APPENDIX D

New Jersey
Ports and Harbors Evaluation

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Intended for:
New Jersey Board of Public Utilities

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NEW JERSEY PORTS AND HARBORS EVALUATION

OFFSHORE WIND SUPPLY CHAIN

RAMBOLL

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1. EXECUTIVE SUMMARY

At the request of New Jersey Board of Public Utilities (NJBPU), Ramboll conducted a Preliminary Ports and Harbors Evaluation Report (Preliminary Report) in early 2019 to assist the New Jersey Economic Development Agency (NJEDA) in identifying potential properties suitable for marshaling, manufacturing, and operations & maintenance (O&M) facilities to support the offshore wind energy industry in the State of New Jersey. This initial assessment was also to support NJBPU's initial 1,100-megawatt (MW) solicitation and Offshore Wind Strategic Plan (OWSP) to develop 3,500 MW of offshore wind energy.

In November 2019, the NJBU was tasked by Governor Murphy to complete the OWSP based on New Jersey's new offshore wind goal—7,500 MW of offshore wind energy by 2035. Based on the new goal, Ramboll has updated the Preliminary Report and added relevant analyses in this New Jersey Ports and Harbor Evaluation (Evaluation). The Evaluation includes an update to New Jersey port assessments based on the current plans for offshore wind and port development in the state. It includes updates to the Preliminary Report in regard to current potential ports available for supporting the OWSP for 7,500 MW by 2035.

This report is based on current publicly available information at the time of each assessment. As the offshore wind market develops, port availability may change accordingly. Inclusion or exclusion of potential sites in this Evaluation does not preclude other alternative development or sites from consideration.

Ramboll evaluated potential properties for future port and harbors development based on:

- Waterfront access
- Size of property
- Depth of existing berth
- Depth of nearby navigational channel
- Air draft (i.e. bridges causing vertical limitations)
- Availability for future development as an offshore wind port

Ramboll initially examined 38 properties to be potentially developed for offshore wind use and screened out 18 of these shoreline properties based on the six selection criteria listed above. Twenty sites were then evaluated in more detail. Of the twenty sites, several sites were selected for deeper evaluation based on their potential for use in marshaling, manufacturing, and operations and maintenance (O&M). The following 13 properties were selected for further evaluation:

- Werner Generating Station located in South Amboy (Northern New Jersey)
- Chemours Chambers Works/Carney's Point located in Pennsville Township (Southern New Jersey)
- Paulsboro Marine Terminal in Paulsboro (Southern New Jersey)
- The New Jersey Wind Port, formerly known as the Lower Alloways Creek site (Hope Creek - Artificial Island) in Lower Alloway Creek Township (Southern New Jersey)
- Military Ocean Terminal at Bayonne (MOTBY) in Bayonne (Northern New Jersey)

- Chemours site in Linden (Northern New Jersey)
- Former DuPont site (Repauno) in Greenwich Township (Southern New Jersey)
- Gardner's Basin in Atlantic City (Atlantic Coast)
- Cape May-Lewes Ferry in Cape May (Atlantic Coast)
- North New Jersey Ave in Atlantic City (Atlantic Coast)
- North & McLester in Elizabeth (Northern New Jersey)
- Construction & Marine Equipment in Elizabeth (Northern New Jersey)
- Naval Weapons Station Earle (Northern New Jersey)

For each of the above sites, this report summarizes existing site conditions, discusses potential offshore wind use, and provides estimated costs associated with reuse scenarios. Several sites were identified as potential marshaling and/or manufacturing ports, while others may be more suited for O&M support. Most, if not all sites, require significant upgrades to accommodate offshore wind uses and it unlikely that many of these sites would be available for full use for the construction of New Jersey's first major offshore project – Ørsted's Ocean Wind project for 1,100 MW of energy.

The Evaluation looks at both existing and undeveloped port sites. The principal advantages of focusing on existing terminals are: 1) these properties already have terminal operators who understand the business of port operations and are in a better position to expand the operations to include offshore wind; 2) marine terminal operators already have existing relationship with the regulatory agencies that issue the permits, licenses, and other approvals necessary to allow for future expansion; and 3) existing ports have trained workforces experienced in port operations. However, existing ports typically have ongoing operations for other industries, and may not be readily available for large scale offshore wind related uses. Building new port and harbor infrastructure on properties with no current port terminal operations would be very difficult to meet the expedited schedule for this initial 1,100 MW tranche. However, new sites create the opportunity to develop for offshore-specific uses over the long term and also avoid conflict with ongoing uses at existing ports.

It is important to note that the development of any port will require a full assessment of potential environmental impacts from activities such as waterfront construction, dredging and site disturbance. Environment assessments will be done as each specific site is developed and environmental assessments for each offshore project development impacts will also be required. This Evaluation does not assess potential environmental impacts of developing each port site.

The Evaluation focuses on the current New Jersey goal of 7,500 MW and the state's plans to identify ports which will support offshore wind projects. New Jersey has currently identified two major ports for initial offshore wind and supply chain development. The Paulsboro Marine Terminal, located in Southern New Jersey along the Delaware River, has been identified as a potential staging and manufacturing site for foundation or other components used in the initial phase of New Jersey offshore wind development. The port is currently being upgraded to potentially accommodate these anticipated uses.

Governor Murphy has also recently announced that the New Jersey Wind Port (formerly known as the Lower Alloways Creek Site) will be developed by New Jersey and others as a manufacturing and marshaling site. The New Jersey Wind Port (Wind Port) site is a vacant artificial island located near

Hancock Bridge on the Delaware River in Southern New Jersey. The site is a former US Army Corps of Engineer's dredge spoil site with approximate 320 acres and is owned by the Public Service Enterprise Group (PSEG). Because of its size, location, and, importantly, its unlimited air draft restrictions, NJBPU and NJEDA have identified the Wind Port to be developed into a major offshore wind manufacturing and marshaling site.

2. INTRODUCTION

Per the request of the NJBPU, the purpose of this report is to provide an initial evaluation of facilities which could be potentially utilized as marshaling, manufacturing, and /or operations and maintenance (O&M) ports for developing the New Jersey offshore wind (OSW) market sector. Ramboll completed the original assessment in 2019 and updated this report to consider New Jersey's revised goal of 7,500 MW of offshore wind energy by 2035, which was announced by Governor Murphy in November 2019. Ramboll evaluated publicly available resources on New Jersey ports/facilities together with OSW supply chain infrastructure requirements and consulted with NJBPU and NJEDA regarding the development of offshore wind port support in the state.

2.1 East Coast Offshore Wind Port Development

Although this Evaluation only assesses New Jersey sites, it is important to note that the expanded interest in offshore wind across most Mid-Atlantic and New England States has resulted in several ports outside of New Jersey being identified for offshore wind use and development. Other ports along the East Coast region have either received funding or are seeking investment to become purpose-build offshore wind ports. Development of New Jersey ports will support projects in other states, and conversely, other state ports may be used to support New Jersey offshore wind solicitations. Potential regional ports for offshore wind include, but are not limited to:

Massachusetts

- New Bedford Marine Commerce Terminal
- Brayton Point

Connecticut

- New London
- Bridgeport

Rhode Island

- Quansett

New York

- Port of Albany
- Port of Coeymans
- South Brooklyn Marine Terminal
- Port Ivory
- Arthur Kill Terminal

Maryland

- Sparrow's Point

Delaware

- Port of Wilmington

Virginia

- Hampton Roads Ports

2.2 Offshore Wind Foundation Technology

The type and size of offshore wind foundation that will be used for New Jersey project is important when evaluating which ports can support manufacturing, assembling and staging od foundations. Because foundations are large and require manufacturing and assembly processes, ports that can accommodate this activity are desired. Port requirements and specifications will vary depending on the type of foundations utilized by the developer. This report does not evaluate port requirements for floating foundation concepts which have different requirements. The three most common types of fixed bottom foundations are monopiles, jackets and gravity-based structures (GBS). Figure 1 below depicts each.

Monopiles - The first East Coast offshore wind project approved for federal waters will use monopiles. Monopiles are fabricated by rolling steel plate, typically in a highly efficient automated manufacturing facility. A crane installation vessel is used to transport and position the monopiles, which are then driven into the seabed by a large hydraulic hammer. The transition piece is mounted on top of the monopile foundation. The pile driving installation method emits noise, which can impact marine wildlife. Scour protection, such as rock, is typically placed around the base of the monopile. Local content for monopiles could include rolling and welding of large diameter steel tubulars, final assembly of pre-fabricated can sections, scour protection, and fabrication of secondary steel.

Jacket - Jacket fabrication can vary between assembling one complete side of the jacket at a time and then assembling the jacket lying down or assembling the jacket in an upper and lower part and then mating the two parts. This process is typically more labor intensive than monopile manufacturing. For installation, the piles are driven using a hydraulic hammer and then a heavy lift crane vessel is used to position the jacket onto the piles. The hydraulic hammer used to install jacket piles is smaller than that used for monopiles, thus, less noise is emitted. However, the noise emission can still impact local wildlife and noise mitigation methods can be utilized. Scour protection is typically placed around the base of the jacket. Local content for jackets could include scour protection, rolling and welding of piles and steel tubulars for jacket lattice; and fabrication and welding of jacket, transition piece, and other secondary steel.

Gravity-based structure (GBS) - The most recent GBS foundation project was commissioned in 2013. Earlier offshore wind farms used smaller turbines and were generally in shallower waters. GBS have now been proposed for use projects in deeper water with larger turbines. The fabrication of GBS is labor intensive and time consuming but does not require a specialized manufacturing facility. The GBS is typically either floated and pulled by tugs or placed on a semi-submersible barge to be transported from manufacturing location to installation site. The seabed must be prepared by excavation and installation of a stone bedding. When the GBS reaches its final location, the conical void is filled with ballast material. The installation of GBS creates less noise than pile driving required for other structures but may require a larger area of disturbance on the sea floor. Local content for GBS could include: fabrication of the concrete structures and secondary steel, scour protection, and ballasting operations.

There are also other promising variants of monopile and jacket foundation concepts that use large buckets at the base of the structure to suck them silently into the seabed instead of using a large noisy hammer to drive piles. Floating foundation technology is also being developed for offshore wind and will likely become the preferred technology for deeper waters.

Figure 1: Foundation Concepts Including Jacket, Monopiles, and Gravity-based

2.3 OSW Facility Requirements

Table 1 below summaries the port parameters required by OSW use.

Table 1: High-Level Port Requirements for Each Use

Activity/Use	Size (acres)	Air Draft[1] (feet)	Depth of Channel[2] (feet)	Depth at Berth (feet)	Quayside Length (feet)	Quayside Load Bearing Capacity (psf)
Marshaling	30 to 100	430 to unlimited[3]	20 to 50	20 to 40	660 to 1,200	4,000 to 5,000
O&M	2 to 15	20 to 30	18 to 23	20 to 25	165 to 330	N/A
Cables	15 to 30	100 to 250	20 to 34	20 to 34	300 to 400	1,500 to 3,000
Monopiles	20 to 50	100 to 250	20 to 34	20 to 34	290 to 660	1,500 to 4,000

[1] Due to Jones Act issues, the ports / facilities for the early projects will not likely support use of jack up vessels as such US-flagged vessels will not be available. As such, the early projects will likely be serviced via a feeder barge system which negates air-gap issues. However, later OSW projects will likely be supported by US-flagged vessels and air-gap restriction issues become more critical

[2] 20 ft draft required for barges, 34 ft draft required for cargo vessels

[3] Air draft required for multiple tower sections to be transported upright and connected

Activity/Use	Size (acres)	Air Draft[1] (feet)	Depth of Channel[2] (feet)	Depth at Berth (feet)	Quayside Length (feet)	Quayside Load Bearing Capacity (psf)
Jacket Foundations	35 to 100	130 to 300	20 to 34	20 to 35	600 to 1,200	3,000 to 5,000
Gravity Foundations	25 to 100	80 to 195	13 to 55	13 to 55	200 to 600	2,000 to 4,000
Tower Sections	30 to 50	100 to 250	20 to 34	22 to 34	330 to 660	1,500 to 3,500
Blades	35 to 75	70 to 100	20 to 34	22 to 34	550 to 800	1,000 to 4,000
Nacelles	15 to 30	75 to 120	24 to 36	22 to 34	330 to 1,000	1,500 to 4,000
Substation	30 to 50	100 to 430	20 to 50	20 to 40	200 to 550	3,000 to 4,000

Notes: psf-pounds per square foot

2.4 Initial Facility Screening

As part of this preliminary evaluation, Ramboll examined 38 properties to be potentially developed for OSW use and screened out 18 of these shoreline properties based on the selection criteria listed above. Only ports within 50 nautical miles of an OSW lease area were considered for O&M-use development. As indicated in Figure 2, the offshore wind lease areas considered in this study included:

- OCS-A 0498 – leased by Ocean Wind LLC (Ørsted)
- OCS-A 0499 – leased by Atlantic Shores Offshore Wind, LLC (a 50:50 joint venture between Shell New Energies US LLC and EDF Renewables North America)
- OCS-A 0512 – leased by Equinor Wind US LLC; location of the Boardwalk Wind and Empire Wind projects
- OCS-A 0482 – leased by Garden State Offshore Energy, LLC (GSOE I, LLC), a joint venture between Ørsted and PSEG
- OCS-A 0519 – leased by Skipjack Offshore Energy, LLC, a joint venture between Ørsted and PSEG
- OCS-A 0490 – leased by US Wind, Inc
- Fairways North Call Area
- Fairways South Call Area
- Hudson North Call Area
- Hudson South Call Area

Figure 2 also depicts the 38 sites originally assessed and those selected for detailed review.

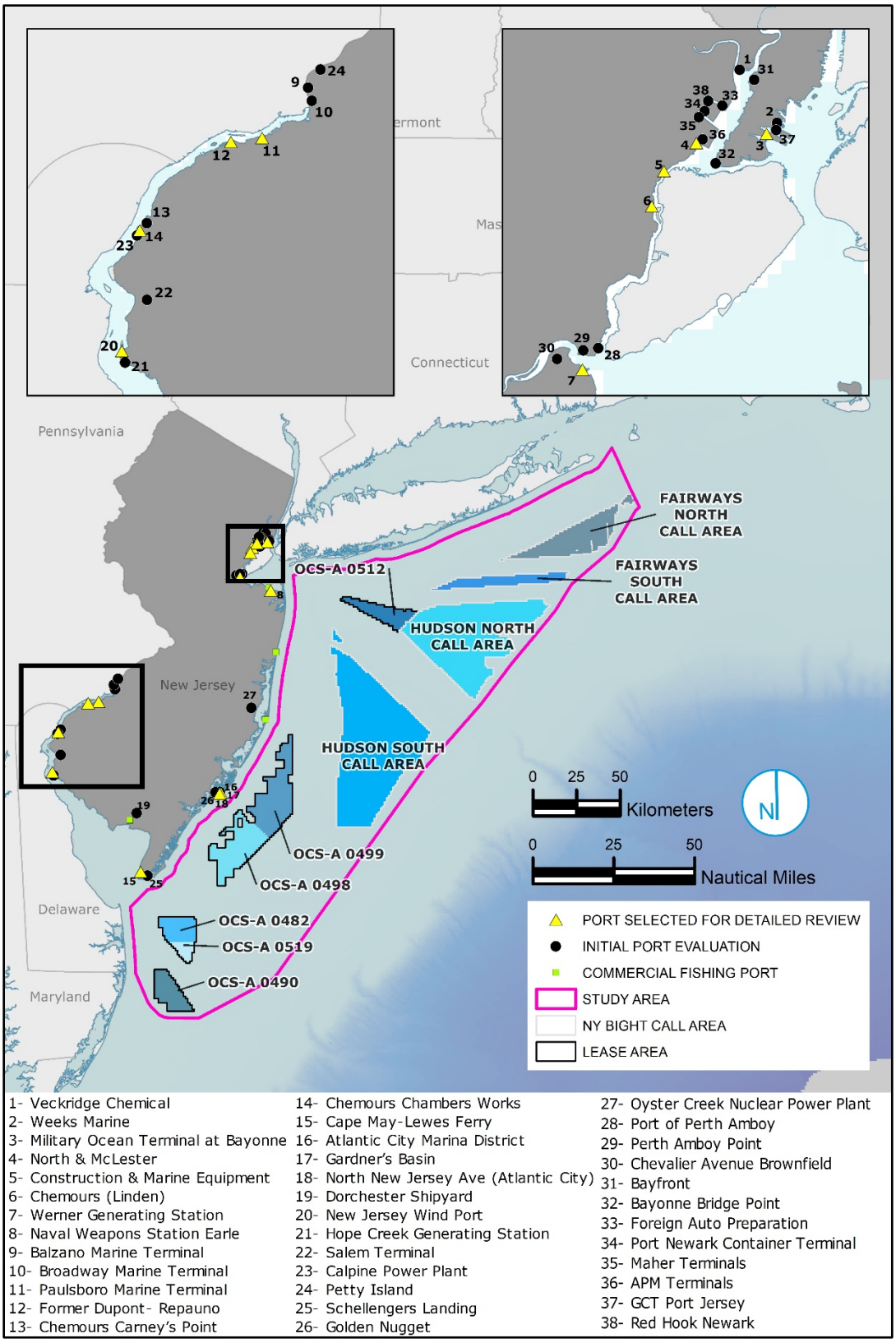


Figure 2: Ports Overview

The 18 ports that were initially screened out as unsuitable or unlikely to be repurposed for OSW use are listed in Table 2 below.

Table 2: Ports Not Selected for Further Review

Site Name	Location	Rationale
Chevalier Avenue Brownfield	Chevalier Avenue, Sayreville, NJ	Not viable due to location upstream of a narrow swing bridge.
Bayonne Bridge Point	Avenue A & West 1st Street, Bayonne, NJ	Site is not available; being redeveloped for residential and parkland use.
GTC Port Jersey (Global Container Terminal)	302 Port Jersey Boulevard, Jersey City, NJ	Site is unlikely to be repurposed; currently used as a busy container terminal.
Bayfront	60 Kellogg Street, Jersey City, NJ	Site is unlikely to be repurposed; being developed for residential use.
Foreign Auto Preparation	371 Craneway Street, Newark, NJ	Site is unlikely to be repurposed; currently used as a busy international Roll-On/Roll-Off terminal.
Red Hook Newark	138 Marsh Street, Newark, NJ	Site is unlikely to be repurposed; currently used as a busy container terminal.
Port Newark Container Terminal	241 Calcutta Street, Newark, NJ	Site is unlikely to be repurposed; currently used as a busy container terminal.
Maher Terminals (Port Elizabeth)	1210 Corbin Street, Elizabeth, NJ	Site is unlikely to be repurposed; currently used as a busy container terminal.
APM Terminals (Port Elizabeth)	5080 McLester Street, Elizabeth, NJ	Site is unlikely to be repurposed; currently used as a busy container terminal.
Hope Creek Generating Station Deepwater Point	Alloway Creek Neck Rodd, Hancock's Bridge, NJ	Nuclear power plant present makes development of this site unrealistic. There do not appear to be plans to decommission this plant.
Port of Perth Amboy	260B Front Street, Perth Amboy, NJ	Appears to be small marina. Due to size and use, unlikely that it can be redeveloped for OSW use.

Site Name	Location	Rationale
Perth Amboy Point	Foot of Elm Street, Perth Amboy, NJ	Swing bridge will make this location difficult to redevelop for OSW use.
Schellengers Landing, Cape May, NJ	1111-1115 Route 109; 1121 Route 109; 1129 Route 109; 1139 Route 109; 1145 Route 109; 1149 Route 109, Lower Township, NJ	Marina; would need quayside improvements to handle larger vessels. Too many recreational boats to be viable for offshore wind.
Golden Nugget	North of Absecon Boulevard Bridge, Atlantic City, NJ	Channel is too shallow (2-4 feet deep) and bridges/power cables are too low (26 feet).
Oyster Creek Nuclear Power Plant	741 US 9, Lanoka Harbor, NJ	Route 9 overpasses are very low. Additionally, Fork River and Oyster Creek are both narrow and shallow, making navigation difficult. Note: Ørsted may use this site as a grid connection point.
Salem Terminal	Salem, New Jersey at Exit 1 of the New Jersey Turnpike	Overhead power cables are too low (66 feet). Salem River Channel is too narrow and shallow (150 feet wide by 16 feet deep mean lower low water (MLLW))
Calpine Power Plant, Deepwater Point, NJ	401 North Broadway, Pennsville Township, NJ	Existing closed power plant, not currently available for OSW purposes.
Petty Island (Port of Pennsauken)	1 Betsy Ross Bridge Plaza, Pennsauken, NJ	Citgo plans to turn over property to New Jersey Natural Lands Trust in 2020, upon remediation completion. New Jersey Lands Trust has been granted a conservation easement for the entire property.

The 20 sites that were selected for further review are summarized with specific evaluation details in Appendix D.1.

2.5 Ports Selected for Evaluation

Of the 20 ports summarized in Appendix D.1, the following 13 ports/facilities were selected for a detailed evaluation as part of this report (shown in Figure 3) based on port characteristics and likelihood of development:

- Werner Generating Station located in South Amboy (Northern New Jersey)
- Chemours Chambers Works/Carney's Point located in Pennsville Township (Southern New Jersey).

- Paulsboro Marine Terminal (Southern New Jersey)
- The New Jersey Wind Port (Lower Alloways Creek site/Hope Creek - Artificial Island) in Lower Alloway Creek Township (Southern New Jersey)
- Military Ocean Terminal at Bayonne (MOTBY) in Bayonne (Northern New Jersey)
- Chemours site in Linden (Northern New Jersey)
- Former DuPont site (Repauno) in Greenwich Township (Southern New Jersey)
- Garner's Basin in Atlantic City (Atlantic Coast)
- Cape May-Lewes Ferry in Cape May (Atlantic Coast)
- North New Jersey Ave in Atlantic City (Atlantic Coast)
- North & McLester in Elizabeth (Northern New Jersey)
- Construction & Marine Equipment in Elizabeth (Northern New Jersey)
- Naval Weapons Station Earle (Northern New Jersey)

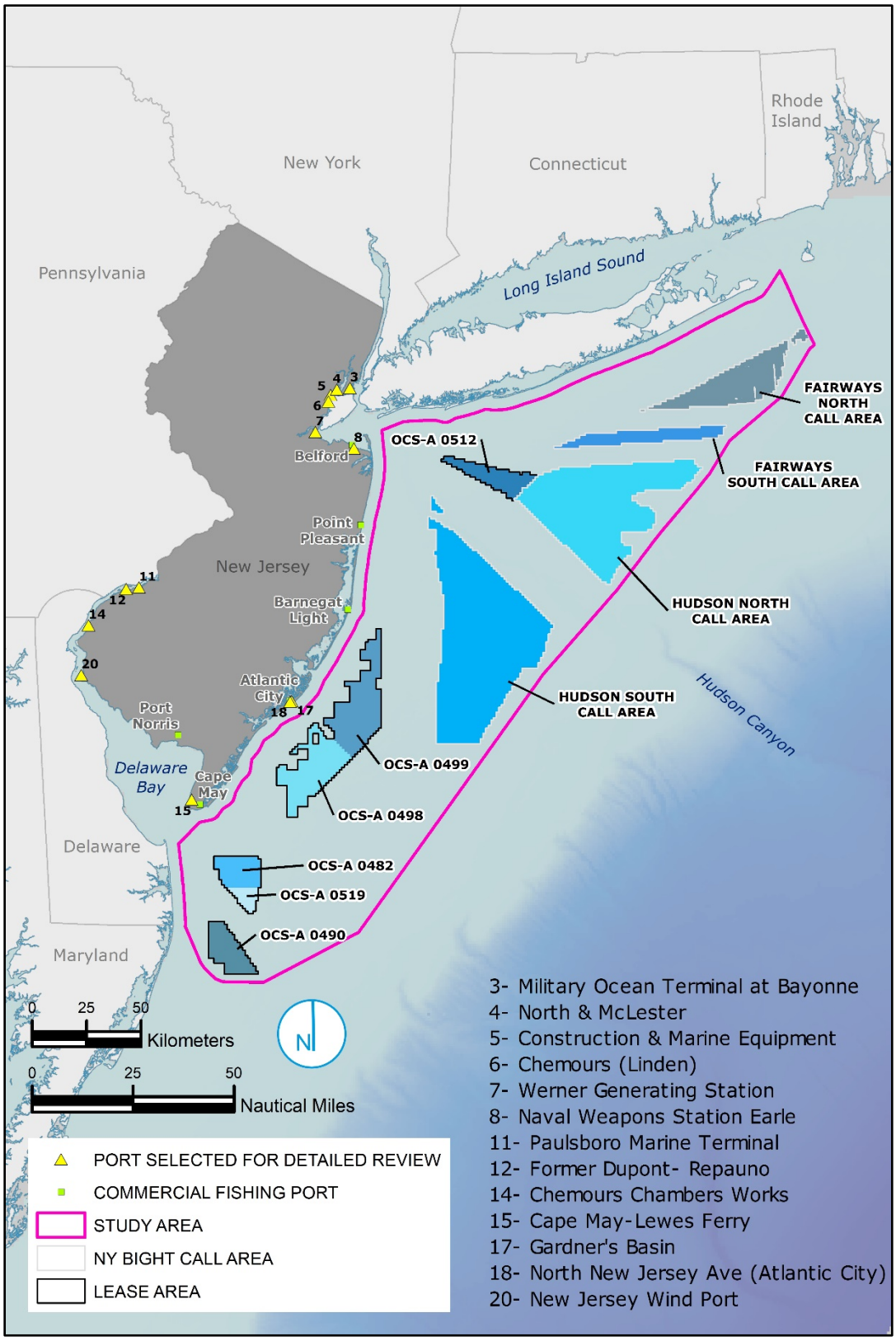


Figure 3: Ports Evaluation Map

The 13 ports selected for further detailed analysis were compared to the suitability parameters provided in Table 1. Table 3 below summarizes each facility's suitability and readiness to support the various OSW components. The readiness of each port/facility was rated green, light green, yellow, orange, or red for each of the eight OSW activities. Sites rated red have hard constraints such as inadequate space, vertical restrictions (bridge or overhead cables), or distance from OSW lease areas. Sites rated orange could be suitable with major improvements (greater than $100M). Sites rated yellow could be suitable with moderate improvements ($25M to $100M). Sites rated light green are suitable with some improvements ($5M to $25M). Sites rated green are suitable with few or no upgrades (less than $5M).

Table 3: Summary of Port Suitability and Readiness

	Werner Generating Station	Chemours Chambers Works (Deepwater)	Paulsboro Marine Terminal	The New Jersey Wind Port (Lower Alloways Creek)	MOTBY	Chemours (Linden)	Former Dupont – Repauno	Gardners Basin	Cape May-Lewes Ferry	North New Jersey Ave	North & McLester	Construction & Marine Equipment	Naval Weapons Station Earle
Marshaling	O	O	O	O	R	R	O	R	R	R	O	R	R
O&M	LG	R	R	LG	G	LG	R	LG	LG	LG	LG	G	LG
Cables	O	O	Y	O	O	O	Y	R	R	R	O	R	O
Foundations	O	O	Y	O	O	R	Y	R	R	R	O	R	O
Tower Sections	O	O	Y	O	O	R	Y	R	R	R	O	R	O
Blades	O	O	Y	O	O	O	Y	R	R	R	O	R	O
Nacelles	O	O	Y	O	O	O	Y	R	R	R	O	R	O
Substations	O	O	O	O	O	R	O	R	R	R	O	R	O

The suitability for various uses and redevelopment and reuse costs for each port are further discussed in Sections 3 to 15 of this report. Redevelopment costs include preliminary estimated costs to construct a suitable quayside, improve upland load bearing capacity, and dredging, if needed. Reuse scenario costs include additional costs for the site to be suitable for a specific use. Reuse scenario costs include buildings and specialized equipment for a specific use. Costs were estimated in late 2018 and early 2019.

3. PAULSBORO MARINE TERMINAL– PAULSBORO, NJ

3.1 Existing Conditions

The Paulsboro Marine Terminal totals approximately 200 acres and is located at 50A Universal Rd, Paulsboro, NJ (Figure 4). The site is owned by South Jersey Port Corporation and operated by Holt Logistics, LLC. The Paulsboro Marine Terminal is located along the eastern shore of the Delaware River in the southern portion of New Jersey. It is the first major port to be constructed on the Delaware River in over 50 years. The site has a long industrial history including former use as a BP Oil Terminal and Dow Chemical Plant. A wastewater treatment facility is located along the western property boundary. An approximately 5,500 square foot building is located at the site's entrance on Universal Road. A solar panel field is located in the southeastern portion of site. The site is currently being developed by Holt Logistics for use as a cargo terminal. The site layout (Figure 4) and proposed development layouts are provided below.

Figure 4: Paulsboro Marine Terminal - Site Location Map

The site is located across the Delaware River from Philadelphia International Airport. A residential area is located west of the site. Beyond the residential area is the Paulsboro Refinery. A canal, following by an oil terminal are located east of the site. An industrial facility and wetlands are located south of the site. Rail access is available on-site. Route I-295 is located within one mile east of the site.

Water approaches to the site are via the Billingsport Range and Mifflin Range (See Figure 5). The Billingsport Range and Mifflin Range are 40 feet deep MLLW and 800 feet wide. The channels through the Delaware River continue as the Tinicum Range, Eddystone Range, Chester Range, Marcus Hook Range, Bellevue Range, Cherry Island Range, Deepwater Point Range, Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range, all of which are at least 800 feet wide and 40 feet deep. The 850 quayside is fully utilized. A new 1,500-foot quayside with 1,500 psf uniform live load with reinforced landing pads for mobile harbor crane is being constructed. Approximately 100 acres of the property could potentially be available for OSW use.

