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 CORRESPONENCE

Part 1. Correspondence during Preparation and Review of the Final Feasibility Report and Final Environmental Assessment

Part 2. Correspondence during Public Review of the Draft Feasibility Report and Draft Environmental Assessment

Part 3. 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
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

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Part 1

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

To be Added for Submittal of Final Report

Part 2

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

To be Added at Conclusion of Public Review

Part 3

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	NAE
Chris Ricciardi	John Kennelly
Valerie Cappola	Mark Habel
Naomi Fraenkel	Sharon Pailler
Ralph Lamoglia	Todd Randall
John O'Connor	

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

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 Christopher L. Halfpenny
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>
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>
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]
Sent: Wednesday, March 7, 2018 9:38 AM
To: Randall, Todd A CIV USARMY CENAE (US) <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 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

On Tue, Feb 6, 2018 at 4:45 PM, Randall, Todd A CIV USARMY CENAE (US) <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]
> Sent: Tuesday, February 6, 2018 2:56 PM
> To: Randall, Todd A CIV USARMY CENAE (US) <Todd.A.Randall@usace.army.mil>
> Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Point Judith Harbor Dredging

(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
Email: 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> > 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>]
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> >
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>
Email: 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> > > 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> >]
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> > >
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> >
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 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> > >

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 with "2017 NLAA Program" in the subject line)

Section 1: General Project Details

Application Number:	
Applicant(s):	USACE New England District
Permit Type (e.g. NWP, LOP, RGP, IP, Permit Modification):	Planning Division
Anticipated project start date (e.g., 9/1/2017)	10/01/2018
Anticipated project end date (e.g., 3/14/2018 – if there is no permit expiration date, write "N/A")	1/31/2019

Project Type/Category (check all that apply to entire action):

☐	Aquaculture (shellfish) and artificial reef creation	☐	Transportation and development (e.g., culvert construction, bridge repair)
☑	Routine maintenance dredging and disposal/beach nourishment	☐	Mitigation (fish/wildlife enhancement or restoration)
☐	Piers, ramps, floats, and other structures	☐	Bank stabilization and dam maintenance
☐	If other, describe project type/category:		

Project/Action Description and Purpose (*include town/city/state and water body where project is occurring; relevant permit conditions that aren't captured elsewhere on form*):

Improvement dredging: Narragansett, RI. In water disposal: South Kingstown, RI

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 (Figure 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

Type of Habitat Modified (e.g., sand, cobble, silt/mud/clay):	Area (acres):
sand, saline	8.00
Project Latitude (e.g., 42.625884)	41.384041
Project Longitude (e.g., -70.646114)	-71.511496

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

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

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

a) GENERAL PDC	
☐	Yes, my project meets all of the General PDC.
☑	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):
	Information for PDC 8 (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:
	425.00	Turbidity Plume	701.00

☐	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.
☐	2.	No work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10–November 7.
☐	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
☐	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
☐	5.	Within designated Atlantic salmon critical habitat, no work will affect spawning and rearing areas (PBFs 1-7).
☐	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).
☐	7.	Work will not change temperature, water flow, salinity, or dissolved oxygen levels.
☑	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).
☐	9.	Any work in designated North Atlantic right whale critical habitat must have no effect on the physical and biological features (PBFs).
☐	10.	The project will not adversely impact any submerged aquatic vegetation (SAV).
☐	11.	No blasting will occur.

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

☐	Sound Pressure
☑	Impingement/Entrapment/Capture
☑	Turbidity/Water Quality
☐	Entanglement

☑	Habitat Modification
☑	Vessel Traffic

	Stressor Category					
Activity 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

☐	Yes, my project meets all of the Sound Pressure PDC below.				
☐	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):				
	Information for PDC 14 (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)				

☐	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.
☐	13.	Any new pile supported structure must involve the installation of ≤ 50 piles (below MHW).
☐	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		
☑		Yes, my project meets all of the Impingement/Entrainment/Capture PDC below.
☐		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):
		Information for Dredging:
		If dredging permit/authorization includes multiple years of maintenance, include estimated number of dredging/disposal events: 1
		Information for PDC 18 (refer to SOPs for guidance):
		Mesh screen size (mm) for temporary intake:
☐	15.	Only mechanical, cutterhead, and low volume hopper (e.g., CURRITUCK) dredges may be used.
☐	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 (≤ 2 acres) expansions of areas already subject to maintenance dredging (e.g., marina/harbor expansion).
☐	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.
☐	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 Chapter 11 of the NOAA Fisheries Anadromous Salmonid Passage Facility Design) and must not have greater than 0.5 fps intake velocities, to prevent impingement or entrainment of any ESA-listed species life stage.
☐	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		
☑		Yes, my project meets all of the Turbidity/Water Quality PDC below.

☐	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):	
☐	20.	Work behind cofferdams, turbidity curtains, or other methods to control turbidity are required when operationally feasible and ESA-listed species may be present.
☐	21.	In-water offshore disposal may only occur at designated disposal sites that have already been consulted on with GARFO.
☐	22.	Any temporary discharges must meet state water quality standards; no discharges of toxic substances.
☐	23.	Only repair of existing discharge pipes allowed; no new construction.

f) ENTANGLEMENT PDC

☐	Yes, my project meets all of the Entanglement PDC below.		
☐	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):		
	Information for Aquaculture Projects:		
		Type of Aquaculture (e.g., cage on bottom)	Acreage
	a)		
	b)		
	c)		
☐	24.	Shell on bottom <50 acres with maximum of 4 corner marker buoys;	
☐	25.	Cage on bottom with no loose floating lines <5 acres and minimal vertical lines (1 per string of cages, 4 corner marker buoys);	
☐	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);	
☐	27.	Floating upweller docks in >10 feet MLLW.	
☐	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

☑	Yes, my project meets all of the Habitat Modification PDC below.
☐	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):

☐	29.	No conversion of habitat type (soft bottom to hard, or vice versa) for aquaculture or reef creation.	
h) VESSEL TRAFFIC PDC			
☑	Yes, my project meets all of the Vessel Traffic PDC below.		
☐	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):		
	Information for PDC 33 (refer to SOPs for guidance):		
		Temporary Project Vessel Type (e.g., work barge, tug, scow, etc.)	Number of Vessels
	a)	work barge	1
	b)	scow	1
	c)	tug	1
		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)		
☐	30.	Speed limits below 10 knots for project vessels with buffers of 150 feet for all listed species (1,500 feet for right whales).	
☐	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.	
☐	32.	The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.	
☐	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
8	Suspended sediment levels from conventional mechanical clamshell bucket dredging operations have been shown to range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (210 mg/L, depth-averaged) (ACOE 2001). Furthermore, a study by Burton (1993) measured turbidity levels 500, 1,000, 2,000 and 3,300 feet from dredge sites in the Delaware River and were able to detect turbidity levels between 15 mg/L and 191 mg/L up to 2,000 feet from the dredge site. Within Point Judith Harbor, turbidity would remain localized about the dredge because of the harbor's low energy environment and due to the fact that the material being dredged is primarily sand. Based on these analyses, elevated suspended sediment levels of up to

Section 5: USACE Verification of Determination

☐	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.
☑	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:	Date:
	12/12/2017

