dredged material will be placed in approximately 15 to 18 feet (MLLW) of water to allow the beneficial use of dredge material for beach nourishment. Construction will occur between October 1 and January 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete. The Federally authorized project at Point Judith Harbor of Refuge and Pont Judith Pond was adopted by the River & Harbor Act of 1890, and further modified in 1892, 1902, 1905, 1907, 1910, 1919, 1948, 1961, 1962, and 1976. This improvement project is authorized under the continuing authority of Section 107 of the River and Harbor Act of 1960, as amended.

**Character and Purpose of Work:** The existing commercial and recreational vessels that use the Point Judith Harbor FNP have increased in number over the years. New berthing areas over the past several years were constructed to meet increasing demand for use of the Port. The result has been that navigation delays and inefficiencies exist at the western and northern sides of the bulkhead. The western side of the bulkhead is the primary work area and offloading area for fish haul, and contains major fish buyers and fish processors. The heavy use of this area by many of

the vessels in the harbor and the narrow federal channel width result in frequent and significant congestion delays. Additional delays occur while vessels wait to offload catch. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays.

The improvement dredging of Point Judith Harbor would increase the FNP's ability to accommodate safe and efficient vessel movement to the western and northern sides of the State Pier at the Port of Galilee. This measure would alleviate crowded conditions for the commercial fishing fleet at the berthing and offloading areas, and provide access to northern berthing areas built to accommodate increased demands for use of the facility. It would also improve transit efficiency and improve safe passage for the commercial fishing fleet that use the western and northern areas of the port.

Approximately 24,000 cubic yards (CY) of sandy material will be removed from the improvement sections (See Attachment No. 2) using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor (See Attachment no. 3).

**Alternatives Considered:** Several alternatives were evaluated for the proposed project. Alternatives included no action, fleet relocation to another harbor, improvement dredging to existing channels, and relocating the port facilities within the harbor. With the exception of the improvement dredging alternative, all alternatives were deemed not practicable. Therefore, the recommended alternative is the improvement of the existing channels in the Point Judith Harbor FNP.

**Placement Area:** The material to be dredged has undergone physical and chemical analyses. Based on these data, the sandy material has been found suitable for placement at the nearshore site off of Matunuck Beach in South Kingstown, RI.

**Additional Information:** Additional information may be obtained from Mr. Mark Habel, Planning Division, at the address shown above, telephone number (978) 318-8871.

**Coordination:** The proposed work is being coordinated with the following Federal, State, and local agencies:

**Federal**

U.S. Environmental Protection Agency  
U.S. Fish and Wildlife Service  
National Marine Fisheries Service

**State**

Rhode Island Department of Environmental Management  
Rhode Island Coastal Resources Management Council  
State Historic Preservation Office  
Rhode Island Department of Administration, Office of Strategic Planning  
Rhode Island National Heritage Program

**Federally Recognized Tribes**

Narragansett Tribe

Local

Town of Narragansett

Town of South Kingstown

**Environmental Impacts:** A draft Environmental Assessment for this work has been prepared and is available for review upon request. I have made a preliminary determination that an Environmental Impact Statement is not required under the provisions of the National Environmental Policy Act of 1969. This determination will be reviewed in light of facts submitted in response to this notice.

**Federal Consistency with Rhode Island's Coastal Zone Management Program:** I find that the improvement dredging of the Point Judith Harbor navigation project is consistent to the maximum extent practicable with the Rhode Island's approved coastal zone management plan established as a result of the Coastal Zone Management Act of 1972.

**Other Information:**

- a. Local Sponsor: The Rhode Island Coastal Resources Management Council is the local sponsor for the proposed work.
- b. Previous Dredging: The areas proposed to be dredged for navigation improvement have never been dredged before.
- c. Alternate Placement Methods: Alternate placement options that have been considered include open-ocean placement, beach and nearshore placement, and upland placement. The Corps favors nearshore placement of the sandy material because of the benefit in retaining the sand in the littoral system and providing indirect nourishment to adjacent beaches over time. A suitable upland disposal site was not identified.
- d. Non-Federal Dredging: To date there are no non-Federal dredging projects proposed in connection with the proposed Federal improvement dredging. Facility owners within the harbor who may be interested in performing non-Federal dredging concurrently with this project should be aware that work will require a permit from the Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and, depending on the location of the non-Federal dredged material disposal, may also require a Corps permit under Section 404 of the Clean Water Act. In order to be disposed of in ocean waters, private dredged material must be determined to be suitable for such disposal.
- e. Endangered Species: Coordination with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service indicated that the proposed project is not likely to adversely affect any endangered or threatened species or critical habitat designated as endangered or threatened.
- f. Floodplain Management: In accordance with Executive Order 11988, the Corps of Engineers has determined that the proposed work will not contribute to negative impacts or damages caused by floods.
- g. Cultural Resources: The proposed work will not affect any cultural or archaeological features or resources in the area of dredging or disposal. USACE has coordinated with the State

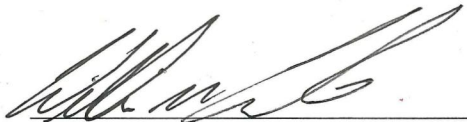
Historic Preservation Officer and the Narragansett Tribal Nation in accordance with Section 106 of the National Historic Preservation Act and implementing regulations (36 CFR 800).

- h. Essential Fish Habitat Assessment: It has been determined that dredging and placement activities may have a temporary adverse effect on Essential Fish Habitat (EFH). The dredging and disposal sites are contained within areas designated EFH as defined by the Magnuson-Stevens Fishery Conservation and Management Act and amended by the Sustainable Fisheries Act of 1996 for federally managed fish species. The Corps has assessed the effects the project is likely to have on EFH and has determined that they will be short-term and localized and that there will be no significant impacts on the designated fisheries resources. The National Marine Fisheries Service has concurred with our EFH assessment.
- i. Additional Requirements: A 401 Water Quality Certificate will be requested from the State of Rhode Island. The Clean Water Act of 1977 requires that the work comply with State or interstate requirements to control the discharge of dredged or fill material.

The decision whether to perform the proposed work will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, will be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered; among these are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use classification, and the welfare of the people.

Any person who has an interest, which may be affected by the dredging and disposal of this dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within the comment period of this notice and must clearly set forth the interest, which may be affected and the manner in which the interest may be affected by this activity.

Please bring this notice to the attention of anyone you know to be interested in this project. Comments are invited from all interested parties and should be directed to the U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751, ATTN: Mark Habel, or to email address [nae-pd-pn@usace.army.mil](mailto:nae-pd-pn@usace.army.mil) within 30 days of this notice.



William M. Conde  
Colonel, Corps of Engineers  
Engineer

Attachments

## **Attachment 1**

### **PERTINENT LAWS, REGULATIONS, AND DIRECTIVES**

Clean Air Act, as amended (42 U.S.C. 1221 et. seq.)

Clean Water Act, as amended (33 U.S.C. 1251 et. seq.)

Coastal Zone Management Act of 1972 [16 U.S.C. 1456(c)(1) and (2)],

Code of Federal Regulation, Title 33, Parts 335 through 338

Endangered Species Act of 1973 as amended (16 U.S.C. 668aa-668cc)

Estuary Protection Act (16 U.S.C. 1221 et. seq.)

Federal Water Project Recreation Act, as amended (16 U.S.C. 4601-12 et. seq.)

Fish and Wildlife Act of 1956 (16 U.S.C. 472a, et. seq.)

Fish and Wildlife Coordination Act (16 U.S.C. 661-666c)

Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 4601-4 et. seq.)

Magnuson-Stevens Fishery Conservation and Management Act and amended by the  
Sustainable Fisheries Act of 1996

Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g)

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)

National Historic Preservation Act of 1966 (16 U.S.C. 470)

Executive Order 11988, Floodplain Management, 24 May 1977

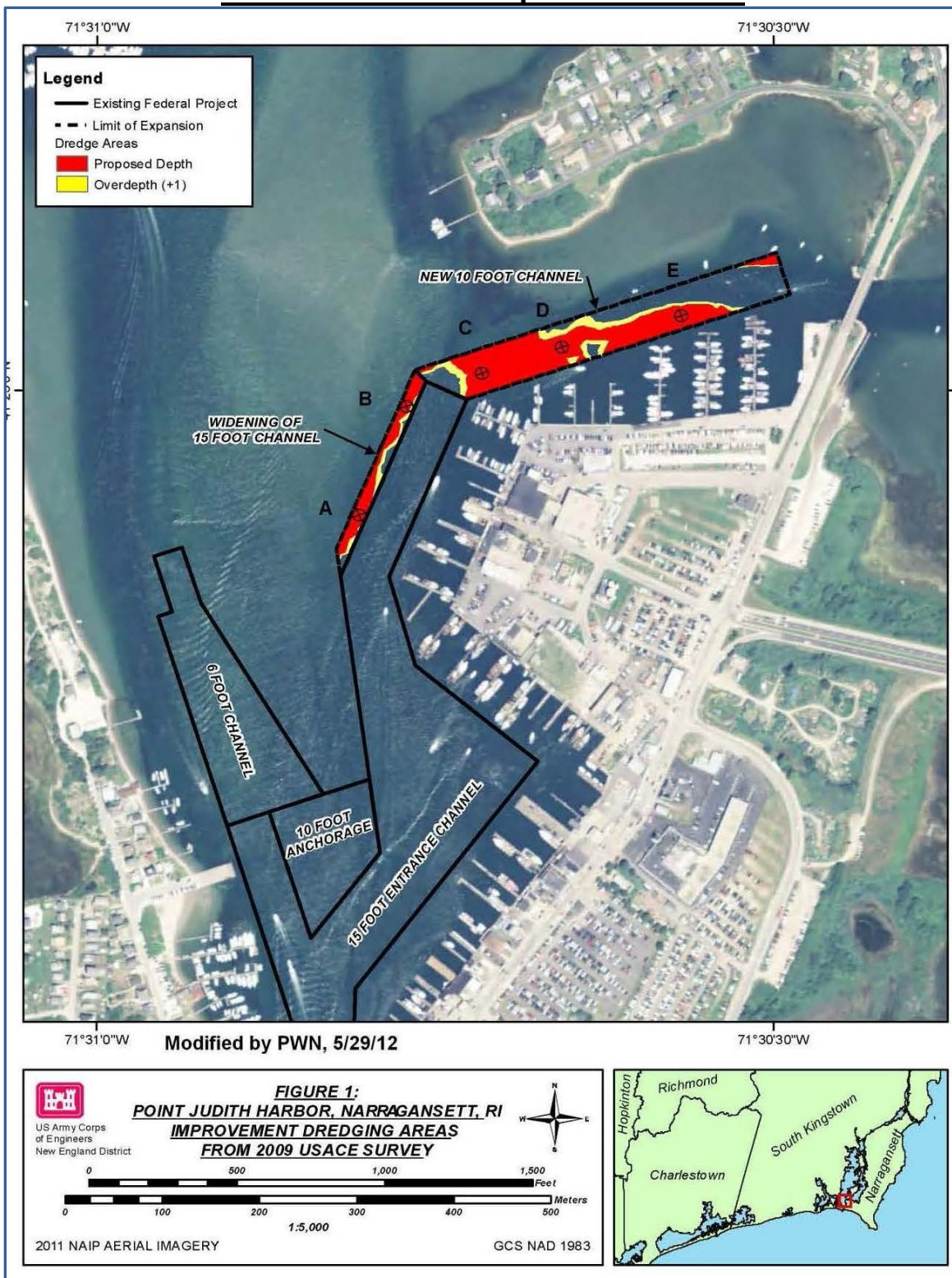
Executive Order 11990, Protection of Wetlands, 24 May 1977

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority  
Populations and Low Income Populations, 11 February 1994



## Attachment 2

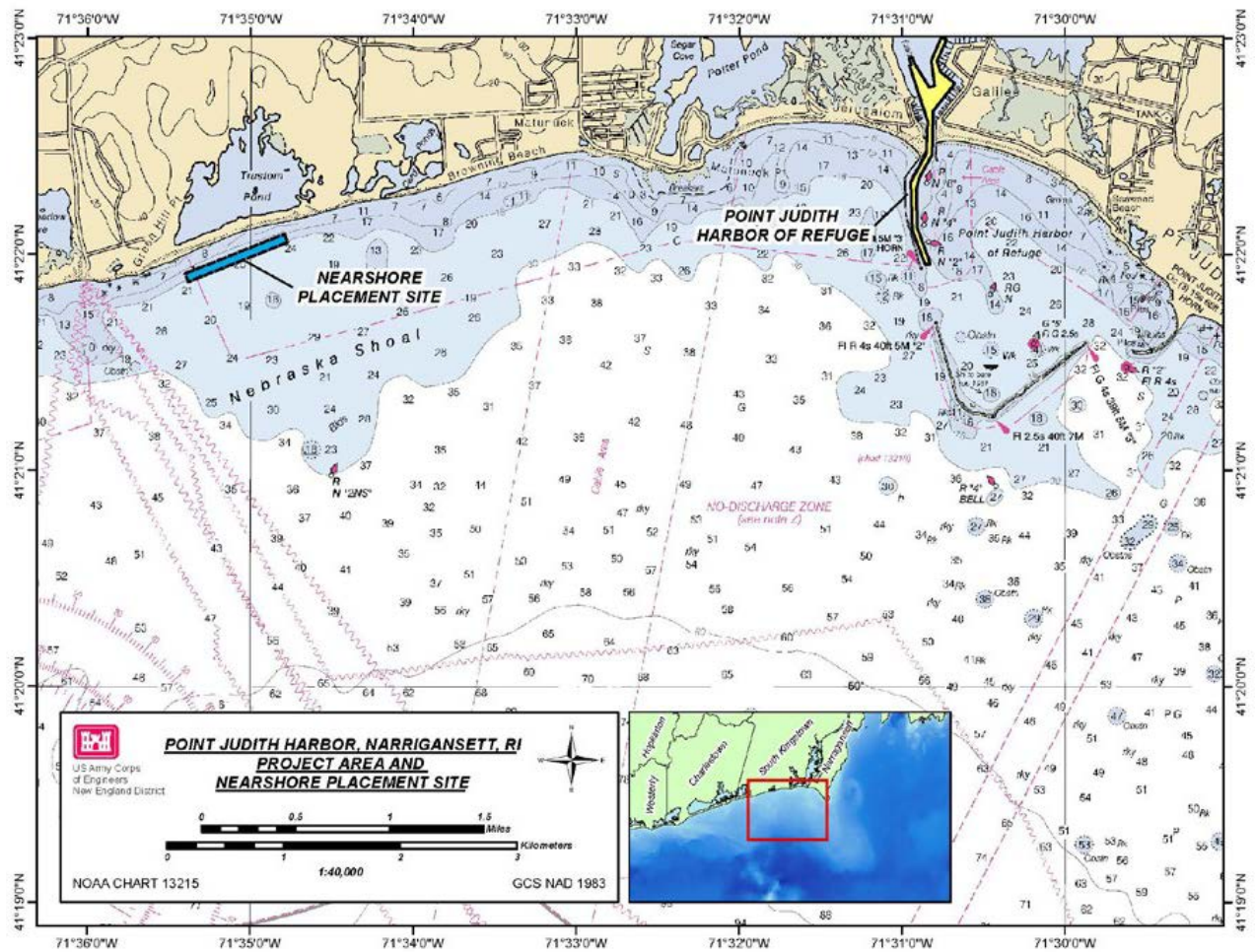
### Point Judith FNP – Improvement Areas





### Attachment 3

## Matunuck Beach Nearshore Placement Site



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DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

To Whom It May Concern:

The U.S. Army Corps of Engineers (USACE), in partnership with the Rhode Island Coastal Resources Management Council (CRMC), has completed the Draft Detailed Project Report and Draft Environmental Assessment (DPR/EA) examining improvements to the Federal Navigation Project (FNP) at Point Judith Harbor, Narragansett, Rhode Island. The draft documents are being released for State and public review.

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The non-Federal Sponsor would be required to provide ten percent of the cost of design and construction (\$163,000) up-front upon execution of a Project Partnership Agreement before project design can be completed, and a second ten percent (\$163,000) upon completion of construction. The total non-Federal share of project implementation is \$326,000. The total Federal share, 90 percent up-front, is \$1,467,000.

The USACE recommends that the existing Federal navigation project at Point Judith Harbor of Refuge and Point Judith Pond, Narragansett, Rhode Island, be modified under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Plan identified in this Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

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A copy of the Public Notice for the project is enclosed. The draft documents are available through the New England District website at <http://www.nae.usace.army.mil/Missions/Projects-Topics/Point-Judith-Harbor/>. If you have any questions or comments please contact the project manager, Mr. Mark Habel at (978) 318-8871. Written comments may be directed to me at the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts 1742-2751.

Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosure – Public Notice

CC: Mr. Habel (PD-P)  
Mr. Randall (PD-E)



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Honorable Sheldon Whitehouse  
United States Senate  
530 Hart Senate Office Building  
Washington, DC 20510

Dear Senator Whitehouse:

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Construction would take approximately three months and would be limited to the period of October 1 to January 31 to protect fisheries resources. Future maintenance dredging of the completed improvements by the Federal government would be contingent upon the availability of maintenance funds, the continued economic justification of the project, and the environmental acceptability of maintenance activities, as with the existing FNP.

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A copy of the Public Notice for the project is enclosed, along with a CD containing the draft DPR/EA. Please feel free to call me with any questions or comments you may have on this project at (978) 318-8220. The draft documents are available through the New England District website at <http://www.nae.usace.army.mil/Missions/Projects-Topics/Point-Judith-Harbor/>. Written comments may be directed to me at the U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts 01742-2751.

Sincerely,



William M. Conde  
Colonel, Corps of Engineers  
District Engineer

Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Honorable Sheldon Whitehouse  
United States Senator  
170 Westminister Street, Suite 200  
Providence, RI 02903





DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Honorable Jack Reed  
United States Senate  
728 Hart Office Building  
Washington, DC 20510

Dear Senator Reed:

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Sincerely,

A handwritten signature in black ink, appearing to read 'William M. Conde', with a stylized flourish at the end.

William M. Conde  
Colonel, Corps of Engineers  
District Engineer

Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Honorable Jack Reed

United States Senator

U.S. District Courthouse

One Exchange Terrace, Suite 408

Providence, RI 02903-1744



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Honorable Jim Langevin  
Representative in Congress  
2077 Rayburn House Office Building  
Washington, DC 20515

Dear Representative Langevin:

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Sincerely,



William M. Conde  
Colonel, Corps of Engineers  
District Engineer

Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Honorable Jim Langevin

Representative in Congress

300 Centerville Road, Suite 200 South

Warwick, RI 02886



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Honorable Gina M. Raimondo  
Governor of Rhode Island  
82 Smith Street  
Providence, RI 02903

Dear Governor Raimondo:

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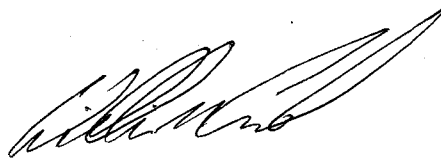
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Sincerely,

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William M. Conde  
Colonel, Corps of Engineers  
District Engineer

Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Honorable Jim Langevin  
Representative in Congress  
2077 Rayburn House Office Building  
Washington, DC 20515

Honorable Jim Langevin  
Representative in Congress  
300 Centerville Road, Suite 200 South  
Warwick, RI 02886

Honorable Jack Reed  
United States Senate  
728 Hart Office Building  
Washington, DC 20510

Honorable Jack Reed  
United States Senator  
U.S. District Courthouse  
One Exchange Terrace, Suite 408  
Providence, RI 02903-1744

Honorable Sheldon Whitehouse  
United States Senate  
530 Hart Senate Office Building  
Washington, DC 20510

Honorable Sheldon Whitehouse  
United States Senator  
170 Westminister Street, Suite 200  
Providence, RI 02903



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

Daniel Costa, State Port Manager  
Coastal Resources Program  
Department of Environmental Management  
301 Great Island Road  
Narragansett, RI 02882

Dear Mr. Costa:

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Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Grover Fugate, Executive Director  
Coastal Resources Management Council  
Stedman Government Center, Suite 3  
4808 Tower Hill Road  
Wakefield, RI 02879-1900





**DEPARTMENT OF THE ARMY**  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

Grover Fugate, Executive Director  
Coastal Resources Management Council  
Stedman Government Center, Suite 3  
4808 Tower Hill Road  
Wakefield, RI 02879-1900

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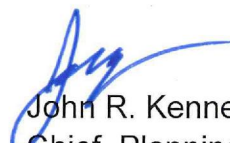
The non-Federal Sponsor would be required to provide ten percent of the cost of design and construction (\$163,000) up-front upon execution of a Project Partnership Agreement before project design can be completed, and a second ten percent (\$163,000) upon completion of construction. The total non-Federal share of project implementation is \$326,000. The total Federal share, 90 percent up-front, is \$1,467,000.

The USACE recommends that the existing Federal navigation project at Point Judith Harbor of Refuge and Point Judith Pond, Narragansett, Rhode Island, be modified under the authority of Section 107 of the River and Harbor Act of 1960, as amended, in accordance with the Plan identified in this Detailed Project Report, with such further modifications thereto as in the discretion of the Chief of Engineers may be advisable.

The recommendations contained in this report reflect the information available at this time and current USACE Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are authorized for design and implementation funding.

A copy of the Public Notice for the project is enclosed, along with a CD containing the draft DPR/EA. The draft documents are available through the New England District website at <http://www.nae.usace.army.mil/Missions/Projects-Topics/Point-Judith-Harbor/>. If you have any questions or comments please contact the project manager, Mr. Mark Habel at (978) 318-8871. Written comments may be directed to me at the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts 1742-2751.

Sincerely,



John R. Kennelly  
Chief, Planning Division



Enclosures

Public Notice

CD with Draft DPR/EA

CC: Mr. Habel (PD-P)

Mr. Randall (PD-E)

Copy Furnished (with Enclosures):

Daniel Costa, State Port Manager

Coastal Resources Program

Department of Environmental Management

301 Great Island Road

Narragansett, RI 02882



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

Mr. Thomas Chapman  
New England Field Office  
U.S. Fish and Wildlife Service  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087

Dear Mr. Chapman:

The U.S. Army Corps of Engineers (USACE), in partnership with the Rhode Island Coastal Resources Management Council (CRMC), has completed the Draft Detailed Project Report and Draft Environmental Assessment (DPR/EA) examining improvements to the Federal Navigation Project (FNP) at Point Judith Harbor, Narragansett, Rhode Island. The draft documents are being released for State and public review. USACE is requesting that, pursuant to Section 2(b) of the Fish and Wildlife Coordination Act, your office provide either a Final Coordination Act Report (FCAR) or an acknowledgement of no need for further consultation for the project within 30 days of receipt of this letter.

The Draft DPR/EA identifies the selected plan for navigation improvements consisting of two segments. First is to widen the existing 15-foot deep mean lower low water (MLLW) channel for about 700 feet along the western Galilee bulkhead by 50 feet (for a total width of 200 feet) to increase access and safety for the larger fishing boats now based in this area and for other boats transiting through this area. Second is to extend the Federal channel about 1200 feet northeasterly into the port's north basin to access the newer north bulkhead area, at a depth of -11 feet MLLW and width of 150 feet to improve access and navigation safety for the portion of the fleet based in this area.

These improvements require the removal of about 23,700 cubic yards of material. The material has been tested by CRMC and determined to be clean sand suitable for beneficial use as nearshore bar nourishment. The sand would be placed at a previously used nearshore bar nourishment area located about 2.5 miles southwest of the project location off Matunuck Beach. The dredging would be accomplished by a small mechanical bucket dredge or excavator with the material placed in scows and towed to the nearshore placement site. These improvements would provide safer and more efficient navigation for the existing fleet based at the Port of Galilee at Point Judith Harbor.

Construction would take approximately three months and would be limited to the period of October 1 to January 31 to protect fisheries resources. Future maintenance dredging of the completed improvements by the Federal government would be contingent upon the availability of maintenance funds, the continued economic justification of the project, and the environmental acceptability of maintenance activities, as with the existing FNP.

A copy of the Public Notice for the project is enclosed, along with a CD containing the draft DPR/EA. The draft documents are also available through the New England District website at <http://www.nae.usace.army.mil/Missions/Projects-Topics/Point-Judith-Harbor/>. Please feel free to contact Mr. Todd Randall with any questions or comments you may have on this project at (978) 318-8518. Please direct the FCAR or an acknowledgement of no need for further consultation me by October 19, 2018.

Thank you for your review of the project.

Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosures  
Public Notice  
CD with Draft DPR/EA

CC: Mr. Habel (PD-P)  
Mr. Randall (PD-E)

Similar Letter (with Enclosures) Sent To:

Ms. Regina Lyons  
Ocean and Coastal Protection Unit  
U.S. Environmental Protection Agency  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

Mr. Michael Pentony  
NOAA Fisheries Service  
Northeast Regional Office  
55 Great republic Drive  
Gloucester, MA 01930-2276





DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

Mr. Michael Pentony  
NOAA Fisheries Service  
Northeast Regional Office  
55 Great republic Drive  
Gloucester, MA 01930-2276

Dear Mr. Pentony:

The U.S. Army Corps of Engineers (USACE), in partnership with the Rhode Island Coastal Resources Management Council (CRMC), has completed the Draft Detailed Project Report and Draft Environmental Assessment (DPR/EA) examining improvements to the Federal Navigation Project (FNP) at Point Judith Harbor, Narragansett, Rhode Island. The draft documents are being released for State and public review.

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Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosures  
Public Notice  
CD with Draft DPR/EA

CC: Mr. Habel (PD-P)  
Mr. Randall (PD-E)

Similar Letter (with Enclosures) Sent To:

Ms. Regina Lyons  
Ocean and Coastal Protection Unit  
U.S. Environmental Protection Agency  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

Mr. Thomas Chapman  
New England Field Office  
U.S. Fish and Wildlife Service  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

September 19, 2018

Planning Division  
Plan Formulation Branch

Ms. Regina Lyons  
Ocean and Coastal Protection Unit  
U.S. Environmental Protection Agency  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

Dear Ms. Lyons:

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The Draft DPR/EA identifies the selected plan for navigation improvements consisting of two segments. First is to widen the existing 15-foot deep mean lower low water (MLLW) channel for about 700 feet along the western Galilee bulkhead by 50 feet (for a total width of 200 feet) to increase access and safety for the larger fishing boats now based in this area and for other boats transiting through this area. Second is to extend the Federal channel about 1200 feet northeasterly into the port's north basin to access the newer north bulkhead area, at a depth of -11 feet MLLW and width of 150 feet to improve access and navigation safety for the portion of the fleet based in this area.

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Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosures  
Public Notice  
CD with Draft DPR/EA

CC: Mr. Habel (PD-P)  
Mr. Randall (PD-E)

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Mr. Thomas Chapman  
New England Field Office  
U.S. Fish and Wildlife Service  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087

Mr. Michael Pentony  
NOAA Fisheries Service  
Northeast Regional Office  
55 Great republic Drive  
Gloucester, MA 01930-2276



## Part 2

### Correspondence During Preparation of the Draft Feasibility Report and Draft Environmental Assessment

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DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

CENAE-PDP

22 August 2018

MEMORANDUM FOR RECORD

MEMORANDUM FOR Chief, Civil Works Integration Division (Attn: Mr. Christopher Ricciardi), USACE-NAD, Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, New York 11252-6700

SUBJECT: Point Judith Harbor, Rhode Island, Section 107 Feasibility Study – Alternative Formulation Briefing (AFB)

1. An AFB meeting was held on the subject study via teleconference on 15 August 2018 from 1300 to 1330 with the following persons participating:

NAD

Chris Ricciardi  
Valerie Cappola  
Naomi Fraenkel  
Ralph Lamoglia  
John O'Connor

NAE

John Kennelly  
Mark Habel  
Sharon Pailler  
Todd Randall

2. After introductions, Mr. Habel began the briefing stating the purpose to achieve vertical team concurrence with the draft report recommendation and approval to release the public notice and draft report for agency and public review.

3. Mr. Habel walked the group through the 15 slide presentation that described the study background, problems and opportunities, plan formulation, the recommended plan, environmental compliance, real estate, risk, and the schedule going forward.

4. The sponsor request was received in September 2006, and the FID was initiated in May 2010. The FID was completed in June 2012 and approved by NAD in August 2012. The FCSA was executed with the sponsor, the RI Coastal Resources Management Council, that State's CZM authority, in April 2015. ATR on the draft report was completed in July 2018.

5. The problem at Point Judith is safe and efficient navigation for the commercial fishing fleet at the west and north bulkheads at the State-operated port of Galilee on the east side of the harbor. Tidal delays and groundings result from inadequate channel width along the west bulkhead and lack of any improved channel at the north bulkhead.

5. Plan formulation was discussed. Alternatives examined during the study and screened out before detailed evaluation due to excessive cost included fleet relocation, and construction of new port facilities on the harbor's west side at Jerusalem or Snug

SUBJECT: Connecticut River, Lyme, New Hampshire Section 14 Feasibility Study –  
Alternative Formulation Briefing (AFB) - Memorandum for the Record

Harbor. Alternatives examined in detail included no action, channel widening along the Galilee west bulkhead, and channel extension to the Galilee north bulkhead. A combination of the West Channel widening and North Channel extension yielded the highest BCR at 5.9:1.

6. Current working estimate for the combined alternative is \$1,634,000. It includes a 25 to 27% contingency, \$327,000 for PED, and another \$113,000 for S&A. Risk driving the contingency includes fuel and labor prices, contractor availability, and working in the fall and winter seasons. Mr. Lamoglia confirmed the need for contingencies at this level for these purposes.

7. Ms. Cappola asked about issues with the recent maintenance project where debris from the maintenance dredging washed up on the beaches (lobster bands and aluminum pull tabs) and the public comment that generated. Mr. Habel responded that as this was improvement dredging in parent material we expected less of a problem, but would address any comments received. Mr. Habel named the ATR team members that had conducted the review.

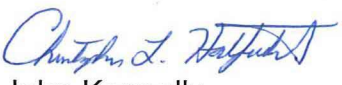
8. Mr. O'Connor asked whether NAE had programmed funds for design in the coming fiscal year. After the call NAE Planning checked with its programs office and \$160,000 has been included in the FY19 program for the Federal share of design efforts.

9. The Draft DPR/EA is completed and ready to go to public review. EPA has concurred with the dredged material placement suitability determination and provided CAA concurrence. The state SHPO has issued a no impact finding. NMFS issued an ESA not likely to affect and an EFH no impact finding. USF&WS also issued an ESA no impact letter. No adverse impacts are expected or mitigation required.

10. No LERRDs are needed for the project as documented in the Real Estate report as all work is seaward of MLLW, and all plant will be waterborne.

11. Mr. Habel outlined the schedule going forward. Public review would be completed in September and submission of a final report to NAD is scheduled for October 2018. Approval of a final report and project is scheduled for February 2019.

12. The AFB and public release of the draft report were approved by Mr. Ricciardi, Civil Works Integration Division - District Support Team, and the NAD quality assurance review team.

  
for John Kennelly  
Chief, Planning Division  
New England District

**From:** [Hopkins, Aaron D CIV USARMY CENAE \(US\)](#)  
**To:** [Habel, Mark L CIV USARMY CENAE \(US\)](#)  
**Subject:** Point Judith Suitability Determination  
**Date:** Wednesday, April 25, 2018 1:23:46 PM

---

EPA's concurrence:

-----Original Message-----

From: Guza-Pabst, Olga [<mailto:Guza-Pabst.Olga@epa.gov>]  
Sent: Tuesday, April 10, 2018 12:23 PM  
To: Hopkins, Aaron D CIV USARMY CENAE (US) <[Aaron.D.Hopkins@usace.army.mil](mailto:Aaron.D.Hopkins@usace.army.mil)>  
Subject: [Non-DoD Source] RE: RI Suitability Determination

Hi Aaron, I concur with your SD. One question - why do chemistry on sediments that meet exclusionary criteria?

-----Original Message-----

From: Hopkins, Aaron D CIV USARMY CENAE (US) [<mailto:Aaron.D.Hopkins@usace.army.mil>]  
Sent: Tuesday, April 10, 2018 9:46 AM  
To: Guza-Pabst, Olga <[Guza-Pabst.Olga@epa.gov](mailto:Guza-Pabst.Olga@epa.gov)>  
Subject: RI Suitability Determination

Olga,

Attached is a draft suitability determination for proposed improvement dredging of the Point Judith Pond FNP. The material will be mechanically dredged and placed at a previously used nearshore site for beach nourishment.

Please respond within 10 working days if you have any comments or concerns.

Thank you,  
Aaron

Aaron Hopkins  
US Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, MA 01742  
978.318.8973

**From:** [Randall, Todd A CIV USARMY CENAE \(US\)](#)  
**To:** [Randall, Todd A CIV USARMY CENAE \(US\)](#)  
**Subject:** FW: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging (UNCLASSIFIED)  
**Date:** Tuesday, March 20, 2018 1:29:25 PM

---

CLASSIFICATION: UNCLASSIFIED

**From:** Alison Verkade - NOAA Federal [mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)]  
**Sent:** Wednesday, March 7, 2018 9:38 AM  
**To:** Randall, Todd A CIV USARMY CENAE (US) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
**Subject:** Re: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging (UNCLASSIFIED)

Thanks Todd, this helped clear things up! But, I just realized I never got back to you again to let you know. As I had originally thought, as you have proposed, we do not have any additional conservation recommendations for the current project.

Please note that for future maintenance dredge events, the extent of SAV in the project area will need to be determined and consultation with us should be reinitiated to evaluate potential impacts to SAV beds and provide additional EFH conservation recommendations if necessary.

Thanks again, Alison

Alison T. Verkade  
National Marine Fisheries Service  
Greater Atlantic Regional Fisheries Office  
Habitat Conservation Division  
55 Great Republic Drive  
Gloucester, MA 01930  
Office: 978-281-9266  
Email: [alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)

On Tue, Feb 6, 2018 at 4:45 PM, Randall, Todd A CIV USARMY CENAE (US) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> wrote:

CLASSIFICATION: UNCLASSIFIED

AV - Here ya go. Let me know if you need any additional info. tx2 TODD

-----Original Message-----

From: Alison Verkade - NOAA Federal [mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)]  
Sent: Tuesday, February 6, 2018 2:56 PM  
To: Randall, Todd A CIV USARMY CENAE (US) <[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging

A-2-4



(UNCLASSIFIED)

Thanks, that helps! Yes, if you could do a map with the proposed expansion and 2009 & 2012 eelgrass beds that would be greatly appreciated. Thanks again, Alison

Alison T. Verkade  
National Marine Fisheries Service  
Greater Atlantic Regional Fisheries Office Habitat Conservation Division  
55 Great Republic Drive  
Gloucester, MA 01930  
Office: [978-281-9266](tel:978-281-9266)  
Email: [alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov) <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>

On Tue, Feb 6, 2018 at 2:45 PM, Randall, Todd A CIV USARMY CENAE (US)  
<[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> > wrote:

CLASSIFICATION: UNCLASSIFIED

Ahhh. I see...

That is the sponsor's (RI-CRMC) contractor's (CLE engineering) sediment sampling map. CLE Engineering did the sampling for CRMC as an in-kind service for the project. That shape also looks suspiciously like the 2012 RIGIS eelgrass shape, but I believe they have it geo-referenced wrong. If you look at the aerial map we provided them from the Sampling & Analysis Plan on the page 1 of the appendix b, part 1 document, you can see the triangular shaped eelgrass bed north of the project area above the letters identifying samples C & D and under the words "New 10 Foot Channel" .

I can generate a map with the 2009 & 2012 data and our channel layout on it if you'd like. Let me know. I went through all the historic SAV layers and have never seen anything mapped within that natural channel area that we are looking at deepening by a few feet.

Thanks for your attention to detail!!

TODD

-----Original Message-----

From: Alison Verkade - NOAA Federal [mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)]  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> ]  
Sent: Tuesday, February 6, 2018 2:13 PM



To: Randall, Todd A CIV USARMY CENAE (US)  
<[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil) <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> >  
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging  
(UNCLASSIFIED)

Thanks! Maybe we won't need any time and it's okay "as is" then. I was looking at page 3 of appendix b, part 1. It looks like the graphic that appears to be illustrating the 2012 mapped eelgrass is overlapping the proposed extension area? If that isn't the mapped eelgrass, what is it?

Alison T. Verkade  
National Marine Fisheries Service  
Greater Atlantic Regional Fisheries Office Habitat Conservation Division  
55 Great Republic Drive  
Gloucester, MA 01930  
Office: [978-281-9266](tel:978-281-9266) <tel:[978-281-9266](tel:978-281-9266)>  
Email: [alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov) <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov) <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> >

On Mon, Feb 5, 2018 at 5:10 PM, Randall, Todd A CIV USARMY CENAE (US)  
<[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil) <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
<mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil) <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> >  
> wrote:

CLASSIFICATION: UNCLASSIFIED

Hey Alison,

Thanks for the email. Sorry for the delay..., had a few projects stacked up before this one.

Sure, we can extend the review period. Let me know what you need.

In regard to eelgrass, when planning the channel design, we looked at the 2012 and 2009 RIGIS data layers and found that the mapped SAV shapes were about 75'-100' from our projected top of slope for the improvement features. We should have made that clear in the figure in the EA. I think the data was referenced as RIGIS 2017 - that was just when we accessed the data - sorry I missed that clarification - we were using the 2009 and 2012 data.

Do you have other data that that shows the area as recently having eelgrass? If you do, can you send me the shape files and metadata for the dataset?

Thanks!

TODD

-----Original Message-----

From: Alison Verkade - NOAA Federal [mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)]  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> > ]  
Sent: Friday, January 26, 2018 12:29 PM  
To: Randall, Todd A CIV USARMY CENAE (US)  
<[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)>  
<mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> <mailto:[Todd.A.Randall@usace.army.mil](mailto:Todd.A.Randall@usace.army.mil)> >  
>

Subject: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging  
(UNCLASSIFIED)

Hi Todd,

I was going to send a no issues with EFH as proposed so you could close your EFH records, and I know it is past the 30 day consult period, but when I was referencing the document I realized the area that has previously been mapped supporting eelgrass is a new area, not maintenance. Somehow I missed this when I reviewed it earlier. Is it possible to extent our consultation period? Eelgrass is now HAPC for not only summer flounder, but juvenile Atlantic cod (also now designated in this area). I realize the eelgrass was mapped in 2012 and not in the more recent 2016 survey, but it would be great if we could work to minimize the proposed footprint in this area to avoid areas that have recently supported eelgrass. Thanks, Alison

Alison T. Verkade  
National Marine Fisheries Service  
Greater Atlantic Regional Fisheries Office Habitat Conservation Division  
55 Great Republic Drive  
Gloucester, MA 01930  
Office: [978-281-9266](tel:978-281-9266) <tel:[978-281-9266](tel:978-281-9266)> <tel:[978-281-9266](tel:978-281-9266)> <tel:[978-281-9266](tel:978-281-9266)> >

Email: [alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov) <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> >  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> > >

On Wed, Dec 13, 2017 at 1:54 PM, Alison Verkade - NOAA Federal  
<[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)>  
<mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> <mailto:[alison.verkade@noaa.gov](mailto:alison.verkade@noaa.gov)> >



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

New England Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087  
<http://www.fws.gov/newengland>



January 8, 2018

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2018)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact David Simmons of this office at 603-227-6425 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman  
Supervisor  
New England Field Office

**NOAA FISHERIES**

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**Greater Atlantic Region****US Army Corps  
of Engineers®****GARFO ESA Section 7: 2017 NLAA Program Verification Form**

(Please submit a signed version of this form, together with any project plans, maps, supporting analyses, etc., to [nmfs.gar.esa.section7@noaa.gov](mailto:nmfs.gar.esa.section7@noaa.gov) with "2017 NLAA Program" in the subject line)

**Section 1: General Project Details**

Application Number:			
Applicant(s):			
Permit Type (e.g. NWP, LOP, RGP, IP, Permit Modification):			
Anticipated project start date (e.g., 9/1/2017)			
Anticipated project end date (e.g., 3/14/2018 – if there is no permit expiration date, write “N/A”)			
Project Type/Category (check all that apply to entire action):			
<input type="checkbox"/>	Aquaculture (shellfish) and artificial reef creation	<input type="checkbox"/>	Transportation and development (e.g., culvert construction, bridge repair)
<input type="checkbox"/>	Routine maintenance dredging and disposal/beach nourishment	<input type="checkbox"/>	Mitigation (fish/wildlife enhancement or restoration)
<input type="checkbox"/>	Piers, ramps, floats, and other structures	<input type="checkbox"/>	Bank stabilization and dam maintenance
<input type="checkbox"/>	If other, describe project type/category:		
Project/Action Description and Purpose ( <i>include town/city/state and water body where project is occurring; relevant permit conditions that aren't captured elsewhere on form</i> ):			

Type of Habitat Modified (e.g., sand, cobble, silt/mud/clay):	Area (acres):
Project Latitude (e.g., 42.625884)	
Project Longitude (e.g., -70.646114)	

**Section 2: ESA-listed species and/or critical habitat in the action area:**

<input type="checkbox"/>	Atlantic sturgeon (all DPSs) If not all DPSs, list which here:	<input type="checkbox"/>	Kemp's ridley sea turtle
<input type="checkbox"/>	Atlantic sturgeon critical habitat (proposed or designated) Indicate which DPS (GOM, NYB, Chesapeake Bay DPSs):	<input type="checkbox"/>	Loggerhead sea turtle (NW Atlantic DPS)
<input type="checkbox"/>	Shortnose sturgeon	<input type="checkbox"/>	Leatherback sea turtle
<input type="checkbox"/>	Atlantic salmon (GOM DPS)	<input type="checkbox"/>	North Atlantic right whale
<input type="checkbox"/>	Atlantic salmon critical habitat (GOM DPS)	<input type="checkbox"/>	North Atlantic right whale critical habitat
<input type="checkbox"/>	Green sea turtle (N. Atlantic DPS)	<input type="checkbox"/>	Fin whale

**Section 3: NLAA Determination (check all applicable fields):**

a) GENERAL PDC	
<input type="checkbox"/>	Yes, my project meets all of the General PDC.
<input type="checkbox"/>	No, my project does not meet all the General PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):
	<b>Information for PDC 8</b> (if "max extent of stressor" exceeds "width of water body", PDC 8 is NOT met, and a justification in Section 4 is required to proceed with the verification form)

	Width (m) of water body in action area:	Stressor Category (stressor that extends furthest distance into water body – e.g., turbidity plume; sound pressure wave):	Max extent (m) of stressor into the water body:
<input type="checkbox"/>	1.	No work will individually or cumulatively have an adverse effect on ESA-listed species or designated critical habitat; no work will cause adverse modification or destruction to proposed critical habitat.	
<input type="checkbox"/>	2.	No work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10–November 7.	
<input type="checkbox"/>	3.	No work will occur in Atlantic or shortnose sturgeon spawning grounds as follows: i. New England: April 1–Aug. 31 ii. New York/Philadelphia: March 15–August 31 iii. Baltimore/Norfolk: March 15–July 1 and Sept. 15–Nov. 1	
<input type="checkbox"/>	4.	No work will occur in shortnose sturgeon overwintering grounds as follows: i. New England District: October 15–April 30 ii. New York/Philadelphia: Nov. 1–March 15 iii. Baltimore: Nov. 1–March 15	
<input type="checkbox"/>	5.	Within designated Atlantic salmon critical habitat, no work will affect spawning and rearing areas (PBFs 1-7).	
<input type="checkbox"/>	6.	Within proposed/designated Atlantic sturgeon critical habitat, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand) (PBF 1).	
<input type="checkbox"/>	7.	Work will not change temperature, water flow, salinity, or dissolved oxygen levels.	
<input type="checkbox"/>	8.	If it is possible for ESA-listed species to pass through the action area, a zone of passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create barrier to passage).	
<input type="checkbox"/>	9.	Any work in designated North Atlantic right whale critical habitat must have no effect on the physical and biological features (PBFs).	
<input type="checkbox"/>	10.	The project will not adversely impact any submerged aquatic vegetation (SAV).	
<input type="checkbox"/>	11.	No blasting will occur.	

b) The following stressors are applicable to the action  
(check all that apply – use Stressor Category Table for guidance):

<input type="checkbox"/>	Sound Pressure
<input type="checkbox"/>	Impingement/Entrapment/Capture
<input type="checkbox"/>	Turbidity/Water Quality
<input type="checkbox"/>	Entanglement

<input type="checkbox"/>	Habitat Modification
<input type="checkbox"/>	Vessel Traffic

Activity Category	Stressor Category					
	Sound Pressure	Impingement/ Entrapment/ Capture	Turbidity/ Water Quality	Entanglement	Habitat Mod.	Vessel Traffic
Aquaculture (shellfish) and artificial reef creation	N	N	Y	Y	Y	Y
Routine maintenance dredging and disposal/beach nourishment	N	Y	Y	N	Y	Y
Piers, ramps, floats, and other structures	Y	N	Y	Y	Y	Y
Transportation and development (e.g., culvert construction, bridge repair)	Y	N	Y	N	Y	Y
Mitigation (fish/wildlife enhancement or restoration)	N	N	Y	N	Y	Y
Bank stabilization and dam maintenance	Y	N	Y	N	Y	Y

c) SOUND PRESSURE PDC					
<input type="checkbox"/>	Yes, my project meets all of the Sound Pressure PDC below.				
<input type="checkbox"/>	No, my project does not meet all the Sound Pressure PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):				
	<b>Information for PDC 14</b> (refer to SOPs for guidance):				
	Pile material (e.g., steel pipe, timber, concrete)	Pile diameter/width (inches)	Number of piles	Installation method (e.g., impact hammer, vibratory start and then impact hammer to depth)	
a)					
b)					



	c)				
	d)				
<input type="checkbox"/>	12.	If the pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold of those species (please see SOPs), a 20 minute “soft start” is required to allow for animals to leave the project vicinity before sound pressure increases.			
<input type="checkbox"/>	13.	Any new pile supported structure must involve the installation of $\leq 50$ piles (below MHW).			
<input type="checkbox"/>	14.	All underwater noise (pressure) is below ( $<$ ) the physiological/injury noise threshold for ESA-listed species in the action area (if project involves steel piles, or non-steel piles $> 24$ -inches in diameter/width, include noise estimate with this form).			
d) IMPINGEMENT/ENTRAINMENT/CAPTURE PDC					
<input type="checkbox"/>	Yes, my project meets all of the Impingement/Entrainment/Capture PDC below.				
<input type="checkbox"/>	No, my project does not meet all the Impingement/Entrainment/Capture PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):				
	<b>Information for Dredging:</b>				
	If dredging permit/authorization includes multiple years of maintenance, include estimated number of dredging/disposal events:				
	<b>Information for PDC 18</b> (refer to SOPs for guidance):				
	Mesh screen size (mm) for temporary intake:				
<input type="checkbox"/>	15.	Only mechanical, cutterhead, and low volume hopper (e.g., CURRITUCK) dredges may be used.			
<input type="checkbox"/>	16.	No new dredging in proposed or designated Atlantic sturgeon or Atlantic salmon critical habitat (maintenance dredging still must meet all other PDCs). New dredging outside Atlantic sturgeon or salmon critical habitat is limited to one time dredge events (e.g., burying a utility line) and minor ( $\leq 2$ acres) expansions of areas already subject to maintenance dredging (e.g., marina/harbor expansion).			
<input type="checkbox"/>	17.	Work behind cofferdams, turbidity curtains, and other methods to block access of animals to dredge footprint is required when operationally feasible and ESA-listed species may be present.			
<input type="checkbox"/>	18.	Temporary intakes related to construction must be equipped with appropriate sized mesh screening (as determined by GARFO section 7 biologist and/or according to <a href="#">Chapter 11 of the NOAA Fisheries Anadromous Salmonid Passage Facility Design</a> ) and must not have greater than 0.5 fps intake velocities, to prevent impingement or entrainment of any ESA-listed species life stage.			
<input type="checkbox"/>	19.	No new permanent intake structures related to cooling water, or any other inflow at facilities (e.g. water treatment plants, power plants, etc.).			
e) TURBIDITY/WATER QUALITY PDC					
<input type="checkbox"/>	Yes, my project meets all of the Turbidity/Water Quality PDC below.				

<input type="checkbox"/>	No, my project does not meet all the Turbidity/Water Quality PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):	
<input type="checkbox"/>	20.	Work behind cofferdams, turbidity curtains, or other methods to control turbidity are required when operationally feasible and ESA-listed species may be present.
<input type="checkbox"/>	21.	In-water offshore disposal may only occur at designated disposal sites that have already been consulted on with GARFO.
<input type="checkbox"/>	22.	Any temporary discharges must meet state water quality standards; no discharges of toxic substances.
<input type="checkbox"/>	23.	Only repair of existing discharge pipes allowed; no new construction.
f) ENTANGLEMENT PDC		
<input type="checkbox"/>	Yes, my project meets all of the Entanglement PDC below.	
<input type="checkbox"/>	No, my project does not meet all the Entanglement PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):	
	<b>Information for Aquaculture Projects:</b>	
	Type of Aquaculture (e.g., cage on bottom)	Acreage
	a)	
	b)	
	c)	
<input type="checkbox"/>	24.	Shell on bottom <50 acres with maximum of 4 corner marker buoys;
<input type="checkbox"/>	25.	Cage on bottom with no loose floating lines <5 acres and minimal vertical lines (1 per string of cages, 4 corner marker buoys);
<input type="checkbox"/>	26.	Floating cages in <3 acres in waters and shallower than -10 feet MLLW with no loose lines and minimal vertical lines (1 per string of cages, 4 corner marker buoys);
<input type="checkbox"/>	27.	Floating upweller docks in >10 feet MLLW.
<input type="checkbox"/>	28.	Any in-water lines, ropes, or chains must be made of materials and installed in a manner (properly spaced) to minimize the risk of entanglement by keeping lines taut or using methods to promote rigidity (e.g., sheathed or weighted lines that do not loop or entangle).
g) HABITAT MODIFICATION PDC		
<input type="checkbox"/>	Yes, my project meets all of the Habitat Modification PDC below.	
<input type="checkbox"/>	No, my project does not meet all the Habitat Modification PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):	

<input type="checkbox"/>	29.	No conversion of habitat type (soft bottom to hard, or vice versa) for aquaculture or reef creation.	
h) VESSEL TRAFFIC PDC			
<input type="checkbox"/>	Yes, my project meets all of the Vessel Traffic PDC below.		
<input type="checkbox"/>	No, my project does not meet all the Vessel Traffic PDC as indicated below (please check the PDC the action does NOT comply with below, and provide justification in Section 4 of this form):		
	<b>Information for PDC 33</b> (refer to SOPs for guidance):		
	Temporary Project Vessel Type (e.g., work barge, tug, scow, etc.)	Number of Vessels	
	a)		
	b)		
	c)		
	Type of Non-Commercial Vessels Added (e.g., 20' recreational motor boat – only include if there is a net increase directly/indirectly resulting from project)	Number of Vessels (if sum > 2, PDC 33 is not met and justification required in Section 4)	
	a)		
	b)		
	Type of Commercial Vessels Added (only include if there is a net increase directly/indirectly resulting from project)	Number of Vessels (if > 0, PDC 33 is not met and justification required in Section 4)	
	a)		
	b)		
<input type="checkbox"/>	30.	Speed limits below 10 knots for project vessels with buffers of 150 feet for all listed species (1,500 feet for right whales).	
<input type="checkbox"/>	31.	While dredging, dredge buffers of 300 feet in the vicinity of any listed species (1,500 feet for right whales), with speeds of 4 knots maximum.	
<input type="checkbox"/>	32.	The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.	
<input type="checkbox"/>	33.	The permanent net increase in vessels resulting from a project (e.g., dock/float/pier/boating facility) must not exceed two non-commercial vessels. A project must not result in the permanent net increase of any commercial vessels (e.g., a ferry terminal).	

