December 2, 2024

Maryland Department of the Environment
Water and Science Administration
1800 Washington Boulevard
Baltimore, MD 21230-1708

RE: Request for a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC)

Tradepoint TiL Terminals (TTT) is submitting a Water Quality Certification Request for the Sparrows Point Container Terminal Project (SPCT). SPCT has previously submitted a Joint Permit Application (JPA) for this project, Maryland Department of the Environment (MDE) tracking number 23-WL-0862 and US Army Corps of Engineers (USACE) tracking number NAB-2023-61200.

The Pre-Filing Meeting Request was submitted on 10/25/24. Attached herein is the required information noted in the MDE "*Key Elements for a Request for a CWA Section 401 Water Quality Certification as required by 40 C.F.R. § 121.5 and COMAR 26.08.02.10*" (Key Elements) document. Below are the required statements per 1(p) and 1(q) of the Key Elements document.

If you have any questions or require additional information, please contact the undersigned at 410-382-6667 or Ms. Peggy Derrick with EA Engineering at 410-329-5126. Thank you for your attention to this matter.

Required Statements per the Key Elements document:

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.

The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

Sincerely,
Tradepoint TiL Terminal

Tom Caso
Project Manager

Cc: Maria Teresi, USACE (via email maria.teresi@usace.army.mil)
Joe Davia, USACE (via email joe.davia@usace.army.mil)
Nicole Nasteff, USACE (via email Nicole.nasteff@usace.army.mil)

In accordance with the Maryland Department of the Environment document titled "Key Elements for a Request for a CWA Section 401 Water Quality Certification as required by 40 C.F.R. § 121.5 and COMAR 26.08.02.10, the following information is provided:

(a) Identify the project proponent(s) and a point of contact. Name, address, phone number, email address of the applicant and as applicable the authorized agent.

Applicant & Authorized Agent
Tom Caso
Tradepoint TiL Terminal, LLC
6995 Bethlehem Boulevard, Suite 100
Baltimore, Maryland 21219
Phone: 410-382-6667
Email: tcaso@tradepointatlantic.com

(b) Identify the applicable federal license or permit. For example, include the assigned U.S. Army Corps of Engineers and Maryland Department of Environment tracking numbers along with a copy of the Joint Permit Application (JPA). The JPA shall be included with the Request for a Water Quality Certification, as well as any supplemental documents that address all of the following not contained in the JPA:

Applicable State/Federal Permits
U.S. Army Corps of Engineers Permit Tracking Number: NAB-2023-61200
State Wetlands License: Application Tracking Number: 23-WL-0862
Sitewide National Pollution Discharge Elimination System Permit:
State Discharge Permit No. 05-DP-0064; NPDES Permit No. 0001201

(c) The project site address, including coordinates in degrees, minutes, seconds, 12 digit HUC no., Watershed name.

Project Site Address
6995 Bethlehem Blvd
Sparrows Point, Maryland 21219

Coordinates
Latitude: 39° 12’ 40.39” N
Longitude: 76° 29’ 25.25” W

12-digit HUC No. and Watershed Name
020600031204
Patapsco River-Frontal Chesapeake Bay

(d) The name(s) and address(es) of adjacent property owners.

Please reference attached **Exhibit A**.

(e) Signed Public Notice Billing Form.

The signed Public Notice Billing Approval Form is attached as **Exhibit B**.

(f) Identify the proposed project. Description of the facility or activity.

The Sparrows Point Container Terminal (SPCT) is a proposed +/- 330-acre terminal located in Baltimore County, MD within the Tradepoint Atlantic property on the southwest peninsula known as Coke Point. The proposed terminal would consist of a +/- 3,000-foot marginal wharf with ship-to-shore (STS) cranes, a container yard, gate complex, intermodal/rail yard, and various support structures. To provide vessel access to the wharf, the project would include deepening and widening of the existing Sparrows Point Channel and turning basin, which would require dredging and placement of approximately 4.2 million cubic yards (MCY) of dredged material. The proposed project would include the construction of an offshore dredged material containment facility (DMCF) in Coal Pier Channel adjacent to Coke Point, a proposed +/- 28-acre facility including 19.6 acres in tidal wetland area, and an upland DMCF on TPA property at High Head Industrial Basin a proposed +/- 44 acre facility, as well as use of exiting permitted upland DMCFs managed by MPA (Cox Creek and Masonville DMCFs), and an ocean placement site (Norfolk Ocean Disposal Site [NODS]).

