

PART 2 USACE PERMIT APPLICATION

Section 404 Clean Water Act Permit

Section 10 Rivers & Harbors Act Permit

U.S. Army Corps of Engineers (USACE)
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
 33 CFR 325. The proponent agency is CECW-CO-R.

*Form Approved -
 OMB No. 0710-0003
 Expires: 02-28-2022*

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: <http://dpcl.dod.mil/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx>

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - John Middle - Last - Henshaw Company - Connecticut Port Authority E-mail Address - jhenshaw@ctportauthority.com	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Michael Middle - Last - Garbolski, P.E. Company - AECOM E-mail Address - Michael.Garbolski@AECOM.com
6. APPLICANT'S ADDRESS: Address- 455 Boston Post Road, Suite 204 City - Old Saybrook State - CT Zip - 06475 Country -USA	9. AGENT'S ADDRESS: Address- 500 Enterprise Drive, Suite 1A City - Rocky Hill State - CT Zip - 06067 Country -USA
7. APPLICANT'S PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax N/A 860-577-5174 N/A	10. AGENTS PHONE NOs. w/AREA CODE a. Residence b. Business c. Fax N/A 860-263-5800 860-263-5777

STATEMENT OF AUTHORIZATION

11. I hereby authorize, AECOM to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.


 SIGNATURE OF APPLICANT

10/27/2020
 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) State Pier Infrastructure Improvements	
13. NAME OF WATERBODY, IF KNOWN (if applicable) Thames River	14. PROJECT STREET ADDRESS (if applicable) Address 200 State Pier Road City - New London State- CT Zip- 06320
15. LOCATION OF PROJECT Latitude: °N 41.359785 Longitude: °W -72.092035	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID See CTDEEP Attachment K Municipality Section - Township - Range -	

17. DIRECTIONS TO THE SITE

The Connecticut State Pier Facility complex is located in the City of New London on the Thames River in southeastern Connecticut, approximately 100 miles south of Boston, Massachusetts and 130 miles northeast of New York City.

From the south: northbound I-95 to Exit 83 onto Frontage Road, turn left (north) at Williams Street. Turn right (east) onto State Pier Road and continue 0.8 miles to end. From the north: southbound I-95 to Exit 84S, bear right and merge onto Williams Street. Turn left (east) onto State Pier Road and continue 0.8 miles to end.

18. Nature of Activity (Description of project, include all features)

Please see attached narrative (Block 18. Nature of Activity).

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Please see attached narrative (Block 19. Project Purpose).

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Please see attached narrative (Block 20. Reason for Discharge).

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
~323,600 CY fill at piers below MHHW:	~399,000 CY yards of dredged material generated:	~214,000 CY yards of jack-up pad stone install

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres ~8.1 acres of fill between piers and potentially at East Face for Heavy Lift area creation;
or ~8.7 acres of jack-up pad placement within ~15.9 acres of dredge area
Linear Feet 4,546 ft developed shorefront impacts

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please see attached narrative (Block 23. Avoidance, Minimization, Compensation).

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- 32 Walbach Street (Penn Central Trans Co. - 400 N. Capital St. NW, Washington, DC. 20001)

City - New London State - CT Zip - 06320

b. Address- 35 Thomas Griffen Street (A&J Real Estate LLC - 2 Ferry Street, New London, CT 06320)

City - New London State - CT Zip - 06320

c. Address- Eastern Avenue (Eastern Avenue Properties Inc. - P.O. Box 1429, New London, CT 06320)

City - New London State - CT Zip - 06320

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CT DEEP	LWRD OLIS SDF	201905859 SDFWQC	05/06/2019	TBD	
CT DEEP	Stormwater GP	201914361/GSN3536	01/09/2020	04/07/2020	N/A
CT DEEP	Cert. of Permission	201910828-COP	09/11/2019	10/07/2019	N/A

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.


SIGNATURE OF APPLICANT

10/22/2020
DATE

SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

Block 18. Nature of Activity (Description of project, include all features).

The proposed State Pier Infrastructure Improvement (SPII or Project) includes onshore site work and in-water activities in the Thames River. For the purposes of this application, activities are separated into demolition/removal activities and construction/installation/improvement activities. As described herein, the Project will be completed in phases – generally moving from upland areas to in-water work.

While the following narrative is presented as two distinct phases, some overlap may occur between the Phase 1 and Phase 2. In addition, select actions listed as Phase 1 activities may actually occur during Phase 2. For example, if deemed appropriate by the contractor, the fill movement from the uplands into the central wharf may be completed as one action during Phase 2, rather than as two separate actions (i.e. stockpiling in Phase 1 and fill placement in Phase 2). Work activities will only progress once applicable permits are obtained.

Phase 1 work generally consists of the on-shore improvements and activities at the site, as well as select in-water activities. Work will include demolition of buildings, excavation, grading and installation of a stormwater management system and utilities. The site will be leveled and graded to accommodate future uses. Specifically, the entire upland portion of the site will be provided with a level, compacted gravel surface for use by any cargo handling and storage activities. Select in-water activities, such as derelict structure removal and bulkhead overshooting, which have been authorized through the COP/GP process will be conducted under Phase 1.

Phase 2 work generally consists of the in-water and over-water improvements such as dredging, fill placement and marine structure construction for creation of the new Central Wharf area and heavy-lift pad. Anticipated SPII components are discussed in more detail below.

Phase 1 Work (Uplands and NE Bulkhead)

Onshore Demolition Activities

- Demolition of various existing buildings (including the Administration Building and Warehouse 1) and site utilities in upland area.
- Demolition of a segment of State Pier Road, including the bridge and bridge abutment.
- Offsite relocation of NOAA station.
- Removal of existing onsite rail tracks.

In-Water and Over-Water Demolition Activities

- Demolition of existing berthing dolphins (currently not used: dolphin demolition work permitted separately under CT DEEP OLISP Certificate of Permission [COP: 201910828-COP issued 10/07/19] and USACE CT General Permit [CT GP] process [NAE-2018-02161 issued 11/01/19]).
- Demolition of Northeast Annex timber pile supported concrete deck on east side of Admiral Shear State Pier along shoreline (±6,300 sf: Northeast Annex pile and superstructure demolition work permitted separately under CT DEEP COP / USACE GP process [see authorization numbers above]).

Onshore Improvements

- Cutting of the onsite hill (±190,000 CY). These soils will be used as fill between the two piers during Phase 2 activities.
- Overall grading and compaction of the site and installation of a gravel surface.
- Installation of retaining wall or earth embankment to maintain existing State Pier Road.