#### Section 4: Justification for Review under the 2017 NLAA Program

If the action is not in compliance with all of the General PDC and appropriate stressor PDC, but you can provide justification and/or special conditions to demonstrate why the project still meets the NLAA determination and is consistent with the aggregate effects considered in the programmatic consultation, you may still certify your project through the NLAA program using

this verification form. Please identify which PDC your project does not meet (e.g., PDC 9, PDC 15, PDC 22, etc.) and provide your rationale and justification for why the project is still eligible for the verification form.

To demonstrate that the project is still NLAA, you must explain why the effects on ESA-listed species or critical habitat are **insignificant** (i.e., too small to be meaningfully measured or detected) or **discountable** (i.e., extremely unlikely to occur). Please use this language in your justification.

PDC#	Justification

### Section 5: USACE Verification of Determination

<input type="checkbox"/>	In accordance with the 2017 NLAA Programmatic Consultation, the Corps has determined that the action complies with all applicable PDC and is not likely to adversely affect listed species.
<input checked="" type="checkbox"/>	In accordance with the 2017 NLAA Programmatic Consultation, the Corps has determined that the action is not likely to adversely affect listed species per the justification and/or special conditions provided in Section 4.
USACE Signature:	
RANDALL.TODD.A.1 241930480	
Digitally signed by RANDALL.TODD.A.1241930480 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RANDALL.TODD.A.1241930480 Date: 2017.12.12 17:03:23 -05'00'	
Date:	
12/12/2017	

### Section 6: GARFO Concurrence

<input type="checkbox"/>	In accordance with the 2017 NLAA Program, GARFO PRD concurs with USACE's determination that the action complies with all applicable PDC and is not likely to adversely affect listed species or critical habitat.
<input checked="" type="checkbox"/>	In accordance with the 2017 NLAA Program, GARFO PRD concurs with USACE's determination that the action is not likely to adversely affect listed species or critical habitat per the justification and/or special conditions provided in Section 4.
<input type="checkbox"/>	GARFO PRD does not concur with USACE's determination that the action complies with the applicable PDC (with or without justification), and recommends an individual Section 7 consultation to be completed independent from the 2017 NLAA Program.
GARFO Signature:	
JYLLKA.ZACHARY.E VERETT.1504438283	
Digitally signed by JYLLKA.ZACHARY.EVERETT.1504438283 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=OTHER, cn=JYLLKA.ZACHARY.EVERETT.1504438283 Date: 2017.12.13 10:37:11 -05'00'	
Date:	
12/13/2017	



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION I**  
**5 POST OFFICE SQUARE SUITE 100**  
**BOSTON, MASSACHUSETTS 02109-3912**

December 1, 2017

Kirk Bargerhuff  
U.S. Army Corps of Engineers  
New England District  
Programs/Project Management Division  
696 Virginia Road  
Concord, Massachusetts 01742-2751

Dear Mr. Bargerhuff:

This is in response to your letter dated November 3, 2017 requesting the U.S. Environmental Protection Agency (EPA) to review and comment on the proposed improvement dredging of the Point Judith Harbor Federal Navigation Project (FNP) in Narragansett, Rhode Island, pursuant to its responsibilities under sections 176(c) and 309 of the Clean Air Act (CAA).

EPA has reviewed the Environmental Assessment and other information on this project that you provided. Based upon our review and understanding of how the project will be dredged and disposed, and the associated impact, we find the Point Judith Harbor FNP meets the requirements of Section 176(c) and 309 of the CAA.

Please contact Ms. Olga A Guza of my staff at (603) 818-9788 if you have any questions or require additional information.

Sincerely,

A handwritten signature in cursive script, reading "Regina Lyons", is positioned above the typed name.

Regina Lyons, Manager  
Ocean and Coastal Protection Unit



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

November 3, 2017

Planning Division  
Navigation Section

Ms. Regina Lyons, Manager  
Ocean and Coastal Protection Unit  
U.S. Environmental Protection Agency, Region I  
5 Post Office Square - Suite 100  
Boston, Massachusetts 02109-3912

Dear Ms. Lyons:

I am writing to solicit your comments on our proposal to perform improvement dredging of the Point Judith Harbor Federal Navigation Project (FNP) in Narragansett, Rhode Island (RI). Enclosed is a copy of the draft Environmental Assessment (EA) (on DVD) for your reference. The draft EA and its appendices include maps of the proposed project area, a project description, resource characterizations of the project area, and an air quality conformity determination.

The proposed project includes the widening of the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet. Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water. Construction will occur between October 1 and January 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete.

We are requesting that you review this proposal relative to your responsibility under Section 176c and 309 under the Clean Air Act and provide your comments. We would appreciate your comments within 30 days of the date of this letter.



If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Mr. Kirk Bargerhuff, the project manager, at (978) 318-8029.

Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosure

Copy Furnished (via email):

Ms. Jean Brochi: [Brochi.jean@epa.gov](mailto:Brochi.jean@epa.gov)



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

November 3, 2017

Planning Division  
Navigation Section

Mr. Lou Chiarella  
Habitat Conservation Division  
National Marine Fisheries Service  
55 Great Republic Drive  
Gloucester, Massachusetts 01930-2276

Dear Mr. Chiarella:

I am writing to solicit your Essential Fish Habitat (EFH) conservation recommendations, if any, under the Magnuson-Stevens Fishery Conservation and Management Act and comments in accordance with the Fish and Wildlife Coordination Act (FWCA) on our proposal to perform improvement dredging of the Point Judith Harbor Federal Navigation Project (FNP) in Narragansett, Rhode Island (RI). Enclosed is a copy of the draft Environmental Assessment (EA) (on DVD) for your reference. The draft EA and its appendices include maps of the proposed project area, a project description, resource characterizations of the project area and an essential fish habitat assessment.

The proposed project includes the widening of the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet. Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water. Construction will occur between October 1 and January 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete.

Please provide any EFH conservation recommendations and comments under the FWCA within 30 days of the date this letter.

If you or your staff have any questions or require additional information, please feel free to contact Mr. Todd Randall, the Environmental Resources Team Member at (978) 318-8518 or Mr. Kirk Bargerhuff, the project manager, at (978) 318-8029.

Sincerely,



John R. Kennelly  
Chief, Planning Division

Enclosure

Copies Furnished (via email):

Ms. Alison Verkade: [Alison.verkade@noaa.gov](mailto:Alison.verkade@noaa.gov)  
Mr. Zachary Jylkka: [Zachary.jylkka@noaa.gov](mailto:Zachary.jylkka@noaa.gov)



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
HISTORICAL PRESERVATION & HERITAGE COMMISSION  
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209  
TEL (401) 222-2678 FAX (401) 222-2968  
TTY / Relay 711 Website [www.preservation.ri.gov](http://www.preservation.ri.gov)

29 June, 2017

John Kennedy  
New England District, Army Corps of Engineers  
696 Virginia Road  
Concord MA 01742

RE: Point Judith Harbor of Refuge Federal Navigation Project, RI

Dear Mr. Kennedy:

The Rhode Island Historical Preservation and Heritage Commission (RIHPHC) staff has reviewed the above-referenced proposal. It is our conclusion that the proposed navigation improvements will have no effect on any significant cultural resources. Therefore, we have no objections to the project.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact Glenn Modica, Project Review Coordinator of this office.

Very truly yours,

Edward F. Sanderson  
Executive Director  
State Historic Preservation Officer



**DEPARTMENT OF THE ARMY**  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO  
ATTENTION OF

June 19, 2017

Planning Division  
Evaluation Branch

Mr. Edward F. Sanderson, Executive Director  
Rhode Island Historic Preservation and Heritage Commission  
150 Benefit Street  
Providence, Rhode Island 02903

Dear Mr. Sanderson:

The U.S. Army Corps of Engineers, New England District, is preparing an Environmental Assessment for a proposed navigation improvement project at the Point Judith Harbor of Refuge Federal Navigation Project (FNP) in Narragansett, Rhode Island. Please see the enclosed figures of the FNP and proposed nearshore disposal area. We would like your comments on the following undertaking in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

The Point Judith Harbor of Refuge was originally authorized by the Rivers and Harbors Act of September 19, 1890. The Rivers and Harbors Act of March 3, 1905 authorized improvements to the Point Judith Pond inlet and channel, including dredging and extension of the East Jetty (which was originally constructed by the State of Rhode Island in 1903). The jetty was last maintained in 1950.

The tentatively selected plan for navigation improvements would widen the existing 15-foot deep West Bulkhead channel to the west by 50 feet for a distance of approximately 700 feet and then extend this same channel to the northeast about 1,200 feet into the North Basin area at a width of 150 feet and a depth of 10 feet. The project would involve the dredging of about 18,300 cubic yards of material of which 7,100 cubic yards would be from widening the West Bulkhead channel and an estimated 11,200 cubic yards from the expansion of the channel into the North Basin area.

Clean dredged material would then be disposed at a previously used near-shore beach nourishment area located about 2.5 miles southwest of the FNP off Matunuck Beach (see disposal site map). The dredging would be conducted using a mechanical dredge and scow that will be able to operate in shallow draft areas in the channel. Dredged material would be placed in scows and transported under tow to the nearshore site at Matunuck Beach.



Sediment sampling, including vibracores, indicated primarily sand within areas to be dredged within the FNP. Side scan sonar survey of the area in 2005 failed to identify any areas of possible submerged historic properties (Boothroyd et al. 2006). Any cultural resources in this area would have likely been subject to erosional disturbances in the high-energy environment. Two wrecks depicted on the NOAA nautical chart are well to the south of the area proposed for beach nourishment. Dredged material will be placed relatively close to the beach areas to ensure proper nourishment.

Your office has previously reviewed the proposed navigation improvement study, by letter dated August 13, 1986, and concurred that the project will have "no effect" upon significant cultural resources. Therefore, we feel that the proposed navigation improvement project at the Point Judith Harbor of Refuge FNP, with nearshore disposal at a previously utilized nourishment site at Matunuck Beach, will have no effect upon any structure or site of historic, archaeological, or architectural significance as defined by the NHPA and implementing regulations 36 CFR 800.

If you have any questions, please contact Mr. Kirk Bargerhuff, Study Manager at 978-318-8029 or Mr. Marc Paiva, Archaeologist at 978-318-8796.

Sincerely,

  
John B. Kennelly  
Chief, Planning Division

Enclosures

Same Letter Sent (With Enclosures):

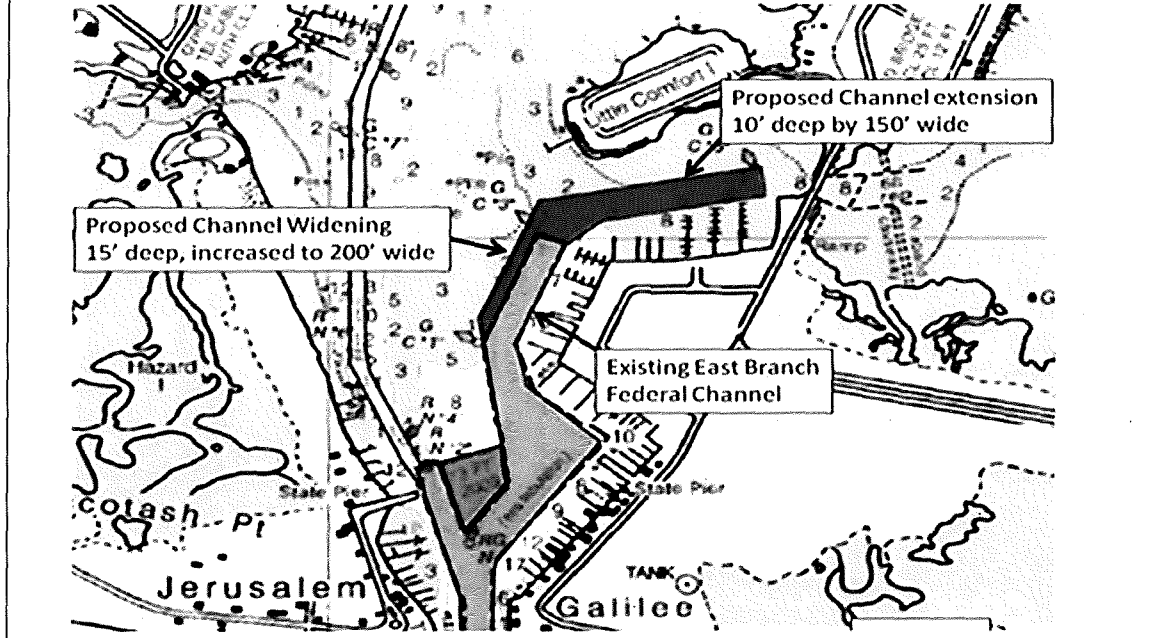
Mr. John Brown, Tribal Historic Preservation Officer  
Narragansett Indian Tribe  
215 Fenner Hill Road  
Hope Valley, RI 02832



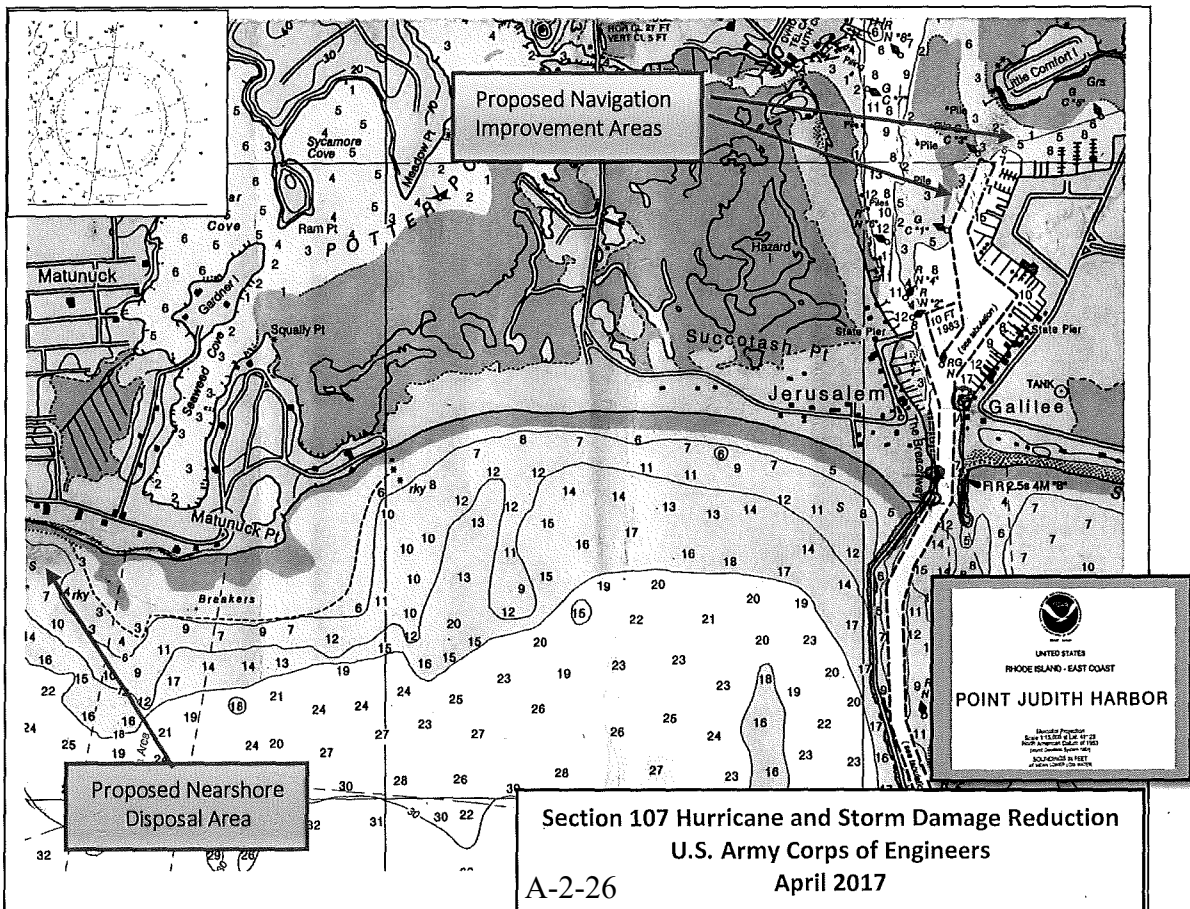
# Section 107 Hurricane and Storm Damage Reduction

## POINT JUDITH HARBOR OF REFUGE FEDERAL NAVIGATION PROJECT

### Navigation Improvement Areas



Nearshore Disposal Site Off Matunuck Beach







DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

April 17, 2015

Engineering/Planning Division  
Planning Branch

Grover J. Fugate, Executive Director  
Coastal Resources Management Council  
Oliver H. Stedman Government Center  
4808 Tower Hill Road, Suite 3  
Wakefield, RI 02879-1900

Dear Mr. Fugate:

Enclosed are two fully executed copies of the Feasibility Cost Sharing Agreement (FCSA) for the Point Judith Harbor, Rhode Island Feasibility Study.

As stipulated in Article VI. – Method of Payment of the FCSA, your estimated cash contribution toward project costs is \$20,000. We request that you transmit a check to cover this amount payable to "FAO, USAED, NEW ENGLAND" to the attention of the Study Manager, Mr. Robert Russo. This office must receive the check by May 22, 2015.

If you have any questions or require any additional information, please contact me at (978) 318-8505 or Mr. Russo, at (978) 318-8553.

Sincerely,

  
John R. Kennelly  
Chief of Planning

Enclosure



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT  
696 VIRGINIA ROAD  
CONCORD MA 01742-2751

March 13, 2015

Engineering/Planning Division  
Planning Branch

Grover J. Fugate, Executive Director  
Coastal Resources Management Council  
Oliver H. Stedman Government Center  
Wakefield, RI 02879-1900

Dear Mr. Fugate,

On March 12, 2015 the New England District received approval from our North Atlantic Division to execute the Feasibility Cost Sharing Agreement between the Coastal Resources Management Council and the Department of the Army, Corps of Engineers for the Feasibility Study of navigation improvements at Point Judith Harbor, Rhode Island. Enclosed are four (4) copies of the Feasibility Cost Sharing Agreement. Please sign and date the three signature pages at the end of each copy of the agreement and return all four (4) to this office for the Corps New England District Engineer's signature. Once signed by the District Engineer, we will date the first page and send you two (2) copies of the fully executed agreement for your records, along with our request for sponsor cost-share funds.

If you have any questions or require any additional information, please contact me or Rob Russo, at (978) 318-8162 or (978) 318-8553 respectively.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott E. Acone", is positioned above the typed name.

Scott E. Acone, P.E.  
Chief, Engineering/Planning



DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION  
FORT HAMILTON MILITARY COMMUNITY  
302 GENERAL LEE AVENUE  
BROOKLYN NY 11252-6700

CENAD-PD-C

12 March 2015

MEMORANDUM FOR Commander, New England District, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742

SUBJECT: Pt. Judith Harbor, Rhode Island – Continuing Authorities Program (CAP), Section 107 project (P2/CWIS#: 130481)

1. References:

- a. Memorandum, CENAE-EP-PN, 13 January 2015, which transmitted the subject agreement package to Division for approval.
- b. E-mail, CENAE-EP-PN, 27 February and 3 March 2015, subject: Pt. Judith FCSA.

2. Based upon a review of the materials submitted by CENAE (References 1a and 1b), the enclosed Feasibility Cost Sharing Agreement (FCSA) is approved and signatory authority is delegated to the District Commander.

3. The estimated total study cost in the FCSA is \$280,000, which is to be cost-shared on a 50 percent Federal and 50 percent non-Federal basis. The District must mark the approval as complete in P2 and the CAP database. The District is currently projecting a FCSA execution milestone (CW 130) for 5/1/2015 in P2 and must verify the schedule prior to re-lock.

4. The subject agreement is approved for execution within 60 calendar days from the date of this memorandum. You may not deviate from this approved agreement without prior authorization from the North Atlantic Division. The District should prepare a minimum of four final agreement originals. The Sponsor must sign the agreement first, and upon execution by the District Engineer, the District should retain two originals, and the remaining original agreements should be provided to the sponsor. A copy of the agreement should be forwarded to CENAD-PD-CS (Mr. Paul Sabalis) not later than 14 days after execution.

5. The point of contact for this action is Mr. Paul Sabalis, P.E., PMP. Mr. Sabalis may be reached at (347) 370-4589.

  
JOHN O'CONNOR, P.E.  
Continuing Authorities Program Manager



State of Rhode Island and Providence Plantations  
**Coastal Resources Management Council**  
Oliver H. Stedman Government Center  
4808 Tower Hill Road, Suite 3  
Wakefield, RI 02879-1900

(401) 783-3370  
Fax (401) 783-3767

October 1, 2014

John Kennelly, Chief  
Planning Branch  
Engineering/Planning Division  
US Army Corps of Engineers  
696 Virginia Road  
Concord, MA 01742

**RE: CRMC File No. 2014-09-012**

Site Location: Point Judith Federal channel Extension, Narragansett

Dear Mr. Kennelly:

The purpose of this letter is to reiterate the State of Rhode Island's support to continue the feasibility study of navigation improvements at Point Judith Harbor, Narragansett, Rhode Island under the U.S. Army Corps of Engineers (USACE), Section 107 program. We understand the study will include a complete investigation of alternatives to improve the existing Federal Navigation project and result in identification of a recommended plan.

We understand the Feasibility Study cost (amount to be shared) is estimated at \$280,000 and the required non-Federal share of fifty (50) percent is \$140,000. We understand that the continuation of the study requires the execution of a Feasibility Study Cost Sharing Agreement (FSCA). We reviewed the draft FSCA and are willing and capable of meeting the non-Federal responsibilities outlined in the document. If the study reveals elements that were not anticipated or are beyond the original scope, as sometimes happens, the State requests that the budget be discussed and negotiated beyond the original study estimate.

We look forward to working together to complete the study. If you have any questions, please don't hesitate to contact Dan Goulet of my staff at (401) 783-3370.

Sincerely,

Grover Fugate, Executive Director  
Rhode Island Coastal Resources Management Council

/lat



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
**NEW ENGLAND DISTRICT, CORPS OF ENGINEERS**  
**696 VIRGINIA ROAD**  
**CONCORD, MASSACHUSETTS 01742-2751**

CENAE-EP-PN

26 October 2012

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers  
CENAD-PD-CID-P (Attn: Mr. Forcina), Ft. Hamilton Military Community, 302 General Lee  
Avenue, Brooklyn, New York 11252-5700

SUBJECT: Approval to Execute the Feasibility Cooperation Study Agreement (FCSA) for the  
Point Judith Harbor of Refuge and Point Judith Pond Navigation Improvement Study,  
Narragansett, Rhode Island, PWI 130481, Section 107

1. NAE requests that NAD approve for execution the enclosed FCSA for the Point Judith Harbor of Refuge and Point Judith Pond Navigation Improvement Study, Narragansett, Rhode Island. HQUSACE review and coordination of the CAP Fact Sheet with the OASA (CW) has been completed.
2. The state of Rhode Island, Coastal Resources Management Council, the non-Federal sponsor, supports this study and will provide the non-Federal share when requested. There are no deviations to the revised model Feasibility Cost Sharing Agreement, dated September 26, 2012. As directed by the OASA (CW) the non-Federal sponsor was advised that the Army does not budget for the Section 107 program.
3. Enclosed for your information are the non-Federal sponsor's Support Letter, Self Certification of Financial capability, Review Plan, negotiated FCSA, FCSA Legal certification, funds allocation table, and the OASA (CW) Fact Sheet approval memo.

FOR THE COMMANDER:

ANTHONY T. MACKOS, P. E.  
Chief Engineering/Planning Division

Encls

CF (w/encls):  
Richard Ring, NAD  
Peter Blum, NAD



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
CIVIL WORKS  
108 ARMY PENTAGON  
WASHINGTON DC 20310-0108

OCT 17 2012

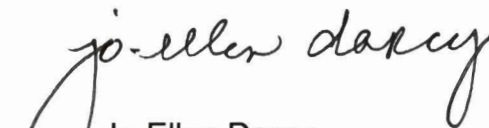
MEMORANDUM FOR THE DIRECTOR OF CIVIL WORKS

SUBJECT: Point Judith Harbor of Refuge and Point Judith Pond Project, Rhode Island  
Section 107 Fact Sheet

This responds to an email from the North Atlantic Division Regional Integration Team, dated September 7, 2012, requesting concurrence with the subject fact sheet to allow the New England District to proceed with negotiating a feasibility study cost sharing agreement with the non-federal sponsor.

I understand that \$100,000 has been allocated to this project thru Fiscal Year 2012, including an allocation of \$55,000 in the Fiscal Year 2012 work plan for the Continuing Authorities Program.

I concur with the fact sheet. However, the non-Federal sponsor is to be advised that the Army does not budget for the Section 107 program and that, if the project is constructed, future budgets for the Civil Works program might not include funding to maintain it. Future funding for maintenance of navigation projects with low commercial tonnage is likely to be highly constrained.

  
Jo-Ellen Darcy  
Assistant Secretary of the Army  
(Civil Works)



State of Rhode Island and Providence Plantations

**Coastal Resources Management Council**

Oliver H. Stedman Government Center  
4808 Tower Hill Road, Suite 3  
Wakefield, RI 02879-1900

(401) 783-3370  
Fax (401) 783-3767

October 1, 2012

John Kennelly, Chief of Planning Branch  
Engineering/Planning Division  
US Army Corps of Engineers  
696 Virginia Road  
Concord, MA 01742

Dear Mr. Kennelly

The purpose of this letter is to reiterate the State of Rhode Island's support of further Feasibility Study of navigation improvements at Point Judith Harbor. The State is aware that we have a responsibility in this partnership that includes providing 50 percent of the study cost, and are willing and capable to proceed with the study.

At this time, the Feasibility Study cost is estimated at \$160,000 area which brings the states share of the feasibility study to \$80,000. As a partner, the State requests a breakdown of the remaining tasks and their budget. If the study reveals elements that were not anticipated or beyond the scope, as sometimes happens, the State requests that the budget be discussed and negotiated beyond the original study estimate.

The State looks forward to this partnership. If you have any questions, please don't hesitate to contact Dan Goulet of my staff.

Sincerely,

Grover J. Fugate, Executive Director  
Coastal Resources Management Council

/dg





DEPARTMENT OF THE ARMY  
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS  
FORT HAMILTON MILITARY COMMUNITY  
GENERAL LEE AVENUE, BLDG 301  
BROOKLYN, NY 11252

REPLY TO

CENAD-PD-CS

24 August 2012

MEMORANDUM FOR Commander, New England District, US Army Corps of Engineers, ATTN: CENAE-EP-PN

SUBJECT: Point Judith Harbor, Rhode Island, Continuing Authorities Program (CAP), Section 107 – Initial appraisal – PWI/P2 #: 130481

1. References:

a. CENAE-EP-PN memorandum received 15 June 2012.

b. CENAD-PSD-P memorandum dated 24 August 2012.

2. The Division staff has reviewed the Initial appraisal (Reference 1a), and Planning and Policy has determined that the District has met the Federal interest determination requirement (Reference 1b). However, Planning and Policy has noted some concerns which must be addressed early in the feasibility phase.

3. This effort is currently on the HQUSACE list of allowable agreements for execution of a Feasibility Cost Sharing Agreement. Please coordinate with the NAD CAP Program Manager in developing your execution plan as the Section 107 policy fact sheet will require HQUSACE review and coordination with OASA (CW) for concurrence to proceed with the project.

4. The point of contact for this action is Mr. Paul A. Sabalis, P.E., PMP (NAD DST Manager). Mr. Sabalis may be reached at 347-370-4589.

Encl

  
JOSEPH FORCINA, P.E., PMP  
District Support Team Leader



DEPARTMENT OF THE ARMY  
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS  
FORT HAMILTON MILITARY COMMUNITY  
BROOKLYN, NY 11252-6700

REPLY TO  
ATTENTION OF

CENAD-PDS-P

24 Aug 2012

MEMORANDUM FOR: Chief, CENAD-PDC (Ms. Linda Monte)

SUBJECT: SUBJECT: Point Judith, RI, Section 107 Initial Appraisal Report (IAR),  
PWI# 130481


1. References:

a. CENAE-EP-PN memorandum, dated 15 June 2012, subject as above, requesting review and approval of the Determination of Federal Interest contained in the IAR

2. The NAD Planning and Policy Community of Practice has reviewed the subject IAR and Determination of Federal Interest. Based on a benefit-to-cost ratio (BCR) of 16 to 1, Federal Interest has been established. A review of the Economic Assessment for the IAR shows that sixty percent of project benefits are based in the reduction of crew labor costs from reducing or eliminating vessel congestion delays. While a legitimate benefit category, hourly labor costs can be estimated in different ways and have changed and evolved over the recent past. In the feasibility phase of this study, hourly labor costs must be based on latest guidance and this can be provided by the Small Boat Planning Center of Expertise in the Alaska District. Even if the current hourly labor cost is decreased substantially, the project remains economically justified and Federal Interest is established. However, this concern must be addressed and resolved in the next study phase. Benefits for reduced fuel costs and reduced vessel damages appear reasonable.

3. The report is approved as the basis for the New England District to prepare and negotiate a Feasibility Cost Sharing Agreement (FCSA) with the Sponsor. Please direct any questions to Rich Ring, the NAE Planning Manager, at (978) 318-8643.

PM D57  
**RECEIVED**  
8-27-2012

  
JOSEPH R. VIETRI  
Chief, Planning and Policy  
Programs Directorate



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

CENAE-EP

10 July 2012  
Russo/emm/553

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers,  
ATTN: CENAD-PD-CID-P (Attn: Mr. Joseph Forcina), Fort Hamilton Military Community,  
301 General Lee Avenue, Brooklyn, NY 11252-6700

SUBJECT: Point Judith Harbor of Refuge and Point Judith Pond, Narragansett and South  
Kingstown, Rhode Island, Navigation Improvement Study, Continuing Authorities Program  
(CAP) P2 130481 – Fact Sheet Submittal for Approval

1. Enclosed is subject Fact Sheet, dated 20 June 2012, for your review.
2. Please coordinate with HQ RIT to receive ASA approval of the subject Fact Sheet.
3. If you have any questions or require additional information, please contact the study manager,  
Mr. Rob Russo at robert.s.russo@usace.army.mil or (978) 318-8553.

FOR THE COMMANDER:

Encl

H. FARRELL MCMILLAN, P.E.  
Chief, Engineering/Planning Division



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

CENAE-EP-PN

12 June 2012

MEMORANDUM FOR Commander, North Atlantic Division, U.S. Army Corps of Engineers,  
ATTN: CENAD-PD-CID-P (Attn: Mr. Joseph Forcina), Fort Hamilton Military Community, 301  
General Lee Avenue, Brooklyn, New York 11252-6700

SUBJECT: Continuing Authorities Project Fact Sheet, Section 107, Point Judith Harbor  
Narragansett, R.I. PWI 130481

1. Enclosed are four copies of the Initial Appraisal Report for the Point Judith Harbor Navigation Improvement Project, Narragansett, Rhode Island for your review and approval to proceed to the Feasibility Phase. The investigation is being conducted under the Section 107 Small Navigation Project Continuing Authority. The Initial Appraisal indicates that channel improvements to the existing Federal project are in the Federal interest as a basis to prepare and negotiate a Feasibility Cost Sharing Agreement (FCSA). Execution of a model FCSA with the Sponsor, the State of Rhode Island, Coastal Resources Management Council, is required to share the costs of completing the feasibility phase.
2. Please contact the Study Manager, Mr. Robert Russo at (978) 318-8553 if you require further information.

FOR THE COMMANDER:

Encls

H. Farrell McMillan, P.E.  
Chief, Engineering/Planning Division





DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
CIVIL WORKS  
108 ARMY PENTAGON  
WASHINGTON DC 20310-0108

OCT 23 2006

Honorable Jack Reed  
United States Senate  
728 Hart Senate Office Building  
Washington, DC 20515

Dear Senator Reed:

Thank you for your letter of September 29, 2006, concerning funding for work in the State of Rhode Island and Providence Plantations, on the Point Judith Harbor of Refuge and a study of the Blackstone Valley Watershed.

The east and west breakwaters at the Point Judith project are in good condition, but a survey completed in Fiscal Year (FY) 2003 shows that the main breakwater, which underwent major rehabilitation most recently in 1963, is in need of repairs. Maintenance dredging also is needed. The backup data supporting the President's FY 2007 budget for the Army Civil Works program show that, provided that conditions at Point Judith and other projects do not change in the intervening time, \$1,866,000 would be used for maintenance dredging at Point Judith and no funding would be used for repair of the main breakwater. Funding for design and preparation of plans and specifications for repair of the main breakwater, estimated to cost \$250,000, is being considered for funding in the FY 2008 budget. During design, the Army Corps of Engineers would develop a detailed estimate of construction costs.

A feasibility study of potential modifications to the Point Judith project would be conducted under the authority of Section 107 of the Rivers and Harbors Act of 1960, as amended, as part of the "Continuing Authorities" program. The Coastal Resources Management Council of the State of Rhode Island and Providence Plantations has requested initiation of this study. This study was not funded in the FY 2007 budget. It will compete for such additional funding as the Congress may provide for Section 107 projects in FY 2007, and is being considered for funding in the FY 2008 budget. The initial, Federally-funded portion of the study is estimated to cost \$100,000.

The reconnaissance study of floodplain management in the Blackstone Valley Watershed was not included in the FY 2007 budget. It is estimated to cost \$100,000, and is being considered for funding in the FY 2008 budget.

I enjoyed our tour of Point Judith Harbor of Refuge. Please feel free to contact me if I may be of further assistance.

Very truly yours,

John Paul Woodley, Jr.  
Assistant Secretary of the Army  
(Civil Works)

JACK REED  
RHODE ISLAND  
COMMITTEES  
ARMED SERVICES  
BANKING  
HEALTH AND EDUCATION  
JOINT ECONOMIC COMMITTEE

rec'd 10/5/06

## United States Senate

WASHINGTON, DC 20510-3903

September 29, 2006

The Honorable John Paul Woodley, Jr.  
Assistant Secretary of the Army  
Civil Works  
108 Army Pentagon  
Room 3E446  
Washington, DC 20310-0108

Dear Assistant Secretary Woodley:

I want to thank you and your staff for taking time during your visit to Rhode Island to tour the Point Judith Breakwater. As a follow-up, I write to urge that the Army Corps of Engineers include funding for this project in its fiscal year 2008 budget request.

The breakwater forms a Harbor of Refuge that was authorized in the late 1800s as part of a system of refuge harbors to provide protection for coastal schooners. The breakwater protects navigation, provides critical shoreline protection to Narragansett, and is important to protecting the fishing fleet and surrounding area from the open ocean. As we saw on the tour, portions of the breakwater have eroded and fallen into the ocean. Parts of the center breakwater are submerged at high tide, creating a dangerous situation for navigation.

In FY2003, I secured \$120,000 in the Energy and Water Appropriations bill to survey the breakwater and determine what would be necessary to repair the structure. The survey determined that the main breakwater is not currently at authorized dimensions. The Corps estimates it would require 81,000 tons of stone to restore the breakwater at a cost of approximately \$15 to \$20 million. I request the Army Corps of Engineers include at least \$15 million in its fiscal year 2008 budget to repair the Point Judith Breakwater.

There are two other projects in Rhode Island I would like to bring to your attention that I also hope you will consider for the Corps of Engineers' FY2008 budget request. The Blackstone Valley, which encompasses nine communities in Rhode Island and several in southern Massachusetts, has historically experienced flooding. In September, the Environment and Public Works passed the enclosed study resolution, which I requested to evaluate flood plain management in the Blackstone Valley Watershed of Rhode Island. I respectfully request that you include \$100,000 for a reconnaissance study for this project for FY2008. I also request the Corps of Engineers include \$100,000 in FY2008 for a feasibility study that would examine a modification of the existing federal navigation project at Point Judith. The proposed project would provide an extension of the 15-foot Galilee channel northeasterly along the north bulkhead of the state-operated fishing port and widen the existing channel. By extending the federal channel to reach the bulkhead of the state pier, this project would greatly benefit Rhode Island's commercial fishing fleet.

PLEASE RESPOND TO:  
WASHINGTON, DC:  
728 HART SENATE OFFICE BUILDING  
WASHINGTON, DC 20510-3903  
(202) 224-4642  
RHODE ISLAND:  
201 HILLSIDE ROAD  
SUITE 200  
GARDEN CITY  
CRANSTON, RI 02920-5602  
(401) 943-3100  
U.S. FEDERAL COURTHOUSE  
ONE EXCHANGE TERRACE  
ROOM 408  
PROVIDENCE, RI 02903-1773  
(401) 528-5200  
1-(800) 284-4200  
TDD RELAY RHODE ISLAND  
1-(800) 745-5555  
<http://reed.senate.gov>

I want to commend the work of the Corps in Rhode Island, particularly Colonel Thalken and the New England District staff. I look forward to continuing to work with you and the New England District on water resource and civil works projects in Rhode Island. Thank you for your consideration of these important requests.

Sincerely,

A handwritten signature in dark ink, reading "Jack Reed". The signature is fluid and cursive, with the first name "Jack" and last name "Reed" clearly distinguishable.

Jack Reed  
United States Senator

---

cc: Lieutenant General Carl A. Strock, Commander and Chief of Engineers  
Colonel Curtis L. Thalken, District Engineer, New England District





STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL

Oliver H. Stedman Government Center  
4808 Tower Hill Road, Suite 3  
Wakefield, R.I. 02879-1900

(401) 783-3370  
FAX: (401) 783-3767

September 26, 2006

John Kennelly  
Chief, Planning Branch  
US Army Corps of Engineers  
696 Virginia Road  
Concord, MA 01742

RE: Navigation Improvements Study, Pt. Judith Pond

Dear Mr. Kennelly:

The Rhode Island Coastal Resources Management Council (CRMC) requests that you initiate a study of navigation improvements to Point Judith Harbor in Rhode Island under the authority of Section 107 of the River and Harbors Act of 1960. Point Judith harbor is home to the States largest commercial fishing port, the mainland terminus of the only freight ferry that provides year round service to Block Island and a Coast Guard station. Improvements to navigation within the harbor are necessary to these vital state interests.

It is our understanding that subsequent to the Corps initial appraisal of this request, the State and Corps will jointly determine the scope of the feasibility study. The CRMC looks forward to working with the Army Corps of Engineers on this project. If you have any questions or need any additional information, please don't hesitate to contact Mr. Dan Goulet of my staff at (401) 783-3370.

Sincerely,

Grover J. Fugate, Executive Director  
Coastal Resources Management Council

GJF/drg/lam

Rec'd 10/25/00



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
DIVISION OF COASTAL RESOURCES  
The Port of Galilee  
301 Great Island Road  
Narragansett, RI 02882  
Tel. (401) 783-5551 Providence (401) 277-3429

October 17, 2000

Roger Juhola  
Army Corps of Engineers  
696 Virginia Road  
Concord, Ma. 01742  
General Information

Dear Mr. Juhola:

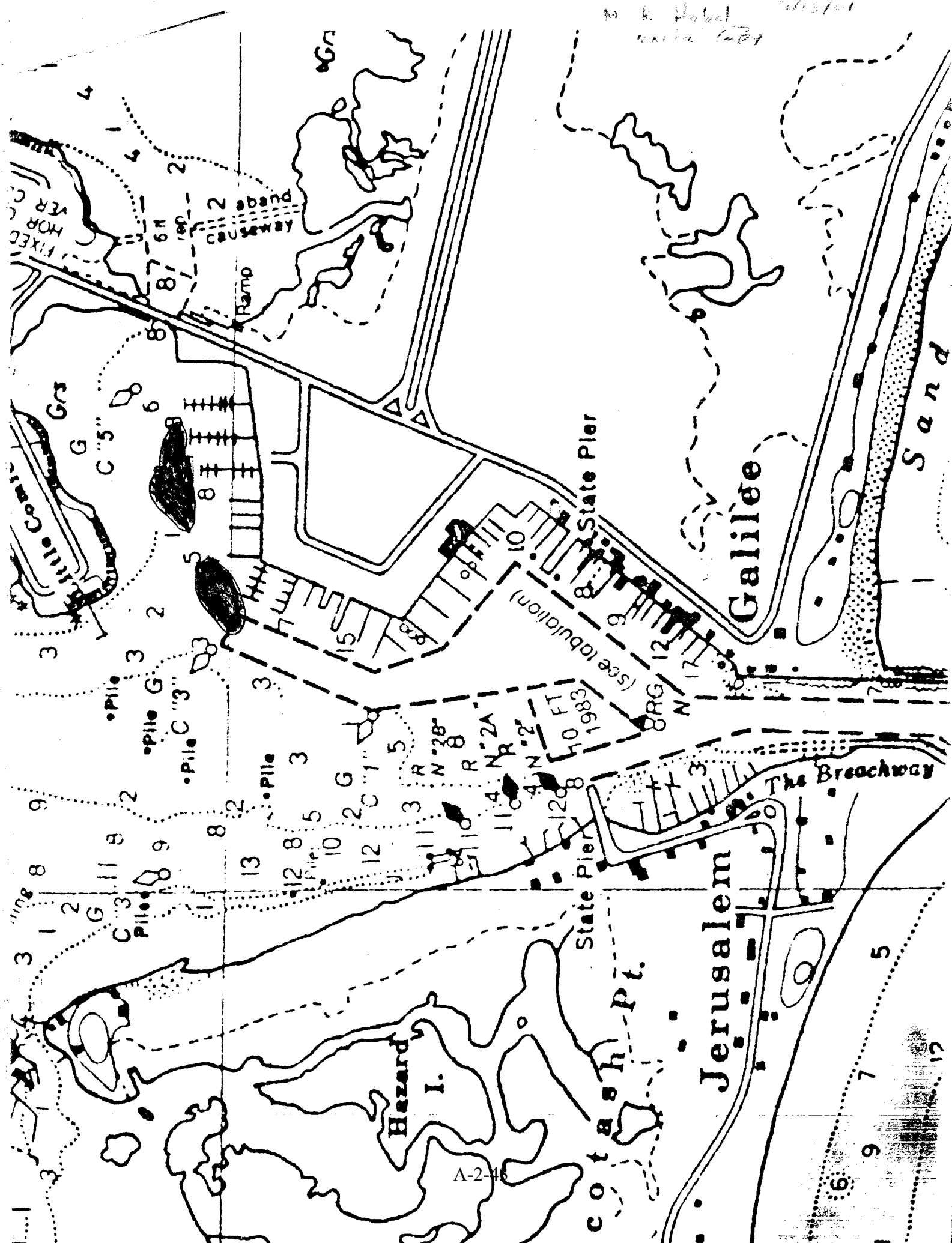
Enclosed please find a segment of chart 13219 showing Point Judith Harbor. As I previously mentioned to you I had received a few complaints of "bottoming out" in the channel at low tide. I then asked numerous Galilee fishermen if they knew of any areas in the channel around the Port that may require work. I have shaded in the areas in the North Basin of the 8' Federal Channel that were described to me as areas that may be in need of maintenance dredging. No other areas in the channel were described to me as being a problem.

I hope this information is helpful to you. Please contact me if I can be of any further assistance in this matter and thank you for your consideration.

Sincerely,

Donald McGovern  
Acting Chief

1950





STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management  
DIVISION OF COASTAL RESOURCES

The Port of Galilee  
301 Great Island Road  
Narragansett, RI 02882  
Tel. (401) 783-5551 Providence (401) 277-3429

August 29, 2000

Army Corps of Engineers  
696 Virginia Road  
Concord, Ma. 01742  
General Information

Dear Sir or Madam:


I am the Acting Chief of the Division of Coastal Resources/ Department of Environmental Management for the State of Rhode Island. Our Division has jurisdiction over the State facilities in the commercial fishing Port of Galilee. There are over 180 commercial, charter, and sport boats berthed at our State facility.

Recently, I have been receiving complaints concerning shoaling in the eight foot channel located in the North Basin approaching the Great Island Bridge as well as areas immediately West of our Western-most piers in the Port in the sixteen foot section of the channel.

I am hoping that you might be able to advise me how to best proceed and whether it may be possible to have a survey of the channel conducted to find out if further measures may be warranted.

Thank you in advance for any assistance you may provide concerning this issue.

Sincerely,



Donald McGovern  
Acting Chief

# **APPENDIX B**

## **PROJECT HISTORY**

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**POINT JUDITH HARBOR OF REFUGE & POINT JUDITH POND  
NARRAGANSETT AND SOUTH KINGSTON, RHODE ISLAND  
LIST OF AUTHORIZATIONS**

<b>Authorization</b>	<b>Work Authorized &amp; Constructed</b>	<b>Construction Dates</b>
River & Harbor Act of 19 September 1890	Two Breakwaters for Harbor of Refuge, Outer V-Shaped and Shorter Detached Eastern Breakwater, Both with 20 Ft Top Width, +10 Ft MLW Top Elevation, and Slopes of 1/1 Leeward and 1/2 Seaward	Main Breakwater - Feb 1891 – Dec 1898 (West Arm Never Extended) East Breakwater - Sea Arm - June 1907 – Jan 1909
River & Harbor Act of 13 July 1892	Channel –10 Feet MLW through West Pond Breachway from the Harbor of Refuge, with a Jettied Inlet in the Beach, and Large Interior Anchorage	Never Constructed
Annual Report for 1897, Page 920	Raising the Design Top Elevation of the East Arm of Main Breakwater to +13 Feet MLW.	See Below - 1907
River & Harbor Act of 13 June 1902	Extending the Detached Eastern Breakwater to Shore at Point Judith to Protect a Landing Area and the Lifesaving Station	July 1903 – Jan 1909
River & Harbor Act of 3 March 1905	Seaward Extension of the Shore Arm of the Detached Eastern Breakwater. At Point Judith Pond - Extension of the State Jetties, Revetment of the Inlet and Dredging of the Entrance Channel.	West Jetty and Inlet Revetment – Nov 1905 – Jan 1906 East Breakwater – June 1907 -
River & Harbor Act of 2 March 1907	Deferring the Detached Reach of the Eastern Breakwater, the Raising of the East Arm of the Main Breakwater and the Extension of the West Arm of the Main Breakwater. Authorized the Seaward Extension of the Detached Eastern Breakwater Shore Arm. At the Pond Entrance - Constructing Extensions to the State Jetties or in Dredging the Inlet.	Dredging Never Undertaken
River & Harbor Act of 25 June 1910	Westerly Detached Shore Arm of the Main Breakwater, Removal of Boulders and Shoal Spots in the Harbor of Refuge and Raising the Height of the Easterly Shore Arm of the Breakwater by 5 Feet.	West Shore Breakwater Aug 1911 – Aug 1914  Dredging Never Undertaken



River & Harbor Act of 2 March 1919	Removal of Two Shoal Areas from the Refuge Anchorage to -18 Feet MLW	Second Half of 1921
River & Harbor Act of 30 June 1948	Abandoned the Prior Project for an Entrance Channel to Point Judith Pond. Adopted 1) an Entrance Channel -15 Feet MLW by 150 Feet Wide from the Refuge through the Breach into the Pond along its West Side to a Point 100 Feet North of the State Pier at Jerusalem, with 2) a Branch Channel -15 Feet MLW by 200 Feet Wide on the East Side of the Pond to a Point 100 Feet North of the State Pier at Galilee, 3) A 5-Acre Anchorage Basin between these Channels at -10 Feet Deep, 4) Bulkheads to Supplement the Inlet Jetties, and 5) A Channel -6 Feet Deep and 100 Feet Wide Extending Upstream from the West Branch Channel at Jerusalem to Wakefield with, 6) A 5-Acre Anchorage -6 Feet Deep at the Head of Navigation at Wakefield.	April 1950 – Nov 1950
Design Memorandum 24 August 1961, Approved by OCE, 11 September 1961	Major Rehabilitation of Main Breakwater (Both Arms - +10-Ft MLW), West Shore Breakwater (+8-Ft & +10-Ft MLW) and East Shore Breakwater (+10-Ft MLW)	Dec 1961 – Oct 1963
River & Harbor Act of 23 October 1962  Deauthorization Recommended in House Doc. #413, 94th Congress, 2nd Session, 18 March 1976	Multi-Purpose Project: <u>Navigation Features</u> = (1) Deepening the Entrance Channel to -20 Feet MLW up to Galilee, (2) Extend the Channel at -10 Feet by 150 Feet Around Galilee to North Bulkhead Basin, (3) Expand the Main Anchorage to 11 Acres at -10 Feet MLW, (4) Provide a North Bulkhead 8-Acre Anchorage at -8 Feet MLW, (5) Retain the -15-Foot MLW Channel to Jerusalem Pier, (6) Deepen the Pond Channel up to Wakefield to -8 Feet MLW, (7) Expand the Wakefield Anchorage by an Additional 7 Acres and Deepen the Entire Area to -8 Feet MLW, (8) Provide a Channel into Snug Harbor at 6 Feet by 100 Feet, with (9) a -6-Foot MLW by 5-Acre Anchorage in Snug Harbor <u>Hurricane Protection &amp; Beach Erosion Features</u> = Diking, Revetment and Beachfill along about 3.5 Miles of Shoreline, a 150-Foot Wide Navigation Gate with Stone Dike and Concrete Bulkheads	Never Constructed

6 November 1977, House Doc. #413, 94th Congress, 2nd Session, 18 March 1976	Deauthorized above Listed Multi-Purpose Project for Hurricane Protection, Flood Control and Navigation, as Authorized by the River & Harbor and Flood Control Act of 23 October 1962	Deauthorization
Chief of Engineers, 10 November 1976 (29 September 1976) under Section 107 of the River & Harbor Act of 1960	Extending the -15-Foot Channel 1,400 Feet Northward at Widths of from 640 Feet Narrowing to 150 Feet along the Galilee Piers	Feb 1977 – April 1977

**POINT JUDITH HARBOR OF REFUGE & POINT JUDITH POND  
NARRAGANSETT AND SOUTH KINGSTON  
PROJECT CONSTRUCTION & MAINTENANCE HISTORY**

<b>Work Dates</b>	<b>Work Accomplished</b>	<b>Quantities</b>
Feb 1891 – Nov 1891	Begin Construction of Main Harbor of Refuge Breakwater – Both East and West Main Arms	11,630 Tons Stone
Aug 1893 – Oct 1896	Continue Construction of Harbor of Refuge Breakwater – East and West Main Arms	635,022 Tons Stone
June 1897 – Dec 1898	Continue Construction of Harbor of Refuge Breakwater – East and West Main Arms	240,851 Tons Stone
July 1903 – Nov 1903	Begin Construction of East Shore Arm Harbor of Refuge Breakwater	32,568 Tons Stone
Nov 1905 – June 1906	Continue Construction of East Shore Arm Harbor of Refuge Breakwater	87,920 Tons Stone
Oct 1905 – Nov 1905	Repairs to Main Breakwater 1898 Damage	2,005 Tons Stone
Nov 1905 – Jan 1906	Extend and Strengthen West Jetty to Pond and Revet Slopes of Breach Channel Cut	4,632 Tons Stone
June 1907 – Jan 1909	Continue Seaward Extension of East Shore Arm of Harbor of Refuge Breakwater	111,100 Tons Stone
Sept 1908 – FY 1909	Repairs to Main Breakwater	3,496 Tons Stone

Nov 1909 – Dec 1909	Repairs to Main Breakwater	6,957 Tons Stone
March 1910	Repairs to Main Breakwater from 1910 Storms	219 Tons Stone
Aug 1911 – Aug 1914	Begin & Complete Construction of West Shore Arm Harbor of Refuge Breakwater	294,727 Tons Stone
FY 1913 – Oct 1913	Repairs to Easterly Shore Arm Breakwater	12,931 Tons Stone
July 1913 – Oct 1913	Repairs to East Arm of Main Breakwater	3,887 Tons Stone
Aug 1914 – Dec 1914	Repairs to Easterly Shore Arm Breakwater and East Arm of Main Breakwater	31,115 Tons Stone
May 1916 – Dec 1916	Repairs to Slopes of East Arm of Main Breakwater	26,853 Tons Stone
Summer to Fall 1921	Removal of Boulder Shoals from Refuge Anchorage	25,000 cy Estimate
FY 1927 – FY 1928	Repairs to Main Breakwater and East Shore Arm Breakwater	42,000 Long Tons Stone Estimated
Spring 1928 – FY 1929	Repairs to East and West Arms of Main Refuge Breakwater	10,772 Long Tons Stone
June 1935 – Aug 1935	Repairs to Main Refuge Breakwater	6,032 Long Tons Stone
Nov 1939 – May 1940	Repairs to East Arm of Main Breakwater	13,578 Long Tons Stone
June 1941 – Dec 1941	Repairs to West Arm of Main Breakwater	15,136 Long Tons of New Stone and 1,460 Long Tons of Salvaged Stone
July 1941 – Dec 1941	Repairs to East Shore Arm Breakwater	12,998 Long Tons of New Stone and 2,988 Long Tons of Salvaged Stone
April 1950 – Nov 1950	Construction of Sand Arresting Structures in Point Judith Pond	9,446 Tons Stone
July 1950 – Nov 1950	Improvement Dredging of 15-Foot Channel, 10-Foot Anchorage and 6-Foot Channel	193,689 cy
July 1950 – Nov 1950	Repairs to the Harbor of Refuge Breakwaters	19,098 Tons Stone

Apr 1956 – May 1956	Maintenance Dredging of 15-Foot Entrance Channel and 6-Foot Pond Channel	62,259 cy
July 1959	Maintenance Dredging of 15-Foot Channels and 6-Foot Pond Channel	62,534 cy
Dec 1961 – Oct 1963	Major Rehabilitation of Main Harbor of Refuge Breakwater and East Shore Arm Breakwater	142,440 Tons Stone
Dec 1962 – May 1963	Maintenance Dredging of 15-Foot Channel	46,800 cy
May 1971 – June 1971	Maintenance Dredging of 15-Foot Channel	19,766 cy
Feb 1977 – April 1977	Improvement Dredging of Northeasterly Extension of 15-Foot Galilee Channel	72,000 cy
Late FY 1983 – Nov 1983	Repairs to East Shore Arm Breakwater	22,750 Tons New Stone Plus Est.
FY 1985	Repairs to Main Breakwater – Contract Default with only Partial Work Done	Unknown Tonnage
Oct 1994 – May 1995	Rehabilitation of East Shore Arm Breakwater – Contract Terminated by Mutual Agreement	2,200 Tons New Stone Plus 625 Tons Reset Stone Est.
Oct 1996 – Aug 1997	Restoration of the Former Galilee Salt Marsh Disposal Area	Unknown
Oct 2006 – March 2007	Maintenance Dredging of 15-Foot Channels and 6-Foot Wakefield Channel with Disposal Nearshore off Matunuck Beach	53,623 CY Total 43,536 CY 15-Foot Channel 10,087 CY 6-Foot Channel
October 2009 – April 2010	Maintenance Dredging of 15-Foot Entrance Channel and a Small Portion of the 6-Foot Pond Channel with Disposal Nearshore off Matunuck Beach.	23,980 cy
January 2014 to June 2014	Repairs to the East Jetty and the Point Judith Pond Inlet Revetment	2,610 Tons New Stone
December 2014 to May 2015	Work under MOA with the State for Repairs to the Revetment at the State's Camp Cronin Fishing Area in Conjunction with Breakwater Repairs	16,920 to 39,240 Tons New Stone (Spec)

December 2014 to September 2016	Work under MOA with the US Coast Guard for Repairs to the Seawall and Revetment at the Point Judith Light Station.	7,000 Tons New Armor Stone (Spec)
October 2015 to April 2017	Repairs to the East Shore Arm Breakwater for the Harbor of Refuge	10,700 Tons New Stone Estimated

**POINT JUDITH HARBOR  
NARRAGANSETT, RHODE ISLAND  
NAVIGATION IMPROVEMENT PROJECT**

**APPENDIX C  
ECONOMIC ASSESSMENT**

**PREPARED BY:  
DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS  
NEW ENGLAND DISTRICT**

**MAY 2019**

**REVISED MARCH 2020**

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**Economic Assessment**  
**Point Judith Harbor of Refuge and Point Judith Pond**  
**Narragansett, Rhode Island**  
**Section 107 Navigation Improvement Study**

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## **1.0 Introduction**

This Economic Assessment evaluates the benefits of providing navigation improvements to the existing Federal channel at the Port of Galilee in Point Judith Pond, Rhode Island. The analysis includes a description of the study area and existing conditions, as well as determination of the most likely without and with project conditions. Economic benefits to the proposed navigation improvements are estimated by evaluating the difference between the two conditions.