Section 6: GARFO Concurrence

☐	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.
☑	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.
☐	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:	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,

Regina Lyons

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

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
Mr. Zachary Jylkka: 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

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

170629.04

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 R. Kennelly
Chief, Planning Division

Enclosures

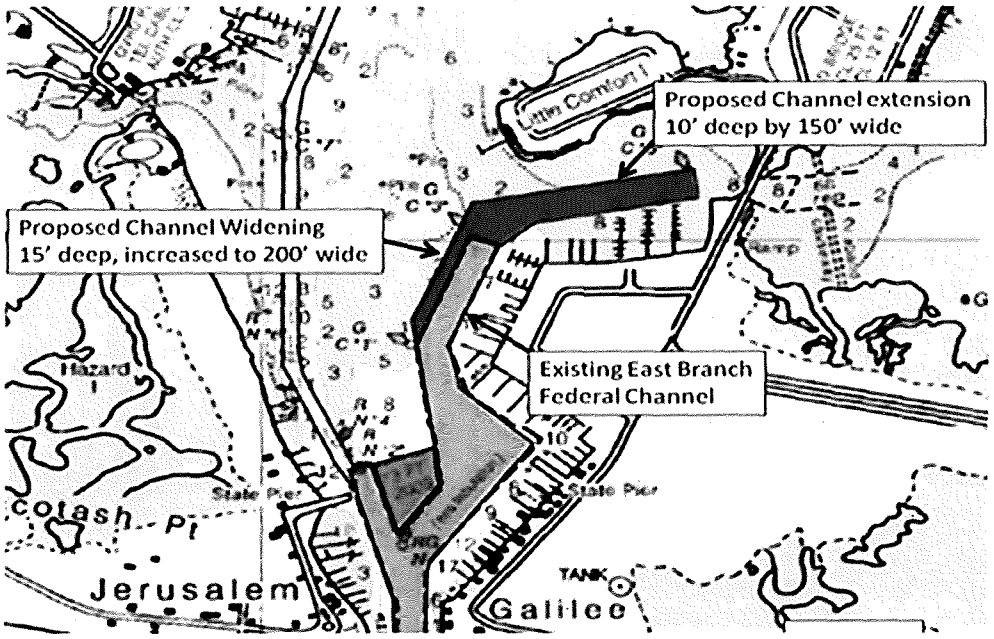
Same Letter Sent (With Enclosures):

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

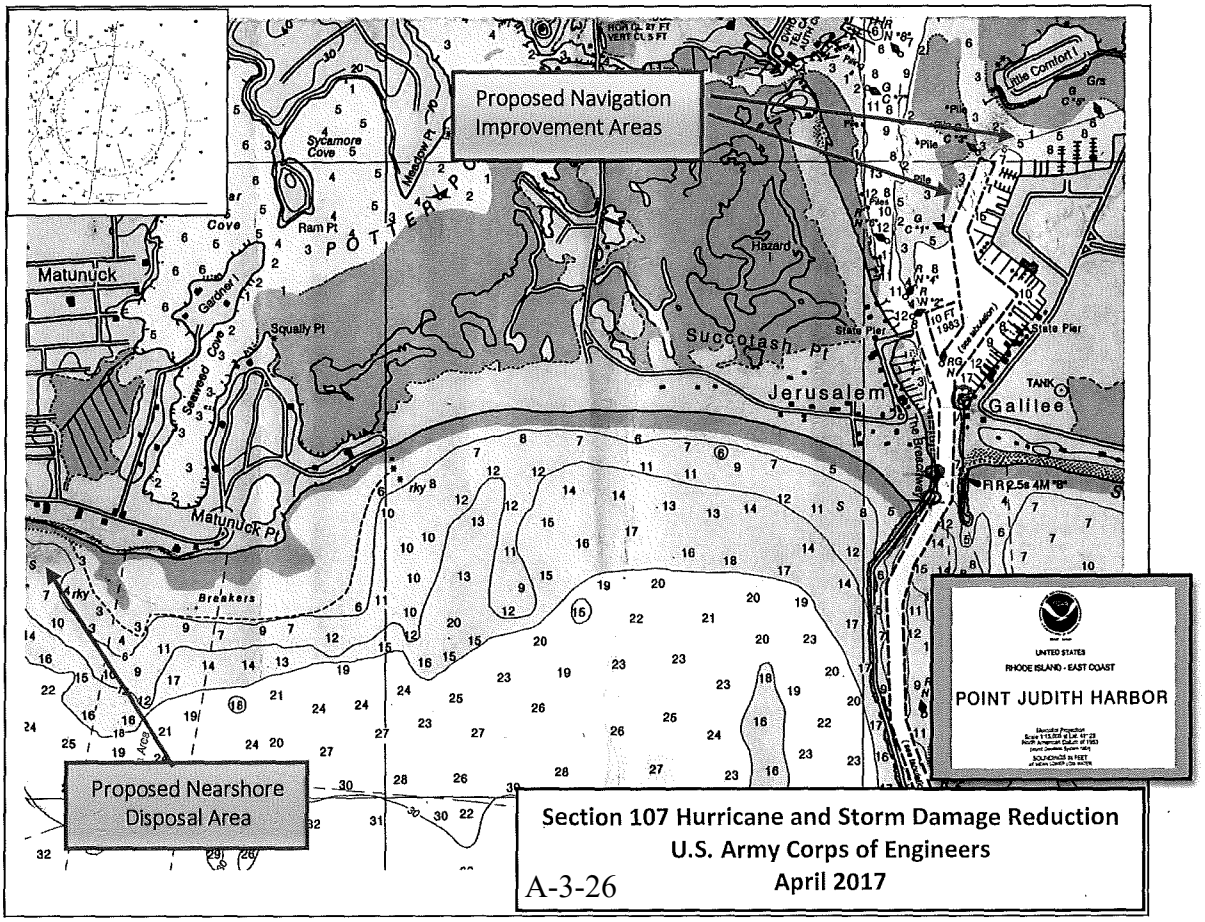
Section 107 Hurricane and Storm Damage Reduction

POINT JUDITH HARBOR OF REFUGE FEDERAL NAVIGATION PROJECT

Navigation Improvement Areas



Nearshore Disposal Site Off Matunuck Beach



Section 107 Hurricane and Storm Damage Reduction
U.S. Army Corps of Engineers
April 2017

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-hare 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,

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

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 (USACOE) , 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 FCSA 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

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

REPLY TO
ATTENTION OF

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:

Encls

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

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

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.

RECEIVED
8-27-2012

JOSEPH R. VIETRI
Chief, Planning and Policy
Programs Directorate

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

REPLY TO
ATTENTION OF

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:

H. Farrell McMillan

Encl

H. FARRELL MCMILLAN, P.E.
Chief, Engineering/Planning Division

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

REPLY TO
ATTENTION OF

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:

H. Farrell McMillan

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.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Recvd 10/5/06

JACK REED
RHODE ISLAND

COMMITTEES

ARMED SERVICES
BANKING
HEALTH AND EDUCATION
JOINT ECONOMIC COMMITTEE

United States Senate

WASHINGTON, DC 20510-3903

September 29, 2006

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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.