- Installation of new drainage and stormwater treatment system to meet stormwater quality requirements.
- Onshore installation of an anchored heavy-lift relieving platform on the existing Northeast Bulkhead (± 700 lf impact along existing bulkhead: bulkhead work permitted separately under CT DEEP COP / USACE GP process [see authorization numbers above]).
- Installation of fendering and bollards at Northeast Bulkhead.
- Installation of new electrical utilities. High mast light poles will be installed. Electrical equipment may include electrical substations, transformers and powered racks for nacelles.
- Installation of new fire protection mains, hydrants and potable water supply lines.
- Installation or upgrade of sanitary sewers.
- Installation of perimeter security fencing and gate.
- New roadway entrance to the site.

Phase 2 Work (Waterfront Works: State Pier / CVRR Pier / Central Wharf)

In-Water, Over-Water and On-Shore Improvements

- Demolition of approximately 420 linear feet (~84,000 SF) of State Pier to facilitate construction of the heavy lift pile supported area and bulkhead at the State Pier East Berth (approximately 78,000 sf).
- Demolition of additional segments (~34,000 SF) of the west face of State Pier concrete deck to facilitate fill placement between the piers (approximately 24,000 sf).
- Demolition of two areas at the east face and southeast corner of State Pier to facilitate mooring bollard installation (each area approximately 1,500 sf).
- Dredging of Turning Basin including approaches to both berths. Dredging to -39.8' NAVD88 (-36' MLLW + 2' overdredge), matching the existing New London Federal Channel depths. This includes removal of approximately 55,000 CY of material, including overdredge, generated from approximately 241,000 SF¹. The majority of this material will be generated in the northern portion of the turning basin.
- Dredging of vessel berthing areas to -41.8' NAVD88 (-38' MLLW + 2' overdredge) for berthing layout and up to -66.8' NAVD88 (-63' MLLW + 2' overdredge) to accommodate the seabed preparation work described below. Dredging to be completed at the proposed Northeast Berth (Up to ~240,000 SF; $\pm 222,000$ CY) and East Berth (Up to ~210,000 SF; $\pm 122,000$ CY) proximate to the new heavy lift areas.
- Seabed preparations would be completed after the above dredging to allow for berthing of vessels equipped with jack up legs (or similar) at the Northeast Bulkhead and East Berth heavy lift areas. Jack-up pockets will be constructed by filling the dredged pockets with crushed stone or gravel, to provide a stable jacking platform and to protect the seafloor from damage during install vessel jacking operations. Dredging and rock pad design utilizes a tiered approach, with stone pad thickness of 13' to 27' (maximum; in the eastern portions). Up to 107,000 CY of crushed stone would be placed in each pocket. The East Berth seabed preparation would be completed first and the Northeast Bulkhead seabed preparation work would be constructed at a later stage. This stone bed will be maintained throughout the duration of WTG operations.
- Installation of longitudinal steel sheeting or protected slope at CVRR pier.
- Installation of king pile bulkhead between the State Pier and the CVRR Pier, extending into the CVRR pier, tying into the new longitudinal sheet pile wall/slope along the CVRR pier.

¹ Proposed Turning Basin has a larger overall total footprint than the dredge area identified above (many existing areas are already below the design depth within the ~460,000 SF Turning Basin area).

- Filling approximately 7.4 acres (~322,000 SF) between the CVRR Pier and State Pier to create the new Central Wharf operational area (±400,000 CY) which is located adjacent to the heavy lift area at the proposed East Berth. Approximately 308,600 CY will be placed below MHHW (+1.21 ft. NAVD88) and the balance will be placed above this elevation to raise the Central Wharf to finish grades. Relative to the DEEP New London Coastal Jurisdiction Line (CJL) elevation of +2.1 ft. NAVD88, approximately 315,900 CY of fill would be placed between the piers for Central Wharf creation.
- Installation of a series of ~3' wide stone columns, or comparable technology, in the filled area of the new Central Wharf created between the piers and at the East Berth Heavy Lift area.
- Installation of steel sheet pile to enclose the State Pier heavy lift platform and filling approximately ~33,600 SF between the existing State Pier riprap slope and the proposed sheet pile wall along its East Face². Approximately 15,000 CY will be placed below MHHW (+1.21 ft. NAVD88) for the East Face Heavy Lift area creation. An additional 600 CY of East Face Heavy Lift area fill would be placed between MHHW and the CJL elevation of 2.1 ft NAVD88.
- Installation of steel toewall system at the base of the State Pier heavy lift platform. ~1,115 LF of toewall is proposed at and adjacent to the heavy lift platform.
- Installation of upgraded fendering and mooring bollards at the State Pier East Face Berth.
- Installation of a toewall to protect an existing eelgrass bed from dredging activities. Toewall will consist of up to ~170 ft of combination sheet pile (to extend ~1 ft above mudline).
- Installation of high mast lights at the State Pier Facility.
- Installation of cold ironing infrastructure.
- Installation of piles and associated gangway to support ConnDOT Chester-Hadlyme ferry overwintering at the Northwest Bulkhead area.

Existing conditions and proposed activities are detailed on site plans in Attachment I. A table summarizing anticipated Project activities and impact quantities is included below.

Suitable dredge materials and upland soils will be used for fill between the two existing piers. The CPA has conducted soil and sediment characterization studies to ensure the materials proposed for use as fill between the two existing piers are suitable. The results of the sediment investigations have been provided in Attachment M2. Additional quantities of offsite fill material may be required. Other fill sources may include unrelated dredge projects or offsite sources.

In addition, sediment dredged from the site may require offsite upland disposal or upland beneficial reuse for logistical reasons. If geotechnical characteristics, Project sequencing or other factors such as onsite space dictate, offsite disposal of select dredged materials may be required. Offsite disposal of any such unsuitable sediment would be disposed of at an approved facility in compliance with all applicable regulatory requirements.

Additional detailed information pertaining to anticipated construction methodologies, including sedimentation and erosion control implementation, is presented in CT DEEP OLISP Application Form, Part III-2.a.

Project Permit Authorizations

The CPA has been granted authorizations for select Project elements under the CT DEEP Land & Water Resources Division (formerly Office of Long Island Sound Programs: OLISP) Certificate of

² Engineering design is progressing. The East Berth Heavy Lift area may be constructible using a toe wall and associated pile supports, thus eliminating a need for structural solid-fill placement atop the riprap slope. Conservatively, and for permitting purposes, placement of this fill has been assumed.

Permission⁴ (COP) program and associated authorizations from USACE (i.e. approval under General Permit [GP: Coastal GP 2] of the USACE CT GP Program)⁵. These programs have specific eligibility requirements and allow for the general repair, maintenance and/or removal of certain existing structures. As described herein, the following permit phasing approach is anticipated:

Phase 1 Project Elements

The anticipated construction and permitting timelines for the *Phase 1* Project components (in-water demolition and bulkhead oversheeting work) is presented in the table below. The COP/GP 2 applications noted below were prepared under separate cover and cover select *Phase 1* Project Elements. These applications were submitted to the agencies on September 10, 2019 and have been authorized by CT DEEP LWRD (201910828-COP) and USACE (NAE-2018-02161).