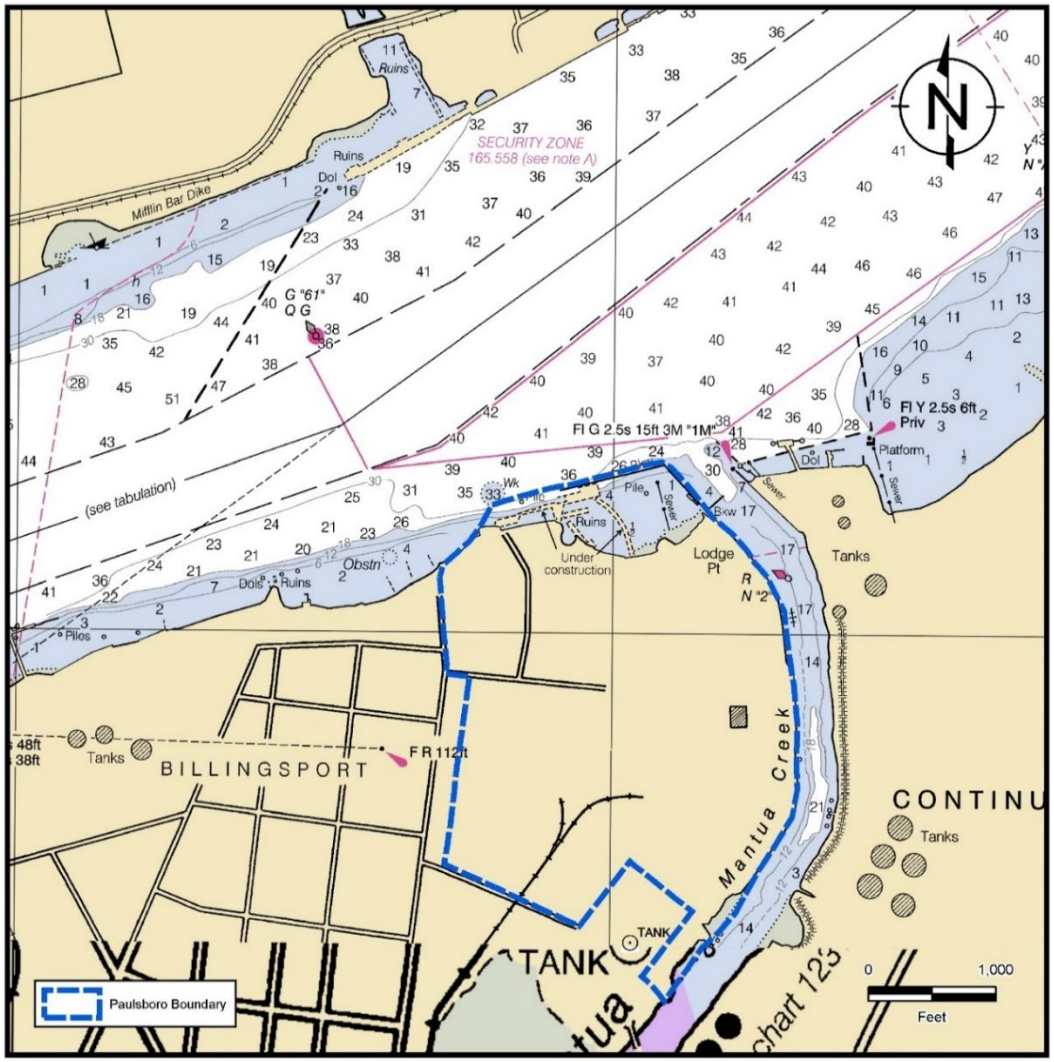


Figure 5: Paulsboro Marine Terminal - NOAA Depth Chart

3.2 Limitations

Vertical restrictions between the site and open water include the Commodore Barry Bridge, Delaware Memorial Bridge and overhead cables. The Commodore Barry Bridge has vertical clearances of 190 feet (middle 822 feet) and 181 feet (remainder) and a horizontal clearance of 1,600 feet. The Delaware Memorial Bridge has vertical clearances of 188 feet (middle 800 feet), 175 feet (middle 1,500 feet), and 166 feet (Main Towers) and a horizontal clearance (beam) of 2,000 feet. There are overhead cables which have a vertical clearance of 223 feet. The closest airport is the Philadelphia International Airport located directly across the Delaware River.

3.3 Environmental Conditions

In addition, the site is listed on the New Jersey active sites with confirmed contamination (NJEMS IDs 14643 and 45934).

NJEMS Site ID 14643; Preferred ID 004975 (BP Oil Inc Paulsboro Terminal) – Remedial actions were initiated on November 1, 1995. The remedial investigation was completed on May 7, 2014. Remedial action essential completed.

- NJEMS Site ID 45934; Preferred ID 005438 (Essex Chemical Corporation) – Remedial actions were initiated on May 1, 1989. The site is required to submit a Remedial Action Protectiveness/Biennial Certification next on December 9, 2020.

Wetlands are present in the northeast corner of the property (Figure 6). Smaller areas of wetlands are located in the southern portion of the property. The southeast portion of the property has areas with habitat-specific requirements. The majority of the site contains threatened habitats. These environmental conditions will need to be considered during development of this property.

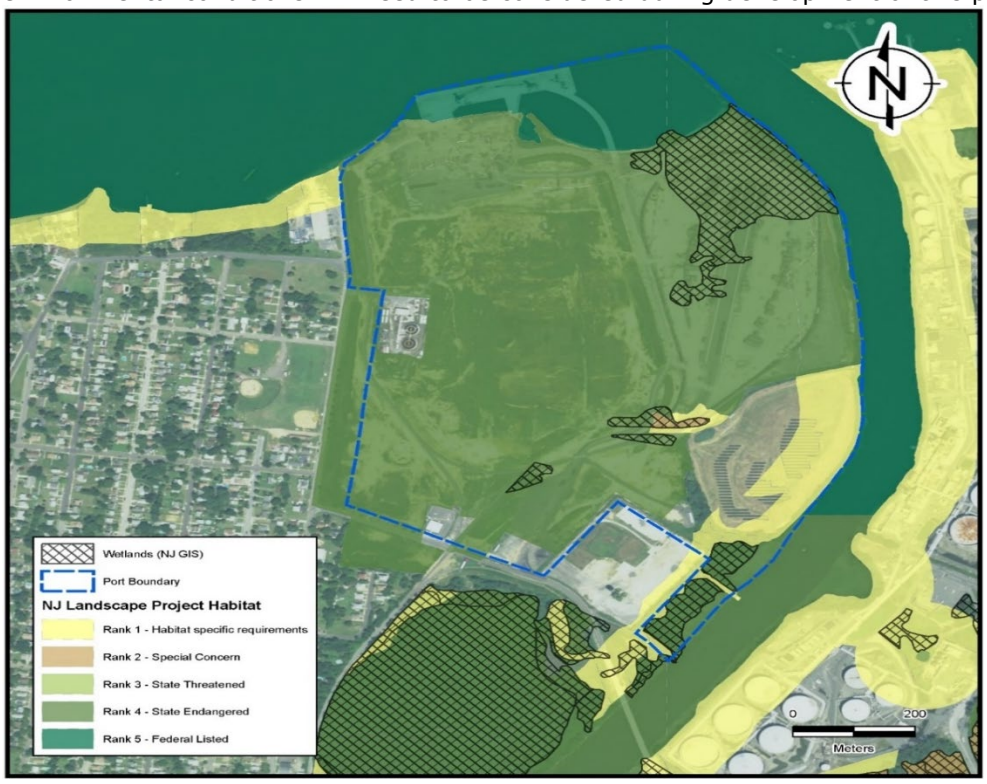


Figure 6: Paulsboro Marine Terminal - Wetlands and Habitat Map

Table 4: Paulsboro Marine Terminal - Summary of Existing Conditions		
Size	~200 acres	Up to 200 acres may be available for monopiles or other components, minimal acreage for other uses
Buildings	Solar panels on southeastern parcel. Apparent wastewater settling basins on the western portion of the property. One structure on the southern boundary. Former oil storage and fueling structures have been demolished.	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Marginal wharf	
Quayside Length	850 feet (fully utilized); additional 1,500 feet being constructed	
Quayside Load Bearing Capacity*	1,500 psf	
Depth at Potential Quayside locations	40 feet MLLW	
Channel Dimensions	800-1,000 ft wide by 40 ft deep Mifflin Range, Billingsport Range, Tinicum Range, Eddystone Range, Chester Range, Marcus Hook Range, Bellevue Range, Cherry Island Range, Deepwater Point Range, Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range - 800 feet wide by 40 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 103 nautical miles OCS-A 0519 – 98 nautical miles OCS-A 0482 (Ørsted/PSEG) - 90 nautical miles OCS-A 0498 (Ørsted) – 111 nautical miles OCS-A 0499 (EDF/Shell) - 130 nautical miles Hudson South Call Area – 150 nautical miles OSC-A 0512 (Equinor) – 201 nautical miles Hudson North Call Area – 202 nautical miles Fairways South Call Area – 218 nautical miles Fairways North Call Area – 240 nautical miles	
Rail Connection	Rail on-site	

Table 4: Paulsboro Marine Terminal - Summary of Existing Conditions		
Restrictions	Delaware Memorial Bridge: Vert Cl 188 feet (middle 800 feet); Vert Cl 175 feet (middle 1,500 feet); Vert Cl 166 feet (Main Towers); Horizontal Clearance 2,000 feet	
Environmental Conditions	NJEMS Site ID 14643; Preferred ID 004975 (BP Oil Inc Paulsboro Terminal) NJEMS Site ID 45934; Preferred ID 005438 (Essex Chemical Corporation)	
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of marshaling or OSW manufacturing, certain improvements are necessary. Table 9 below provides a cost summary to construct a suitable quayside, complete the required dredging, and improve upland load bearing capacity (50 acres). Given that expansion beyond the 50 acres required by marshaling is possible, a cost to improve the upland load bearing capacity per acre is also provided. Disposal costs are variable, so low and high costs are provided. Cost estimates were completed prior to ongoing work being done at Paulsboro.

Table 5: Paulsboro Marine Terminal - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (1,500 linear feet) – assumes a new quayside is required by the facility to support OSW operations	$57,000,000	$57,000,000
Dredge around quayside to 35 feet	$12,635,760	$44,225,160
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet of DGA	$18,150,000	$18,150,000
Upland load bearing capacity improvements per acre	$907,500/acre	$1,815,000/acre
20% Contingency	$23,002,152	$38,395,032
Total	**$138,012,912***	**$230,370,192**

*Paulsboro is currently being upgraded to potentially accommodate some offshore wind uses. These upgrades could support port use for cables, foundations, towers, blades, or nacelles. Completion of ongoing upgrades would significantly reduce the above costs.

3.4 Potential Offshore Wind Uses

The Port of Paulsboro is currently being upgraded to potentially accommodate additional offshore wind manufacturing. An additional 1,500 ft quayside is under construction and will have a bearing capacity of 1,500 PSF and roll-off capabilities. With the addition of roll-off capabilities, Paulsboro now has the potential to serve as a manufacturing facility for certain foundations, tower sections, blades, nacelles and cables. A likely use for Paulsboro would be for staging and manufacturing of monopile foundations. Paulsboro may be available for marshaling activities in 2021-2022, and some manufacturing uses in 2023. Paulsboro could be available as early as 2024-25 for full manufacturing of certain offshore wind components. Because of its size, location, and ongoing investments and improvements, the port is a primary site for marshaling and manufacturing.

4. THE NEW JERSEY WIND PORT (LOWER ALLOWAYS CREEK/HOPE CREEK – ARTIFICIAL ISLAND)

4.1 Existing Conditions

Governor Murphy has recently announced that the 320-acre New Jersey Wind Port (Lower Alloways Creek site) will be developed by New Jersey and others as a manufacturing and marshaling site. Because of its size, location, and, importantly, its unlimited air draft restrictions, this site has been identified to be developed into a major offshore wind port. Construction is planned in two phases, beginning in 2021. Phase 1 will develop a 30-acre site to accommodate marshaling activities and a 25-acre component manufacturing site. Phase 2 adds another 150+ acres to accommodate expanded marshaling activities and extensive manufacturing facilities for turbine components like blades and nacelles. The New Jersey Economic Development Authority (NJEDA) is leading development and is currently considering a range of public, private, and public-private partnership (P3) financing options This first phase of development is expected to be completed in 2023 to support the first phase of offshore wind construction. Because Lower Alloways Creek has a total of 320 acres, New Jersey expects future phases of investment will attract additional manufacturing and marshaling activity at this site, to support full build-out of offshore projects to deliver 7,500 MW by 2035.

Figure 7: New Jersey Wind Port Rendering

The site is located on the eastern shores of the Delaware River. North of the site is the continuation of Artificial Island, owned by the USACE. To the east of the site are wetlands. To the south of the site is the Hope Creek Nuclear Generating Station. No major highways are located in proximity to the site.

Water approaches to the site are via the Baker Range and Liston Range (Figure 8). The Baker Range and Liston Range are 40 feet deep MLLW and 800 feet wide. There is not active quayside at the

property; however, there are approximately 8,000 feet of water frontage which could be developed into a quayside to support OSW operations.

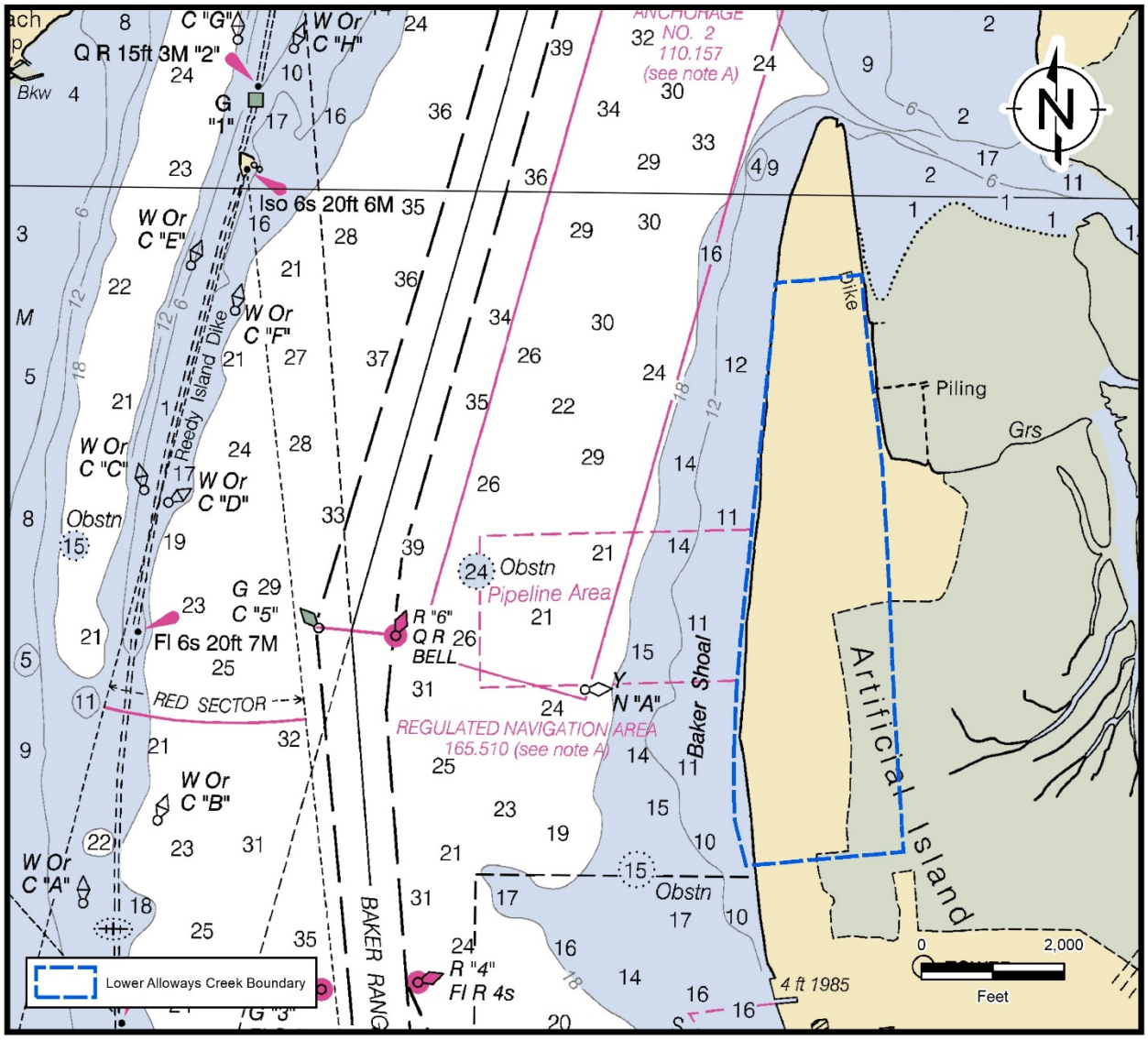


Figure 8: Lower Alloways Creek - NOAA Depth Chart

4.2 Limitations

There are no vertical restrictions between the site and open ocean. The closest airport is the New Castle Airport located approximately 12.5 miles northwest of the site.

The site was used by the USACE for dredge spoil disposal. A change in use will be required for port development.

4.3 Environmental Conditions

The site operated as three CDF cells. The site is not listed on NJDEP's database of sites with known contamination. The site is mostly comprised of wetlands (Figure 9). There are habitat specific requirements that will need to be considered during the planning phase of development.

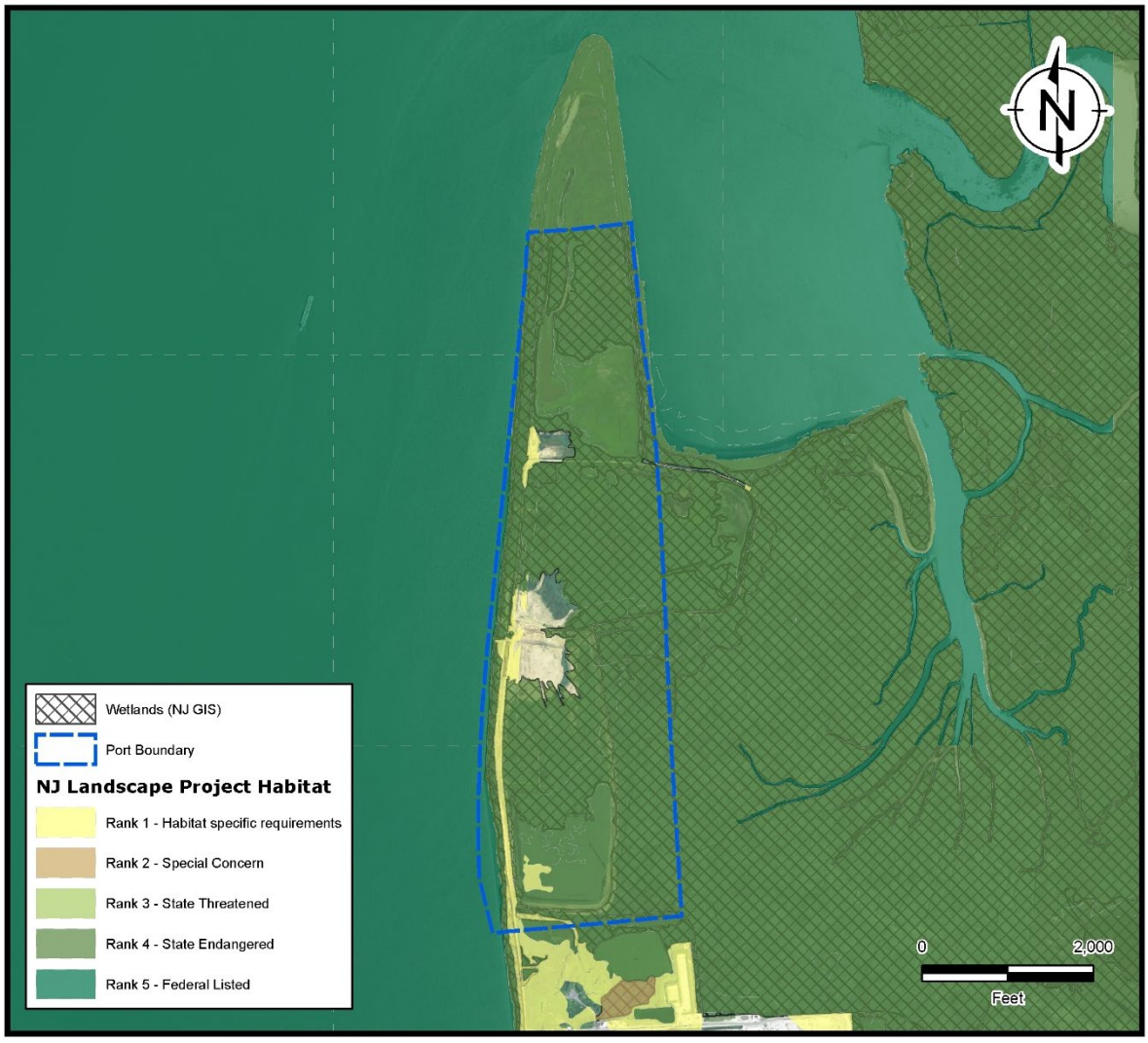


Figure 9: Lower Alloways Creek - Wetlands and Habitat Map

Table 6: Lower Alloways Creek - Summary of Existing Conditions		
Size	~320 acres	Majority of site has been classified as wetlands.
Buildings	No structures; site was historically used for confined disposal facilities for Delaware River dredging.	

Table 6: Lower Alloways Creek - Summary of Existing Conditions		
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	N/A	
Quayside Length	N/A; ~8,000 feet of water frontage	
Quayside Load Bearing Capacity*	N/A	
Depth at Potential Quayside locations	10-12 feet MLLW	
Channel Dimensions	Baker Range and Liston Range - 800 feet wide by 40 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 71 nautical miles OCS-A 0519 – 66 nautical miles OCS-A 0482 (Ørsted/PSEG) - 57 nautical miles OCS-A 0498 (Ørsted) – 76 nautical miles OCS-A 0499 (EDF/Shell) - 95 nautical miles Hudson South Call Area – 121 nautical miles OSC-A 0512 (Equinor) – 169 nautical miles Hudson North Call Area – 170 nautical miles Fairways South Call Area – 186 nautical miles Fairways North Call Area – 208 nautical miles	
Rail Connection	None identified	
Restrictions	No overhead restrictions	
Environmental Conditions	No known contamination; majority of site is wetlands	
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

Governor Murphy's announcement about the New Jersey Wind Port development estimated a cost of $300-$400 million. The costing estimated for the site was conducted prior to the announcement and does not directly reflect the costs provided in the announcement. Table 7 below provides a cost summary to construct the quayside, increase upland load bearing capacity (50 acres), and complete the required dredging. Given that expansion beyond the 50 acres required by marshaling is possible, a cost to improve the upland load bearing capacity per acre is also provided. Disposal costs are variable, so low and high costs are provided.

Table 7: Lower Alloways Creek - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (1,200 linear feet) including relieving platform	$45,600,000	$45,600,000
Dredge around quayside to 35 feet	$21,333,333	$74,666,667
Dredge to Baker Range channel to 35 feet	$49,866,667	$174,533,333
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet' of DGA	$18,150,000	$18,150,000
Upland load bearing capacity improvements per acre	$907,500/acre	$1,815,000/acre
20% Contingency	$32,435,000	$77,110,000
Total	**$194,610,000**	**$462,660,000**

4.4 Potential Offshore Wind Uses

The site's large acreage, lack of vertical restrictions, and potential for sole use make it adaptable for manufacturing of OSW components and marshaling. The site's large acreage and generous water frontage make it potentially suitable for multiple OSW uses. For example, marshaling could be conducted on the southern portion of the property, and the northern portion of the property could be developed for manufacturing of various components. There are no overhead restrictions between the site and the open ocean, making the site in an ideal location for marshaling. The site does not currently have a suitable quayside, so a new quayside will need to be designed and constructed. Additionally, dredging is required to connect the site quayside (to be constructed) to the deep-water channel. The site is currently owned by PSEG and has been selected for development as a manufacturing and marshaling port.

4.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle monopile, transition piece, tower section components and jacket foundations, including manufacturing, fabrication, and lay down. Upland soil load bearing capacities would need to be improved and the new quayside constructed to support these operations. Dredging is required at the quayside (to be constructed).

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, a new quayside will need to be designed and constructed. Dredging is required at the quayside (to be constructed).

O&M, Service, Cables, Secondary Steel:

The site could be used for O&M operations from a layout perspective but is further from most of the lease areas than ideal. Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily conducted at this site. The site has the potential for cable storage, as a cable service port, and as a cable manufacturing facility. Similar to the requirements for other components, a new quayside will need to be designed and constructed. Dredging is required at the quayside (to be constructed).

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of marshaling or offshore wind production, certain site improvements would be required. These would include: closure of USACE CDFs, improvement of upland load bearing capacity; development of quayside; dredging of berth; addition of production buildings (for manufacturing/fabrication scenarios); and installation of crane pads or relieving platform where extreme heavy lift operations might occur

4.4.2 Reuse Scenario - Marshaling

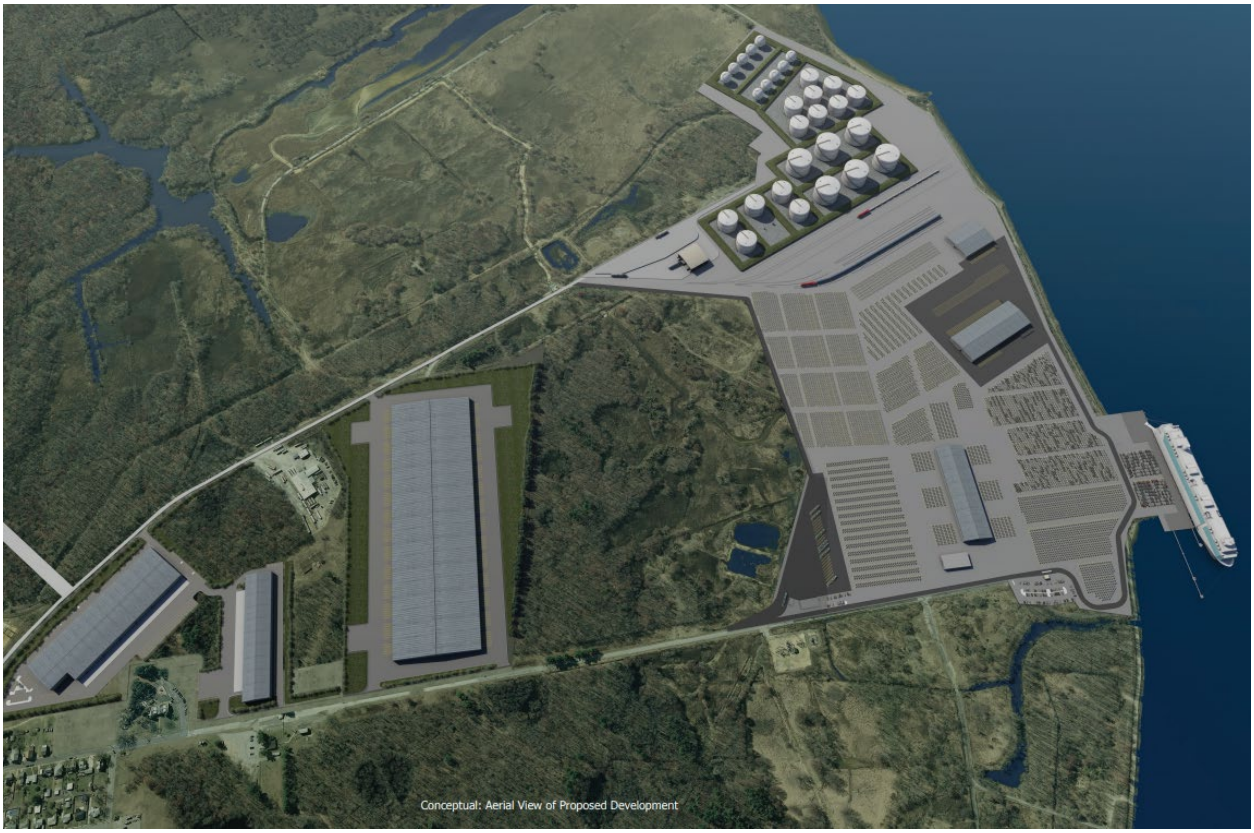
The site's large acreage, lack of vertical restrictions, and potential for sole use make the site adaptable for marshaling. The redevelopment costs provided above include constructing the quayside (including relieving platform), increasing upland load bearing capacity (50 acres; including laydown areas), and completing the required dredging.

5. FORMER DUPONT SITE-REPAUNO – GREENWICH, NJ

5.1 Existing Conditions

The former Chemours (DuPont) facility totals approximately 1,600 acres (356 acres for the red parcel) and is located at 200 North Repauno Avenue in Greenwich Township, New Jersey (Figure 10). The site has a long industrial history dating back to 1880. The former DuPont chemical plant manufactured a variety of products including dynamite, acids, nitrobenzene, and other organic compounds. The explosive manufacturing and ammonia manufacturing operations were discontinued in the 1960s. In 1998, Repauno Products LLC acquired sodium nitrite and nitrosylsulfuric acid manufacturing operations. From 1999 to 2002, Spring AG operated the industrial diamond refining process. The property was sold to Delaware River Partners LLC in 2016. The majority of the site is comprised of wetlands. The site is currently being developed to create a deep-water marine terminal for vessels with a maximum length of 870 feet. Based on available information the port is currently being redeveloped for multiple uses including, energy products Roll-On/Roll-Off (RO-RO) cargo, project cargo, bulk cargo, warehousing and logistics (Conceptual future rendering Figure 11).

Figure 10: Repauno - Site Location Map



Conceptual rendering. Source: Greenwich Township (https://www.greenwichtwp.com/2202/Proposed-Port-Development)

Figure 11: Repauno - Site Development Map

The Delaware River bounds the site to the north. Wetlands and the former Hercules chemical plant are located adjacent east of the site. A residential area is located south of the site. Wetlands and a raceway are located west of the site. Rail access is available on-site. Philadelphia International Airport is located north of the site, across the Delaware River. Route I-295 is located within two miles east of the site.

Water approaches to the site is via the Tinicum Range (See Figure 12). The Tinicum Range is 40 feet deep MLLW and 800 feet wide. The channels through the Delaware River continue as the Eddystone Range, Chester Range, Marcus Hook Range, Bellevue Range, Cherry Island Range, Deepwater Point Range, Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range, all of which are at least 40 feet deep and 800 feet wide.