The study was requested by the State of Rhode Island and is conducted at a Feasibility level of detail using data provided by the RI Coastal Resources Management Council and the RI Department of Environmental Management, as well as local Point Judith contacts including the President of the Rhode Island Fishermen's Alliance, the President of the RI Party and Charter Boat Association, and Point Judith fishermen. The analysis follows Corps guidance for estimating National Economic Development benefits as contained in ER 1105-2-100, April 2000, Appendix E, Section II - Navigation. Costs and benefits in Section 8 and 9 of the report are reported based on a 50 year period of analysis, starting in 2020, and presented in annual terms using the FY20 Federal interest rate for water resources projects of 2.75%. A cost and benefits update to FY 20 price level is provided in section 12 of this appendix.

## **2.0 Description of Study Area**

The Port of Galilee is located in the town of Narragansett on the central Rhode Island coastline, inside the Point Judith Harbor of Refuge and about 40 miles south of Providence. The existing Federal project consists, in part, of a 15-Foot deep 150-Foot wide channel that runs along the west and south sides of the eastern bulkhead. Other elements of the Federal project in the area include a Federal channel extending to the west farther up into Point Judith Pond, several anchorage areas throughout the pond, and large breakwaters which form the Harbor of Refuge outside of the pond. The US Coast Guard Station Point Judith is located outside the Harbor of Refuge, at the southeastern tip of Point Judith. The harbor has a tidal range of three to four feet.

Point Judith is the largest commercial fishing port in Rhode Island, and includes 40 piers used primarily for commercial berthing, five fish buyers/processors, repair facilities, and various suppliers including fuel, bait, and ice. The harbor also contains a State Pier, a terminal for the Block Island ferry, and a US Coast Guard facility. The fish piers and berths are controlled by the State of Rhode Island Department of Environmental Management. The largest fishing vessels in the harbor berth at slips along the west and south sides of the bulkhead. The western side of the bulkhead contains the main pier for unloading catch to one of the larger fish processing plants. The northern side of the bulkhead, just south of Little Comfort Island, contains 132 vessels at slips, including lobster boats, charter fishing and party boats, and several small draggers. There is a state boat ramp located east of the northern bulkhead area,

east of Great Island Road in Bluff Hill Cove. The boat ramp is used heavily by recreational boaters in the summer months. Boats launched at the ramp typically transit the area north of the bulkhead to exit the harbor.

In addition to being a major commercial fishing port, Point Judith is an active tourist destination, containing many shops, restaurants, sport fishing boats, sightseeing tour boats, beaches and a motel. The Block Island Ferry at Point Judith provides a critical link to Block Island, a popular tourist destination, transporting visitors, residents, and supplies to the island year-round. The ferry runs eight to nine trips per day to Block Island in the summer months, tapering somewhat in the fall and spring, and provides a few trips each day in the winter.

The Point Judith commercial fleet consists of 273 vessels, of which 230 are commercial fishing vessels and 43 are charter fishing or party vessels. The fishing vessels range in draft from three to fourteen feet, with 90 percent of the vessels having drafts between five and twelve feet.

The Block Island Ferry and the Coast Guard vessels operate out of the southern end of the harbor and generally have no problems with the current channel dimensions. Ferry operations include five vessels in the peak summer months, reducing to one vessel in the middle of winter. The Coast Guard keeps two to four vessels at Point Judith, and periodically uses the boat ramp in Bluff Hill Cove to launch its smaller vessels. These smaller vessels then transit the area north of the bulkhead but have drafts of less than 4 feet, shallower than the commercial fishing vessels which use the area.

### **3.0 Commercial Fishing**

Point Judith is one of the larger fishing ports in the country in terms of both pounds landed and value. In 2017, Point Judith was ranked 23<sup>rd</sup> in the nation in terms of pounds landed and 19<sup>th</sup> in the nation in terms of value, with 44 million pounds landed valued at \$57 million (2017 National Marine Fisheries Service, latest available data). The most valuable species landed are squid, scallop, scup, lobster, summer flounder, herring and clam. Point Judith lands more squid than any port in the United States, and more scup in terms of poundage than any other east coast port. Other significant species landed at the port include Jonah crab, yellowtail flounder, hake, sea bass and skates. A seasonal longline fishery for tuna also operates out of the port, as well as various charter fishing vessels.

Table C-1 shows the Historical landings at Point Judith over the 15 year period of 2003 to 2017. Commercial fishing is a major industry in Rhode Island. According to a study by Cornell University, in 2010 the commercial fishing industry as a whole, including fishermen, fish processors, wholesale and retail dealers, and seafood restaurants, contributed \$763 million in sales to the Rhode Island economy, \$240 million in income, and 8,995 jobs (Rhode Island Commercial Fishing and Seafood Industries – The Development of an Industry Profile, Cornell Cooperative Extension Marine Program, October 12, 2011, p. 66).

As the largest fishing port in the state, often making up more than half the total state landings, commercial fishing in Point Judith makes up a major portion of these impacts in terms of sales, incomes, and jobs.

#### 4.0 Economic Setting

The town of Narragansett is located in Washington County, on the southern coast of Rhode Island. In 2017 (latest available), the town had a population of 15,601 and contained 9,962 housing units (US Census Bureau, 2017 American Community Survey). Between 2010

and 2017, the population of the town decreased while the number of housing units increased, with a population in 2010 of 15,868 and 9,470 housing units (US Census Bureau, 2010 Census). The median family income in Narragansett in 2017 was \$69,332 (US Census Bureau, 2017 ACS) compared to \$65,842 in 2010. This is also slightly higher than the median family income in Rhode Island of \$61,043

In August 2019, Narragansett had a labor force of 9,062 and an unemployment rate of 2.2% (US Bureau of Labor Statistics). In terms of total wages, the largest employment sectors in Narragansett in 2019 were Government (19 establishments, \$14.628M total wages), Food Services and Lodging (75 establishments, \$4.488M total wages), Retail Trade (48 establishments, \$4.249M total wages), and Health Care/Social Services (37 establishments, \$3.648M) (Rhode Island Department of Labor and Training, Quarterly Census of Employment & Wages, 2019).

As the largest commercial fishing port in Rhode Island and one of the larger fishing ports in the country, Point Judith plays a significant role in the economy of Narragansett and the wider regional area. The economic impact of the industry extends beyond the fishermen to include the many fish buyers, fish processors, suppliers, and vessel repair businesses related to Point Judith fishing activity. The Federal channel at Point Judith supports the significant economic activity of the harbor. The Federal project is also used extensively by the Block Island Ferry, a critical supply and transport link from the mainland to Block Island.

Table C-1 Point Judith Commercial Fishery Landings, 2003 - 2017				
Year	Commercial Fish Landings, pounds	U.S. Rank, Quantity	Commercial Fish Landings, dollars	U.S. Rank, Value
2017	44,000,000	23rd	\$57,000,000	19th
2016	53,000,000	23rd	\$56,000,000	19th
2015	46,000,000	24th	\$46,000,000	20th
2014	57,000,000	23rd	\$50,000,000	25th
2013	55,000,000	23rd	\$47,000,000	25th
2012	46,000,000	25th	\$43,000,000	26th
2011	41,000,000	25th	\$40,000,000	26th
2010	36,000,000	24th	\$32,000,000	25th
2009	39,000,000	24th	\$32,000,000	25th
2008	38,000,000	21st	\$37,000,000	17th
2007	38,000,000	21st	\$37,000,000	17th
2006	46,000,000	20th	\$47,000,000	11th
2005	42,000,000	20th	\$38,000,000	11th
2004	40,000,000	24th	\$32,000,000	19th
2003	45,000,000	24th	\$31,000,000	19th

<https://www.fisheries.noaa.gov/national/fisheries-united-states-2017>  
accessed 10/14/2019

## 5.0 Existing Conditions

Navigation delays and inefficiencies exist at the western and northern sides of the bulkhead. The western side of the bulkhead is the primary work area and catch offloading area, containing major fish buyers and fish processors. The heavy use of this area by many of the vessels in the harbor and the narrow channel width result in frequent and significant congestion delays. Additional delays occur while vessels wait to offload catch. As boats jockey for position, they keep their engines running to fight against the ‘pushing’ of tide, current, and wind. The waiting vessels make it difficult for other vessels to pass safely in the channel to reach their berths, causing additional congestion delays. Longer delays occur during bad weather, when many vessels return to port at once to offload and sell catch before a storm causing landside capacity to be exceeded. Due to the congestions, fishing vessels are periodically forced out of the channel to the west and ground out on a shallow area located outside the channel. Tidal forces are often strong in this area, and can make safe navigation more difficult. Vessels stuck on the sand bar have to wait until high tide to be towed out, typically incurring vessel damages and haul-out costs.

Delays also occur off the northern side of the bulkhead, where vessels make the left turn from the north toward the existing Federal channel, due to insufficient depths since this area to the north of the bulkhead is without an authorized Federal channel. The narrowness of the upper end of the Federal channel and the sharpness of the turn required to stay in the channel mean that vessels are delayed waiting for space to make the turn, or are forced out of the channel and may bump bottom, damaging propellers or taking sand into pumps and motors. Vessel groundings result in increased maintenance costs over time. As of 2011, a Corps survey showed depths in channel area north of the bulkhead of 8 to 14 feet, with the shallowest depths of 7 feet. The larger vessels using the north side of the bulkhead must take extra time to safely clear shallow areas and periodically bump bottom. Tidal delays and minor grounding damages are incurred by these larger vessels. This area is also often congested with recreational vessels transiting the state channel from the boat ramp in Bluff Hill Cove. Commercial fishing vessels are sometimes forced to the edge of the channel by the congestion, causing them to bump bottom, damaging propellers and hulls, or causing them to intake sand and silt, damaging pumps and motors.

## 6.0 Without Project Condition

In the without project condition, the congestion delays, grounding damages and haul-out costs currently experienced by Point Judith fishermen due to inadequate channel width in the Federal channel will continue to occur. In addition, tidal delays and grounding damages from inadequate channel depth off the northern side of the bulkhead will continue to occur. These delays and damages increase the operating costs of Point Judith fishermen, reducing their net incomes and reducing overall economic efficiency.

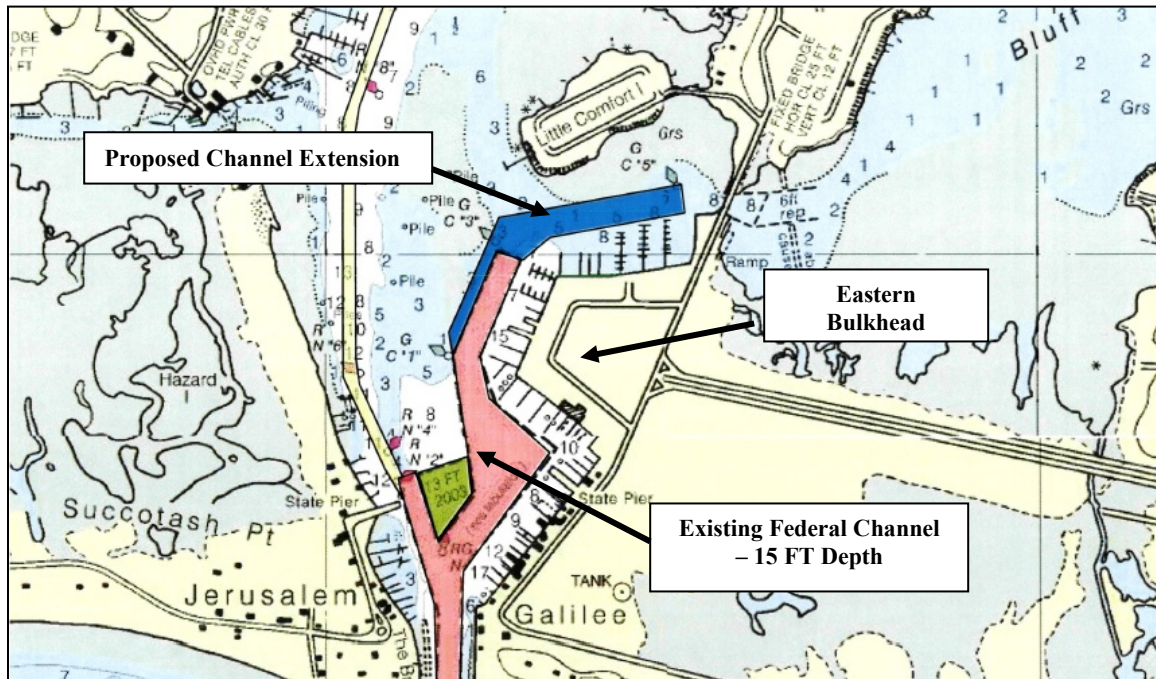
## 7.0 With Project Condition

With the proposed navigation improvements, the length and width of the existing Federal channel would be increased as shown above in Figure C-1. Opposite the western side of the bulkhead, the Federal channel would be widened by 50 feet. Channel depths of 12 to 15 feet MLLW are examined, although a 15-foot channel depth in this area would match the existing



Federal channel. A channel extension around the bulkhead corner and along the northern side of the bulkhead is also examined, with a length of 1,200 feet. For the extension, depths of 8 to 12 feet MLLW are examined.

**Figure C-1-- Proposed Improvements to Existing Federal Channel at Pt. Judith, RI**



## 8.0 Calculation of Benefits

Benefits are calculated using information provided by port officials and harbor representatives including the Rhode Island Commercial Fishermen's Alliance and the Rhode Island Party and Charter Vessel Association, as well as information obtained from telephone interviews with fishermen conducted in September 2016. The Port Manager identified 181 vessels which regularly use the proposed improvement areas, vessels which regularly transit the Federal channel off the western side of the bulkhead to either offload along the western side of the bulkhead or access berths on the northern side of the bulkhead. The 181 vessels include 138 commercial fishing vessels and 43 charter fishing vessels. Based on information collected from port officials and in discussion with fishermen, the commercial fishing vessels make an average of 150 trips per year, experience delays approximately 20% of the time and generally have a crew of 3 to 5, depending on the size of the vessel. The number of trips per year by charter fishing varies widely, from 30 trips for boats that operate only on weekends in the summer, to 270 trips per year for the largest boats that make two trips per day for an extended season. An average of 100 trips per year is used for this analysis for charter vessels. The crew size for charter vessels varies from 2 to 4 crew per boat depending on the size of the vessel and operating practices.



To calculate the opportunity cost of time for fishermen and charter boat operators and crew during congestion delays and tidal delays, the value of time is estimated using one-third of the average wage for production workers in manufacturing in Rhode Island, as required for Corps small boat harbor analyses. The average production wage in June 2017 for Rhode Island was \$18.95 (US Bureau of Labor Statistics: State and Metro Area Employment, Hours, & Earnings, Table D-4), one-third of which is \$6.32. Fuel costs during delays are calculated using the average cost of diesel fuel during the week of July 31, 2017: \$2.53 per gallon ([https://www.eia.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm) accessed 8/31/2017).

## 8.1 Channel Widening

The wider Federal channel would reduce congestion delays and related labor and fuel costs incurred while waiting to maneuver around other vessels in the main offloading area off the western side of the bulkhead. Delays due to inadequate landside off-loading capacity, typically experienced prior to bad weather, would not be reduced with the proposed project. The channel widening would provide more room for vessels to safely pass each other while waiting and maneuvering off the western side of the bulkhead, and would provide more room for vessels waiting to offload, reducing congestion delays. The wider channel would also prevent vessels from grounding out when forced outside of the existing Federal channel and on to the shoal area west of the channel due to the congestion. Benefits to the proposed channel widening are calculated for the 181 vessels (138 commercial fishing and 43 charter vessels), which regularly transit the area of the proposed channel widening, in the following categories:

1. Prevention of Congestion Delays – Time costs while delayed waiting to transit the congested channel areas and access berths and offloading facilities
2. Prevention of Congestion Delays – Fuel Costs while delayed waiting to transit the congested channel areas and access berths and offloading facilities
3. Reduction in grounding damages and haul-out costs

Based on information collected from port representatives and from interviews with fishermen, the average congestion delay in the channel area west of the bulkhead lasts 20 minutes, although during times of heavy congestion or unusually low tide, or if vessels ground out and get hung up on the sand bar, some delays can be significantly longer. Delay costs for the vessels which regularly use the area of the proposed channel widening are calculated as shown below (Tables C-2 and C-3), for commercial fishing followed by charter vessels.

Table C-2							
Congestion Delay Costs - Commercial Fishing Vessels (channel widening along west bulkhead)							
	# of vessels	Average Crew Size	Average Delay Time (hours)	Average # Trips/Year	Probability of Occurrence	Hourly Wage	Annual Value
Time Costs	138	4	0.33	150	20%	\$6.32	\$34,500
	# of vessels	Fuel Use (Gallons/hr)	Average Delay Time (hours)	Average # Trips/Year	Probability of Occurrence	Fuel Cost/Gallon	Annual Value
Fuel Costs	138	7	0.33	150	20%	\$2.53	\$24,200

<b>Table C-3</b>							
<b>Congestion Delay Costs - Charter Fishing Vessels (channel widening along west bulkhead)</b>							
	# of vessels	Average Crew Size	Average Delay Time (hours)	Average # Trips/Year	Probability of Occurrence	Hourly Wage	Annual Value
Time Costs	43	3	0.33	100	20%	\$6.32	\$5,400
	# of vessels	Fuel Use (Gallons/Hr)	Delay Time (hours)	Trips/Year	Probability of Occurrence	Fuel Cost/Gallon	Annual Value
Fuel Costs	43	5	0.33	100	20%	\$2.53	\$3,600

Table C-4 shows the Grounding damages and Haul-out Costs. These costs, due to vessels grounding out on the shallow areas west of the Federal channel along the western side of the bulkhead, are estimated at \$8,000 and occur on average 5 times per year, based on information provided by fishermen in telephone

interviews. Of the \$8,000 in costs, \$2,000 are for haul-out costs and the remaining are vessel damages for wheel and rudder repairs, sand intake screens and other damages that lead to engine and electronics repairs. These costs would be prevented with the project.

<b>Table C-4</b>		
<b>Grounding and Haul-out Costs</b>		
# of vessels grounded/year	Grounding and Haul-out costs/Incident	Annual Costs
5	\$8,000	\$40,000

Annual congestion delay costs and grounding/haul-out costs total \$107,700, as summarized in Table C-5. These costs would be prevented if the Federal channel along the western side of the bulkhead is widened by 50 feet to a depth of 15 feet.

To estimate the benefits of lesser channel depths, annual benefits are apportioned based on the distribution of vessel drafts for those vessels identified as regularly transiting the channel off the western side of the bulkhead. Based on the vessel draft data, 100% of the vessels have drafts of 12 feet or less, 93% have drafts of 11 feet or less, 82% have drafts of 10 feet or less and 73% have drafts of 9 feet or less. Because this area has strong tides and is a major transit area, an underkeel clearance requirement of two feet is assumed, thus a channel depth of 14 feet would fully accommodate all vessels safely under typical tides (12-foot draft plus two foot underkeel clearance). Likewise, a channel depth of 13 feet would fully accommodate 93% of the vessels (11-foot draft plus two foot underkeel clearance), and a channel depth of 12 feet would fully accommodate 82% of vessels (10-foot draft plus two foot underkeel clearance).

The 2017 tidal record shows that one-third of the time the low tide level is up to 0.8 feet below mean lower-low water level, therefore a channel depth of 14 feet would be insufficient to accommodate 12 foot vessels (12-foot draft plus two feet underkeel clearance minus one foot extreme MLLW). Congestion delays due to extreme MLLW are incorporated by including a one-foot depth difference 33% of the time when calculating benefits.

In this case, a channel depth of 15 feet would fully accommodate all vessels safely under typical tides (12-foot draft plus two foot underkeel clearance minus one foot extreme MLLW). A channel depth of 14 feet would fully accommodate 93% of the vessels (11-foot draft plus two foot underkeel clearance minus one foot extreme MLLW), and a channel depth of 13 feet would fully accommodate 82% of vessels (10-foot draft plus two foot underkeel clearance minus one foot extreme MLLW).

Table C-5	
Benefit Summary - Channel Widening	
Category	Annual Benefits
Congestion Delays - Fishing Vessels	
Time Costs	\$34,500
Fuel Costs	\$24,200
Sub-total	\$58,700
Congestion Delays - Charter Vessels	
Time Costs	\$5,400
Fuel Costs	\$3,600
Sub-total	\$9,000
Grounding Damages and Haul-out Costs	\$40,000
Total Annual Benefits, Channel Widening	\$107,700

Annual benefits to the proposed channel widening are allocated by channel depth as shown in Table C-6 (below).

Table C-6				
Channel Widening - Annual Benefits by Channel Depth				
Category	15' Channel	14' Channel	13' Channel	12' Channel
Congestion Delays - Fishing Vessels	\$58,700	\$57,347	\$52,455	\$46,648
Congestion Delays - Charter Vessels	\$9,000	\$8,802	\$8,070	\$7,169
Grounding and Haul-out Cost Savings	\$40,000	\$39,076	\$35,748	\$31,810
Total Annual Benefits, Channel Widening	\$107,700	\$105,225	\$96,273	\$85,627

## 8.2 Channel Extension

The extension of the Federal channel would reduce tidal delays and related labor and fuel costs incurred waiting to reach or leave berths along the northern bulkhead. In addition, the channel extension would reduce maintenance and repair costs due to grounding out or bumping bottom on shallow spots off the northern bulkhead.

Benefits to the proposed channel extension are calculated in the following categories:

1. Prevention of Tidal Delays – Time costs while delayed waiting to transit the congested channel areas and access berths and offloading facilities
2. Prevention of Tidal Delays – Fuel Costs while delayed waiting to transit the congested channel areas and access berths and offloading facilities
3. Reduction in grounding damages and reduced maintenance costs

The Port Manager provided vessel draft information for 93 vessels that berth on the north side of the bulkhead. Average tidal delays were calculated by vessel draft using a mean tide chart based on a 3.5-foot tidal range, assuming a controlling depth of 7-feet per the latest available survey, and an underkeel clearance requirement of two feet. Tidal delay costs are calculated only for those vessels identified as having drafts of 6 feet or greater, since shallower draft vessels are able to use the area with little or no problems. The tide cycles are calculated on a diurnal basis over 24.8 hours. Table C-7 shows the average tidal delays inclusive of the vessel operations. Tables C-8 and C-9 show tidal delay time cost for commercial fishing and charter vessels. Tables C-10 and C-11 show the delay time in hours for commercial fishing and charter vessels.

**Table C-7 (Delay Time in Hours)**

Average Tidal Delay based on Mean Tide Chart								
vessel draft (feet)	# of vessels	controlling depth	underkeel clearance	tide height required	delay time	time to dock (hours)	total delay	average delay
9	4	7	2	3.5	12	0.25	12.25	6.1
8	5	7	2	2.5	9	0.25	9.25	3.5
7	13	7	2	1.5	6	0.25	6.25	1.6
6	36	7	2	0.5	4	0.25	4.25	0.7
5	27	7	2	0	0	0	0	0.0
4	6	7	2	-1	0	0	0	0.0
3	2	7	2	-2	0	0	0	0.0

**Table C-8 (Delay Time in Hours)**

Tidal Delay Time Costs - Commercial Fishing Vessels						
draft (feet)	# of vessels	average delay	trips/year	# crew/boat	\$/hr	delay time cost
9	3	6.1	150	3	\$6.32	\$51,600
8	4	3.5	150	3	\$6.32	\$39,200
7	7	1.6	150	2	\$6.32	\$20,900
6	22	0.7	150	2	\$6.32	\$30,380

**Table C-9 (Delay Time in Hours)**

Tidal Delay Time Costs - Charter Vessels						
draft (feet)	# of vessels	average delay	trips/year	# crew/boat	\$/hr	delay time cost
9	1	6.1	100	4	\$6.32	\$15,300
8	1	3.5	100	4	\$6.32	\$8,700
7	6	1.6	100	3	\$6.32	\$17,900
6	14	0.7	100	2	\$6.32	\$12,888

<b>Table C-10 (Delay Time in Hours)</b>						
<b>Tidal Delay Fuel Costs - Commercial Fishing Vessels</b>						
draft	# of vessels	average delay	trips/year	gallons /hour	fuel price/ gallon	delay fuel cost
9	3	6.1	150	6	\$2.53	\$41,300
8	4	3.5	150	6	\$2.53	\$31,400
7	7	1.6	150	6	\$2.53	\$25,100
6	22	0.7	150	6	\$2.53	\$36,485

<b>Table C-11 (Delay Time in Hours)</b>						
<b>Tidal Delay Fuel Costs - Charter Vessels</b>						
draft	# of vessels	average delay	trips/year	gallons /hour	fuel price/ gallon	delay fuel cost
9	1	6.1	100	5	\$2.53	\$7,700
8	1	3.5	100	5	\$2.53	\$4,400
7	6	1.6	100	5	\$2.53	\$12,000
6	14	0.7	100	5	\$2.53	\$12,899

Table C-12 shows the increased maintenance and repair costs due to vessels bumping bottom or grounding out in areas outside of the existing Federal channel. These are estimated to average \$1,500 per incident, and have an estimated annual probability of occurrence of 10%, based on information obtained during telephone interviews with fishermen. Damages include damages to propellers, increased damages to pumps and motors from the intake of sand into pumps and motors, and other increased repair and maintenance costs. These costs would be prevented with the project.

<b>Table C-12</b>			
<b>Increased Maintenance and Repair Costs</b>			
# of vessels	Increased Maintenance and Repair Costs	Annual Probability of Occurrence	Annual Value
132	\$1,500	10%	\$19,800

Table C-13 summaries the annual tidal delay and increased maintenance and repair costs. These costs would be prevented with the channel extension.

<b>Table C-13</b>	
<b>Benefit Summary - Channel Extension</b>	
Category	Annual Benefits
Tidal Delays Prevented - Commercial Fishing	
Time Costs	\$142,080
Fuel Costs	\$134,285
Sub-total	\$276,365
Tidal Delays Prevented - Charter Fishing	
Time Costs	\$54,788
Fuel Costs	\$36,999
Sub-total	\$91,787
Grounding and Maintenance Costs Prevented	\$19,800
Total Annual Benefits, Channel Extension	\$387,952

Table C-14 show the projected annual benefits by Channel Depths. To evaluate channel depths from 8 to 12 feet, additional tidal delay calculations were made to determine the annual delay costs that would be prevented at each incremental channel depth. It is assumed that all tidal delay costs would be prevented with channel depths of 11 feet and above, since the deepest draft of vessels using this area is 9 feet and it is assumed that two feet of underkeel clearance is adequate to transit this more protected area. At channel depths of 8, 9 and 10 feet, the residual tidal delay costs were calculated, and annual benefits adjusted as appropriate. The results of these additional calculations are summarized in the table below. Benefits from reduced maintenance and repair costs were allocated assuming full benefits to channel depths of 11 feet, as with the tidal delay costs. Benefits from reduced maintenance and repair costs were allocated to lesser channel depths using a rough percentage, assuming 2/3 of this minor category of benefits would accrue to a 10-foot channel, 1/2 would accrue to a 9-foot channel, and 1/3 would accrue to an 8-foot channel.

<b>Table C-14</b>					
<b>Channel Extension - Annual Benefits by Channel Depth</b>					
Category	12' Channel	11' Channel	10' Channel	9' Channel	8' Channel
Tidal Delays Prevented - Commercial Fishing	\$276,365	\$276,365	\$265,165	\$237,265	\$169,865
Tidal Delays Prevented - Charter Fishing	\$91,787	\$91,787	\$89,087	\$83,087	\$58,887
Grounding and Maintenance Costs Prevented	\$19,800	\$19,800	\$13,200	\$9,900	\$6,600
Total Annual Benefits, Channel Extension	\$387,952	\$387,952	\$367,452	\$330,252	\$235,352

### 8.3 Benefit Summary

This section summarizes the benefits of (1) Benefits to widening the West Bulkhead, (2) extending the channel into the North Basin, and (3) and combining the two and the various combinations of those two strategies. These are summarized in Table C-15.

Table C-15			
Calculation of NED Annual Benefits			
Alternative	Description	Total Annual Benefits of Alternatives	Net Benefits
Alt 1	West Bulkhead Widening - 12ft	\$85,627	\$36,368
Alt 2	West Bulkhead Widening - 13 ft	\$96,273	\$46,114
Alt 3	West Bulkhead Widening - 14 ft	\$105,225	\$53,066
Alt 4	West Bulkhead Widening - 15 ft	\$107,700	\$53,641
Alt 5	North Basin Extension - 8 ft	\$235,352	\$177,605
Alt 6	North Basin Extension - 9 ft	\$330,252	\$268,405
Alt 7	North Basin Extension - 10 ft	\$367,452	\$300,005
Alt 8	North Basin Extension - 11 ft	\$387,952	\$313,905
Alt 9	North Basin Extension - 12 ft	\$387,952	\$306,205
Alt 10	W Bulk Wide - 12 ft & N Basin Ext - 8 ft	\$320,979	\$253,044
Alt 11	W Bulk Wide - 12 ft & N Basin Ext - 9 ft	\$415,879	\$343,744
Alt 12	W Bulk Wide - 12 ft & N Basin Ext - 10 ft	\$453,079	\$375,444
Alt 13	W Bulk Wide - 12 ft & N Basin Ext - 11 ft	\$473,579	\$389,344
Alt 14	W Bulk Wide - 12 ft & N Basin Ext - 12 ft	\$473,579	\$381,644
Alt 15	W Bulk Wide - 13 ft & N Basin Ext - 8 ft	\$331,625	\$262,790
Alt 16	W Bulk Wide - 13 ft & N Basin Ext - 9 ft	\$426,525	\$353,490
Alt 17	W Bulk Wide - 13 ft & N Basin Ext - 10 ft	\$463,725	\$385,190
Alt 18	W Bulk Wide - 13 ft & N Basin Ext - 11 ft	\$484,225	\$399,090
Alt 19	W Bulk Wide - 13 ft & N Basin Ext - 12 ft	\$484,225	\$391,390
Alt 20	W Bulk Wide - 14 ft & N Basin Ext - 8 ft	\$340,577	\$269,742
Alt 21	W Bulk Wide - 14 ft & N Basin Ext - 9 ft	\$435,477	\$360,542
Alt 22	W Bulk Wide - 14 ft & N Basin Ext - 10 ft	\$472,677	\$392,142
Alt 23	W Bulk Wide - 14 ft & N Basin Ext - 11 ft	\$493,177	\$406,042
Alt 24	W Bulk Wide - 14 ft & N Basin Ext - 12 ft	\$493,177	\$398,342
Alt 25	W Bulk Wide - 15 ft & N Basin Ext - 8 ft	\$343,052	\$270,317
Alt 26	W Bulk Wide - 15 ft & N Basin Ext - 9 ft	\$437,952	\$361,017
Alt 27	W Bulk Wide - 15 ft & N Basin Ext - 10 ft	\$475,152	\$392,717
Alt 28	W Bulk Wide - 15 ft & N Basin Ext - 11 ft	\$495,652	\$406,617
Alt 29	W Bulk Wide - 15 ft & N Basin Ext - 12 ft	\$495,652	\$398,917

Benefits include the avoided cost associated with congestion and tidal delays including vessel damage cost, lost labor cost, increased fuel consumption cost and increased ordinary maintenance cost. The alternative that maximizes net annual benefits, would be the National Economic Development (NED) plan, provided that plan also has a benefit-cost ratio greater than one. Project Costs are located in Table C-16.



## 9.0 Project Costs

Project alternatives include widening the West Bulkhead of the channel by 12, 13, 14 or 15 feet, extending the North Basin by 8, 9, 10 or 11 feet, and any combination of widening and extension. Details of each design are provided in the main feasibility report. Annualized cost estimates of each alternative, presented in Table C-16, are calculated at the FY 2020 federal interest rate of 2.75% and based on a construction period of 3 months. Annualized costs are converted to present value equivalents based on a 50 year project life, including dredge maintenance at 25 and 50 years, and then compared to estimated annual project benefits to determine the National Economic Development (NED) plan.

**Table C-16**

Annualized Cost Calculation							
Alternative	Description	Project Construction Cost	Interest During Construction	Total Investment Cost	Average Annual Cost	Operation & Maintenance Cost	Total Annual Cost of Alternatives
Alt 1	West Bulkhead Widening - 12ft	\$1,096,015	\$2,514	\$1,098,529	\$40,700	\$12,500	\$53,200
Alt 2	West Bulkhead Widening - 13 ft	\$1,120,549	\$2,570	\$1,123,119	\$41,600	\$12,684	\$54,284
Alt 3	West Bulkhead Widening - 14 ft	\$1,174,053	\$2,693	\$1,176,746	\$43,600	\$13,085	\$56,685
Alt 4	West Bulkhead Widening - 15 ft	\$1,225,491	\$2,811	\$1,228,302	\$45,500	\$13,471	\$58,971
Alt 5	North Basin Extension - 8 ft	\$1,143,964	\$2,624	\$1,146,588	\$42,500	\$16,203	\$58,703
Alt 6	North Basin Extension - 9 ft	\$1,256,320	\$2,881	\$1,259,201	\$46,600	\$17,046	\$63,646
Alt 7	North Basin Extension - 10 ft	\$1,405,049	\$3,222	\$1,408,271	\$52,200	\$18,161	\$70,361
Alt 8	North Basin Extension - 11 ft	\$1,583,456	\$3,632	\$1,587,088	\$58,800	\$19,499	\$78,299
Alt 9	North Basin Extension - 12 ft	\$1,790,344	\$4,106	\$1,794,450	\$66,500	\$21,051	\$87,551
Alt 10	W Bulk Wide - 12 ft & N Basin Ext - 8 ft	\$1,284,244	\$2,945	\$1,287,189	\$47,700	\$19,749	\$67,449
Alt 11	W Bulk Wide - 12 ft & N Basin Ext - 9 ft	\$1,396,637	\$3,203	\$1,399,840	\$51,900	\$20,592	\$72,492
Alt 12	W Bulk Wide - 12 ft & N Basin Ext - 10 ft	\$1,545,419	\$3,544	\$1,548,963	\$57,400	\$21,708	\$79,108
Alt 13	W Bulk Wide - 12 ft & N Basin Ext - 11 ft	\$1,723,773	\$3,953	\$1,727,726	\$64,000	\$23,046	\$87,046
Alt 14	W Bulk Wide - 12 ft & N Basin Ext - 12 ft	\$1,930,566	\$4,428	\$1,934,994	\$71,700	\$24,597	\$96,297
Alt 15	W Bulk Wide - 13 ft & N Basin Ext - 8 ft	\$1,308,805	\$3,002	\$1,311,807	\$48,600	\$19,934	\$68,534
Alt 16	W Bulk Wide - 13 ft & N Basin Ext - 9 ft	\$1,421,157	\$3,259	\$1,424,416	\$52,800	\$20,776	\$73,576
Alt 17	W Bulk Wide - 13 ft & N Basin Ext - 10 ft	\$1,569,876	\$3,600	\$1,573,476	\$58,300	\$21,892	\$80,192
Alt 18	W Bulk Wide - 13 ft & N Basin Ext - 11 ft	\$1,748,323	\$4,010	\$1,752,333	\$64,900	\$23,230	\$88,130
Alt 19	W Bulk Wide - 13 ft & N Basin Ext - 12 ft	\$1,955,162	\$4,484	\$1,959,646	\$72,600	\$24,781	\$97,381
Alt 20	W Bulk Wide - 14 ft & N Basin Ext - 8 ft	\$1,362,323	\$3,124	\$1,365,447	\$50,600	\$20,335	\$70,935
Alt 21	W Bulk Wide - 14 ft & N Basin Ext - 9 ft	\$1,474,660	\$3,382	\$1,478,042	\$54,700	\$21,177	\$75,877
Alt 22	W Bulk Wide - 14 ft & N Basin Ext - 10 ft	\$1,623,452	\$3,723	\$1,627,175	\$60,300	\$22,293	\$82,593
Alt 23	W Bulk Wide - 14 ft & N Basin Ext - 11 ft	\$1,801,877	\$4,132	\$1,806,009	\$66,900	\$23,632	\$90,532
Alt 24	W Bulk Wide - 14 ft & N Basin Ext - 12 ft	\$2,008,677	\$4,607	\$2,013,284	\$74,600	\$25,183	\$99,783
Alt 25	W Bulk Wide - 15 ft & N Basin Ext - 8 ft	\$1,413,759	\$3,242	\$1,417,001	\$52,500	\$20,721	\$73,221
Alt 26	W Bulk Wide - 15 ft & N Basin Ext - 9 ft	\$1,526,084	\$3,500	\$1,529,584	\$56,700	\$21,563	\$78,263
Alt 27	W Bulk Wide - 15 ft & N Basin Ext - 10 ft	\$1,674,857	\$3,841	\$1,678,698	\$62,200	\$22,679	\$84,879
Alt 28	W Bulk Wide - 15 ft & N Basin Ext - 11 ft	\$1,853,287	\$4,250	\$1,857,537	\$68,800	\$24,017	\$92,817
Alt 29	W Bulk Wide - 15 ft & N Basin Ext - 12 ft	\$2,060,106	\$4,725	\$2,064,831	\$76,500	\$25,568	\$102,068

## 10. Economic Justification

The total annual benefits in fuel and time cost savings for each project alternative are weighed against the costs of each alternative to determine the benefit-cost ratio. The benefit-cost ratio of each alternative is determined by dividing its total annual benefits by its total annual costs (Table C-17). A project is considered economically justified if it has a benefit to cost ratio of 1.0 or greater. The alternative that maximizes net annual benefits, and with the greatest BCR is the alternative chosen for the National Economic Development (NED) plan. Over a 50-

year analysis period, Alternative 28 is the NED plan based on the highest net annual benefits of \$402,835 and a 5.34 benefit to cost ratio. The NED plan will widen the existing Federal channel by 50 feet on the west side of the Point Judith bulkhead to a depth of -15 feet MLLW. It will also provide for a channel extension around the bulkhead corner and along the northern side of the bulkhead with a width of 150 feet, a length of about 1,200 feet and a depth of -11 feet MLLW.

**Table C-17**

Benefit to Cost Ratio					
Alternative	Description	Annual Benefits of Alternatives	Annual Costs	Net Benefits	Benefit to Cost Ratio
Alt 1	West Bulkhead Widening - 12ft	\$85,627	\$53,200	\$32,427	1.61
Alt 2	West Bulkhead Widening - 13 ft	\$96,273	\$54,284	\$41,989	1.77
Alt 3	West Bulkhead Widening - 14 ft	\$105,225	\$56,685	\$48,540	1.86
Alt 4	West Bulkhead Widening - 15 ft	\$107,700	\$58,971	\$48,729	1.83
Alt 5	North Basin Extension - 8 ft	\$235,352	\$58,703	\$176,649	4.01
Alt 6	North Basin Extension - 9 ft	\$330,252	\$63,646	\$266,606	5.19
Alt 7	North Basin Extension - 10 ft	\$367,452	\$70,361	\$297,091	5.22
Alt 8	North Basin Extension - 11 ft	\$387,952	\$78,299	\$309,652	4.95
Alt 9	North Basin Extension - 12 ft	\$387,952	\$87,551	\$300,401	4.43
Alt 10	W Bulk Wide - 12 ft & N Basin Ext - 8 ft	\$320,979	\$67,449	\$253,530	4.76
Alt 11	W Bulk Wide - 12 ft & N Basin Ext - 9 ft	\$415,879	\$72,492	\$343,387	5.74
Alt 12	W Bulk Wide - 12 ft & N Basin Ext - 10 ft	\$453,079	\$79,108	\$373,971	5.73
Alt 13	W Bulk Wide - 12 ft & N Basin Ext - 11 ft	\$473,579	\$87,046	\$386,533	5.44
Alt 14	W Bulk Wide - 12 ft & N Basin Ext - 12 ft	\$473,579	\$96,297	\$377,282	4.92
Alt 15	W Bulk Wide - 13 ft & N Basin Ext - 8 ft	\$331,625	\$68,534	\$263,091	4.84
Alt 16	W Bulk Wide - 13 ft & N Basin Ext - 9 ft	\$426,525	\$73,576	\$352,949	5.80
Alt 17	W Bulk Wide - 13 ft & N Basin Ext - 10 ft	\$463,725	\$80,192	\$383,533	5.78
Alt 18	W Bulk Wide - 13 ft & N Basin Ext - 11 ft	\$484,225	\$88,130	\$396,095	5.49
Alt 19	W Bulk Wide - 13 ft & N Basin Ext - 12 ft	\$484,225	\$97,381	\$386,844	4.97
Alt 20	W Bulk Wide - 14 ft & N Basin Ext - 8 ft	\$340,577	\$70,935	\$269,642	4.80
Alt 21	W Bulk Wide - 14 ft & N Basin Ext - 9 ft	\$435,477	\$75,877	\$359,599	5.74
Alt 22	W Bulk Wide - 14 ft & N Basin Ext - 10 ft	\$472,677	\$82,593	\$390,083	5.72
Alt 23	W Bulk Wide - 14 ft & N Basin Ext - 11 ft	\$493,177	\$90,532	\$402,645	5.45
Alt 24	W Bulk Wide - 14 ft & N Basin Ext - 12 ft	\$493,177	\$99,783	\$393,394	4.94
Alt 25	W Bulk Wide - 15 ft & N Basin Ext - 8 ft	\$343,052	\$73,221	\$269,831	4.69
Alt 26	W Bulk Wide - 15 ft & N Basin Ext - 9 ft	\$437,952	\$78,263	\$359,689	5.60
Alt 27	W Bulk Wide - 15 ft & N Basin Ext - 10 ft	\$475,152	\$84,879	\$390,273	5.60
Alt 28	W Bulk Wide - 15 ft & N Basin Ext - 11 ft	\$495,652	\$92,817	\$402,835	5.34
Alt 29	W Bulk Wide - 15 ft & N Basin Ext - 12 ft	\$495,652	\$102,068	\$393,584	4.86

## 11. Risk & Uncertainty

Because the average annual benefits of Alternative 23 (402,645), are considerably close to the average net benefits of the selected plan (\$402,835), we perform a sensitivity analysis of the benefits from channel widening. Table C-18 demonstrates the net benefits of Alternatives 23 and 28 with a five and ten percent increase and decrease of the widening benefits (including

labor, fuel and grounding and maintenance costs prevented). The costs of the alternatives and benefits from extension remain the same. The net benefits of Alternative 23 only exceed those of Alternative 28 when widening benefits are reduced by 10%; when widening benefits are reduced 5%, the net benefits of Alternative 28 still exceed those of Alternative 23. When widening benefits increase by five or ten percent, Alternative 28 provides increasingly greater net benefits compared with Alternative 23. Given that the assumptions surrounding benefits estimates have erred on the side of caution, it is likely that the benefits would be greater than reported here, and unlikely that the reported benefits would be lower.

**Table C-18 – Sensitivity Analysis – Net Benefits Comparison**

	Alt 23	Alt 28	Alt28-Alt23
Original net benefits	\$402,645	\$402,835	\$189
Net Benefits +5% Widening Benefits	\$407,907	\$408,220	\$313
Net Benefits -5% Widening Benefits	\$397,384	\$397,450	\$66
Net Benefits +10% Widening Benefits	\$413,168	\$413,605	\$437
Net Benefits -10% Widening Benefits	\$392,123	\$392,065	-\$58

A large source of uncertainty that would substantially influence the net benefits is the number of boats used in the analysis. In the main analysis benefits were only calculated for boats whose drafts were known (93 of 132). The net benefits were recalculated for Alternatives 23 using 132 boats, assuming the same proportion of boats fall in the same draft size as the 93 observed. The net benefits from Alternative 28 are substantially greater than those from Alternative 23 (Table C-19). The use of less conservative assumptions increases the discrepancy between the net benefits of the two alternatives such that Alternative 28 consistently (and increasingly) yields the greatest net benefits.

**Table C-19 – Sensitivity Analysis – Net Benefits Comparison - Boats**

	Alt 23	Alt 28	Alt28-Alt23
Original net benefits based on 93 boats	\$402,645	\$402,835	\$189
Recalculated net benefits based on 132 boats	\$647,731	\$650,206	\$2,475

## 12. Benefit-Cost Update for Fiscal Year 2020

Benefits and costs have been updated to the fiscal year 2020 price level. The average production wage used in the benefits calculation was updated to \$19.57, the February 2019 average production wage for Rhode Island (US Bureau of Labor Statistics: State and Metro Area Employment, Hours, & Earnings, Table D-4), one-third of which is \$6.52. Fuel costs during delays have been updated to the week of April 19, 2019 with the average cost of diesel fuel at \$3.12 per gallon (<https://www.eia.gov/petroleum/gasdiesel/>). Grounding and increased maintenance costs have been escalated using a price-level update factor of 1.05, the average of the implicit price deflator for GDP and the construction cost index. The total annual benefits of the alternatives are described in Table C-20 below.

<b>Table C-20</b>			
Calculation of Annual Benefits (FY20 Price Levels)			
Alternative	Description	Total Annual Benefits at FY 2017 Price Levels	Total Annual Benefits at FY 2020 Price Levels
Alternative 4	West Bulkhead Widening – 15 Feet		
	Fishing Vessels	\$58,700	\$65,400
	Charter Vessels	\$9,000	\$10,000
	Grounding and Haul-out Costs	\$40,000	\$42,000
	TOTAL	\$107,700	\$117,400
Alternative 8	North Basin Channel Extension – 11 Feet		
	Fishing Vessels	\$276,400	\$312,500
	Charter Vessels	\$91,800	\$102,000
	Grounding and Haul-out Costs	\$19,800	\$19,800
	TOTAL	\$388,000	\$434,300
Alternative 28	Widen W Bulkhead at 15 Feet & North Basin Extension at 11 Feet		
	Fishing Vessels	\$335,100	\$377,900
	Charter Vessels	\$100,800	\$112,000
	Grounding and Haul-out Costs	\$59,800	\$61,800
	TOTAL	\$495,700	\$551,700

Annualized cost estimates of each alternative, presented in Table C-21, are calculated at the FY 2020 federal interest rate of 2.75% and based on a construction period of 3 months. Annualized costs are converted to present value equivalents based on a 50 year project life, including maintenance dredging actions at 25 and 50 years. More details on project costs can be found in Appendix E-Cost Engineering.