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,

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

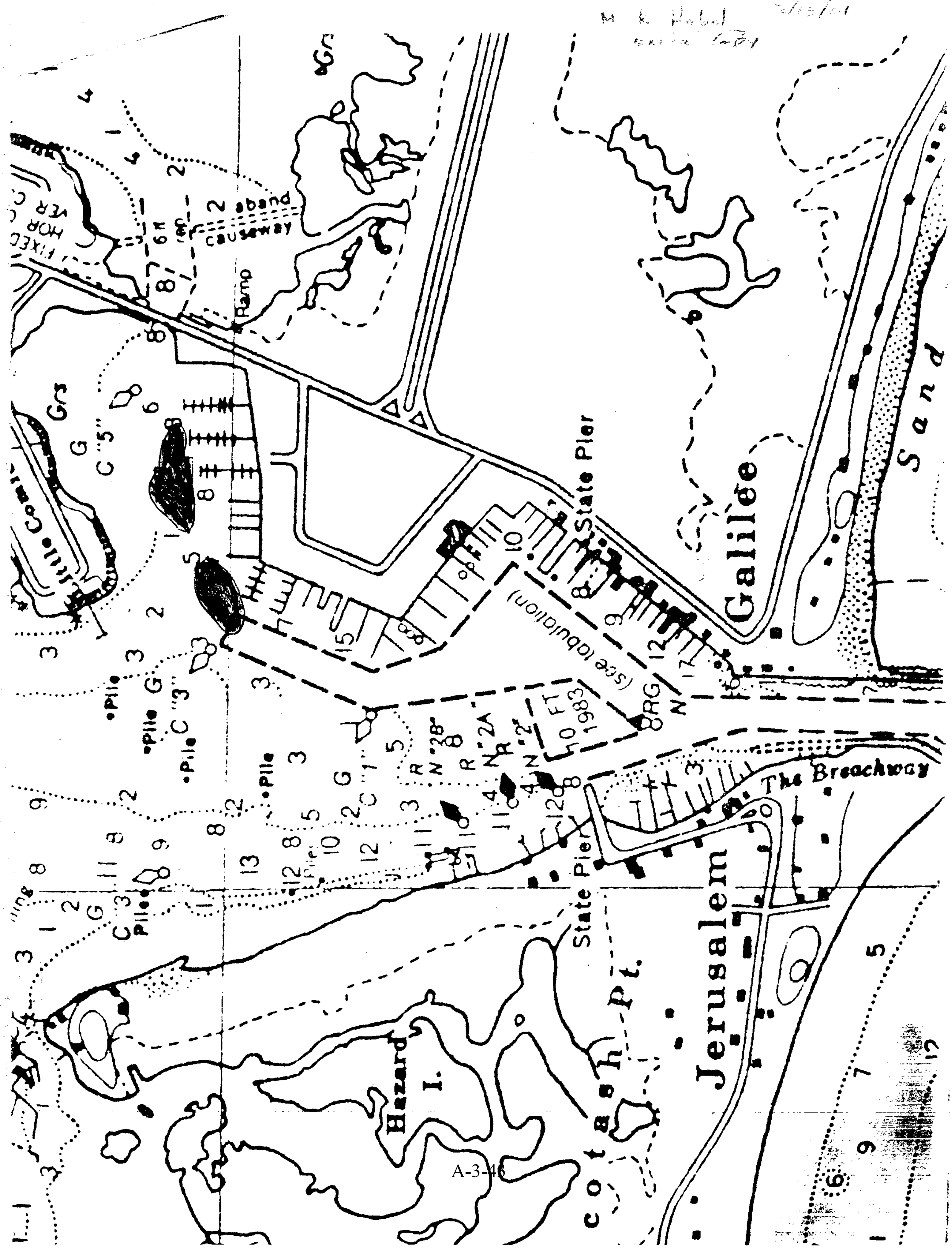
Dear Mr. Juhola:

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


Galilee
Jerusalem
State Pier
State Pier
The Breachway
Sand
Hazard I.
(See tabulation)
10 FT 1983
causeway
Ramp
Grs
Pile

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		
Authorization	**Work Authorized & Constructed**	**Construction Dates**
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 & 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

Work Dates	Work Accomplished	Quantities
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

APPENDIX C

ECONOMIC ASSESSMENT

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Table of Contents

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Economic Assessment
Point Judith Harbor of Refuge and Point Judith Pond
Narragansett, Rhode Island
Section 107 Navigation Improvement Study

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 are based on a 50 year evaluation period, starting in 2020, and presented in annual terms using the FY18 Federal interest rate for water resources projects of 2.75%.

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 2014, Point Judith was ranked 23rd in the nation in terms of pounds landed and 25th in the nation in terms of value, with 57.3 million pounds landed valued at $50.4 million (2014 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 2000 to 2014. 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.

Table C-1
Point Judith Commercial Fishery Landings, 2000 - 2014

Year	Commercial Fish Landings, pounds	U.S. Rank, Quantity	Commercial Fish Landings, dollars	U.S. Rank, Value
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
2002	49,000,000	23rd	$34,000,000	15th
2001	49,000,000	23rd	$34,000,000	15th
2000	60,000,000	18th	$41,000,000	16th

National Marine Fisheries Service:
Commercial Fishery Landings and Value at Major U.S. Ports

4.0 Economic Setting

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 of the town 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 2015, Narragansett had a labor force of 9,176 and an unemployment rate of 4.1% (Rhode Island Department of Labor and Training, Local Area Unemployment Statistics). This compares favorably with the state, which had a 2015 unemployment rate of 6.0%. 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).

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.

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

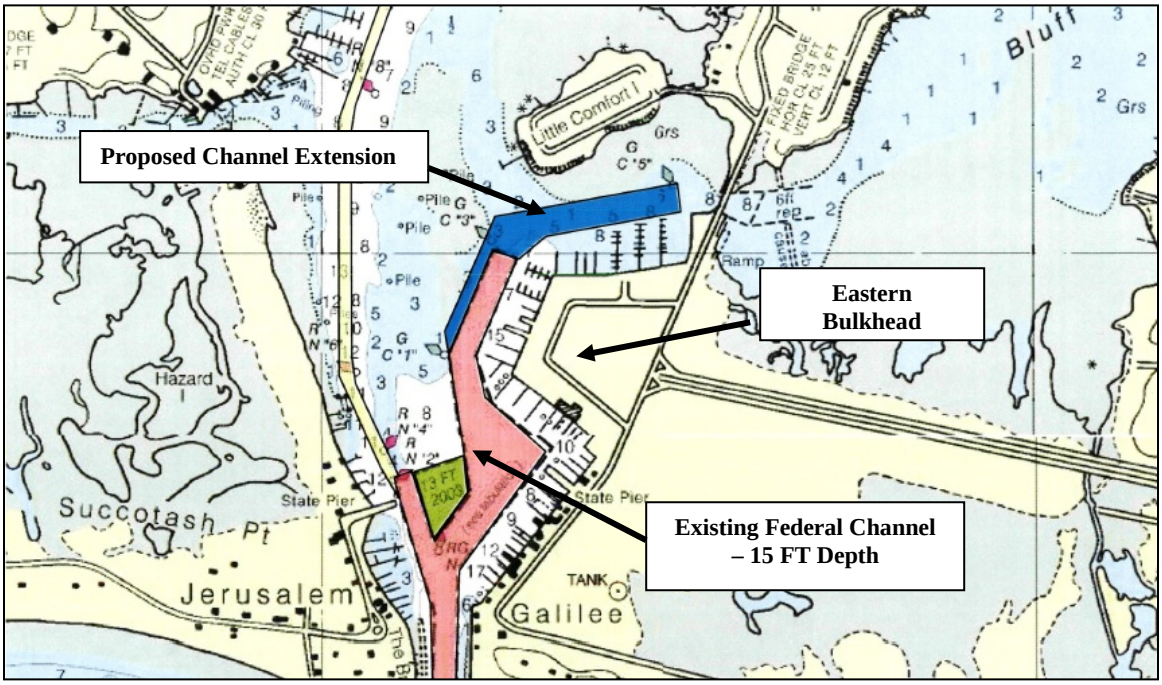
In the without project condition, the congestion delays, grounding damages and haul-out costs currently experienced by Point Judith fishermen due to inadequate channel width in the Federal channel will continue to occur. In addition, tidal delays and grounding damages from inadequate channel depth off 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 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