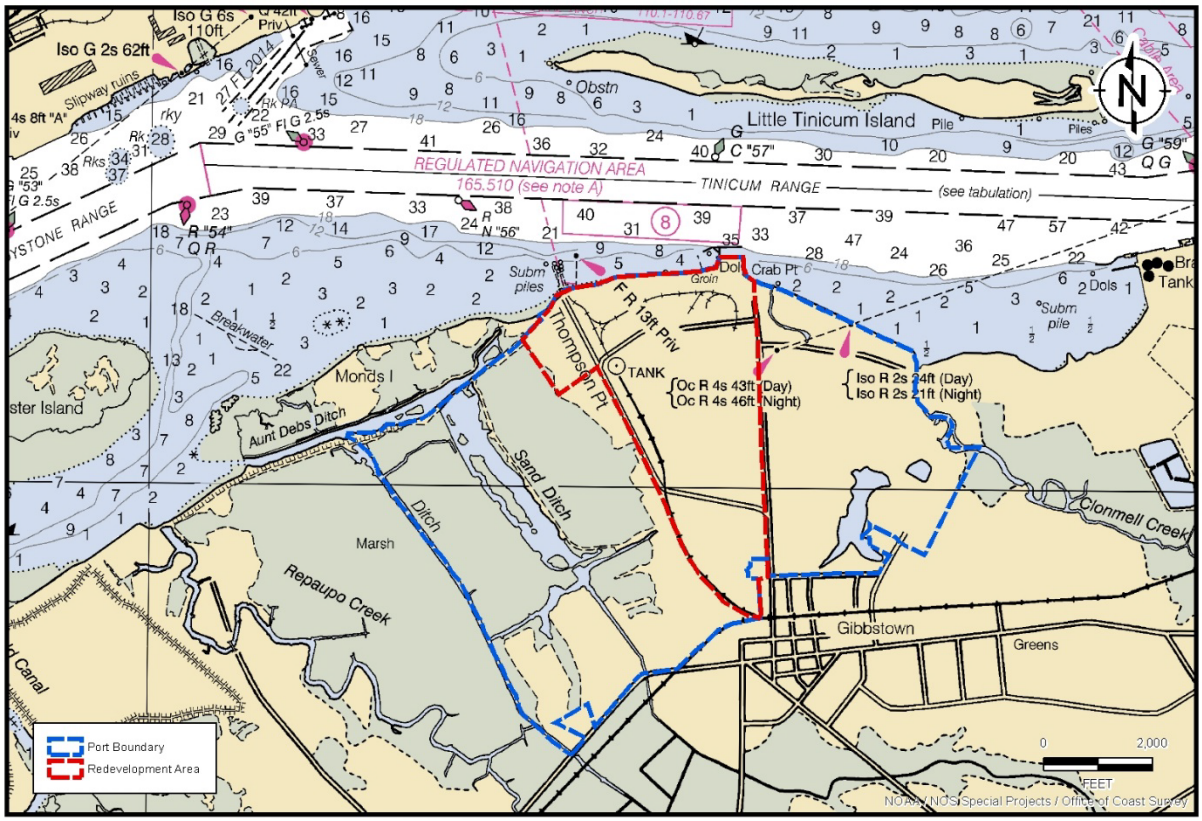


Figure 12: Repauno - NOAA Depth Chart

5.2 Limitations

Vertical restrictions between the site and open water include the Commodore Barry Bridge, Delaware Memorial Bridge and overhead cables. The Commodore Barry Bridge has vertical clearances of 190 feet (middle 822 feet) and 181 feet (remainder) and a horizontal clearance of 1,600 feet. The Delaware Memorial Bridge has vertical clearances of 188 feet (middle 800 feet), 175 feet (middle 1,500 feet), and 166 feet (Main Towers) and a horizontal clearance (beam) of 2,000 feet. There are overhead cables which have a vertical clearance of 223 feet. The closest airport is the Philadelphia International Airport located directly across the Delaware River.

5.3 Environmental Conditions

The site is listed on NJDEP's database for sites with known contamination (NJEMS IDs 36417 and 26416). The site is under investigation and a soil remedial action permit (RAP190002) has been issued.

According to NJDEP GIS data, the majority of the site is classified as wetlands (Figure 13). Additionally, there are habitat-specific requirements that will need to be considered during the planning phase of development.

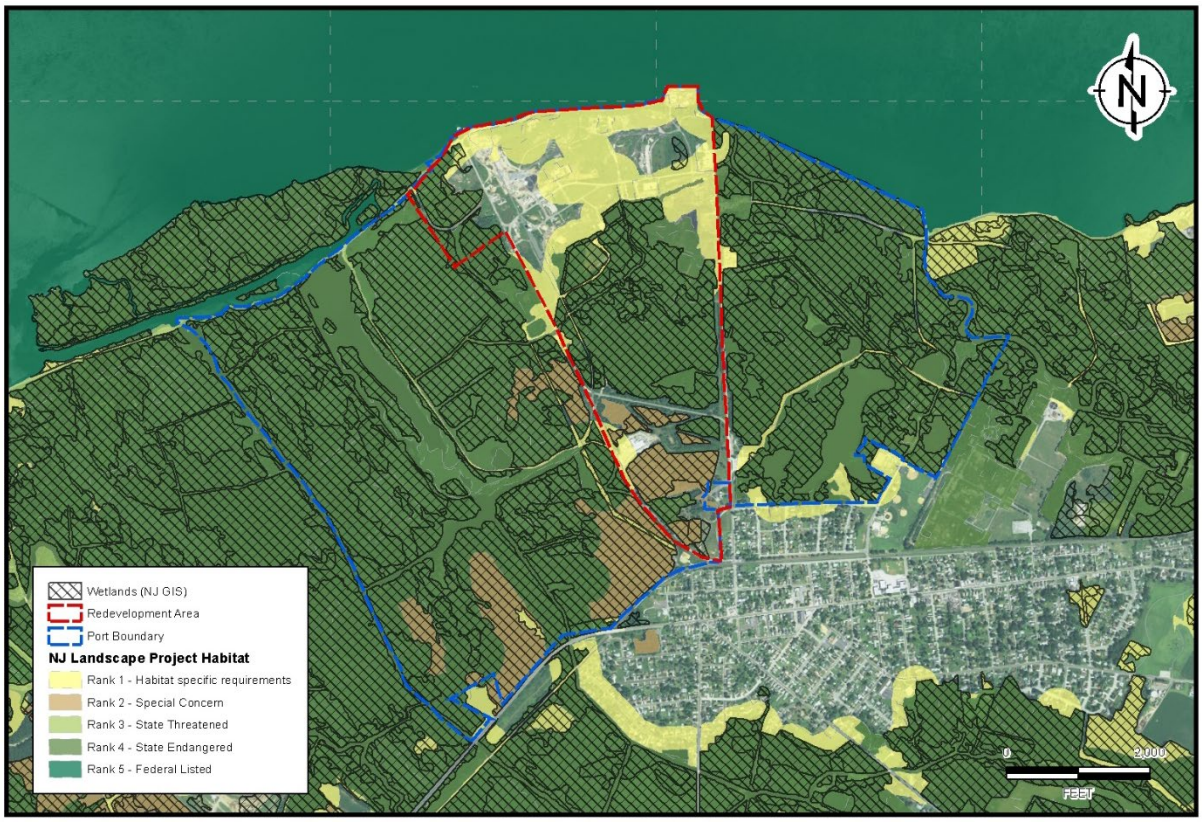


Figure 13: Repauno - Wetlands and Habitat Map

Table 8: Repauno - Summary of Existing Conditions		
Size	~1,600 acres (356 acres for redevelopment)	Majority of site is wetlands.
Buildings	Most buildings associated with former Dupont operations have been demolished. Site is currently being redeveloped.	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Concrete decking supported by steel piles.	
Quayside Length	751 feet	
Quayside Load Bearing Capacity*	<2,500 psf	
Depth at Potential Quayside locations	40 feet deep MLLW; dredging completed	

Table 8: Repauno - Summary of Existing Conditions		
Channel Dimensions	Tinicum Range, Eddystone Range, Chester Range, Marcus Hook Range, Bellevue Range, Cherry Island Range, Deepwater Point Range, Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range - 800 feet wide by 40 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 100 nautical miles OCS-A 0519 – 95 nautical miles OCS-A 0482 (Ørsted/PSEG) - 86 nautical miles OCS-A 0498 (Ørsted) – 107 nautical miles OCS-A 0499 (EDF/Shell) - 126 nautical miles Hudson South Call Area – 146 nautical miles OSC-A 0512 (Equinor) – 197 nautical miles Hudson North Call Area – 199 nautical miles Fairways South Call Area – 215 nautical miles Fairways North Call Area – 237 nautical miles	
Rail Connection	Rail on-site	
Restrictions	Delaware Memorial Bridge: Vert Cl 188 feet (middle 800 feet); Vert Cl 175 feet (middle 1,500 feet); Vert Cl 166 feet (Main Towers); Horizontal Clearance 2,000 feet	
Environmental Conditions	Known contaminated site under investigation and remediation NJEMS Site ID 36417; Preferred ID 008225 (Repauno Plant) NJEMS Site ID 26416; Preferred ID 016891 (Cardox Corp) Site contains extensive wetlands	Soil Remedial Action Permit issued 7/11/2019
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of OSW manufacturing, certain improvements are necessary. Table 9 below provides a cost summary to construct the quayside, improve upland load bearing capacity (30 acres), and complete the required dredging. Disposal costs are variable, so low and high costs are provided. Costs for existing building demolition are not included.

Table 9: Repauno - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (1,000 feet); including a relieving platform	$38,000,000	$38,000,000
Dredge around quayside to 35 feet	$21,481,481	$75,185,185
Dredge to deep water channel to 35 feet	$888,889	$3,111,111
Transportation and disposal costs of upland soils, including excavation	$16,335,000	$43,560,000
Placement and compaction of 3 feet of DGA	$10,890,000	$10,890,000
20% Contingency	$17,519,074	$34,149,259
Total	**$105,114,444***	**$204,895,556**

*Repauno has recently been upgraded, including dredging. Although not designated for offshore wind at this time, the upgrades could support potential port use for cables, foundations, towers, blades, or nacelles. Completion of ongoing upgrades would significantly reduce the above costs.

5.4 Potential Offshore Wind Uses

The site's large acreage makes it adaptable for manufacturing of OSW components and potentially marshaling. The port is currently being developed as a RO-RO facility, so any additional development for offshore wind would need to accommodate current use. This analysis assumes that a new quayside will be constructed, as the existing quayside will be fully utilized and may not meet the required load bearing capacity for OSW components. The Delaware Memorial Bridge with a vertical clearance of 188 feet will present challenges for marshaling which will likely need to be addressed via barge feedering. Coordinating with RO-RO operations could make marshaling challenging.

5.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle monopile, transition piece, tower section components and jacket foundations, including manufacturing, fabrication, and lay down. Upland soil load bearing capacity would need to be improved. A new quayside will need to be constructed. Dredging at the site is being conducted as part of the RO-RO facility development.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, a new quayside will need to be constructed.

O&M Service, Cables, Secondary Steel:

The site is well suited for O&M operations from a layout perspective but is too far of a distance from the OSW lease areas to be viable. Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily adapted at this site. The site is well suited for cable storage, as a cable service port, and as a cable manufacturing facility. In all cases, a robust quayside will need to be constructed.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of marshaling or OSW manufacturing, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside and dredging; addition of production buildings (for manufacturing/fabrication scenarios); and installation of crane pads or relieving platform where extreme heavy lift operations might occur.

5.4.2 Reuse Scenario – Nacelle Manufacturing

The site's large acreage, access to deep water channels, and use as an existing port make the site adaptable for nacelle manufacturing. The redevelopment costs provided above include constructing the quayside (1,000 feet; including relieving platform), increasing upland load bearing capacity (30 acres; including laydown areas), and completing the required dredging. Additional reuse costs may include construction of production and assembly buildings.

Table 10: Repauno - Summary of Reuse Costs – Nacelle Manufacturing

	Estimated Costs
Production building (180,000 square feet); includes overhead crane	$9,682,000
Assembly building (120,000 square feet); includes overhead crane	$6,788,000
20% Contingency	$3,294,000
Total	**$19,764,000**

6. WERNER GENERATING STATION

6.1 Existing Conditions

The decommissioned Werner Generating Station (WGS) is located at 106 Pupek Road, South Amboy, NJ. The property encompasses approximately 97 acres on the west bank of Raritan Bay (Figure 14). The WGS was constructed circa 1929 by the Jersey Central Power & Light Company (JCP&L). The facility was originally powered by coal and then modified to burn either coal or oil after a large explosion occurred at the plant in the 1950s. The main power-generating building has been demolished circa 2014. Several structures associated with the former power plant infrastructure, including out-of-service oil storage tanks, electrical transformers, and several smaller buildings remain on-site. The remaining infrastructure is currently being demolished. Based on discussions with the New Jersey Economic Development Authority and other local stakeholders, the planned development for the site does not include OSW. Currently, the site is targeted as a potential ferry terminal and as a site for residential condos and not for heavy industrial development. Although the site is adequate in size and has unlimited air draft, its current plans and significant required investment and improvement make offshore wind use unlikely.

Figure 14: Werner Generating Station - Site Location Map

A railroad swing bridge crosses the Raritan River west of the site and the Arthur Kill is located to the north of the site. Residential areas are located to the south, southeast, and southwest of the property. Industrial properties border the site to the west. Rail lines are located along the site's western boundary. The Garden State Parkway is located approximately one mile west of the site.

According to available NOAA information, water approaches to the site are via the South Amboy Reach and Great Beds Reach (Figure 15). The South Amboy Reach and Great Beds Reach are 25 feet deep at MLLW and 300 feet wide. The channel widens and deepens at the Ward Point Secondary Channel, which is 30 feet deep MLLW and 400 feet wide. The channel widens and deepens again at Ward Point East, which is 35 feet deep MLLW and 600 to 800 feet wide. An approximately 220 to 350-foot-wide and 920-foot long pier is located on the southeastern portion of the site. The construction details of the pier are unknown, although NOAA charts indicate quay side depths of 21 feet MLLW. Additionally, a smaller pier of approximately 100 feet wide and 235 to 400 feet long is located north of the main pier. Depths at the smaller pier range from 3 to 17 feet MLLW.

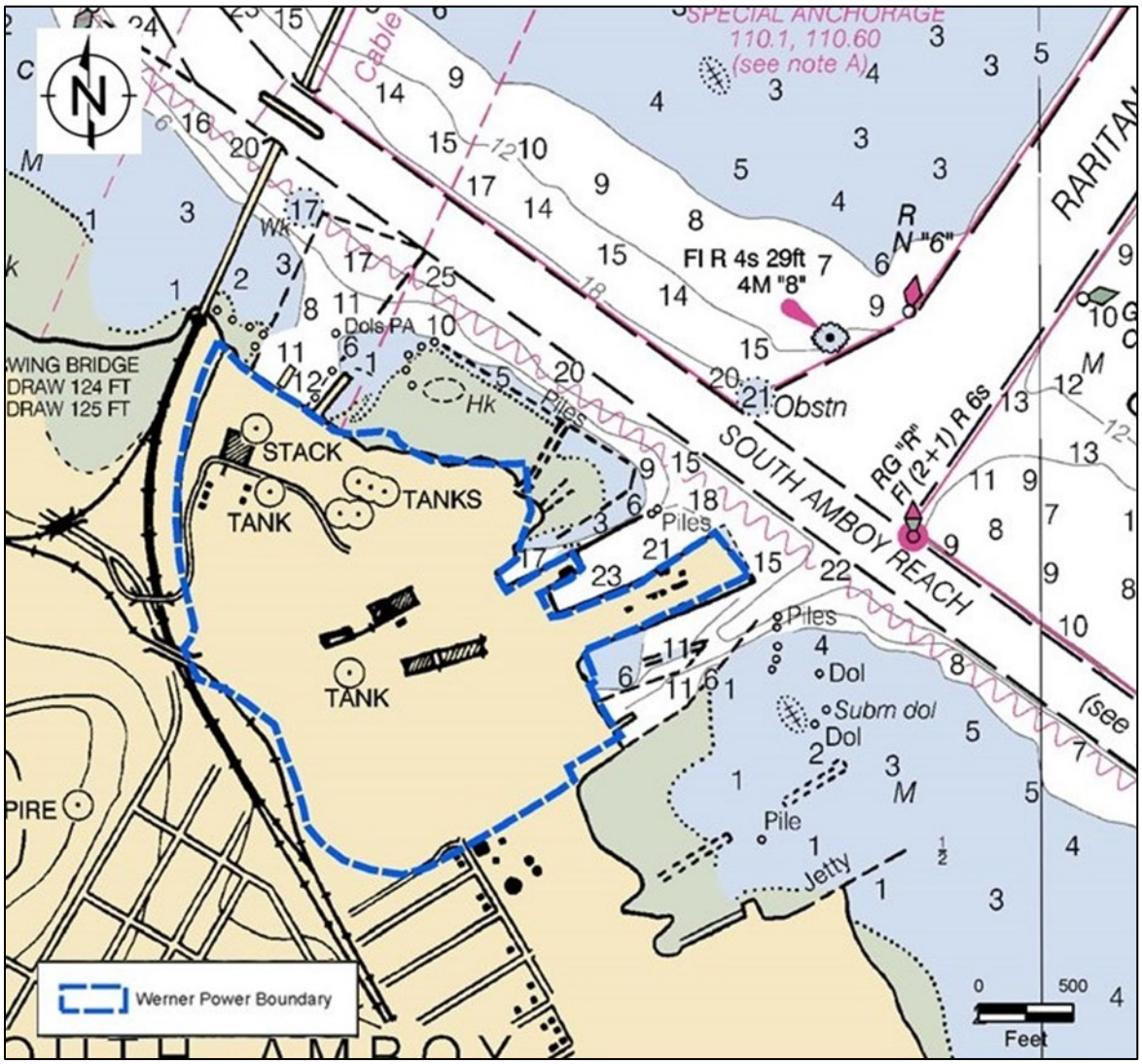


Figure 15: Werner Generating Station - NOAA Depth Chart

6.2 Limitations

There are no bridges between the facility and the open ocean. The closest airports are the Newark International Airport located approximately 13.5 miles to the north-northeast of the site and the Old Bridge Airport (a small, public-use airport) located approximately 11.4 miles southwest of the site.

6.3 Environmental Conditions

According to New Jersey Department of Environmental Protection (NJDEP) online databases, remediation was required to be initiated on the property on January 1, 1992 under activity LSR120001. The Remedial Action Report is due May 6, 2021. In addition, the site is listed on the New Jersey active sites with confirmed contamination (NJEMS IDs 15970 and 94273). Contaminants of concern include gasoline, sodium hydroxide, lube oil, transmission fluid, #2 fuel oil, and sodium hypochlorite. The site is also listed on environmental databases for numerous spills and releases on the property. There are limited areas of wetlands and areas that require habitat-specific requirements that would need to be considered during the planning phase of redevelopment (Figure 16).

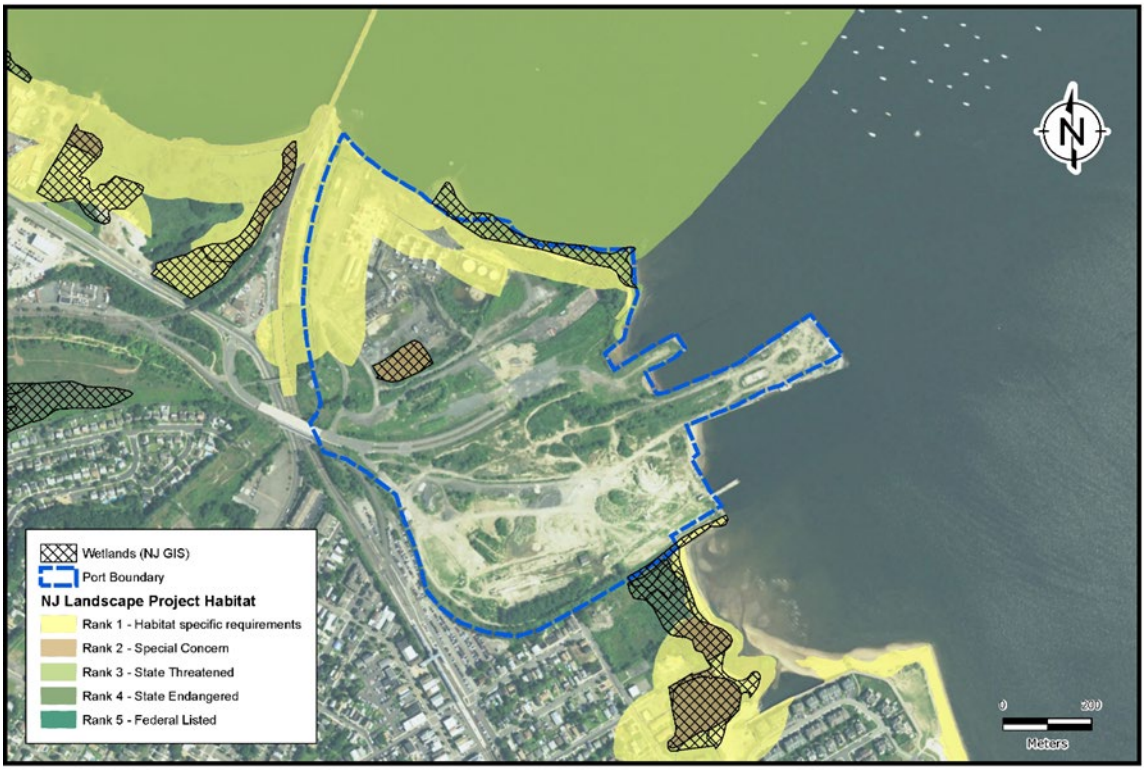


Figure 16: Werner Generating Station - Wetland and Habitat Map

Table 11: WGS - Summary of Existing Conditions		
Size	~97 acres total	
Buildings	Several structures remain from power generating operations.	Plant infrastructure is currently being demolished.
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Piers	Piers are in disrepair
Quayside Length	Main Pier: ~920 feet Pier face: ~350 feet	
Quayside Load Bearing Capacity*	<1,000 psf	
Depth at Berth	No existing berth; water depth is 15 feet	
Channel Dimensions	South Amboy Reach and Great Beds Reach- 300 feet wide by 25 feet deep MLLW* Ward Point Secondary Channel - 400 feet wide by 30 feet deep MLLW Ward Point Bend East, Red Bank Reach, Seguine Point Reach, Raritan Bay West Reach, Raritan Bay East Reach - 600-800 feet wide by 35 feet deep MLLW *recent surveys show that these reaches may be shallower than project depth (15-20 ft)	Dredging would be required at berth to deepen the channel and quaysides to 35 feet MLLW to support typical OSW marshaling operations
Distance to OSW Lease Areas	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 148 nautical miles OCS-A 0482 (Ørsted/PSEG) - 132 nautical miles OCS-A 0498 (Ørsted) – 91 nautical miles OCS-A 0499 (EDF/Shell) - 64 nautical miles Hudson South Call Area – 42 nautical miles OSC-A 0512 (Equinor) – 35 nautical miles Hudson North Call Area – 57 nautical miles Fairways South Call Area – 59 nautical miles Fairways North Call Area – 81 nautical miles	
Rail Connection	Adjacent; Rail runs along the northwestern site boundary	
Restrictions	No overhead restrictions	

Table 11: WGS - Summary of Existing Conditions		
Environmental Conditions	Wetlands (~0.8 acres) are located in the southeastern portion of the site. Additionally, wetlands are located along the waterfront. NJEMS ID 15970; Preferred ID 009964 (E H Werner Generating Station) NJEMS ID 94273; Preferred ID 132954 (Conrail & McKean Property)	Site has subsurface impacts from former power plant operations.
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of marshaling or OSW manufacturing uses, certain improvements would be necessary. Table 12 below provides a redevelopment cost summary to improve the quayside, increase upland load bearing capacity (50 acres) and complete the required dredging. Given that expansion beyond the 50 acres required by marshaling is possible, a cost to improve the upland load bearing capacity per acre is also provided. Disposal costs are variable, so low and high costs are provided. Costs to demolish existing structures are not included.

Table 12: Werner Generating Station - Summary of Redevelopment Costs[4]		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
Harden current quayside (2,100 linear feet) and install relieving platform	$79,800,000	$79,800,000
Dredge around quayside to 35 feet	$31,111,111	$108,888,889
Dredge to South Amboy channel to 35 feet	$4,444,444	$15,555,556
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet of dense-grade aggregate (DGA)[5]	$18,150,000	$18,150,000
Upland load bearing capacity improvements per acre	$907,500/acre	$1,815,000/acre
20% Contingency	$32,146,111	$58,998,889
Total	**$192,876,667**	**$353,993,333**

[4] Detailed cost-breakdown sheets are available upon request.

[5] Most OSW developers prefer installation of DGA to support their site operations. The costs for a developers specific infrastructure improvements are typically borne by the developer.

6.4 Potential Offshore Wind Uses

The site's relatively large acreage and lack of vertical restrictions make the site adaptable for manufacturing of OSW components and marshaling. The existing structures would require demolition and the entire site redeveloped for the site to be suitable to support manufacturing, staging of components and/or marshaling (e.g., erection). The quaysides would also require complete rebuilding. Additionally, to serve as a marshaling port, the berth and channels will need to be dredged to 35 feet MLLW. Redevelopment would also need to take into account any NJDEP-required environmental remediation requirements.

6.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle manufacturing/fabrication of monopiles, transition pieces, tower section components and jacket foundations, including lay down. Upland soil load bearing capacities would need to be improved and the quayside will need complete redevelopment to support these operations. Dredging is required at the quaysides as well as the approach channels.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, the quaysides will require complete redevelopment and dredging at the quaysides and channels would be required.

O&M, Service, Cables, Secondary Steel:

The site could be used for O&M operations from a layout perspective and is within 50 nautical miles of Hudson South Call Area and OCS-A 512 (Equinor's Empire Wind). The channel is suitable for O&M, but the quayside would require dredging. Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily conducted at this site. The site is well suited for cable storage, as a cable service port, and as a cable manufacturing facility with moderate modification needed.

Upgrades and Improvements Opportunity for Full Utility:

For full utility, certain site improvements would be required. These would include:

- Demolition of existing structures;
- Improvement of upland soil bearing capacities;
- Complete redevelopment of quayside;
- Dredging of berth and channel;
- Addition of production buildings (for manufacturing/fabrication scenarios); and
- Installation of crane pads or relieving platform where extreme heavy-lift operations might occur.

The depth of the channel (currently 25 feet MLLW) represents a limiting factor of the site's redevelopment as a marshaling facility as a minimum of 35 feet MLLW is typically required to OSW marshaling operations.

6.4.2 Reuse Scenario - Marshaling

The site's relatively large acreage, lack of vertical restrictions, and potential for sole use make the site adaptable for marshaling. The bulk of the redevelopment costs for marshaling are associated with hardening the quayside, increasing upland load bearing capacity (50 acres), and completing the required dredging. The redevelopment cost to harden the quayside includes the cost to construct a relieving platform. Additional costs may include office trailer rentals (approximately $20,000).

7. CHEMOURS CHAMBERS WORKS – DEEPWATER, NJ & CARNEY'S POINT, NJ

7.1 Existing Conditions

The approximately 1,545-acre Chemours Chambers Works Complex is located at 67 Canal Road, Pennsville Township, New Jersey and 600 Shell Road, Carney's Point, New Jersey. The Chemours Chambers Works Complex, composed of the Chambers Works manufacturing area (Deepwater Site) and the former Carneys Point Works (Carney's Point Site), is located along the eastern shore of the Delaware River (Figure 17) in the southern portion of New Jersey. The site has a long industrial history with operations initiating as early as 1892 and included the manufacture of gunpowder, dyes, freon, tetraethyl lead, and aromatic chemicals. During World War II, the site was used for research and development of chemicals for the production of radiological materials. By the early 1980s, the manufacture of explosives and dyes ended, leaving only chemical manufacturing. Currently, there are several active waste-management areas on the site, including a secure landfill and a wastewater treatment plant. Portions of the site remain in operation by Chemours for chemical manufacturing purposes. Up to 405 acres are available for redevelopment, of which approximately 101 acres are located along the Delaware River on the Deepwater site. The approximately 412-acre Deepwater site is paved or developed for chemical manufacturing purposes. Approximately 175 acres of the Carney's Point site are available for redevelopment. The remaining portions of the Carney's Point site are wetlands or currently being utilized by Chemours for their own operations.

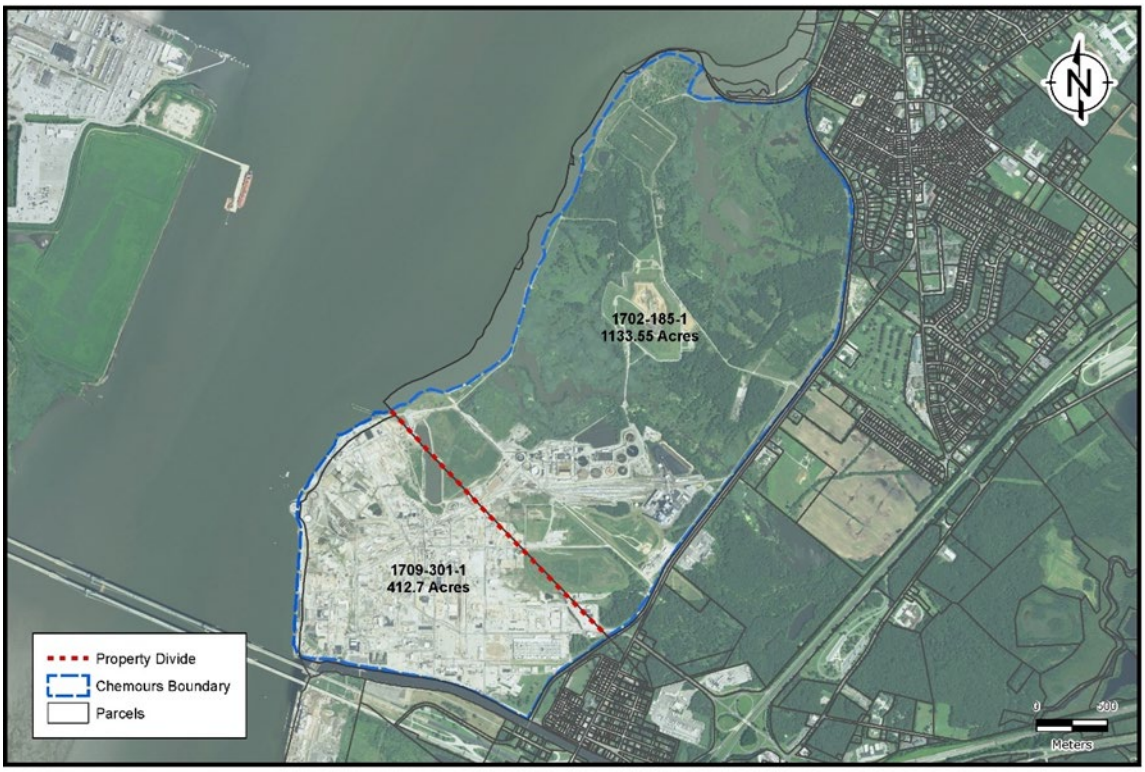


Figure 17: Chemours Chambers Works - Site Location Map

A canal and the Delaware Memorial Bridge are located immediately south of the site, beyond which is the Calpine Power Plant. Residential areas are located east and north of the site. The Delaware River bounds the site to the west. The Port of Wilmington is across the Delaware River. Rail access is available on-site. The New Jersey Turnpike and Route I-295 are located within one mile east of the site.

Water approaches to the site is via the Cherry Island Range and Deepwater Point Range (Figure 18). The Cherry Island Range and Deepwater Point Range are 40 feet deep MLLW and 800 feet wide. The channels through the Delaware River continue as the Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range, all of which are at least 800 feet wide and 40 feet deep. There is not active quayside at the property; however, there are approximately 16,300 feet of water frontage which could be developed into a quayside to support multiple OSW operations.