Permanent fill for a total of 19.8 acres of state tidal waters would be mitigated in accordance with Federal and State requirements. Onsite mitigation concepts under consideration include: conversion of upland to tidal open water and wetlands at several locations along the east shoreline (including Jones Creek, Old Road Bay, and the Patapsco River); multi-habitat creation and restoration along the eastern shoreline of Bear Creek (parallel to Bethlehem Blvd); and *Phragmites* removal in adjacent areas. Collectively, these concepts would require placement of structures and rock to protect the shoreline, limited fill to improve bottom substrate, landward excavation and dredging to create open water habitat and tidal wetlands, demolition/removal of aged in-water pier structures, excavation to remove *Phragmites* vegetation and rhizomes, and placement of in-water habitat/reef structures (such as woody debris, natural stone/cobble, and/or shell bags). Offsite mitigation concepts under consideration include removal of derelict crab traps and fishing gear in state tidal waters in the middle Chesapeake watershed and enhancement of the existing oyster restoration at Fort Carroll in the Patapsco River.

(g) A plan showing the proposed activities to scale including:
o The location(s) and boundaries of the activities;
o The location(s), dimension(s), and type(s) of any existing and/or proposed structures; and
o The location(s), name(s), identification number(s), and extent of all potentially affected surface water bodies, including wetlands.

Please reference the following exhibits attached herein:

- **Exhibit C** for plans showing a general overview of the project, and **Exhibit D** for engineering plans of specific project elements including:
- **Exhibit D** for wharf plans including wharf location and pile details
- **Exhibit E** for dredging plans
- **Exhibit F** for storm water plans
- **Exhibit G** for Coal Pier Channel DMCF plan
- **Exhibit H** for High Head DMCF plan

(h) Identify the location and nature of any potential discharge that may result from the proposed project and the location of receiving waters; A description of any discharge which may result from the conduct of any activity including:

The locations of discharges from the proposed SPCT project and for the proposed mitigation concepts are provided in **Exhibit I**.

Discharges from the Proposed SPCT Project:

- Stormwater – discharge from two new outfalls on the south shoreline, and additional stormwater through an existing outfall at the northwest side of Coke Point (**Exhibit F**).

- Dredging and Excavation – potential discharge from the proposed new work dredging for channel improvements and the dredging of overburden material within the exterior dike footprint at the entrance to the Coal Pier Channel. Removal of nearshore slag in the dredging footprint for the wharf construction may include use of landside mechanical long-reach excavators (**Exhibit E**).

- Installation of Wharf Pilings – discharge associated with the installation of pilings to support the wharf. The wharf will be a 3000 LF marginal open wharf supported by approximately 1,400 piles which will be driven both on the landside and on the waterside above the new revetment. All piles will be steel pipe pile, either 24", 30" or 36" in diameter. The in-water steel pipe piles collectively result in the permanent fill of 0.2 acres of state tidal waters (**Exhibit D**).

- Installation of Fill Material Under Wharf – discharge associated with mechanical placement and reuse of approximately 7,500 CY of slag in approximately 0.54 acres of state tidal waters to support wharf construction (**Exhibit C**).

- Installation of Stone on Revetment Under Wharf – discharge associated from the mechanical placement of approximately 90,000 CY of quarry stone (with an average diameter ranging from 0.5 to 2 ft) on the revetment following the completion of pile installation and dredging work within the wharf footprint. This activity will result in placement of stone in approximately 8.1 acres of state tidal waters (**Exhibit D**).

- Installation of Coal Pier Channel Waterside Berm – discharge associated with the mechanical placement of approximately 75,000 CY sand fill in state tidal water [below Mean High Water (MHW)] to construct the water-side enclosure berm for the Coal Pier Channel DMCF. The berm footprint will be approximately 3.5 acres in size (**Exhibit G**).