Table C-3

Congestion Delay Costs - Charter 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	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.

Table C-4

Grounding and Haul-out Costs		
# 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

Table C-10 (Delay Time in Hours)

Tidal Delay Fuel Costs - Commercial Fishing Vessels						
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

Table C-11 (Delay Time in Hours)

Tidal Delay Fuel Costs - Charter Vessels						
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.

Table C-12

Increased Maintenance and Repair Costs			
# 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.

Table C-13

Benefit Summary - Channel Extension	
Category	Annual Benefits
Tidal Delays Prevented - Commcercial 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.

Table C-14

Channel Extension - Annual Benefits by Channel Depth					
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 Annaul Benefits, Channel Extension	$387,952	$387,952	$367,452	$330,252	$235,352

8.3 Benefit summary

This section summaries 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 2018 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 11feet 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

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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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LIST OF TABLES

LIST OF FIGURES

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).

Table D-1 – Tide Range
NOAA Tide Prediction Station Point Judith Harbor of Refuge, RI

Condition	Elevation (feet, NAVD88*)
Mean Higher High Water (MHHW)	+1.50
Mean High Water (MHW)	+1.25
North American Vertical Datum 1988 (NAVD88)	0.00
Mean tide level (MTL)	-0.25
National Geodetic Vertical Datum 1929 (NGVD29)	-0.91
Mean Low Water (MLW)	-1.75
Mean Lower Low Water (MLLW)	-1.88
*North American Vertical Datum of 1988 (NAVD88)	

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.

Figure D-1
Project Location

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.