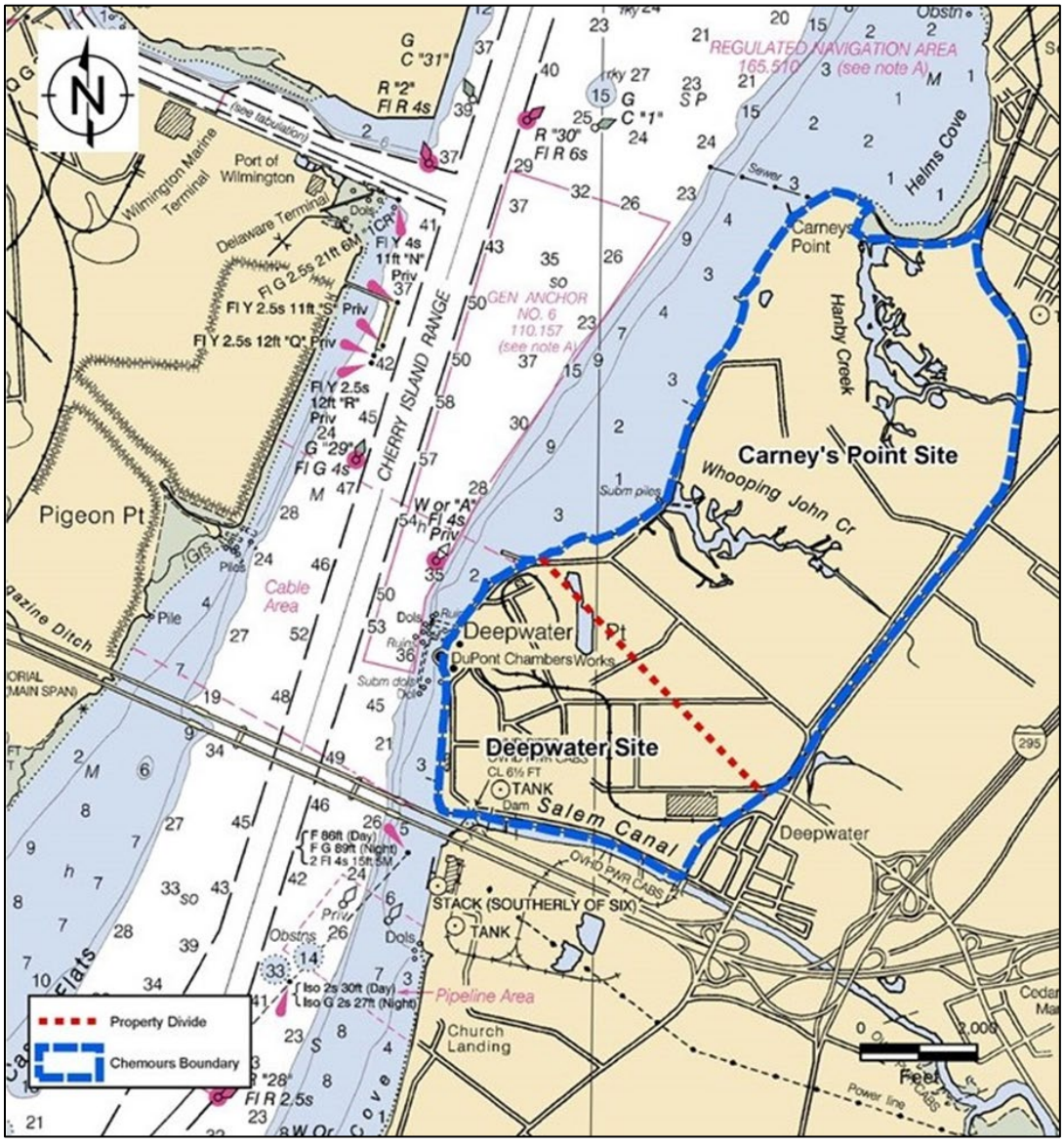


Figure 18: Chemours Chambers Works - NOAA Depth Chart

7.2 Limitations

Vertical restrictions between the site and open water include the Delaware Memorial Bridge and overhead cables. The Delaware Memorial Bridge has vertical clearances of 188 feet (middle 800 feet), 175 feet (middle 1,500 feet), and 166 feet (Main Towers) and a horizontal clearance (beam) of 2,000 feet. There are overhead cables which have a vertical clearance of 223 feet. The closest airport is the New Castle Airport located approximately 4.5 miles southwest of the site.

7.3 Environmental Conditions

Historical chemical manufacturing and waste management at the site have resulted in impacts to the site subsurface. Contaminants of concern include aniline, benzene, chlorobenzene, trichloroethene, tetrachloroethene, lead, and other organic and inorganic chemical constituents such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), perfluorooctanoic acid (PFOA), and radiological materials.

Chemours is required to conduct site-wide groundwater monitoring and remediation. In addition, the U.S. Army Corps of Engineers (USACE) is evaluating the areas utilized for the radiological material research and development.

Two rounds of site-wide investigation have been completed to date, and several interim remedial measures (removal of source materials, installation of caps over contaminated areas, and fences) have been completed to address immediate environmental concerns. An interceptor Well System (IWS) was installed in the 1970s to pump and treat contaminated groundwater at an on-site wastewater treatment plant. A site-wide groundwater monitoring program has been implemented to monitor the effectiveness of the system. The closures of three basins and two ditches were completed in the early 1990s.

As of 2016, remedial actions were being implemented at the Salem Canal to address a groundwater plume of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) migrating into and beneath the adjacent canal; an investigation was performed for the dense non-aqueous phase liquid (DNAPL) found under Delaware River near the AOC-1 area; a vapor intrusion investigation was conducted at more than 200 buildings and structures at the site; and an investigation was performed to determine the extent of PFOA contamination in the groundwater on-site and off-site.

Chemours and the USACE are continuing to evaluate additional contaminant sources that might be contributing to the subsurface impacts. The groundwater pump and treat system will continue to operate in conjunction with a cut-off sheet pile barrier wall system, and the site-wide groundwater monitoring program to ensure that contaminated groundwater does not migrate off-site. NJDEP will impose a deed notice on the site to restrict future use to industrial purposes, such as OSW support operations.

Additionally, the majority of the Carney's Point site are wetlands and areas of both sites have habitat specific requirements (Figure 19).

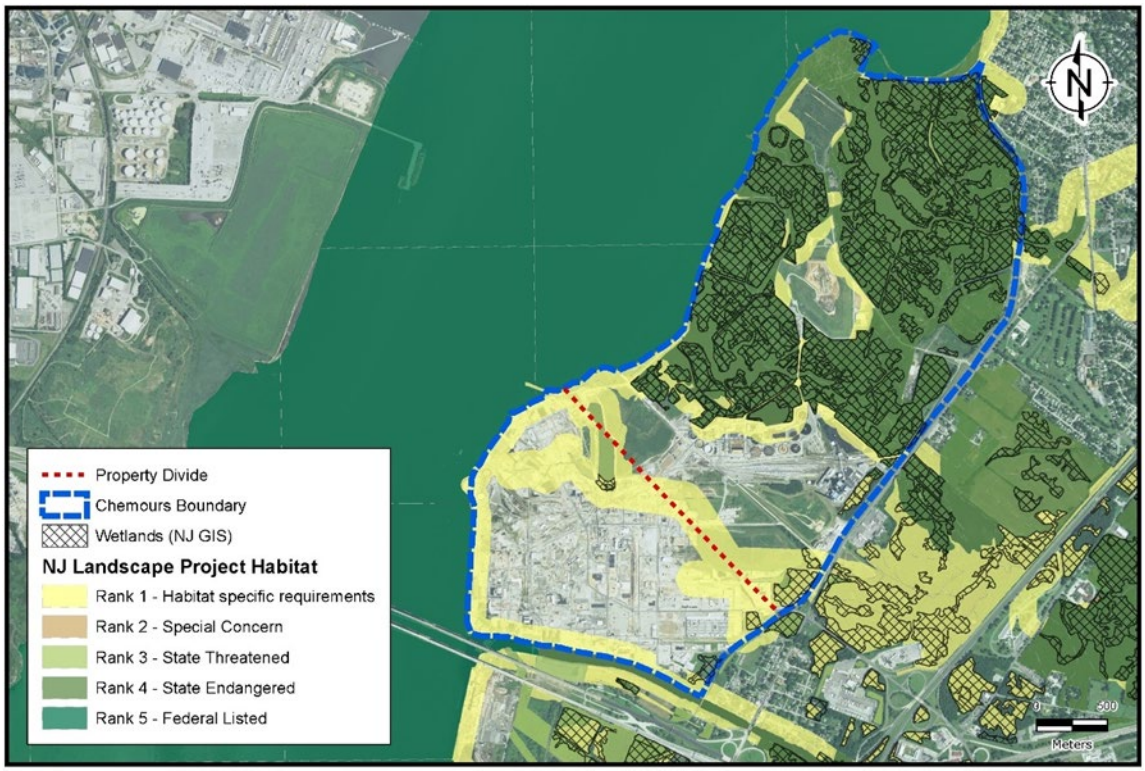


Figure 19: Chemours Chambers Works - Wetlands and Habitat Map

Table 13: Chemours Chambers Works - Summary of Existing Conditions		
Size	Deepwater: ~412 acres total; up to 230 acres available for development. Carney's Point: ~1,133.55 acres total; 175 acres available for development	Majority of Carney's Point site is wetlands.
Buildings	Deepwater: Several structures associated with former manufacturing. Majority of site is paved or improved with buildings. Carney's Point: Wastewater treatment plant is located on southern portion of parcel. Majority of the site is undeveloped.	Complete redevelopment is required.
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	N/A	
Quayside Length	N/A; ~16,300 feet of water frontage	
Quayside Load Bearing Capacity*	N/A	

Table 13: Chemours Chambers Works - Summary of Existing Conditions		
Depth at Potential Quayside locations	1-314 feet MLLW	
Channel Dimensions	Cherry Island Range, Deepwater Point Range, Bulkhead Bar Range, New Castle Range, Reedy Island Range, Baker Range, and Liston Range - 800 feet wide by 40 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 85 nautical miles OCS-A 0519 – 80 nautical miles OCS-A 0482 (Ørsted/PSEG) - 74 nautical miles OCS-A 0498 (Ørsted) – 95 nautical miles OCS-A 0499 (EDF/Shell) - 112 nautical miles Hudson South Call Area – 145 nautical miles OSC-A 0512 (Equinor) – 187 nautical miles Hudson North Call Area – 184 nautical miles Fairways South Call Area – 200 nautical miles Fairways North Call Area – 222 nautical miles	
Rail Connection	Rail on-site	
Restrictions	Delaware Memorial Bridge: Vert Cl 188 feet (middle 800 feet); Vert Cl 175 feet (middle 1,500 feet); Vert Cl 166 feet (Main Towers); Horizontal Clearance 2,000 feet Overhead Cables Vertical Clearance 223 feet	
Environmental Conditions	NJEMS Site ID 15645; Preferred ID 008221 (The Chemours Company FC LLC) Majority of Carney's Point site is wetlands	Subsurface impacts from long industrial history. Remediation is on-going.
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of marshaling or OSW manufacturing, certain improvements are necessary. Table 14 below provides a cost summary to improve the quayside, improve upland load bearing capacity (50 acres) and complete the required dredging. Given that expansion is possible, a cost to improve the upland load bearing capacity per acre is also provided. Disposal costs are variable, so low and high costs are provided. Costs for existing building demolition are not included.

Table 14: Chemours Chambers Works - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (1,200 linear feet) including relieving platform	$45,600,000	$45,600,000
Dredge around quayside to 35 feet	$29,333,333	$102,666,667
Dredge to Cherry Island Range channel to 35 feet	$4,444,444	$15,555,556
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet of DGA	$18,150,000	$18,150,000
Upland load bearing capacity improvements per acre	$907,500/acre	$1,815,000/acre
20% Contingency	$24,950,556	$50,914,444
Total	**$149,703,333**	**$305,486,667**

7.4 Potential Offshore Wind Uses

The site's large acreage makes the site adaptable for manufacturing of OSW components and potentially marshaling. The existing structures will need to be demolished and the entire site redeveloped for the site to be suitable to support manufacturing or staging of components. The Delaware Memorial Bridge with a vertical clearance of 188 feet will present challenges for marshaling which will likely need to be addressed via barge feedering, especially for early projects. The site does not currently have a suitable quayside, so a new quayside will need to be designed and constructed. Additionally, to serve as a marshaling port, dredging is required to connect the site quayside (to be constructed) to the deep-water channel. The site could also be well suited for use as a component lay down facility.

7.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle monopile, transition piece, tower section components and jacket foundations, including manufacturing, fabrication, and lay down. Upland soil load bearing capacity would need to be improved and the quayside would need to be constructed. Dredging is required at the future quayside to connect to the deep-water channel.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, the quayside will need to be built and dredging is necessary.

O&M Service, Cables, Secondary Steel:

The site is well suited for O&M operations in terms of available acreage but is located away from the OSW lease areas to be viable. Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily adapted at this site. The site is well suited for cable storage, as a cable service port, and as a cable manufacturing facility with moderate modification needed. In all cases, a robust quayside would need to be constructed.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of marshaling or offshore wind production, certain site improvements would be required. These would include: demolition of existing structures; improvement of upland load bearing capacity; development of quayside; dredging of berth; addition of production buildings (for manufacturing/fabrication scenarios); and installation of crane pads or relieving platform where extreme heavy-lift operations might occur.

7.4.2 Reuse Scenario - Marshaling

The site's large acreage and potential for sole use make the site adaptable for marshaling. The majority of the redevelopment costs for marshaling are associated with constructing the quayside, increasing upland load bearing capacity (50 acres), and completing the required dredging. The cost to construct the quayside includes a relieving platform suitable for marshaling. Additional costs may include office trailer rentals (approximately $20,000).

8. MILITARY OCEAN TERMINAL AT BAYONNE (MOTBY) – BAYONNE, NJ

8.1 Existing Conditions

The Military Ocean Terminal at Bayonne (MOTBY) totals approximately 427 acres is located at 630 Avenue C, Bayonne, New Jersey (Figure 20). The site is an active port and shipyard with portions of the site currently being redeveloped for residential/commercial use (over 1,500 new apartments) and industrial warehousing. Current tenants include GMD Shipyard, Cape Liberty Cruise Port, City of Bayonne Police Department and Fire Department, and US Coast Guard. GMD Shipyard and Cape Liberty Cruise Port appear to use the northeast, east, and southeast berthing areas. A portion of the site along Route 440 was recently developed for a Costco retail store. Based on Ramboll's current understanding of the planned residential/commercial/industrial development at MOTBY, up to 150 contiguous acres may be available for redevelopment for OSW use.

MOTBY was formed using dredged material in as early as 1939. In 1941, the US Navy acquired the terminal and used it as the primary East Coast distribution point for ordnance and electronic materials and stored war reserve materials. The site was also used for petroleum storage. In 1967, the US Navy transferred the site to the US Army. In 1995, MOTBY was designated for closure under the Base Realignment and Closure Act (BRAC). In 1999, MOTBY was officially closed under BRAC.

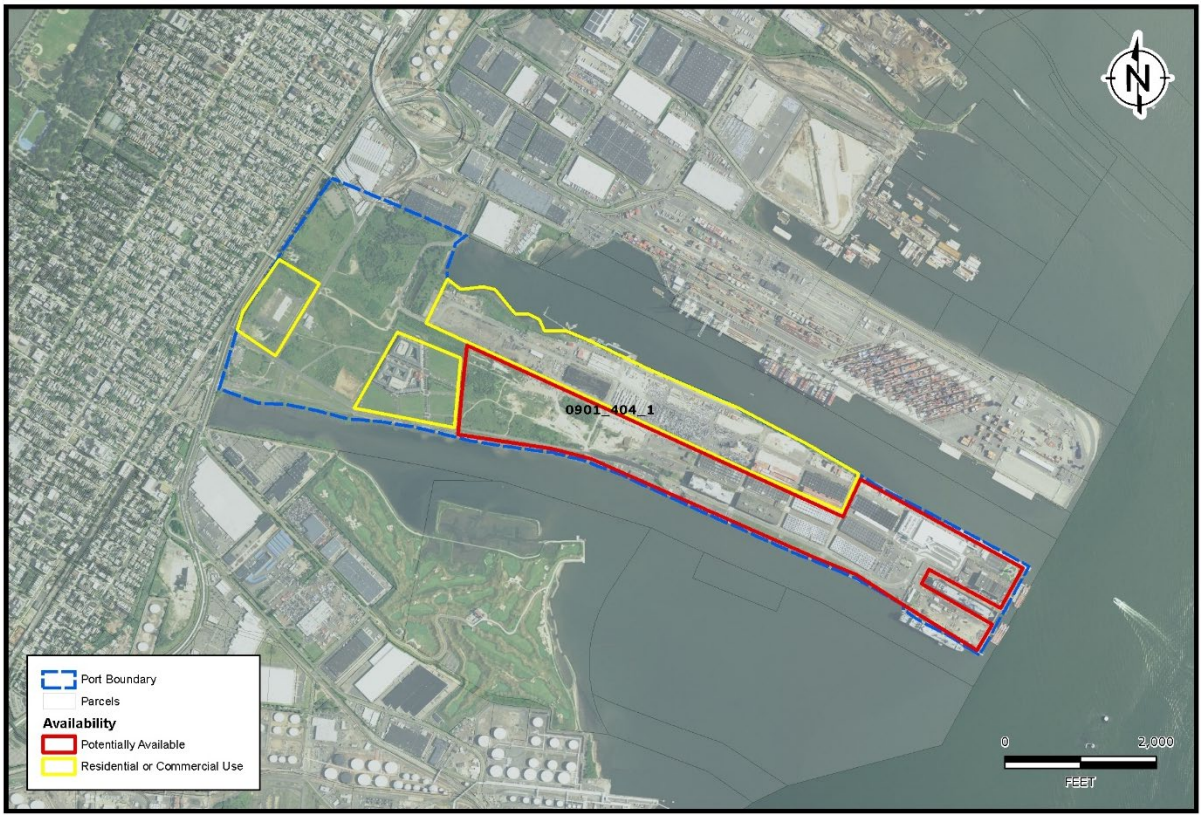


Figure 20: MOTBY - Site Location Map

Global Container Terminal (GCT) is located north of the site. The Upper Bay bounds the site to the east. Across the Upper Bay is Brooklyn, NY. South of the site are a golf course and shopping center. Route 440 bounds the site to the west, beyond which are mixed residential and commercial areas. Rail access is available within 0.5 miles of the site. The New Jersey Turnpike Extension can be accessed via Route 440.

Water approaches to the site are via the Ambrose Channel Reach D (53 feet deep by 2,000 feet wide) and the Anchorage Channel (51 feet deep by 500 feet wide) (Figure 21). The site has several active berths located along the northern, eastern, and southeastern sides of the peninsula. GMD Shipyard and Cape Liberty Cruise Port appear to use the northeast, east, and southeast berthing areas. It is unclear if any of the existing berths are available. The depths along the southwestern side of the peninsula (non-berthing areas) range from 11 to 13 feet.

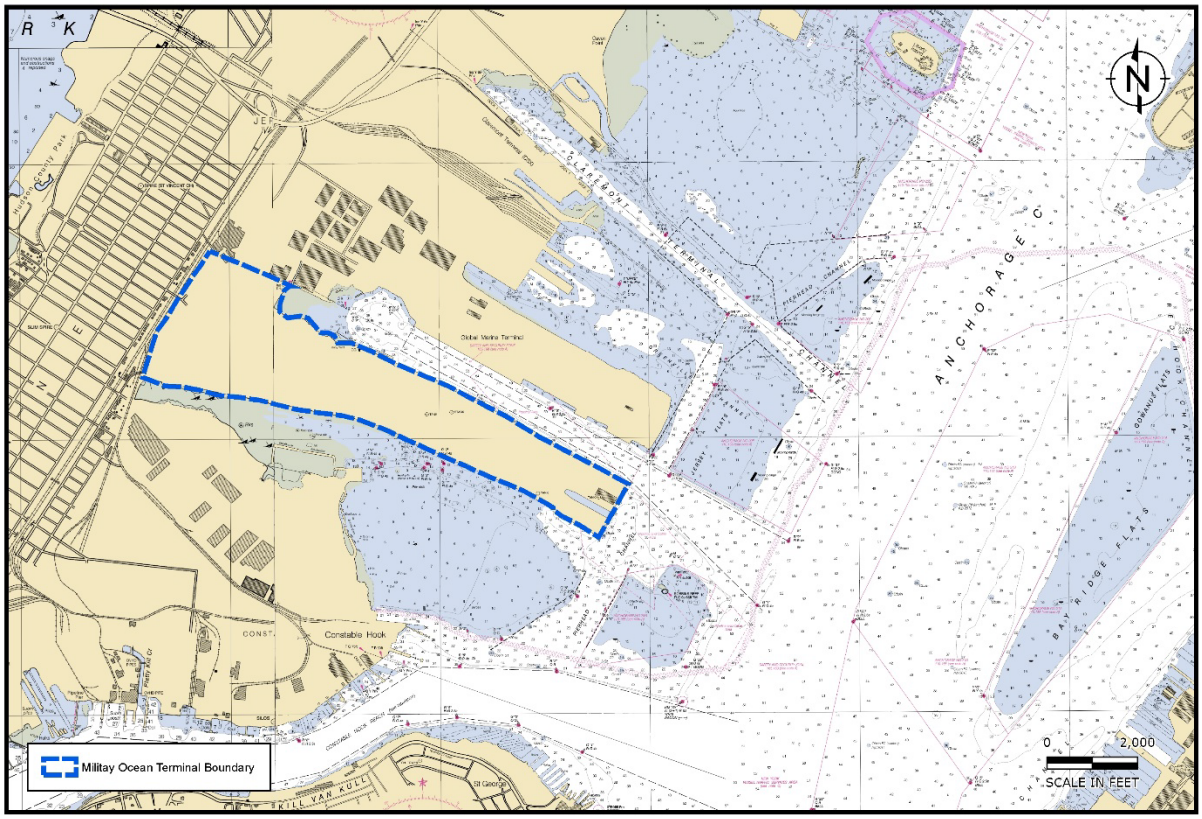


Figure 21: MOTBY - NOAA Depth Chart

8.2 Limitations

Vertical clearance between the site and open water is restricted by the Verrazano-Narrows Bridge. The Verrazano-Narrows Bridge has vertical clearances of 198 feet (middle 2,000 feet), 183 feet (piers), and 215 feet (center). The closest airport is the Newark International Airport located approximately 3.5 miles southwest of the site. No rail is available on-site; however, rail is available within 0.5 miles of the site.

8.3 Environmental Conditions

The site is listed in NJDEP's database for known contamination sites (NJEMS Site IDs 14201, 602237, 621075, 621105, and 601158). Additionally, the site is listed in the USEPA's Hazardous Waste

Cleanup program. Subsurface impacts were caused by releases from underground storage tanks (USTs), possible releases from a sanitary sewer, spills from former transformers (PCBs), contaminated fill used to construct the Military Ocean Terminal Bayonne peninsula, and the possible migration of petroleum contamination on-site from off-site sources. The releases resulted in impacts to site soil (metals, organics, pesticides and PCBs), and site groundwater (arsenic, mercury, volatile organic compounds and pesticides). According to the USEPA, corrective actions have been completed for 551 acres of MOTBY (MOTBY was formerly 652 acres, a parcel larger than the current study area). In 2001, NJDEP granted a no further action determination for site cleanup.

A small area of wetlands is present in the southwest corner of the property, along the water (Figure 22). There are habitat-specific requirements that will need to be considered during the planning phase of development.

Figure 22: MOTBY - Wetlands and Habitat Map

Table 15: MOTBY - Summary of Existing Conditions		
Size	Parcel: ~427 acres; ~150 contiguous acres available for development	
Buildings	Warehouse Area: ~1,200,000 sf (10 - 200 feet by 600 feet One apartment complex complete; several apartment complexes under development Costco along Route 440	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Piers	
Quayside Length	Berth A: 225 feet Berths B and C: 348 feet total L-shaped Pier: 120 feet + 100 feet +110 feet + 90 feet Drydock: 1,092 feet by 148 feet	
Quayside Load Bearing Capacity*	<1,000 psf	
Depth at Potential Quayside locations	Berth - 48 feet The southwest side of the site is not currently used for berthing. Depths along the southwest side range from 11 to 13 feet.	
Channel Dimensions	Ambrose Channel Reach D: 2,000 feet wide by 53 feet deep MLLW Anchorage Channel - 51 feet to 54 feet deep MLLW 500 foot of channel dredged to 45 feet MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 135 nautical miles OCS-A 0482 (Ørsted/PSEG) - 132 nautical miles OCS-A 0498 (Ørsted) – 97 nautical miles OCS-A 0499 (EDF/Shell) - 68 nautical miles Hudson South Call Area – 36 nautical miles OSC-A 0512 (Equinor) – 30 nautical miles Hudson North Call Area – 56 nautical miles Fairways South Call Area – 59 nautical miles Fairways North Call Area – 80 nautical miles	
Rail Connection	Rail is available within 0.5 miles	

Table 15: MOTBY - Summary of Existing Conditions		
Restrictions	Verrazano-Narrows Bridge: Vert Cl 198 feet (middle 2,000 feet); Vert Cl 183 feet (piers); Vert Cl 215 feet (center)	
Environmental Conditions	NJEMS Site ID 14201; Preferred ID 011992 (Military Ocean Terminal – Bayonne) NJEMS Site ID 602237; Preferred ID 788099 (Bayonne Bay Residential Development) NJEMS Site ID 621075; Preferred ID 788103 (Harbor Pointe & Alexan City View Apartments) NJEMS Site ID 621105; Preferred ID 788144 (Port Authority @ Maritime District) NJEMS Site ID 601158; Preferred ID 788093 (151 Centre Street Urban Development)	NJDEP issued a No Further Action required in 2001
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of offshore wind component manufacturing, certain improvements are necessary. Table 16 below provides a cost summary to replace 1,000 feet of the quayside and improve upland load bearing capacity (50 acres). Disposal costs are variable, so low and high costs are provided. Given that expansion beyond the 50 acres is possible, a cost to improve the upland load bearing capacity per acre is also provided. It is assumed that an existing quayside with access to a deep-water berth will be replaced, so no dredging will be required. Costs to demolish existing buildings are not included.

Table 16: MOTBY - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
Replace quayside (1,000 feet); including relieving platform	$38,000,000	$38,000,000
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet of DGA	$18,150,000	$18,150,000
Upland load bearing capacity improvements per acre	$907,500/acre	$1,815,000/acre
20% Contingency	$16,675,000	$25,750,000
Total	**$100,050,000**	**$154,500,000**

8.4 Potential Offshore Wind Uses

The site's large acreage and access to deep water channels make it adaptable for manufacturing of OSW components. Some of the existing structures will need to be demolished for the site to be suitable to support manufacturing or staging of components. Depending on the condition of the existing buildings, it is possible some of the buildings can be repurposed for storage or fabrication of OSW components. The Verrazano-Narrows Bridge with a vertical clearance of 198 feet (middle 2,000 feet) or 183 feet (piers) will present challenges for larger wind components without utilizing a feeder barge system. Coordinating with other operations at the terminal will make marshaling challenging. Depending on availability and OSW use, the existing quaysides will either need to be strengthened or replaced. Additionally, if the southern side is used, dredging will be required. If the existing quaysides on the north, east, or southeast are available, then dredging will not be required.

8.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle monopile, transition piece, tower section components and jacket foundations, including manufacturing, fabrication, and lay down. Upland soil load bearing capacity would need to be improved and a replacement quayside constructed.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. For heavier components including nacelles, rotors, and generators, a replacement quayside will need to be constructed to handle the heavy loads. For blades, strengthening the existing quayside may meet the load bearing capacity requirements.

O&M Service, Cables, Secondary Steel:

The site is well suited for O&M operations from a layout perspective and is within 50 nautical miles of the Hudson South Call Area and OCS-A 0512 (Equinor's Empire Wind). The existing quayside is suitable for O&M. Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily adapted at this site. The site is well suited for cable storage, as a cable service port, and as a cable manufacturing facility with moderate modification needed. The existing quayside will likely need to be strengthened for cables and secondary steel.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of offshore wind production, certain site improvements would be required. These would include: demolition of existing structures; improvement of upland load bearing capacity; strengthening or development of quayside; dredging of berth (southern side only); addition of production buildings (for manufacturing/fabrication scenarios); and installation of crane pads or relieving platform where extreme heavy lift operations might occur.

8.4.2 Reuse Scenario – Cable Manufacturing

The site's large acreage and access to deep water channels make the site adaptable for cable manufacturing. The redevelopment costs provided above include replacing the quayside (including installing a relieving platform) and increasing upland load bearing capacity (50 acres; including laydown areas). If the site were to be redeveloped for cable manufacturing, only 30 acres of upland soil capacity would need to be improved. Additional costs may include construction of warehouse/office building, construction of manufacturing building, and installation of a transfer crane.

Table 17: MOTBY - Summary of Reuse Costs – Cable Manufacturing	
	Estimated Costs
Construction of warehouse/offices (50,000 square feet)	$1,010,000
Construction of manufacturing building (100,000 square feet); including two overhead cranes	$6,090,000
Transfer crane	$3,000,000
20% Contingency	$2,020,000
Total	**$12,120,000**

9. CHEMOURS – LINDEN, NJ

9.1 Existing Conditions

The former Chemours (also formerly known as DuPont Grasselli) chemical manufacturing facility totals approximately 98 acres (Figure 23). The site has a long industrial history dating back to 1800s. From 1885 to 1928, the site was used for chemical manufacturing by Grasselli. In 1928, the plant was acquired by DuPont for manufacture of chemicals and pesticides. DuPont operated at the site until 1990. The long industrial history resulted in chemical releases to the subsurface. Site environmental remediation is now complete, and the site is reportedly ready for development. The site is currently for sale with a listing price of $70M. According to NJ state planning documents, the site is the longest contiguous available waterfront parcel in the NJ & NY port area with rail access. All former chemical manufacturing buildings have been demolished and the site has undergone pre-consolidation with fill material and is graded for development above the base flood elevation (BFE) line. The site is equipped with three dolphins along the southeastern boundary.

Figure 23: Chemours (Linden, NJ) - Site Location Map

The site is located on the western shore of the Arthur Kill. Pralls Island divides the Arthur Kill east of the site. Beyond the Arthur Kill is Staten Island, NY. A wastewater treatment facility and petroleum terminal are located south of the site. An apparent warehouse is located on the parcel west of the site. North of the site is a canal, beyond which is the PSEG Linden Generating Station. The majority of the adjacent west parcel is undeveloped wetlands. Route I-95 is located within three miles of the site and the Garden State Parkway is located within five miles of the site. Rail access is available along the western property boundary.