CPA has received authorization under the CT DEEP *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities*⁶. (Application No. 201914361 / Permit No. GSN003536), and would obtain other applicable authorizations, as applicable, prior to initiation of Project construction activities in upland areas. Additional detail on the anticipated stormwater handling and treatment methodologies are included in this stormwater filing.

<u>Construction Element</u>	<u>Anticipated Schedule</u>	<u>Separate COP/CT GP Applications</u>
Phase 1 Activities: Terrestrial Components		
Demolition of existing upland structures (including foundations)	February 2021 to June 2021	No
Upland / land-side construction, including (but not limited to): <ul style="list-style-type: none"> • Grading, compaction and leveling of uplands. Upland stockpiling would occur until in-water placement is possible • In-pier reinforcement of the CVRR Pier • Raising the elevation of the CVRR Pier (task to be primarily completed under Phase 2) • Fill and raise elevation of the NECR Parcel • Installation of the NE bulkhead <u>land side</u> supporting structures • Installation of dead-man anchorage system for Northeast Bulkhead oversheeting • Installation of pile supported, concrete heavy lift platform directly inshore of Northeast Bulkhead (land side piling) • Installation of in-ground utilities and bollards • Installation of new drainage and stormwater treatment system to meet stormwater quality requirements. • Temporary Office Installations 	February 2021 to November 2021	No

⁴ https://www.ct.gov/deep/cwp/view.asp?a=2705&q=323580&deepNav_GID=1635

⁵ https://www.nae.usace.army.mil/portals/74/docs/regulatory/StateGeneralPermits/CT/Connecticut_General_Permits-August_2016.pdf

⁶ <https://www.ct.gov/deep/cwp/view.asp?A=2721&Q=558612>

<u>Construction Element</u>	<u>Anticipated Schedule</u>	<u>Separate COP/CT GP Applications</u>
Phase 1 Activities: In-Water & Above-Water Elements (Demolition and Existing Structure Improvement)		
In-water demolition and structure improvements, including: <ul style="list-style-type: none"> Northeast Bulkhead – Sheet Pile Oversheeting (February - June 2021) Northeast Annex - Demolition of derelict Pile-Supported Deck Platform (February - June 2021) Mooring Dolphin Demolition (February – April 2021) 	February 2021 to December 2021 (*No Prohibited In-Water Work June through September)	Yes: CT DEEP Authorization 201910828-COP issued 10/07/2019 USACE Authorization NAE-2018-02161 issued 11/01/2019

Phase 2 Project Elements

- The remaining Project elements described herein (i.e. all remaining non-Phase 1 Project components [including dredging and fill components]) would be completed under Phase 2 *Waterfront Works*, using authorizations anticipated from DEEP under the *Structures, Dredging & Fill (SDF) and Clean Water Act (CWA) Section 401 Water Quality Certificate* and authorizations anticipated from USACE under the CWA Section 404 / Rivers and Harbors Act Section 10 programs, as outlined in this JPA submittal, in addition to those received via the pending USACE Section 408 / Congressional channel deauthorization processes.
- Authorization for the potential Living Shoreline installation (which is further discussed in Attachment M8 as potential compensatory mitigation for Project impacts) may also be pursued in the future under the DEEP OLISP COP program and/or as a condition of the SDF authorization.

Detailed information pertaining to anticipated construction schedule and anticipated Time of Year Restrictions (TOY), is presented in CT DEEP OLISP Application Form, Part III-2.c.

Compensatory Mitigation for Unavoidable Impacts

As described in this application, the Project has been designed to include avoidance and impact minimization measures wherever feasible. For unavoidable project impacts, such as proposed fill from the pier footprint expansion, compensatory mitigation will be pursued.

The CPA will continue to develop an appropriate mitigation strategy with the regulatory agencies. CPA anticipates that the compensatory mitigation plan will include the following components (please note that mitigation plan elements may change based on additional agency input):

- Living Shoreline Creation and Habitat Enhancement.
- In-Lieu Fee / Mitigation Bank Payments.
- Funding Off-Site Stream Continuity / Diadromous Fisheries Restoration Projects through CT DEEP Inland Fisheries Program.
- Potential Winter Flounder Habitat Shelf Provision. Additional NMFS input required.

Detail pertaining to the compensatory mitigation plan elements is presented in Attachment M8.

Table 1 – Project Dredge and Fill: Areas and Volumes

Location / Activity	<u>Navigational Dredging</u>⁺	<u>Seabed Preparation Areas: Vessel Berth Dredging and Stone Pad Installation</u>^{**}	<u>Wharf Creation: Fill Placement</u>^{***}
Turning Basin^a	241,000 SF	N/A	N/A
	55,000 CY		
Northeast (Delivery Vessel) Berth^b	70,000 SF	170,000 SF	N/A
	98,000 CY	124,000 CY ^{**}	
East Face (Installation Vessel) Berth^c and Heavy Lift Area^{****}	N/A	210,000 SF	33,600 SF
		122,000 CY ^{**}	15,000 CY ^{***}
Central Wharf Area (Between Existing Piers)	N/A	N/A	322,000 SF
			308,600 CY ^{***}
<u>Activity Total</u>	311,000 SF	380,000 SF	355,600 SF
	153,000 CY	246,000 CY^{**}	323,600 CY^{***}

⁺ Approximate areas and volumes presented for dredging and stone pad placement have been updated to include sideslope construction and deeper berth pocket design depths.

^{**} Dredge material volume presented in table above; backfill volumes are slightly less. Up to 107,000 CY of crushed stone would be installed at the East Berth and 107,000 CY of crushed stone at the Northeast Berth for seabed preparation / jack-up pad creation work. It is anticipated that the East Berth seabed preparation work would be completed first and the Northeast Bulkhead seabed preparation work would be constructed at a later stage.

^{*} Dredging will include removal of material above -39.8' NAVD88 (-36' MLLW plus a two-foot overdredge) to address navigational concerns. Approximately three-quarters of this dredge material would be generated in the northern third of the turning basin. The proposed Turning Basin has a larger overall total footprint (~460,000 SF) than the dredging work area identified above (i.e. many existing areas of the Turning Basin are already below the design depth).

^{**} Crushed stone will be placed to protect seafloor from vessel spud cans and to create a stable lifting platform. NE Berth rock pad to be installed at later stage.

^{***} Approximate fill volumes represent material placed below MHHW line (Elevation +1.21' NAVD88). Total Fill at Central Wharf to +9' NAVD88 ~400,000 CY. Fill relative to CT DEEP Coastal Jurisdiction Line (CJL: +2.1' NAVD88 in New London) is 315,900 CY at the Central Wharf Area and 15,600 CY at the East Face Heavy Lift Area (See note below).