TABLE D-2 – SEDIMENT SAMPLES
GRAIN SIZE DISTRIBUTION OF POINT JUDITH SEDIMENTS

	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

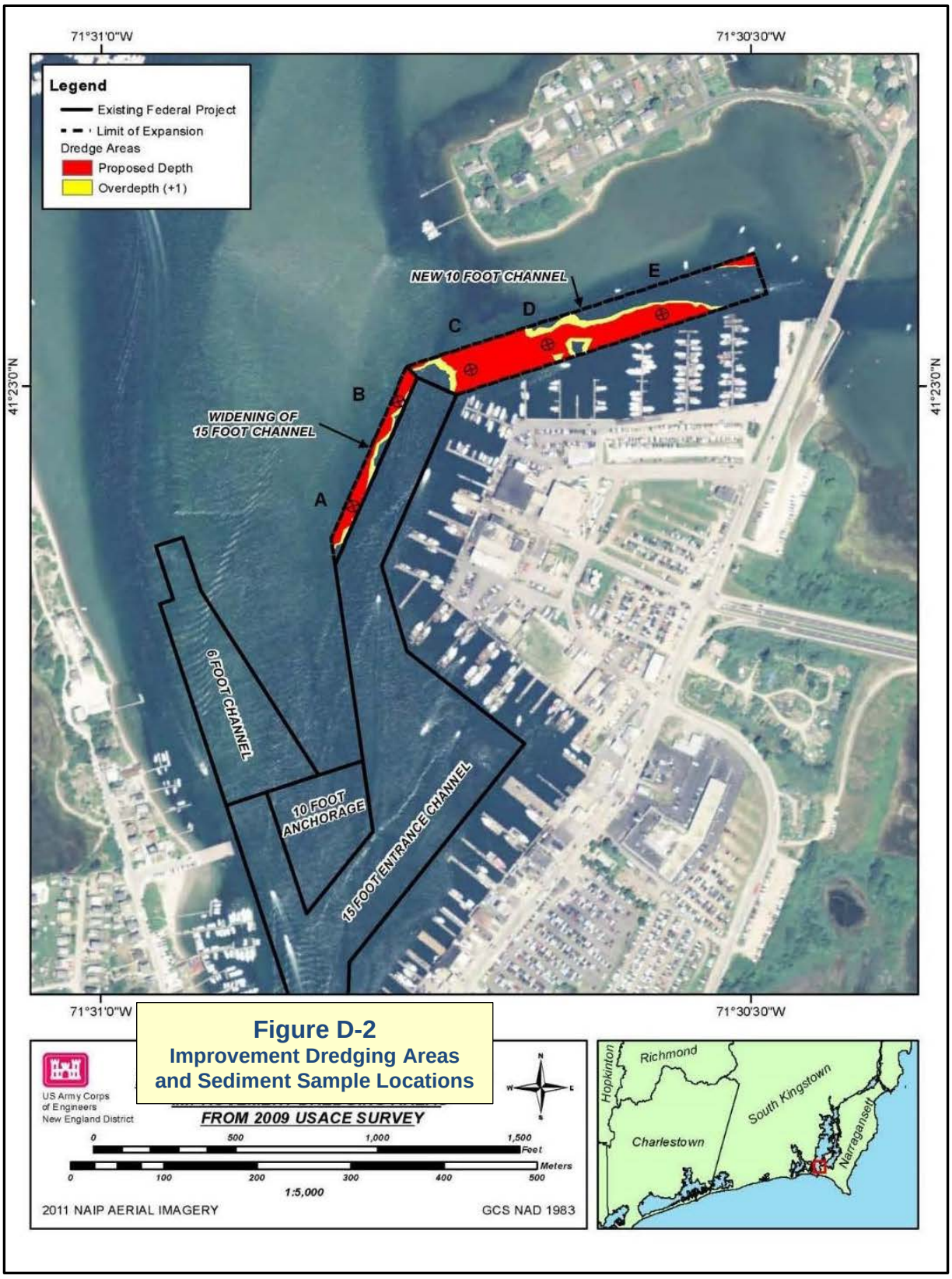


Figure D-2
Improvement Dredging Areas and Sediment Sample Locations

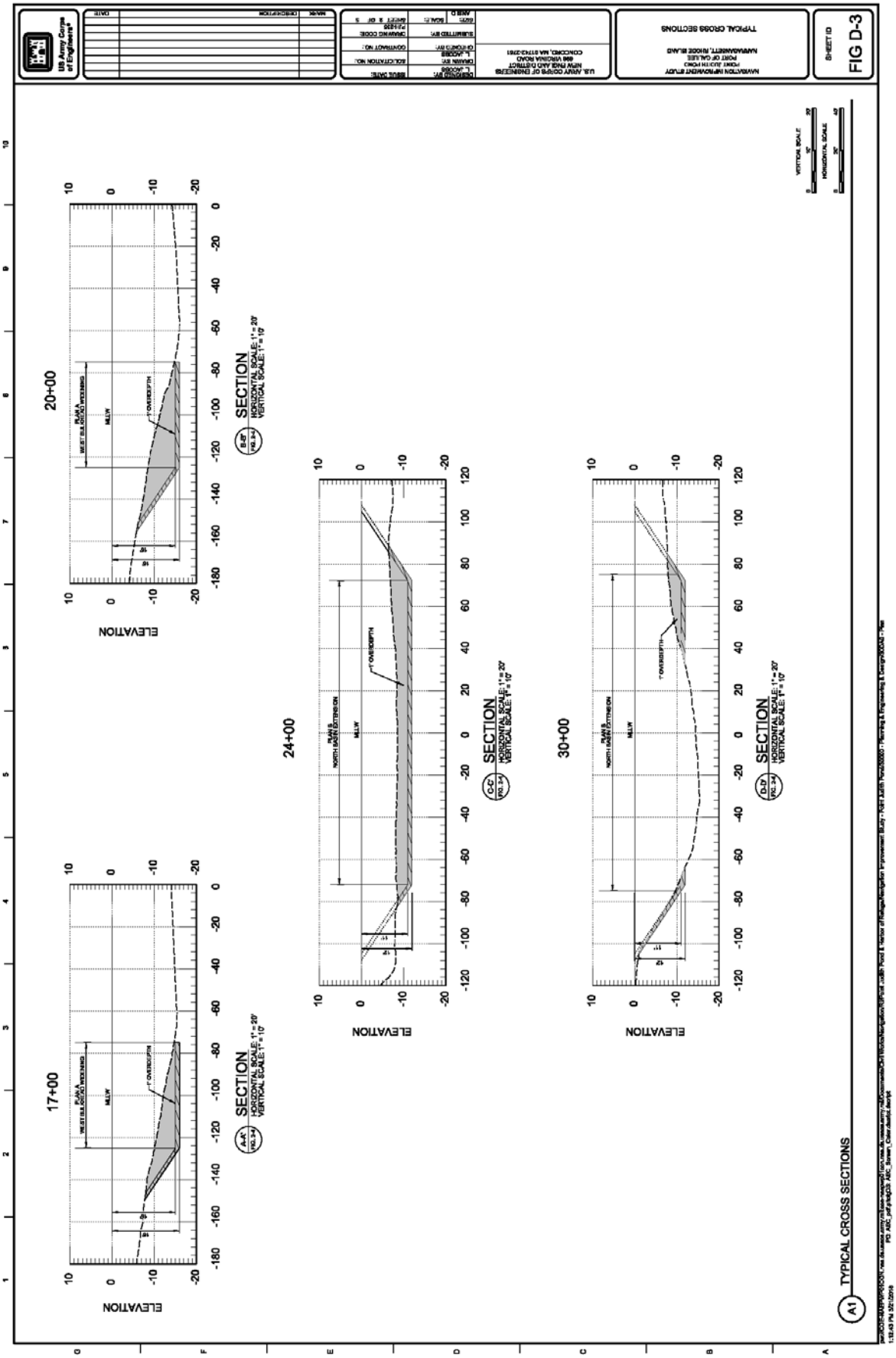


FIG D-3
TYPICAL CROSS SECTIONS
17+00
20+00
24+00
30+00
SECTION
ELEVATION
MLLW

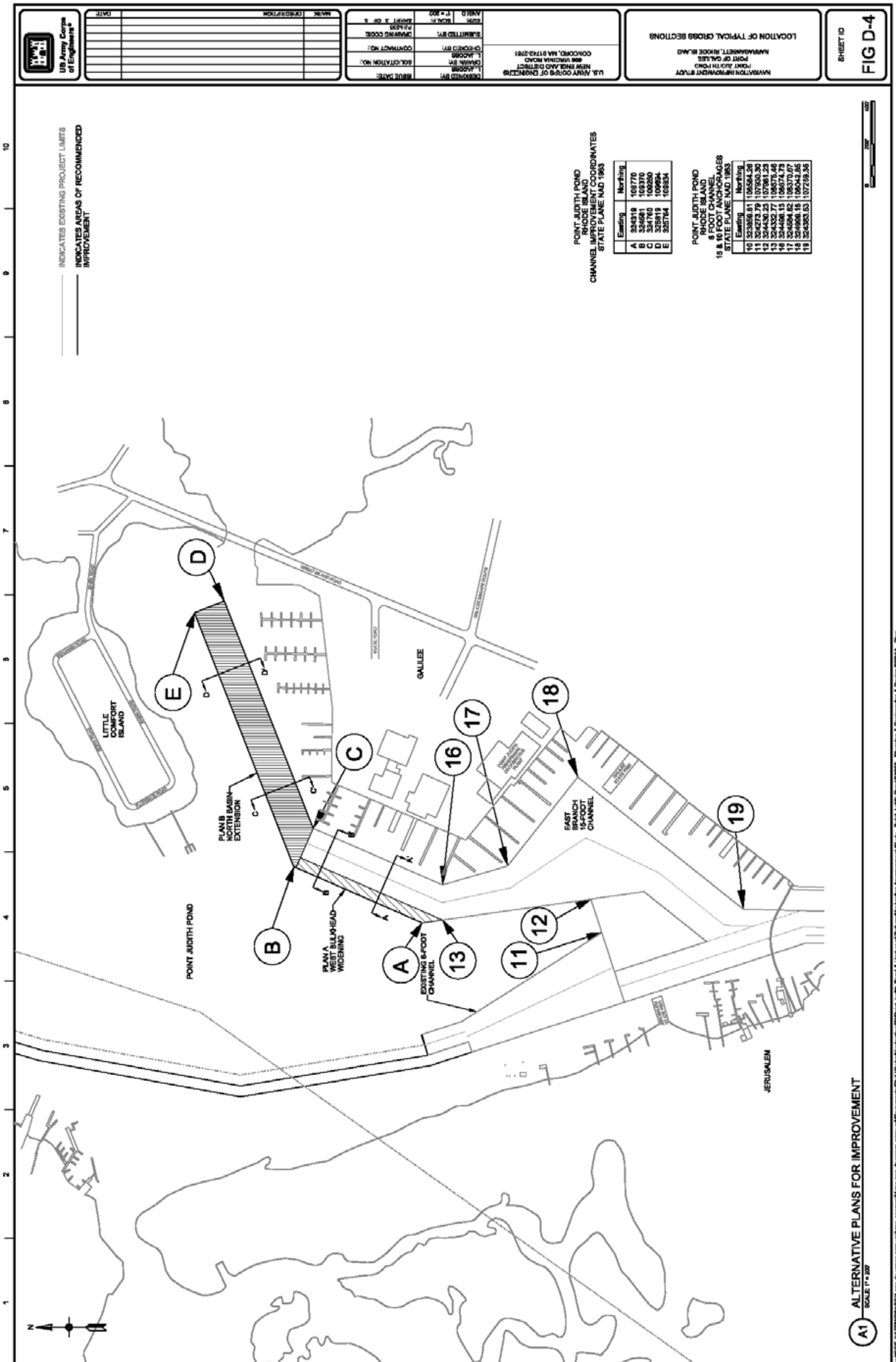

ALTERNATIVE PLANS FOR IMPROVEMENT
FIG D-4
SHEET ID
LOCATION OF TYPICAL CROSS SECTIONS
NAVIGATION IMPROVEMENT STUDY
POINT JUDITH POND
PORT OF GALILEE
NARRAGANSETT, RHODE ISLAND
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD, MA
US Army Corps of Engineers
INDICATES EXISTING PROJECT LIMITS
INDICATES AREAS OF RECOMMENDED IMPROVEMENT
POINT JUDITH POND