<b>Table C-21</b>							
Annualized Cost Calculation – FY20 Price Levels							
Alternative	Description	Project Design & Construction Cost	Interest During Construction	Total Investment Cost	Average Annual I & A	Operation & Maintenance Cost	Total Annual Cost
Altern 4	15-Ft West Bulkhead Widening	\$1,159,000	\$2,000	\$1,161,000	\$43,000	\$7,300	\$50,300
Altern 8	North Basin Extension – 11 Feet	\$1,545,000	\$3,000	\$1,548,000	\$57,300	\$17,400	\$74,700
Altern 28	Combined 15-Ft West Bulkhead & 11-Foot North Basin	\$1,812,000	\$4,000	\$1,816,000	\$67,300	\$24,300	\$91,600

The total annual benefits in fuel and time cost savings for each project alternative are weighed against the costs of each alternative to determine the benefit to cost ratio and net benefit. Over a 50-year period of analysis, Alternative 28 remains the recommended NED plan as it is the plan that reasonably maximizes net annual benefits (\$460,100). The project is economically justified with a benefit to cost ratio of 6.0. The NED plan will widen the existing Federal channel by 50 feet on the west side of the Point Judith bulkhead to a depth of -15 feet MLLW. It will also provide for a channel extension around the bulkhead corner and along the northern side of the bulkhead with a width of 150 feet, a length of about 1,200 feet and a depth of -11 feet MLLW.

<b>Table C-22</b>					
Benefit to Cost Ratio – FY20 Price Levels					
Alternative	Description	Total Annual Benefits	Annual Costs	Net Annual Benefits	Benefit to Cost Ratio
Altern 4	West Bulkhead Widening – 15 Feet	\$117,400	\$50,300	\$67,100	2.3
Altern 8	North Basin Extension – 11 Feet	\$434,300	\$74,700	\$359,600	5.8
Altern 28	Combined 15-Foot West Bulkhead and 11-Foot North Basin	\$551,700	\$91,600	\$460,100	6.0

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**APPENDIX D**

**ENGINEERING INVESTIGATIONS  
AND PROJECT DESIGN**



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## **APPENDIX D ENGINEERING INVESTIGATIONS AND DESIGN**

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## **INTRODUCTION**

This appendix contains two sections. Section A outlines the various field activities and investigations conducted during the course of the detailed study. Section B provides a detailed engineering analysis of the various alternative Federal plans based on those investigations described in Section A. The project delivery team, in consultation with the non-Federal Sponsor decided to carry forward with the channel design alternatives from the 1989 Detailed Project Report as the majority of the commercial vessels using the channel had remained largely the same in size and draft range as was the case for the prior study. Therefore, all designs were carried forward from the 1989 Detailed Project Report. A new survey has been conducted and quantities have been updated.

## **SECTION A**

### **ENGINEERING INVESTIGATIONS**

#### **DESCRIPTION OF PROJECT AREA**

The Point Judith Pond Small Navigation Project is located in the lower Pond area in the Towns of South Kingstown and Narragansett, Rhode Island. This southern shore area of Rhode Island from Watch Hill near the Connecticut state line eastward to Point Judith at the entrance to Narragansett Bay, a distance of about 20 miles, constitutes one of the most extensive coastal sand deposits in New England (Figure D-1).

What was once a large sand plain in this area became submerged, and over a period of time marine forces eroded indentations and lagoons between the more resistant headlands of terminal moraine. Sand beaches and dunes occur between the headlands where glacial sands have been retained. Behind the beaches and lagoons is the more resistant deposit of boulders and till known as the Harbor Hill moraine. Watch Hill forms the westernmost headland of the exposed string of beaches and the Point Judith headland is the eastern promontory. Between these two prongs the sand stretches and is held seaward by the lesser headlands of Weekapaug, Quonochontaug, Green Hill and Matunuck Point.

Point Judith Pond, one of the tidal lagoons formed in this low lying area, is dotted with islands and shoals. It extends approximately four miles inland and is about one mile wide. The tides are semi-diurnal (two low and two high tides per day) with one high and low tide typically of more magnitude than the other due to a slight diurnal shift. The tide range at Point Judith (NOAA Station 8455083) is provided in Table D-1 and as shown has a great diurnal tide range (Mean Lower Low Water to Mean Higher High Water) of 3.38 feet. The mean tide range (from Mean Low Water to Mean High Water) is 3.0 feet in the Pond near the Breachway and 2.9 feet at Wakefield. Maximum tidal currents average 2.7 knots through the entrance to the Pond (1989 Detailed Project Report).

<b>Table D-1 – Tide Range</b>		
<b>NOAA Tide Prediction Station Point Judith Harbor of Refuge</b>		
<b>(Tidal Ranges are about 0.3 Feet Less in Point Judith Pond)</b>		
<b>Condition</b>	<b>Elevation (Feet, NAVD88*)</b>	<b>Elevation Feet MLLW</b>
Mean Higher High Water (MHHW)	+1.50	+3.38
Mean High Water (MHW)	+1.25	+3.13
North American Vertical Datum 1988 (NAVD88)	0.00	+1.88
Mean tide level (MTL)	-0.25	+1.63
National Geodetic Vertical Datum 1929 (NGVD29)	-0.91	+0.97
Mean Low Water (MLW)	-1.75	+0.13
Mean Lower Low Water (MLLW)	-1.88	0.00
<b>*North American Vertical Datum of 1988 (NAVD88)</b>		

## **FIELD INVESTIGATIONS**

Field investigations were conducted during the detailed study to determine the ground surface elevation, type and composition of substrate, and other physical characteristics which would affect plan formulation. This work included hydrographic surveys and sediment analysis. The base data obtained from these field investigations was used to develop and evaluate alternative plans of improvement.

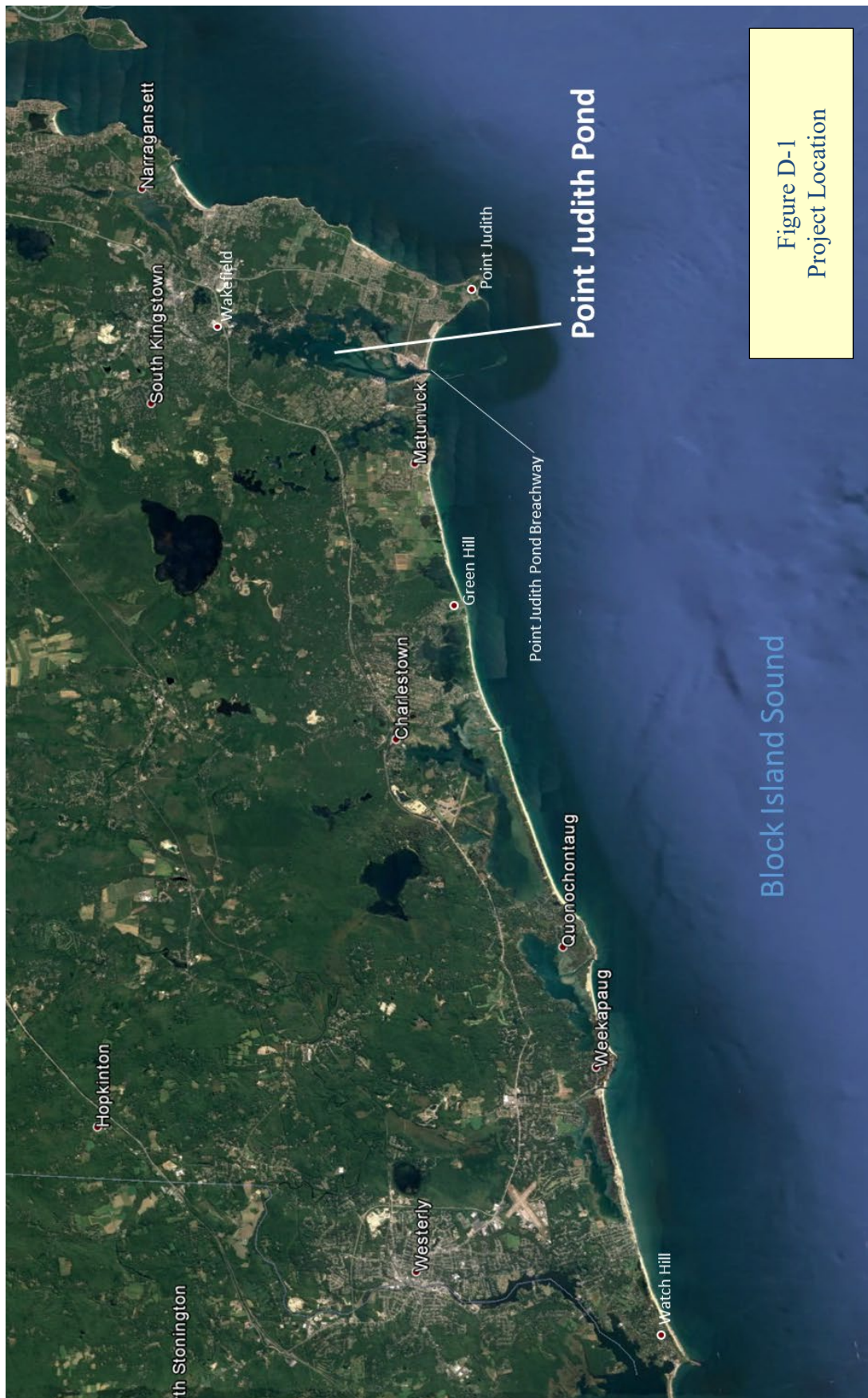
### **HYDROGRAPHIC SURVEYS**

A hydrographic condition survey of the lower portion of Point Judith Pond was conducted in 2007 by the US Army Corps of Engineers. The results of this survey are shown in Figure D-2.

### **SUBSURFACE INVESTIGATIONS**

Twenty five borings were made by the US Army Corps of Engineers in 1965 and 1966 for studying improvements to the navigation channel. The borings were 5 to 80 feet deep and mostly encountered silty or gravelly sands. Some organic silt layers were found at the surface and other silt and gravel layers up to 8 feet thick were found at depth. There were some indications that the top of the till layer is about 35 feet below the bottom of the lagoon. No bedrock was encountered.

Work done by the State of Rhode Island in the Port of Galilee involved dredging where nothing but sand and silt was encountered. More importantly sheet piling, placed to form a new bulkhead, was driven to a depth in excess of 120 feet and did not encounter bedrock. Based on these facts, it was deemed unnecessary to conduct additional subsurface explorations in the project area.





## NATURE OF THE MATERIAL TO BE REMOVED

In order to determine the nature of the material to be removed under each plan, sediment samples were obtained from various locations in the project area and visually classified using the Unified Classification System. Chemical testing was also completed on a number of samples. The results of the physical and chemical testing revealed the dredged material to be fine sand and silts, uncontaminated and suitable for the proposed disposal methods.

### Sediment Analysis

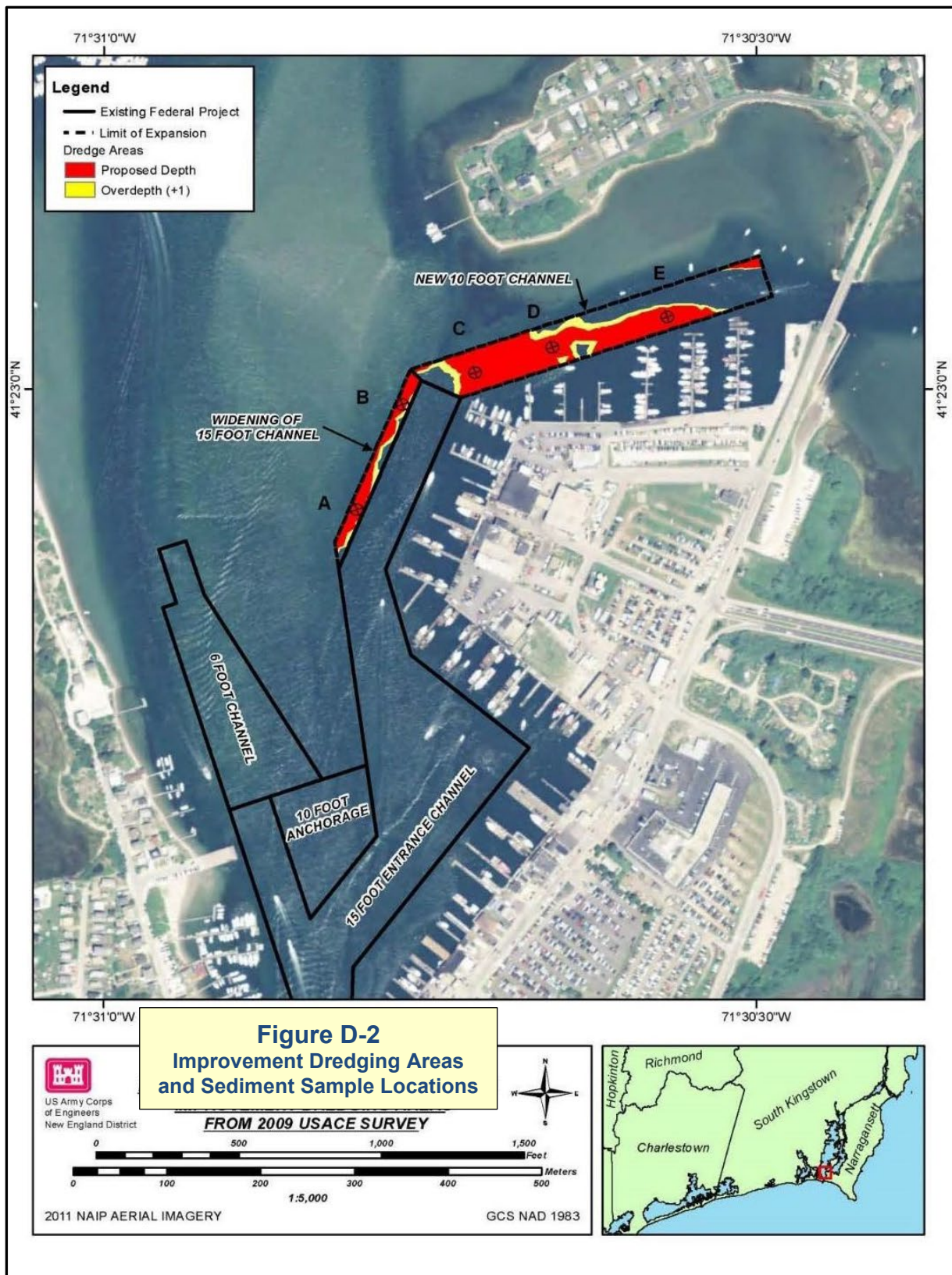
Sediments from the areas to be dredged were collected on December 14, 2015. Sediments were collected using a vibracore at 5 stations shown on Figure D-2. All samples were analyzed for grain size distribution (Table D-1). Sediments from stations A and B were classified as fine sands with sandy material comprising between 93-96% sand. Sediments from Stations C, D and E were dominated by sandy material, however they had larger components of silt (9.6%, 20% and 15% respectively) than the other samples.

The sediments from stations A and B were excluded from chemical sampling as they were comprised of greater than 90% sand. Sediments from station C, D, and E were composited and analyzed for bulk chemistry. The composite sample was tested for metals (Table D-2), petroleum hydrocarbons (PAHs) (Table D-3), and polychlorinated biphenyl congeners (PCBs). The results of the chemical analysis indicate that the material contains low levels of contaminants.

## CHANNEL ANCHORAGE CROSS-SECTIONS

Data developed from the hydrographic survey and subsurface investigations were used to develop several representative cross-sections of the area selected for detailed study. In all areas a one foot allowable overdepth was assumed for ordinary material. Typical cross-sections for the areas to be dredged are shown in Figure D-3, and the locations of these cross-sections appear in Figure D-4.

<b>TABLE D-2 – SEDIMENT SAMPLES</b>					
<b>GRAIN SIZE DISTRIBUTION OF POINT JUDITH SEDIMENTS</b>					
	A	B	C	D	E
% GRAVEL	0.9	1	1	0.2	0
% SAND	96.8	93.9	89.4	79.8	84.4
% SILT & CLAY	2.3	5.1	9.6	20	15.6



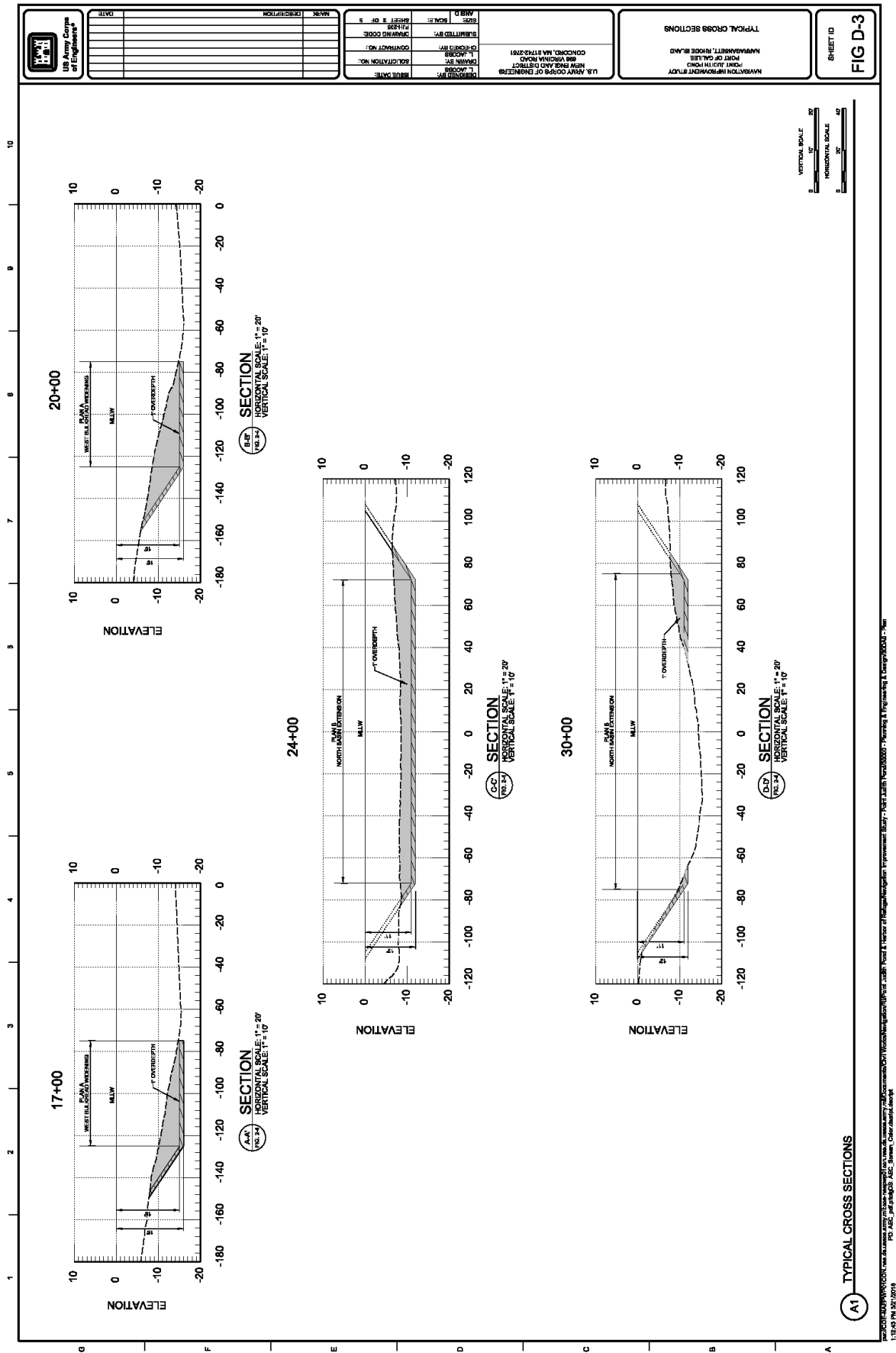




TABLE D-3 TOTAL METALS AND TOC RESULTS FOR THE POINT JUDITH COMPOSITE (COMP 1)			
Compound	Units	RISDS	COMP 1
Arsenic, Total	µg/kg	2.8	1.5
Cadmium, Total	µg/kg	ND	0.14
Chromium, Total	µg/kg	9.6	10
Copper, Total	µg/kg	2.3	5.2
Lead, Total	µg/kg	6.2	4.7
Mercury, Total	µg/kg	ND	0.015
Nickel, Total	µg/kg	4.7	6.2
Zinc, Total	µg/kg	17	23
TOC	%	0.26	0.51

TABLE D-4 PAH RESULTS FOR POINT JUDITH COMPOSITE (COMP 1)			
Compound	Units	RISDS	COMP 1
Naphthalene	µg/kg	U	U
Acenaphthylene	µg/kg	U	U
Acenaphthene	µg/kg	U	U
Fluorene	µg/kg	U	U
Phenanthrene	µg/kg	20	29
Anthracene	µg/kg	J	J
Fluoranthene	µg/kg	13	54
Pyrene	µg/kg	J	54
Benz(a)anthracene	µg/kg	U	21
Chrysene	µg/kg	U	32
Benzo(b)fluoranthene	µg/kg	U	25
Benzo(k)fluoranthene	µg/kg	U	18
Benzo(a)pyrene	µg/kg	U	16
Indeno(1,2,3-cd)Pyrene	µg/kg	U	11
Dibenz(a,h)anthracene	µg/kg	U	10
Benzo(ghi)perylene	µg/kg	U	12

## **QUANTITY ESTIMATES**

In order to determine quantities of material to be removed under each plan, quantity estimates were developed for selected dredge depths chosen for detailed analysis. These incremental dredge quantities are shown in Table D-5.

TABLE D-5 QUANTITIES OF ORDINARY MATERIAL TO BE REMOVED POINT JUDITH POND, RHODE ISLAND ESTIMATED VOLUME TO BE REMOVED (CUBIC YARDS)				
Plan and Feature	Construction Duration	Cut to Design Depth	Allowable Overdepth	Total Dredging Volume
PLAN A – West Bulkhead Widening Alone – 15 Foot MLLW	3 Weeks	5,200	1,900	7,100
PLAN B – North Basin Extension Alone – 8-Foot Channel	3 Weeks	1,600	2,000	3,600
North Basin Extension Alone – 9-Foot Channel	3 Weeks	3,600	3,300	6,900
North Basin Extension Alone – 10-Foot Channel	3 Weeks	6,900	4,300	11,200
North Basin Extension Alone – 11-Foot Channel	3 Weeks	11,200	5,400	16,600
North Basin Extension Alone – 12-Foot Channel	3 Weeks	16,600	6,300	22,900
PLANS A & B Combined – 15 Foot West Channel Widening Plus 11-Foot North Channel Extension	4 Weeks	16,400	7,300	23,700



## **SECTION B**

### **PROJECT DESIGN**

#### **ANALYSIS OF PLANS**

Three detailed plans were selected for study. Plan A involves widening the existing 150-foot wide federal channel, opposite the West Bulkhead in Galilee, to 200 feet. Plan B will be to extend the same channel 1,200 feet, into the North Basin area, at a width of 150 feet. For the purpose of analysis five incremental depths of 8, 9, 10, 11 and 12 feet will be investigated, including one foot of allowable over depth for each. Since these two plans are both essential to the effectiveness of the State's improvement work in Galilee, a combination of these plans, Plans A & B, will also be analyzed. Economic analysis shows the 11-foot deep channel of Plan B maximizes benefits and will therefore be combined with Plan A for this plan. The alternative plans of improvement are shown in Figure D-5.

#### **QUANTITIES OF MATERIAL TO BE REMOVED**

The quantities of material to be removed were calculated for each of the proposed dredge depths. The incremental dredged quantities are shown in Table D-4 and are based on one foot of allowable dredge overdepth for ordinary material.

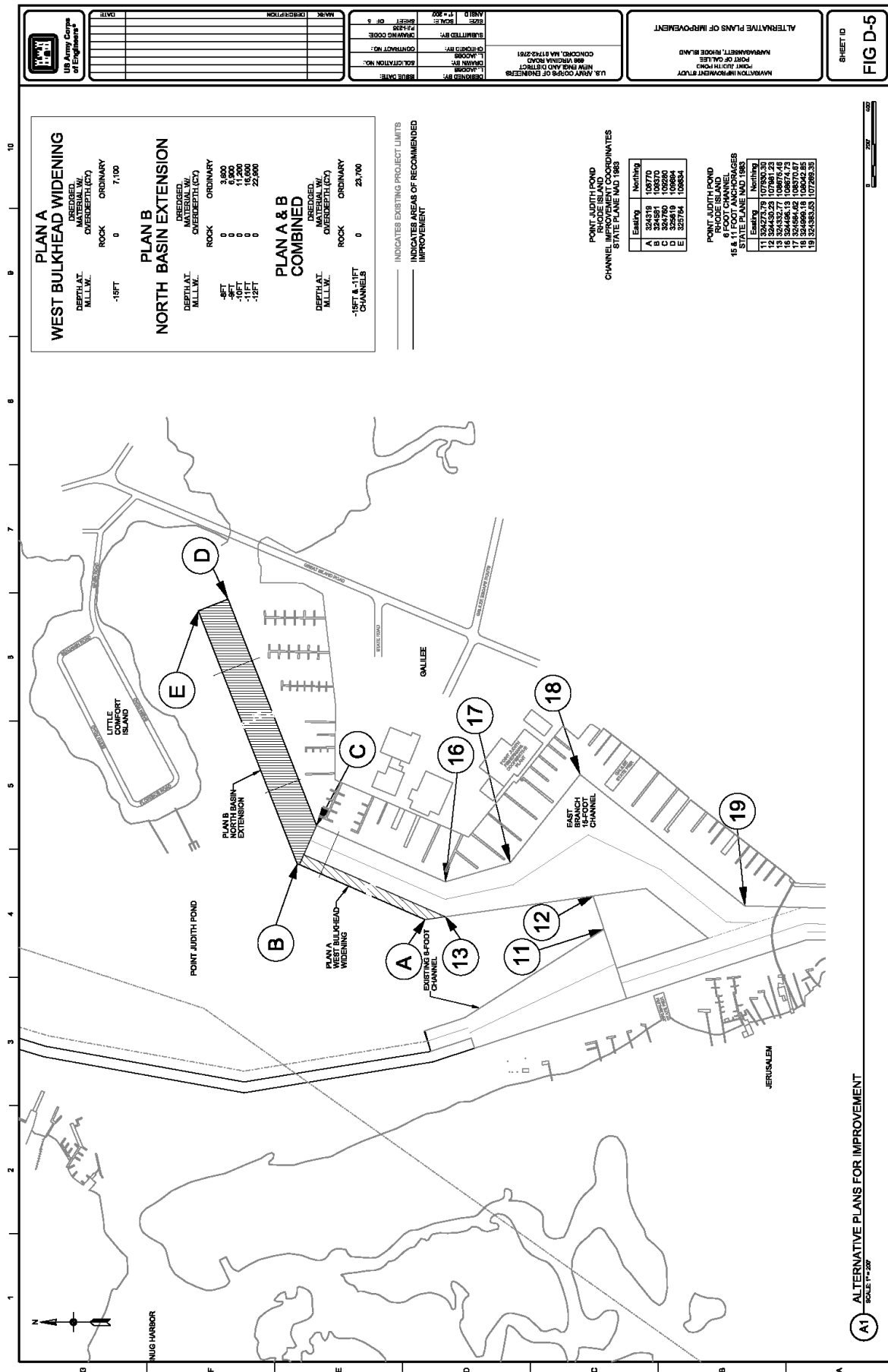
#### **SELECTED PLAN**

The Selected Plan, as determined through economic and environmental analysis, is a combination of Plans A and B. The plan involves widening by 50 feet the existing 15-foot deep Federal channel opposite the West Bulkhead in Galilee, and extending this channel 1,200 feet into the North Basin area at a depth of 11 feet and a width of 150 feet. Completion of this work would require dredging 23,700 cubic yards of ordinary material. This would provide the existing commercial fleet with safe access to existing docking areas, at all tidal stages, thereby increasing operational efficiency. The recommended plan of improvement is shown in Figure D-6.

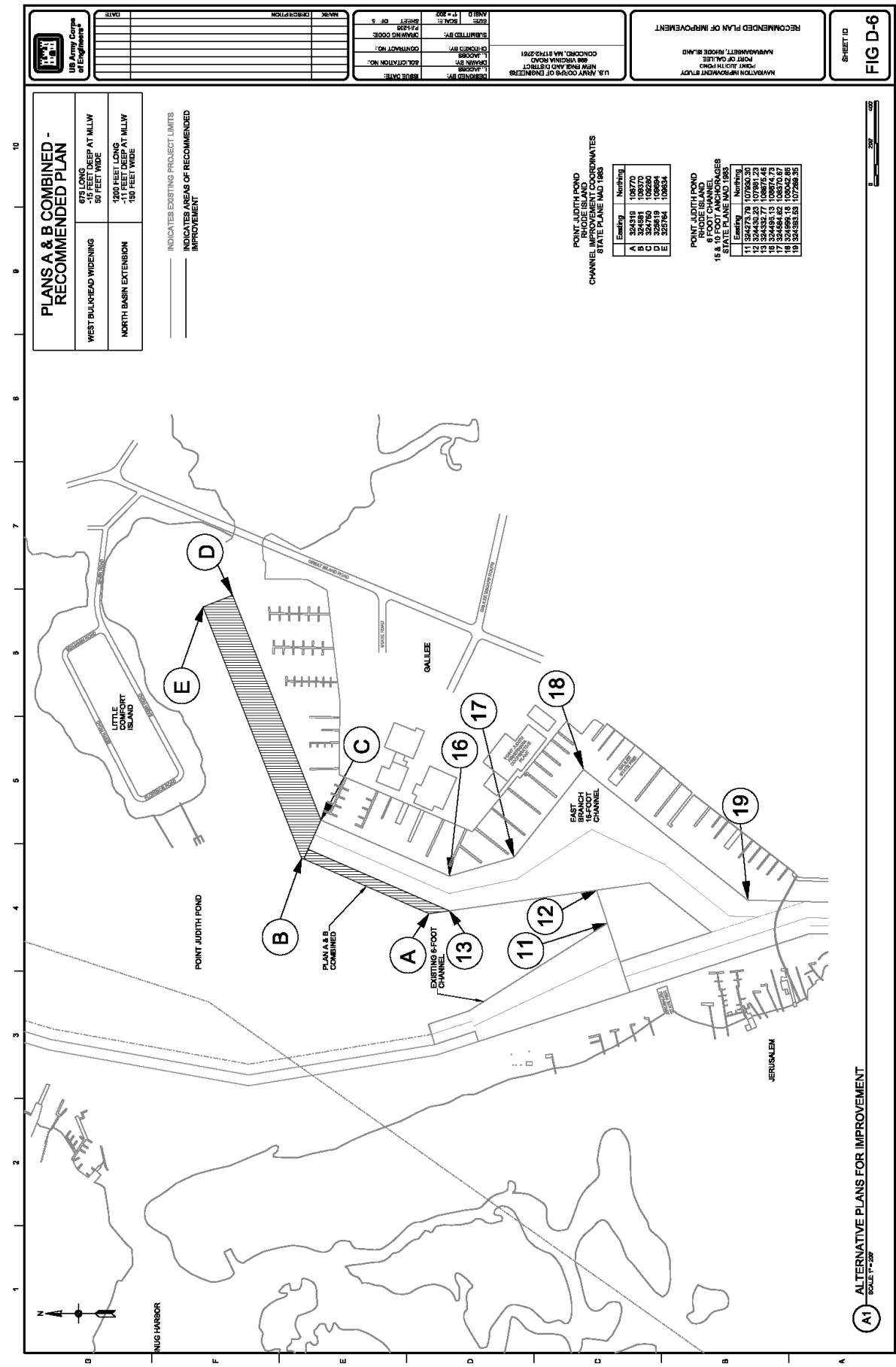
#### **PLAN RESILIENCE**

Based on ER 1100-2-8162 and ETL 1100-2-1, USACE studies must consider future rates of sea level change to account for the potential impacts of climate change. Due to the uncertainty associated with future sea level change, USACE policy is to look at three scenarios of sea level change and investigate impacts to project feasibility. These rates are the historical rate at the project site, an intermediate rate and a high rate of sea level rise. The intermediate and high rates are from the National Research Council (NRC) curves 1 and 3, respectively. These rates were calculated using the online calculator tool at the USACE climate change web portal (<http://corpsclimate.us/ccaceslcurves.cfm>). The tool uses the closest NOAA tide station with an adequately long water level record to determine the historical trend. The historical trend is then used with a formulation provided in the ETL to determine the intermediate and high rates of change.

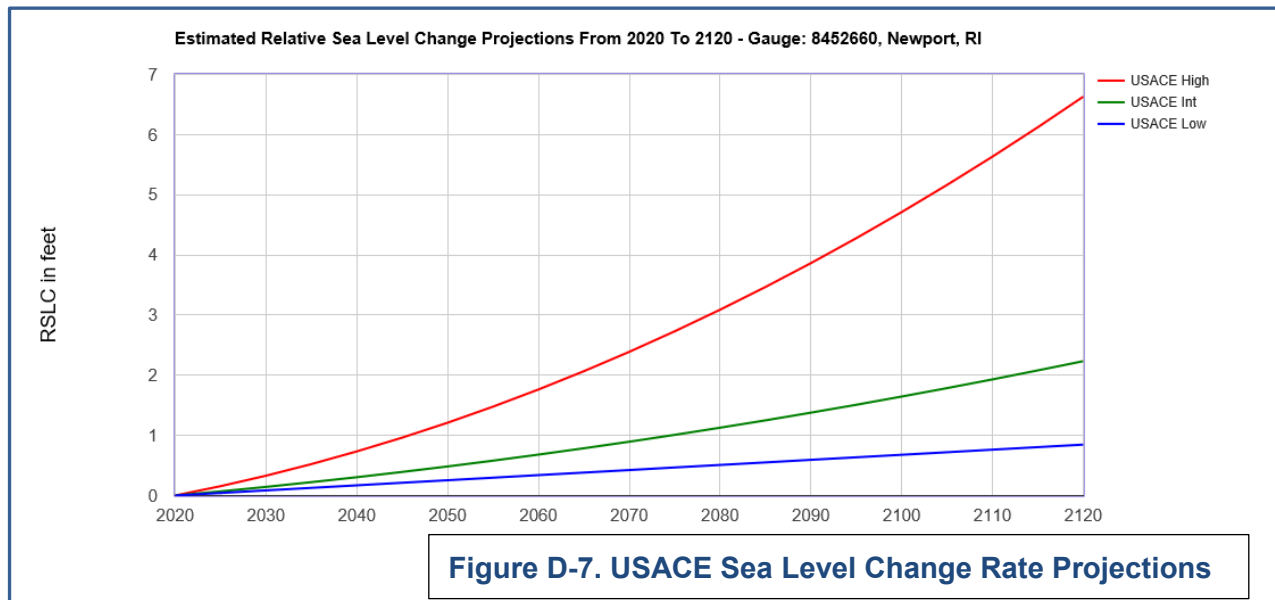




Point Judith Harbor, Narragansett, RI \$107 Navigation Improvement Project - Planning & Engineering & Design - Final



The Newport, RI station (NOAA 8452660) was used to approximate changes in sea level for Point Judith Pond from 2020 to 2120. This time range includes both the anticipated project economic life and the planning horizon. Sea level is expected to rise between 0.42 feet and 2.39 feet by 2070 and between 0.85 feet and 6.63 feet by 2120 (Figure D-7). This increase in sea level will deepen the existing channel and proposed improvements, resulting safer vessel transits with greater under-keel clearance.



Projected changes in sea level were added to existing water levels to evaluate if sea level rise will impact landside infrastructure on or access to the bulkhead over the project's 50 year economic life and the 100 year planning horizon. Future Mean Higher High Water (MHHW) levels and 1 year annual recurrence interval (ARI) flood elevations for the years 2070 and 2120 are provided in Table D-6 for each scenario. The bulkhead elevation is approximately 5.0 feet NAVD.

Table D-6 – Projected Water Levels Elevations in feet, NAVD88				
Sea Level Rise Scenario	2070 MHHW	2070 1-YR ARI	2120 MHHW	2120 1-YR ARI
Low	2.16	4.23	2.59	4.66
Intermediate	2.63	4.70	3.97	6.04
High	4.13	6.20	8.37	10.44

The bulkhead is not projected to be impacted by the daily tide range under the low and intermediate sea level rise scenarios through 2120. By 2070, however, the Mean Higher High Water level associated with the high sea level rise scenario will begin to exceed elevations on the southern side of the bulkhead, as illustrated by the blue contour in Figure D-8. While this water level would impact access to Great Island Road south of the Block Island Ferry Terminal, the west and northern sides of the bulkhead will not be impacted. The 2070 high sea level rise Mean Higher High Water elevation is comparable to the 1 year annual recurrence interval flood elevation under the low sea level rise scenario. Figure D-8 also depicts the 1 year annual recurrence interval flood elevations for 2070 under the intermediate and the high sea level rise scenarios in green and red, respectively. The selected plan again is projected to be impacted little by the 1 year annual recurrence interval flood under the intermediate sea level rise scenario. Under the high rate of sea level change, much of the bulkhead is projected to be inundated by the 1 year annual recurrence interval flood in the year 2070. By 2120, the annual recurrence interval storm is also predicted to inundate the bulkhead under the intermediate and high sea level rise scenarios. However, it can be assumed that vessels would not be transiting the channel or coming in and out of port during a storm event of this magnitude, making the need to access the bulkhead less critical. This level of risk was not assumed to impact project feasibility.



**Figure D-8 - Inundation Contours Associated with Projected Sea Level Rise**

## **AIDS TO NAVIGATION**

The U.S. Coast Guard is responsible for placing and maintaining any aids they deem necessary for navigation safety. There are three U.S. Coast Guard buoys marking the channels being improved, all on the port inbound (green) side of the channels. Two mark the western limit of the west bulkhead channel reach, with the second also marking the turn into the north bulkhead channel. The third marks the upper end of the north bulkhead channel. The Coast Guard typically moves and resets buoys before and after (respectively) dredging operations. The two buoys marking the west bulkhead channel would need to be reset 50 feet further west to mark the widened channel. The third buoy already marks the upper end of the north bulkhead channel and would be reset near its current location.

## **DISPOSAL OF DREDGED MATERIAL**

The identified near shore disposal site as described in the Environmental Assessment is a site off of the Matunuck Beach shoreline approximately two to three miles west of the Point Judith Breachway. This site has been used in the recent past for placement of dredged sands from maintenance of the existing FNP. Dredged material placed in the nearshore area will move to the shore during fair weather conditions through onshore sediment transport. Also, because the net littoral drift is from west to east, any sand placed in the nearshore area would help down drift beaches that are experiencing similar erosion problems, such as South Kingstown Town Beach. The results of a sidescan survey show that two large sand sheets exist just off the shoreline. The dredged material will be placed at the west end of the one or both sand sheets in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of the dredged material for beach nourishment. This option of nearshore disposal represents the Federal Base Plan under the Federal Standard as the least cost, environmentally acceptable alternative.

## **MAINTENANCE COSTS**

Maintenance of various navigation improvements proposed under each alternative plan would be necessary at estimated intervals throughout the 50-year project life. Maintenance of the channel to its authorized depth would be necessary to ensure the continued efficiency of the developed areas. Continued maintenance of the existing aids to navigation would also be necessary.

Following initial dredging the channel would tend to shoal or fill in because of settlement of material from side slopes, deposition of material derived from upland erosion, and from current tidal action.

Channel side slopes would be designed at slopes of 1 vertical: 3 horizontal so as to enhance long-term stability, although changes to the bottom contours would occur over time resulting in gradual flattening of the slopes.

Strong current action occurring during storms may result in the movement of bottom sediments. The propeller wash and waves produced by passing vessels would also tend to disturb the channel bottom, resulting in the redistribution of bottom sediments.

The last improvements to Point Judith Pond were made in 1977 when the 15-foot east Federal channel was extended 1,400 feet to provide access to the commercial piers on the West Bulkhead in Galilee. Approximately 63,000 cubic yards of ordinary material was removed from the project area. Disposal of the material was on land, immediately opposite the construction site.

Maintenance of the Point Judith Pond project was conducted in 2007. Approximately 89,000 cubic yards was dredged within the 15-foot channel.

In order to determine annualized maintenance cost resulting from the proposed improvements, estimates must be made with and without improvement maintenance costs. Based on the maintenance frequency of the current channel, it was assumed there would be two cycles of O&M dredging throughout the 50-year project life. For economic purposes, an annual shoaling rate of 3 percent of the improvement dredging was used to predict the quantity of material to be dredged at the end of the two 25-year periods.

The proposed alternatives would alter the water depths of several areas in the Pond by various amounts. Sedimentation due to the upland erosion would not be increased by the proposed alternatives. There would be some initial side slope settling due to the strong tidal currents in the area. None of the proposed improvements would, if implemented, result in an increase in the frequency of necessary maintenance operations.

Future maintenance dredging activity could make use of the nearshore disposal area with approval from the state authorities. Otherwise, it would be the local responsibility to locate an appropriate disposal site and fund construction of any necessary features.



# **APPENDIX E**

## **COST ENGINEERING**

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# **POINT JUDITH HARBOR OF REFUGE AND POINT JUDITH POND FEDERAL NAVIGATION PROJECT – SECTION 107 NAVIGATION IMPROVEMENT STUDY**

## **COST ESTIMATE, RISK ANALYSIS, TPCS DEVELOPMENT SUMMARY**

### **COST ESTIMATE**

The cost estimate is based on dredge quantities developed by the Civil Engineering Section. The tentatively selected plan (TSP) includes widening by 50 feet the existing 15-foot deep West Bulkhead channel for a distance of approximately 700 feet and extending for a distance of 1,200 feet channel into the North Basin at 150 feet wide by 11 feet deep. It should be noted that numerous alternatives, including widening the West Bulkhead in 1-foot increments from 12 feet to 15 feet deep, extending the North Basin in 1-foot increments from 8 feet to 12 feet and all possible combinations of these increments. The TSP was selected through an economic analysis.

### **Assumptions**

- Construction methodology: CEDEP estimate assumes the same equipment will be used in the West Bulkhead and the North Basin. The estimates assume an 8-cy bucket will place material directly into two 600 cy bottom dump scows which will be towed 3.5 miles to the near-shore disposal area and disposed of. The estimate assumes two 3000 HP tugs will haul the scows to/from the dredge site and the disposal area.
- Estimate assumes the prime contractor will self-perform all work.
- Estimate assumes mobilization will occur from the New York/New Jersey area.
- Estimate assumes open competition and invitation for bid procurement method.

### **RISK ANALYSIS**

Risk Mitigation was conducted through an Abbreviated Risk Analysis of the project as it is currently presented in addition to the acknowledgement of risk in the scope and estimated quantities. The District has mitigated this risk through a conservative approach to the excavation and hauling of dredge material as well as utilizing a conservative cost of fuel. The values included in the project cost provide an amount that the PDT is confident will provide substantive costs to mitigate any issues. The District will continue to monitor and include all risks in continuing assessment of contingency and amend as necessary as an essential element to the continued development of the project. The potential risk areas identified through formal risk and sensitivity analysis

were mobilization & demobilization, dredge & disposal of material from West Bulkhead Widening and dredge & disposal of material from North Basin Extension.

The Abbreviated Risk Analysis or ARA was developed relying on local District staff to provide expertise and information gathering. The cost engineer facilitated a risk assessment meeting on site with the PDT in addition to a qualitative analysis to produce a risk register that served as the framework for the risk analysis.

The ARA assumes the Project Development Stage/Alternative is "Feasibility (Recommended Plan)" with a "Low Risk" risk category based on the experience of the cost engineer and vetted with the PDT. The resultant contingencies are 27.11% for the Total Construction Estimate, 11.90% for Total Planning, Engineering & Design, and 14.86% for Total Construction Management. These contingency percentages were then utilized in the Total Project Cost Summary. It should be noted that no Lands and Damages are anticipated for this project.

There is no one significant risk factor for this project that stands above the rest. The risks associated with the project are typical for improvement/maintenance dredging and include vintage of data used to develop quantities, acquisition strategy, and cost estimate assumptions regarding what equipment will be utilized to construct the project.

## **TOTAL PROJECT COST SUMMARY (TPCS)**

The Total Project Cost Summary (TPCS) was then computed to summarize the construction cost, project first cost, and the Total Project Cost or the Fully Funded Cost. The TPCS was utilized to calculate the construction cost estimate applied contingency and escalated to the midpoints of the features of work and the remaining work breakdown structure to include Planning, Engineering & Design (PED) and Construction Management. The inputs of the TPCS, to include percentages for the PED phase and Construction Management were obtained from the project manager.

The resultant TPCS from the cost estimate, risk analysis, and escalation is \$1,865,000 with an estimated federal cost of \$1,679,000 and non-federal cost of \$187,000 utilizing a 90%/10% federal/non-federal cost of project split. Including the Federal share of the feasibility study costs, \$209,250, the total estimated federal cost of the project is \$1,888,000.

**\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\***

Printed:10/10/2019  
Page 1 of 2

PROJECT: **Point Judith Section 107**  
PROJECT NO: **130481**  
LOCATION: **Washington County, Rhode Island**

DISTRICT: **New England District**  
POC: **CHIEF, COST ENGINEERING, Andrew Jordan**  
PREPARED: **3/21/2018**  
UPDATED: **10/10/2019**

This Estimate reflects the scope and schedule in report; Report Name and date

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)			
<b>WEST BULKHEAD WIDENING &amp; NORTH BASIN EXTENSION</b>						Program Year (Budget EC): 2021 Effective Price Level Date: 1-Oct- 20 Spent Thru: 1-Oct-19								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	REMAINING COST (\$K)	TOTAL FIRST COST (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
09	CHANNELS & CANALS #N/A #N/A	\$1,023	\$277	27%	\$1,300	11.6%	\$1,141	\$309	\$1,450	\$1,450	3.0%	\$1,175	\$319	\$1,494
						-					-			
						-					-			
						-					-			
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	\$1,023	\$277		\$1,300	11.6%	\$1,141	\$309	\$1,450	\$1,450	3.0%	\$1,175	\$319	\$1,494
01	LANDS AND DAMAGES			-		-					-			
30	PLANNING, ENGINEERING & DESIGN	\$194	\$23	12%	\$217	9.6%	\$212	\$25	\$237	\$237	2.3%	\$217	\$26	\$243
31	CONSTRUCTION MANAGEMENT	\$98	\$15	15%	\$113	9.6%	\$108	\$16	\$124	\$124	3.9%	\$112	\$17	\$128
	<b>PROJECT COST TOTALS:</b>	\$1,315	\$315	24%	\$1,630		\$1,461	\$351	\$1,812	\$1,812	3.0%	\$1,504	\$361	\$1,865

E-3

\_\_\_\_\_  
CHIEF, COST ENGINEERING, Andrew Jordan

\_\_\_\_\_  
PROJECT MANAGER, Mark Habel

\_\_\_\_\_  
CHIEF, REAL ESTATE, Gaelen Daly

\_\_\_\_\_  
CHIEF, PLANNING, John Kennelly

\_\_\_\_\_  
CHIEF, ENGINEERING, David Margolis

\_\_\_\_\_  
CHIEF, OPERATIONS, Eric Pedersen

\_\_\_\_\_  
CHIEF, CONSTRUCTION, Sean Dolan

\_\_\_\_\_  
CHIEF, CONTRACTING, Sheila Winston-Vincuilla

\_\_\_\_\_  
CHIEF, PM-PB, Janet Harrington

\_\_\_\_\_  
CHIEF, DPM, Scott Acone

**ESTIMATED TOTAL PROJECT COST: \$1,865**  
ESTIMATED FEDERAL COST: **90%** \$1,679  
ESTIMATED NON-FEDERAL COST: **10%** \$187

**22 - FEASIBILITY STUDY (CAP studies) <sup>1)</sup>: \$318.50**  
ESTIMATED FEDERAL COST: **\$209.25**  
ESTIMATED NON-FEDERAL COST: **\$109.25**

**ESTIMATED FEDERAL COST OF PROJECT \$1,888**

1) Feasibility Study costs were 100% Federal for the first \$100,000. The remainder of the Feasibility Study costs, \$218,500, are shared 50/50.

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:10/10/2019  
Page 2 of 2

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

PROJECT: Point Judith Section 107  
LOCATION: Washington County, Rhode Island  
This Estimate reflects the scope and schedule in report;

Report Name and date

DISTRICT: New England District  
POC: CHIEF, COST ENGINEERING, Andrew Jordan

PREPARED: 3/21/2018  
UPDATED: 10/10/2019

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 18-May-18 Estimate Price Level: 1-Oct-17				Program Year (Budget EC): 2021 Effective Price Level Date: 1-Oct-20								
		RISK BASED												
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
09	PHASE 1 or CONTRACT 1 CHANNELS & CANALS #N/A #N/A	\$1,023	\$277	27.1%	\$1,300	11.6%	\$1,141	\$309	\$1,450	2022Q1	3.0%	\$1,175	\$319	\$1,494
CONSTRUCTION ESTIMATE TOTALS:		\$1,023	\$277	27.1%	\$1,300		\$1,141	\$309	\$1,450			\$1,175	\$319	\$1,494
01	LANDS AND DAMAGES													
30	PLANNING, ENGINEERING & DESIGN													
	Project Management	\$26	\$3	11.9%	\$29	9.6%	\$28	\$3	\$32	2021Q3	1.9%	\$29	\$3	\$32
	Planning & Environmental Compliance	\$17	\$2	11.9%	\$19	9.6%	\$19	\$2	\$21	2021Q3	1.9%	\$19	\$2	\$21
	Engineering & Design	\$86	\$10	11.9%	\$96	9.6%	\$94	\$11	\$105	2021Q3	1.9%	\$96	\$11	\$107
	Engineering Tech Review ITR & VE	\$22	\$3	11.9%	\$25	9.6%	\$24	\$3	\$27	2021Q3	1.9%	\$25	\$3	\$28
	Contracting & Reprographics	\$13	\$2	11.9%	\$15	9.6%	\$14	\$2	\$16	2021Q3	1.9%	\$15	\$2	\$16
	Engineering During Construction	\$5	\$1	11.9%	\$6	9.6%	\$6	\$1	\$6	2022Q1	3.9%	\$6	\$1	\$7
	Planning During Construction	\$10	\$1	11.9%	\$12	9.6%	\$11	\$1	\$13	2022Q1	3.9%	\$12	\$1	\$13
	Project Operations			11.9%										
	Pre-Construction Monitoring			11.9%										
	Post Construction Monitoring	\$14	\$2	11.9%	\$16	9.6%	\$16	\$2	\$18	2022Q2	4.9%	\$16	\$2	\$18
31	CONSTRUCTION MANAGEMENT													
	Construction Management	\$83	\$12	14.9%	\$96	9.6%	\$91	\$14	\$105	2022Q1	3.9%	\$95	\$14	\$109
	Project Operation:			14.9%										
	Project Management	\$15	\$2	14.9%	\$17	9.6%	\$16	\$2	\$19	2022Q1	3.9%	\$17	\$3	\$20
CONTRACT COST TOTALS:		\$1,315	\$315		\$1,630		\$1,461	\$351	\$1,812			\$1,504	\$361	\$1,865

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# **WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE**

## **COST AGENCY TECHNICAL REVIEW CERTIFICATION STATEMENT**

**For Project No. 130481**

**NAE – Point Judith Harbor of Refuge  
and Point Judith Pond  
Section 107 - Navigation Improvement Project**

The Point Judith Harbor of Refuge and Point Judith Pond Section 107 Project as presented by New England District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of May 22, 2018, the Cost MCX certifies the estimated total project cost:

FY18 Project First Cost:	\$1,630,000
Fully Funded Total Project Cost:	\$1,704,000
Federal Cost of Project:	\$1,208,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management through the period of Federal participation.