^{****} Engineering design is progressing. The East Berth Heavy Lift Area may be constructible using a toe wall and associated pile supports, thus eliminating a need for structural solid-fill placement atop the existing embankment. Conservatively, and for permitting purposes, placement of this fill has been assumed.

^a Dredging to -38' MLLW (-36' plus 2' overdredge)/-39.8' NAVD88.

^b Dredging to -40' MLLW (-38' plus 2' overdredge)/-41.8' NAVD88 in "dredging only" berthing areas. Tiered Jack-Up Pad area dredging to -52 MLLW (-50' plus 2' overdredge)/-53.8' NAVD88 in shallower section; and to -65 MLLW (-63' plus 2' overdredge)/-66.8' NAVD88 in deeper, eastern section. Feature also referred to as the "Northeast Bulkhead Berth".

^c Tiered Jack-Up Pad area dredging to -52 MLLW (-50' plus 2' overdredge)/-53.8' NAVD88 in shallower section; to -65 MLLW (-63' plus 2' overdredge)/-66.8' NAVD88 in deeper, eastern section. Feature also referred to as the "East Berth".

Block 19. Project Purpose (Describe the reason or purpose of the project).

The Connecticut General Assembly funded construction of the Admiral Shear State Pier over 100 years ago to facilitate business and commerce in the state. The mission of the facility today remains essentially the same as at inception. With the Central Vermont Railroad (CVRR) Pier, the State Pier Facility contains approximately 4,000 linear feet of dockage along its two main piers, on-dock rail connectivity to the New England Central Railroad (now owned by Genesee & Wyoming) system, 102,000 square feet of warehouse space, deep water access, and direct connection to the interstate highway system. The site, in its entirety, is generally known as the State Pier Facility (or State Pier Complex), which not only includes waterfront features such as piers and quay walls but also includes upland areas straddling State Pier Road and land north of the Gold Star Bridge.

In 2011, the *State Pier Needs and Deficiency Planning Study* was commissioned by the Connecticut Department of Transportation (CTDOT) to identify site-related and infrastructure repairs and improvements that would better position the facility to capture emerging East Coast shipping opportunities and accommodate some of the logistical needs associated with the \$5 billion in cargo flow annually in Connecticut.

The 2011 study concluded that State Pier's niche among East Coast ports was to remain primarily a break-bulk port capable of handling a variety of cargo types (lumber, paper, pulp, salt, steel, etc.) but with future Marine Highway container potential. The study also concluded the State Pier Facility should be operated as efficiently as possible by taking advantage of its rail connections in order to expand its market reach. The study further concluded the facility needed to efficiently accommodate cargo movements, storage, and multimodal throughput to assure quick vessel turnaround times. Maximizing the flexibility of the port facility was seen as the key to enhanced utilization and efficiency.

The existing State Pier Facility was found generally to be in good condition relative to similar New England ports with some exceptions. Some of State Pier's greatest constraints are the limited near-dock surface area available for cargo moves, limited laydown area and poor surface conditions. Dredging to achieve uniform depths for both piers and the poor structural and overall condition of the CVRR Pier are deficiencies that need to be remedied.

The State Pier Facility Master Plan, developed in 2011, called for a number of improvements to the facility in order to accommodate future growth in the marine shipping market and to address the shortcomings of the existing site. Recommended improvements at the facility included:

- Improved vehicular access and circulation;
- Restored and enhanced rail connectivity;
- Dredging and dredged material disposal;
- Enhanced vessel accommodations;
- Upland grading and surface improvements;
- Structural improvements to piers, bulkheads, and quay walls; and,
- Stormwater controls and treatment measures.

In 2018, CPA released a document entitled "Connecticut Maritime Strategy" (included as JPA Attachment M13). The document outlines CPA's current strategic objectives, which includes capitalizing on Connecticut's geographic location between New York and Boston by expanding and marketing the State Pier Facility's capacity for break-bulk and other goods to attract more commercial traffic whether through imports, exports or domestic movements of goods. This

document further recognizes emerging opportunities associated with the offshore wind energy industry in the northeastern United State and the potential to maximize under-utilized state assets.

CPA's principal source of revenue is generated from its lease with the Facility's terminal operator. Accordingly, payments to CPA are calculated by combining monthly lease payments as well as a percentage of the lessee's assessable revenue. Therefore, it is in CPA's best interest to ensure that the State Pier Facility is designed to allow it to provide additional capability for existing uses (such as the processing of more traditional break-bulk cargoes), while also accommodating new opportunities, such as the recently emerging offshore wind industry in the northeast United States. The redesign and substantial upgrading of the State Pier Facility, proposed through the Project, will allow for the accommodation of a wider range of cargo opportunities and is consistent with CPA's updated 2018 strategies document.

Located in New London Harbor along the Thames River, the State Pier Facility is strategically situated in far eastern Connecticut, exhibits the necessary pre-qualifying port and navigation channel attributes and is uniquely positioned to support the emerging wind energy sector that is gaining momentum in New England.

Through this Project, it is the goal of CPA to create infrastructure in Connecticut that will serve as a long-term wind turbine generator (WTG) port facility serving the northeast coast of the United States while at the same time continuing to support other existing long-term breakbulk operations for steel, coil steel, lumber, copper billets, as well as other cargo.

The proposed State Pier Infrastructure Improvements (SPII, or Project) are being designed to address shortcomings identified in the Master Plan to upgrade facilities that are in need of repair, improve conditions on the site, and to enhance the State Pier Facility in order to accommodate additional shipping and vessel opportunities in the State of Connecticut.

Wind Energy

A critical emerging market in the northeast, and globally, is that of the offshore wind industry. Connecticut, as well as other states in the region, has turned to offshore wind energy to supply a growing portion of their energy needs. This driving factor will create new and expanded demand for port facilities to support the construction and maintenance of wind power projects for the foreseeable future. Driving this industry, and thus the need for the currently proposed improvements at the State Pier Facility in New London, are the following factors:

- The offshore wind industry in the northeast of the United States has recently begun to take shape.
- Multiple states have passed legislation mandating offshore wind power be included in their energy portfolio (MA, NY).
- Over 1,500 MW of power purchasing agreements have been awarded to various offshore wind developers (MA, RI, CT) in recent years.
- These new offshore wind farms will be commercial scale (over 300 MW).
- New York and New Jersey recently awarded power purchase agreements for over 2,800 MW of offshore wind projects.
- This Project aligns with the Lamont Administration's plans to expand the use of carbon-free energy sources and commitment to procure 2 GW of offshore wind in the coming years.
- The infrastructure upgrades planned by the Project will allow the facility to take advantage of this long-term growing market.

Offshore wind turbine blades are very long and require port facilities with significant laydown area. Other components such as nacelles and tower sections are exceptionally heavy and require port heavy-load capacity. Due to the size and weight of the components, they are almost exclusively transported over water. Currently, there are no manufacturing facilities in the northeast U.S. capable of producing the required components. Therefore, the components will be imported to the port facility via import vessel. A major focus of the Project is to provide a facility that meets the high specifications required to support the marine cargos associated with the offshore wind industry.