- Placement of Dredged Material within Coal Pier Channel DMCF – discharge is the permanent fill of 16.1 acres of state tidal waters. Placement/discharge of dredged

material will occur behind the constructed enclosure berm and will not impact surface waters (**Exhibit G**).

- Discharge of Water from Coal Pier Channel DMCF during DMCF Operations – discharge of effluent water associated with de-watering, drying, and consolidation of the dredged material placed in the Coal Pier Channel DMCF. Discharge of effluent water will be through a new outfall location within the waterside perimeter dike and will be conducted in compliance with conditions of a NDPES permit (**Exhibit G**).

- Discharge of Water from High Head DMCF during DMCF Operations – discharge of effluent water associated de-watering, drying, and consolidation of dredged material placed in the High Head DMCF. Discharge of effluent water will be through an existing outfall and will be conducted in compliance with conditions of an existing NDPES permit (**Exhibit F**).

Discharges Associated with Mitigation Concepts:

- Dredging/Excavation – potential discharge from dredging and excavation of nearshore and upland area to create tidal open water and wetlands at several locations along the east shoreline of Sparrows Point (including Jones Creek, Old Road Bay, and the Patapsco River) (**Exhibit I**).

- Demolition/Removal of In-water Pier Structures – discharge associated with the manual demolition and removal of piers and pilings from state tidal waters on the east shoreline of Sparrows Point in Old Road Bay (**Exhibit I**).

- Placement of Habitat Structures and Fill to Improve Bottom Substrate – discharge associated with the placement of structures and placement of fill in state tidal waters to improve and create aquatic habitat along the east shoreline of Sparrows Point and along the east shoreline of Bear Creek parallel to Bethlehem Blvd (**Exhibit I**).

- Excavation to Remove *Phragmites* Vegetation and Rhizomes – potential discharge in nearshore state tidal waters associated with the removal of invasive species in areas adjacent to proposed mitigation areas (**Exhibit I**).

(i) Biological, chemical, thermal or other characteristics of the potential discharge;

(a) A description of any other aspect of associated with construction and operation of the activity that would affect the chemical composition, temperature, flow, or physical aquatic habitat of the surface water.

The nearshore and offshore sediments surrounding the Coke Point peninsula include slag and legacy contaminants from historical industrial processes and steel-making activities. These anthropogenic contaminants include metals, PAHs, PCBs, and other organic constituents. Site-specific sediment investigations were conducted in 2023 and 2024. Results of the investigations indicated that the sediments in the north section of the channel dredging footprint (from approximately the southern point of the finger pier to the northern extent of the turning basin) contain elevated concentrations of metals and organic contaminants (particularly PAHs.) The majority of sediments in south section of the channel dredging footprint (south of the finger pier) contain lower concentrations of contaminants and meet the chemical and ecotoxicological requirements for ocean placement. The site-specific sediment investigations are summarized in the Draft Environmental Impact Statement (DEIS) for the project. The applicable section of the DEIS (Section 4.2) which describes the physical and chemical composition of the sediments in the SPCT project area is provided in **Attachment A**.

Contaminants that are currently present in surficial sediments are exposed, interact with, and influence surface water quality at the sediment-water interface. Contaminants in subsurface sediments have the potential to be disturbed and be released as discharges to surface waters during in-water construction and dredging activities. Construction activities involving discharges to surface waters have the potential to resuspend/release contaminants that are either bound to sediment particles or are present in dissolved form.

Surface waters in the vicinity of Coke Point peninsula are influenced by river flow and precipitation, daily tides, and groundwater flow patterns. Inputs and sources of chemicals, nutrients, and suspended sediments to surface waters include non-point source and agricultural practices, groundwater, regulated point-source industrial and stormwater discharges, and displacement or re-suspension of underlying sediment during storm events, vessel movements, and waterfront activities. Vertical stratification of the water column in the deeper waters surrounding the peninsula and in the adjacent

navigation channels is common in the summer and fall, with higher salinity and low dissolved oxygen present in bottom waters. The applicable section of the DEIS (Section 4.5) which describes the physical conditions and sources for existing chemical and nutrient inputs to surface water in the SPCT project area is provided in **Attachment B**.