---

**Michael P. Jacobs, PE, CCE  
Chief, Cost Engineering MCX  
Walla Walla District**



\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:5/22/2018

Page 1 of 2

PROJECT: **Point Judith Section 107**  
PROJECT NO: **130481**  
LOCATION: **Washington County, Rhode Island**

DISTRICT: **New England District**

PREPARED: **3/21/2018**

UPDATED: **5/18/2018**

POC: **CHIEF, COST ENGINEERING, Andrew Jordan**

This Estimate reflects the scope and schedule in report; Report Name and date

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)				
WEST BULKHEAD WIDENING & NORTH BASIN EXTENSION						Program Year (Budget EC): 2018 Effective Price Level Date: 1-Oct- 17 Spent Thru: 1-Oct-17									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	REMAINING COST (\$K)		TOTAL FIRST COST (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
09	CHANNELS & CANALS	\$1,023	\$277	27%	\$1,300		\$1,023	\$277	\$1,300		\$1,300	4.1%	\$1,065	\$289	\$1,353
	#N/A		-			-						-			
	#N/A		-			-						-			
			-			-						-			
CONSTRUCTION ESTIMATE TOTALS:		\$1,023	\$277		\$1,300		\$1,023	\$277	\$1,300		\$1,300	4.1%	\$1,065	\$289	\$1,353
01	LANDS AND DAMAGES			-		-						-			
30	PLANNING, ENGINEERING & DESIGN	\$194	\$23	12%	\$217		\$194	\$23	\$217		\$217	5.4%	\$204	\$24	\$228
31	CONSTRUCTION MANAGEMENT	\$98	\$15	15%	\$113	0.0%	\$98	\$15	\$113		\$113	8.2%	\$106	\$16	\$122
PROJECT COST TOTALS:		\$1,315	\$315	24%	\$1,630		\$1,315	\$315	\$1,630		\$1,630	4.6%	\$1,375	\$329	\$1,704

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\_\_\_\_\_  
CHIEF, COST ENGINEERING, Andrew Jordan

\_\_\_\_\_  
PROJECT MANAGER, Mark Habel

\_\_\_\_\_  
CHIEF, REAL ESTATE, Anne Kosel

\_\_\_\_\_  
CHIEF, PLANNING, John Kennelly

\_\_\_\_\_  
CHIEF, ENGINEERING, Frank Fedele

\_\_\_\_\_  
CHIEF, OPERATIONS, Eric Pedersen

\_\_\_\_\_  
CHIEF, CONSTRUCTION, Sean Dolan

\_\_\_\_\_  
CHIEF, CONTRACTING, Sheila Winston-Vincuilla

\_\_\_\_\_  
CHIEF, PM-PB, Janet Harrington

\_\_\_\_\_  
CHIEF, DPM, Scott Acone

**ESTIMATED TOTAL PROJECT COST: \$1,704**  
ESTIMATED FEDERAL COST: **65%** \$1,108  
ESTIMATED NON-FEDERAL COST: **35%** \$596

**22 - FEASIBILITY STUDY (CAP studies): \$100**  
ESTIMATED FEDERAL COST: 100% **\$100**  
ESTIMATED NON-FEDERAL COST:

**ESTIMATED FEDERAL COST OF PROJECT \$1,208**

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:5/22/2018  
Page 2 of 2

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

PROJECT: Point Judith Section 107  
LOCATION: Washington County, Rhode Island  
This Estimate reflects the scope and schedule in report;

Report Name and date

DISTRICT: New England District  
POC: CHIEF, COST ENGINEERING, Andrew Jordan

PREPARED: 3/21/2018  
UPDATED: 5/18/2018

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 18-May-18 Estimate Price Level: 1-Oct-17				Program Year (Budget EC): 2018 Effective Price Level Date: 1-Oct-17								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F	ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O
09	PHASE 1 or CONTRACT 1 CHANNELS & CANALS #N/A #N/A	\$1,023	\$277	27.1%	\$1,300		\$1,023	\$277	\$1,300	2020Q1	4.1%	\$1,065	\$289	\$1,353
CONSTRUCTION ESTIMATE TOTALS:		\$1,023	\$277	27.1%	\$1,300		\$1,023	\$277	\$1,300			\$1,065	\$289	\$1,353
01	LANDS AND DAMAGES													
30	PLANNING, ENGINEERING & DESIGN													
	Project Management	\$26	\$3	11.9%	\$29		\$26	\$3	\$29	2019Q2	4.9%	\$27	\$3	\$31
	Planning & Environmental Compliance	\$17	\$2	11.9%	\$19		\$17	\$2	\$19	2019Q2	4.9%	\$18	\$2	\$20
	Engineering & Design	\$86	\$10	11.9%	\$96		\$86	\$10	\$96	2019Q2	4.9%	\$90	\$11	\$101
	Engineering Tech Review ITR & VE	\$22	\$3	11.9%	\$25		\$22	\$3	\$25	2019Q2	4.9%	\$23	\$3	\$26
	Contracting & Reprographics	\$13	\$2	11.9%	\$15		\$13	\$2	\$15	2019Q2	4.9%	\$14	\$2	\$15
	Engineering During Construction	\$5	\$1	11.9%	\$6		\$5	\$1	\$6	2020Q1	8.2%	\$6	\$1	\$6
	Planning During Construction	\$10	\$1	11.9%	\$12		\$10	\$1	\$12	2020Q1	8.2%	\$11	\$1	\$13
	Project Operations			11.9%										
	Pre-Construction Monitoring			11.9%										
	Post Construction Monitoring	\$14	\$2	11.9%	\$16		\$14	\$2	\$16	2020Q1	8.2%	\$15	\$2	\$17
31	CONSTRUCTION MANAGEMENT													
	Construction Management	\$83	\$12	14.9%	\$96		\$83	\$12	\$96	2020Q1	8.2%	\$90	\$13	\$103
	Project Operation:			14.9%										
	Project Management	\$15	\$2	14.9%	\$17		\$15	\$2	\$17	2020Q1	8.2%	\$16	\$2	\$19
CONTRACT COST TOTALS:		\$1,315	\$315		\$1,630		\$1,315	\$315	\$1,630			\$1,375	\$329	\$1,704

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\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:4/22/2019

Page 1 of 2

PROJECT: **Point Judith Section 107**  
PROJECT NO: **130481**  
LOCATION: **Washington County, Rhode Island**

DISTRICT: **New England District**

PREPARED: **3/21/2018**

UPDATED: **4/22/2019**

POC: **CHIEF, COST ENGINEERING, Andrew Jordan**

This Estimate reflects the scope and schedule in report; Report Name and date

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)			
<b>WEST BULKHEAD WIDENING &amp; NORTH BASIN EXTENSION</b>						Program Year (Budget EC): 2019 Effective Price Level Date: 1-Oct- 18 Spent Thru: 1-Oct-18								
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	REMAINING COST (\$K)	TOTAL FIRST COST (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
09	CHANNELS & CANALS #N/A #N/A	\$1,023	\$277	27%	\$1,300	2.0%	\$1,043	\$283	\$1,326	\$1,326	5.6%	\$1,102	\$299	\$1,400
						-					-			
						-					-			
						-					-			
	<b>CONSTRUCTION ESTIMATE TOTALS:</b>	\$1,023	\$277		\$1,300	2.0%	\$1,043	\$283	\$1,326	\$1,326	5.6%	\$1,102	\$299	\$1,400
01	LANDS AND DAMAGES			-		-					-			
30	PLANNING, ENGINEERING & DESIGN	\$194	\$23	12%	\$217	3.8%	\$201	\$24	\$225	\$225	5.3%	\$212	\$25	\$237
31	CONSTRUCTION MANAGEMENT	\$98	\$15	15%	\$113	3.8%	\$102	\$15	\$117	\$117	7.8%	\$110	\$16	\$126
	<b>PROJECT COST TOTALS:</b>	\$1,315	\$315	24%	\$1,630		\$1,346	\$322	\$1,668	\$1,668	5.7%	\$1,423	\$340	\$1,763

CHIEF, COST ENGINEERING, Andrew Jordan

PROJECT MANAGER, Mark Habel

CHIEF, REAL ESTATE, Gaelen Daly

CHIEF, PLANNING, John Kennelly

CHIEF, ENGINEERING, David Margolis

CHIEF, OPERATIONS, Eric Pedersen

CHIEF, CONSTRUCTION, Sean Dolan

CHIEF, CONTRACTING, Sheila Winston-Vincuilla

CHIEF, PM-PB, Janet Harrington

CHIEF, DPM, Scott Acone

**ESTIMATED TOTAL PROJECT COST: \$1,763**

ESTIMATED FEDERAL COST: **90%** \$1,587

ESTIMATED NON-FEDERAL COST: **10%** \$176

**22 - FEASIBILITY STUDY (CAP studies) <sup>1)</sup>: \$318.50**

ESTIMATED FEDERAL COST: **\$209.25**

ESTIMATED NON-FEDERAL COST: **\$109.25**

**ESTIMATED FEDERAL COST OF PROJECT \$1,796**

1) Feasibility Study costs were 100% Federal for the first \$100,000. The remainder of the Feasibility Study costs, \$218,500, are shared 50/50.

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

Printed:4/22/2019  
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\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

PROJECT: Point Judith Section 107  
LOCATION: Washington County, Rhode Island  
This Estimate reflects the scope and schedule in report;

Report Name and date

DISTRICT: New England District  
POC: CHIEF, COST ENGINEERING, Andrew Jordan

PREPARED: 3/21/2018  
UPDATED: 4/22/2019

WBS Structure		ESTIMATED COST				PROJECT FIRST COST Dollar Basis)				(Constant	TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 18-May-18 Estimate Price Level: 1-Oct-17				Program Year (Budget EC): 2019 Effective Price Level Date: 1-Oct-18									
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	RISK BASED				ESC (%) G	COST (\$K) H	CNTG (\$K) I	TOTAL (\$K) J	Mid-Point Date P	ESC (%) L	COST (\$K) M	CNTG (\$K) N	FULL (\$K) O	
		COST (\$K) C	CNTG (\$K) D	CNTG (%) E	TOTAL (\$K) F										
09	PHASE 1 or CONTRACT 1 CHANNELS & CANALS #N/A #N/A	\$1,023	\$277	27.1%	\$1,300	2.0%	\$1,043	\$283	\$1,326	2021Q1	5.6%	\$1,102	\$299	\$1,400	
CONSTRUCTION ESTIMATE TOTALS:		\$1,023	\$277	27.1%	\$1,300		\$1,043	\$283	\$1,326			\$1,102	\$299	\$1,400	
01	LANDS AND DAMAGES														
30	PLANNING, ENGINEERING & DESIGN														
	Project Management	\$26	\$3	11.9%	\$29	3.8%	\$27	\$3	\$30	2020Q2	4.8%	\$28	\$3	\$32	
	Planning & Environmental Compliance	\$17	\$2	11.9%	\$19	3.8%	\$18	\$2	\$20	2020Q2	4.8%	\$18	\$2	\$21	
	Engineering & Design	\$86	\$10	11.9%	\$96	3.8%	\$89	\$11	\$100	2020Q2	4.8%	\$93	\$11	\$104	
	Engineering Tech Review ITR & VE	\$22	\$3	11.9%	\$25	3.8%	\$23	\$3	\$26	2020Q2	4.8%	\$24	\$3	\$27	
	Contracting & Reprographics	\$13	\$2	11.9%	\$15	3.8%	\$13	\$2	\$15	2020Q2	4.8%	\$14	\$2	\$16	
	Engineering During Construction	\$5	\$1	11.9%	\$6	3.8%	\$5	\$1	\$6	2021Q1	7.8%	\$6	\$1	\$7	
	Planning During Construction	\$10	\$1	11.9%	\$12	3.8%	\$11	\$1	\$12	2021Q1	7.8%	\$12	\$1	\$13	
	Project Operations			11.9%											
	Pre-Construction Monitoring			11.9%											
	Post Construction Monitoring	\$14	\$2	11.9%	\$16	3.8%	\$15	\$2	\$17	2021Q1	7.8%	\$16	\$2	\$18	
31	CONSTRUCTION MANAGEMENT														
	Construction Management	\$83	\$12	14.9%	\$96	3.8%	\$86	\$13	\$99	2021Q1	7.8%	\$93	\$14	\$107	
	Project Operation:			14.9%											
	Project Management	\$15	\$2	14.9%	\$17	3.8%	\$16	\$2	\$18	2021Q1	7.8%	\$17	\$2	\$19	
CONTRACT COST TOTALS:		\$1,315	\$315		\$1,630		\$1,346	\$322	\$1,668			\$1,423	\$340	\$1,763	

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Abbreviated Risk Analysis

Project (less than \$40M): Point Judith Harbor of Refuge Section 107 Navigation Imprc  
Project Development Stage/Alternative: Feasibility (Recommended Plan)  
Risk Category: Low Risk: Typical Construction, Simple

Alternative: 28 (WBW to -15 & NBE to -11 ft)

Meeting Date: 6/30/2016

Total Estimated Construction Contract Cost = \$ 1,022,880

	CWWBS	Feature of Work	Estimated Cost	% Contingency	\$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	\$ -	0%	\$ -	\$ -
1	09 01 CHANNELS	Mobilization & Demobilization	\$ 368,274	23%	\$ 83,049	\$ 451,323
2	09 01 CHANNELS	Dredge & Disposal (West Bulkhead Widening)	\$ 190,138	30%	\$ 56,427	\$ 246,565
3	09 01 CHANNELS	Dredge & Disposal (North Basin Extension)	\$ 464,468	30%	\$ 137,839	\$ 602,307
4				0%	\$ -	\$ -
5				0%	\$ -	\$ -
6				0%	\$ -	\$ -
7				0%	\$ -	\$ -
8				0%	\$ -	\$ -
9				0%	\$ -	\$ -
10				0%	\$ -	\$ -
11				0%	\$ -	\$ -
12	All Other	Remaining Construction Items	\$ -	0.0%	\$ -	\$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 194,000	12%	\$ 23,093	\$ 217,093
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 98,000	15%	\$ 14,561	\$ 112,561
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$ -	

Totals					
Real Estate	\$	-	0%	\$	-
Total Construction Estimate	\$	1,022,880	27.11%	\$	277,315
Total Planning, Engineering & Design	\$	194,000	11.90%	\$	23,093
Total Construction Management	\$	98,000	14.86%	\$	14,561
Total Excluding Real Estate	\$	1,314,880	23.95%	\$	314,969

Confidence Level Range Estimate (\$000's)	Base	50%	80%
	\$1,315k	\$1,504k	\$1,630k

\* 50% based on base is at 5% CL.

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.)	
---	--

Point Judith Harbor of Refuge Section 107 Navigation Improvement Study 28 (WBW to -15 & NBE to -11 ft)

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Risk Evaluation

WBS	Potential Risk Areas	Project Management & Scope Growth	Acquisition Strategy	Construction Elements	Specialty Construction or Fabrication	Technical Design & Quantities	Cost Estimate Assumptions	External Project Risks	Cost in Thousands
01 LANDS AND DAMAGES	Real Estate								\$0
09 01 CHANNELS	Mobilization & Demobilization	0	2	2	0	0	1	1	\$368
09 01 CHANNELS	Dredge & Disposal (West Bulkhead Widening)	1	2	2	0	2	2	1	\$190
09 01 CHANNELS	Dredge & Disposal (North Basin Extension)	1	2	2	0	2	2	1	\$464
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
All Other	Remaining Construction Items	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$0
30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	0	0	0	0	0	1	0	\$194
31 CONSTRUCTION MANAGEMENT	Construction Management	0	0	2	0	0	1	0	\$98

		\$1,315							
Risk		\$ 14	\$ 126	\$ 99	\$ -	\$ 22	\$ 36	\$ 19	\$315
Fixed Dollar Risk Allocation		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$0
Risk		\$ 14	\$ 126	\$ 99	\$ -	\$ 22	\$ 36	\$ 19	\$315
		Total \$1,630							

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Point Judith Harbor of Refuge Section 107 Navigation Improvements

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 30-Jun-16

Risk Level					
Very Likely	2	3	4	5	5
Likely	1	2	3	4	5
Possible	0	1	2	3	4
Unlikely	0	0	1	2	3
	Negligible	Marginal	Moderate	Significant	Critical

Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth						40%
PS-1	Mobilization & Demobilization	None	None	Negligible	Unlikely	0
PS-2	Dredge & Disposal (West Bulkhead Widening)	Concern regarding scope creep and the need to construct a deeper channel when the project gets to PED.	The feasibility study encompasses several options for channel depths that will be optimized utilizing benefit/cost ratio analysis. It is very unlikely this depth/width would change in the future however it could have a moderate impact on the dredge and disposal cost of the project.	Moderate	Unlikely	1
E-12 PS-3	Dredge & Disposal (North Basin Extension)	Concern regarding scope creep and the need to construct a deeper channel when the project gets to PED.	The feasibility study encompasses several options for channel depths that will be optimized utilizing benefit/cost ratio analysis. It is very unlikely this depth/width would change in the future however it could have a moderate impact on the dredge and disposal cost of the project.	Moderate	Unlikely	1
PS-12	Remaining Construction Items			Negligible	Unlikely	N/A
PS-13	Planning, Engineering, & Design	Concern regarding scope creep and the need to construct a deeper channel when the project gets to PED.	The feasibility study encompasses several options for channel depths that will be optimized utilizing benefit/cost ratio analysis. It is very unlikely this depth/width would change in the future and would only have a marginal impact on the PED cost of the project.	Marginal	Unlikely	0
PS-14	Construction Management	Concern regarding scope creep and the need to construct a deeper channel when the project gets to PED.	The feasibility study encompasses several options for channel depths that will be optimized utilizing benefit/cost ratio analysis. It is very unlikely this depth/width would change in the future and would only have a marginal impact on the S&A cost of the project.	Marginal	Unlikely	0
Acquisition Strategy						30%
AS-1	Mobilization & Demobilization	Concern over 8a or small business KTR being able to perform work in the required time frame and with the required equipment. Limited bid competition.	Concern mitigated by years of small dredging projects being completed by small business dredging contractors. Also, recent solicitations have included definitive responsibility criteria (DRC) even on small dredging projects to ensure they can perform the work required in the time period permitted. The DRC and recent documented experience with small business contractors mitigate any potential risk in this category. It is possible there would be moderate impacts if the DRC is not used in the solicitation.	Moderate	Possible	2



AS-2	Dredge & Disposal (West Bulkhead Widening)	Concern over 8a or small business KTR being able to perform work in the required time frame and with the required equipment. Limited bid competition.	Concern mitigated by years of small dredging projects being completed by small business dredging contractors. Also, recent solicitations have included definitive responsibility criteria (DRC) even on small dredging projects to ensure they can perform the work required in the time period permitted. The DRC and recent documented experience with small business contractors mitigate any potential risk in this category. It is possible there would be moderate impacts if the DRC is not used in the solicitation.	Moderate	Possible	2
AS-3	Dredge & Disposal (North Basin Extension)	Concern over 8a or small business KTR being able to perform work in the required time frame and with the required equipment. Limited bid competition.	Concern mitigated by years of small dredging projects being completed by small business dredging contractors. Also, recent solicitations have included definitive responsibility criteria (DRC) even on small dredging projects to ensure they can perform the work required in the time period permitted. The DRC and recent documented experience with small business contractors mitigate any potential risk in this category. It is possible there would be moderate impacts if the DRC is not used in the solicitation.	Moderate	Possible	2
AS-12	Remaining Construction Items			Negligible	Unlikely	N/A
AS-13	Planning, Engineering, & Design	Concern over acquisition strategy being something other than IFB. PED costs will assume IFB procurement.	The project does not contain and specialized equipment or means and methods. It is extremely unlikely that anything other than IFB would be utilized to procure the construction contract.	Negligible	Unlikely	0
AS-14	Construction Management			Negligible	Unlikely	0
<b>Construction Elements</b>						<b>Maximum Project Growth</b>
						<b>15%</b>
CON-1	Mobilization & Demobilization	Concern regarding short dredge window (i.e. necessary production rate of contractor) and open water disposal area.	Again, production rate concerns mitigated by likely use of DRC in which contractors are required to show past performance of similar work. Disposal area is also very near shore, which helps to mitigate the risk of a more open water disposal area which is more challenging for small tugs/scows which will likely be used here. It is possible, however unlikely, there will be significant impacts if the DRC is not used and an unqualified contractor performs the work.	Significant	Unlikely	2
CE-2	Dredge & Disposal (West Bulkhead Widening)	Concern regarding short dredge window (i.e. necessary production rate of contractor) and open water disposal area.	Again, production rate concerns mitigated by likely use of DRC in which contractors are required to show past performance of similar work. Disposal area is also very near shore, which helps to mitigate the risk of a more open water disposal area which is more challenging for small tugs/scows which will likely be used here. It is possible, however unlikely, there will be significant impacts if the DRC is not used and an unqualified contractor performs the work.	Significant	Unlikely	2
CE-3	Dredge & Disposal (North Basin Extension)	Concern regarding short dredge window (i.e. necessary production rate of contractor) and open water disposal area.	Again, production rate concerns mitigated by likely use of DRC in which contractors are required to show past performance of similar work. Disposal area is also very near shore, which helps to mitigate the risk of a more open water disposal area which is more challenging for small tugs/scows which will likely be used here. It is possible, however unlikely, there will be significant impacts if the DRC is not used and an unqualified contractor performs the work.	Significant	Unlikely	2

CE-12	Remaining Construction Items			Negligible	Unlikely	N/A	
CE-13	Planning, Engineering, & Design			Negligible	Unlikely	0	
CE-14	Construction Management	Concern regarding short dredge window (i.e. necessary production rate of contractor) and open water disposal area.	Any delay in the dredge & disposal of material for this project would result in increased construction management costs.	Moderate	Possible	2	
Specialty Construction or Fabrication						Maximum Project Growth	50%
SC-1	Mobilization & Demobilization	Concern regarding small dredging project in shallow water requiring small tugs and scows which are available in limited areas.	Cost estimate assumes approximately 400-mile mob distance which would allow for contractors from the Philadelphia/Wilmington area and beyond. In our experience this is more than adequate. The risk associated with this element has been mitigated by cost estimate assumptions.	Negligible	Unlikely	0	
SC-2	Dredge & Disposal (West Bulkhead Widening)			Negligible	Unlikely	0	
SC-3	Dredge & Disposal (North Basin Extension)			Negligible	Unlikely	0	
SC-12	Remaining Construction Items			Negligible	Unlikely	N/A	
SC-13	Planning, Engineering, & Design			Negligible	Unlikely	0	
SC-14	Construction Management			Negligible	Unlikely	0	
Technical Design & Quantities						Maximum Project Growth	20%
T-1	Mobilization & Demobilization			Negligible	Unlikely	0	
T-2	Dredge & Disposal (West Bulkhead Widening)	Concern regarding dredge material quantity fluctuations.	The Civil Section calculated the quantities using Power InRoads v8i and the existing surface used was a 2010 USACE survey. The survey did not include roughly 2000 sq. ft. (1% of the total area) within the footprint of the proposed extension. It is likely that the quantities in the selected plan will change during PED using new survey data, however, it is anticipated this impact will be marginal due to the lack of accretion experienced in this area.	Marginal	Likely	2	
T-3	Dredge & Disposal (North Basin Extension)	Concern regarding dredge material quantity fluctuations.	The Civil Section calculated the quantities using Power InRoads v8i and the existing surface used was a 2010 USACE survey. The survey did not include roughly 2000 sq. ft. (1% of the total area) within the footprint of the proposed extension. It is likely that the quantities in the selected plan will change during PED using new survey data, however, it is anticipated this impact will be marginal due to the lack of accretion experienced in this area.	Marginal	Likely	2	
T-12	Remaining Construction Items			Negligible	Unlikely	N/A	
T-13	Planning, Engineering, & Design			Negligible	Unlikely	0	
T-14	Construction Management			Negligible	Unlikely	0	

E-14

Cost Estimate Assumptions				Maximum Project Growth		25%
EST-1	Mobilization & Demobilization	Concern regarding assumed mob distance and resultant cost.	Cost estimate assumes approximately 400-mile mob distance which would allow for contractors from the Philadelphia/Wilmington area and beyond. In our experience this is more than adequate. It is unlikely that a contractor will mob from farther than 400 miles away, but it would have a moderate impact to the mob/demob cost.	Moderate	Unlikely	1
EST-2	Dredge & Disposal (West Bulkhead Widening)	Cost estimate utilized most current USACE CEDEP with updated labor rates.	Cost estimate utilized USACE CEDEP with updated labor rates. Bucket and scow sizes have been adjusted to reflect the likely equipment to be used in this shallow area with these anticipated low volumes however, there is a possibility that work will be done with different equipment/means and methods resulting in a different cost. This scenario is possible and could have a moderate impact.	Moderate	Possible	2
EST-3	Dredge & Disposal (North Basin Extension)	Cost estimate utilized most current USACE CEDEP with updated labor rates.	Cost estimate utilized USACE CEDEP with updated labor rates. Bucket and scow sizes have been adjusted to reflect the likely equipment to be used in this shallow area with these anticipated low volumes however, there is a possibility that work will be done with different equipment/means and methods resulting in a different cost. This scenario is possible and could have a moderate impact.	Moderate	Possible	2
EST-12	Remaining Construction Items			Negligible	Unlikely	N/A
E-15 EST-13	Planning, Engineering, & Design	Concern regarding PED estimates that will be utilized in TPCS.	PED costs will be vetted with PDT members and Branch & Section chiefs to ensure the estimates in the TPCS are accurate. It is unlikely these estimates would vary drastically but there could be a moderate impact once we get to PED and additional requirements are put on the design.	Moderate	Unlikely	1
EST-14	Construction Management	Concern regarding S&A estimates that will be utilized in TPCS.	S&A costs will be vetted with PDT members and Branch & Section chiefs to ensure the estimates in the TPCS are accurate. It is unlikely these estimates would vary drastically but there would be a moderate impact once we get to construction and additional requirements are put on the contract.	Moderate	Unlikely	1
External Project Risks				Maximum Project Growth		20%
EX-1	Mobilization & Demobilization	Concern regarding potential severe weather/tides delaying project. Another Sandy-type storm may affect dredge equipment availability.	Risks to this feature of work due to storms and weather delays could possibly impact costs to the projects. The impact could be significant if the project is delayed.	Marginal	Possible	1
EX-2	Dredge & Disposal (West Bulkhead Widening)	Concern regarding potential severe weather/tides delaying project. Another Sandy-type storm may affect dredge equipment availability. Ice dams in the channel could affect the ability of dredge and tugs/scows to travel safely up and down the canal.	Risks to this feature of work due to storms and weather delays could possibly impact costs to the projects. Ice dams in the channel are also a possibility which would affect the ability of the dredge to maneuver where necessary. The impact could be significant if the project is delayed.	Marginal	Possible	1
EX-3	Dredge & Disposal (North Basin Extension)	Concern regarding potential severe weather/tides delaying project. Another Sandy-type storm may affect dredge equipment availability. Ice dams in the channel could affect the ability of dredge and tugs/scows to travel safely up and down the canal.	Risks to this feature of work due to storms and weather delays could possibly impact costs to the projects. Ice dams in the channel are also a possibility which would affect the ability of the dredge to maneuver where necessary. The impact could be significant if the project is delayed.	Marginal	Possible	1
EX-12	Remaining Construction Items			Negligible	Unlikely	N/A

EX-13	Planning, Engineering, & Design			Negligible	Unlikely	0
EX-14	Construction Management			Negligible	Unlikely	0

Scope of Work includes dredging the North Basin Extension (1200 ft) to a depth of 11 feet plus 1-foot overdepth and the West Bulkhead Widening (50 ft) to a depth of 15 feet plus 1-foot overdepth. Disposal of all dredge material will occur at a previously used near-shore bar nourishment area located approximately 2.5 miles southwest of the project location off Matunuck Beach.

Mob/demob cost and unit prices for the North Basin Extension and West Bulkhead Widening obtained from CEDEP sheets. All markups applied in CEDEP sheets.

E-17

Estimated by Jeffrey Gaeta  
Designed by Lauren Jacobs  
Prepared by Jeffrey Gaeta  
Preparation Date 3/21/2018 Revision Date 5/18/2018  
Effective Date of Pricing 10/1/2017  
Estimated Construction Time 60 Days  
This report is not copyrighted, but the information contained herein is For Official Use Only.

Designed by  
Lauren Jacobs  
  
Estimated by  
Jeffrey Gaeta  
  
Prepared by  
Jeffrey Gaeta

Design Document PJH\_Section107-Quantities.pdf  
Document Date 6/15/2016  
  
District New England District  
Contact Jeffrey Gaeta 978-318-8438  
  
Budget Year 2018  
UOM System Original

**Direct Costs**  
LaborCost  
EQCost  
MatlCost  
SubBidCost

**Timeline/Currency**  
Preparation Date 3/21/2018 Revision Date 5/18/2018  
Escalation Date 10/1/2017  
Eff. Pricing Date 10/1/2017  
Estimated Duration 60 Day(s)

Currency US dollars  
Exchange Rate 1.000000

Description		Quantity	UOM	DirectCost	ContractCost	Escalation	Contingency	ProjectCost
Project Cost Summary Report				1,022,880	1,022,880	0	0	1,022,880
				43.16	43.16			43.16
1	PtJudithSec107 - West Bulkhead Widening & North Basin Extension	23,700.00	CY	1,022,880	1,022,880	0	0	1,022,880
1.1	Mobilization/Demobilization	1.00	LS	368,274	368,274	0	0	368,274
				26.78	26.78			26.78
1.2	West Bulkhead Channel to 15-foot Deep	7,100.00	CY	190,138	190,138	0	0	190,138
				27.98	27.98			27.98
1.3	North Basin Extension to 11-foot Deep	16,600.00	CY	464,468	464,468	0	0	464,468

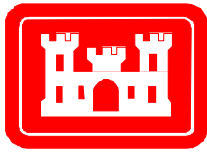


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**APPENDIX F**

**REAL ESTATE PLANNING REPORT**

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US Army Corps of Engineers  
New England District

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## Section 107 Navigation Improvement Study Real Estate Planning Report

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# Point Judith Harbor of Refuge and Point Judith Pond Narragansett, Rhode Island

Prepared By:

R. Jeffrey Teller, MBA, USACE

State of Delaware Certified General Real Property Appraiser: X1-0000099

State of Maryland Certified General Appraiser #12985

Lead Appraiser, NAE Appraisal Branch/Planning & Control Branch

696 Virginia Road

Concord, MA 01742

October 5, 2017

**Real Estate Planning Report  
U.S. ARMY CORPS OF ENGINEERS  
New England District**

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**Point Judith Harbor of Refuge and Point Judith Pond  
Narragansett, Rhode Island  
Section 107 Navigation Improvement Project  
Real Estate Planning Report**

1. **PURPOSE:** The real estate planning report will be utilized to estimate both the real estate acquisition costs and administrative costs associated with the detailed project report. The detailed project report is advocating Section 107 construction alternatives for navigation improvements to enhance port operations at Point Judith, located in Rhode Island. An initial appraisal report was completed in 1985 which concluded a detailed study of the navigation conditions in Point Judith should be completed, however the project was not implemented due to funding considerations.
2. **PROJECT AUTHORITY:** The detailed project report (DPR), was prepared under the authority and provisions of section 107 of the 1960 River and Harbor Act which provides USACE authority to construction navigation improvements through partnership with non-federal sponsors. The 2018 detailed project report (DPR) evaluates the findings of the 1985 report, and updates the completed detailed study of the navigation conditions, while further evaluating USACE recommendations for navigation improvements, at this project location. The study evaluates the justification for USACE to participate in the improvement and expansion of navigation conditions in Point Judith Pond and Port Galilee in regards to modifying the existing general navigation project (FNP) for commercial fishing vessels. The navigation modifications are intended to accommodate safe and efficient vessel movement to the western (existing) and northern sides (new federal channel) of the commercial bulkhead located at the Port of Galilee. Three alternatives were developed and evaluated to provide new or increased channel access into areas where fleet movement can be accommodated and potential growth considered.

The preferred plan (National Economic Development, NED) is a combination of two alternatives (Plans A & B) which involves widening by 50 feet the existing 150 foot wide by 15-foot deep (MLW) west bulkhead channel for approximately 700 feet (Plan A) and extending into the north basin by dredging a new 150 foot by 11 foot deep (MLW) for approximately 1,200 feet (Plan B). The navigation improvement would dispose of the clean dredged material at a previously used near shore bar nourishment area. The dredging would be by mechanical dredge and scow that will be able to operate in shallow draft areas in the channel, it has been reported that all construction activities will be waterside with no requirements for access, staging, storage or mobilization.

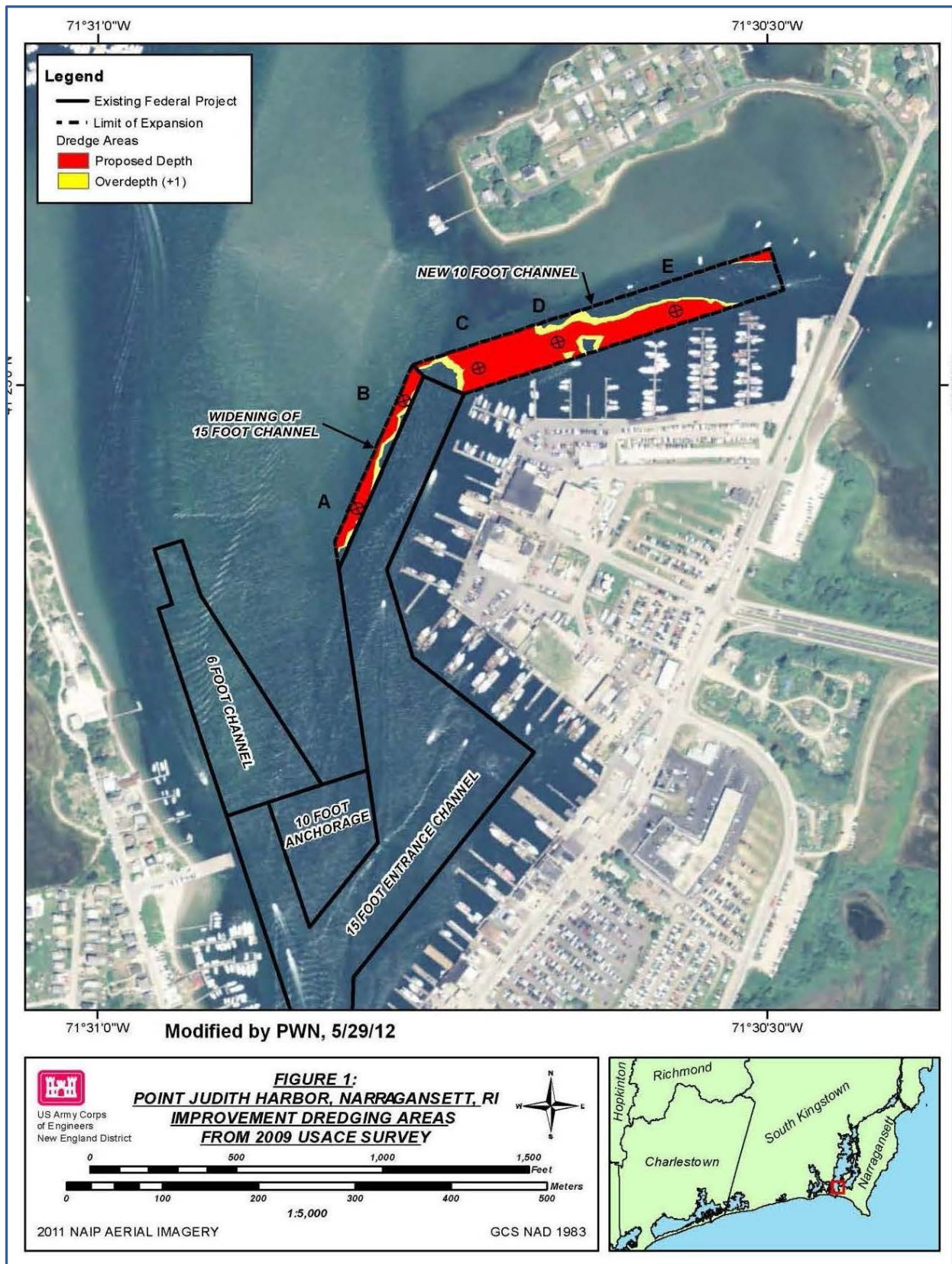
3. **EXISTING FEDERAL PROJECTS:** The Point Judith Harbor area includes a federally constructed 770-acre offshore Harbor Refuge protected by three breakwaters and an anchorage and berthing area in lower Point Judith Pond.

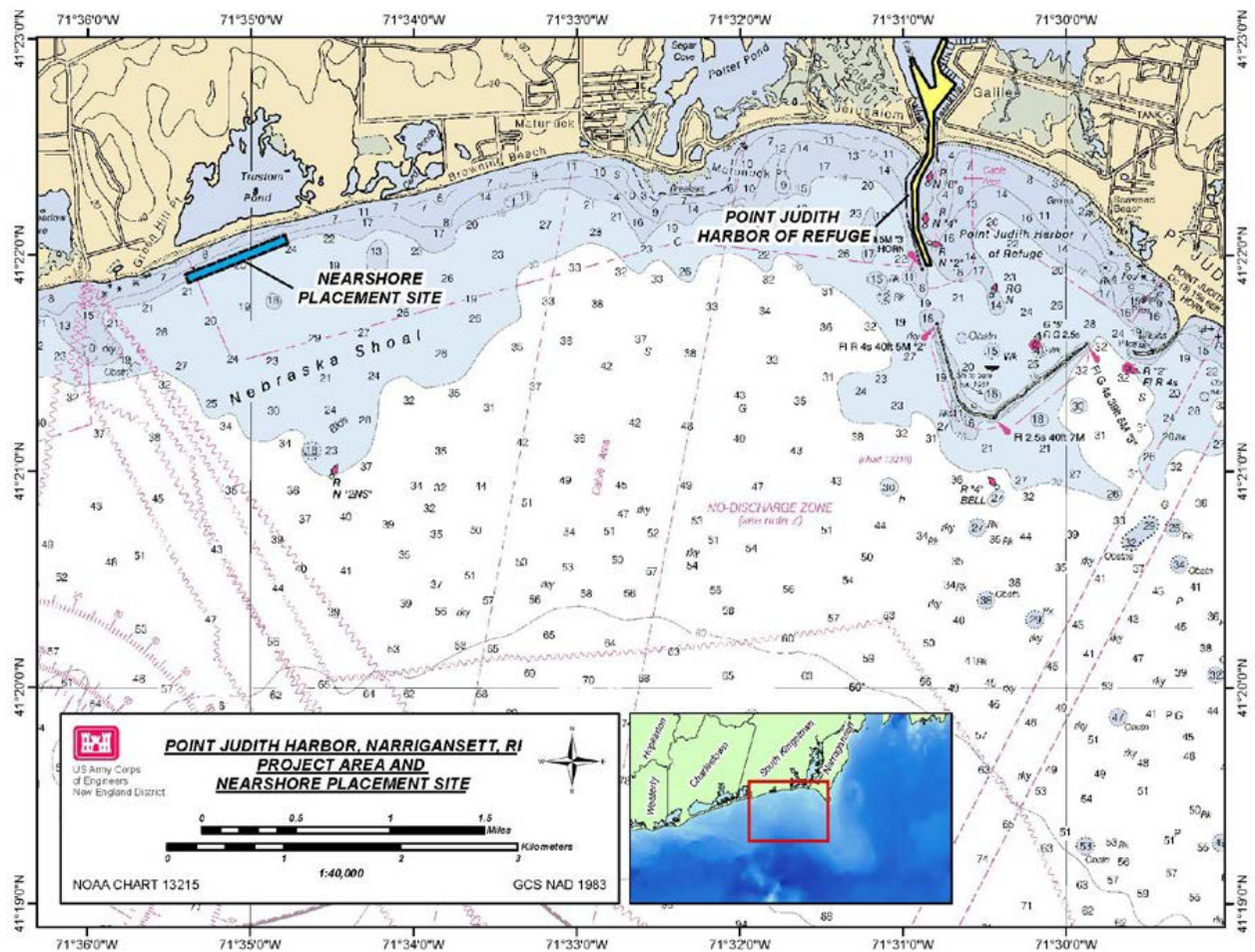
4. **EXISTING FEDERALLY OWNED LANDS:** There are no federal lands associated with project requirements.
5. **LANDS OWNED BY THE NON-FEDERAL SPONSOR:** All projects areas required for construction, operation, maintenance, repair, replacement, & rehabilitation (OMRR&R) are reported to be subtidal within the waters of the United States. The Rhode Island Coastal Resources Management Council (CRMC) is identified as the non-federal project partner.
6. **NAVIGATIONAL SERVITUDE:** Project construction requirements are based on Section 107 authority and there is a linkage between the preferred plan and navigation purpose. As result, navigation servitude applies in accordance with project authorities and the proposed construction alternatives.
7. **INDUCED FLOODING:** Induced flooding is not anticipated to result from implementation of the proposed project.
8. **REAL ESTATE REQUIREMENTS:** Land, Easements, Rights-of-Way, Relocations, Borrow Material, and Dredged or Excavated Material Disposal Requirements. The Project Delivery Team (PDT) confirms that the proposed navigation improvements and dredged material disposal sites do not require the acquisition of any real property interests based on application of Navigation Servitude (Federal riparian rights below MHWL). Plan details depict the limits of construction (and operation) within the existing and proposed federal navigation channel. Therefore, no temporary work area, road/access easements, or permanent easements are required for construction or maintenance. If limited temporary access or staging areas are determined to be needed in the future, this will be a contractor requirement or USACE will work with non-Federal Sponsor to accomplish.
9. **BASELINE COST ESTIMATE FOR REAL ESTATE:** Real estate costs are typically based on the feasibility plan alternatives and project authorities which will specify USACE LERRD requirements in accordance with construction requirements and (OMRR&R). As referenced above, there are no lands, easements, rights-of way are required for improvement project implementation. The area to be dredged and the open water disposal areas required for construction are below the ordinary high watermark of the navigable watercourse and will entail work by a waterborne dredging plant.
10. **PUBLIC LAW91-646 RELOCATIONS:** The displacement of residences or businesses is not anticipated based on project requirements.
11. **UTILITY AND FACILITY RELOCATIONS:** There are no facility relocations and/or utility displacement anticipated at this time. Confirmation will be conducted during the



project's Design and Implementation phase.

12. **MINERAL ACTIVITY:** There are no present or anticipated mining and/or drilling activity in the vicinity of the project that may affect project purposes and the operation thereof.
13. **TIMBER RIGHTS:** There are no harvesting activities to occur within the proposed project footprint.
14. **ASSESSMENT OF NON-FEDERAL SPONSOR ACQUISITION CAPABILITY:** The non-federal sponsor has been identified as the Rhode Island Coastal Resources Management Council (CRMC). Based on project construction alternatives, there are no real property requirements, all construction will reportedly take place waterside.
15. **ZONING:** There are no real property acquisition requirements.
16. **ACQUISITION SCHEDULE:** Project schedules have not been defined as of the date of this report.
17. **ENVIRONMENTAL:** The NAE Planning division is currently completing a review and evaluation of the environmental effects of the project, to be presented in the Environmental Assessment Report (NEPA). If it is determined that modification of the existing federal navigation project and establishment of new federal channel is not a major federal action significantly affecting the quality of environment, a finding of no significant impact will be issued (FONSI determination).
18. **ATTITUDES OF THE LANDOWNERS:** The study has involved personnel of other federal offices, state agencies, and local authorities including the Rhode Island Department of Environmental Management. Overall, stakeholders have indicated support for dredging improvements at the referenced project location. The proposed project will be offered to the public through the 30-day public notice period to solicit comments and concerns.
19. **NOTIFICATION TO NON-FEDERAL SPONSOR:** If the project is approved, a project partnership agreement will be required to be executed by the non-federal sponsor, identified as Rhode Island Coastal Resources Management Council (RI CRMC).





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# **APPENDIX G**

## **SEDIMENT SAMPLING & TESTING**

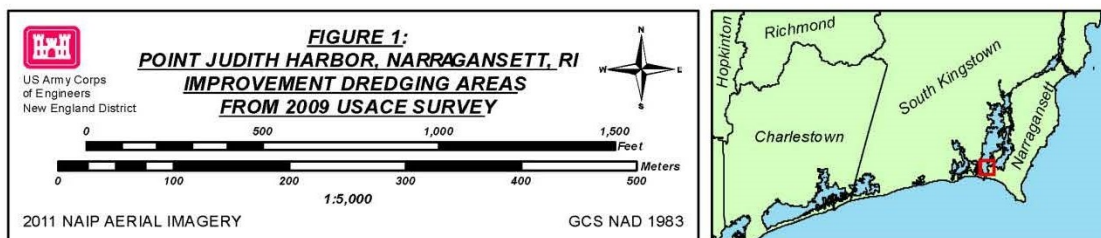
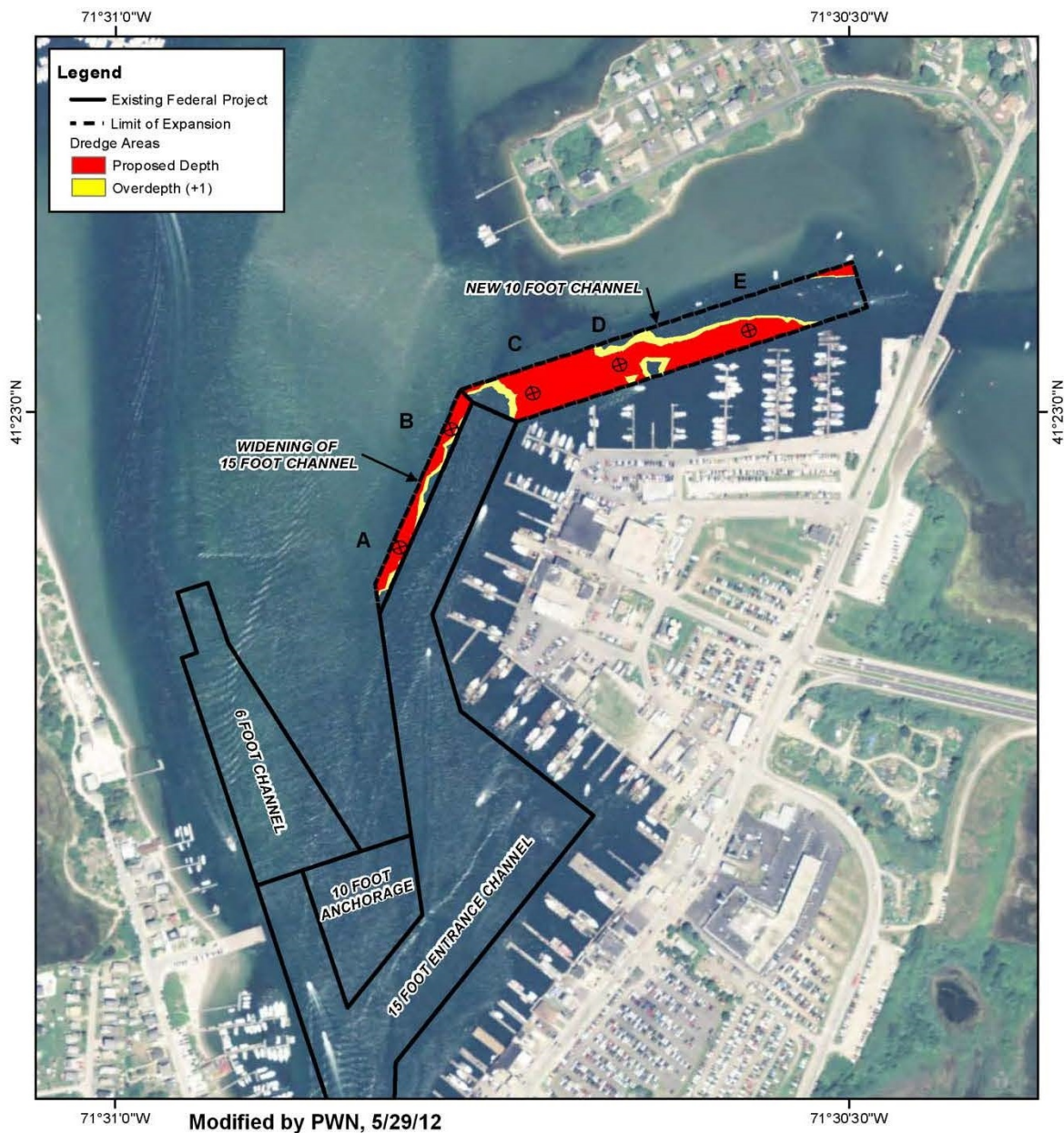
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**Part 1**

**Sample Core Results**



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Project: Point Judith Pond Federal Channel Extension - Galilee Project

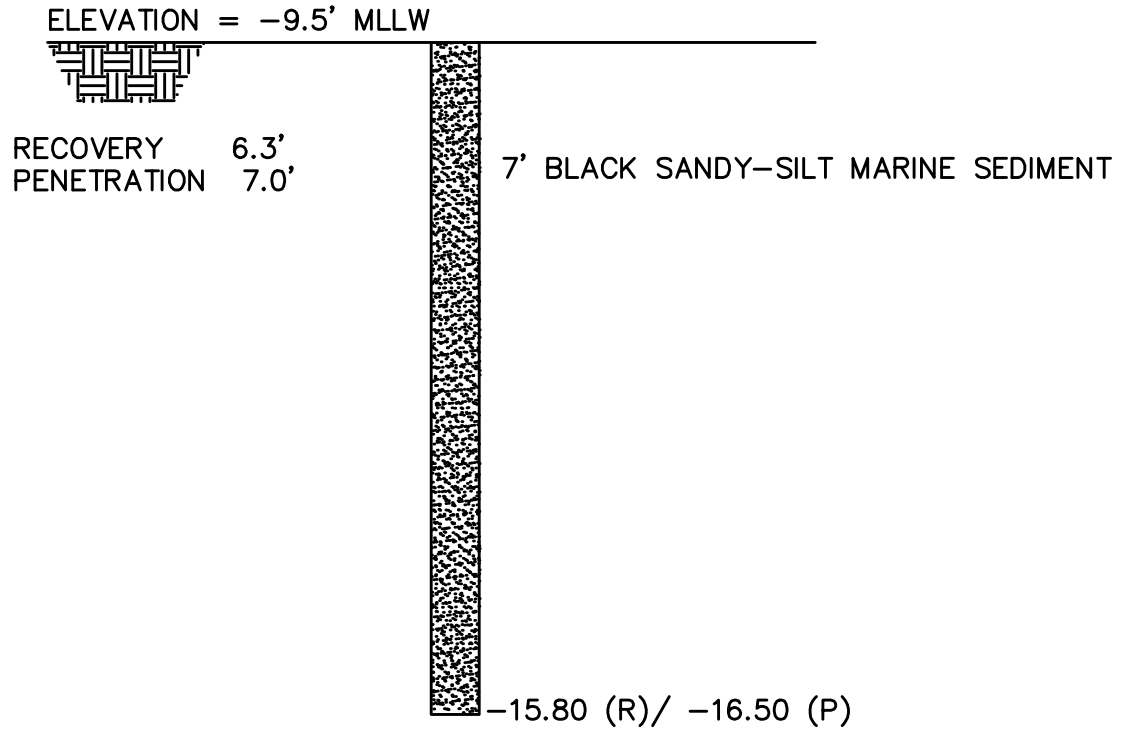
Percent Finer						
Sieve Name	Sieve Size	Sample ID A 26884-002	Sample ID B 26884-004	Sample ID C 26884-006	Sample ID D 26884-008	Sample ID E 26884-010
0.75 in	19	100	100	100		
0.5 in	12.5	100	100	99		
0.375 in	9.5	100	100	99	100	
#4	4.75	99	99	99	100	100
#10	2	98	99	99	100	100
#20	0.85	96	99	98	100	100
#40	0.42	85	97	97	99	99
#60	0.25	47	80	90	97	96
#100	0.15	13	24	27	77	64
#200	0.075	2.6	5.1	9.6	20	16
Grain Size						
% Cobble	--	--	--	--	--	--
% Gravel	0.9	1	1	0.2	0	
% Sand	96.8	93.9	89.4	79.8	84.4	
% Silt & Clay	2.3	5.1	9.6	20	15.6	
Description	Moist, olive sand	Moist, olive sand with silt. Sample contains shell fragments	Moist, olive sand with silt.	Moist, olive silty sand. Sample contains shell fragments	Moist, olive silty sand.	
AASHTO Clasification	Silty Gravel and Sand A-2-4-(0)	Silty Soils A-4-(0)	Silty Soils A-4-(0)	Silty Gravel and Sand A-2-4-(0)	Silty Gravel and Sand A-2-4-(0)	