The infrastructure improvements planned for the Facility will enhance its capabilities for conventional cargos but will also allow it to serve as a regional WTG port. WTG ports require a facility that allows for the import, staging, preassembly, and loadout of offshore wind maritime cargo.

As a regional WTG port, the main components that will be delivered to this facility are turbines, blades and tower sections. The typical size and weight of these components is shown below. The size and weight of these components require that a WTG port facility have a bearing capacity of between 3,000 to 5,000 pounds per square foot (psf).

Typical Size and Weight of Major Offshore Wind Components

Component	Length (ft)	Width/Diameter (ft)	Weight (tons)
Turbine	70	27	500 – 1,000
Tower Section*	120	20	225 - 350
Blade	265	20	20 - 50

*typically, 3 tower sections are preassembled at a WTG port prior to load-out and transit to install site.

Components arrive to the facility on import vessels with an approximate Length Overall (LOA), beam and draft of 600 ft, 180 ft, and 35 ft, respectively. These components are then moved from the vessel to the uplands or storage area via shipboard or large crawler cranes and self-propelled modular transporters (SPMTs). Once on the uplands, the components are staged to facilitate preassembly. Preassembly of a WTG consists of final assembly and testing of the turbine or nacelle as well as the assembly and testing of the 3 large tower sections using multiple large crawler cranes. Once the preassembly is complete, the components are loaded onto a purpose-built installation vessel. The installation vessels utilize jack-up legs that allow them to work in offshore waters. These legs are raised during transit and can reach heights in excess of 300 ft.

For the past 25 to 30 years, offshore wind developers have been successfully installing offshore wind turbines in the North and Baltic Seas. The installation of these turbines has been supported by regional WTG ports located on the coasts of Denmark, Germany, the Netherlands and the United Kingdom. These ports provide vital marine and upland infrastructure for the staging, preassembly and loadout of offshore wind components.

This lengthy and successful period of transportation and installation of large offshore wind components in Europe has defined the specific requirements for a WTG port facility. The main requirements are listed below:

- Location – transit distance from the facility to the installation site via installation vessel should be no more than 40 to 100 nautical miles. The installation vessel also serves as the transit vessel - transporting the preassembled WTG components between the port and the install

site. Keeping the transit distance within this outer bound provides for more efficient use of this specialty vessel.

- Air Draft Restrictions – The WTG facility should have no overhead structures (bridges) between it and the turbine installation site. This is due to a combination of the height of the installation vessel jack-up legs (+/- 300 ft) and the +/-300 ft height of the fully assembled WTG towers during transit.
- Deep Draft at Bulkhead and Direct Access to Deep Water Channel – The vessel used at the WTG ports typically require a berth with water depths of +/-30-40 feet and direct access to a deep-water channel leading to open water.
- Heavy Loading Criteria – WTG ports require a live-load rating ranging between 2,000 psf to 5,000 psf.
- Upland footprint – A minimum of approximately 30 acres is required to stage and preassemble the offshore wind components.
- Berthing Space – A minimum of approximately 1,400 LF of bulkhead is required to simultaneously berth an import and installation vessel.

In addition, certain design parameters are required to accommodate anticipated near-term and future facility uses of the State Pier Facility. Specifically, the adjacent, improved upland area needs to be flexible in order to accommodate:

- The continued handling and storage of compatible general cargoes;
- Various WTG components to be handled onsite, also accounting for the anticipated future increases in wind turbine size and weight. These turbines are currently designed at 12 MW per unit, with forecasts for increases of 15 to 18 MW per unit;
- The planned sequential use of the facility by Gateway and various WTG operators, which will stage components in different manner due to alternative upland equipment each operator will use;
- The anticipated sourcing of WTG subcomponents and other general cargo domestically, thereby requiring rail service within close proximity of the heavy lift wharf capacity.

A regional WTG port facility is required for the successful installation of offshore wind farms off the coast of the northeast US. Once complete, the State Pier Facility will serve as a critical piece of infrastructure to support the WTG industry in the U.S. The enhanced capabilities of the facility will also provide a more functional and capable facility for traditional breakbulk cargo operations for steel, coil steel, lumber, copper billets, as well as other cargo.

Traditional Cargoes and Regional Rail Consideration

In this Project, the majority of existing onsite rail infrastructure will be removed to accommodate the construction activities of the project. The CPA and Gateway Terminals are currently assessing options for reinstallation of reconfigured rail track to be installed at a later date in response to market demand.

Currently there is no regular cargo calling at the State Pier that requires rail service. Lumber, steel and salt shipments are moved by over-the-road tractor trailers. The current configuration of the rail tracks on the State Pier is not optimal to the handling of break-bulk cargo in the full buildout plan of the facility infrastructure improvements. These tracks were installed during the reconstruction of the State Pier in the late 1990s in order to replace the depressed tracks that served the State Pier Warehouse when cargo was offloaded from ships using cargo nets.

Genessee & Wyoming (G&W) Railroad operate one third of the freight rail lines in Connecticut and, through their associated entity the New England Central Railroad (NECR), control the rail service into the State Pier Facility in the Port of New London, which includes facilities (public and private) on the entire Thames estuary, including the State Pier. There are three active rail lines in and next to the State Pier property. It is technically feasible to extend all three lines into the State Pier Facility after the Project is built, should there be a business demand. In recent years, the cargo business into the State Pier requiring rail service has been a “spot” business, meaning an ad-hoc request for rail service.

It is more reasonable to consider alternative rail track configurations and layouts for future import and export scenarios. Specifically, export products that may be exported from the New England region in general and to New London in particular, are:

- Breakwater stone
- Crushed gravel
- Heavy Lift components
- Lumber from Canada and the Northwestern US
- Steel products

These exports may also be handled by existing local private facilities in the Port of New London. These private facilities would need infrastructure improvements, dredging and capital funds to implement these kinds of improvements to accommodate this service.

The Project does not “design out” the ability of reconfiguration of future rail infrastructure to serve import and export cargo service. In fact, rail standards have evolved and contemporary requirements will need to be incorporated, specifically meaning horizontal and vertical geometry of the rail tracks to meet the proposed elevated grade of the site. The newest 3-axle locomotives and railcar configurations will also need to be considered, as well as modern 286k Gross Rail Load standard. The Amtrak rail bridge just to the north of the State Pier Facility poses vertical constraints to the height of rail car transit, which also needs to be considered.

During the period when the facility is not actively engaged in support of offshore wind projects (wind project support anticipated to be approximately March through November of a given year [assuming suitable weather conditions prevail]), the facility will have capacity for traditional break-bulk cargoes. The anticipated initial tenants are expected to enter into a ten-year lease agreement at the facility, with an option to extend for an additional seven years. Upon completion of this project, the facility will be well suited for all manner of cargoes and will have two berths with heavy-lift capacity, key assets in the marine shipping industry within the North Atlantic region.