Stormwater management at Sparrows Point is governed by a Sitewide NPDES permit (State Discharge Permit No. 05-DP-0064, NPDES Permit No. MD0001201) that establishes approved discharge locations (outfalls) and includes specific monitoring requirements and discharge limits for nutrients, organics, metals, and total suspended solids. These discharge limits include both maximum loadings for nitrogen, phosphorus and suspended solids and concentration-based limits for pH, select metals, oil and grease, and select PAHs and VOCs. Discharge monitoring and sampling at the permit-specified outfalls has demonstrated compliance with NPDES permit limits. In addition to current stormwater controls, TPA has worked with Baltimore County to develop a sitewide stormwater management strategy that includes construction of a regional wet pond stormwater facility on the site. This regional wet pond stormwater facility will provide 5,502,794 cubic feet of water quality treatment for 946 acres of impervious area, including 299 acres of the adjacent community. Prior to the runoff being pumped into the regional wet pond, a pre-treatment volume of approximately 2,359,230 cubic feet will be provided within the existing Tin Mill Canal. Based on the substantial capacity and the excess treatment of this new system, TPA and Baltimore County have agreed to a credit system for future projects so that individual stormwater management is not required on a project-by-project basis. The new system is currently under construction and is anticipated for completion and use in 2026.

(b) The characteristics of the discharge
o Flow rate (cfs)
o Potential chemical, physical, biological constituents
o Frequency (e.g., daily, hourly,)
o Duration
o Temperature (Celsius)

The characteristics of each identified discharge and the approximate frequency and duration of each discharge are summarized in the following table.

Discharge	Discharge Characteristics	Anticipated Frequency and Duration
Project Construction		
Stormwater	Nutrients, organics, metals, and total suspended solids (TSS)	Release of stormwater will occur during and following storm events for an approximate construction duration of 3 years.
Mechanical Dredging and Excavation – North Channel Improvements (2.63 MCY) and Coal Pier Channel Dike Alignment (55,000 CY)	TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form; potential for oils and sheens	Dredging will be conducted in three phases, each anticipated to be approximately 8.5 months in duration. Dredging of the overburden material within the enclosure dike alignment for the Coal Pier Channel DMCF is anticipated to be approximately 1 month in duration.
Mechanical Dredging – South Channel Improvements (1.57 MCY)	TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	Dredging will be conducted in three phases with an approximate duration of 8.5 months each, overlapping with the north channel dredging.
Installation of Wharf Pilings	Permanent fill of state tidal water consisting of steel pipe piles; TSS and release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form; potential for oils and sheens	Pile driving is anticipated to occur 10 hrs per day, 6 days per week, for a duration of 24 months.
Installation of Fill Under Wharf	Permanent fill of state tidal water consisting of 7,500 CY of mechanically-placed slag. TSS and release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form; potential for oils and sheens	In-water fill placement under wharf is anticipated to occur for a duration of 2 months.

Discharge	Discharge Characteristics	Anticipated Frequency and Duration
Installation of Stone Revetment Under Wharf	Mechanical placement of fill below MHW consisting of 90,000 CY of quarry stone (ranging from 0.5 to 2 ft in diameter); TSS and release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	Placement of quarry stone on the revetment is anticipated to occur intermittently throughout the 24-month wharf construction process.
Installation of Coal Pier Channel Enclosure Berm/Dike	Placement of sand fill (75,000 CY) below MHW to build enclosure dike; TSS and release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form; potential for oils and sheens	Placement of sand to construct the enclosure berm is anticipated to occur for a duration of 7 months.
Dredged Material Placement within Coal Pier Channel DMCF	Permanent fill of state tidal waters through placement of dredged material within area enclosed by exterior dike	Placement of dredged material is expected to occur in phases throughout a 3-year period of phased dredging; material placement will not result in discharge to surface waters.
Discharge of Effluent from Coal Pier Channel DMCF	Discharged effluent will comply with NPDES permit requirements	Discharges will occur periodically during material inflows and for an anticipated duration ranging from 5 to 10 years to facilitate material consolidation and drying following completion of inflow.
Discharge of Effluent from High Head DMCF	Discharged effluent will comply with NPDES permit requirements	Discharges will occur periodically during material inflows and for an anticipated duration of ranging from 5 to 10 years to facilitate material consolidation and drying following completion of inflow.
Mitigation		
Dredging and Excavation to Create Open Water and Wetlands	TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	To Be Determined