RHODE ISLAND
CHANNEL IMPROVEMENT COORDINATES
STATE PLANE NAD 1983
POINT JUDITH POND
RHODE ISLAND
6 FOOT CHANNEL
15 & 10 FOOT ANCHORAGES
STATE PLANE NAD 1983
Easting
Northing
LITTLE COMFORT ISLAND
POINT JUDITH POND
GALILEE
JERUSALEM
PLAN B NORTH BASIN EXTENSION
PLAN A WEST BULKHEAD WIDENING
EXISTING 6-FOOT CHANNEL
EAST BRANCH 15-FOOT CHANNEL
A
B
C
D
E
11
12
13
16
17
18
19

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 Feet 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

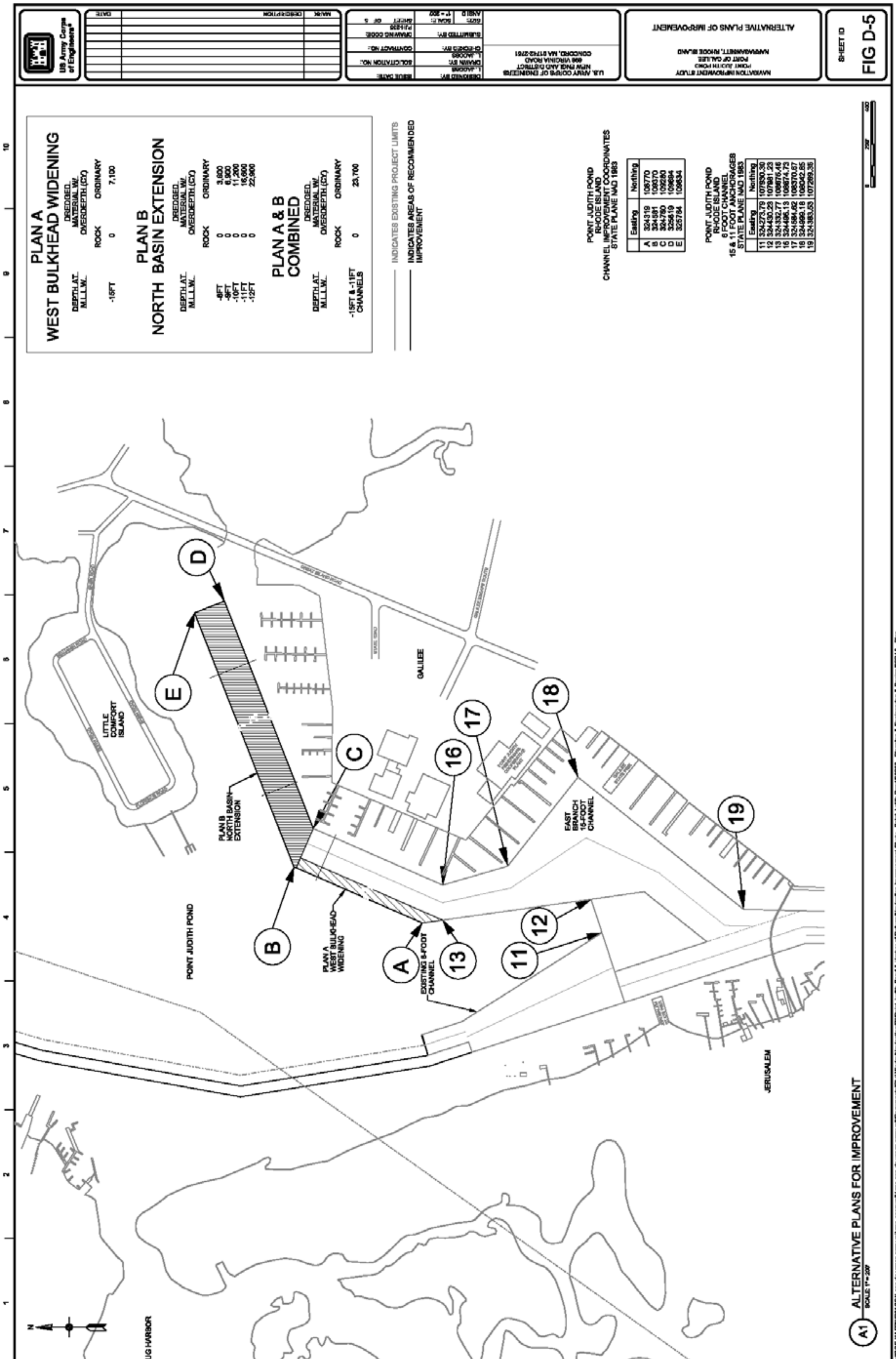
The quantities of material to be removed were calculated for each of the proposed dredge depths. The incremental dredged quantities are shown in Table D-4 and are based on one foot of allowable dredge overdepth for ordinary material.