SAMPLING LOCATION  
GAL-A: LAT: 41° 22.9520" N LONG: 71° 30.8044" W

SAMPLING LOCATION GAL-A



MATERIAL DESCRIPTIONS BASED ON  
EXAMINATION OF THE SAMPLES  
ON SITE AT TIME OF COLLECTION ONLY

SAMPLING LOCATION  
GAL-B: LAT: 41° 23.0084" N LONG: 71° 30.7719" W

SAMPLING LOCATION GAL-B

ELEVATION = -8.7' MLLW



RECOVERY 6.8'  
PENETRATION 8.0'

8' BLACK SANDY-SILT MARINE SEDIMENT

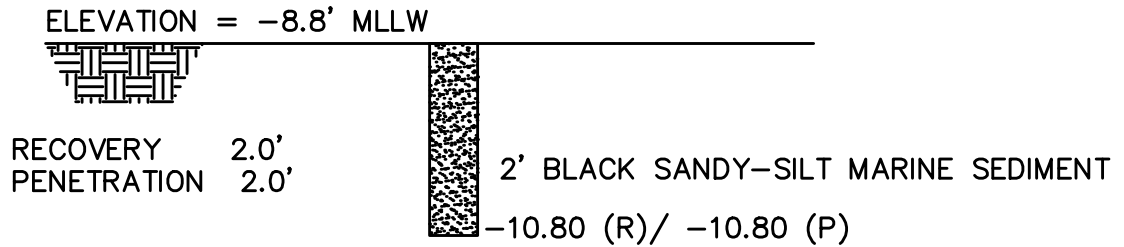
-15.50 (R)/ -16.70 (P)

MATERIAL DESCRIPTIONS BASED ON  
EXAMINATION OF THE SAMPLES  
ON SITE AT TIME OF COLLECTION ONLY



SAMPLING LOCATION  
GAL-C: LAT: 41° 23.0244" N LONG: 71° 30.7018" W

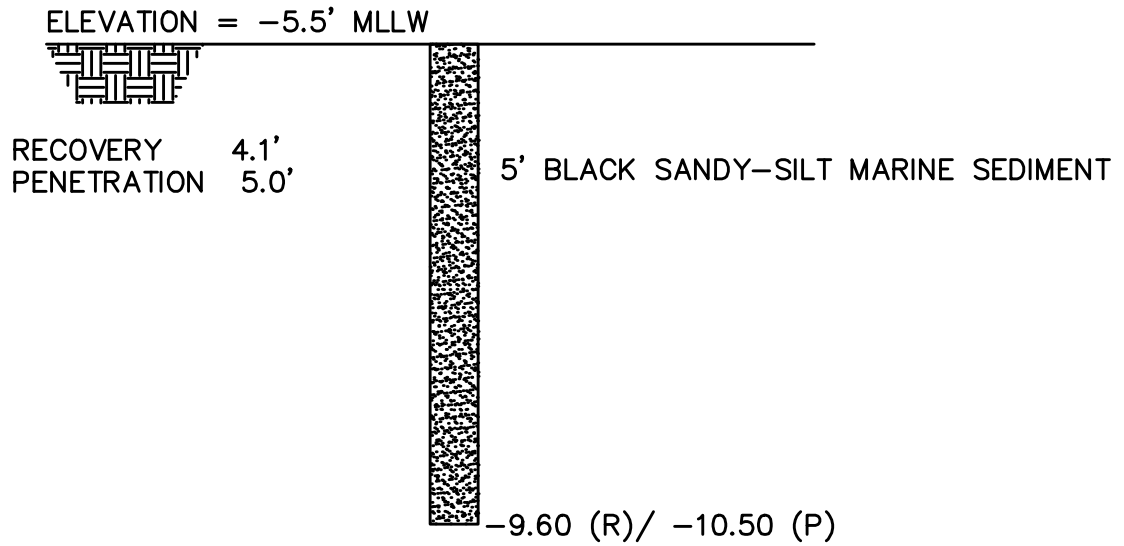
SAMPLING LOCATION GAL-C



MATERIAL DESCRIPTIONS BASED ON  
EXAMINATION OF THE SAMPLES  
ON SITE AT TIME OF COLLECTION ONLY

SAMPLING LOCATION  
GAL-D: LAT: 41° 23.0511" N LONG: 71° 30.6391" W

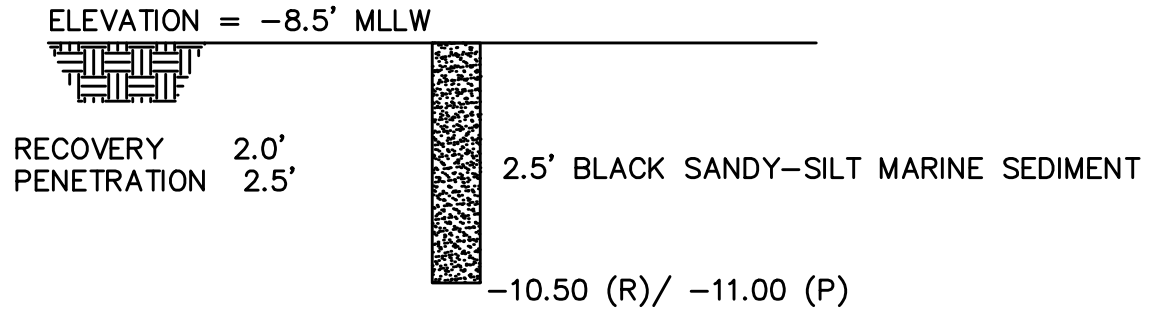
SAMPLING LOCATION GAL-D



MATERIAL DESCRIPTIONS BASED ON  
EXAMINATION OF THE SAMPLES  
ON SITE AT TIME OF COLLECTION ONLY

SAMPLING LOCATION  
GAL-E: LAT: 41° 23.0434" N LONG: 71° 30.5695" W

SAMPLING LOCATION GAL-E



MATERIAL DESCRIPTIONS BASED ON  
EXAMINATION OF THE SAMPLES  
ON SITE AT TIME OF COLLECTION ONLY

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**Part 2**

**Physical Test Results**

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**TOXICOLOGICAL EVALUATION  
OF A PROPOSED DREDGE SEDIMENT:  
Grain Size Analysis**

**Point Judith Pond  
Federal Project Channel Extension, Narragansett, Rhode Island**

**Rhode Island Fast Ferry  
Narragansett Bay, North Kingstown, Rhode Island  
New England District Corps of Engineers Application Number NAE-2015-861**

**Electric Boat - Quonset Point Facility  
Narragansett Bay, North Kingstown, Rhode Island  
New England District Corps of Engineers Application Number NAE-2015-1853**

**Prepared For:**

**CLE Engineering, Incorporated  
15 Creek Road  
Marion, Massachusetts 02738**

**Prepared By:**

**EnviroSystems, Incorporated  
One Lafayette Road  
Hampton, New Hampshire 03842**

**Reference 26884  
January 2016**

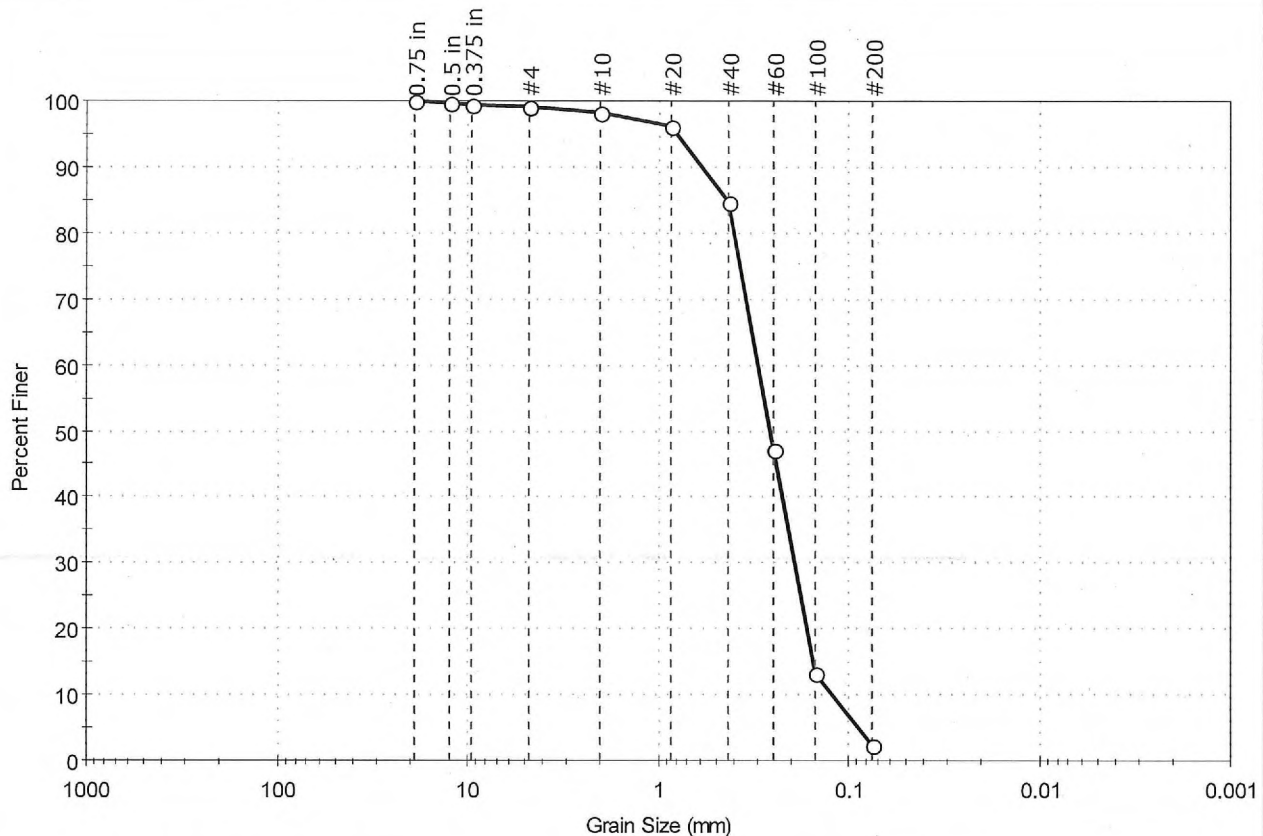


## Sample Key

ESI Code	Field ID	Project	Sampled	Received
26884-002	12-14-15 GAL-A	Point Judith Pond Federal Project Channel Extension, Narragansett, RI	12/14/15	12/15/15 1130
26884-004	12-14-15 GAL-B	Point Judith Pond Federal Project Channel Extension, Narragansett, RI	12/14/15	12/15/15 1130
26884-006	12-14-15 GAL-C	Point Judith Pond Federal Project Channel Extension, Narragansett, RI	12/14/15	12/15/15 1130
26884-008	12-14-15 GAL-D	Point Judith Pond Federal Project Channel Extension, Narragansett, RI	12/14/15	12/15/15 1130
26884-010	12-14-15 GAL-E	Point Judith Pond Federal Project Channel Extension, Narragansett, RI	12/14/15	12/15/15 1130
26884-012	FF-A CLE	Fast Ferry, Narragansett Bay, North Kingston, RI	12/15/15	12/15/15 1555
26884-014	FF-B CLE	Fast Ferry, Narragansett Bay, North Kingston, RI	12/15/15	12/15/15 1555
26884-016	FF-C CLE	Fast Ferry, Narragansett Bay, North Kingston, RI	12/15/15	12/15/15 1555
26884-018	FF-D CLE	Fast Ferry, Narragansett Bay, North Kingston, RI	12/15/15	12/15/15 1555
26884-020	FF-E CLE	Fast Ferry, Narragansett Bay, North Kingston, RI	12/15/15	12/15/15 1555
26884-021	QDC-A CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-023	QDC-B CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-025	QDC-C CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-027	QDC-D CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-029	QDC-E CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-031	QDC-F CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-033	QDC-G CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-035	QDC-H CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-037	QDC-I CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340
26884-039	QDC-J CLE	Electric Boat - Quonset Point Facility, North Kingstown, RI	12/16/15	12/17/15 1340

Client:	EnviroSystems, Inc.	Project No:	GTX-304174
Project:	26884	Sample Type:	bag
Location:	---	Tested By:	jbr
Boring ID:	---	Test Date:	01/06/16
Sample ID:	26884-002	Checked By:	emm
Depth :	---	Test Id:	359218
Test Comment:	---		
Visual Description:	Moist, olive sand		
Sample Comment:	---		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.9	96.8	2.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	100		
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	96		
#40	0.42	85		
#60	0.25	47		
#100	0.15	13		
#200	0.075	2.3		

### Coefficients

D <sub>85</sub> = 0.4311 mm	D <sub>30</sub> = 0.1931 mm
D <sub>60</sub> = 0.2996 mm	D <sub>15</sub> = 0.1541 mm
D <sub>50</sub> = 0.2601 mm	D <sub>10</sub> = 0.1224 mm
C <sub>u</sub> = 2.448	C <sub>c</sub> = 1.017

### Classification

ASTM Poorly graded sand (SP)

AASHTO Fine Sand (A-3 (1))

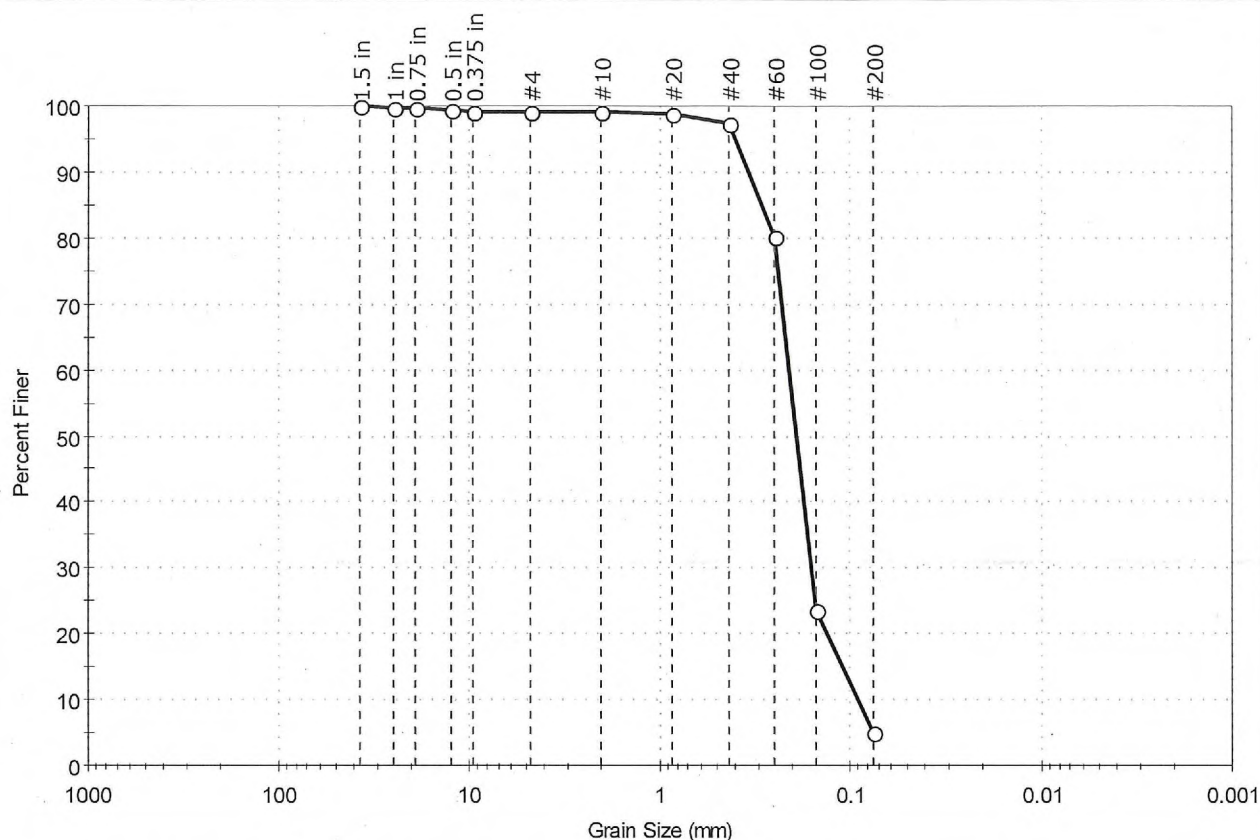
### Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	EnviroSystems, Inc.	Project No:	GTX-304174
Project:	26884	Tested By:	jbr
Location:	---	Checked By:	emm
Boring ID:	---	Sample Type:	bag
Sample ID:	26884-004	Test Date:	01/05/16
Depth:	---	Test Id:	359219
Test Comment:	---		
Visual Description:	Moist, olive sand with silt		
Sample Comment:	Sample contains shell fragments		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	1.0	93.9	5.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	100		
0.75 in	19.00	100		
0.5 in	12.50	99		
0.375 in	9.50	99		
#4	4.75	99		
#10	2.00	99		
#20	0.85	99		
#40	0.42	97		
#60	0.25	80		
#100	0.15	24		
#200	0.075	5.1		

### Coefficients

D <sub>85</sub> = 0.2888 mm	D <sub>30</sub> = 0.1588 mm
D <sub>60</sub> = 0.2081 mm	D <sub>15</sub> = 0.1085 mm
D <sub>50</sub> = 0.1901 mm	D <sub>10</sub> = 0.0900 mm
C <sub>u</sub> = 2.312	C <sub>c</sub> = 1.346

### Classification

ASTM N/A

AASHTO Fine Sand (A-3 (1))

### Sample/Test Description

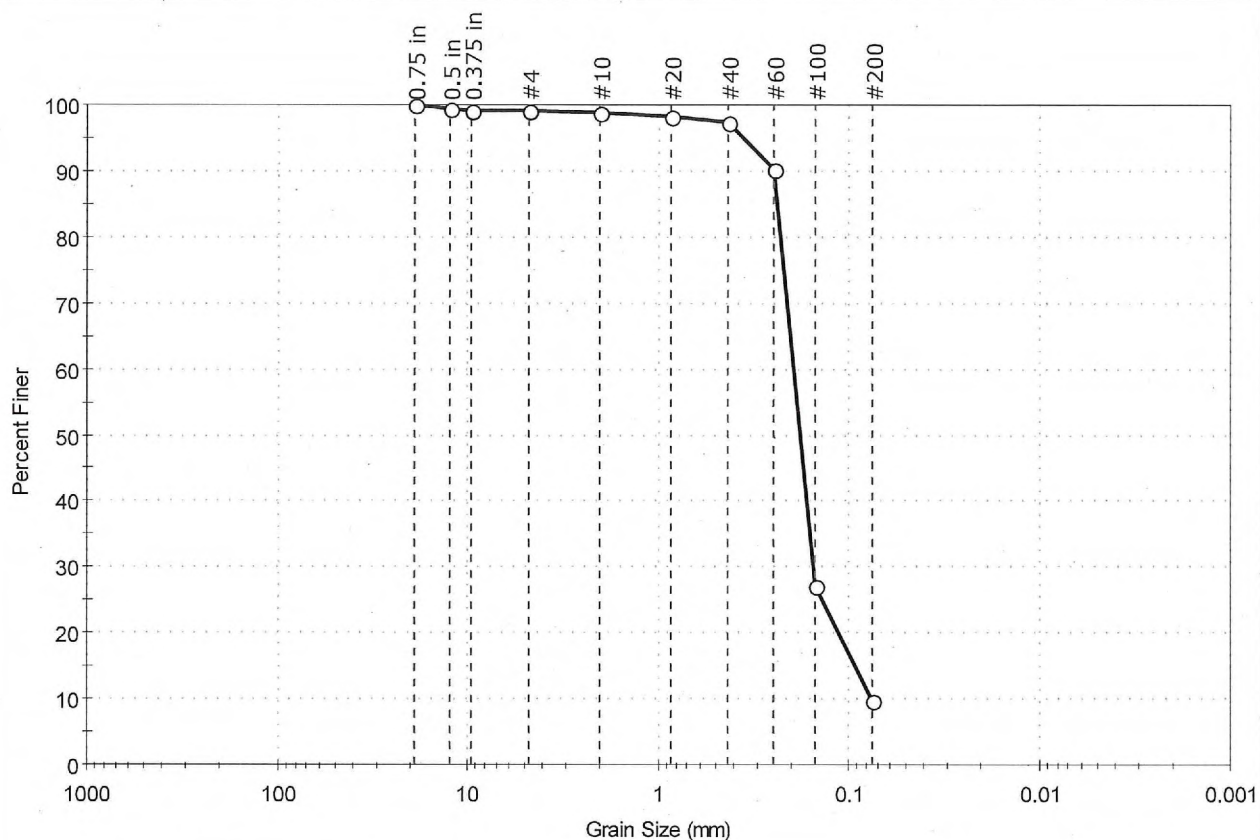
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Client:	EnviroSystems, Inc.	Project No:	GTX-304174
Project:	26884	Tested By:	jbr
Location:	---	Checked By:	emm
Boring ID:	---	Sample Type:	bag
Sample ID:	26884-006	Test Date:	01/06/16
Depth :	---	Test Id:	359220
Test Comment:	---		
Visual Description:	Moist, olive sand with silt		
Sample Comment:	---		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	1.0	89.4	9.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	99		
0.375 in	9.50	99		
#4	4.75	99		
#10	2.00	99		
#20	0.85	98		
#40	0.42	97		
#60	0.25	90		
#100	0.15	27		
#200	0.075	9.6		

### Coefficients

D <sub>85</sub> = 0.2398 mm	D <sub>30</sub> = 0.1537 mm
D <sub>60</sub> = 0.1959 mm	D <sub>15</sub> = 0.0930 mm
D <sub>50</sub> = 0.1806 mm	D <sub>10</sub> = 0.0762 mm
C <sub>u</sub> = 2.571	C <sub>c</sub> = 1.583

### Classification

ASTM N/A

AASHTO Fine Sand (A-3 (1))

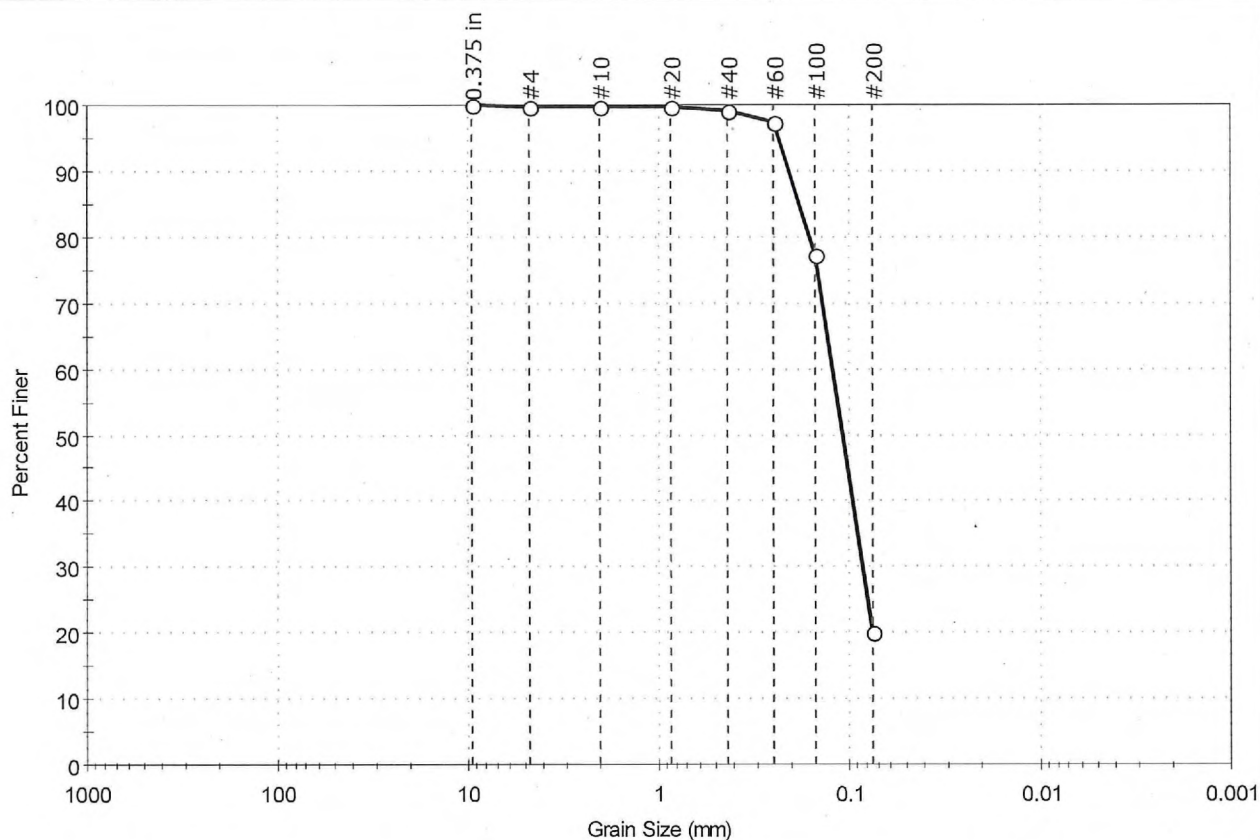
### Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	EnviroSystems, Inc.	Project No:	GTX-304174
Project:	26884	Sample Type:	bag
Location:	---	Tested By:	jbr
Boring ID:	---	Test Date:	01/06/16
Sample ID:	26884-008	Checked By:	emm
Depth:	---	Test Id:	359221
Test Comment:	---		
Visual Description:	Moist, olive silty sand		
Sample Comment:	Sample contains shell fragments		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.2	79.8	20.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	97		
#100	0.15	77		
#200	0.075	20		

### Coefficients

D <sub>85</sub> = 0.1821 mm	D <sub>30</sub> = 0.0847 mm
D <sub>60</sub> = 0.1216 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.1078 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

### Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

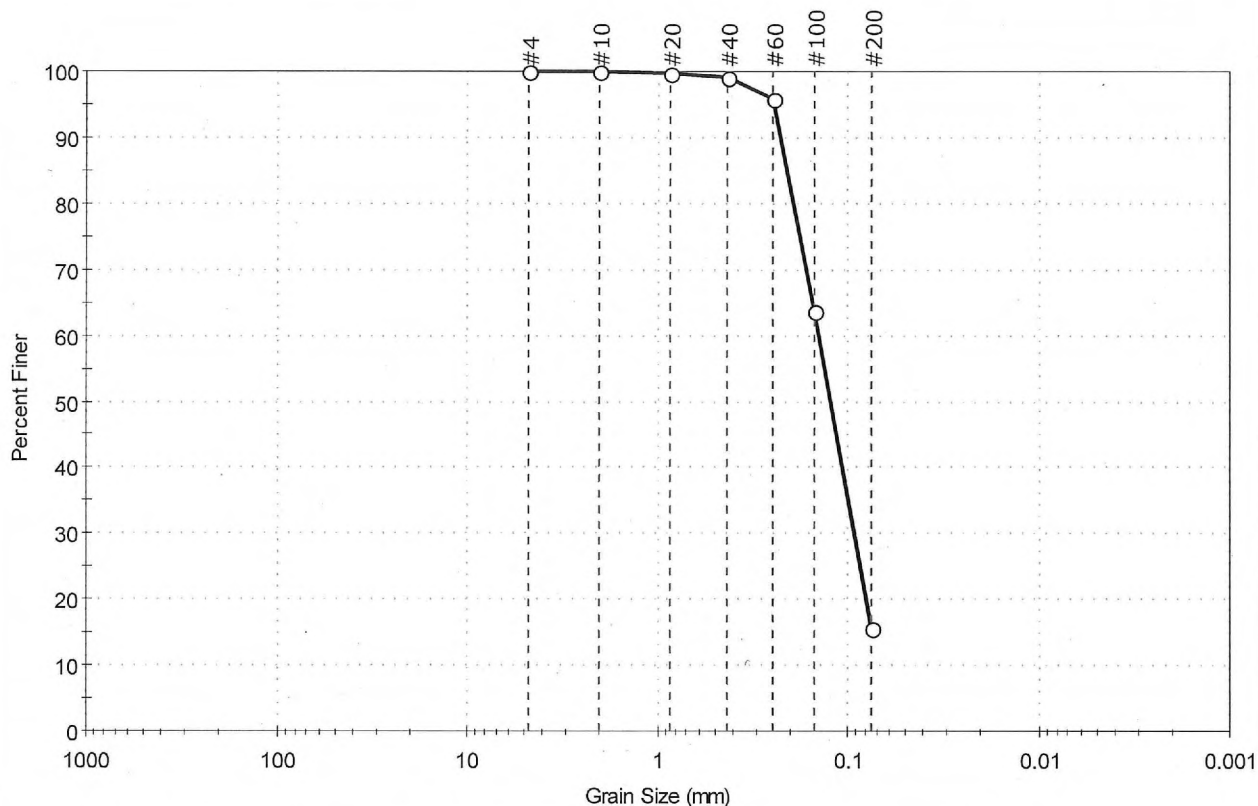
### Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	EnviroSystems, Inc.	Project No:	GTX-304174
Project:	26884	Tested By:	jbr
Location:	---	Checked By:	emm
Boring ID:	---	Sample Type:	bag
Sample ID:	26884-010	Test Date:	01/06/16
Depth :	---	Test Id:	359222
Test Comment:	---		
Visual Description:	Moist, olive silty sand		
Sample Comment:	---		

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	84.4	15.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	96		
#100	0.15	64		
#200	0.075	16		

### Coefficients

D <sub>85</sub> = 0.2102 mm	D <sub>30</sub> = 0.0923 mm
D <sub>60</sub> = 0.1421 mm	D <sub>15</sub> = N/A
D <sub>50</sub> = 0.1231 mm	D <sub>10</sub> = N/A
C <sub>u</sub> = N/A	C <sub>c</sub> = N/A

### Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

### Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



## CHAIN OF CUSTODY DOCUMENTATION

Client: <u>EnviroSystems, Inc.</u>		Contact: <u>Renée McIsaac</u>		Project Name: <u>26884</u>		Page <u>1</u> of <u>2</u>	
Report to:		Address:		Project Number:			
Invoice to:		Address:		Project Manager:			
Voice: <u>603-926-3345 ext 212</u>		Fax:		email: <u>r.mcisacc@envirosystems.com</u>		P.O. No:      Quote No:	

Protocol: Lab Number (assigned by lab)	RCRA Your Field ID: (must agree with container)	SDWA	NPDES		USCOE		Other: <u>CENAE</u>		Container Type (P/GM)	Field Preser- vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested/ Special Instructions:
			Date Sampled	Time Sampled	Grab or com- posit (G/C)	Container Size (ml.)							
	26884-002		-	-	-	-	-	1 quart ziplock bag	-	S	NA	Grain Size NE RIM Criteria (no hydrometer)	
	26884-004												
	26884-006												
	26884-008												
	26884-010												
	26884-012												
	26884-014												
	26884-016												
	26884-018												
	26884-020												
	26884-021												
	26884-023												

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received at Lab By:	Date:	Time:

Comments: 10 Day TAT



## SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 1

STUDY NO: 26884  
 SDG No:  
 Project: Point Judith Pond Federal Project Channel Extension, Narragansett, RI  
 Delivered via: ESI  
 Date and Time Received: 12/15/15 1130 Date and Time Logged into Lab: 12/15/15 1300  
 Received By: RS Logged into Lab by: BP  
 Air bill / Way bill: No Air bill included in folder if received? NA  
 Cooler on ice/packs: YES Custody Seals present? NA  
 Cooler Blank Temp (C) at arrival: 2.4 Custody Seals intact? NA  
 Number of COC Pages: 1  
 COC Serial Number(s):  
 COC Complete: YES Does the info on the COC match the samples? Yes  
     Sampled Date: Yes Were samples received within holding time? Yes  
     Field ID complete: Yes Were all samples properly labeled? Yes  
     Sampled Time: Yes Were proper sample containers used? Yes  
     Analysis request: Yes Were samples received intact? (none broken or leaking) Yes  
 COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes  
 Were all samples received? Yes Were VOC vials free of headspace? NA  
 Client notification/authorization: Not required pH Test strip ID number: NA

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
12-14-15 GAL-A	26884-001	S	Hold;	3x1 Gal buck	4C	Yes
12-14-15 GAL-A	26884-002	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-B	26884-003	S	Hold;	2x1 Gal buck	4C	Yes
12-14-15 GAL-B	26884-004	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-C	26884-005	S	Hold;	2x1 Gal buck	4C	Yes
12-14-15 GAL-C	26884-006	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-D	26884-007	S	Hold;	2x1 Gal buck	4C	Yes
12-14-15 GAL-D	26884-008	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-E	26884-009	S	Hold;	2x1 Gal buck	4C	Yes
12-14-15 GAL-E	26884-010	S	GZ;	1qt bag	4C	Yes

Notes and qualifications:

SEE C.O.C



## CHAIN OF CUSTODY DOCUMENTATION

Client: CLF Engineering	Contact: Ray Sabarwal	Project Name: QDC	Page 1 of 1
Report to:	Address: 15 Creek Road MAYFLOW, MA 02738	Project Number: 14217	
Invoice to:	Address:	Project Manager: Wendy Rocha	
Voice:	Fax:	email: WRocha@CLFEngineering.com	Quote No:
Protocol:	RCRA	SDWA	NPDES
Lab Number (assigned by lab)	Your Field ID: (must agree with container)	SDWA	NPDES
		Time Sampled	USCOE
		Date Sampled	Grab or composite (G/C)
		Container Size (ml)	Other
		Container Type (P/G/T)	Field Preservation
		Matrix S-Solid W-Water	Filter N=Not needed F=Done in field L=Lab to do
			Analyses Requested/ Special Instructions:
-001	12-14-15 GAL-A	12/14/15	15
-002	GAL-A	"	"
	<del>GAL-A</del>	"	"
-003	GAL-B	"	"
-004	GAL-B	"	"
-005	GAL-C	"	"
-006	GAL-C	"	"
-007	GAL-D	"	"
-008	GAL-D	"	"
-009	GAL-E	"	"
-010	GAL-E	"	"
Relinquished By: Ray Sabarwal	Date: 12/15/15	Time: 11:30	Received By: R Sabarwal
Relinquished By:	Date:	Time:	Received at Lab By:
Comments: 242			Date:

**Part 3**  
**Chemical Test Results**

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**CHEMICAL ANALYSIS  
OF A MARINE SEDIMENT:**

**Point Judith Pond  
Federal Project Channel Extension, Galilee Project  
Narragansett, Rhode Island**

Prepared For:

CLE Engineering, Incorporated  
15 Creek Road  
Marion, Massachusetts 02738

Prepared By:

EnviroSystems, Incorporated  
One Lafayette Road  
Hampton, New Hampshire 03842

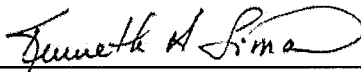
EnviroSystems, Inc. Sample Deliver Group Reference 26884

Study Specific Reference 26884-100

## LABORATORY STANDARDS STATEMENT

This study was performed by EnviroSystems, Incorporated at its facility in Hampton, New Hampshire. EnviroSystems' laboratory is accredited by the State of New Hampshire under the National Environmental Laboratory Accreditation (NELAC) program. Additionally, ESI is accredited under the Department of Defense (DoD) ELAP program, ISO/IEC 17025:2005, Certificate Number L2340. All testing conducted by EnviroSystems as part of this program was compliant with NELAC guidelines and standards. Additionally, this study was conducted in accordance with guidelines presented in the 2004 version of the New England District's Regional Implementation Manual (RIM) for Evaluation of Dredged Material Proposed for Disposal in New England Waters. Any deviations from specific elements of the RIM are detailed in the Protocol Deviation Section of this Report.

For EnviroSystems, Inc.

  
Kenneth A. Simon  
Technical Director

February 25, 2016  
Date

## **CHEMICAL ANALYSIS OF A MARINE SEDIMENT:**

### **Point Judith Pond Federal Project Channel Extension, Galilee Project Narragansett, Rhode Island**

#### **1.0 SAMPLE COLLECTION, PRESERVATION AND STORAGE**

Sediment samples for chemical and physical analysis were provided by CLE Environmental, Inc. from locations specified within the project work plan. Samples were received under chain of custody in sample containers appropriate for the specified analysis. Upon arrival at the laboratory, all samples received an internal sample control number and were logged into the project sample control system. Samples were placed in a secure sample holding location and stored at a temperature of  $4 \pm 2$  °C until analysis.

#### **2.0 ANALYSIS**

Sample analysis was carried out following methods and protocol specified in the project Sample Analysis Plan by EnviroSystems, Inc. at its Hampton, NH facility. Review of the data report document showed that all sample holding times were met, unless otherwise qualified, that the analytical methods used in the analysis were appropriate for the parameter and sample matrix and met New England District Regional Implementation Manual requirements. Review of supporting quality assurance data documented that, except where qualified, all data collected meet all of the requirements of NELAC, for all NELAC accredited parameters.

#### **3.0 RESULTS**

Analytical methods used in the analysis of sediment samples were analyzed using protocol recommended in Tables 2 and 3 of the New England District RIM document with appropriate updates related to current methods. Trace metals were evaluated using EPA Method 6020, Inductively Coupled Plasma - Mass Spectrometry (ICP-MS), mercury was evaluated using EPA Method 245.7, Cold Vapor Atomic Fluorescence Spectrometry. PCB Congeners and PAH compounds were analyzed by EPA Method 8270C - SIM. Pesticides were analyzed by EPA Method 8081B. In cases where dilution of the sample extract was required the final reporting limit remained below the RIM document specified limits and did not result in artificial "Non Detects."

A review of QC data documented two incidences where the %R fell outside of acceptable limits. There were two incidences of the %RR exceeding the acceptable limit in a laboratory duplicate and one incidence of a low %R in a laboratory control sample.

A full copy of the analytical report is included in the following data appendix



## TABLE OF CONTENTS

Report Element	Number of Pages	Page Number
<hr/>		
Sediment Analysis		
Trace Metals Analysis	2	5
PCB Congener Analysis	2	7
PAH Analysis	2	9
Pesticide Analysis	2	11
QC Support		
Trace Metals QC Support	12	13
PCB Congener QC Support	6	25
PAH QC Support	6	31
Pesticide QC Support	6	37
 New England District Quality Control Summary Tables	 6	 43
 Sample Support Documents		
COC, Sample Receipt Record	2	49
 Total Pages	 50	

Report No: 26884 SDG:  
 Project: Point Judith Pond Federal Project Channel Extension, Narragansett, RI

Sample ID: RISDS-A  
 Matrix: Solid  
 Sampled: 12/17/15

Parameter		Result		Quant Limit	Units	Date Prepared	Date of Analysis	INIT/Method/Reference
Total solids	26884-041	82		0.1	%	02/09/16 1410	02/09/16 1410	JH /160.3 EPA 600/4/79/020
Organic Carbon Rep 1	26884-041	0.26	J2	0.1	%	02/09/16 1530	02/16/16 0700	AC /SW846 9060
Organic Carbon Rep 2	26884-041	0.29	J2	0.1	%	02/09/16 1530	02/16/16 0700	AC /SW846 9060
Arsenic, total	26884-041	2.8		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Cadmium, total	26884-041	ND		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Chromium, total	26884-041	9.6		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Copper, total	26884-041	2.3		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Lead, total	26884-041	6.2		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Mercury, total	26884-041	ND		0.01	ug/g dry wt	02/10/16 1130	02/16/16 1500	JLH/EPA 245.7
Nickel, total	26884-041	4.7		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Zinc, total	26884-041	17		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020

Notes:

ND = Not Detected

J2 = LCS %R on Rep 1 was low. The average of Rep 1 and Rep 2 passed.

ESI

Report No: 26884 SDG:  
 Project: Point Judith Pond Federal Project Channel Extension, Narragansett, RI

Sample ID: Site Composite  
 Matrix: Solid  
 Sampled: 01/13/16 0940

Parameter		Result		Quant Limit	Units	Date Prepared	Date of Analysis	INIT/Method/Reference
Total solids	26884-100	74		0.1	%	02/09/16 1410	02/09/16 1410	JH /160.3 EPA 600/4/79/020
Organic Carbon Rep 1	26884-100	0.57	J2J5	0.1	%	02/09/16 1530	02/16/16 0700	AC /SW846 9060
Organic Carbon Rep 2	26884-100	0.51	J2J5	0.1	%	02/09/16 1530	02/16/16 0700	AC /SW846 9060
Arsenic, total	26884-100	1.5		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Cadmium, total	26884-100	0.14		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Chromium, total	26884-100	10		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Copper, total	26884-100	5.2		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Lead, total	26884-100	4.7		0.03	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Mercury, total	26884-100	0.015		0.01	ug/g dry wt	02/10/16 1130	02/16/16 1500	JLH/EPA 245.7
Nickel, total	26884-100	6.2		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020
Zinc, total	26884-100	23		0.1	ug/g dry wt	02/10/16 1130	02/10/16	JLH/SW846 3rd Ed. 6020

Notes:

J2 = LCS %R on Rep 1 was low. The average of Rep 1 and Rep 2 passed.

J5 = Estimate, MS %R below limit.

ESI

PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number: 26884-041  
Sample Designation: RISDS-A  
Date Sampled: 12/17/15  
Date Extracted: 02/10/16  
Date Analyzed: 02/13/16  
Matrix: Solid  
Moisture (%): 18  
Sample Amount (g): 25  
Final Volume (mL): 1.0  
Dilution Factor: 1

Congener Number	PCB Congener	Concentration (ug/Kg)	Qualifier
8	2,4'-dichlorobiphenyl	0.05	U
18	2,2',5-trichlorobiphenyl	0.05	U
28	2,4,4'-trichlorobiphenyl	0.05	U
44	2,2',3,5'-tetrachlorobiphenyl	0.05	U
49	2,2',4,5'-tetrachlorobiphenyl	0.05	U
52	2,2',5,5'-tetrachlorobiphenyl	0.05	U
66	2,3',4,4'-tetrachlorobiphenyl	0.05	U
77	3,3',4,4'-tetrachlorobiphenyl	0.05	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.05	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.09	
105	2,3,3',4,4'-pentachlorobiphenyl	0.05	U
118	2,3',4,4',5-pentachlorobiphenyl	0.07	
126	3,3',4,4',5-pentachlorobiphenyl	0.05	
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.05	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.06	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.12	
156	2,3,3',4,4',5-hexachlorobiphenyl		
169	3,3',4,4',5,5'-hexachlorobiphenyl		
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.05	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.07	
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.05	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.05	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.05	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.05	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.05	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.06	

Surrogate Standard	Recovery (%)	Advisory Limits (%)
PCB 198	100	30 - 150

U = Not detected at value reported

ESI

PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number:	26884-100
Sample Designation:	Site Composite
Date Sampled:	01/13/16
Date Extracted:	02/10/16
Date Analyzed:	02/12/16
Matrix:	Solid
Moisture (%):	26
Sample Amount (g):	29
Final Volume (mL)	1.0
Dilution Factor:	1

Congener Number	PCB Congener	Concentration (ug/Kg)	Qualifier
8	2,4'-dichlorobiphenyl	0.06	
18	2,2',5-trichlorobiphenyl	0.05	U
28	2,4,4'-trichlorobiphenyl	0.05	U
44	2,2',3,5'-tetrachlorobiphenyl	0.16	
49	2,2',4,5'-tetrachlorobiphenyl	0.16	
52	2,2',5,5'-tetrachlorobiphenyl	0.31	
66	2,3',4,4'-tetrachlorobiphenyl	0.05	U
77	3,3',4,4'-tetrachlorobiphenyl	0.05	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.20	
101	2,2',4,5,5'-pentachlorobiphenyl	0.43	
105	2,3,3',4,4'-pentachlorobiphenyl	0.18	
118	2,3',4,4',5-pentachlorobiphenyl	0.36	
126	3,3',4,4',5-pentachlorobiphenyl	0.05	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.12	
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.65	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.72	J8
156	2,3,3',4,4',5-hexachlorobiphenyl		
169	3,3',4,4',5,5'-hexachlorobiphenyl		
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.26	
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.81	J8
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.21	
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.05	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.56	
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.07	
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.10	
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.05	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
PCB 198	83	30 - 150

U = Not detected at value reported  
J8 = Estimate. Dup %RR above limit.

ESI

Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number: 26884-041  
Sample Designation: RISDS-A  
Date Sampled: 12/17/15  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): 18  
Sample Amount (g): 25  
Final Volume (mL): 1.00  
Dilution Factor: 1

Compound	Concentration (ug/Kg)	Qualifier
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	20	
anthracene	5	J
fluoranthene	13	
pyrene	9	J
benzo[a]anthracene	10	U
chrysene	10	U
benzo[b]fluoranthene	10	U
benzo[k]fluoranthene	10	U
benzo[a]pyrene	10	U
indeno[1,2,3-cd]pyrene	10	U
dibenz[a,h]anthracene	10	U
benzo[g,h,i]perylene	10	U

Surrogate Standards	Recovery (%)	Advisory Limits (%)
2-fluorobiphenyl	79	30 - 150
o-terphenyl	109	30 - 150

U = Not detected at the reporting limit.

J = Analyte detected below the reporting limit.

ESI

Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number: 26884-100  
Sample Designation: Site Composite  
Date Sampled: 01/13/16 0940  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): 26  
Sample Amount (g): 29  
Final Volume (mL): 1.00  
Dilution Factor: 1

Compound	Concentration (ug/Kg)	Qualifier
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	29	
anthracene	9	J
fluoranthene	54	
pyrene	54	
benzo[a]anthracene	21	
chrysene	32	
benzo[b]fluoranthene	25	
benzo[k]fluoranthene	18	
benzo[a]pyrene	16	
indeno[1,2,3-cd]pyrene	11	
dibenz[a,h]anthracene	10	U
benzo[g,h,i]perylene	12	

Surrogate Standards	Recovery (%)	Advisory Limits (%)
2-fluorobiphenyl	66	30 - 150
o-terphenyl	86	30 - 150

U = Not detected at the reporting limit.

J = Analyte detected below the reporting limit.

ESI



Pesticides in Sediment  
SW 846 8081B

Lab Number: 26884-041  
Sample Designation: RISDS-A  
Date Sampled: 12/17/15  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/12/16  
Matrix: Solid  
Moisture (%): 18  
Sample Amount (g): 25  
Final Volume (mL): 1.0  
Dilution Factor: 1

Analyte	Concentration (ug/Kg)	Qualifier
aldrin	0.13	T
gamma-chlordane (cis)	0.1	U
alpha-chlordane (trans)	0.1	U
cis-nonachlor	0.1	U
trans-nonachlor	0.1	U
oxychlordane	0.1	U
4,4'-DDT	0.2	U
4,4'-DDE	0.2	U
4,4'-DDD	0.2	U
alpha-BHC	0.1	U
dieldrin	0.2	U
endosulfan I	0.1	U
endosulfan II	0.2	U
endrin	0.2	U
heptachlor	0.1	U
heptachlor epoxide	0.1	U
hexachlorobenzene	0.1	U
gamma-BHC (lindane)	0.1	U
methoxychlor	1	U
toxaphene	5	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	41	30 - 150
decachlorobiphenyl	78	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

ESI

Pesticides in Sediment  
SW 846 8081B

Lab Number: 26884-100  
Sample Designation: Site Composite  
Date Sampled: 01/13/16 0940  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): 26  
Sample Amount (g): 29  
Final Volume (mL): 1.0  
Dilution Factor: 1

Analyte	Concentration (ug/Kg)	Qualifier
aldrin	0.14	T
gamma-chlordane (cis)	0.09	U
alpha-chlordane (trans)	0.09	U
cis-nonachlor	0.09	U
trans-nonachlor	0.36	T
oxychlordane	0.09	U
4,4'-DDT	0.43	P
4,4'-DDE	0.44	P
4,4'-DDD	0.2	U
alpha-BHC	0.09	U
dieldrin	0.24	T
endosulfan I	0.09	U
endosulfan II	0.2	U
endrin	0.2	U
heptachlor	0.09	U
heptachlor epoxide	0.09	U
hexachlorobenzene	0.09	U
gamma-BHC (lindane)	0.09	U
methoxychlor	0.9	U
toxaphene	5	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	56	30 - 150
decachlorobiphenyl	61	30 - 150

U = Not detected at indicated level.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

P = Presence of analyte confirmed by GC-MS.