The Connecticut Port Authority and NECR/G&W have executed a 10-year lease agreement on the adjacent 5.5 acre parcel to the west of the facility warehouses. This lease will allow for storage of offshore wind components on the parcel (New London Parcel G10-245-3A). Terms of the agreement require that the CPA invest in rehabilitation of NECR’s existing twin freight rail line which are located in the northern rail yard, beneath the Gold Star Bridge. The removal of track at the State Pier site will be compensated by these improvements to the NECR tracks which will be available for immediate use. This cultivates the development of a new rail/water application and mitigates the CT State Pier restrictions during its modification and subsequent offshore wind assignment that there would be no public and only limited private cargo facilities.

Project Benefits

Additional details on select benefits anticipated from the Project are presented below:

New London Impact

- Ørsted/Eversource have a long-standing public commitment to make payments to the City of New London of \$750,000 per year for the first two years of its operations at the upgraded State Pier facility. In addition to this commitment, Ørsted/Eversource have engaged regularly with the Mayor/City of New London in the development of longer-term Host Community Agreement (HCA). Once completed, the HCA will provide additional financial benefits to the City for the duration of the Orsted/Eversource tenancy at the facility (minimum of 10 years). The specific terms of the HCA are expected to be made public once completed and executed.
- The CPA will commit 10% of its share of the revenue from the State Pier Facility to the City of New London, as well as provide the city an annual impact fee to the City.
- Expanded operations will bring additional activity along the New London waterfront area, boosting local businesses who provide goods and services in the vicinity of the port and throughout the region.

Regional Impact

- Economic expansion at State Pier Facility means short-, medium-, and long-term benefits to Southeast Connecticut and adjacent areas.
- In the short-term, jobs will be created as the infrastructure improvements start across the facility, requiring labor and technical expertise from the local workforce.
- The multi-year presence of the offshore wind industry will encourage an increase in regional manufacturing and jobs, as subsidiary industries are drawn to the region.
- In the long-term, the infrastructure improvements made to State Pier Facility will allow a wider range of cargo to utilize the upgraded port facilities.

Statewide Impact

- The infrastructure upgrades to State Pier Facility will allow accommodation of new cargo types requiring heavy lift capabilities.
- Increased ship calls and cargo flow translates into increased economic activity and revenue generation for the CPA, which will have increased capacity for investing in maritime projects to drive economic growth throughout the state.

Clean Energy

- This Project aligns with the Lamont Administration's plans to expand the use of carbon-free energy sources, and commitment to procure 2GW of offshore wind in the coming years.
- The Project offers the ability to significantly reduce offshore wind energy costs for Connecticut and the North East region through improved logistics, with New London serving as a regional hub.

Block 20. Reason(s) for Discharge

Discharges to Waters of the United States will be required to meet the purpose and need (see USACE Application Block 19) of the State Pier Infrastructure Improvements.

Specifically, fill discharges will be required seaward of the existing developed shorefront limits (coincident with the high tide line) in order to create approximately 7.4 acres (322,200 SF) of area between the existing Admiral Shear State Pier and CVRR Pier (i.e. creation of the new “Central Wharf” area). This area will be created in support of the proposed East Berth Heavy Lift area that will be used for WTG installation vessels. After installation of a king pile bulkhead, fill will be placed between the piers to create the Central Wharf area.

Fill of approximately 0.7 acres (~30,500 SF) is proposed on the Admiral Shear’s existing riprap slope for the creation of the State Pier heavy lift platform. This work would be completed via bulkhead installation and associated backfilling¹.

Minimal fill is also proposed in association with Northeast Annex bulkhead overshooting and for the installation of two toewalls onsite (one at the East Face of State Pier; one extending from the Northeast Bulkhead to protect an existing eelgrass bed). In addition, Installation of 36-inch pipe piles and associated gangway to support the ConnDOT Chester-Hadlyme ferry overwintering structure at the Northeast Bulkhead area is proposed. Upgrades to the easternmost stormwater outfall (OF-3) are also proposed at or below the HTL.

Additionally, dredging activities will be required in the turning basin, adjacent to the Northeast Bulkhead and adjacent to the upgraded Admiral Shear State Pier eastern bulkhead heavy lift area in order to accommodate inbound delivery and outbound installation vessels. A subset of the dredged areas will be prepared for jack-up barge use via overdredging portions of the dredge pockets and backfilling these areas with crushed gravel. Dredging activities will include:

- Dredging of Turning Basin including approaches to both berths. Dredging to -39.8’ NAVD88 (-36’ MLLW + 2’ overdredge), matching the existing depth of the adjacent New London Federal Channel. This includes removal of approximately 55,000 CY of material, including overdredge generated from approximately 241,000 SF². The majority of this material will be generated in the northern portion of the turning basin.
- Dredging of vessel berthing areas to -41.8’ NAVD88 (-38’ MLLW + 2’ overdredge) for berthing layout and up to -66.8’ NAVD88 (-63’ MLLW + 2’ overdredge) to accommodate the seabed preparation work described below. Dredging to be completed at the proposed Northeast Berth (Up to ~240,000 SF; ±222,000 CY) and East Berth (Up to ~210,000 SF; ±122,000 CY) proximate to the new heavy lift areas.
- Seabed preparations would be completed after the above dredging to allow for berthing of vessels equipped with jack up legs (or similar) at the Northeast Bulkhead and East Berth heavy lift areas. Jack-up pockets will be constructed by filling the dredged pockets with crushed stone or gravel, to provide a stable jacking platform and to protect the seafloor

¹ Engineering design is progressing. The East Berth Heavy Lift area may be constructible using a toe wall and associated pile supports, thus eliminating a need for structural solid-fill placement atop the riprap slope. Conservatively, and for permitting purposes, placement of this fill has been assumed.

² Proposed Turning Basin has a larger overall total footprint than the dredge area identified above (many existing areas are already below the design depth within the ~460,000 SF Turning Basin area).

from damage during install vessel jacking operations. Dredging and rock pad design utilizes a tiered approach, with stone pad thickness of 13' to 27' (maximum; in the eastern portions). Up to 107,000 CY of crushed stone would be placed in each pocket. The East Berth seabed preparation would be completed first and the Northeast Bulkhead seabed preparation work would be constructed at a later stage. This stone bed will be maintained throughout the duration of WTG operations.

Block 23. Description of Avoidance, Minimization, and Compensation.

The Connecticut Port Authority (CPA) has designed the SPII to avoid and minimize impacts to the extent practicable. Temporary and permanent Best Management Practices (BMPs) will be implemented in order to minimize construction period and operational impacts on water quality and the surrounding environment. Specifically, a permanent stormwater treatment system will be installed, construction phase soil erosion control and mitigation measures will be implemented, and a turbidity monitoring will be performed during in-water activities. Details regarding these BMPs are presented below.