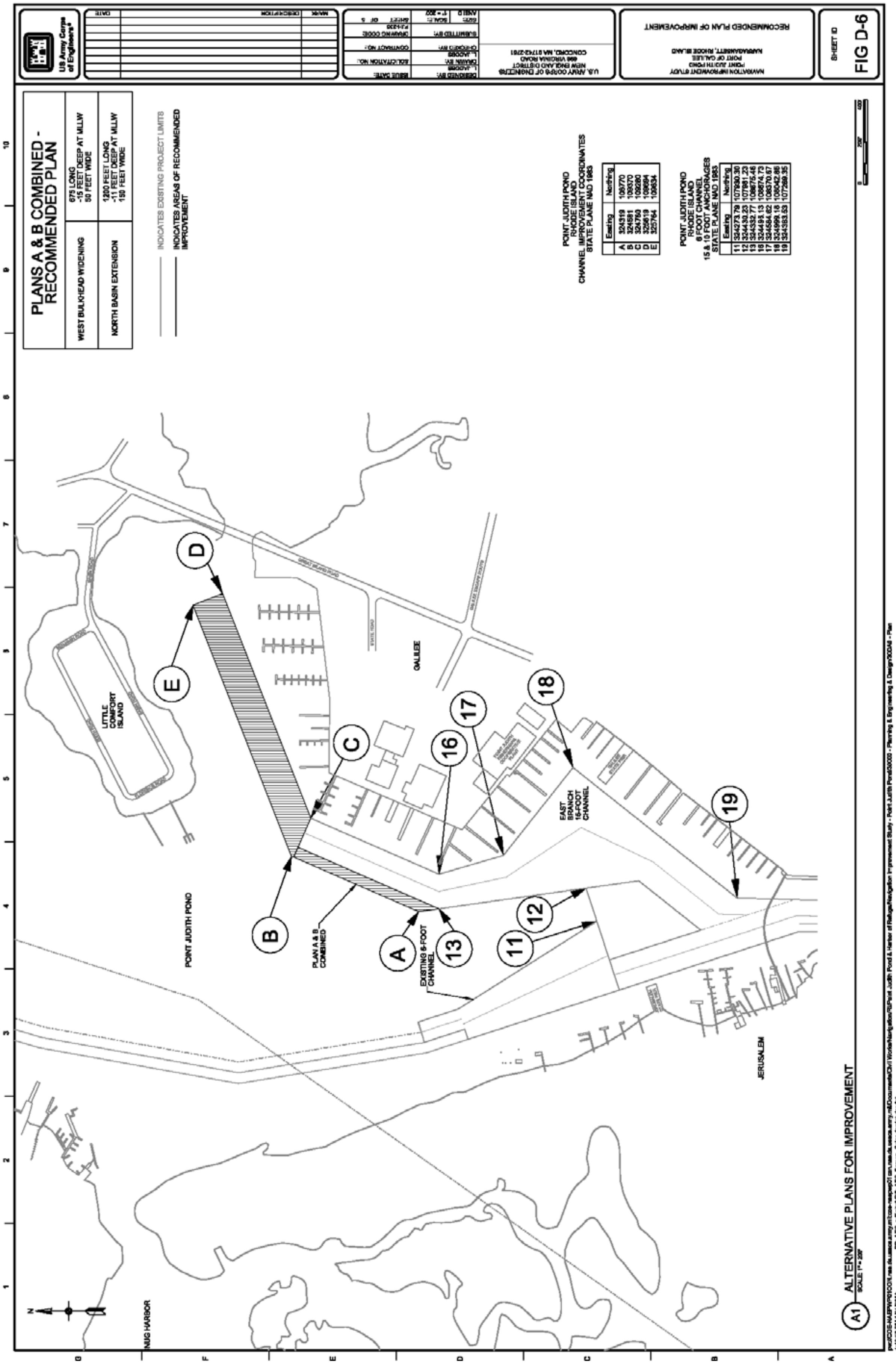
SELECTED PLAN

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.


PLAN A
WEST BULKHEAD WIDENING
DEPTH AT M.L.L.W.
DREDGED MATERIAL W/ OVERDEPTH (CY)
ROCK
ORDINARY
-15FT
0
7,100
PLAN B
NORTH BASIN EXTENSION
DEPTH AT M.L.L.W.
DREDGED MATERIAL W/ OVERDEPTH (CY)
ROCK
ORDINARY
-8FT -9FT -10FT -11FT -12FT
0 0 0 0 0
3,800 6,900 11,200 16,600 22,900
PLAN A & B
COMBINED
DEPTH AT M.L.L.W.
DREDGED MATERIAL W/ OVERDEPTH (CY)
ROCK
ORDINARY
-15FT & -11FT CHANNELS
0
23,700
INDICATES EXISTING PROJECT LIMITS
INDICATES AREAS OF RECOMMENDED IMPROVEMENT
POINT JUDITH POND
RHODE ISLAND
CHANNEL IMPROVEMENT COORDINATES
STATE PLANE NAD 1983
POINT JUDITH POND
RHODE ISLAND
6 FOOT CHANNEL
15 & 11 FOOT ANCHORAGES
STATE PLANE NAD 1983
US Army Corps of Engineers
ALTERNATIVE PLANS OF IMPROVEMENT
SHEET ID
FIG D-5
LITTLE COMFORT ISLAND
POINT JUDITH POND
PLAN B NORTH BASIN EXTENSION
PLAN A WEST BULKHEAD WIDENING
EXISTING 6-FOOT CHANNEL
EAST BRANCH 15-FOOT CHANNEL
GALILEE
JERUSALEM
A1 ALTERNATIVE PLANS FOR IMPROVEMENT


PLANS A & B COMBINED - RECOMMENDED PLAN
WEST BULKHEAD WIDENING
675 LONG
-15 FEET DEEP AT MLLW
50 FEET WIDE
NORTH BASIN EXTENSION
1200 FEET LONG
-11 FEET DEEP AT MLLW
150 FEET WIDE
INDICATES EXISTING PROJECT LIMITS
INDICATES AREAS OF RECOMMENDED IMPROVEMENT
POINT JUDITH POND
RHODE ISLAND
CHANNEL IMPROVEMENT COORDINATES
STATE PLANE NAD 1983
| Easting | Northing
A 324319 108970
B 324581 109370
C 324760 109280
D 325619 108894
E 325764 109634
POINT JUDITH POND
RHODE ISLAND
6 FOOT CHANNEL
15 & 10 FOOT ANCHORAGES
STATE PLANE NAD 1983
| Easting | Northing
11 324273.79 107930.30
12 324430.23 107981.23
13 324332.77 108675.46
16 324493.13 108674.73
17 324584.62 108370.67
18 324999.18 108042.86
19 324383.53 107289.35
US Army Corps of Engineers
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD, MA 01742-2751
NAVIGATION IMPROVEMENT STUDY
POINT JUDITH POND
PORT OF GALILEE
NARRAGANSETT, RHODE ISLAND
RECOMMENDED PLAN OF IMPROVEMENT
SHEET ID
FIG D-6
LITTLE COMFORT ISLAND
GALILEE
POINT JUDITH POND
PLAN A & B COMBINED
EXISTING 6-FOOT CHANNEL
EAST BRANCH 15-FOOT CHANNEL
GREAT ISLAND ROAD
JERUSALEM
NUG HARBOR
A1 ALTERNATIVE PLANS FOR IMPROVEMENT
SCALE: 1" = 200'

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.

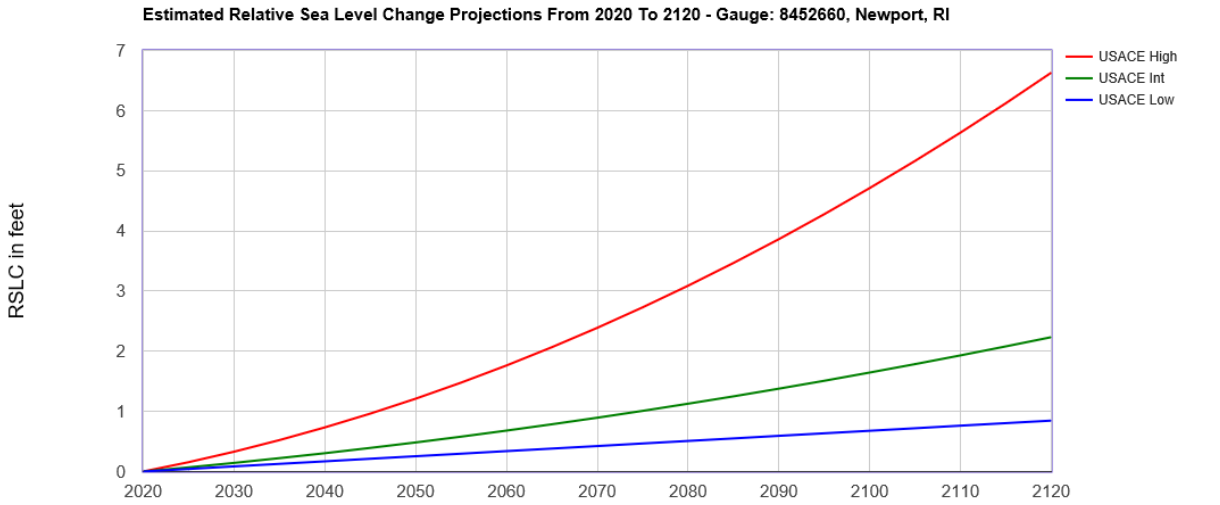


Figure D-7. USACE Sea Level Change Rate Projections

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.