Water approaches to the site is via the Pralls Island Reach (Figure 24). Deep water channels are available to the north and south of the site. To the north, the Pralls Island Reach and Gulfport Reach are 35 feet deep and 500 feet wide. The channel deepens to 50 feet through the Elizabethport Reach, North of Shookers Island Reach, Bergen Point West Reach, Bergen Point East Reach, and Constable Hook Reach. To the south, the channels are 35 feet deep and at least 500 feet wide via the Pralls Island Reach, Tremley Point Reach, Fresh Kills Reach, Port Reading Reach, Port Socony Reach, Outerbridge Reach, Ward Point Bend West, Ward Point Bend East, Red Bank Reach, Seguine Point Reach, Raritan Bay West Reach, and Raritan West Reach. There are three dolphins along the southeastern site boundary. There is not a suitable quayside at the property; however, there are approximately 3,175 feet of water frontage which could be developed into a quayside to support OSW operations.

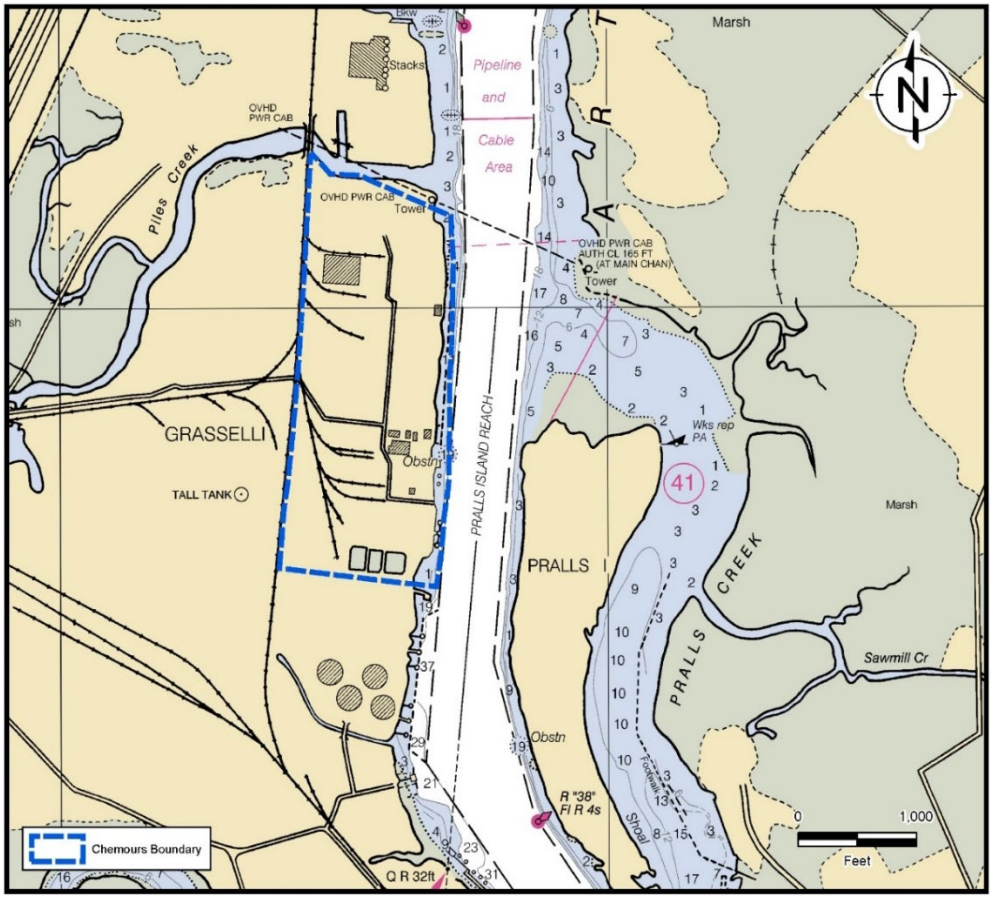


Figure 24: Chemours (Linden, NJ) - NOAA Depth Chart

9.2 Limitations

Vertical restrictions between the site and open water include overhead power cables, the Goethals Bridge, Arthur Kill Railroad Bridge, Bayonne Fixed Bridge, and the Verrazano-Narrows Bridge to the north. The vertical clearance along the northern route is restricted by the Arthur Kill Railroad Bridge at 135 feet (up), and 31 feet (down). The Arthur Kill Railroad Bridge has a horizontal (beam) clearance of 500 feet. To the south, the Outerbridge Crossing restricts the vertical clearance at 143 feet. The Outerbridge Crossing has a horizontal clearance of 675 feet. The closest airport is the Newark International Airport located approximately 4.5 miles north of the site.

9.3 Environmental Conditions

The site is listed on the NJDEP's database for sites with known contamination (NJEMS ID 930). Site soil and groundwater were impacted with solvents and pesticides from the long industrial history. Site environmental remediation is reportedly complete. Additionally, there are habitat-specific requirements that will need to be considered during the planning phase of development (Figure 25).

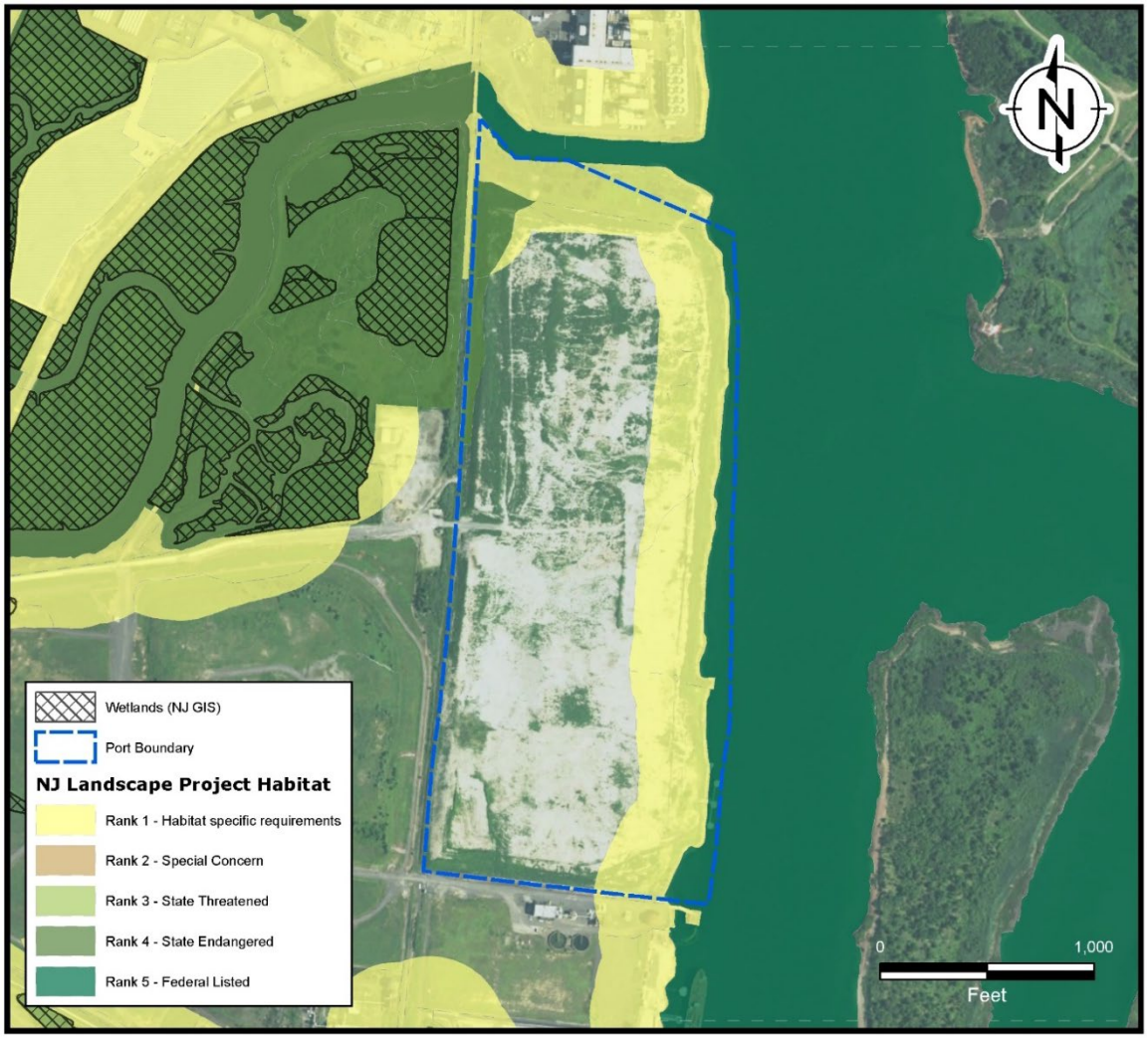


Figure 25: Chemours (Linden, NJ) - Wetlands and Habitat Map

Table 18: Chemours (Linden, NJ) - Summary of Existing Conditions		
Size	~98 acres total	
Buildings	Buildings associated with former chemical manufacturing have been demolished.	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Three dolphins; not a suitable quayside	
Quayside Length	N/A; ~3,176 feet of water frontage	
Quayside Load Bearing Capacity*	N/A	
Depth at Potential Quayside locations	1-19 feet MLLW	
Channel Dimensions	Route North: Pralls Island Reach and Gulfport Reach - 35 feet deep MLLW by 500 feet wide Elizabethport Reach, North of Shookers Island Reach, Bergen Point West Reach, Bergen Point East Reach, and Constable Hook Reach - 50 feet deep MLLW by at least 500 feet wide Route South: Pralls Island Reach, Tremley Point Reach, Fresh Kills Reach, Port Reading Reach, Port Socony Reach, Outerbridge Reach, Ward Point Bend West, Ward Point Bend East, Red Bank Reach, Seguine Point Reach, Raritan Bay West Reach, and Raritan Bay East Reach - 35 feet deep MLLW by at least 500 feet wide	
Distance to OSW Lease Areas	OCS-A 0490 – 159 nautical miles OCS-A 0519 – 153 nautical miles OCS-A 0482 (Ørsted/PSEG) - 138 nautical miles OCS-A 0498 (Ørsted) – 98 nautical miles OCS-A 0499 (EDF/Shell) - 70 nautical miles Hudson South Call Area – 50 nautical miles OSC-A 0512 (Equinor) – 42 nautical miles Hudson North Call Area – 62 nautical miles Fairways South Call Area – 63 nautical miles Fairways North Call Area – 85 nautical miles	
Rail Connection	Rail at western site boundary	

Table 18: Chemours (Linden, NJ) - Summary of Existing Conditions		
Restrictions	North: Arthur Kill Railroad Bridge: Vert Cl 135 feet (up); Vert Cl 31 feet (down); Hor Cl 500 feet South: Outerbridge Crossing (Cantilever Bridge) Vert Cl 143 feet; Hor Cl 675 feet	
Environmental Conditions	NJEMS Site ID 930; Preferred ID G000001666 (El Dupont Denemours & Co)	Remediation is reportedly complete
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

To meet the needs of OSW manufacturing, certain improvements are necessary. Table 19 below provides a cost summary to construct the quayside, improve the upland load bearing capacity (50 acres), and complete the required dredging. Given that expansion beyond 50 acres is possible, a cost to improve the upland load bearing capacity per acre is also provided. Disposal costs are variable, so low and high costs are provided.

Table 19: Chemours (Linden, NJ) - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (800 linear feet) including relieving platform	$30,400,000	$30,400,000
Dredge around quayside to 35 feet	$2,844,444	$9,955,556
Transportation and disposal costs of upland soils, including excavation	$27,225,000	$72,600,000
Placement and compaction of 3 feet of DGA	$18,150,000	$18,150,000
20% Contingency	$15,723,889	$26,221,111
Total	**$94,343,333**	**$157,326,667**

9.4 Potential Offshore Wind Uses

The site's large acreage and potential for sole use make it adaptable for manufacturing of OSW components. The upland load bearing capacity of the site will need to be improved. The Arthur Kill Railroad Bridge with a vertical clearance of 135 feet make the site unsuitable for marshaling or manufacture of larger components without utilizing a feeder barge system. The site does not currently have a suitable quayside, so a new quayside will need to be designed and constructed. Additionally, dredging at the quayside (to be constructed) will be necessary.

9.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The vertical clearance of 135 feet will make it challenging to manufacture or fabricate monopile, transition piece, tower section components and jacket foundations without utilizing a feeder barge system.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, the quayside will need to be built and dredging is necessary.

O&M Service, Cables, Secondary Steel:

The site is well suited for O&M operations from a layout perspective and is within 50 nautical miles of the Hudson South Call Area and OCS-0512 (Equinor's Empire Wind). Manufacture of secondary steel components (ladders, platforms, railings, racks) could be easily adapted at this site. The site is well suited for cable storage, as a cable service port, and as a cable manufacturing facility. In all cases, a robust quayside would need to be constructed.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of offshore wind production, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside; dredging of berth; addition of production buildings (for manufacturing/fabrication scenarios); and installation of crane pads or relieving platform where extreme heavy lift operations might occur.

9.4.2 Reuse Scenario – Blade Manufacturing

The site's large acreage and access to deep water channels make the site adaptable for blade manufacturing. The bulk of the reuse costs for blade manufacturing are associated with the redevelopment costs presented above. The redevelopment costs include quayside construction (including relieving platform), upland load bearing capacity improvement (including laydown areas) and dredging. Additional costs may include construction of warehouse building, and construction of fabrication building.

Table 20: Chemours (Linden, NJ) - Summary of Reuse Costs – Blade Manufacturing

	Estimated Costs
Construction of warehouse building (20,000 square feet)	$524,000
Construction of fabrication building (180,000 square feet); includes two overhead cranes	$10,682,000
20% Contingency	$2,241,200
Total	**$13,447,200**

10. GARDNER'S BASIN – ATLANTIC CITY, NJ

10.1 Existing Conditions

The approximately 10-acre site is currently vacant and located at Carson Avenue in Atlantic City, New Jersey (Figure 26). Portions of the site are used for parking for visitors accessing the water. The site has approximately 1,400 feet of water frontage along Absecon Inlet.

Figure 26: Gardner's Basin - Site Location Map

Absecon Inlet bounds the site to the north and east. To the southeast are a recreational beach and residences. To the west are residences and the Atlantic City Aquarium. No rail is available on-site. The Atlantic City International Airport is located approximately nine miles northwest of the site. The Atlantic City Expressway is located within two miles southwest of the site.

Water approaches to the site are via the Absecon Inlet (See Figure 27). The channel is 29 feet to 46 feet deep and 400 feet wide. Depth along the property is approximately 15 feet deep. The Absecon Inlet leads to open water.

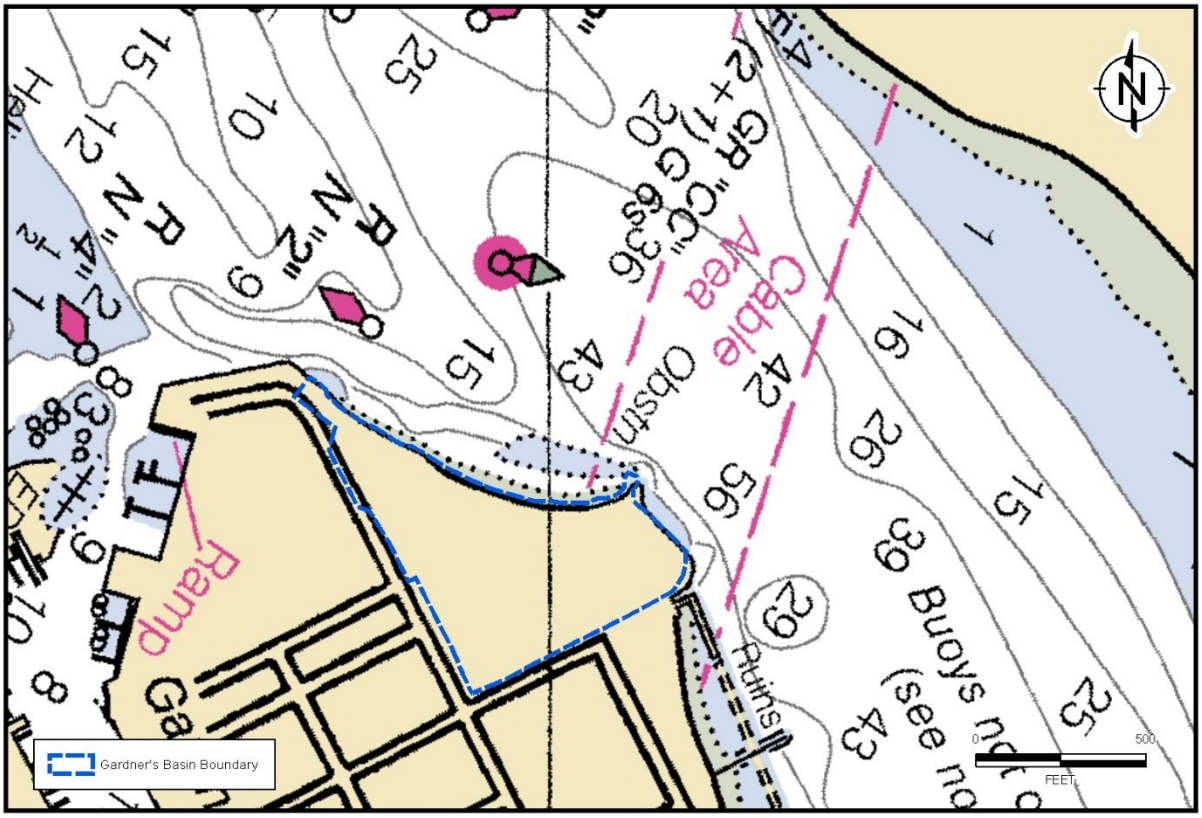


Figure 27: Gardner's Basin - NOAA Depth Chart

10.2 Limitations

There are no overhead restrictions between the site and open water.

10.3 Environmental Conditions

The site address is not listed on NJDEP's database for sites with known contamination; however, Captain Starns Fuel Service Inc (801 New Hampshire Ave N) is mapped on the database within site boundaries. No wetlands were identified on-site. The site does have habitat-specific requirements that will need to be considered if redeveloped (Figure 28).

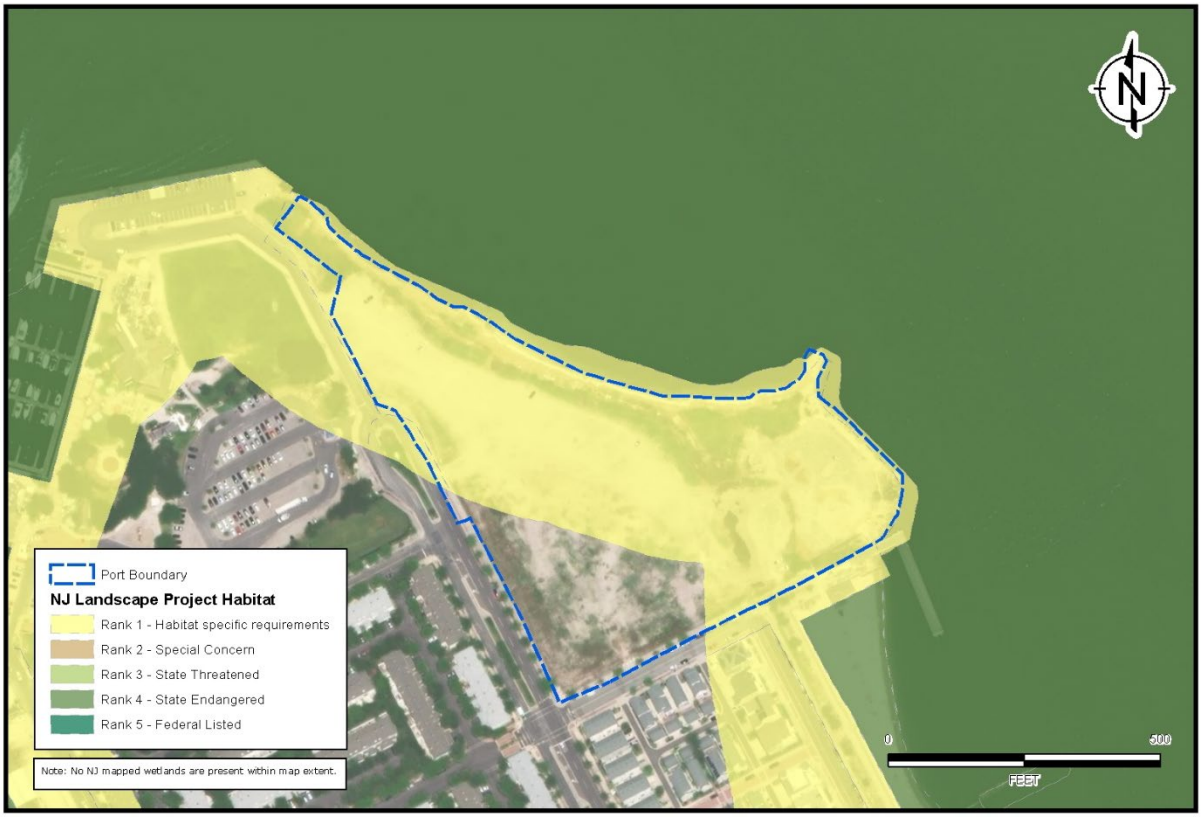


Figure 28: Gardner's Basin - Wetlands and Habitat Map

Table 21: Gardner's Basin - Summary of Existing Conditions		
Size	~10 acres	
Buildings	No buildings present	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	N/A; riprap	
Quayside Length	N/A; ~1,400 feet of water frontage	
Quayside Load Bearing Capacity*	N/A	
Depth at Potential Quayside locations	9-15 feet deep MLLW	
Channel Dimensions	400 feet wide by 29-46 feet deep MLLW	

Table 21: Gardner's Basin - Summary of Existing Conditions		
Distance to OSW Lease Areas	OCS-A 0490 – 69 nautical miles OCS-A 0519 – 65 nautical miles OCS-A 0482 (Ørsted/PSEG) - 42 nautical miles OCS-A 0498 (Ørsted) – 9 nautical miles OCS-A 0499 (EDF/Shell) - 10 nautical miles Hudson South Call Area – 37 nautical miles OSC-A 0512 (Equinor) – 76 nautical miles Hudson North Call Area – 79 nautical miles Fairways South Call Area – 94 nautical miles Fairways North Call Area – 117 nautical miles	
Rail Connection	None identified	
Restrictions	No overhead restrictions	
Environmental Conditions	NJEMS Site ID 44393; Preferred ID 010045 (Captain Starns Fuel Service Inc)	Unclear if this is on-site. The Known Contaminated Site listing is for 801 New Hampshire Ave N.
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

This location is well-suited to support O&M operations but not for other OSW-related uses. To meet the needs of an O&M facility, certain improvements are necessary. Table 22 below provides a redevelopment cost summary to construct the quayside (pontoon), improve upland load bearing capacity, and complete the required dredging. Disposal costs and pontoon construction costs are variable, so low and high costs are provided.

Table 22: Gardner's Basin - Summary of Redevelopment Costs		
	Low Cost Scenario	**High Cost Scenario**
New quayside (pontoon)	$3,000,000	$4,000,000
Dredge around quayside to 20 feet	$550,000	$1,925,000
Transportation and disposal costs of upland soils, including excavation	$3,630,000	$9,680,000
Placement and compaction of 1 foot of coarse granular aggregate (CGA)	$847,000	$847,000
Placement and compaction of 1 foot of DGA	$1,210,000	$1,210,000
20% Contingency	$1,847,400	$3,532,400

Table 22: Gardner's Basin - Summary of Redevelopment Costs		
	Low Cost Scenario	**High Cost Scenario**
Total	**$11,084,400**	**$21,194,400**

10.4 Potential Offshore Wind Use

The site's proximity to offshore wind lease areas make it in an ideal location for an O&M facility. The site is less than 10 miles from OCS-0498 (Ørsted's Ocean Wind) and OCS-0499 (EDF and Shell's joint venture, Atlantic Shores Offshore Wind). Additionally, the site is within 50 nautical miles of Hudson South Call Area and OCS-0482 (Ørsted and PSEG's joint venture, Garden State Offshore Energy). There are no vertical restrictions between the site and open ocean. The site does not currently have a suitable quayside, so a new quayside (likely pontoon) will need to be designed and constructed. Additionally, dredging is required to connect the site quayside (to be constructed) to the deep-water channel.

10.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site's acreage makes it unsuitable for fabrication or manufacture of foundation and tubular components.

Nacelles, Blades, Rotors, Generators:

The site's acreage makes it unsuitable for fabrication or manufacture of nacelles, blades, rotors, and generator components.

O&M Service, Cables, Secondary Steel:

The site is ideal for O&M operations from a layout perspective and proximity to OSW lease areas. Due to the relatively small size, manufacture of secondary steel components (ladders, platforms, railings, racks) and cables would be challenging. Additionally, given the surrounding land use (residential) and recreation vessel traffic, OSW component manufacturing would be challenging at this site. A suitable pontoon-type quayside and dredging would be needed.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside; dredging of berth; and addition of storage buildings.

10.4.2 Reuse Scenario – O&M

The site's layout and proximity to OSW lease areas make it adaptable for O&M. The bulk of the redevelopment costs for O&M are associated with constructing the quayside, increasing upland load bearing capacity (10 acres; includes laydown areas), and completing the required dredging. Additional costs may include construction of warehouse/office building (20,000 square feet).

Table 23: Gardner's Basin - Summary of Reuse Costs – O&M	
	Estimated Costs
Construction of warehouse/office building (20,000 square feet)	$524,000
20% Contingency	$104,800
Total	**$628,800**

11. CAPE MAY-LEWES FERRY – CAPE MAY, NJ

11.1 Existing Conditions

The approximately 250-acre site is owned by the Delaware River and Bay Authority and located in Cape May, New Jersey (Figure 29). The southwest portion of the site is operated by the Cape May-Lewes Ferry Terminal, including quayside, support structures, and parking areas. An apparent industrial facility is located on the southeast corner of the site. The majority of the site consists of wetlands and undeveloped land. There are over 6,000 feet of water frontage.

Figure 29: Cape May-Lewes Ferry - Site Location Map

The Cape May Canal bounds the site to the south. Residential properties and a vineyard are located east of the site. To the north of the site is Route 9, beyond which is a mixed residential and commercial area. A beach and the Delaware Bay are located west of the site. The Garden State Parkway is located within two miles east of the site. No rail is available on-site. The Cape May Airport is located approximately 3.5 miles northwest of the site.

Water approaches the site via the Cape May Canal and Delaware Bay (See Figure 30). The Cape May Canal is approximately 100 feet wide and 12 feet deep. The Cape May Canal provides direct access to the Delaware Bay.

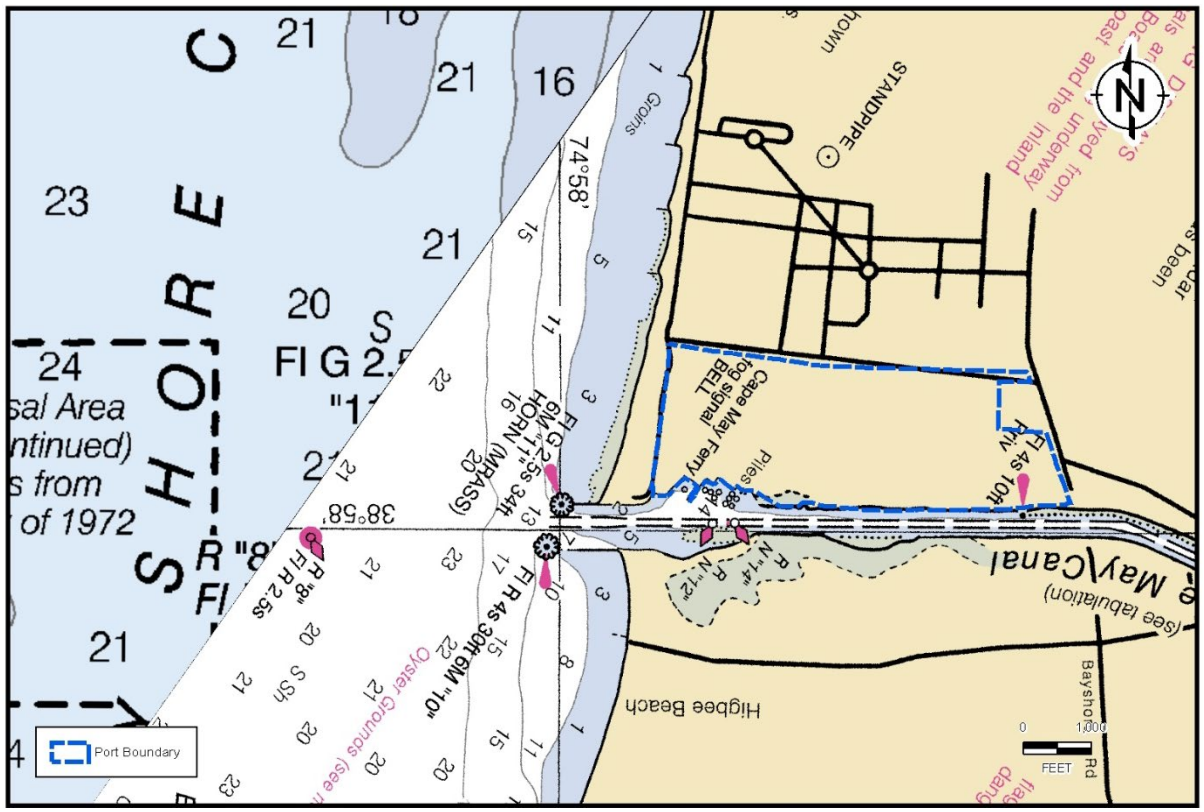


Figure 30: Cape May-Lewes Ferry - NOAA Depth Chart

11.2 Limitations

There are no vertical restrictions between the site and open water. The Cape May Canal is 12 feet deep, so dredging is necessary to accommodate OSW support vessels.

11.3 Environmental Conditions

The site is not listed on NJDEP's database of sites with known contamination sites. The majority of the site is comprised of wetlands and habitat-specific requirements that will need to be considered during the planning phase of development (Figure 31).