ESI

## Quality Control Summary

Parameter: Arsenic, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q	M
PB440S	0.1	0.1	U	Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	23.9	25	96	24.8	25	99	Pass
SRM	70-130	17.9	18.9	95				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	1.52		1.54		1		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	26.5	26.0	1.54		96		Pass
26884-100SD	80-120	27.1	26.4	1.54		97		Pass

ESI

## Quality Control Summary

Parameter: Cadmium, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q	M
PB440S	0.03	0.03	U	Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	11.9	12.5	95	12.1	12.5	97	Pass
SRM	70-130	8.16	8.8	93				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	0.14		0.14		NC		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	12.9	13.0	0.14		98		Pass
26884-100SD	80-120	13.1	13.2	0.14		98		Pass

ESI

## Quality Control Summary

Parameter: Chromium, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q	M
PB440S	0.1	0.11		High

## LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	19.4	20	97	19.7	20	98	Pass
SRM	70-130	186	266	70				Pass

## DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	9.17		9.97		8		Pass

## SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	29.5	20.8	9.97		94		Pass
26884-100SD	80-120	30.1	21.1	9.97		95		Pass

ESI

## Quality Control Summary

Parameter: Copper, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q	M
PB440S	0.03	0.05		High

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	23.9	25	96	24.3	25	97	Pass
SRM	70-130	331	380	87				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	5.11		5.19		2		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	29.7	26.0	5.19		94		Pass
26884-100SD	80-120	30.5	26.4	5.19		96		Pass

ESI

## Quality Control Summary

Parameter: Lead, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q	M
PB440S	0.03	0.03	U	Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	23.7	25	95	24.1	25	96	Pass
SRM	70-130	290	330	88				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	4.79		4.71		2		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	30.8	26.0	4.71		100		Pass
26884-100SD	80-120	30.3	26.4	4.71		97		Pass

ESI



## Quality Control Summary

Parameter: Mercury, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 130S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g	Q		M
PB130S	0.01	0.01	U		Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g	True Value ug/g	%R	Lab Control Dup Sample Result ug/g	True Value ug/g	%R	
LCS	85-115	1.51	1.6	94	1.54	1.6	96	Pass
SRM	70-130	3.68	3.4	108				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	0.014		0.015		NC		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	1.59	1.66	0.015		95		Pass
26884-100SD	80-120	1.68	1.69	0.015		99		Pass

ESI

## Quality Control Summary

Parameter: Nickel, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q		M
PB440S	0.1	0.1	U		Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	48.0	50	96	48.8	50	98	Pass
SRM	70-130	57.3	76.1	75				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	5.67		6.21		9		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	55.6	52.0	6.21		95		Pass
26884-100SD	80-120	55.9	52.8	6.21		94		Pass

ESI

## Quality Control Summary

Parameter: Zinc, total  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 440S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result ug/g dry wt	Q		M
PB440S	0.1	0.1	U		Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result ug/g dry wt	True Value ug/g dry wt	%R	Lab Control Dup Sample Result ug/g dry wt	True Value ug/g dry wt	%R	
LCS	85-115	47.4	50	95	48.1	50	96	Pass
SRM	70-130	551	656	84				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result ug/g dry wt	Q	Sample Result ug/g dry wt	Q	RPD	Q	
26884-100	20	23.4		23.2		1		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result ug/g dry wt	Spike Added ug/g dry wt	Sample Result ug/g dry wt	Q	%R	Q	
26884-100S	80-120	75.1	52.0	23.2		100		Pass
26884-100SD	80-120	76.4	52.8	23.2		101		Pass

ESI

Metals by ICPMS and Mercury by CVAF  
EPA 200.8 SW846 6020 and EPA 245.7

Lab Number: MDL2015  
Sample Designation: Solid  
Date Analyzed: 03/15/15  
Date Analyzed: 02/04/15 Mercury  
Matrix: Solid  
Sample Amount (g) 1  
Final Volume (mL) 50

	True Value ug/g	Rep 1 ug/g	Rep 2 ug/g	Rep 3 ug/g	Rep 4 ug/g	Rep 5 ug/g	Rep 6 ug/g	Rep 7 ug/g	RL ug/g	MDL ug/g
Aluminum, total	0.5	0.544	0.481	0.449	0.364	0.291	0.491	0.468	0.25	0.3
Antimony, total	0.01	0.00955	0.0101	0.00945	0.01	0.0102	0.0099	0.00945	0.10	0.001
Arsenic, total	0.025	0.0222	0.0272	0.029	0.0229	0.0245	0.027	0.0261	0.10	0.007
Barium, total	0.2	0.193	0.193	0.191	0.2	0.205	0.193	0.195	0.10	0.015
Beryllium, total	0.005	0.00495	0.00565	0.0051	0.00505	0.00495	0.00495	0.00505	0.10	0.001
Boron, total	0.05	0.034	0.0343	0.0364	0.0338	0.0311	0.0329	0.0315	0.25	0.005
Cadmium, total	0.0125	0.013	0.0124	0.0129	0.0126	0.0129	0.0123	0.0125	0.10	0.001
Calcium, total	0.5	0.5	0.55	0.4	0.55	0.55	0.55	0.45	0.10	0.18
Chromium, total	0.02	0.0188	0.0198	0.0191	0.0198	0.0192	0.0198	0.0191	0.10	0.0012
Cobalt, total	0.05	0.0478	0.0481	0.0476	0.0465	0.0472	0.0464	0.0472	0.10	0.0019
Copper, total	0.025	0.0237	0.0244	0.0244	0.0237	0.0243	0.0234	0.0236	0.10	0.0012
Iron, total	0.25	0.271	0.266	0.272	0.168	0.149	0.201	0.194	0.25	0.15
Lead, total	0.025	0.0245	0.0244	0.0242	0.0246	0.0249	0.0242	0.0242	0.10	0.001
Magnesium, total	0.5	0.5	0.45	0.45	0.35	0.3	0.5	0.55	0.25	0.3
Manganese, total	0.05	0.0468	0.0464	0.0478	0.0467	0.0463	0.0486	0.0482	0.10	0.003
Mercury, total	0.025	0.0273	0.0264	0.0272	0.0266	0.0268	0.027	0.0277	0.01	0.002
Molybdenum, total	0.05	0.0536	0.0512	0.0521	0.0441	0.0434	0.0334	0.0321	0.10	0.03
Nickel, total	0.05	0.0476	0.0491	0.0476	0.0467	0.0482	0.0483	0.0469	0.10	0.003
Potassium, total	1.25	1.3	1.35	1.45	1.15	1.15	1.3	1.3	0.10	0.3
Selenium, total	0.025	0.0267	0.0269	0.026	0.0245	0.0261	0.0282	0.0283	0.10	0.004
Silver, total	0.025	0.0236	0.0248	0.0248	0.0248	0.0252	0.0241	0.0246	0.10	0.0016
Sodium, total	1.25	1.15	1.1	1.25	1	0.95	1.1	1.15	0.25	0.3
Strontium, total	0.01	0.0099	0.00995	0.00975	0.00975	0.01	0.0099	0.0098	0.10	0.001
Thallium, total	0.025	0.0195	0.0196	0.0196	0.019	0.0191	0.0182	0.0175	0.10	0.003
Tin, total	0.01	0.0088	0.00835	0.00835	0.0093	0.00915	0.00885	0.0091	0.10	0.0011
Vanadium, total	0.05	0.0484	0.0476	0.0483	0.0479	0.0477	0.0489	0.0483	0.10	0.0013
Zinc, total	0.05	0.0496	0.0527	0.0519	0.0522	0.0491	0.0504	0.0495	0.10	0.005

## Quality Control Summary

Parameter: Organic carbon Rep 1  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 461S

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result %	Q		M
PB461S	0.1	0.1	U		Pass

### LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result %	True Value %	%R	Lab Control Dup Sample Result %	True Value %	%R	
LCS	70-130	0.68	1	68	0.78	1	78	Low
SRM	70-130	3.7	4.4	85				Pass

### DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result %	Q	Sample Result %	Q	RPD	Q	
26884-100	30	0.54		0.57		5		Pass

### SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result %	Spike Added %	Sample Result %	Q	%R	Q	
26884-100S	60-140	1.06	1	0.57		49	J5	Low
26884-100SD	60-140	1.16	1	0.57		59	J5	Low

J2 = LCS %R below limit.  
 J5 = MS %R below limit

ESI

## Quality Control Summary

Parameter: Organic carbon Rep 2  
 Project: Rhode Island Dredge Sediment Evaluations  
 Matrix: Solid  
 QC Batch No: 461S SDG: 0

Pertains to samples:

Lab ID	Sample ID	Lab ID	Sample ID
26884-041	RISDS-A		
26884-100	Site Composite		
26884-101	Composite 1		
26884-102	Composite 2		
26884-103	Composite A		
26884-104	Composite B		

	Control Limit +/-	Preparation Blank Result %	Q	M
PB461S	0.1	0.1	U	Pass

## LABORATORY CONTROL SAMPLE RECOVERY

ID	Control Limit %	Lab Control Sample Result %	True Value %	%R	Lab Control Dup Sample Result %	True Value %	%R	
LCS	70-130	0.83	1	83	0.73	1	73	Pass
SRM	70-130	3.17	4.4	72				Pass

## DUPLICATE ANALYSIS

ID	Control Limit %	Duplicate Result %	Q	Sample Result %	Q	RPD	Q	
26884-100	30	0.62		0.51		19		Pass

## SPIKE SAMPLE ANALYSIS

ID	Control Limit %	Spiked Sample Result %	Spike Added %	Sample Result %	Q	%R	Q	
26884-100S	60-140	1.10	1	0.51		59	J5	Low
26884-100SD	60-140	1.11	1	0.51		60	J5	Low

J5 = MS %R below limit

ESI

Wet Chemistry  
SW846 9060  
Total Organic Carbon in Sediment

Lab Number: MDL S 2015  
Sample Designation: Sediment  
Date Sampled: 01/22/15  
Date Analyzed: 01/22/15  
Matrix: Sediment  
Moisture: NA  
Sample Amount (mL): NA  
Final Volume (mL): NA  
Dilution Factor: 1

	True Value	Replicate 1	Replicate 2	Replicate 3	Replicate 4	Replicate 5	Replicate 6	Replicate 7	Std Dev	MDL
	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt	% Dry Wt
Total Organic Carbon	0.1	0.08	0.06	0.06	0.06	0.08	0.04	0.12	0.02	0.07



PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number:	PB921S
Sample Designation:	Laboratory Blank PB921S
Date Sampled:	02/10/16
Date Extracted:	02/10/16
Date Analyzed:	02/12/16
Matrix:	Solid
Sample Amount (g):	20
Final Volume (mL)	1.00
Dilution Factor:	1

Congener Number	PCB Congener	Concentration (ug/Kg)	Qualifier
8	2,4'-dichlorobiphenyl	0.1	U
18	2,2',5-trichlorobiphenyl	0.1	U
28	2,4,4'-trichlorobiphenyl	0.1	U
44	2,2',3,5'-tetrachlorobiphenyl	0.1	U
49	2,2',4,5'-tetrachlorobiphenyl	0.1	U
52	2,2',5,5'-tetrachlorobiphenyl	0.1	U
66	2,3',4,4'-tetrachlorobiphenyl	0.1	U
77	3,3',4,4'-tetrachlorobiphenyl	0.1	U
87	2,2',3,4,5'-pentachlorobiphenyl	0.1	U
101	2,2',4,5,5'-pentachlorobiphenyl	0.1	U
105	2,3,3',4,4'-pentachlorobiphenyl	0.1	U
118	2,3',4,4',5-pentachlorobiphenyl	0.1	U
126	3,3',4,4',5-pentachlorobiphenyl	0.1	U
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.1	U
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.1	U
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.1	U
156	2,3,3',4,4',5-hexachlorobiphenyl		
169	3,3',4,4',5,5'-hexachlorobiphenyl		
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.1	U
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.1	U
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.1	U
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.1	U
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.1	U
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.1	U
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.1	U
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.1	U

Surrogate Standards	Recovery (%)	Advisory Limits (%)
PCB 198	86	30 - 150

U = Not detected at indicated level.

ESI

PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number: LCS921S / LCSD921S  
Sample Designation: Laboratory Control Sample Duplicate  
Date Sampled: 02/10/16  
Date Extracted: 02/10/16  
Date Analyzed: 02/12/16  
Matrix: Solid  
Sample Amount (g): 20  
Final Volume (mL): 1.00  
Dilution Factor: 1

Congener Number	PCB Congener	LCS Concentration (ug/Kg)	Recovery (%)	Recovery Limit (%)	LCSD Concentration (ug/Kg)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	6.65	66	30 - 150	8.1	81	30 - 150	20	30
18	2,2',5-trichlorobiphenyl	6.6	66	30 - 150	7.9	79	30 - 150	18	30
28	2,4,4'-trichlorobiphenyl	6.77	68	30 - 150	8.4	84	30 - 150	22	30
44	2,2',3,5'-tetrachlorobiphenyl	7.15	71	30 - 150	8.7	87	30 - 150	20	30
49	2,2',4,5'-tetrachlorobiphenyl	7.08	71	30 - 150	9.1	91	30 - 150	25	30
52	2,2',5,5'-tetrachlorobiphenyl	6.75	68	30 - 150	8.6	86	30 - 150	24	30
66	2,3',4,4'-tetrachlorobiphenyl	7.97	80	30 - 150	9.3	93	30 - 150	16	30
77	3,3',4,4'-tetrachlorobiphenyl	8.97	90	30 - 150	10	102	30 - 150	13	30
87	2,2',3,4,5'-pentachlorobiphenyl	8.14	81	30 - 150	9.8	98	30 - 150	18	30
101	2,2',4,5,5'-pentachlorobiphenyl	7.49	75	30 - 150	9	90	30 - 150	19	30
105	2,3,3',4,4'-pentachlorobiphenyl	8.33	83	30 - 150	9.8	98	30 - 150	16	30
118	2,3',4,4',5-pentachlorobiphenyl	8.49	85	30 - 150	9.8	98	30 - 150	14	30
126	3,3',4,4',5-pentachlorobiphenyl	8.22	82	30 - 150	10	101	30 - 150	20	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	7.69	77	30 - 150	9.2	92	30 - 150	18	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	7.46	75	30 - 150	9.2	92	30 - 150	21	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	7.86	79	30 - 150	9.4	94	30 - 150	18	30
156	2,3,3',4,4',5-hexachlorobiphenyl			30 - 150			30 - 150		30
169	3,3',4,4',5,5'-hexachlorobiphenyl			30 - 150			30 - 150		30
170	2,2',3,3',4,4',5-heptachlorobiphenyl	8.42	84	30 - 150	10	101	30 - 150	18	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	8	80	30 - 150	9.5	95	30 - 150	17	30
183	2,2',3,4,4',5',6-heptachlorobiphenyl	7.89	79	30 - 150	9.5	95	30 - 150	18	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	7.59	76	30 - 150	9.1	91	30 - 150	18	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	7.66	77	30 - 150	9	90	30 - 150	17	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	8.02	80	30 - 150	9.5	95	30 - 150	17	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	8.38	84	30 - 150	10	100	30 - 150	17	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	8.03	80	30 - 150	9.9	99	30 - 150	21	30

Surrogate Standard		Advisory		Advisory	
		Recovery (%)	Limits (%)	Recovery (%)	Limits (%)
198	2,2',3,3',4,4',5,5',6-octachlorobiphenyl	78	30 - 150	94	30 - 150

ESI

PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number: 26884-100D  
Sample Designation: Site Composite (Laboratory Duplicate)  
Date Sampled: 02/10/16  
Date Extracted: 02/10/16  
Date Analyzed: 02/12/16  
Matrix: Solid  
Moisture (%): 26  
Sample Amount (g): 29.00  
Final Volume (mL): 1.00  
Dilution Factor: 1

Congener Number	PCB Congener	Duplicate Result (ug/Kg)	Duplicate Qualifier	Sample Result (ug/Kg)	Sample Qualifier	Relative Difference (%)	Limit (%)	Qualifier
8	2,4'-dichlorobiphenyl	0.057		0.06		NC	30	
18	2,2',5-trichlorobiphenyl	0.047	U	0.047	U	NC	30	
28	2,4,4'-trichlorobiphenyl	0.049		0.047	U	NC	30	
44	2,2',3,5'-tetrachlorobiphenyl	0.17		0.16		NC	30	
49	2,2',4,5'-tetrachlorobiphenyl	0.17		0.16		NC	30	
52	2,2',5,5'-tetrachlorobiphenyl	0.32		0.31		5	30	
66	2,3',4,4'-tetrachlorobiphenyl	0.047	U	0.047	U	NC	30	
77	3,3',4,4'-tetrachlorobiphenyl	0.047	U	0.047	U	NC	30	
87	2,2',3,4,5'-pentachlorobiphenyl	0.19		0.2		NC	30	
101	2,2',4,5,5'-pentachlorobiphenyl	0.43		0.43		0	30	
105	2,3,3',4,4'-pentachlorobiphenyl	0.18		0.18		NC	30	
118	2,3',4,4',5-pentachlorobiphenyl	0.4		0.36		9	30	
126	3,3',4,4',5-pentachlorobiphenyl	0.047	U	0.047	U	NC	30	
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.11		0.12		NC	30	
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.63		0.65		4	30	
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.5		0.72		36	30	J8
156	2,3,3',4,4',5-hexachlorobiphenyl						30	
169	3,3',4,4',5,5'-hexachlorobiphenyl						30	
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.13		0.26		NC	30	
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.29		0.81		96	30	J8
183	2,2',3,4,4',5',6-heptachlorobiphenyl	0.09		0.21		NC	30	
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	0.047	U	0.047	U	NC	30	
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.2		0.56		NC	30	
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.066		0.069		NC	30	
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.047	U	0.1		NC	30	
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	0.056		0.047	U	NC	30	

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
PCB 198	89	83	30 - 150

U = Not detected at reporting limit.

NC = Not calculated due to one or more values less than five times the reporting limit.

J8 = Estimate. Dup %RR above limit.

ESI

Lab Number: 26884-100MSD  
Sample Designation: Site Composite (Matrix Spike Duplicate)  
Date Sampled: 02/10/16  
Date Extracted: 02/10/16  
Date Analyzed: 02/12/16  
Matrix: Solid  
Sample Amount (g): 29.00  
Final Volume (mL): 1.00  
Dilution Factor: 1.00

Congener Number	PCB Congener	Sample Result (ug/Kg)	Amount Added (ug/Kg)	MS Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
8	2,4'-dichlorobiphenyl	0.06	9	7.8	83	30 - 150	8.4	89	30 - 150	7	30
18	2,2',5-trichlorobiphenyl	ND	9	7.9	85	30 - 150	7.8	84	30 - 150	2	30
28	2,4,4'-trichlorobiphenyl	ND	9	8.4	90	30 - 150	8.5	91	30 - 150	2	30
44	2,2',3,5'-tetrachlorobiphenyl	0.16	9	8.7	92	30 - 150	8.3	88	30 - 150	5	30
49	2,2',4,5'-tetrachlorobiphenyl	0.16	9	8.9	94	30 - 150	8.3	88	30 - 150	7	30
52	2,2',5,5'-tetrachlorobiphenyl	0.31	9	9	93	30 - 150	8.4	86	30 - 150	7	30
66	2,3',4,4'-tetrachlorobiphenyl	ND	9	9.2	98	30 - 150	9	97	30 - 150	2	30
77	3,3',4,4'-tetrachlorobiphenyl	ND	9	9.8	105	30 - 150	9.4	101	30 - 150	4	30
87	2,2',3,4,5'-pentachlorobiphenyl	0.2	9	9.6	101	30 - 150	8.9	93	30 - 150	8	30
101	2,2',4,5,5'-pentachlorobiphenyl	0.43	9	8.8	90	30 - 150	8.7	89	30 - 150	1	30
105	2,3,3',4,4'-pentachlorobiphenyl	0.18	9	9.2	97	30 - 150	9.1	96	30 - 150	1	30
118	2,3',4,4',5-pentachlorobiphenyl	0.36	9	9.8	102	30 - 150	9.2	94	30 - 150	7	30
126	3,3',4,4',5-pentachlorobiphenyl	ND	9	9.8	105	30 - 150	9.6	103	30 - 150	2	30
128	2,2',3,3',4,4'-hexachlorobiphenyl	0.12	9	8.9	94	30 - 150	8.6	91	30 - 150	3	30
138	2,2',3,4,4',5'-hexachlorobiphenyl	0.65	9	9.1	90	30 - 150	9	90	30 - 150	0	30
153	2,2',4,4',5,5'-hexachlorobiphenyl	0.72	9	9.1	90	30 - 150	8.8	87	30 - 150	3	30
156	2,3,3',4,4',5-hexachlorobiphenyl	NA	NA								
169	3,3',4,4',5,5'-hexachlorobiphenyl	NA	NA								
170	2,2',3,3',4,4',5-heptachlorobiphenyl	0.26	9	9.3	97	30 - 150	9.2	96	30 - 150	1	30
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	0.81	9	8.8	85	30 - 150	8.4	81	30 - 150	4	30
183	2,2',3,4,4',5,6-heptachlorobiphenyl	0.21	9	8.5	89	30 - 150	8.5	89	30 - 150	0	30
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	ND	9	9.2	99	30 - 150	8.2	88	30 - 150	12	30
187	2,2',3,4',5,5',6-heptachlorobiphenyl	0.56	9	8.9	90	30 - 150	8.5	85	30 - 150	5	30
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	0.069	9	8.5	91	30 - 150	8.4	90	30 - 150	1	30
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	0.1	9	8.8	93	30 - 150	8.5	90	30 - 150	3	30
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	ND	9	9	97	30 - 150	8.5	91	30 - 150	6	30

Surrogate Standard	MS Recovery (%)	Advisory Limits (%)	MSD Recovery (%)	Advisory Limits (%)
PCB 198	88	30 - 150	87	30 - 150

ND = Not detected  
NA = Not added or evaluated

ESI

PCB Congeners in Sediment  
SW 846 8082/EPA 680 modified

Lab Number:	SRM921S
Sample Designation:	Standard Reference Material NIST 1944
Date Sampled:	02/10/16
Date Extracted:	02/10/16
Date Analyzed:	02/12/16
Matrix:	Solid
Sample Amount (g):	1.00
Final Volume (mL)	1.00
Dilution Factor:	2

Congener Number	PCB Congener	Result (ug/Kg)	True Value (ug/Kg)	Recovery (%)	Limit (%)
8	2,4'-dichlorobiphenyl	22	22	97	30 - 150
18	2,2',5-trichlorobiphenyl	53	51	104	30 - 150
28	2,4,4'-trichlorobiphenyl	75	81	93	30 - 150
44	2,2',3,5'-tetrachlorobiphenyl	54	60	90	30 - 150
49	2,2',4,5'-tetrachlorobiphenyl	60	53	113	30 - 150
52	2,2',5,5'-tetrachlorobiphenyl	75	79	94	30 - 150
66	2,3',4,4'-tetrachlorobiphenyl	64	72	88	30 - 150
77	3,3',4,4'-tetrachlorobiphenyl	ND	NA	NA	30 - 150
87	2,2',3,4,5'-pentachlorobiphenyl	31	30	104	30 - 150
101	2,2',4,5,5'-pentachlorobiphenyl	73	73	100	30 - 150
105	2,3,3',4,4'-pentachlorobiphenyl	24	25	97	30 - 150
118	2,3',4,4',5-pentachlorobiphenyl	60	58	104	30 - 150
126	3,3',4,4',5-pentachlorobiphenyl	ND	NA	NA	30 - 150
128	2,2',3,3',4,4'-hexachlorobiphenyl	10	8.5	118	30 - 150
138	2,2',3,4,4',5'-hexachlorobiphenyl	62	62	99	30 - 150
153	2,2',4,4',5,5'-hexachlorobiphenyl	62	74	83	30 - 150
156	2,3,3',4,4',5-hexachlorobiphenyl				30 - 150
169	3,3',4,4',5,5'-hexachlorobiphenyl				30 - 150
170	2,2',3,3',4,4',5-heptachlorobiphenyl	23	23	102	30 - 150
180	2,2',3,4,4',5,5'-heptachlorobiphenyl	38	44	85	30 - 150
183	2,2',3,4,4',5,6-heptachlorobiphenyl	10	12	84	30 - 150
184	2,2',3,4,4',6,6'-heptachlorobiphenyl	ND	NA	NA	30 - 150
187	2,2',3,4',5,5',6-heptachlorobiphenyl	23	25	90	30 - 150
195	2,2',3,3',4,4',5,6-octachlorobiphenyl	4	3.8	77	30 - 150
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	8.7	9.2	94	30 - 150
209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	7.3	6.8	107	30 - 150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
PCB 198	99	30 - 150

ND = Not detected  
NA = Not added or evaluated

ESI

PCB Congeners in Solid Matrix  
SW 846 8082/EPA 680 modified

Method Detection Limit Study  
Sample Designation: MDL 2016 Solid  
Date Sampled: MDL Solid Matrix  
Date Extracted: 01/27/16  
Date Analyzed: 01/27/16  
Matrix: 02/19/16  
Sample Amount (g): Solid  
Final Volume (mL): 20.00  
Dilution Factor: 1

Congener	True Value	Replicate 1	Replicate 2	Replicate 3	Replicate 4	Replicate 5	Replicate 6	Replicate 7	Calcd MDL
Number PCB Congener	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)
8 2,4'-Dichlorobiphenyl	0.1	0.09	0.09	0.11	0.10	0.10	0.11	0.11	0.03
18 2,2',5'-Trichlorobiphenyl	0.1	0.11	0.11	0.09	0.10	0.10	0.08	0.10	0.03
28 2,4,4'-Trichlorobiphenyl	0.1	0.10	0.10	0.08	0.10	0.10	0.09	0.09	0.03
52 2,2',5,5'-Tetrachlorobiphenyl	0.1	0.10	0.10	0.11	0.09	0.10	0.10	0.10	0.02
49 2,2',4,5'-Tetrachlorobiphenyl	0.1	0.09	0.09	0.10	0.09	0.10	0.09	0.08	0.02
44 2,2',3,5'-Tetrachlorobiphenyl	0.1	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.01
66 2,3',4,4'-Tetrachlorobiphenyl	0.1	0.09	0.09	0.10	0.10	0.09	0.09	0.09	0.01
101 2,2',4,5,5'-Pentachlorobiphenyl	0.1	0.10	0.10	0.10	0.11	0.11	0.10	0.10	0.01
87 2,2',3,4,5'-Pentachlorobiphenyl	0.1	0.10	0.10	0.12	0.11	0.11	0.10	0.11	0.01
77 3,3',4,4'-Tetrachlorobiphenyl	0.1	0.10	0.10	0.11	0.10	0.10	0.09	0.09	0.02
118 2,3',4,4',5'-Pentachlorobiphenyl	0.1	0.11	0.11	0.11	0.10	0.10	0.12	0.12	0.02
184 2,2',3,4,4',6'-Heptachlorobiphenyl	0.1	0.10	0.10	0.11	0.11	0.09	0.11	0.10	0.02
153 2,2',4,4',5,5'-Hexachlorobiphenyl	0.1	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.01
105 2,3,3',4,4'-Pentachlorobiphenyl	0.1	0.12	0.12	0.10	0.11	0.10	0.11	0.11	0.02
138 2,2',3,4,4',5'-Hexachlorobiphenyl	0.1	0.12	0.12	0.11	0.11	0.11	0.11	0.11	0.01
126 3,3',4,4',5'-Pentachlorobiphenyl	0.1	0.16	0.16	0.20	0.19	0.17	0.17	0.17	0.05
187 2,2',3,4',5,5',6'-Heptachlorobiphenyl	0.1	0.10	0.10	0.09	0.09	0.10	0.10	0.11	0.02
183 2,2',3,4,4',5',6'-Heptachlorobiphenyl	0.1	0.11	0.11	0.11	0.11	0.11	0.12	0.11	0.01
128 2,2',3,3',4,4'-Hexachlorobiphenyl	0.1	0.11	0.11	0.10	0.11	0.11	0.11	0.11	0.01
180 2,2',3,4,4',5,5'-Heptachlorobiphenyl	0.1	0.10	0.10	0.10	0.10	0.11	0.10	0.11	0.01
170 2,2',3,3',4,4',5'-Heptachlorobiphenyl	0.1	0.10	0.10	0.11	0.11	0.12	0.10	0.09	0.02
195 2,2',3,3',4,4',5,6'-Octachlorobiphenyl	0.1	0.10	0.10	0.11	0.10	0.11	0.11	0.10	0.02
206 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl	0.1	0.12	0.12	0.12	0.11	0.13	0.13	0.12	0.02
209 Decachlorobiphenyl	0.1	0.12	0.12	0.13	0.12	0.12	0.12	0.12	0.01

Surrogate Standard	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)	Recovery (%)
PCB 198	103	103	104	106	105	106	104

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Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number:	PB921S
Sample Designation:	Laboratory Blank
Date Sampled:	02/10/16 0900
Date Extracted:	02/10/16 0900
Date Analyzed:	02/11/16
Matrix:	Solid
Sample Amount (g):	20.00
Final Volume (mL)	1.00
Dilution Factor:	1

Compound	Concentration (ug/Kg)	Qualifier
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	10	U
anthracene	10	U
fluoranthene	10	U
pyrene	10	U
benzo[a]anthracene	10	U
chrysene	10	U
benzo[b]fluoranthene	10	U
benzo[k]fluoranthene	10	U
benzo[a]pyrene	10	U
indeno[1,2,3-cd]pyrene	10	U
dibenz[a,h]anthracene	10	U
benzo[g,h,i]perylene	10	U

Surrogate Standard	Recovery (%)	Advisory Limits ( %)
2-fluorobiphenyl	69	30 - 150
o-terphenyl	90	30 - 150

U = Not detected at indicated level.

ESI



Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number: LCS921S / LCSD921S  
Sample Designation: Laboratory Control Sample Duplicate  
Date Sampled: 02/10/16 0900  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Sample Amount (g): 20.00  
Final Volume (mL): 1.00  
Dilution Factor: 1

Compound	True Value (ug/Kg)	LCS Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	LCSD Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
naphthalene	50	34	67	30 - 150	39	78	30 - 150	15	30
acenaphthylene	50	30	59	30 - 150	37	73	30 - 150	21	30
acenaphthene	50	33	66	30 - 150	39	78	30 - 150	16	30
fluorene	50	34	69	30 - 150	40	80	30 - 150	15	30
phenanthrene	50	40	80	30 - 150	48	95	30 - 150	18	30
anthracene	50	46	92	30 - 150	53	105	30 - 150	14	30
fluoranthene	50	47	94	30 - 150	50	100	30 - 150	6	30
pyrene	50	39	78	30 - 150	39	79	30 - 150	0	30
benzo[a]anthracene	50	42	84	30 - 150	48	95	30 - 150	13	30
chrysene	50	50	99	30 - 150	47	95	30 - 150	5	30
benzo[b]fluoranthene	50	39	77	30 - 150	39	78	30 - 150	1	30
benzo[k]fluoranthene	50	55	110	30 - 150	54	109	30 - 150	1	30
benzo[a]pyrene	50	45	89	30 - 150	45	90	30 - 150	1	30
indeno[1,2,3-cd]pyrene	50	41	83	30 - 150	44	88	30 - 150	6	30
dibenz[a,h]anthracene	50	43	86	30 - 150	45	90	30 - 150	4	30
benzo[g,h,i]perylene	50	44	89	30 - 150	46	93	30 - 150	5	30

Surrogate Standards	Recovery (%)	Advisory Limits (%)	Recovery (%)	Advisory Limits (%)
2-fluorobiphenyl	53	30 - 150	60	30 - 150
o-terphenyl	71	30 - 150	74	30 - 150

ESI

Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number: 26884-100D  
Sample Designation: Site Composite (Laboratory Duplicate)  
Date Sampled: 01/13/16  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Sample Amount (g): 29  
Final Volume (mL): 1.00  
Dilution Factor: 1

Compound	Duplicate Concentration (ug/Kg)	Duplicate Qualifier	Sample Concentration (ug/Kg)	Sample Qualifier	Relative Difference (%)	Limit (%)	Qualifier
naphthalene	9	U	9	U	NC	30	
acenaphthylene	9	U	9	U	NC	30	
acenaphthene	9	U	9	U	NC	30	
fluorene	9	U	9	U	NC	30	
phenanthrene	38	B	29	B	NC	30	
anthracene	9		9		NC	30	
fluoranthene	62		54		13	30	
pyrene	68		54		22	30	
benzo[a]anthracene	25		21		NC	30	
chrysene	31		32		NC	30	
benzo[b]fluoranthene	20		25		NC	30	
benzo[k]fluoranthene	22		18		NC	30	
benzo[a]pyrene			16		NC	30	
indeno[1,2,3-cd]pyrene	13		11		NC	30	
dibenz[a,h]anthracene	9	U	9	U	NC	30	
benzo[g,h,i]perylene	14		12		NC	30	

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
2-fluorobiphenyl	65	66	30 - 150
o-terphenyl	91	86	30 - 150

U = Not detected.

NC = Not calculated due to one or both values less than five times the reporting limit.

B = Analyte observed in the laboratory blank below the reporting limit.

ESI

Lab Number: 26884-100MSD  
Sample Designation: Site Composite (Matrix Spike Duplicate)  
Date Sampled: 02/10/16 0900  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Sample Amount (g): 29.00  
Final Volume (mL): 1  
Dilution Factor: 1

Compound	Sample Result (ug/Kg)	Amount Added (ug/Kg)	MS Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)
naphthalene	U	47	39	80	30 - 150	40	83	30 - 150	3	30
acenaphthylene	U	47	45	90	30 - 150	46	92	30 - 150	3	30
acenaphthene	U	47	41	84	30 - 150	42	86	30 - 150	1	30
fluorene	U	47	47	93	30 - 150	49	97	30 - 150	4	30
phenanthrene	29 B	47	66	81	30 - 150	69	86	30 - 150	4	30
anthracene	9	47	46	81	30 - 150	54	97	30 - 150	15	30
fluoranthene	54	47	90	78	30 - 150	92	82	30 - 150	2	30
pyrene	54	47	101	99	30 - 150	100	99	30 - 150	0	30
benzo[a]anthracene	21	47	65	96	30 - 150	65	95	30 - 150	1	30
chrysene	32	47	71	82	30 - 150	66	72	30 - 150	7	30
benzo[b]fluoranthene	25	47	62	80	30 - 150	61	77	30 - 150	2	30
benzo[k]fluoranthene	18	47	61	91	30 - 150	60	89	30 - 150	2	30
benzo[a]pyrene	16	47	58	90	30 - 150	54	81	30 - 150	8	30
indeno[1,2,3-cd]pyrene	11	47	53	90	30 - 150	51	85	30 - 150	4	30
dibenz[a,h]anthracene	U	47	46	94	30 - 150	45	92	30 - 150	2	30
benzo[g,h,i]perylene	12	47	52	86	30 - 150	48	78	30 - 150	7	30

Surrogate Standard	Advisory		Advisory	
	Recovery (%)	Limits (%)	Recovery (%)	Limits (%)
2-fluorobiphenyl	71	30 - 150	68	30 - 150
o-terphenyl	90	30 - 150	89	30 - 150

U = Not detected

B = Analyte observed in the laboratory blank below the reporting limit.

ESI

Polynuclear Aromatic Hydrocarbons in Sediment  
SW 846 8270/EPA 680 modified

Lab Number: SRM921S  
Sample Designation: Standard Reference Material NIST 1944  
Date Sampled: 02/10/16 0900  
Date Extracted: 02/10/16 0900  
Date Analyzed: 03/08/10  
Matrix: Solid  
Sample Amount (g): 1.00  
Final Volume (mL): 1.00  
Dilution Factor: 2

Compound	Result (ug/Kg)	True Value (ug/Kg)	Recovery (%)	Limit (%)
naphthalene	1200	1650	70	30 - 150
acenaphthylene	960	NA	NA	30 - 150
acenaphthene	370	570	65	30 - 150
fluorene	460	850	54	30 - 150
phenanthrene	5200	5270	99	30 - 150
anthracene	890	NA	NA	30 - 150
fluoranthene	8800	8920	99	30 - 150
pyrene	8200	9700	85	30 - 150
benzo[a]anthracene	3900	4720	84	30 - 150
chrysene	4600	4860	96	30 - 150
benzo[b]fluoranthene	2900	3870	74	30 - 150
benzo[k]fluoranthene	2700	2300	119	30 - 150
benzo[a]pyrene	2800	4300	64	30 - 150
indeno[1,2,3-cd]pyrene	2000	2780	70	30 - 150
dibenz[a,h]anthracene	490	424	115	30 - 150
benzo[g,h,i]perylene	2200	2840	76	30 - 150

Surrogate Standard	Recovery (%)	Advisory Limits (%)
2-fluorobiphenyl	87	30 - 150
o-terphenyl	114	30 - 150

NA = Not added or evaluated

ESI

Polynuclear Aromatic Hydrocarbons in Solids  
SW 846 8270/EPA 680 modified

Lab Number: 26884  
Sample Designation: Method Detection Limit Study  
Date Sampled: 04/06/15  
Date Extracted: 04/06/15  
Date Analyzed: 05/12/15  
Matrix: Solid  
Sample Amount (g): 10.00  
Final Volume (mL): 1.00  
Dilution Factor: 1

	Rep 1 ug/Kg	Rep 2 ug/Kg	Rep 3 ug/Kg	Rep 4 ug/Kg	Rep 5 ug/Kg	Rep 6 ug/Kg	Rep 7 ug/Kg	Calculated MDL ug/Kg
naphthalene	10.7	13.2	16.3	NA	15.0	15.0	15.2	5.8
acenaphthylene	8.9	12.0	13.2	9.5	13.7	12.5	13.1	5.5
acenaphthene	9.8	13.4	14.9	10.5	15.3	14.1	13.9	6.3
fluorene	11.3	15.0	15.9	14.4	16.7	14.9	15.7	5.1
phenanthrene	21.2	26.1	26.4	28.4	27.7	26.9	26.6	6.8
anthracene	8.1	11.5	10.6	14.3	14.7	10.8	10.9	6.7
fluoranthene	12.3	16.8	16.8	19.2	18.0	17.1	17.4	6.3
pyrene	12.7	15.1	18.8	19.0	18.1	17.3	17.9	6.7
benzo[a]anthracene	9.4	10.5	12.6	14.9	12.4	12.0	12.2	5.1
chrysene	12.6	14.4	12.9	19.2	17.0	12.1	12.7	7.8
benzo[b]fluoranthene	9.4	13.5	14.1	15.2	14.4	12.4	13.8	5.6
benzo[k]fluoranthene	9.6	13.6	12.5	15.7	15.0	13.8	14.3	5.8
benzo[a]pyrene	10.2	12.6	13.0	16.6	15.4	9.2	10.2	8.2
indeno[1,2,3-cd]pyrene	8.7	12.0	12.0	14.6	14.1	10.9	10.8	5.9
dibenz[a,h]anthracene	8.7	10.3	9.4	12.6	11.1	9.2	10.8	3.9
benzo[g,h,i]perylene	9.8	13.0	11.6	14.6	14.2	10.7	12.2	5.2

Pesticides in Sediment  
SW 846 8081B

Lab Number: PB922S  
Sample Designation: Laboratory Blank  
Date Sampled: 02/10/16 0900  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): NA  
Sample Amount (g): 20.00  
Final Volume (mL): 1.00  
Dilution Factor: 1

Analyte	Concentration (ug/Kg)	Qualifier
aldrin	0.1	U
gamma-chlordane (cis)	0.1	U
alpha-chlordane (trans)	0.1	U
cis-nonachlor	0.1	U
trans-nonachlor	0.1	U
oxychlordane	0.1	U
4,4'-DDT	0.2	U
4,4'-DDE	0.2	U
4,4'-DDD	0.2	U
alpha-BHC	0.1	U
dieldrin	0.2	U
endosulfan I	0.1	U
endosulfan II	0.2	U
endrin	0.2	U
heptachlor	0.1	U
heptachlor epoxide	0.1	U
hexachlorobenzene	0.1	U
gamma-BHC (lindane)	0.1	U
methoxychlor	1	U
toxaphene	5	U

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	60	30 - 150
decachlorobiphenyl	84	30 - 150

U = Not detected at indicated level.

ESI

Pesticides in Sediment  
SW 846 8081B

Lab Number: LCSD922S  
Sample Designation: Laboratory Control Sample Duplicate  
Date Sampled: 02/10/16 0900  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture: NA  
Sample Amount (g): 20  
Final Volume (mL): 1  
Dilution Factor: 1

Analyte	LCS True Value (ug/Kg)	LCS Found (ug/Kg)	LCS Recovery (%)	LCSD True Value (ug/Kg)	LCSD Found (ug/Kg)	LCSD Recovery (%)	Relative Difference (%)
aldrin	1	0.711	71	1	0.779	78	9
gamma-chlordane	1	0.787	79	1	0.696	70	12
alpha-chlordane	1	0.749	75	1	0.722	72	4
cis-nonachlor	1	0.849	85	1	0.883	88	4
trans-nonachlor	1	0.851	85	1	0.96	96	12
oxychlordane	1	0.782	78	1	0.871	87	11
4,4'-DDT	2	1.76	88	2	1.9	95	7
4,4'-DDE	2	1.68	84	2	1.72	86	3
4,4'-DDD	2	1.81	91	2	1.7	85	7
alpha-BHC	1	0.685	68	1	0.721	72	5
dieldrin	2	1.79	89	2	1.82	91	1
endosulfan I	1	0.788	79	1	0.771	77	2
endosulfan II	2	1.51	75	2	1.72	86	14
endrin	2	1.91	95	2	1.97	99	3
heptachlor	1	0.95	95	1	1.07	107	12
heptachlor epoxide	1	1.15	115	1	1.08	108	7
hexachlorobenzene	1	0.697	70	1	0.713	71	2
gamma-BHC (lindane)	1	0.631	63	1	0.734	73	15
methoxychlor	10	9.65	97	10	9.69	97	0

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	70	94	30 - 150
decachlorobiphenyl	113	109	30 - 150

ESI



Pesticides in Sediment  
SW 846 8081B

Lab Number: 26884-100  
Sample Designation: Site Composite (Laboratory Duplicate)  
Date Sampled: 01/13/16 0940  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): 26  
Sample Amount (g): 29  
Final Volume (mL): 1  
Dilution Factor: 1

Analyte	Sample Concentration (ug/Kg)	Qualifier	Duplicate Concentration (ug/Kg)	Qualifier	Relative Difference (%)	Limit (%)
aldrin	0.138	T	0.125	T	9	30
gamma-chlordane (cis)	0.093	U	0.093	U	NC	30
alpha-chlordane (trans)	0.093	U	0.112	T	NC	30
cis-nonachlor	0.093	U	0.093	U	NC	30
trans-nonachlor	0.356	T	0.259	T	NC	30
oxychlordane	0.093	U	0.093	U	NC	30
4,4'-DDT	0.431	P	0.366	T	16	30
4,4'-DDE	0.443	P	0.428	T	3	30
4,4'-DDD	0.19	U	0.19	U	NC	30
alpha-BHC	0.093	U	0.093	U	NC	30
dieldrin	0.243	T	0.219	T	11	30
endosulfan I	0.093	U	0.093	U	NC	30
endosulfan II	0.19	U	0.19	U	NC	30
endrin	0.19	U	0.19	U	NC	30
heptachlor	0.093	U	0.093	U	NC	30
heptachlor epoxide	0.093	U	0.093	U	NC	30
hexachlorobenzene	0.093	U	0.093	U	NC	30
gamma-BHC (lindane)	0.093	U	0.093	U	NC	30
methoxychlor	0.93	U	0.93	U	NC	30
toxaphene	4.7	U	4.7	U	NC	30

Surrogate Standard	Sample Recovery (%)	Duplicate Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	56	59	30 - 150
decachlorobiphenyl	61	60	30 - 150

U = Not detected at indicated level.

NC = Not calculated due to one or both values less than five times quantitation limit.

T = Concentrations of target analytes were too low for GCMS confirmation. Compound identification is tentative.

P = Presence of analyte confirmed by GC-MS.

ESI

Pesticides in Sediment  
SW 846 8081B

Lab Number: 26884-100MSD  
Sample Designation: Site Composite (Matrix Spike Duplicate)  
Date Sampled: 01/13/16 0940  
Date Extracted: 02/10/16 0900  
Date Analyzed: 02/11/16  
Matrix: Solid  
Moisture (%): 26  
Sample Amount (g): 29  
Final Volume (mL): 1  
Dilution Factor: 1

Compound	Sample Result (ug/Kg)	Amount Added (ug/Kg)	MS Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	MSD Result (ug/Kg)	Recovery (%)	Recovery Limit (%)	Relative Difference (%)	RPD Limit (%)	Qual
aldrin	0.14	0.9	0.67	57	30-150	0.6	49	30-150	11	30	
gamma-chlordane (cis)	ND	0.9	0.61	65	30-150	0.58	62	30-150	5	30	
alpha-chlordane (trans)	ND	0.9	0.67	72	30-150	0.63	67	30-150	7	30	
cis-nonachlor	ND	0.9	0.63	68	30-150	0.6	65	30-150	4	30	
trans-nonachlor	0.36	0.9	0.68	35	30-150	0.65	31	30-150	5	30	
oxychlordane	ND	0.9	0.64	69	30-150	0.52	55	30-150	22	30	
4,4'-DDT	0.43	1.9	1.4	53	30-150	1.4	50	30-150	4	30	
4,4'-DDE	0.44	1.9	1.6	62	30-150	1.6	61	30-150	1	30	
4,4'-DDD	ND	1.9	1.1	61	30-150	1.1	60	30-150	1	30	
alpha-BHC	ND	0.9	0.55	59	30-150	0.5	53	30-150	10	30	
dieldrin	0.24	1.9	1.4	62	30-150	1.3	59	30-150	4	30	
endosulfan I	ND	0.9	0.63	68	30-150	0.61	65	30-150	4	30	
endosulfan II	ND	1.9	1.1	59	30-150	0.98	53	30-150	12	30	
endrin	ND	1.9	1.4	76	30-150	1.4	75	30-150	1	30	
heptachlor	ND	0.9	0.4	43	30-150	0.4	43	30-150	1	30	
heptachlor epoxide	ND	0.9	0.52	56	30-150	0.48	52	30-150	7	30	
hexachlorobenzene	ND	0.9	0.63	67	30-150	0.57	61	30-150	9	30	
gamma-BHC (lindane)	ND	0.9	0.59	64	30-150	0.54	58	30-150	9	30	
methoxychlor	ND	9.3	7	75	30-150	6.9	74	30-150	1	30	
toxaphene	ND	NA	NA	NA	30-150	NA	NA	30-150	NA	30	

Surrogate Standard	Recovery (%)	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	79	66	30 - 150
decachlorobiphenyl	73	72	30 - 150

Notes:

ND = Not detected above reporting limit.  
NA = Compound not added or evaluated.

ESI

Pesticides in Sediment  
SW 846 8081B

Lab Number: SRM922S  
Sample Designation: Standard Reference Material NIST 1944  
Date Sampled: 02/10/16 0930  
Date Extracted: 02/10/16 0930  
Date Analyzed: 02/13/16  
Matrix: Solid  
Moisture (%): 0  
Sample Amount (g): 1.00  
Final Volume (mL): 1.00  
Dilution Factor: 1

Anayte	Concentration (ug/Kg)	True Value (ug/Kg)	Recovery (%)	Limit (%)	Qual
aldrin	NA	NA	NA	30-150	
gamma-chlordane	NA	NA	NA	30-150	
alpha-chlordane	22.1	16.51	134	30-150	
cis-nonachlor	15.9	3.7	431	30-150	J3
trans-nonachlor	9.42	8.2	115	30-150	
oxychlordane	NA	NA	NA	30-150	
4,4'-DDT	136	119	114	30-150	
4,4'-DDE	87	86	101	30-150	
4,4'-DDD	68.9	108	64	30-150	
alpha-BHC	2.02	2	101	30-150	
dieldrin	NA	NA	NA	30-150	
endosulfan I	NA	NA	NA	30-150	
endosulfan II	NA	NA	NA	30-150	
endrin	NA	NA	NA	30-150	
heptachlor	NA	NA	NA	30-150	
heptachlor epoxide	NA	NA	NA	30-150	
hexachlorobenzene	3.94	6.03	65	30-150	
gamma-BHC (Lindane)	NA	NA	NA	30-150	
methoxychlor	NA	NA	NA	30-150	
toxaphene	NA	NA	NA	30-150	

Surrogate Standard	Recovery (%)	Advisory Limits (%)
tetrachloro-m-xylene	66	30 - 150
decachlorobiphenyl	52	30 - 150

NA = No reference value available  
J3 = SRM %R above limit.

ESI

Lab Number: MDLS2015  
 Sample Designation: Sediment  
 Date Sampled: 02/11/15  
 Date Extracted: 02/11/15  
 Date Analyzed: 02/19/15  
 Matrix: Solid  
 Moisture: 0 %  
 Sample Amount (g): 10.00  
 Final Volume (mL): 1  
 Dilution Factor: 1

Compound	True Value (ug/Kg)	Replicate 1 (ug/Kg)	Replicate 2 (ug/Kg)	Replicate 3 (ug/Kg)	Replicate 4 (ug/Kg)	Replicate 5 (ug/Kg)	Replicate 6 (ug/Kg)	Replicate 7 (ug/Kg)	MDL
hexachlorobenzene	0.2	0.18	0.19	0.19	0.19	0.19	0.19	0.18	0.013
alpha-BHC	0.2	0.12	0.11	0.12	0.13	0.12	0.11	0.12	0.019
gamma-BHC (lindane)	0.2	0.13	0.14	0.14	0.15	0.15	0.14	0.15	0.023
beta-BHC	0.2	0.17	0.21	0.22	0.20	0.26	0.15	0.20	0.102
delta-BHC	0.2	0.13	0.17	0.12	0.14	0.12	0.13	0.14	0.052
heptachlor	0.2	0.16	0.17	0.18	0.20	0.14	0.16	0.16	0.051
aldrin	0.2	0.13	0.14	0.13	0.13	0.13	0.15	0.14	0.024
oxychlordan	0.2	0.15	0.16	0.15	0.16	0.16	0.16	0.17	0.023
chlorpyrifos	0.2	0.19	0.21	0.20	0.22	0.18	0.18	0.21	0.046
heptachlor epoxide	0.2	0.15	0.16	0.17	0.17	0.16	0.16	0.14	0.033
gamma-chlordane (cis)	0.2	0.18	0.19	0.19	0.20	0.18	0.18	0.18	0.018
trans-nonachlor	0.2	0.16	0.17	0.14	0.18	0.16	0.15	0.16	0.037
alpha-chlordane (trans)	0.2	0.16	0.15	0.16	0.19	0.16	0.16	0.17	0.036
endosulfan I	0.2	0.17	0.19	0.16	0.18	0.17	0.17	0.17	0.022
4,4'-DDE	0.4	0.30	0.33	0.31	0.31	0.30	0.29	0.32	0.037
dieldrin	0.4	0.28	0.32	0.31	0.33	0.28	0.30	0.27	0.063
endrin	0.4	0.30	0.31	0.31	0.31	0.31	0.31	0.30	0.012
cis-nonachlor	0.2	0.14	0.14	0.14	0.14	0.14	0.13	0.14	0.010
4,4'-DDD	0.4	0.28	0.29	0.29	0.29	0.29	0.29	0.28	0.013
endosulfan II	0.4	0.28	0.30	0.30	0.30	0.28	0.29	0.29	0.023
toxaphene	100	88.5	90	90.7	90.2	89.2	90	91.00	2.5
4,4'-DDT	0.4	0.28	0.28	0.30	0.31	0.29	0.30	0.29	0.031
endrin aldehyde	0.4	0.27	0.32	0.32	0.35	0.29	0.32	0.31	0.075
endosulfan sulfate	0.4	0.28	0.31	0.32	0.31	0.28	0.31	0.31	0.040
methoxychlor	2	1.73	1.90	1.93	1.90	1.84	1.86	1.79	0.203
endrin ketone	0.4	0.29	0.30	0.31	0.30	0.29	0.30	0.31	0.021

**Table II-1: Completeness Checklist**

<b>Quality Assurance/Quality Control Questions</b>	<b>Yes/No? Comments?</b>
1. Was the report signed by the responsible applicant approved representative?	Yes
2. Were the methods for sampling, chemical and biological testing described in the Sampling and Analysis Plan (SAP) and the Laboratory QA Plan (LQAP) followed?	Yes
3. If not, were deviations documented?	NA
4. Was the SAP approved by the New England District?	Yes
5. Did the applicant use a laboratory with a LQAP on file at the New England District?	Yes
6. Did the samples adequately represent the physical/chemical variability in the dredging area?	Yes
7. Were the correct stations sampled (include the precision of the navigation method used)?	Yes
8. Were the preservation and storage requirements in Chapter 8 of the EPA/Corps QA/QC Manual (EPA/USACE 1995) and EPA (2001d) followed?	Yes
9. Were the samples properly labeled?	Yes
10. Were all the requested data included?	Yes
11. Were the reporting limits met?	Yes
12. Were the chain-of-custody forms properly processed?	Yes
13. Were the method blanks run and were the concentration below the acceptance criteria?	Yes
14. Was the MDL study performed on each matrix (with this data submission) or within the last 12 months?	Yes
15. Were the SRM/CRM analyses within acceptance criteria?	No
16. Were the matrix spike/matrix spike duplicates run at the required frequency and was the percent recovery/RPD within the acceptance criteria?	No
17. Were the duplicate samples analyzed and were the RPDs within the required acceptance criteria?	No
18. For each analytical fraction of organic compounds, were recoveries for the internal standard within the acceptance criteria?	Yes
19. Were surrogate recoveries within the required acceptance criteria?	Yes
20. Were corrective action forms provided for all non-conforming data?	NA
21. Were all the species-specific test conditions in Appendix V met?	NA
22. Were the test-specific age requirements met for each test species?	NA
23. Was the bulk physical/chemical testing performed on the sediments/composites that were biologically tested?	NA
24. Were the mortality acceptance criteria met for the water column and sediment toxicity tests?	NA
25. Were the test performance requirements in Table 11.3 of EPA (1994a) met?	NA

**Table II-2: Quality Control Summary for Analyses of Polyaromatic Hydrocarbons (PAHs) and other base-neutrals in Sediment**

Method Reference Number: 8270C

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met?  Yes/No	List results outside criteria  (Cross-reference results table in data report)	Location of Results  (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Report
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift (15 % D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Report
Method Blank	No target analytes > RL	Yes		In Data Report
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 30 to 150%; RPD <30%)	Yes		In Data Report
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Report
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Report
Internal Standard Areas	Within 50 to 200% of internal standards in continuing calibration check	Yes		Retained at Lab

\* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table

**Table II-3: Quality Control Summary for Analyses of Pesticides in Sediment, Tissue and Water Matrices**

Method Reference Number: 8081B

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (< 20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Report
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ( $\leq$ 15 % D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	No	Cis-nonachlor %R > limit	In Data Report
Method Blank	No target analytes > RL	Yes		In Data Report
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 30 to 150%; RPD <30%)	Yes		In Data Report
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Report
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Report

\* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table

**Table II-4: Quality Control Summary for Analyses of Polychlorinated Biphenyls (PCB congeners) in Sediment, Tissue and Water Matrices**

Method Reference Number: 8082A

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met?  Yes/No	List results outside criteria  (Cross-reference results table in data report)	Location of Results  (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration. (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	Every 20 injections ( $\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 30 to 150%; RPD <30%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	No	%RPD > 30 CGR 153 and 183	In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	Yes		In Data Package

\* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.