An alternatives analysis was performed to identify the least environmentally damaging practicable alternative to meeting the SPII purpose and need. These alternatives include the no action alternative, an assessment of alternate regional sites, a pile supported platform alternative, and alternate configurations onsite. A complete alternatives analysis is provided as Attachment M7 of this Joint Permit Application (JPA).

A compensatory mitigation plan has been prepared for unavoidable impacts to aquatic resources. The mitigation plan presents several anticipated elements, including construction of a living shoreline, in-lieu fee payment, off-site stream continuity/diadromous fisheries restoration projects and potential winter flounder habitat shelf provision. The mitigation plan is provided as Attachment M8 of this JPA.

Proposed Stormwater System

A new site stormwater collection and treatment system will be installed in the upland portions of the site. CPA anticipates that components will include the installation of trench drains, grate inlets, manholes, reinforced concrete pipe (RCP), water treatment units (vortechinics or similar), rain gardens and/or other stormwater storage/treatment options, and outfalls through the bulkhead. This work will be completed using front-end loaders, excavators, dump trucks and earth grading equipment. The site currently lacks a functioning stormwater treatment system. Through the installation of the improved stormwater engineering/water quality infrastructure (including vortechinics and other technologies), the Project will be improving the quality of the site's runoff dramatically.

Construction Phase Soil Erosion Control and Mitigation Measures

A soil erosion control plan has been developed as part of the Construction Activities permitting (Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities - Application No. 201914361 / Permit No. GSN003536). As part of the soil erosion control and stormwater measures for the site, a stormwater system will be installed, as outlined above. In addition, construction phase plans have been developed that identify the types, quantity and specifications for stormwater control measures that will be implemented during construction.

The intent of the erosion control plan is to minimize soil erosion and sedimentation throughout the extent and duration of the project. This will be performed by implementing erosion control best management practices (BMPs) that: 1) control soil detachment, 2) control water movement, and 3) control sediment deposition. The plan has been developed using criteria from the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control".

The erosion control plan for construction will include a variety of stormwater and erosion control measures for the upland portion of the site. Among other BMPs, these measures may include silt fencing, straw bales, slope breakers, rip rap, geotextile filters, water bars, and stabilized construction entrances as well as the use of turbidity control curtains, floating absorbent booms and adherence to the relevant Water Quality Monitoring Plan criteria during in-water applications. Typical BMPs for erosion control measures are provided in Attachment I (Project Plans).

Turbidity Control and Mitigation Measures (Conceptual)

Turbidity control measures will be utilized and implemented during the fill placement between the two piers (i.e. “Central Wharf” area creation). The project intent is to install the steel sheet pile bulkhead between the piers prior to the placement of this fill. However, there may be a period of time prior to the closure of this bulkhead when fill will be placed. In this instance, a turbidity curtain would be used to seal off the Central Wharf area where fill is being placed.

The exact turbidity mitigation and monitoring program will be finalized as the full design of the Project progresses and the specific activities and needs are identified. The CPA anticipates the implementation of a turbidity monitoring as part of the demolition and dredging phases of the Project. Site controls and BMPs will be put in place to minimize impacts to the water column. Turbidity curtains would be available to the Project during dredging construction activities as noted below.

Due to the anticipated minimal effectiveness and logistical issues associated with the use of turbidity curtains or similar technologies in large, flowing rivers, such as the Thames; the regular use of turbidity curtains is not anticipated during dredging operations. However, the use of turbidity curtains is proposed around the existing eelgrass bed located at the northeast portion of the site while in-water Project work is ongoing. The Project will incorporate a provision that turbidity curtains be available for use if the water quality monitoring program indicates that this technology would be necessary and useful to control elevated turbidity associated with dredging or other in-water construction operations.

A conceptual turbidity control and monitoring program is presented below

The potential to create turbidity and impact water column quality will be minimized by adherence to dredging BMPs. Dredging BMP examples are provided below.

- As indicated by the water quality program monitoring results, turbidity curtains may be installed during dredging activities or other activities that may significantly disturb the sediment surface. The new “Central Wharf” area would be filled only after being isolated from the Thames River via kingpile bulkhead installation and/or through the use of turbidity curtain extending between the CVRR Pier and the Admiral Shear State Pier.
- Barges, if needed, will be watertight and regularly inspected to confirm water-tightness during dredging operations and dredged material transport.
- Mechanical dredging operations will utilize an environmental bucket (or equivalent) during dredging operations. Alternatively, hydraulic dredging methods may be employed with CT DEEP review and approval.
- Efforts will be made to avoid grounding of barges, and water levels will be allowed to rise before attempting to free grounded vessels.
- Use of equipment appropriate for the water depth of the work area.
- Minimizing bucket bites.
- Maintaining bucket closure unless prohibited by debris.
- Maintaining expeditious movement of the closed bucket to the receiving barge after completing a cut to reduce water leakage from the bucket into the river, to the extent practicable. The dredge operator shall not intentionally drain the dredge bucket over the water column.
- Re-handling or stockpiling material on the river bottom will not be permitted.

- Limiting tug propeller revolutions per minute.
- Work on slopes will proceed from top of slope to toe of slope, where practical.
- Utilization of precision dredge and bucket guidance systems (e.g., integrated with real-time kinematic differential global positioning systems [RTK – DGPS]), will allow the operator to deploy/retrieve the dredge bucket with a high level of operational accuracy.
- Use of an experienced environmental dredging operator capable of implementing appropriate BMPs to limit re-suspension will be required.
- The operator will not fill the dredge bucket beyond its stated capacity.
- The operator will optimize the rate of bucket descent and retrieval during operations in order to reduce sediment re-suspension.
- The operator will perform single “bites” with the bucket, and each bucket will be brought to the surface and emptied into the watertight barge between “bites”.
- The operator will not overfill barges with the dredged sediments.
- Oil absorbent booms will be available for deployment in an emergency situation.
- As noted above, silt curtains / turbidity curtains are anticipated in association with the Central Wharf area fill (unless the kingpile wall fully encloses this area prior to fill placement). In addition, silt curtains / turbidity curtains may be utilized around the active dredge area, if the water quality monitoring program indicates a need to deploy.
- As noted above, turbidity curtains are proposed around the existing eelgrass bed located at the northeast portion of the site.
- If used, turbidity (silt) curtains will be long enough to cover the full length of the water column, with an allowance for tidal flux (approximately 2-4 feet [ft]). The curtains will be anchored to structures and / or the mudline, as detailed in Attachment I.
- Near-shore silt curtains will be anchored using a multi-point anchoring system and affixed to a mechanical winch system to ensure that they are not moved out of position by tidal action, vessel wakes, etc.