Figure 31: Cape May-Lewes Ferry - Wetlands and Habitat Map

Table 24: Cape May-Lewes Ferry - Summary of Existing Conditions		
Size	~250 acres; 160 acres potentially available for redevelopment	Majority of site is wetlands.
Buildings	Five buildings and parking areas associated with ferry terminal located in the southwestern portion of the property; One building located in the southeastern corner of the property; the majority of the site is undeveloped.	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Piers; five berthing areas associated with ferry terminal	
Quayside Length	Five berthing areas totaling ~1,300 feet	
Quayside Load Bearing Capacity*	<1,000 psf	
Depth at Potential Quayside locations	2-14 feet MLLW	

Table 24: Cape May-Lewes Ferry - Summary of Existing Conditions		
Channel Dimensions	Cape May Canal (Spicer Creek Canal to Inner End of Ferry Basin) - 100 feet wide by 12 feet deep MLLW Cape May Canal (Ferry Basin to Delaware Bay) - 100-150 feet wide by 12 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 35 nautical miles OCS-A 0519 – 28 nautical miles OCS-A 0482 (Ørsted/PSEG) - 22 nautical miles OCS-A 0498 (Ørsted) – 37 nautical miles OCS-A 0499 (EDF/Shell) - 56 nautical miles Hudson South Call Area – 78 nautical miles OSC-A 0512 (Equinor) – 129 nautical miles Hudson North Call Area – 135 nautical miles Fairways South Call Area – 152 nautical miles Fairways North Call Area – 172 nautical miles	
Rail Connection	None identified	
Restrictions	No vertical restrictions; dredging in Cape May Canal is likely necessary	
Environmental Conditions	No known contamination; majority of undeveloped land is wetlands	
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.		

This location is well-suited to support O&M operations but not for other OSW-related uses. To meet the needs of an O&M or fabrication facility, certain improvements are necessary. Table 25 below provides a cost summary to construct the quayside, improve upland load bearing capacity (4 acres), and complete the required dredging. Given that expansion beyond four acres is possible, a cost to improve the upland load bearing capacity (O&M use) per acre is also provided. Disposal costs and pontoon construction costs are variable, so low and high costs are provided.

Table 25: Cape May-Lewes Ferry - Summary of Redevelopment Costs		
	Low Cost Scenario	**High Cost Scenario**
New quayside (pontoon)	$3,000,000	$4,000,000
Dredge around quayside to 20 feet	$550,000	$1,925,000
Dredge to deep water channel to 20 feet	$5,163,704	$18,072,963
Transportation and disposal costs of upland soils, including excavation	$1,452,000	$3,872,000

Table 25: Cape May-Lewes Ferry - Summary of Redevelopment Costs		
	Low Cost Scenario	**High Cost Scenario**
Placement and compaction of 1 foot of CGA	$338,800	$338,800
Placement and compaction of 1 foot of DGA	$484,000	$484,000
Cost to improve upland per acre (excavation, CGA, and DGA)	$568,700/acre	$1,173,700/acre
20% Contingency	$2,197,701	$5,738,533
Total	**$13,186,204**	**$34,431,316**

11.4 Potential Offshore Wind Use - O&M

The site's proximity to offshore wind lease areas make it suitable for O&M. There are no overhead restrictions between the site and open ocean. The Cape May Canal is shallow at 12 feet and will need to be deepened to be suitable for OSW components. The Cape May Canal has a limiting horizontal (beam) clearance of 100 feet, making the site unsuitable for larger OSW components. The majority of the site is comprised of wetlands, so permitting for developing large areas will be challenging. The site's current quayside is used by the Cape May-Lewes Ferry. It is unclear if the existing quayside could be available for OSW use.

11.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

Due to the permitting challenges and Cape May Canal depth and horizontal restrictions, the site cannot be adapted to handle monopile, transition piece, tower section components and jacket foundations.

Nacelles, Blades, Rotors, Generators:

Due to the permitting challenges and Cape May Canal depth and horizontal restrictions, the site is not suitable for manufacturing or finishing of these components.

O&M Service, Cables, Secondary Steel:

The site's proximity to offshore wind lease areas make it a suitable location for an O&M facility. The site is within 50 nautical miles of OCS-0498 (Ørsted's Ocean Wind) and OCS-0482 (Ørsted and PSEG's joint venture, Garden State Offshore Energy). The site's current quayside is used by the Cape May-Lewes Ferry. It is unclear if the existing quayside could be available for OSW use. If the current quayside is available, it could be used for O&M. If a new quayside is required, a pontoon design would be suitable for O&M. The permitting challenges associated with wetlands will be more easily managed in the development of an O&M facility due to the small acreage required. Additionally, dredging is required to connect the site quayside (to be constructed) to the deep-water channel. The Cape May Canal itself will also need to be dredged to 25 feet. Due to the Cape May Canal restrictions and required permitting, this site is not suitable for manufacture of secondary steel components (ladders, platforms, railings, racks) and cables.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside; dredging of berth and Cape May Canal; and addition of storage buildings.

11.4.2 Reuse Scenario – O&M

The site's layout and proximity to OSW lease areas make it adaptable for O&M. The bulk of the redevelopment costs for O&M are associated with constructing the pontoon quayside, increasing upland load bearing capacity (four acres; includes laydown areas), and completing the required dredging. Additional costs may include construction of warehouse/office building (20,000 square feet).

Table 26: Cape May-Lewes Ferry - Summary of Reuse Costs –O&M

	Estimated Costs
Construction of warehouse/office building (20,000 square feet)	$524,000
20% Contingency	$104,800
Total	**$628,800**

12. NORTH NEW JERSEY AVE – ATLANTIC CITY, NJ

12.1 Existing Conditions

The approximately 3.2-acre site is owned by OCD, Inc and located at 614 North New Jersey Avenue in Atlantic City (Figure 32). The site is improved with an approximately 6,200 square foot warehouse. The majority of the site is undeveloped. The site does not have suitable quayside; however, the site has approximately 460 feet of water frontage. The quayside currently consists of a retaining wall and riprap.

Figure 32: North New Jersey Ave - Site Location Map

An inlet off of Absecon Inlet bounds the site to the west and north. Magellan Ave bounds the site to the south, beyond which are residences. To the east are Kirby Shore Mechanical Contractors and residences. To the southeast are a recreational beach and residences. To the west are residences and the Atlantic City Aquarium. No rail is available on-site. The Atlantic City International Airport is located approximately nine miles northwest of the site. The Atlantic City Expressway is located within two miles southwest of the site.

Water approaches to the site is via an inlet off of Absecon Inlet (See Figure 33). The inlet approaching the site is approximately 7 to 14 feet deep and 350 feet wide. The Absecon Inlet is 29 feet to 46 feet deep and 400 feet wide. Depth along the property is approximately 11-13 feet deep. The Absecon Inlet leads to open water.

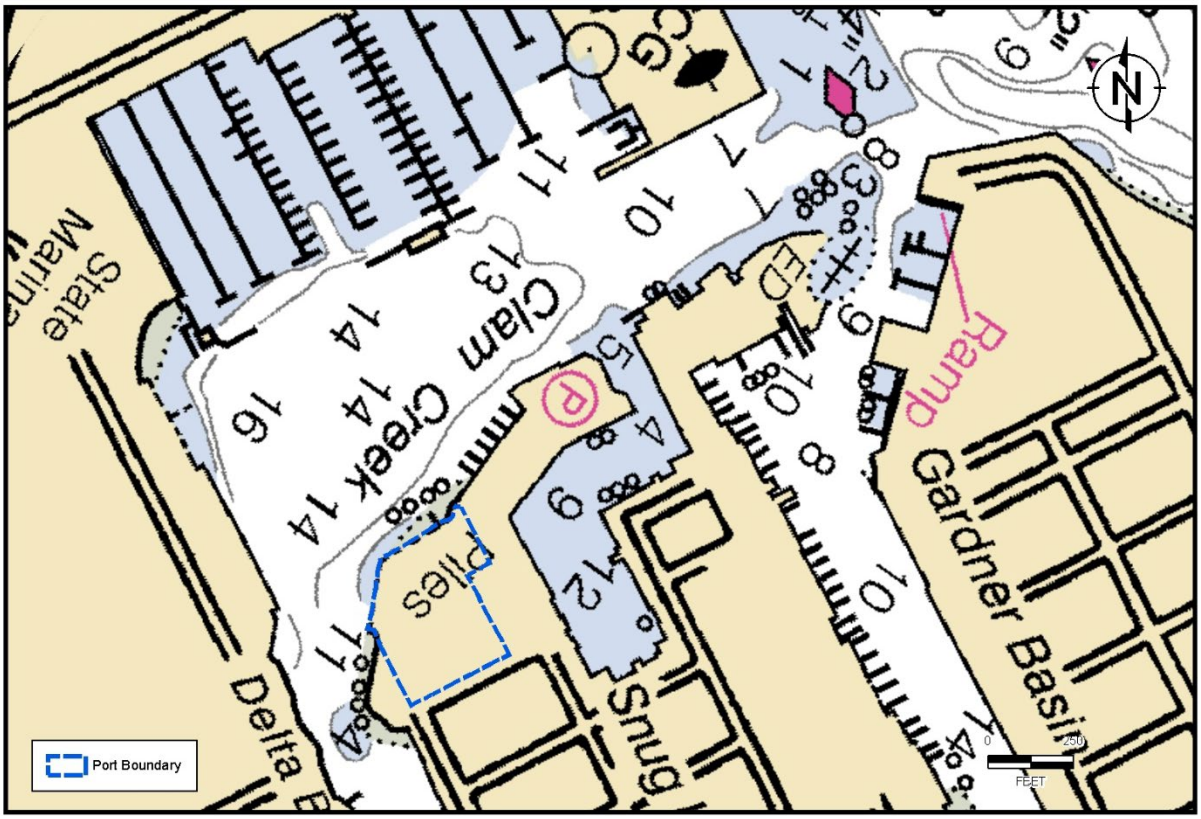


Figure 33: North New Jersey Ave - NOAA Depth Chart

12.2 Limitations

There are no overhead restrictions between the site and open water.

12.3 Environmental Conditions

Wetlands are present on a small section of the western property boundary (Figure 34). The site has habitat-specific requirements that will need to be considered if redeveloped. The site is listed on the NJDEP's database for sites with known contamination. The database listing is for Exxon Company USA.

Figure 34: North New Jersey Ave - Wetlands and Habitat Map

Table 27: North New Jersey Ave - Summary of Existing Conditions	
Size	~3.2 acres
Buildings	One ~6,200 sf warehouse
Upland Load Bearing Capacity*	<1,000 psf
Quayside Type	N/A; Retaining wall and riprap
Quayside Length	~460 feet of water frontage
Quayside Load Bearing Capacity*	N/A
Depth at Potential Quayside locations	11-13 feet deep MLLW
Channel Dimensions	400 feet wide by 29-46 feet deep MLLW Inlet: 7-14 feet deep MLLW

Table 27: North New Jersey Ave - Summary of Existing Conditions	
Distance to OSW Lease Areas	OCS-A 0490 – 69 nautical miles OCS-A 0519 – 65 nautical miles OCS-A 0482 (Ørsted/PSEG) - 42 nautical miles OCS-A 0498 (Ørsted) – 9 nautical miles OCS-A 0499 (EDF/Shell) - 10 nautical miles Hudson South Call Area – 37 nautical miles OSC-A 0512 (Equinor) – 73 nautical miles Hudson North Call Area – 79 nautical miles Fairways South Call Area – 94 nautical miles Fairways North Call Area – 117 nautical miles
Rail Connection	None identified
Restrictions	No vertical restrictions
Environmental Conditions	NJEMS Site ID 12799; Preferred ID 001043 (Exxon Company USA)
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.	

This location is well-suited to support O&M operations but not for other OSW-related uses. To meet the needs of an O&M facility, certain improvements are necessary. Table 28 below provides a cost summary to construct a pontoon-type quayside, increase upland load bearing capacity, and complete the required dredging. Disposal and quayside development costs are variable, so low and high costs are provided. Costs for existing building demolition are not included.

Table 28: North New Jersey Ave - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (pontoon)	$3,000,000	$4,000,000
Dredge around quayside to 20 feet	$740,741	$2,592,593
Dredge to deep water channel to 20 feet	$7,111,111	$24,888,889
Transportation and disposal costs of upland soils, including excavation	$907,500	$2,420,000
Placement and compaction of 1 foot of CGA	$211,750	$211,750
Placement and compaction of foot of DGA	$302,500	$302,500
Cost to improve upland per acre (excavation, CGA, and DGA)	$568,700/acre	$1,173,700/acre

Table 28: North New Jersey Ave - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
20% Contingency	$2,454,720	$6,883,146
Total	**$14,728,322**	**$41,298,878**

12.4 Potential Offshore Wind Use

The site's proximity to offshore wind lease areas makes it in an ideal location for an O&M facility. The site is less than 10 miles from OCS-0498 (Ørsted's Ocean Wind) and OCS-0499 (EDF and Shell's joint venture, Atlantic Shores Offshore Wind). Additionally, the site is within 50 nautical miles of Hudson South Call Area and OCS-0482 (Ørsted and PSEG's joint venture, Garden State Offshore Energy). There are no vertical restrictions between the site and open ocean. The site does not currently have a suitable quayside, so a new quayside (likely pontoon) will need to be designed and constructed. Additionally, dredging is required to connect the site quayside (to be constructed) to the deep-water channel.

12.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site's acreage makes it unsuitable for fabrication or manufacture of foundation and tubular components.

Nacelles, Blades, Rotors, Generators:

The site's acreage makes it unsuitable for fabrication or manufacture of nacelles, blades, rotors, and generator components.

O&M Service, Cables, Secondary Steel:

The site is ideal for O&M operations from a layout perspective and proximity to OSW lease areas. Due to the relatively small size, the site is not suitable for manufacture of secondary steel components (ladders, platforms, railings, racks) or cables. A new quayside (likely pontoon) will need to be designed and constructed. Additionally, dredging is required to connect the site quayside (to be constructed) to the deep-water channel.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M or fabrication of OSW components, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside; dredging of berth; and addition of storage buildings.

12.4.2 Reuse Scenario – O&M

The site's layout and proximity to OSW lease areas make it adaptable for O&M. The bulk of the redevelopment costs for O&M are associated with constructing the pontoon quayside, increasing upland load bearing capacity (2.5 acres; including laydown areas), and completing the required dredging. Additional costs may include construction of warehouse/office building (20,000 square feet). This scenario assumes that the current 6,200 square foot warehouse remains in place.

Table 29: North New Jersey Ave - Summary of Reuse Costs –O&M	
	Estimated Costs
Construction of warehouse/office building (20,000 square foot)	$524,000
20% Contingency	$104,800
Total	**$628,800**

13. NORTH & MCLESTER – ELIZABETH, NJ

13.1 Existing Conditions

The approximately 78-acre site is owned by Port Authority of NY & NJ and located at 801 McLester Street in Elizabeth, New Jersey (Figure 35). The majority of the property is undeveloped. Approximately 70% of the site is encumbered by wetlands, wetland buffers, and flood zone designations. An access road leads to the southwest corner of the property, which is currently under development. An approximately 357-foot-long finger pier in disrepair extends into the water. The site has approximately 1,700 feet of water frontage.

Figure 35: North & McLester - Site Location Map

Newark Bay bounds the site to the southeast. Global Container Terminal (GCT) is located adjacent north. Warehouses and distribution centers are located south and west of the site. A shopping center is located south of the site. No rail is available on-site; however, rail is accessible within 0.5 miles of the site. The Newark International Airport is located approximately one-mile northwest of the site. Route I-95 is located within one mile west of the site.

Water approaches to the site are via the Port Elizabeth South Reach East and West, both of which are 500 feet wide and at least 45 feet deep (See Figure 36). The deep-water channel continues as the South Reach, Bergen Point West and East Reaches, and Constable Hook Reach. Depth along the pier is approximately 8-10 feet deep.

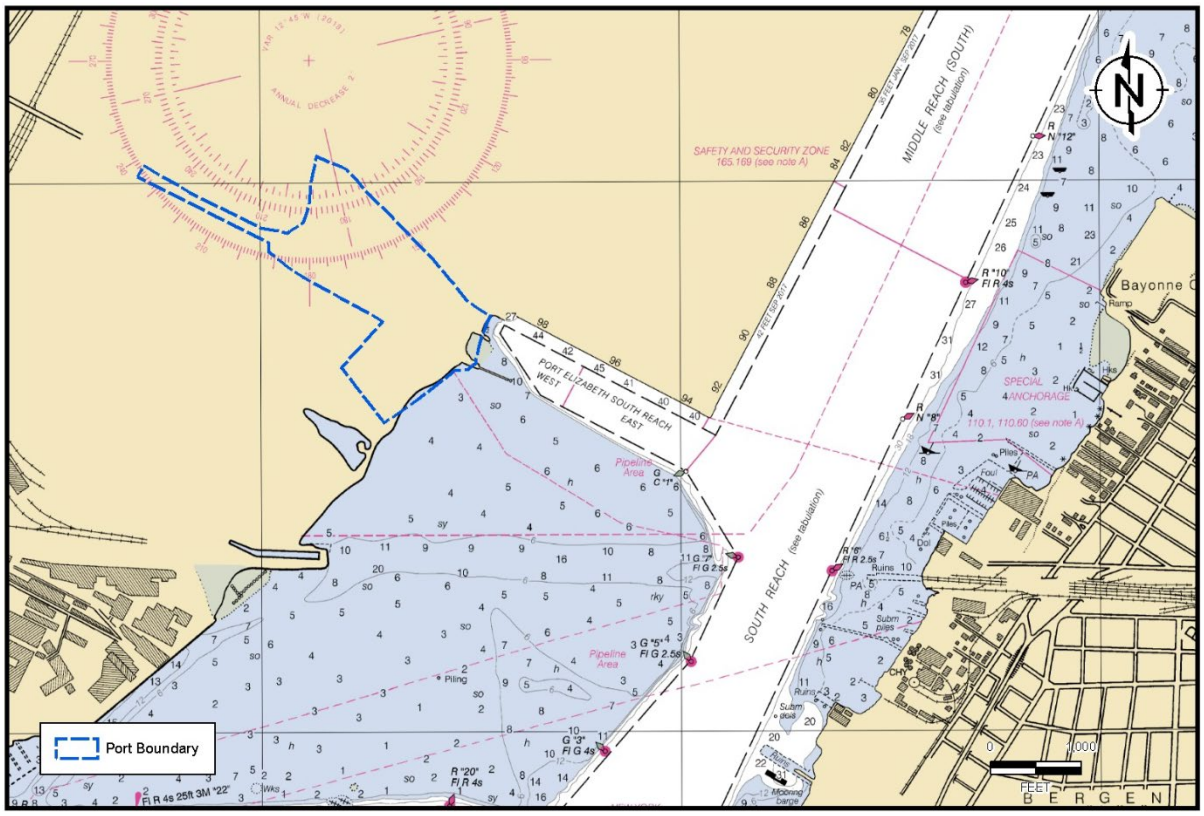


Figure 36: North & McLester - NOAA Depth Chart

13.2 Limitations

Vertical clearance is restricted by the Bayonne Fixed Bridge at 215 feet and the Verrazano-Narrows Bridge at 198 feet (middle 2,000 feet) or 183 feet (piers).

13.3 Environmental Conditions

The site is not listed on NJDEP's database for sites with known contamination. Approximately 70% of site is currently encumbered by freshwater wetlands, wetland buffers, and flood zone designations (Figure 37). There are special habitat requirements for the entire site that will need to be considered during the planning phase of development.

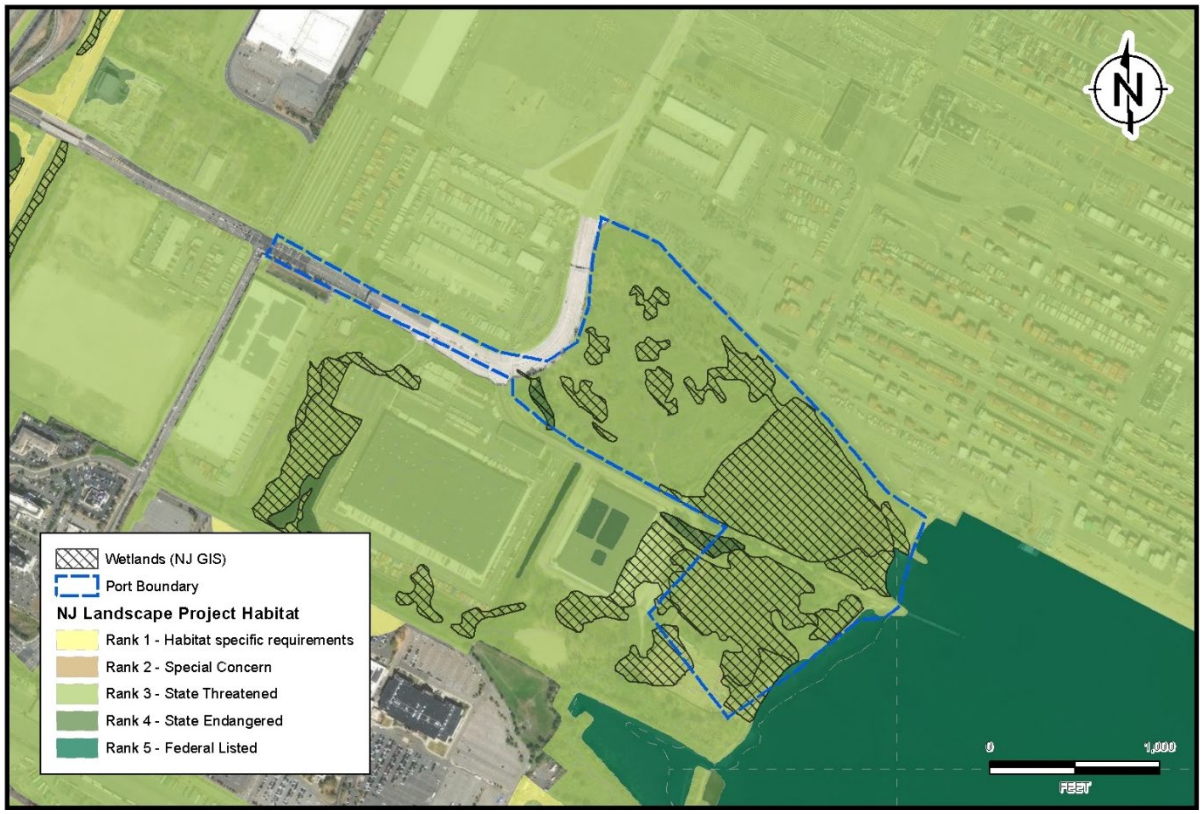


Figure 37: North & McLester - Wetlands and Habitat Map

Table 30: North & McLester - Summary of Existing Conditions	
Size	~78 acres
Buildings	One small building on access road
Upland Load Bearing Capacity*	<1,000 psf
Quayside Type	Pier in disrepair
Quayside Length	Pier is 357 feet long and 15 feet wide; ~1,700 feet of water frontage
Quayside Load Bearing Capacity*	<500 psf
Depth at Potential Quayside locations	8-10 feet deep MLLW
Channel Dimensions	500 feet wide by 45-50 feet deep MLLW

Table 30: North & McLester - Summary of Existing Conditions	
Distance to OSW Lease Areas	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 150 nautical miles OCS-A 0482 (Ørsted/PSEG) - 135 nautical miles OCS-A 0498 (Ørsted) – 100 nautical miles OCS-A 0499 (EDF/Shell) - 71 nautical miles Hudson South Call Area – 38 nautical miles OSC-A 0512 (Equinor) – 34 nautical miles Hudson North Call Area – 60 nautical miles Fairways South Call Area – 63 nautical miles Fairways North Call Area – 84 nautical miles
Rail Connection	Rail within 0.5 miles
Restrictions	Verrazano-Narrows Bridge: Vert Cl 198 feet (middle 2,000 feet); Vert Cl 183 ft (piers); Vert Cl 215 feet (center)
Environmental Conditions	Approximately 70% of site is wetlands.
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.	

As discussed below, due to the presence of on-site wetlands, this location is well-suited to support O&M operations but may be challenging to adapt for other OSW-related uses. To meet the needs of offshore wind O&M use, certain improvements are necessary. Table 31 below provides a cost summary to construct the quayside, improve the upland load bearing capacity, and complete the required dredging. Disposal costs are variable, so low and high costs are provided.

Table 31: North & McLester - Summary of Redevelopment Costs		
	Low Disposal Cost Scenario	**High Disposal Cost Scenario**
New quayside (pontoon)	$3,000,000	$4,000,000
Dredge around quayside to 20 feet	$888,889	$3,111,111
Transportation and disposal costs of upland soils, including excavation	$1,452,000	$3,872,000
Placement and compaction of 1 foot of CGA	$338,800	$338,800
Placement and compaction of 1 foot of DGA	$484,000	$484,000
Cost to improve upland per acre (excavation, CGA, and DGA)	$568,700/acre	$1,173,700
20% Contingency	$1,232,738	$2,361,182
Total	**$7,396,427**	**$14,167,093**

13.4 Potential Offshore Wind Use

The site's moderate acreage and potential for sole use make it adaptable for offshore wind manufacturing of a variety of components. However, since the majority of the site is wetlands, permitting will be challenging and potentially prohibitive. The Verrazano-Narrows Bridge with a vertical clearance of 198 feet will present challenges for marshaling without use of feeder barges. The site does not currently have a suitable quayside, so a new quayside will need to be designed and constructed. The upland load bearing capacity will need to be improved. Additionally, dredging at the quayside (to be constructed) will be necessary.

13.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site could be adapted to handle manufacturing/fabrication of monopiles, transition pieces, tower section components and jacket foundations, including lay down. Upland soil load bearing capacities would need to be improved and the quayside will need complete redevelopment to support these operations. Dredging is required at the quaysides as well as the approach channels. Due to the large area of wetlands, permitting is expected to be challenging and possibly prohibitive. Additionally, the site's air draft restriction decreases the probability that it will be fully developed for manufacturing.

Nacelles, Blades, Rotors, Generators:

These components could be manufactured or finished at this site. Upland soil load bearing capacity would need to be improved over portions of the site for the efficiency of this operation to meet serial production standards. Similar to the requirements for other components, the quaysides will require complete redevelopment and dredging at the quaysides and channels would be required. Permitting challenges are expected and the air draft restriction decreases probability of development.

O&M, Service, Cables, Secondary Steel:

The site is well suited for O&M operations from a layout perspective and is within 50 nautical miles of the Hudson South Call Area and OCS-A 0512 (Equinor's Empire Wind). Due to the permitting challenges associated with developing wetlands and the large acreage required for these components, manufacture of secondary steel components (ladders, platforms, railings, racks) and cables may present challenges. The permitting challenges associated with wetlands will be more easily managed in the development of an O&M facility due to the small acreage required.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M or fabrication of OSW components, certain site improvements would be required. These would include: improvement of upland load bearing capacity; development of quayside; dredging of berth; and addition of storage buildings.

O&M Service, Cables, Secondary Steel:

Upgrades and Improvements Opportunity for Full Utility:

13.4.2 Reuse Scenario – O&M

The site's layout and proximity to OSW lease areas make it adaptable for O&M. The bulk of the redevelopment costs for O&M are associated with constructing the pontoon quayside, increasing upland load bearing capacity (four acres; including laydown areas), and completing the required

dredging. Additional costs may include construction of warehouse/office building (20,000 square feet).

Table 32: North & McLester - Summary of Reuse Costs –O&M

	Estimated Costs
Construction of warehouse/office building (20,000 square feet)	$524,000
20% Contingency	$104,800
Total	**$628,800**

14. CONSTRUCTION & MARINE EQUIPMENT (CME) – ELIZABETH, NJ

14.1 Existing Conditions

The approximately 13-acre active marine terminal is owned by Construction & Marine Equipment (CME) and is located at 330 South Front Street in Elizabeth, New Jersey (Figure 38). The site has approximately 90,000 square feet of indoor storage. South Front Street divides the site. The 5.5 acres west of South Front Street are used for outdoor storage. The site has a 730-foot bulkhead with a berthing depth of 26 feet. The site is equipped with over 2,000 feet of rail tracks and spurs.

Figure 38: CME - Site Location Map

An active shipyard and staging area are located northeast of the site. The Arthur Kill bounds the site to the southeast. A fuel terminal is located adjacent southwest of the site. A canal bounds the site to the northwest, beyond which is an industrial area. Rail access is available on-site. The Newark International Airport is located approximately two miles north of the site. Route I-95 is located within one mile west of the site.

Water approaches to the site is via the Elizabethport Reach (See Figure 39). The Elizabethport Reach is 500 feet wide and 50 feet deep. The channel continues as the North of Shooters Island Reach, Bergen Point West and East Reaches, and Constable Hook Reach, all of which are at least 500 feet wide and 50 feet deep. Depth along the quayside is 26 feet deep.

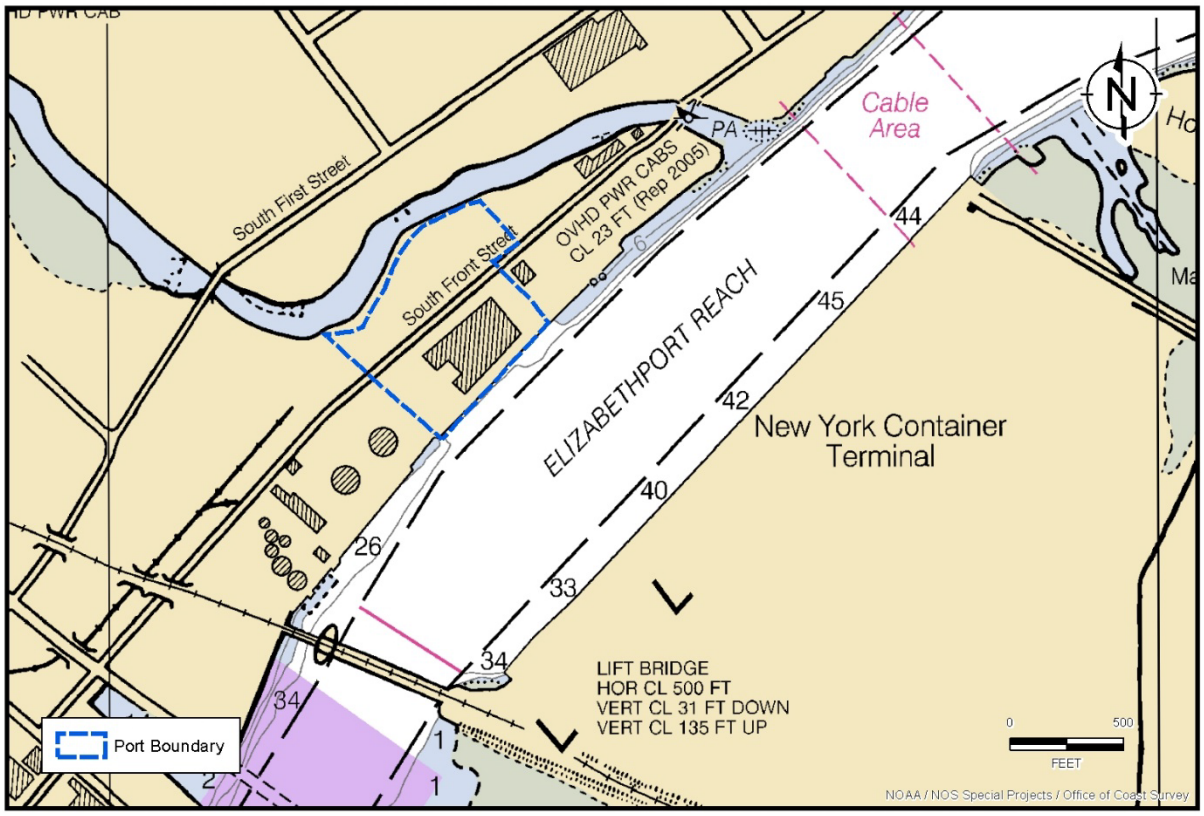


Figure 39: CME - NOAA Depth Chart

14.2 Limitations

Vertical clearance is restricted by the Bayonne Fixed Bridge at 215 feet and the Verrazano-Narrows Bridge at 198 feet (middle 2,000 feet) or 183 feet (piers).