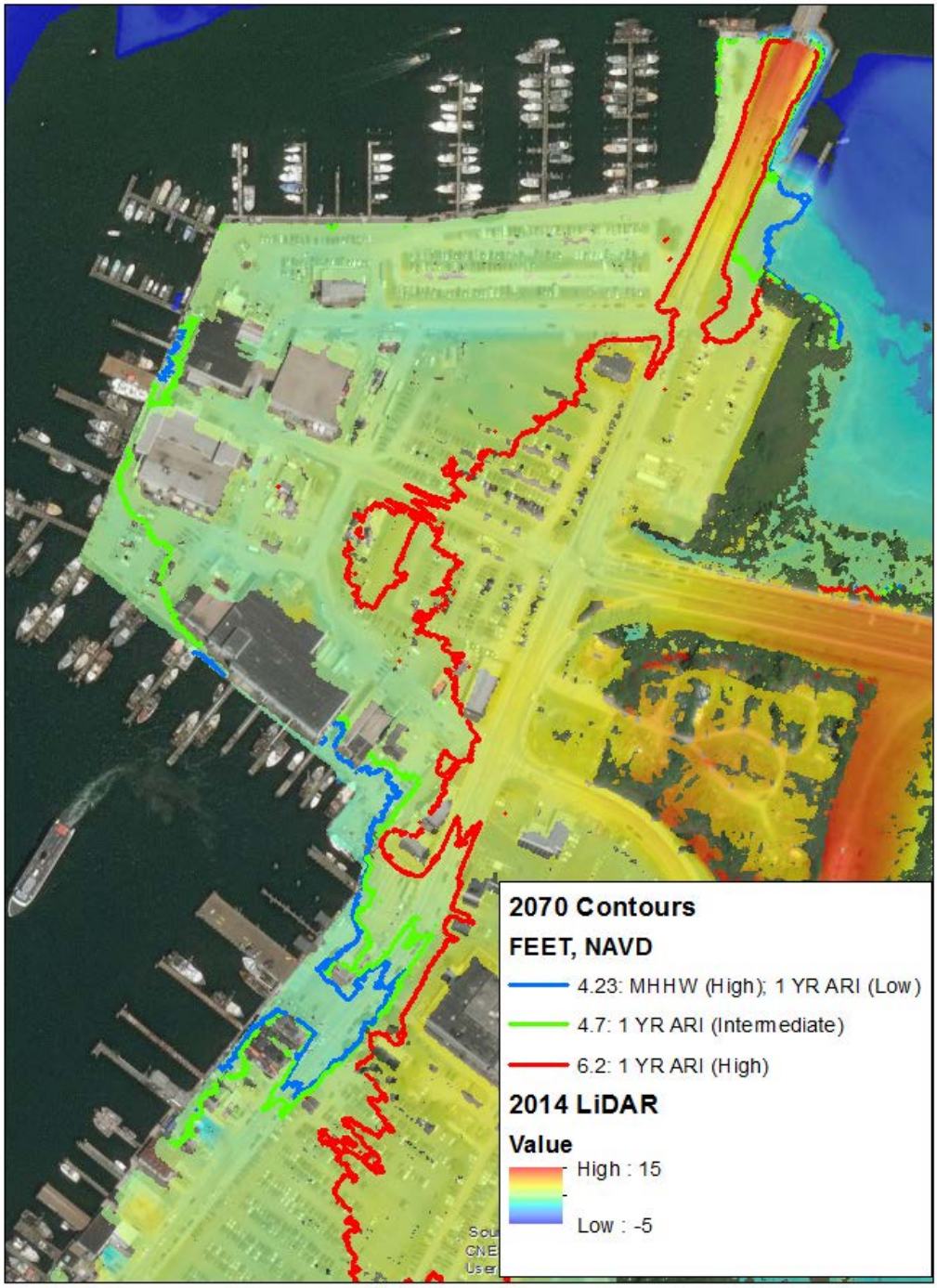


Figure D-8 - Inundation Contours Associated with Projected Sea Level Rise

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 $1,704,000 with an estimated federal cost of $1,108,000 and non-federal cost of $596,000 utilizing a 65%/35% federal/non-federal cost of project split. Including feasibility study costs of $100,000, the total estimated federal cost of the project is $1,208,000.

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.

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DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JACOBS.MICHAEL.PIERRE.1160569537
Date: 2018.05.22 16:03:27 -07'00'

Michael P. Jacobs, PE, CCE
Chief, Cost Engineering MCX
Walla Walla District

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									
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 1-Oct-17 ($K)	TOTAL FIRST COST ($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

_____ 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**

****** 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								
				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*
	PHASE 1 or CONTRACT 1													
09	CHANNELS & CANALS	$1,023	$277	27.1%	$1,300		$1,023	$277	$1,300	2020Q1	4.1%	$1,065	$289	$1,353
	#N/A													
	#N/A													
	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**

Abbreviated Risk Analysis

Project (less than $40M): **Point Judith Harbor of Refuge Section 107 Navigation Imprc** **Alternative: 28 (WBW to -15 & NBE to -11 ft)**

Project Development Stage/Alternative: **Feasibility (Recommended Plan)**

Risk Category: **Low Risk: Typical Construction, Simple** **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%*	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	$ 1,300,195	
Total Planning, Engineering & Design	$ 194,000	11.90%	$ 23,093	$ 217,093	
Total Construction Management	$ 98,000	14.86%	$ 14,561	$ 112,561	
Total Excluding Real Estate	**$ 1,314,880**	**23.95%**	**$ 314,969**	**$ 1,629,849**	

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 analsyis. 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
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**

Point Judith Harbor of Refuge Section 107 Navigation Improv

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 30-Jun-16

Risk Level

	Negligible	Marginal	Moderate	Significant	Critical
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

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				**Maximum Project 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
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				**Maximum Project Growth**		**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**
Construction Elements				**Maximum Project Growth**		**15%**
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 Philadephia/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 accreation 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 accreation 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

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 Philadephia/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
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.

Designed by
Lauren Jacobs

Estimated by
Jeffrey Gaeta

Prepared by
Jeffrey Gaeta

Direct Costs

LaborCost
EQCost
MatlCost
SubBidCost

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

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

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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