Dredging will be conducted during the permitted timeframes, as determined during the final Project permitting process. Anticipated allowable in-water work windows are noted in the Section III-2.c response, below. During dredging and in-water construction activities, real-time measurements of turbidity will be used to trigger mitigation/response actions. The water quality monitoring program will also include ongoing visual inspections for evidence of solids transport that may not be monitored by the turbidity measurements.

During dredging and in-water construction activities, water monitoring would be conducted and responses to increased turbidity observed during monitoring may include one or more of the following:

- A water column monitoring decision tree will be developed to help inform the monitoring effort and ensure environmental compliance. An initial turbidity measurement will be taken at several points immediately adjacent to the dredge area outside of the double curtain to establish a baseline “active dredging operation” level. If, during dredge operations, the turbidity levels adjacent to the dredge area are less than the control limits (100 NTU above background; or as identified by DEEP / USACE) and there is no visible plume present, then the operations can continue as planned. Buoys may be utilized to perform continuous monitoring.

- A turbidity curtain system would be available for use and would be employed during dredging if the water quality monitoring results require its use. Site environmental staff will take regular measurements around the dredge area (immediately outside of the active work area) to measure turbidity levels. Ambient (background) turbidity levels would be determined from the up-current monitoring station and down current compliance data would be collected at the down-current location, at pre-determined distances appropriate for the site conditions (i.e. 300-feet up-stream / downstream).
- If the turbidity levels adjacent to the dredge area are greater than the control limits and a visible plume is observed, the dredging can be continued, but the BMPs would need to be inspected/upgraded as applicable.
- Monitoring will continue and focus on the data collected from the fixed buoy 300 feet down current of the dredge area. If these exceedances are sustained for a period of 30 minutes or more, the next level of monitoring will be triggered. If the turbidity levels at the 300-foot monitoring location are less than 100 NTU above background (or alternate value for the Thames River, as identified by regulators), then the operations will continue, and the buoys will perform the monitoring. All BMPs in place will continue to be monitored. If the turbidity levels at the 300-foot monitoring location are greater than 100 NTU above background (or alternate value for the Thames River, as identified in the permit process) and a visible plume is observed, dredging will be paused in order to adjust the operations and potentially modify BMPs.
- Additionally, monitoring will be shifted approximately 600 feet down current. If the measured turbidity at the limit of the 600-meter down current sampling station exceeds the specified 100 NTU over background control limit (or alternate value for the Thames River, as identified by regulators) and a visible plume is observed, then monitoring will continue (30 minute intervals) to see if the plume dissipates or persists. In the event sustained turbidity measurements indicate that the 100 NTU (or alternate) criterion has been exceeded at the limit of the 600-foot down current station, project operations will cease until the causes for the plume are evaluated and corrective actions are implemented.

Turbidity sensors will be deployed at each location towards the bottom water column (approximately three feet from the sediment surface) based on low tide conditions. The diurnal tidal range at the Site is approximately 3.05 feet, so depending on the current phase of the tide, the height of the instrumentation would need to be adjusted appropriately in order to avoid contact with the river bottom. Site environmental staff will monitor the predicted tides for the day and plan the monitoring approach accordingly.

The instrumentation will either be operated by dedicated on-water staff or be installed on floating buoy platforms. Both approaches will facilitate rapid relocation, as necessary. Turbidity readings will be recorded, compiled, and made available virtually real-time to the Site environmental staff. Data from the turbidity sensors also will be downloaded and placed in redundant storage in a field laptop computer. Readings will be recorded once every 30 minutes at each turbidity monitoring stations.

The turbidity monitoring approach has the benefit of alerting the Site environmental staff on a real time basis when exceedance criteria are met or exceeded. The turbidity control limits will be set using a rolling average and a trigger value based initially on 100 NTU above background (or alternate value for the Thames River, as determined by regulators). Note that the rolling average for turbidity will not be implemented at the 600-foot down current location.

Turbidity/TSS monitoring will be performed via a water quality sonde operated by Site staff or mounted to an automated sampling buoy. The average value of the up-current (background) location will be compared to the rolling average value of the down current location for the same period. The

monitoring limit will be based on 100 NTUs above the upstream (background) level, assuming a 1 mg/L to 1 NTU correlation between TSS and turbidity. Sampling activities are initially triggered when turbidity outside the second turbidity curtain is >100 NTUs above background (or alternate value for the Thames River, as determined by the regulators).

Typically during monitoring activities, it is not uncommon to get occasional one-time spikes that cannot be tied to activities in the water (e.g., the sensor makes contact with the bottom, biofouling). If this happens regularly (that is, more frequently than twice per day), the sensor will be inspected and cleaned, repaired, or replaced.

Turbidity readings will be reported in the daily reports by the Site environmental staff. If there is an exceedance as described above, the dredge contractor and the Site environmental staff will conference immediately.

If after employing BMPs, an exceedance of the turbidity criteria of 100 NTUs above ambient conditions (assuming a 1 mg/L to 1 NTU correlation between TSS and turbidity; or corresponding alternate value as identified) is reported environmental staff will attempt to determine if the cause for the exceedance is related to the Project construction. If the source of the turbidity or visible plume can be traced back to the marine construction (bulkhead improvements or dredging action), as determined by mapping of the plume through navigating in a zig-zag pattern and/or longitudinally through the plume, additional response actions may be employed. Actions will be coordinated with permitting agencies, as required. Potential mitigation measures may include:

- Reducing the dredging operations removal rate or otherwise adjusting the specific dredging operations.
- Temporarily suspending dredging operations until the source of the exceedance can be determined and remedied.
- Installing turbidity curtains around the dredge area.
- If turbidity curtains have already been established around the dredging operation(s) where the confirmed exceedance was obtained, an additional turbidity curtain layer could be established around the dredging operation in question.
- Suspend operations until site conditions (tide, wind, or other factors), improve.

Action will be taken when turbidity measurements indicate that the 100 ppm TSS over ambient condition (or alternate appropriate value for the Thames River) is being exceeded outside the second turbidity curtain and if exceeded at the down-current compliance point located at the 600-foot down-current location.

Depending upon the situation in which the exceedance is identified and investigated by the environmental monitor, a single mitigation measure may be used to correct the issue or a combination of measures may be implemented. Mitigation measures will be coordinated with the Site environmental staff. As more data are obtained as part of the real-time turbidity monitoring, additional mitigation measures may be developed and implemented, or the additional measures suspended if values are significantly lower.

The CPA anticipates submitting a “Water Quality Monitoring Plan”, including a “Turbidity Mitigation and Monitoring Plan”, prior to the start of in-water construction activities. CPA will continue working with DEEP and USACE to ensure that regulatory concerns are appropriately addressed, and that any DEEP- or USACE-identified water-quality monitoring action levels are incorporated into the plan.