14.3 Environmental Conditions

The site is listed on NJDEP's database for sites with known contamination (NJEMS 37414). The listing is for Chevron Bayway Lube Plant. Remedial activities appear to be ongoing. No wetlands are present on-site (Figure 40). The site has habitat-specific requirements that will need to be considered if redeveloped.

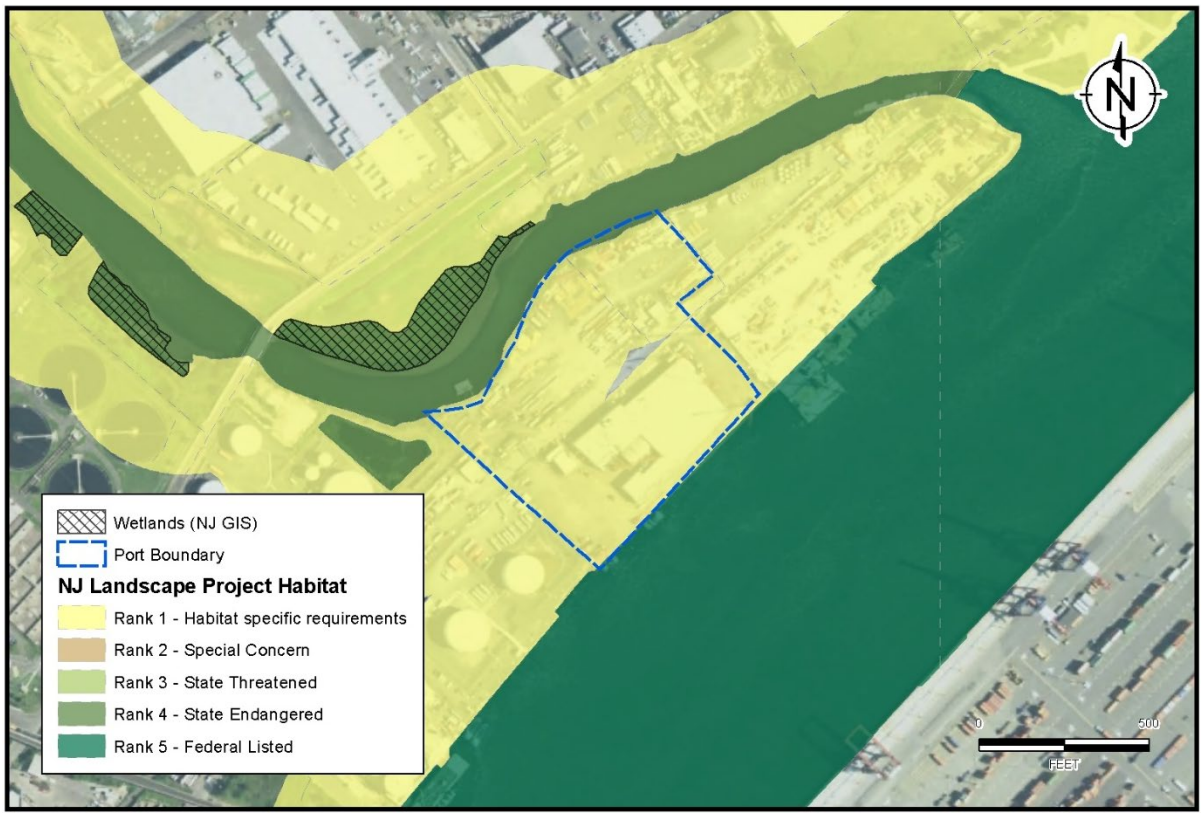


Figure 40: CME - Wetlands and Habitat Map

Table 33: CME - Summary of Existing Conditions	
Size	~13 acres
Buildings	~90,000 square feet of indoor storage
Upland Load Bearing Capacity*	<1,000 psf
Quayside Type	Bulkhead
Quayside Length	~730 feet
Quayside Load Bearing Capacity*	<1,500 psf
Depth at Potential Quayside locations	26 feet deep MLLW
Channel Dimensions	Elizabethport Reach, North of Shooters Island Reach, Bergen Point West Reach, Bergen Point East Reach, and Constable Hook Reach - 500 feet wide by 50 feet deep MLLW

Table 33: CME - Summary of Existing Conditions	
Distance to OSW Lease Areas	OCS-A 0490 – 162 nautical miles OCS-A 0519 – 156 nautical miles OCS-A 0482 (Ørsted/PSEG) - 136 nautical miles OCS-A 0498 (Ørsted) – 101 nautical miles OCS-A 0499 (EDF/Shell) - 71 nautical miles Hudson South Call Area – 41 nautical miles OSC-A 0512 (Equinor) – 36 nautical miles Hudson North Call Area – 60 nautical miles Fairways South Call Area – 62 nautical miles Fairways North Call Area – 85 nautical miles
Rail Connection	Over 2,000 feet of rail tracks and spurs
Restrictions	Verrazano-Narrows Bridge: Vert Cl 198 feet (middle 2,000 feet); Vert Cl 183 feet (piers); Vert Cl 215 feet (center)
Environmental Conditions	NJEMS Site ID 37414; Preferred ID G000003268 (Chevron Bayway Lube Plant)
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.	

The quayside and depth at berth currently meet the needs of an O&M facility. To provide supplemental storage, one 20,000 square foot building can be constructed.

14.4 Potential Offshore Wind Use

The site's relatively small size limits its suitability for OSW manufacturing purposes. Its proximity to offshore wind lease areas make it in a suitable location for an O&M facility. The site is less than 50 nautical miles from Hudson South Call Area and OCS-0512 (Equinor's Empire Wind). The site's quayside and berthing depth (26 feet) are suitable for O&M use.

14.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site's acreage and current use make it unsuitable for fabrication or manufacture of foundation and tubular components.

Nacelles, Blades, Rotors, Generators:

The site's acreage and current use make it unsuitable for fabrication or manufacture of nacelles, blades, rotors, and generator components.

O&M Service, Cables, Secondary Steel:

The site is suitable for O&M operations due to its proximity to OSW lease areas. If there is availability in the existing 90,000 square foot storage building, then the layout is ideal. An O&M facility could utilize the outdoor storage space for laydown of components. The existing quayside and depth at

berth are adequate for O&M use. Due to the relatively small size, manufacture of secondary steel components (ladders, platforms, railings, racks) or cables would be challenging.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M or fabrication of OSW components, certain site improvements may be required. These would include: addition of one storage building.

14.4.2 Reuse Scenario – O&M

The site's layout and proximity to OSW lease areas make it adaptable for O&M. The site's quayside and berthing depths are currently suitable for O&M. Additional reuse costs may include construction of warehouse/office building (20,000 square feet). This scenario assumes that the current 90,000 square feet building remains in place.

Table 34: CME - Summary of Reuse Costs –O&M

	Estimated Costs
Construction of warehouse/office building (20,000 square feet)	$524,000
20% Contingency	$104,800
Total	**$628,800**

15. NAVAL WEAPONS STATION (NWS) EARLE – MIDDLETOWN TOWNSHIP, NJ

15.1 Existing Conditions

The approximately 800-acre site is currently owned by the US Navy and located at State Highway 36 in Middletown Township (Figure 41). The site is improved with several buildings in the Waterfront Area including operations, a fitness center, and security building. The majority of the southern parcel is woodlands. The site has three finger piers that connect to the mainland by a three-mile-long pier. Active military operations include munitions loading and unloading.

Figure 41: Naval Weapons Station Earle - Site Location Map

The piers extend into Sandy Hook Bay. The site is surrounded by residential properties and wetlands. Rail is available on-site. The Newark International Airport is located approximately 16 miles northwest and the JFK International Airport is located approximately 18 miles northeast of the site. State Highway 36 divides the site running east west.

Water approaches to the site is via the Sandy Hook Channel Bayside and the Terminal Channel (See Figure 42). The Terminal Channel is approximately 45 feet deep and 400 feet wide. The Sandy Hook Channel Bayside is 35 feet deep and 800 feet wide. Depth at the finger piers ranges from 34 feet deep to 43 feet deep. Depth along the three-mile pier is approximately 1 foot deep to 16 feet deep. The Sandy Hook Channel Bayside leads to open water.

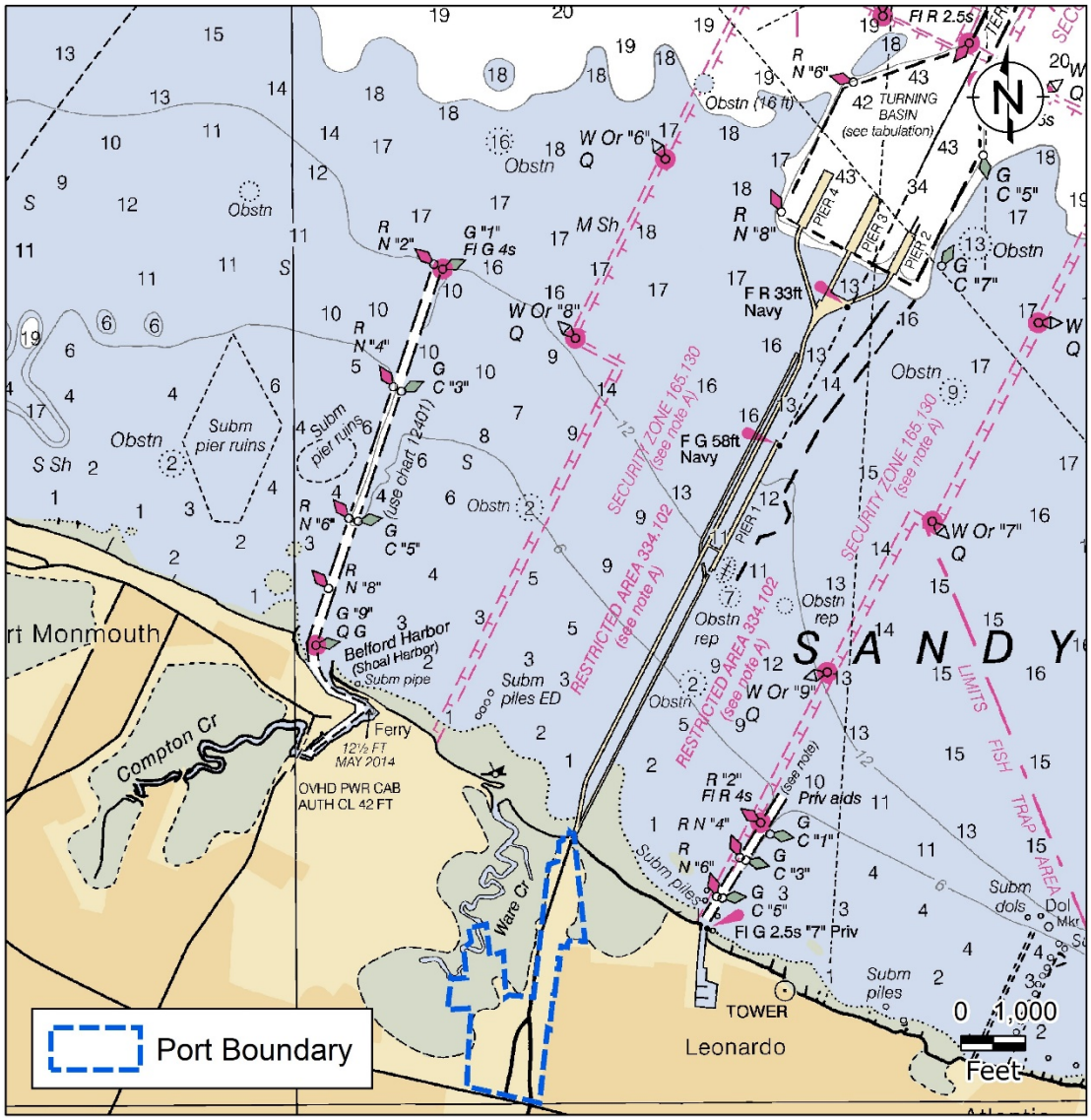


Figure 42: Naval Weapons Station Earle - NOAA Depth Chart

15.2 Limitations

There are no overhead restrictions between the site and open water. The port is likely non-operational several times a year due to military operations.

15.3 Environmental Conditions

Wetlands cover a significant portion of the site (Figure 43). The site has habitat-specific requirements that will need to be considered if redeveloped. Naval Weapons Station Earle is listed as a Superfund site. The majority of the contamination is located on the mainland portion of Naval Weapons Station Earle located in Colts Neck, NJ and is not included in this evaluation. The portion of the Naval Weapons Station Earle included in this evaluation is known as the Waterfront Area and includes Operating Unit 9 (Site IDs 6, 15, and 17). Site ID 6 is associated with industrial waste impacting groundwater. Site ID 15 is associated with bilge sludge impacting soil. Site ID 17 is associated with construction waste impacting soil and groundwater. A remedy is in place for each site.

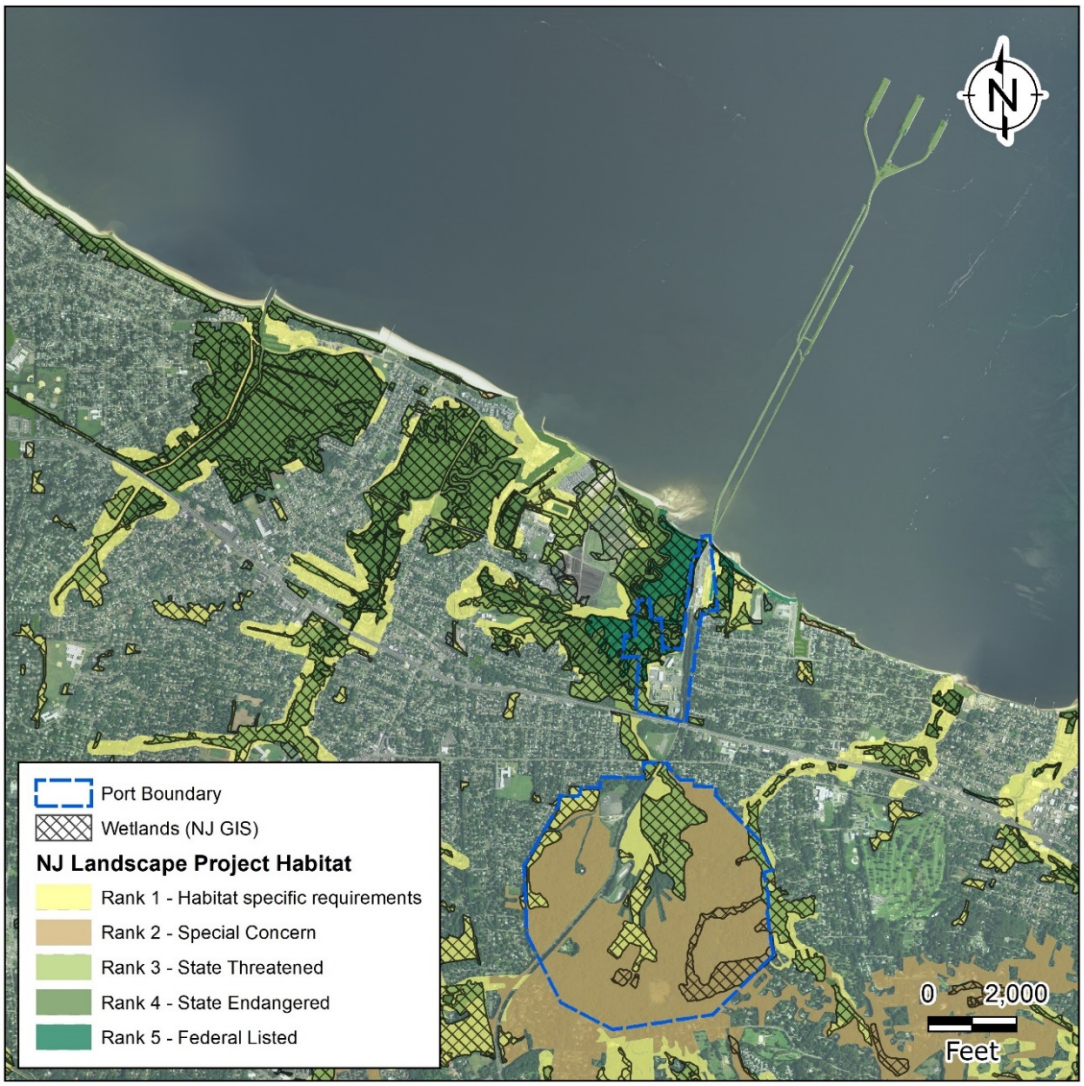


Figure 43: Naval Weapons Station Earle - Wetlands and Habitat Map

Table 35: Naval Weapons Station Earle - Summary of Existing Conditions		
Size	~800 acres, majority woodlands	
Buildings	Waterfront Area: Several buildings including operations, fitness center, and security	
Upland Load Bearing Capacity*	<1,000 psf	
Quayside Type	Three finger piers: Pier 2, Pier 3A, and Pier 4	This evaluation focuses on Pier 2
Quayside Length	Pier 2: 680 feet Pier 3A: 800 feet Pier 4: 800 feet	
Quayside Load Bearing Capacity*	<1,000 psf	Based on information provided in an US Army Engineer Research and Development Center (ERDC), Pier 2 is deteriorated.
Depth at Potential Quayside locations	Pier 2: 19-30 feet deep MLLW Pier 3A: 32-40 feet deep MLLW Pier 4: 35-45 feet deep MLLW	
Channel Dimensions	Sandy Hook Channel: 800 feet wide by 35 feet deep MLLW Terminal Channel: 400 feet wide by 45 feet deep MLLW	
Distance to OSW Lease Areas	OCS-A 0490 – 141 nautical miles OCS-A 0519 – 134 nautical miles OCS-A 0482 (Ørsted/PSEG) - 127 nautical miles OCS-A 0498 (Ørsted) – 84 nautical miles OCS-A 0499 (EDF/Shell) - 57 nautical miles Hudson South Call Area – 38 nautical miles OSC-A 0512 (Equinor) – 27 nautical miles Hudson North Call Area – 43 nautical miles Fairways South Call Area – 49 nautical miles Fairways North Call Area – 71 nautical miles	
Rail Connection	Rail on-site	
Restrictions	No vertical restrictions	
Environmental Conditions	Superfund Site – land use controls in place	

Table 35: Naval Weapons Station Earle - Summary of Existing Conditions
Notes: * No direct investigations conducted – estimates based on desktop analysis. All capacities are approximate.

This location is well-suited to support O&M operations, and potentially manufacturing of OSW components. The current munitions loading and unloading operations and associated "blackout" periods would make marshaling challenging. To meet the needs of an O&M facility, certain improvements are necessary. The pier is long and narrow making the transport of large equipment difficult. Table 36 below provides a cost summary to redevelop the quayside, specifically Pier 2. Costs for existing building demolition are not included.

Table 36: Naval Weapons Station Earle - Summary of Redevelopment Costs

	Estimated Cost Scenario
Demolition of existing pier	$1,000,000
Pier redevelopment (200 feet x 800 feet)	$13,450,000
20% Contingency	$2,690,000
Total	**$16,140,000**

15.4 Potential Offshore Wind Use

The site's proximity to offshore wind lease areas makes it in a good location for an O&M facility. The site is less than 50 nautical miles from OCS-0512 (Equinor) and Hudson South Call Area. However, current Navy operations would make frequent use of crew transfer vessels (CTVs) too challenging.[6] The site may be better suited for use of support operations vessels (SOVs), that do not require daily access to the quayside. There are no vertical restrictions between the site and open ocean. The site does not currently have a suitable quayside, so a new quayside will need to be designed and constructed.

15.4.1 Suitability Discussion by Use

Foundation and Tubular Components:

The site's acreage and lack of vertical restrictions make it appealing for foundations and tower component manufacturing; however, the three-mile pier will make transportation of components challenging. If a new quayside was constructed at the shore, a significant amount of dredging would be required.

[6] The US Navy has indicated that there would be six-to-eight-day blackout periods eight-months a year during which facility operations would preclude other active site operations,

Nacelles, Blades, Rotors, Generators:

The site's acreage and lack of vertical restrictions make it appealing for component manufacturing; however, the three-mile pier will make transportation of components challenging. If a new quayside was constructed at the shore, a significant amount of dredging would be required.

O&M Service, Cables, Secondary Steel:

The site is ideal for O&M operations due to its proximity to OSW lease areas; however, due to Navy operations, daily docking of CTVs would be challenging. The site may be more appropriate for O&M use with SOVs. The site's large acreage makes it suitable for manufacture of secondary steel components (ladders, platforms, railings, racks) or cables; however, the three-mile pier will make handling of components challenging. A new quayside will need to be designed and constructed.

Upgrades and Improvements Opportunity for Full Utility:

To meet the needs of O&M or fabrication of OSW components, certain site improvements would be required. These would include improvement of quayside (Pier 2) and addition of a storage building.

15.4.2 Reuse Scenario – O&M

The site's proximity to OSW lease areas makes it adaptable for O&M. The bulk of the redevelopment costs for O&M are associated with redeveloping Pier 2. Additional costs may include construction of warehouse/office building (10,000 square feet) on the pier.

Table 37: Naval Weapons Station Earle - Summary of Reuse Costs –O&M

	Estimated Costs
Construction of warehouse/office building (10,000 square foot)	$262,000
20% Contingency	$52,400
Total	**$314,400**