**Table II-5: Quality Control Summary for Analyses of Metals in Sediments, Tissue and Water Matrices**

Method Reference Numbers: Various Reference Numbers

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Linear Range Determination for ICP	Performed Quarterly	Yes		Retained at Lab
Initial Calibration for AA, Hg	Performed Daily (Correlation Coefficient $\geq 0.995$ )	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Sechhjk.2 for MDL procedure)	Yes		In Data Package
Initial Calibration Verification/ Continuing Calibration Verification	Hg: 80 to 120% recovery Other metals: 90 to 110% recovery	Yes		Retained at Lab
Initial Calibration Blank/ Continuing Calibration Blank	No target analytes > Instrument Detection Limit (IDL)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Sample Spike/ Sample Duplicate	One set per group of field samples. Must contain all target analytes. Recovery Limits (75 to 125%; RPD < 20% or < 35%)	Yes		In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package

\* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

**Table II-6: Quality Control Summary for Analyses of other Organic Chemicals not listed in Sediment, Tissue and Water Matrices**

**TOTAL ORGANIC CARBON**

Method Reference Numbers: SW846 9060

Quality Control (QC) Element	Acceptance Criteria*	Criteria Met? Yes/No	List results outside criteria (Cross-reference results table in data report)	Location of Results (Retained at Lab or in Data Package)
Initial Calibration	Must be performed prior to the analysis of any QC sample or field sample (<20 % RSD for each compound)	Yes		Retained at Lab
Calculation of Method Detection Limits (MDLs)	For each matrix, analyzed once per 12 month period (see Section 5.2 for MDL procedure)	Yes		In Data Package
Calibration Verification (Second Source)	Once, after initial calibration (80 to 120% recovery of each compound)	Yes		Retained at Lab
Continuing Calibration	At the beginning of every 12 hour shift ( $\pm 15\%$ D)	Yes		Retained at Lab
Standard Reference Materials	Within the limits provided by vendor	Yes		In Data Package
Method Blank	No target analytes > RL	Yes		In Data Package
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One set (MS/MSD) per group of field samples. Must contain all target analytes. (Recovery Limits 60 to 140%; RPD <30%)	No	MS/MSD %R low	In Data Package
Analytical Replicates	Analyze one sample in duplicate for each group of field samples (RPD < 30%)	Yes		In Data Package
Surrogate Recoveries	Calculate % recovery (30 to 150% recovery)	NA		
Internal Standard Areas (if applicable)	Within 50 to 200% of internal standards in continuing calibration check	NA		

\* The Quality Control Acceptance Criteria are general guidelines. If alternate criteria are used, they must be documented in this table.

## SAMPLE RECEIPT AND CONDITION DOCUMENTATION

Page 1 of 1

STUDY NO: 26884  
SDG No:  
Project: Point Judith Pond Federal Project Channel Extension, Narragansett, RI  
Delivered via: ESI  
Date and Time Received: 12/15/15 1130 Date and Time Logged into Lab: 12/15/15 1300  
Received By: RS Logged into Lab by: BP  
Air bill / Way bill: No Air bill included in folder if received? NA  
Cooler on ice/packs: YES Custody Seals present? NA  
Cooler Blank Temp (C) at arrival: 2.4 Custody Seals intact? NA  
Number of COC Pages: 1  
COC Serial Number(s):  
COC Complete: YES Does the info on the COC match the samples? Yes  
Sampled Date: Yes Were samples received within holding time? Yes  
Field ID complete: Yes Were all samples properly labeled? Yes  
Sampled Time: Yes Were proper sample containers used? Yes  
Analysis request: Yes Were samples received intact? (none broken or leaking) Yes  
COC Signed and dated: Yes Were sample volumes sufficient for requested analysis? Yes  
Were all samples received? Yes Were VOC vials free of headspace? NA  
Client notification/authorization: Not required pH Test strip ID number: NA

Field ID	Lab ID	Mx	Analysis Requested	Bottle	Req'd Pres'n	Verified Pres'n
12-14-15 GAL-A	26884-001	S	Hold;	3x1 Gal bucket	4C	Yes
12-14-15 GAL-A	26884-002	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-B	26884-003	S	Hold;	2x1 Gal bucket	4C	Yes
12-14-15 GAL-B	26884-004	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-C	26884-005	S	Hold;	2x1 Gal bucket	4C	Yes
12-14-15 GAL-C	26884-006	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-D	26884-007	S	Hold;	2x1 Gal bucket	4C	Yes
12-14-15 GAL-D	26884-008	S	GZ;	1qt bag	4C	Yes
12-14-15 GAL-E	26884-009	S	Hold;	2x1 Gal bucket	4C	Yes
12-14-15 GAL-E	26884-010	S	GZ;	1qt bag	4C	Yes

Notes and qualifications:

SEE C.O.C

## CHAIN OF CUSTODY DOCUMENTATION

Client: <u>CLF Engineering</u>		Contact: <u>Ray Salazar</u>		Project Name: <u>QDC</u>		Page <u>1</u> of <u>1</u>	
Report to:		Address: <u>15 Creek Road</u>		Project Number: <u>14217</u>			
Invoice to:		Address: <u>MA 02738</u>		Project Manager: <u>Wendy Rulha</u>			
Voice:		Fax:		email: <u>WRulha@CLFEngineering.com</u>		Quote No:	
Protocol:		RCRA		SDWA		NPDES	
Your Field ID: (must agree with container)		Date Sampled		Time Sampled		USCOE	
Lab Number (assigned by lab)		Grab or composite (G/C)		Container Size (ml)		Container Type (P/G/T)	
Field Preservation		Matrix S=Solid W=Water		Filter N=Not needed F=Done in field L=Lab to do		Analyses Requested Special Instructions:	
-001	12-14-15 GAL-A	12/14/15	RS	3x1 Gal			GRATN SIZE / 10 DAY BIO
-002	" GAL-A	"	"	1qt bag			
-003	" GAL-B	"	"	2x1 Gal			
-004	" GAL-B	"	"	1qt bag			
-005	" GAL-C	"	"	2x1 Gal			
-006	" GAL-C	"	"	1qt bag			
-007	" GAL-D	"	"	2x1 Gal			
-008	" GAL-D	"	"	1qt bag			
-009	" GAL-E	"	"	2x1 Gal			
-010	" GAL-E	"	"	1qt bag			
Relinquished By: <u>Ray Salazar</u>		Date: <u>12/15/15</u>		Time: <u>11:30</u>		Received By: <u>R Scott</u>	
Relinquished By:		Date:		Time:		Received at Lab By:	
Comments: <u>2.4%</u>		Date:		Time:		Date:	

**APPENDIX H**  
**ESSENTIAL FISH HABITAT**  
**ASSESSMENT**

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**ESSENTIAL FISH HABITAT ASSESSMENT**  
**FOR THE**  
**IMPROVEMENT DREDGING OF THE POINT JUDITH HARBOR**  
**FEDERAL NAVIGATION PROJECT**

**September 2017**

**Prepared by**

**U.S. Army Corps of Engineers**

**New England District**

**696 Virginia Road**

**Concord, Massachusetts 01742-2751**

## **1.0 INTRODUCTION**

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require that an Essential Fish Habitat (EFH) consultation be conducted for activities that may adversely affect important habitats of federally managed marine and anadromous fish species. EFH includes “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Point Judith Harbor and the nearshore placement site off Matunuck State Beach all fall into this category and have the potential to provide habitat for fish species in the area. The following is an assessment of the impacts to EFH from the improvement dredging of the Point Judith Harbor Federal Navigation Project (FNP).

## **2.0 PROPOSED ACTION**

The proposed project includes the widening of the existing 15-foot deep West Bulkhead channel by 50 feet for a distance of approximately 700 feet and extending this same channel approximately 1,200 feet into the North Basin area at a width of 150 feet and a depth of 11 feet (see Figure 2 in the Environmental Assessment). Approximately 23,700 cubic yards (CY) of sandy material will be removed from the improvement sections using a mechanical dredge with supporting split-hull scows. The sandy dredged material will be placed in nearshore waters off of the Matunuck shoreline in South Kingstown, RI, approximately three miles west of the harbor. The dredged material will be placed in approximately 15 to 18 feet MLLW of water to maximize the beneficial use of dredge material for beach nourishment. Construction will occur between October 1 and January 31 of any given year in which funding becomes available and is expected to take two to three weeks to complete.

## **3.0 ANALYSIS OF IMPACTS**

Impacts to EFH from any dredging and placement activity include potential changes in the physical and chemical properties of the water column, changes in sediment types both within the

channel and at adjacent areas, and changes in water depth. Consequently, changes in the abundance and/or distribution of prey species may also result from both dredging and placement activities. These impacts may range from both short-term, (i.e. impacts to the water column (increases in turbidity and total suspended solids)), to longer term impacts (i.e. changes in bathymetry as a result of dredging within the channel and deposition at the placement site).

### 3.1 Physical Environment

**Water Quality** - Any impacts from the dredging of the channel of Point Judith Harbor on water quality are expected to be temporary, short-term, and limited to the immediate project area. Water quality impacts would be primarily a result of increased suspended sediment (TSS) loads within the water column as a result of both the dredging and disposal operations. The sediments in the entrance channel are predominantly sand. Consequently, any suspended sediments should quickly settle out of the water column.

Decreases in dissolved oxygen (DO) levels are sometimes a concern with dredging and placement activities. Sandy material is generally not associated with high levels of organic carbon, and dredging operations are not likely to result in release of nutrients or decreases in dissolved oxygen. The area(s) are dynamic and well flushed due to tidal activity. Therefore, dissolved oxygen levels are not anticipated to be impacted by dredging and/or disposal activities of this project. No appreciable changes in the salinity regime, tidal flows or tide height are expected as a result of the proposed dredging or placement activity.

**Bathymetry/Water Depth** - Other impacts from the proposed project include changes in the bathymetry of the areas to be dredged and the placement site due to the removal and placement of sediment. Areas within the proposed project area that are to be dredged will result in deeper waters in those areas. At the nearshore placement site, material will be deposited in linear mounds oriented parallel to the shoreline to mimic a natural offshore bar. This will induce a more rapid assimilation of the sandy dredged material into the normal beach system.

### 3.2 Biological Environment

**Prey Species** - The abundance and/or distribution of prey species, for which EFH has been designated, may be impacted from dredging and placement activities conducted for the Point Judith Harbor improvement project. Many fish with EFH in the project area feed on organisms that live in or on the sediment. At locations that are to be dredged, these prey species will be disrupted and or destroyed during the dredging process. During material placement, prey species are likely to be buried. However, the substrate types in both dredging and placement locations following project completion are expected to be similar to pre-project conditions thus promoting rapid recolonization by organisms from adjacent areas. Therefore, any impacts to fish species using these areas for forage, would be expected to be temporary and highly localized.

Prey species that live in the water column are also likely to be impacted during dredging and placement activities. The increased suspended sediments resulting from dredging and mainly from placement activities, have the potential to destroy/disrupt planktonic species in the vicinity of the sediment plume. However, given the short-lived and transient nature of these water



column disturbances, it is expected that any impacts would be of a temporary nature and return to ambient conditions upon cessation of operational activities. Thus, any impacts would not be expected to have any significant long-term effects on prey species within the project area.

Two species of anadromous fish, alewives *Alosa pseudoharengus* and blueback herring *Alosa aestivalis*, are known to transit through Point Judith Pond to spawn in the Saugatucket River. These species generally begin migration into the pond at the end of February/beginning of March, with peak migration in April, and migration is generally completed by the end of May. Migration of these species from upstream areas to sea generally begins in August, peaks during the months of September/October, and is complete near the end of November. Anadromous fish serve as prey for some of the EFH species, such as bluefish. As the sandy nature of the sediments being dredged would have minimal impacts on the water quality of the area, any increases in suspended sediment levels would not affect anadromous fish in the area. Therefore, impacts to EFH species that prey on anadromous fish would not be significantly impacted in the project area.

Dredging will occur between October 1 and January 31 and is expected to take two to three months to complete. While a portion of the effort may occur towards the end of the anadromous fish out-migration period, the sandy nature of the material to be dredge and limited footprint of the construction effort compared to the overall estuarine area in Pond Judith Pond available for fish passage should not pose an impact to migrating fish. Therefore, no more than minimal impacts to the migrating fish EFH and expected.

Shellfish also serve as prey items for EFH species. As noted in Section 7.4 of the Environmental Assessment, there will be no direct impact to shellfish beds from the improvement dredging effort. At the nearshore placement site, placement activities would bury any shellfish in the direct footprint of the site. However, impacts will be confined to a localized area in comparison to the surrounding environment of similar habitat.

#### 4.0 Life History of EFH Species

##### 4.1 Selection of EFH Species

The National Marine Fisheries Service Guide to Essential Fish Habitat web site was used to determine which species have designated EFH in the project area and surrounding areas. The location of this website is <http://www.nmfs.gov/ro/doc/webintro.html>. The species, and the life stages of those species, that have EFH in the study area was determined by using the quick reference 10 x 10 minute squares of latitude and longitude. The coordinates of the 10 x 10 minute squares that are representative of the geographic area of the proposed dredging and disposal activities are provided in Table 1 below. As the species noted in the 10 x 10 square that includes Point Judith are incomplete, the adjacent 10 x 10 square is also considered in this assessment.

Tables 2 and 3 presents a list of the species that have designated EFH within Point Judith Harbor and the nearshore disposal area off of Matunuck Beach. A short summary of the EFH for each life stage of each particular species is described in the sections below. Information on the species

was taken from the NMFS “Guide to EFH Species Designations” located at <http://www.nero.nmfs.gov/ro/doc/list.htm>.

**Table 1.** 10’ x 10’ Square Coordinates: Point Judith Harbor

10 x 10 square	Boundary	North	East	South	West
A	Coordinate	41° 30.0’	71° 20.0’	41° 20.0’	71° 30.0’
B	Coordinate	41° 30.0’	71° 30.0’	41° 20.0’	71° 40.0’

Square A Description (i.e. habitat, landmarks, coast line markers): Atlantic Ocean waters within Narragansett Bay within the square affecting the following: from Point Judith Harbor, Rhode Island to the west half of Newport Neck, along with the southern half of Conanicut Island, along with the inlets to the East and West Passage. These waters also affect the following: The Dumlplings, Rose I., Brenton Pt., Fort Adams, Jamestown, R.I., Mackerel Cove, Beavertail Pt., Beaverhead, The Bonnet, Bonnet Pt., Watson Pier, Old Antonio Rock, Jones Ledge, Haycock Ledge, Brenton Reef, Seal Ledge, Whale Rock, River Ledge, Narragansett Pier, Point Judith, RI., Little Neck, Point Judith Neck, Black Pt., along with the precautionary area to the shipping traffic lanes to and from Narragansett Bay.

Square B Description (i.e. habitat, landmarks, coast line markers): Atlantic Ocean waters within the square within affecting the following: Point Judith Harbor, R. I., from the Marsh (northwest of Point Judith, R. I.) to halfway down Quonochontaug Beach. Also the following are affected by these waters: the eastern half of Quonochontaug Beach, Jerusalem R. I., Matunuck, R. I., and Green Hill, R. I., within Block Island Sound, along with Point Judith Pond, the Nebraska Shoal, and Charlestown Breachway.

**Table 2.** Species designations in Square A

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod ( <i>Gadus morhua</i> )				X
haddock ( <i>Melanogrammus aeglefinus</i> )		X		
pollock ( <i>Pollachius virens</i> )				
whiting ( <i>Merluccius bilinearis</i> )	X	X	X	
red hake ( <i>Urophycis chuss</i> )	X	X	X	X
white hake ( <i>Urophycis tenuis</i> )				
witch flounder ( <i>Glyptocephalus cynoglossus</i> )				
winter flounder ( <i>Pseudopleuronectes americanus</i> )	X	X	X	X
yellowtail flounder ( <i>Limanda ferruginea</i> )				
windowpane flounder ( <i>Scophthalmus aquosus</i> )	X	X	X	X
American plaice ( <i>Hippoglossoides platessoides</i> )		X	X	X
ocean pout ( <i>Macrozoarces americanus</i> )	X	X	X	X
Atlantic sea scallop ( <i>Placopecten magellanicus</i> )				
Atlantic sea herring ( <i>Clupea harengus</i> )		X	X	X
monkfish ( <i>Lophius americanus</i> )	X	X		
bluefish ( <i>Pomatomus saltatrix</i> )			X	X
long finned squid ( <i>Loligo pealeii</i> )	n/a	n/a	X	X
short finned squid ( <i>Illex illecebrosus</i> )	n/a	n/a		
Atlantic butterfish ( <i>Peprilus triacanthus</i> )			X	
Atlantic mackerel ( <i>Scomber scombrus</i> )	X	X	X	X
summer flounder ( <i>Paralichthys dentatus</i> )		X	X	X
scup ( <i>Stenotomus chrysops</i> )	X	X	X	X
black sea bass ( <i>Centropristis striata</i> )	n/a		X	X
surf clam ( <i>Spisula solidissima</i> )	n/a	n/a	X	X
ocean quahog ( <i>Artica islandica</i> )	n/a	n/a		
spiny dogfish ( <i>Squalus acanthias</i> )	n/a	n/a	X	X
tilefish ( <i>Lopholatilus chamaeleonticeps</i> )				
king mackerel ( <i>Scomberomorus cavalla</i> )	X	X	X	X
Spanish mackerel ( <i>Scomberomorus maculatus</i> )	X	X	X	X
cobia ( <i>Rachycentron canadum</i> )	X	X	X	X
sand tiger shark ( <i>Carcharias taurus</i> )		X		
blue shark ( <i>Prionace glauca</i> )		X		X
dusky shark ( <i>Carcharhinus obscurus</i> )			X	
shortfin mako shark ( <i>Isurus oxyrinchus</i> )			X	
sandbar shark ( <i>Carcharhinus plumbeus</i> )			X	X
bluefin tuna ( <i>Thunnus thynnus</i> )				X

**Table 3.** Species designations in Square B.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod ( <i>Gadus morhua</i> )				X
haddock ( <i>Melanogrammus aeglefinus</i> )				
pollock ( <i>Pollachius virens</i> )				
whiting ( <i>Merluccius bilinearis</i> )				
red hake ( <i>Urophycis chuss</i> )				
white hake ( <i>Urophycis tenuis</i> )				
witch flounder ( <i>Glyptocephalus cynoglossus</i> )				
winter flounder ( <i>Pseudopleuronectes americanus</i> )				
yellowtail flounder ( <i>Limanda ferruginea</i> )				
windowpane flounder ( <i>Scophthalmus aquosus</i> )				
American plaice ( <i>Hippoglossoides platessoides</i> )				
ocean pout ( <i>Macrozoarces americanus</i> )				
Atlantic sea scallop ( <i>Placopecten magellanicus</i> )				
Atlantic sea herring ( <i>Clupea harengus</i> )				X
monkfish ( <i>Lophius americanus</i> )				
bluefish ( <i>Pomatomus saltatrix</i> )				X
long finned squid ( <i>Loligo pealeii</i> )			X	X
short finned squid ( <i>Illex illecebrosus</i> )				
Atlantic butterfish ( <i>Peprilus triacanthus</i> )				
Atlantic mackerel ( <i>Scomber scombrus</i> )				
summer flounder ( <i>Paralichthys dentatus</i> )				
scup ( <i>Stenotomus chrysops</i> )				
black sea bass ( <i>Centropristis striata</i> )				
surf clam ( <i>Spisula solidissima</i> )				
ocean quahog ( <i>Artica islandica</i> )				
spiny dogfish ( <i>Squalus acanthias</i> )				
tilefish ( <i>Lopholatilus chamaeleonticeps</i> )				
king mackerel ( <i>Scomberomorus cavalla</i> )	X	X	X	X
Spanish mackerel ( <i>Scomberomorus maculatus</i> )	X	X	X	X
cobia ( <i>Rachycentron canadum</i> )	X	X	X	X
sand tiger shark ( <i>Carcharias taurus</i> )		X		
blue shark ( <i>Prionace glauca</i> )				X
dusky shark ( <i>Carcharhinus obscurus</i> )				
shortfin mako shark ( <i>Isurus oxyrinchus</i> )				
sandbar shark ( <i>Carcharhinus plumbeus</i> )				
bluefin tuna ( <i>Thunnus thynnus</i> )				

## 4.2 EFH Species

Essential fish habitat (EFH) for adult Atlantic cod (*Gadus morhua*) is designated in the project area. Adult Atlantic cod are found in regions with bottom habitats having a substrate of rocks, pebbles, or gravel, water temperatures below 10°C, and depths from 33 to 492 feet. This project is expected to have minimal effects on EFH for adult Atlantic cod because the majority of the work will occur at depths shallower than where the fish is normally found. Additionally, the material to be dredged is sand and which is not a preferred habitat type for cod.

Essential fish habitat (EFH) for haddock larvae (*Melanogrammus aeglefinus*) is designated in the project area. Larval haddock found in waters with depths from 30 to 90 meters. This project is expected to have no effects on EFH for larval haddock because the majority of the work will occur at depths shallower than where the larvae are normally found.

EFH is designated within the project area for eggs, larvae, and juveniles for whiting (*Merluccius bilinearis*). The eggs are pelagic and drift with the prevailing currents. Most eggs are found between 164 and 492 feet depth with peaks from June through September in temperatures below 20° C. The larvae are also pelagic and most are found at depths of 164 to 426.5 feet with abundance peaks from July through September. Juvenile whiting are found on bottom habitats of all substrate types with water temperatures below 21° C and depths between 66 – 886 feet. The Point Judith Harbor project is expected to have minimal effects on EFH for whiting eggs, larvae and juveniles because all these life stages are more common at greater depths than found in this dredging project (approximately 15 feet depth).

EFH is designated within the project area for eggs, larvae, and juveniles for red hake (*Urophycis chuss*). The eggs are found in surface waters with temperatures below 10° C and most often observed during the months from May - November, with peaks in June and July. Larvae are found in surface waters with temperatures below 19° C, water depths less than 656 feet, and salinity greater than 0.5 ‰. Red hake larvae are most often observed from May through December, with peaks in September - October. The juveniles are found on bottom habitats with a substrate of shell fragments, including areas with an abundance of live scallops. The water temperatures are below 16° C, depths less than 328 feet and a salinity range from 31 to 33‰. Although EFH for red hake is within the project area, this species is broadly distributed in north and mid-Atlantic waters from the Gulf of Maine to Cape Hatteras. Any disruption of EFH will be associated with the dredging or placement activities and therefore will not be long-term. Juveniles should be able to avoid any potential impacts because of their mobility. Eggs and larvae have the potential to be impacted by localized, short-term turbidity associated with the construction activity, but this activity will not occur during peak seasons for these sensitive life stages. Therefore, no more than minimal impact on red hake EFH is anticipated as a result of this project.

EFH is designated within the project area for all life stages of the winter flounder (*Pseudopleuronectes americanus*). The eggs of winter flounder, which are demersal, are typically found at depths of less than 16 feet in bottom waters in a broad range of salinities (10-30 ‰). Spawning, and therefore the presence of eggs, occurs from February to June. EFH for larvae, juveniles, and adults includes bottom habitats of mud and fine-grained sandy substrate in

waters ranging from 0.3 to 328 feet in depth. Spawning adults are typically associated with similar substrates in less than 19.7 feet of water. Although winter flounder EFH is located within the project area, juvenile and adults are very mobile and would be able to flee from the dredging or placement areas once activities commence. As this project is being constructed between October – January of the year in which funding becomes available, no more than minimal impacts to winter flounder eggs and larvae are expected. Additionally, habitat disturbance should be short-term and highly localized. Therefore, no more than minimal impacts to winter flounder and winter flounder EFH are expected.

EFH is designated within the project area for all stages of windowpane flounder (*Scopthalmus aquosus*). Juveniles and adults prefer bottom habitats of mud or fine-grained sand and can be found in salinities ranging from 5.5 ‰ to 36 ‰. Seasonal occurrences in the project area are generally from February to November, with peaks in occurring May and October. Although EFH for the windowpane is within the project area, any disruption of EFH will be associated with the dredging and placement activities therefore will not be long-term. Windowpane flounder adults and juveniles should be able to avoid any potential impacts because of their mobility. Therefore, no more than minimal impact on windowpane flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for all life stages of ocean pout (*Macrozoarces americanus*). This species is a nearshore species that inhabits hard bottom substrates with salinities greater than 30 ‰. Ocean pout egg development takes two to three months during late fall and winter. The larvae are most often observed from late fall through spring. The sandy bottom substrate of the project area should limit any potential impact to the eggs and larvae. Adults and juveniles should be able to avoid any potential impacts because of their mobility. Therefore, no more than minimal impacts to ocean pout EFH are expected.

EFH is designated within the project area for Atlantic sea herring (*Clupea harengus*) juveniles and adults. Juvenile and adults typically prefer depths of 49.2 to 426.5 feet, depths that are generally deeper than those found within the project area. No more than minimal impact is expected to occur to Atlantic sea herring EFH.

EFH is designated within the project area for bluefish (*Pomatomus saltatrix*) juveniles and adults. Although juveniles and adults are found in the surface waters of mid-Atlantic estuaries from May through October, EFH for this species is mostly pelagic waters over the Continental Shelf. Bluefish adults are highly migratory, therefore, no more than minimal impact on bluefish EFH is anticipated as a result of the proposed project.

EFH is designated within the project area for long finned squid (*Loligo pealei*) adults. EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina where the highest catches are found. The squid are highly mobile so no more than minimal impact on EFH is anticipated.

EFH is designated with the project area for all stages of summer flounder (*Paralichthys dentatus*). Adult summer flounder migrate into shallow coastal and estuarine waters during warmer months

and move offshore during colder months. Although summer flounder may occur in the project area, adults should be able to avoid any potential impacts because of their mobility. At most, minimal impacts on summer flounder EFH are anticipated as a result of this project.

EFH is designated in the project area for all juvenile and adult scup (*Stenotomus chrysops*). Scup juveniles and adults have the potential to occur in estuarine systems during the spring and summer months. All life stages of scup prefer salinities greater than 15 ‰. Juveniles and adults use structured areas for foraging and refuge that are not available in the project area. They are highly mobile and should be able to avoid dredging and placement activities. No more than minimal impacts to Scup EFH are anticipated as a result of this project.

EFH is designated for black sea bass (*Centropristis striata*) juveniles and adults within the project area. EFH for the juveniles and adults of this species is predominantly within estuarine systems with oceanic salinities. Juveniles and adults are found in estuaries during spring and summer months in water temperatures above 60 °F and salinities greater than 18 ‰. Black sea bass prefer rough, shelly substrates and can be found in natural and man-made structured habitats. Although sea bass may occur in the project area, adults and juveniles should be able to avoid any potential impacts because of their mobility. Therefore, no more than minimal impacts to black sea bass EFH are anticipated as a result of this project.

EFH is designated in the project area for all life stages of the following coastal migratory species: king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), and cobia (*Rachycentron canadum*). EFH for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, all coastal inlets, and all state-designated nursery habitats of particular importance to coastal migratory pelagics. These species prefer warm water about 20° C. As the proposed project will occur in the fall and winter months, no more than minimal impacts to coastal migratory species are anticipated as a result of this project. Any habitat disturbed during construction should be functional when these species are present.

EFH is designated in the project area for either the juveniles or adults or both of the following highly migratory species: common thresher shark (*Alopias vulpinus*), blue shark (*Prionace glauca*), dusky shark (*Charcharinus obscurus*), shortfin mako shark (*Isurus oxyrinchus*), sandbar shark (*Charcharinus plumbeus*), bluefin tuna (*Thunnus thynnus*), and sand tiger shark (*Odontaspis taurus*). Most of these species are found in pelagic waters of at least 82 feet (25 m) depth. The few that enter coastal waters are highly motile and can swim away from any dredging disturbances. Therefore, no more than minimal impacts to highly migratory species are anticipated as a result of this project.

EFH is designated within the dredge and placement areas for juvenile and adult little skates (*Leucoraja erinacea*). The little skate has a coastal distribution; and is found in habitats with sandy, gravelly, or mud substrates of the shallow water in the western Atlantic from Nova Scotia, Canada to North Carolina, USA. This species can tolerate a wide range of temperatures and salinity ranges from 27 to 33.8 ppt. They are found from the surface waters to depths of 295 feet (90 m). The little skate does not appear to have large-scale migrations but they do move to

shallower water during the summer and move to deeper water in fall or early winter. The skates are motile should be able to swim from any areas of disturbance. Therefore, no more than minimal impacts to little skate EFH are anticipated as a result of this project.

EFH is designated in the project areas for juvenile winter skates (*Leucoraja ocellata*). The winter skate also has a coastal distribution; and is found in habitats with sand and gravel for juveniles and sandy, gravelly, or mud substrates for adults. This species is found in the shallow water in the western Atlantic from Newfoundland Banks and southern Gulf of St. Lawrence in Canada to North Carolina, USA from the surface to depths of 295 feet. The skates are motile should be able to swim from any areas of disturbance. Therefore, no more than minimal impacts to little skate EFH are anticipated as a result of this project.

## 5.0 CUMULATIVE EFFECTS

Cumulative impacts are those resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Past and current activities in Point Judith Harbor include the maintenance dredging of the Federal channel, dredging of private marinas, commercial fishing vessel traffic, recreational boating, recreational fishing, and other water related recreational activities. Reasonably foreseeable future actions include the continuation of current maintenance and navigation activities. The effects of these previous and existing actions are generally limited to infrequent disturbances of the benthic communities in the dredged and disposal areas. Water quality, air quality, hydrology, and other biological resources are generally not significantly affected by these actions. The placement of sand in the nearshore environment keeps the sand within the system and reduces the overall erosion of the area. The direct effects of this project are not anticipated to add to impacts from other actions in the area. Therefore, no adverse cumulative impacts to EFH species are anticipated as a result of this project.

## 6.0 SUMMARY OF EFFECTS

The dredging activities proposed for improvement dredging of the Point Judith Harbor channel could potentially have some limited temporary impacts on EFH species found within the vicinity of the dredge and placement area. There would be minimal turbidity associated with the project since the material being dredged is sand and the project is projected to be completed in a short time frame (i.e., under 1 month). During the proposed work schedule of October through January, sensitive life stages of winter flounder (i.e., eggs and larvae) would not be significantly impacted by dredging or suspended sediments as they should not be present in significant numbers. Additionally the localized and short-term increases in turbidity levels should have minimal effects on anadromous fish and shellfish spawning. In general, eggs and larvae are more susceptible to impacts than juveniles and adults (Sherk et al., 1975) which can avoid dredging and disposal related disturbance. Due to the time of year for the proposed dredging, the EFH species with the greatest potential to be affected by the dredging project are those with planktonic eggs and larvae suspended in the water column (whiting, red hake, windowpane flounder). These eggs and larvae may be physically damaged or killed from exposure to elevated



concentrations of suspended solids, but the sediment contains few fines, so little material will stay suspended in the water column.

## 6.1. Conclusions

Although there is the potential for project activities to impact species which may occur in the dredging and disposal areas, any impacts are expected to be of short-term and limited to the immediate project area. Hydrological conditions such as tides and currents will not change as a result of the project. Any changes to water quality (temperature and TSS, DO) will be temporary and water quality will return to pre-project conditions when the project is complete. Prey species destroyed or otherwise impacted during the dredging and placement processes are expected to return following project completion.

Additionally, not all areas designated as EFH for the various species will be impacted. Most species with designated EFH in Point Judith Harbor also have EFH in Block Island Sound and other harbors along the coast. The effects of dredging and placement will be confined to limited areas of the Point Judith Harbor FNP and nearshore off of Matunuck Beach. Therefore, the species at these locations will be able to sustain the population of their respective species in this geographic region.

## 7.0. REFERENCES

LaSalle, M. W., D. G. Clarke, J. Homziak, J.D. Lunz, and T.J. Fredette. 1991. A framework for assessing the need for seasonal restrictions on dredging and disposal operations. Technical Report D-91-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A240 567.

Sherk, J.A., J.M. O'Connor, and D.A. Neumann. 1975. Effects of suspended and deposited sediments on estuarine environments. *Estuarine Research*. 2:541-558.

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## **APPENDIX I**

### **AIR QUALITY RECORD OF NON-APPLICABILITY (RONA)**

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# **RECORD OF NON-APPLICABILITY (RONA)**

## **Emissions Calculations for:**

Point Judith Section 107 Project

Narragansett, Rhode Island

**GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY**

**Project/Action Name:** Point Judith Harbor  
Section 107  
Navigation Improvement Project  
Narragansett, Rhode Island

**Project/Action Point of Contact:** Joseph B. MacKay,  
Chief, Environmental Resources Section  
Phone: 978-318-8142

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

Total direct and indirect emission from this project/action are estimated at less than 100 tons for Ozone, and are below the conformity threshold value established at 40 CFR 93.153(b) of 100 tons/year of Ozone;

**AND**

The project/action is not considered regionally significant under 40 CFR 93.153(i).


Supporting documentation and emissions estimates are:

(X) ATTACHED

(X) APPEAR IN THE NEPA DOCUMENTATION (Section 7.9)

( ) OTHER

**SIGNED**

  
*Jay MacKay, Chief, Environmental Resources Section*



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## **APPENDIX J**

# **DREDGED MATERIAL PLACEMENT SUITABILITY DETERMINATION**

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**Memorandum For:** Mark Habel, Project Manager, CENAE-PDP

**Subject:** Suitability Determination for the Point Judith Pond Federal Navigation Project Channel Extension, Narragansett, Rhode Island.

**1. Summary:**

This memorandum addresses the suitability of dredged material from the Point Judith Pond Federal Navigation Project Channel Extension for placement at a nearshore beneficial reuse site. The New England District (NAE) of the U.S. Army Corps of Engineers (USACE) finds that sufficient data has been provided to satisfy the evaluation and testing requirements of Section 404 of the Clean Water Act (CWA). Based on an evaluation of the project site and the material proposed to be dredged, these sediments are suitable for placement at the proposed location.

**2. Project Description:**

NAE is proposing to widen the existing East Branch Channel of the Point Judith Pond Federal Navigation Project (FNP) by dredging an area approximately 700' long and 50' wide adjacent to the FNP to a depth of -15 FT Mean Lower Low Water (MLLW). This channel widening encompasses approximately 0.8 acres and will produce a volume of approximately 7,100 cubic yards of sandy material. NAE is also proposing to lengthen the East Branch Channel by dredging an area approximately 1,200' long and 150' wide to a depth of -11 FT MLLW. This channel extension covers approximately 4.1 acres and will produce a volume of approximately 11,200 cubic yards of sandy material. The existing FNP and proposed channel improvements are presented on Figure 1.

This material is expected to be mechanically dredged and placed at a previously used nearshore site off the Mantunuk shoreline for the purpose of beach nourishment (Figure 2).

**3. Sampling, Testing, and Analysis:**

A contractor for the Rhode Island Coastal Resources Management Council (RICRMC) collected sediment vibracore samples from Point Judith Pond in December 2015. Five locations were sampled in the proposed improvement areas to characterize the potential dredged material and are presented as Stations A-E on Figure 1. Sediment samples were analyzed for grain size and showed that the entire improvement area is predominately sand with fine grained material comprising less than 20% of any sample (Table 1).

**Table 1. Grain Size Results from the Point Judith Pond FNP**

<b>Stations</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
% Gravel	0.9	1	1	0.2	0
% Sand	96.8	93.9	89.4	79.8	84.4
% Silt and Clay	2.3	5.1	9.6	20	15.6

Stations A and B were greater than 90% sand and were excluded from further testing. Samples from Stations C, D, and E were also predominately sand but were combined into a single composite sample (Composite 1) and analyzed for the bulk chemistry parameters specified in the in the Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters (RIM, EPA/USACE 2004). The additional analysis was performed to determine if the material may be suitable for open water placement at the Rhode Island Sound Disposal Site (RISDS) if an appropriate beneficial use site could not be identified.

The composite sample had detectable concentrations of metals, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). These concentrations were low and comparable to a sample the contractor collected at the RISDS reference area (Tables 2 – 4).

**Table 2. PAH Concentrations from the Point Judith Pond FNP and RISDS**

<b>Analyte</b>	<b>RISDS</b>	<b>COMP 1</b>
Naphthalene	U	U
Acenaphthylene	U	U
Acenaphthene	U	U
Fluorene	U	U
Phenanthrene	20	29
Anthracene	J	J
Fluoranthene	13	54
Pyrene	J	54
Benz(a)anthracene	U	21
Chrysene	U	32
Benzo(b)fluoranthene	U	25
Benzo(k)fluoranthene	U	18
Benzo(a)pyrene	U	16
Indeno(1,2,3-cd)Pyrene	U	11
Dibenz(a,h)anthracene	U	10
Benzo(ghi)perylene	U	12

U = Non-detect, J = Estimated Value, Units = µg/kg

**Table 3. Metal Concentrations from the Point Judith Pond FNP and RISDS**

Analyte	RISDS	COMP 1
Arsenic, Total	2.8	1.5
Cadmium, Total	U	0.14
Chromium, Total	9.6	10
Copper, Total	2.3	5.2
Lead, Total	6.2	4.7
Mercury, Total	U	0.015
Nickel, Total	4.7	6.2
Zinc, Total	17	23

U = Non-detect, Units =  $\mu\text{g/kg}$ **Table 4. PCB Concentrations from the Point Judith Pond FNP and RISDS**

Analyte	RISDS	COMP 1
PCB 8	U	0.06
PCB 18	U	U
PCB 28	U	U
PCB 44	U	0.16
PCB 49	U	0.16
PCB 52	U	0.31
PCB 66	U	U
PCB 77	U	U
PCB 87	U	0.20
PCB 101	0.09	0.43
PCB 105	U	0.18
PCB 118	0.07	0.36
PCB 126	0.05	U
PCB 128	U	0.12
PCB 138	U	0.65
PCB 153	U	0.72
PCB 170	U	0.26
PCB 180	0.07	0.81
PCB 183	U	0.21
PCB 184	U	U
PCB 187	U	0.56
PCB 195	U	0.07
PCB 206	U	0.10
PCB 209	0.06	U

U = Non-detect, Units =  $\mu\text{g/kg}$

The composite sample was then analyzed for the potential to cause toxicity to benthic organisms through a 10 day whole sediment toxicity test as described in the Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual (Green Book, EPA/USACE 1991). Mean survivability for the composite sample was 84% for *A. bahia* and 94% for *L. plumulosus* and was not statistically different from the survivability of organisms exposed to reference sediments from RISDS.

The nearshore placement area of off Mantunuk (Figure 2) was previously used for the placement of dredged material from the Point Judith FNP. Existing side-scan sonar survey data showed the surficial sediments to be composed primarily of sand (Boothroyd et al. 2006).

#### **5. Clean Water Act Regulatory Requirements:**

The placement of sediments at the nearshore site is regulated under Section 404 of the Clean Water Act. Subpart G of Section 404(b)(1), Guidelines for Specification of Disposal Sites for Dredged or Fill Material, describes the procedures for conducting this evaluation, including any relevant testing that may be required.

Under §230.60, General Evaluation of Dredged or Fill Material, further testing of the dredged material is not necessary if the material is not considered a carrier of contaminants. According to §230.60(a) this exclusion applies if the dredged material is composed primarily of sand, gravel, or other naturally occurring inert material from a high energy environment such as a coastal area with shifting sand bars and channels.

Based on a review of the sampling data, NAE determined that the material from the proposed improvement area of the Point Judith FNP is composed primarily of sand and is not likely a carrier of contaminants. Additional bulk chemistry and toxicity testing confirmed that the material is not a carrier of contaminants.

#### **6. Suitability Determination:**

Sediments from the Point Judith FNP improvement areas meet the exclusionary criteria established in §230.60(a) as dredged material that is not likely a carrier of contaminants that does not require further testing. Therefore, the material meets the requirements of Section 404 of the Clean Water Act and is suitable for placement as proposed.

Copies of this determination were sent to the United States Environmental Protection Agency Region 1 (USEPA) and RICRMC who concurred with the findings.

CENAE-PDE

SUBJECT: Suitability Determination for the Point Judith Pond Federal Navigation Project Channel Extension, Narragansett, Rhode Island.

**7. References:**

Boothyrod, J, et. al. 2006. Sidescan Report on the Nearshore Area off of Matunuck Beach, RI. Prepared for the U.S. Army Corps of Engineers, New England District, Concord, MA

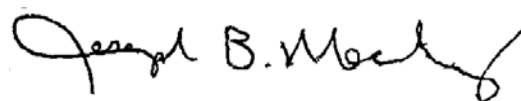
EPA/USACE 2004. Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters. U.S. EPA Region 1, Boston, MA/U.S. Army Corps of Engineers, New England District, Concord, MA.

EPA/USACE 1991. Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual. Environmental Protection Agency, Office of Water and Department of the Army, United States Army Corps of Engineers. Washington, D.C.



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Aaron Hopkins  
Marine Ecologist  
Environmental Resources Section  
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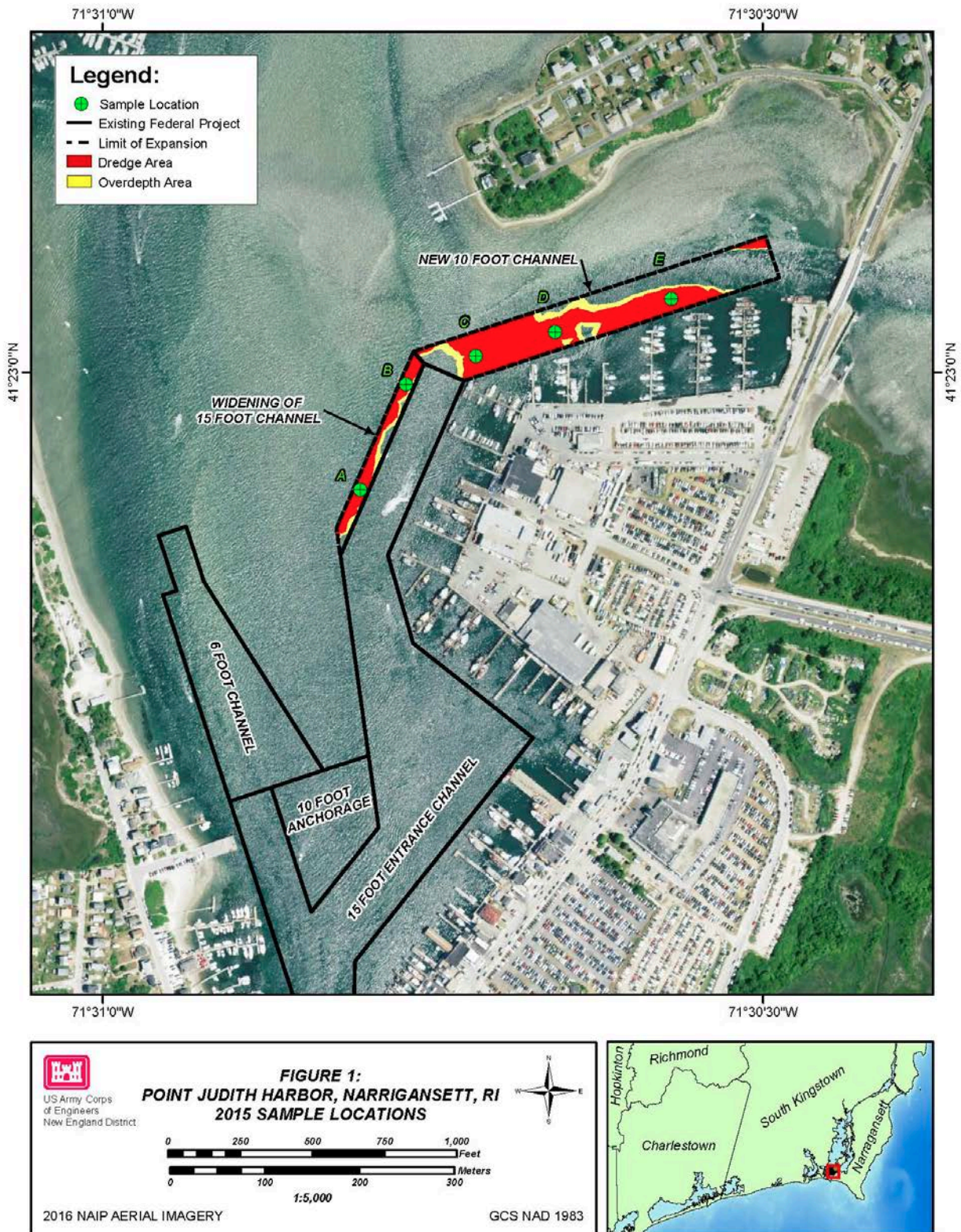


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Joseph Mackay  
Chief  
Environmental Resources Section  
USACE – New England District

CENAE-PDE

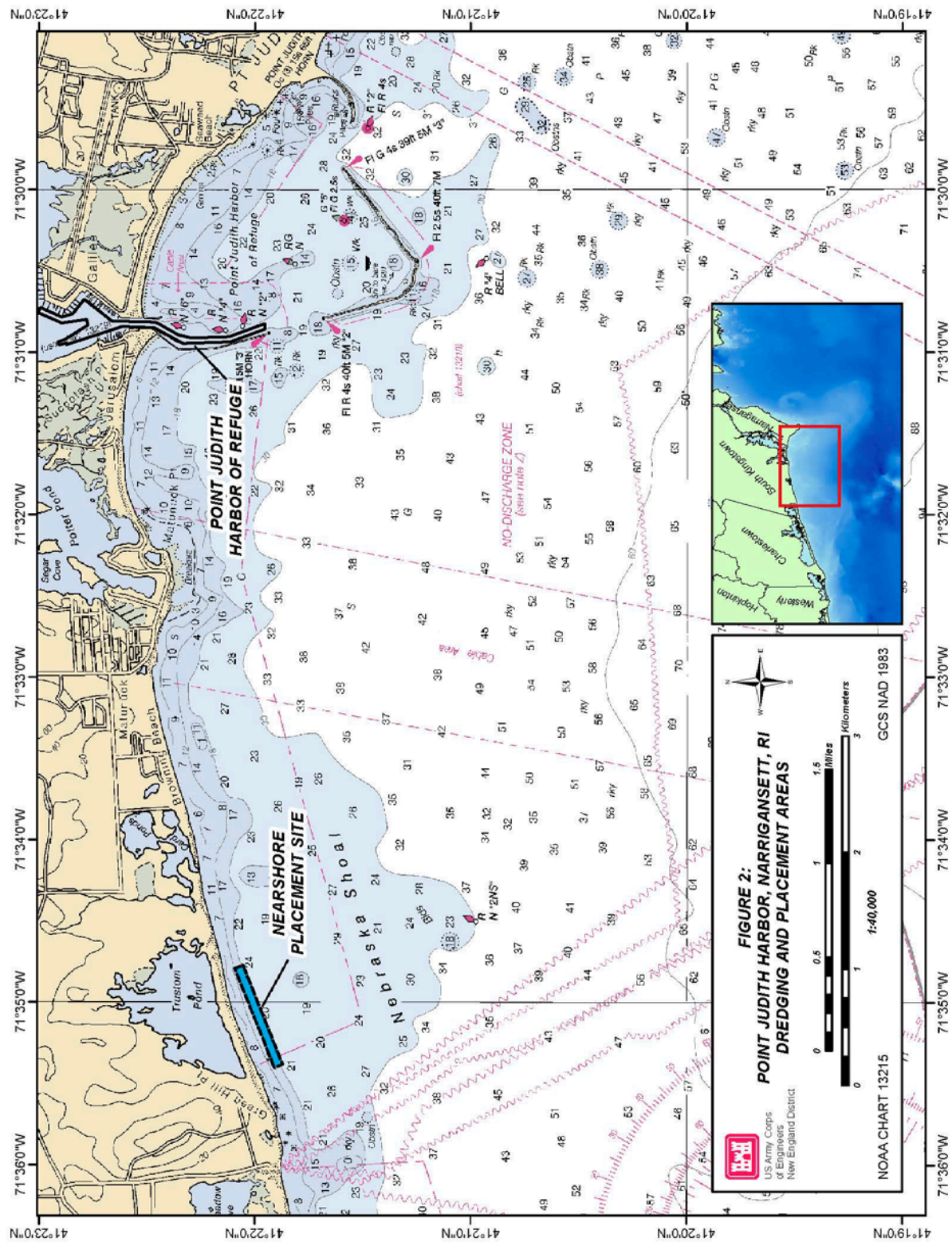
SUBJECT: Suitability Determination for the Point Judith Pond Federal Navigation Project Channel Extension, Narragansett, Rhode Island.





CENAE-PDE

SUBJECT: Suitability Determination for the Point Judith Pond Federal Navigation Project Channel Extension, Narragansett, Rhode Island.



**From:** [Hopkins, Aaron D CIV USARMY CENAE \(US\)](#)  
**To:** [Habel, Mark L CIV USARMY CENAE \(US\)](#)  
**Subject:** Point Judith Suitability Determination  
**Date:** Wednesday, April 25, 2018 1:23:46 PM

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EPA's concurrence:

-----Original Message-----

From: Guza-Pabst, Olga [<mailto:Guza-Pabst.Olga@epa.gov>]  
Sent: Tuesday, April 10, 2018 12:23 PM  
To: Hopkins, Aaron D CIV USARMY CENAE (US) <[Aaron.D.Hopkins@usace.army.mil](mailto:Aaron.D.Hopkins@usace.army.mil)>  
Subject: [Non-DoD Source] RE: RI Suitability Determination

Hi Aaron, I concur with your SD. One question - why do chemistry on sediments that meet exclusionary criteria?

-----Original Message-----

From: Hopkins, Aaron D CIV USARMY CENAE (US) [<mailto:Aaron.D.Hopkins@usace.army.mil>]  
Sent: Tuesday, April 10, 2018 9:46 AM  
To: Guza-Pabst, Olga <[Guza-Pabst.Olga@epa.gov](mailto:Guza-Pabst.Olga@epa.gov)>  
Subject: RI Suitability Determination

Olga,

Attached is a draft suitability determination for proposed improvement dredging of the Point Judith Pond FNP. The material will be mechanically dredged and placed at a previously used nearshore site for beach nourishment.

Please respond within 10 working days if you have any comments or concerns.

Thank you,  
Aaron

Aaron Hopkins  
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