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APPENDIX D.1
PRELIMINARY NEW JERSEY PORT MATRIX

New Jersey

Preliminary Offshore Wind Ports Assessment

Site	Potential Usage	Region	Address	Owner/Operator	Size	Number of Existing Structures	Type of Quayside	Quayside Length	Channel Dimensions	Depth of Berth at Quayside	Distance to Nearest Airport	Distance to OSW Lease Areas (nautical miles)	Rail Connection	Restrictions	Equipment Present	Current Operations and Notable Features	Sources
Military Ocean Terminal at Bayonne (MOTBY)	Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations); O&M	New York Harbor - Upper Bay	630 Avenue C, Bayonne, NJ 100 Military Ocean Term St, Bayonne, NJ Parcel: 0901-404-1	Port Authority of NY & NJ	Parcel: ~427 acres ~150 contiguous acres; 20,650 ft of water frontage; 720,000 sf parking area	Warehouse Area: ~1,200,000 sf (10 - 200 ft x 600 ft)	Pier	Berth A: 225 ft Berths B and C: 348 ft total L-shaped Pier: 120 ft + 100 ft +110 ft + 90 ft Drydock: 1,092 ft by 148 ft	Ambrose Channel Reach D: 2,000 ft wide by 53 ft deep MLLW Anchorage Channel - 51 ft to 54 ft deep MLLW 500 ft of channel dredged to 45 ft MLLW	Berth - 48 ft	Newark International Airport - ~3.5 miles	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 135 nautical miles OCS-A 0482 (Orsted/PSEG) - 132 nautical miles OCS-A 0498 (Orsted) – 97 nautical miles OCS-A 0499 (EDF/Shell) - 68 nautical miles Hudson South Draft WEA – 36 nautical miles OSC-A 0512 (Equinor) – 30 nautical miles Hudson North Draft WEA – 56 nautical miles Fairways South Draft WEA – 59 nautical miles Fairways North Draft WEA – 80 nautical miles	No rail on-site; < 0.5 miles	Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center)	100+ Ton Lifts and 0-25 Ton Lifts currently on-site.	Most of the commercial and residential development appears to be in the western portion of the site, along Route 440. Lincoln Equities Group acquired 152.9-acres of the site (northern portion) for redevelopment into 1.6 million square feet of industrial warehouse space. Current tenants of the eastern (water side) of the property include GMD Shipyard and Cape Liberty Cruise Port. There is still a significant portion of the site (up to 150 contiguous acres) that is potentially available for redevelopment. Portions of the 150 acres are occupied by GMD Shipyard and Cape Liberty Cruise Port, so it is unclear if any berthing areas are currently available.	https://njbmagazine.com/njb-news-now/lincoln-equities-group-announces-acquisition-of-90-acre-waterfront-site-in-bayonne/ http://www.roi-nj.com/2018/03/08/real_estate/bayonne-closes-another-sale-military-ocean-terminal/ https://jerseydigs.com/demolition-video-shows-implosion-military-ocean-terminal-bayonne/ http://www.charts.noaa.gov/PDFs/12334.pdf http://bayonnedrydock.com/ https://www.epa.gov/hwcorrectiveactionsites/hazardous-waste-cleanup-military-ocean-terminal-bayonne-new-jersey
Paulsboro Marine Terminal	Marshalling; Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations)	Delaware River	50A Universal Rd, Paulsboro, NJ Parcels: 0814-1-1; 0814-1-2; 0814-1-4; 0814-1-5; 0814-1-19; 0814-1-20; 0814-1-21; 0814-1-22; 0814-123	South Jersey Port Corporation Operated by Holt Logistics, LLC	200 acres total; 160 acres laydown	Solar panels on southeastern parcel. Apparent waste water settling basins on the western portion of the property. One structure on the southern boundary. Former oil storage and fueling structures have been demolished.	Quay/marginal wharf proposed (1,500 ft of 1,500 psf uniform live load with reinforced landing pads for mobile harbor crane outriggers)	850 ft (fully utilized); additional 1,500 ft being constructed	Billingsport Range - 800 ft wide by 40 ft deep MLLW Tinicum Range - 800 ft wide by 40 ft deep MLLW Eddystone Range - 800 ft wide by 40 ft deep MLLW Chester Range - 800 ft wide by 40 ft deep MLLW Marcus Hook Range - 800 ft wide by 40 ft deep MLLW Bellevue Range - 800 ft wide by 40 ft deep MLLW Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	40 ft MLLW	Philadelphia International Airport - directly across the Delaware River	OCS-A 0490 – 103 nautical miles OCS-A 0519 – 98 nautical miles OCS-A 0482 (Orsted/PSEG) - 90 nautical miles OCS-A 0498 (Orsted) – 111 nautical miles OCS-A 0499 (EDF/Shell) - 130 nautical miles Hudson South Draft WEA – 150 nautical miles OSC-A 0512 (Equinor) – 201 nautical miles Hudson North Draft WEA – 202 nautical miles Fairways South Draft WEA – 218 nautical miles Fairways North Draft WEA – 240 nautical miles	Rail connections CSX, NS, and CP Rail Systems with Integrated On-Dock Rail Infrastructure	Commodore Barry Bridge: Vert Cl 190 ft (middle 822 ft); Vert Cl 181 ft, Hor Cl 1,600 ft Overhead Cables Vert Cl 210 ft Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	Not identified	The Port of Paulsboro is currently being upgraded to potentially accommodate additional offshore wind manufacturing. An additional 1,500 ft quayside is under construction and will have a bearing capacity of 1,500 PSF and roll-off capabilities. With the addition of roll-off capabilities, Paulsboro now has the potential to serve as a manufacturing facility for certain foundations, tower sections, blades, nacelles and cables.	http://www.charts.noaa.gov/PDFs/12311.pdf http://www.charts.noaa.gov/PDFs/12313.pdf http://www.charts.noaa.gov/PDFs/12312.pdf http://southjerseyport.com/facilities/paulsboro-marine-terminal/
Werner Generating Station	Marshalling; Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations); O&M	Raritan Bay	106 Pupek Rd, South Amboy, NJ Parcels: 1220-161.01-26; 1220-161.02-25.01; 1220-161.02-90; 1220-161.02-25; 1220-161.02-25.04; 1220-161.02-25.05	South Amboy Redevelopment Agency	~97 acres total; 6,130 ft of water fr	Several buildings remain from power generating operations. Plant is being demolished.	Pier in disrepair	Pier length: ~920 ft Pier face: ~350 ft	South Amboy Reach* - 300 ft wide by 25 ft deep MLLW Great Beds Reach* - 300 ft wide by 25 ft deep MLLW Ward Point Secondary Channel* - 400 ft wide by 30 ft deep MLLW Ward Point Bend East - 600-800 ft wide by 35 ft deep MLLW Red Bank Reach - 600 ft wide by 35 ft deep MLLW Seguine Point Reach - 600-1,000 ft wide by 35 ft deep MLLW Raritan Bay West Reach - 600 ft wide by 35 ft deep MLLW Raritan Bay East Reach - 600-800 ft wide by 35 ft deep MLLW *recent surveys show that these reaches may be shallower than project depth (15-20 ft)	No existing berth; water depth is 15 feet	Newark International Airport: 13.5 miles Old Bridge Airport: 11.4 miles	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 148 nautical miles OCS-A 0482 (Orsted/PSEG) - 132 nautical miles OCS-A 0498 (Orsted) – 91 nautical miles OCS-A 0499 (EDF/Shell) - 64 nautical miles Hudson South Draft WEA – 42 nautical miles OSC-A 0512 (Equinor) – 35 nautical miles Hudson North Draft WEA – 57 nautical miles Fairways South Draft WEA – 59 nautical miles Fairways North Draft WEA – 81 nautical miles	Adjacent; Rail runs along the northwestern site boundary	No overhead restrictions	N/A	Decommissioned Reliant Power Plant. According to the South Amboy Redevelopment Plan, the site planned to sell to Manhattan Beach Club to redevelop for residential use. There are also potential plans to develop a ferry terminal at this site.	http://old.southamboynj.alphadogtest.com/_Content/pdf/Proposed-Beach-Club-District-Redevelopment-Plan.pdf http://www.charts.noaa.gov/PDFs/12332.pdf
Gardner's Basin, Atlantic City	O&M	Atlantic City	Carson Ave, Atlantic City, NJ Parcels: 0102-103-8; 0102-102-1 0102-102-3; 0102-102-4; 0102-102-5; 0102-102-6	1301 Bacharach Blvd; The Landings at Caspian Pointe, LLC; City of Atlantic City	~10 acres total; ~1,400 ft of water frontage	N/A	N/A; riprap	N/A; ~1,400 ft of water frontage	400 ft wide by 29-46 ft deep MLLW	9-15 ft deep MLLW	Atlantic City International Airport: ~9 mi	OCS-A 0490 – 69 nautical miles OCS-A 0519 – 65 nautical miles OCS-A 0482 (Orsted/PSEG) - 42 nautical miles OCS-A 0498 (Orsted) – 9 nautical miles OCS-A 0499 (EDF/Shell) – 10 nautical miles Hudson South Draft WEA – 37 nautical miles OSC-A 0512 (Equinor) – 76 nautical miles Hudson North Draft WEA – 79 nautical miles Fairways South Draft WEA – 94 nautical miles Fairways North Draft WEA – 117 nautical miles	None identified	No overhead restrictions; needs dredging	N/A	Vacant; The city recently (Nov 2018) terminated its relationship with Scarborough Properties, the developer contracted to revitalize the Gardner's Basin area.	http://www.charts.noaa.gov/PDFs/12318.pdf https://www.pressofatlanticcity.com/news/press/atlantic_city/atlantic-city-terminates-agreement-with-gardner-s-basin-redevelopment/article_8080472b-e535-5134-a314-fa62506bf3e0.html
Former DuPont Site (Repauno)	Manufacturing (cables, foundations, towers, blades, and nacelles)	Delaware River	200 North Repauno Ave, Greenwich Township, NJ Parcel: 0807-8-4 (developable); other parcels not developable	Delaware River Partners, LLC	~1,600 acres (356 acres for redevelopment)	Several buildings associated with former Dupont operations. Site is currently being redeveloped.	N/A; under construction	N/A; under construction	Tinicum Range - 800 ft wide by 40 ft deep MLLW Eddystone Range - 800 ft wide by 40 ft deep MLLW Chester Range - 800 ft wide by 40 ft deep MLLW Marcus Hook Range - 800 ft wide by 40 ft deep MLLW Bellevue Range - 800 ft wide by 40 ft deep MLLW Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	40 ft MLLW, dredging completed	Philadelphia International Airport - across the Delaware River	OCS-A 0490 – 100 nautical miles OCS-A 0519 – 95 nautical miles OCS-A 0482 (Orsted/PSEG) - 66 nautical miles OCS-A 0498 (Orsted) – 107 nautical miles OCS-A 0499 (EDF/Shell) - 126 nautical miles Hudson South Draft WEA – 146 nautical miles OSC-A 0512 (Equinor) – 197 nautical miles Hudson North Draft WEA – 199 nautical miles Fairways South Draft WEA – 215 nautical miles Fairways North Draft WEA – 237 nautical miles	Rail on-site	Commodore Barry Bridge: Vert Cl 190 ft (middle 822 ft); Vert Cl 181 ft, Hor Cl 1,600 ft Overhead Cables Vert Cl 210 ft Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	N/A	This former DuPont site is currently being redeveloped for a roll-on/roll-off (RO-RO) facility. It is uncertain if the property will be available for OSW use.	http://www.charts.noaa.gov/PDFs/12311.pdf http://www.charts.noaa.gov/PDFs/12313.pdf http://www.charts.noaa.gov/PDFs/12312.pdf https://www.greenwichtwp.com/2202/Proposed-Port-Development https://www.epa.gov/hwcorrectiveactionsites/hazardous-waste-cleanup-chemours-repauno-gibbstown-new-jersey
Weeks Marine	O&M	New York Harbor - Upper Bay	Foot of Colony Rd, Jersey City, NJ Parcels: 0906-30501-1	Port Authority of NY & NJ	Parcel: ~68 acres total ~43 acres (southeastern portion); 4,460 ft of water frontage	~240,000 sf building associated with car port (northwestern portion of site); several smaller structures adjacent to the pier	Pier	Pier: 1,000 ft (two berths)	Greenville Channel: ~500 ft wide by 17-23 ft deep MLLW Ambrose Channel Reach D: 2,000 ft wide by 53 ft deep MLLW Anchorage Channel - 51 ft to 54 ft deep MLLW	10-22 ft deep MLLW	Newark International Airport: ~4.5 mi	OCS-A 0482 (Orsted/PSEG) - 135 nmi OCS-A 0498 (Orsted) – 92 nmi OCS-A 0499 (EDF/Shell) - 65 nmi Hudson South Draft WEA – 42 nmi OSC-A 0512 (Equinor) – 32 nmi	Rail on-site	Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center)	N/A	Staging yard operated by Weeks Marine; NYSERDA notes that it is unlikely that Weeks Marine will re-purpose facility on a long-term basis, but may be available on a project -specific basis.	http://www.charts.noaa.gov/PDFs/12334.pdf
Veckridge Chemical	Manufacturing (cables and nacelles); O&M	New York Harbor - Upper Newark Bay	60 Central Ave, Kearney, NJ Parcels: 0907-288-1; 0907-288-2; 0907-288-3	Town of Kearney	~22.8 acres total; 1,890 ft of water	Buildings associated with former chemical manufacturing have been demolished.	N/A; riprap	N/A; ~1,950 ft of water frontage	Kearney Point Reach - 300 ft wide by 30 ft deep MLLW North Reach - 500-1,030 ft wide by 35 ft deep MLLW Middle Reach North - 565-800 ft wide by 40 ft deep MLLW Middle Reach South - 810-1,655 ft wide by 50 ft deep MLLW South Reach - 1,000-2,360 ft wide by 50 ft deep MLLW Bergen Point West Reach - 800-1,710 ft wide by 50 ft deep MLLW Bergen Point East Reach - 800-895 ft wide by 50 ft deep MLLW Constable Hook Reach - 800-2,000 ft wide by 50 ft deep MLLW	Appears to be very shallow (0.5 ft to 5 ft)	Newark International Airport: ~3.5 mi	OCS-A 0482 (Orsted/PSEG) - 144 nmi OCS-A 0498 (Orsted) – 100 nmi OCS-A 0499 (EDF/Shell) - 73 nmi Hudson South Draft WEA – 50 nmi OSC-A 0512 (Equinor) – 39 nmi	Rail on adjacent property	Lift Bridge: Vert Cl 135 ft (up); Vert Cl 35 ft (down); Hor Cl 300 ft I-78 Newark Bay Bridge: Vert Cl 135 ft; Hor Cl 550 ft Bayonne Fixed Bridge: Vert Cl 215 ft Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center)	N/A	Underutilized property adjacent to wastewater treatment plant.	http://www.charts.noaa.gov/PDFs/12333.pdf http://www.charts.noaa.gov/PDFs/12337.pdf
Chemours Company Site Linden	Manufacturing (blades, nacelles, and cables); O&M	Arthur Kill	South Wood Ave, Linden, NJ Parcels: 2009-586-8; 2009-586-9	Chemours Company FC LLC	~98 acres total; 3,176 ft of water fr	Buildings associated with former chemical manufacturing have been demolished.	Three dolphins; riprap	N/A; 3,176 ft of water frontage	Route North: Pralls Island Reach - 500 ft wide by 35 ft deep MLLW Gulfport Reach - 500-600 ft wide by 35 ft deep MLLW Elizabethport Reach - 500-705 ft wide by 50 ft deep MLLW North of Shookers Island Reach - 515-1,105 ft wide by 50 ft deep MLLW Bergen Point West Reach - 800-1,710 ft wide by 50 ft deep MLLW Bergen Point East Reach - 800-895 ft wide by 50 ft deep MLLW Constable Hook Reach - 800-2,000 ft wide by 50 ft deep MLLW Route South: Pralls Island Reach - 500 ft wide by 35 ft deep MLLW Tremley Point Reach - 500 ft wide by 35 ft deep MLLW Fresh Kills Reach - 500 ft wide by 35 ft deep MLLW Port Reading Reach - 500-850 ft wide by 35 ft deep MLLW Port Socony Reach - 600-800 ft wide by 35 ft deep MLLW Outerbridge Reach - 600-840 ft wide by 35 ft deep MLLW Ward Point Bend West - 600-800 ft wide by 35 ft deep MLLW Ward Point Bend East - 600-800 ft wide by 35 ft deep MLLW Red Bank Reach - 600 ft wide by 35 ft deep MLLW Seguine Point Reach - 600-1,000 ft wide by 35 ft deep MLLW Raritan Bay West Reach - 600 ft wide by 35 ft deep MLLW	1-19 feet MLLW	Newark International Airport: ~4.5 mi	OCS-A 0490 – 159 nautical miles OCS-A 0519 – 153 nautical miles OCS-A 0482 (Orsted/PSEG) - 138 nautical miles OCS-A 0498 (Orsted) – 98 nautical miles OCS-A 0499 (EDF/Shell) - 70 nautical miles Hudson South Draft WEA – 50 nautical miles OSC-A 0512 (Equinor) – 42 nautical miles Hudson North Draft WEA – 62 nautical miles Fairways South Draft WEA – 63 nautical miles Fairways North Draft WEA – 85 nautical miles	Rail at western site boundary	Route North: Overhead Power Cables: Vert Cl 165 ft Goethals Bridge: Under construction; Vert Cl 138 ft Arthur Kill Railroad Bridge: Vert Cl 135 ft (up); Vert Cl 31 ft (down); Hor Cl 500 ft Bayonne Fixed Bridge: Vert Cl 215 ft Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center) Route South: Outerbridge Crossing (Cantilever Bridge) Vert Cl 143 ft; Hor Cl 675 ft	N/A	Grasselli Chemical Co manufactured industrial acids from 1885 to 1928. Dufont manufactured pesticides from 1928 to 1990. According to NJ planning documents, the site is fully remediated and ready for redevelopment. Rail on adjacent parcel	http://www.charts.noaa.gov/PDFs/12333.pdf http://www.charts.noaa.gov/PDFs/12331.pdf https://www.nj.com/news/local/index.ssf/2010/09/plan_underway_to_clean_up_lind.html https://www.nj.gov/state/planning/docs/trm-21-linden-dupont.pdf http://www.caruscorporation.com/resources/content/4/5/1/documents/grasselli-chem-company-site-summary.pdf https://www.nj.gov/dep/passaicdocs/docs/3rd-PartyComplaintNexusPackages/3rd-PartyComplaintBNexus/DuPontGrasselliSite.pdf
Balzano Marine Terminal (Formerly Beckett Street Terminal) - Port of Camden	Manufacturing (blades, nacelles, and cables)	Delaware River	101 Joseph A. Balzano Blvd, Camden, NJ Parcels: 0408-141-1; 0408-215-59; 0408-214-1; 0408-213-29 (GP Gypsum); 0408-213-13 (GP Gypsum)	South Jersey Port Corporation	122 acres (SJPC) total; ~86 acres (L	Warehouse area: 21 buildings totaling 1,168,441 sf	Pier	Berths 1-4: 2,655 ft	Reach M to Benjamin Franklin Bridge - 400 ft wide by 40 ft deep MLLW Reach M - 400-500 ft wide by 40 ft deep MLLW East Horseshoe Range - 400-500 ft wide by 40 ft deep MLLW Horseshoe Bend - 500-800 ft wide by 40 ft deep MLLW Eagle Point Range - 800 ft wide by 40 ft deep MLLW Mifflin Range - 800 ft wide by 40 ft deep MLLW Billingsport Range - 800 ft wide by 40 ft deep MLLW Tinicum Range - 800 ft wide by 40 ft deep MLLW Eddystone Range - 800 ft wide by 40 ft deep MLLW Chester Range - 800 ft wide by 40 ft deep MLLW Marcus Hook Range - 800 ft wide by 40 ft deep MLLW Bellevue Range - 800 ft wide by 40 ft deep MLLW Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	Berths 1 & 2: 30 ft Berth 3: 35 ft Berth 4: 40 ft	Philadelphia International Airport: ~6 miles	OCS-A 0482 (Orsted/PSEG) - 102 nmi OCS-A 0498 (Orsted) – 123 nmi OCS-A 0499 (EDF/Shell) - 142 nmi Hudson South Draft WEA – 175 nmi Hudson North Draft WEA – 202 nmi Fairways South Draft WEA – 218 nmi Fairways North Draft WEA – 240 nmi	Rail connections CP Rail System, CSX, and Norfolk Southern	Walt Whitman Bridge: Vert Cl 150 ft (center); Vert Cl 139 ft; Hor Cl 1,930 ft Commodore Barry Bridge: Vert Cl 190 ft (middle 822 ft); Vert Cl 181 ft, Hor Cl 1,600 ft Overhead Cables Vert Cl 210 ft Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	One multi-purpose Kocks bulk/container crane (95 ton); one general purpose Paseco cargo/container crane (35 ton)	The Delaware River port operates as a busy break bulk and cargo terminal. It currently handles steel, project cargo, wood products, cocoa beans, and other bulk cargos.	http://www.charts.noaa.gov/PDFs/12312.pdf http://southjerseyport.com/facilities/balzano-marine-terminal/
Broadway Terminal - Port of Camden	Manufacturing (cables and nacelles)	Delaware River	2500 Broadway, Camden, NJ Parcels: 0408-455-1; 0408-457-10; 0408-457-16; 0408-515-1	South Jersey Port Corporation Pier 5 is leased by Camden Waterfront Development LLC and operated by Southport Distribution	~92 acres total; 30 acres laydown Pier 5: 28 acres	Pier 1 and 1A Storage capacity: 1,128,000 sf Pier 5: 4 warehouses: 60,000 sf; 75,000 sf; 53,400sf; and 25,000 sf	Pier	Pier 1: 900 ft Pier 1A: 850 ft Pier 5: 1,135 ft	Reach M to Benjamin Franklin Bridge - 400 ft wide by 40 ft deep MLLW Reach M - 400-500 ft wide by 40 ft deep MLLW East Horseshoe Range - 400-500 ft wide by 40 ft deep MLLW Horseshoe Bend - 500-800 ft wide by 40 ft deep MLLW Eagle Point Range - 800 ft wide by 40 ft deep MLLW Mifflin Range - 800 ft wide by 40 ft deep MLLW Billingsport Range - 800 ft wide by 40 ft deep MLLW Tinicum Range - 800 ft wide by 40 ft deep MLLW Eddystone Range - 800 ft wide by 40 ft deep MLLW Chester Range - 800 ft wide by 40 ft deep MLLW Marcus Hook Range - 800 ft wide by 40 ft deep MLLW Bellevue Range - 800 ft wide by 40 ft deep MLLW Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	Pier 1: 35 ft Pier 1A: 40 ft Pier 5: 35 ft	Philadelphia International Airport: ~5.5 miles	OCS-A 0482 (Orsted/PSEG) - 94 nmi OCS-A 0498 (Orsted) – 115 nmi OCS-A 0499 (EDF/Shell) - 134 nmi Hudson South Draft WEA – 165 nmi OSC-A 0512 (Equinor) – 211 nmi	Rail connections CP Rail System, CSX, Norfolk Southern	Walt Whitman Bridge: Vert Cl 150 ft (center); Vert Cl 139 ft; Hor Cl 1,930 ft Commodore Barry Bridge: Vert Cl 190 ft (middle 822 ft); Vert Cl 181 ft, Hor Cl 1,600 ft Overhead Cables Vert Cl 210 ft Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	Crane: Multi-purpose Kocks container style electric (95 T)	The site is a busy break bulk and cargo terminal. Additionally, the majority of the site is occupied by an industrial park and large warehouses.	http://www.charts.noaa.gov/PDFs/12312.pdf http://southjerseyport.com/facilities/broadway-terminal/ http://southjerseyport.com/facilities/broadway-terminal-pier-5/
Chemours Chamber Works	Marshalling; Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations)	Delaware River	67 Canal Road, Pennsville Township, NJ Deepwater, NJ Parcel: 1709-301-1	The Chemours Company FC LLC	~412 acres total; up to 230 acres available, of which 101 acres are along the water.	Several structures associated with former manufacturing. Majority of site is paved or improved with buildings.	N/A; retaining wall and riprap	N/A; ~5,300 ft of water frontage	Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	1-3 ft deep MLLW	New Castle Airport: ~4.5 mi	OCS-A 0490 – 85 nautical miles OCS-A 0519 – 80 nautical miles OCS-A 0482 (Orsted/PSEG) - 74 nautical miles OCS-A 0498 (Orsted) – 95 nautical miles OCS-A 0499 (EDF/Shell) - 112 nautical miles Hudson South Draft WEA – 145 nautical miles OSC-A 0512 (Equinor) – 187 nautical miles Hudson North Draft WEA – 184 nautical miles Fairways South Draft WEA – 200 nautical miles Fairways North Draft WEA – 222 nautical miles	Rail on-site	Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	N/A	Former chemical terminal slated for demolition.	http://www.charts.noaa.gov/PDFs/12311.pdf
Chemours Carney's Point Site	Marshalling; Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations)	Delaware River	600 Shell Road, Carneys Point, NJ (adjacent north to Chamber Works) Parcel: 1702-185-1	The Chemours Company FC LLC	~1,133.55 acres total; 175 acres us	Waste water treatment plant is located on southern portion of parcel. Majority of the site is undeveloped.	N/A; retaining wall and riprap	N/A; ~11,000 ft of water frontage	Cherry Island Range - 800 ft wide by 40 ft deep MLLW Deepwater Point Range - 800 ft wide by 40 ft deep MLLW Bulkhead Bar Range - 1,600 ft wide by 40 ft deep MLLW New Castle Range - 800 ft wide by 40 ft deep MLLW Reedy Island Range - 800 ft wide by 40 ft deep MLLW Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	1-3 ft deep MLLW	New Castle Airport: ~4.5 mi		Rail on-site	Delaware Memorial Bridge: Vert Cl 188 ft (middle 800 ft); Vert Cl 175 ft (middle 1,500 ft); Vert Cl 166 ft (Main Towers); Hor Cl 2,000 ft Overhead Cables Vert Cl 223 ft	N/A	Undeveloped; Majority of site is wetlands.	http://www.charts.noaa.gov/PDFs/12311.pdf
Cape May-Lewes Ferry, Cape May, NJ	O&M	Delaware Bay	1200 Lincoln Blvd; 536 Ferry Rd; 576 Ferry Rd; 3920 Bayshore Rd, Lower Township, NJ Parcels: 0505-740-1.05; 0505-740-1.04; 0505-740-1.03, 0505-740-1.02; 0505-740-2	Delaware River and Bay Authority	~250 acres; 160 acres potentially available for redevelopment	5 buildings associated with ferry terminal located in the southwestern portion of the property; 1 building located in the southeastern corner of the property; the majority of the site is undeveloped.	Pier; five berthing areas	Five berthing areas totaling ~1,300 feet	Cape May Canal (Spicer Creek Canal to Inner End of Ferry Basin) - 100 ft wide by 12 ft deep MLLW Cape May Canal (Ferry Basin to Delaware Bay) - 100-150 ft wide by 12 ft deep MLLW	2-14 ft MLLW	Cape May Airport: ~3.5 mi	OCS-A 0490 – 35 nautical miles OCS-A 0519 – 28 nautical miles OCS-A 0482 (Orsted/PSEG) - 22 nautical miles OCS-A 0498 (Orsted) – 37 nautical miles OCS-A 0499 (EDF/Shell) - 56 nautical miles Hudson South Draft WEA – 78 nautical miles OSC-A 0512 (Equinor) – 129 nautical miles Hudson North Draft WEA – 135 nautical miles Fairways South Draft WEA – 152 nautical miles Fairways North Draft WEA – 172 nautical miles	None identified	No overhead restrictions; needs dredging	N/A	Ferry terminal	http://www.charts.noaa.gov/PDFs/12316.pdf
Atlantic City Marina District	O&M	Atlantic City	Atlantic-Brigantine Blvd & Huran Ave, Atlantic City, NJ	AC Holding Corp (MGM Resorts International)	14.7 acres; undeveloped; more than	N/A; undeveloped	N/A; beach	N/A; 935 ft of water frontage	400 ft wide by 29-46 ft deep MLLW	2-3 ft deep MLLW	Atlantic City International Airport: ~8.5 mi	OCS-A 0482 (Orsted/PSEG) - 22 nmi OCS-A 0498 (Orsted) – 37 nmi□ OCS-A 0499 (EDF/Shell) - 56 nmi Hudson South Draft WEA – 78 nmi□ OSC-A 0512 (Equinor) – 129 nmi□	None identified	Significant permitting and land disturbance. No overhead restrictions; needs dredging	N/A	Undeveloped	http://www.charts.noaa.gov/PDFs/12318.pdf

New Jersey

Preliminary Offshore Wind Ports Assessment

Site	Potential Usage	Region	Address	Owner/Operator	Size	Number of Existing Structures	Type of Quayside	Quayside Length	Channel Dimensions	Depth of Berth at Quayside	Distance to Nearest Airport	Distance to OSW Lease Areas (nautical miles)	Rail Connection	Restrictions	Equipment Present	Current Operations and Notable Features	Sources
Atlantic City - North New Jersey Ave	O&M	Atlantic City	614 North New Jersey Avenue, Atlantic City, NJ Parcels: 0102-564-1; 0102-563-1; 0102-564-2	OCD, Inc.	~3.2 acres upland	~6,200 sf warehouse	N/A; retaining wall and riprap	~460 ft of water frontage	400 ft wide by 29-46 ft deep MLLW Inlet: 7-14 ft deep MLLW	11-13 ft deep MLLW	Atlantic City International Airport: ~8.5 mi	OCS-A 0490 – 69 nautical miles OCS-A 0519 – 65 nautical miles OCS-A 0482 (Orsted/PSEG) - 42 nautical miles OCS-A 0498 (Orsted) – 9 nautical miles OCS-A 0499 (EDF/Shell) - 10 nautical miles Hudson South Draft WEA – 37 nautical miles OSC-A 0512 (Equinor) – 73 nautical miles Hudson North Draft WEA – 79 nautical miles Fairways South Draft WEA – 94 nautical miles Fairways North Draft WEA – 117 nautical miles	None identified	No overhead restrictions; needs dredging	N/A	Unused; for sale	http://www.charts.noaa.gov/PDFs/12318.pdf
North & McLester Property, Elizabeth, NJ	O&M	Newark Bay	801 McLester Street, Elizabeth, NJ Parcels: 2004-0-0; 2004-1-1314; 2004-1-1315; 2004-1-1205.A	Port Authority of NY & NJ	78 acres (upland)	N/A; undeveloped	Pier in disrepair	Pier: ~357 ft long by 15 ft wide ~1,700 ft of water frontage	Port Elizabeth South Reach East - 500 ft wide by 50 ft deep MLLW Port Elizabeth South Reach West - 100-500 ft wide by 45 ft deep MLLW South Reach - 1,000-2,360 ft wide by 50 ft deep MLLW Bergen Point West Reach - 800-1,710 ft wide by 50 ft deep MLLW Bergen Point East Reach - 800-895 ft wide by 50 ft deep MLLW Constable Hook Reach - 800-2,000 ft wide by 50 ft deep MLLW	8-10 ft deep MLLW	Newark International Airport: ~1 mi	OCS-A 0490 – 155 nautical miles OCS-A 0519 – 150 nautical miles OCS-A 0482 (Orsted/PSEG) - 135 nautical miles OCS-A 0498 (Orsted) – 100 nautical miles OCS-A 0499 (EDF/Shell) - 71 nautical miles Hudson South Draft WEA – 38 nautical miles OSC-A 0512 (Equinor) – 34 nautical miles Hudson North Draft WEA – 60 nautical miles Fairways South Draft WEA – 63 nautical miles Fairways North Draft WEA – 84 nautical miles	No rail on-site; < 0.5 miles from rail lines	Bayonne Fixed Bridge: Vert Cl 215 ft Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center) Approximately 70% of site is currently encumbered by freshwater wetlands, wetland buffers, and flood zone designations.	N/A	Undeveloped	http://www.charts.noaa.gov/PDFs/12333.pdf http://www.charts.noaa.gov/PDFs/12337.pdf
Construction & Marine Equipment (CME), Elizabeth, NJ	O&M	Newark Bay	330 South Front St, Elizabeth, NJ Parcels: 2004-4-1462; 2004-4-1463; 2004-4-1441; 2004-4-1442; 200-4-1438.A	CME; Dengel Enterprises, LLC	~13 acres	90,000 sf of indoor storage	Bulkhead	730 ft	Elizabethport Reach - 500-705 ft wide by 50 ft deep MLLW North of Shooters Island Reach - 515-1,105 ft wide by 50 ft deep MLLW Bergen Point West Reach - 800-1,710 ft wide by 50 ft deep MLLW Bergen Point East Reach - 800-895 ft wide by 50 ft deep MLLW Constable Hook Reach - 800-2,000 ft wide by 50 ft deep MLLW	26 ft deep MLLW	Newark International Airport: ~2 mi	OCS-A 0490 – 162 nautical miles OCS-A 0519 – 156 nautical miles OCS-A 0482 (Orsted/PSEG) - 136 nautical miles OCS-A 0498 (Orsted) – 101 nautical miles OCS-A 0499 (EDF/Shell) - 71 nautical miles Hudson South Draft WEA – 41 nautical miles OSC-A 0512 (Equinor) – 36 nautical miles Hudson North Draft WEA – 60 nautical miles Fairways South Draft WEA – 62 nautical miles Fairways North Draft WEA – 85 nautical miles	Over 2,000 ft of rail tracks and spurs	Bayonne Fixed Bridge: Vert Cl 215 ft Verrazano-Narrows Bridge: Vert Cl 198 ft (middle 2,000 ft); Vert Cl 183 ft (piers); Vert Cl 215 ft (center)	Crane capacities of 50 to 440 tons.	The approximately 13-acre site is an active marine terminal. The owners have expressed an interest in the site supporting the OSW industry. The site has approximately 90,000 square feet of indoor storage. The rear 5.5 acres of the property could be used for outdoor storage of various OSW components.	http://www.charts.noaa.gov/PDFs/12333.pdf http://www.charts.noaa.gov/PDFs/12337.pdf
Naval Weapons Station Earle	Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations); O&M	Raritan Bay	Highway 36, Middletown Township, NJ Parcel: 1332-306-45; 1332-658-76	US Navy	~800 acres (upland); majority of site	Waterfront Area: Several buildings including operations, fitness center, and security	Three finger piers (3 miles from shore)	Pier 2: ~680 ft Pier 3A: ~800 ft Pier 4: ~800 ft	Sandy Hook Channel: 800 feet wide by 35 feet deep MLLW Terminal Channel: 400 feet wide by 45 feet deep MLLW	Pier 2: 19-30 ft MLLW Pier 3A: 32-40 ft MLLW Pier 4: 35-45 ft MLLW	Newark International Airport: ~16.6 mi	OCS-A 0490 – 141 nautical miles OCS-A 0519 – 134 nautical miles OCS-A 0482 (Orsted/PSEG) - 127 nautical miles OCS-A 0498 (Orsted) – 84 nautical miles OCS-A 0499 (EDF/Shell) - 57 nautical miles Hudson South Draft WEA – 38 nautical miles OSC-A 0512 (Equinor) – 27 nautical miles Hudson North Draft WEA – 43 nautical miles Fairways South Draft WEA – 49 nautical miles Fairways North Draft WEA – 71 nautical miles	Rail connections on-site	No overhead restrictions	N/A	Active military operations including munitions loading and unloading. The ERDC report indicates that according to recent engineering inspections, Pier 1 and Pier 2 are seriously deteriorated and limited or no vehicular loadings are recommended. Both Piers 1 and 2 show deteriorating pilings and bracing. The ERDC report recommends that a comprehensive engineering assessment be conducted. The report notes that "Recovering the original train load-capacity is likely not economically feasible, but regaining the ability to support transport trucks, crane/forklift loadings, and ship mooring may well be feasible."	NAVFAC - Bathymetric Condition Survey (April 2018) US Army Engineer Research and Development Center (ERDC), Assessment of Trestle 2 and Pier 2, Naval Weapons Station Earle, Colts Neck, New Jersey. December 2018
Dorchester Shipyard	O&M	Delaware Bay	13 Front St, Dorchester, NJ Parcels: 0609-274-1; 0609-274-4; 0609-252-21	Nicole-Kristie LLC; Dorchester Shipyard is operated by Aries Marine	14 acres; 1,200 ft riverfront	Several buildings associated with shipyard	Approximately four piers; two piers appear to be wooden; two piers appear to be concrete New drydock (100 ft by 71 ft) with 500 ton bearing capacity	Berthing areas total approximately 330 ft ~1,200 ft of water frontage	Maurice River - 400 ft wide by 7-17 ft deep MLLW Maurice River Cove - 3-8 ft deep MLLW	9-16 ft deep MLLW	Cape May Airport: ~18 mi Atlantic City International Airport: ~25 mi	OCS-A 0482 (Orsted/PSEG) - 46 nmi OCS-A 0498 (Orsted) – 67 nmi OCS-A 0499 (EDF/Shell) - 86 nmi Hudson South Draft WEA – 129 nmi OSC-A 0512 (Equinor) – 165 nmi	None identified	No overhead restrictions	Not identified	Historic shipyard; owner has expressed interest in supporting offshore wind. https://www.dorchestershipyard.com/	http://www.charts.noaa.gov/PDFs/12304.pdf
The New Jersey Wind Port (Lower Alloways Creek)	Marshalling; Manufacturing (cables, foundations, tower sections, blades, nacelles, and substations)	Delaware River	Alloways Creek Neck Road, Lower Alloway Creek Township, NJ Parcels: 1705-26-2	PSEG	~320 acres; majority of site is wetlands	N/A; undeveloped	N/A; undeveloped	N/A; 8,000 ft of water frontage	Baker Range - 800 ft wide by 40 ft deep MLLW Liston Range - 800-1,000 ft wide by 40 ft deep MLLW	10-12 ft MLLW	New Castle Airport: ~12.5 mi	OCS-A 0490 – 71 nautical miles OCS-A 0519 – 66 nautical miles OCS-A 0482 (Orsted/PSEG) - 57 nautical miles OCS-A 0498 (Orsted) – 76 nautical miles OCS-A 0499 (EDF/Shell) - 95 nautical miles Hudson South Draft WEA – 121 nautical miles OSC-A 0512 (Equinor) – 169 nautical miles Hudson North Draft WEA – 170 nautical miles Fairways South Draft WEA – 186 nautical miles Fairways North Draft WEA – 208 nautical miles	None identified	No overhead restrictions; the site is approximately 4,600 ft from the deep water channel	N/A	The property is located adjacent north of the Hope Creek Generating Station. NJ EDA has recently announced that the New Jersey Wind Port (Lower Alloways Creek site) will be developed by New Jersey and others as a manufacturing and marshaling site. Construction is planned in two phases, beginning in 2021. Phase 1 will develop a 30-acre site to accommodate marshaling activities and a 25-acre component manufacturing site. Phase 2 adds another 150+ acres to accommodate expanded marshaling activities and extensive manufacturing facilities for turbine components like blades and nacelles.	http://www.charts.noaa.gov/PDFs/12311.pdf https://www.nap.usace.army.mil/Portals/39/docs/Civil/Public%20Notice/PSEG%20EA%207-1-2014%20Draft.pdf?ver=2014-07-15-130609-563 https://www.nj.com/salem/index.ssf/2014/08/new_salem_county_nuclear_reactor_would_have_small_impact_on_environment_be_boost_to_economy_nrc_stud.html https://www.nap.usace.army.mil/Portals/39/docs/Civil/Reports/NJ-DMU/MainReport_Volume1.pdf?ver=2017-10-17-102517-133