Discharge	Discharge Characteristics	Anticipated Frequency and Duration
Demolition and Removal of In-Water Pier Structures	TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	To Be Determined
Placement of Habitat Structures and Fill to Improve Bottom Substrate	Fill below MHW consisting of sand, woody debris, natural stone/ cobble, shell bags; TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	To Be Determined
Excavation to Remove Invasive Species (*Phragmites*)	TSS; resuspension/release of nutrients, metals, and organic contaminants attached to particulates and in dissolved form	To Be Determined
Terminal Operations		
Stormwater	Nutrients, organics, metals, and TSS	Release of stormwater will occur during and following storm events indefinitely for the operational lifespan of the terminal.

The construction schedule, sequence, and concurrent discharge activities are depicted in **Exhibit J**.

(ii) The location or locations at which any discharge may enter navigable waters;

(a) Latitude and longitude (dd:mm:ss)

See attached **Exhibit I** for discharge locations in navigable waters.

(b) An original or color copy/reproduction of a United States Geological Survey Quadrangle Map that clearly shows the location of the activity and all potential discharge points

The USGS Quadrangle Map is attached with the project location shown (**Exhibit K**).

(iii) Data supporting existing aquatic life use for each waterway; and

Seasonal aquatic resource studies were performed in the vicinity of the SPCT project area during 2023 and 2024. These studies included surface water nutrient analysis, submerged aquatic vegetation (SAV), benthic community surveys, crab pots surveys, plankton surveys (zooplankton and ichthyoplankton), and finfish surveys (trawls, seines, and gillnets). These studies are documented in seasonal aquatic studies reports and are summarized in the Draft Environmental Impact Statement (DEIS) for the project. The DEIS sections for the aquatic environment including Benthic Fauna (Section 4.7), Fish (Section 4.8), Essential Fish Habitat (Section 4.9) and Aquatic Special Status Species (Section 4.10) are provided in **Attachment C**. SAV was not present in the Project Area.

(iv) Antidegredation alternatives analysis as applicable to Tier II waters.

The proposed work is not in Tier II waters.

(v) The existing and designated use(s) that are potentially affected by the proposed activities.

The tidal waters surrounding the project area and extending eastward into the Upper Chesapeake Bay are classified as Use Class II (Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting). The individual designated uses of Use Class II waters that are potentially affected by the proposed project's discharges include: growth and propagation of fish, other aquatic life, and wildlife; water contact sports; fishing; propagation of shellfish; seasonal migratory fish spawning and nursery use; seasonal shallow-water SAV use; open-water fish and shellfish use; seasonal deep-water fish and shellfish use; and seasonal deep-channel refuge use. The effects to these designated uses are detailed in the DEIS for the project. The DEIS sections for the aquatic environment including Benthic Fauna (Section 4.7), Fish (Section 4.8), Essential Fish Habitat (Section 4.9) and Aquatic Special Status Species (Section 4.10) are provided in **Attachment C**.

(i) Include a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge; A description, if applicable, of the function and operation of any equipment or facilities to treat any discharge and the degree of treatment to be attained. A description of any other aspect of associated

with construction and operation of the activity that would affect the chemical composition, temperature, flow, or physical aquatic habitat of the surface water.

Best Management Practices (BMPs) and environmental controls applicable for general in-water construction/demolition activities, dredging-related activities, and upland construction activities are summarized in **Attachment D**. These BMPs and environmental controls may be used to minimize adverse impacts and protect surface waters, aquatic resources, and other resources. The BMPs that could potentially be applied to each specific discharge are referenced in the table below.

Discharge	**Potential BMPs and Environmental Controls**
Project Construction	
Stormwater	Attachment D, Table 4
Mechanical Dredging and Excavation – North Channel Improvements and Coal Pier Channel Dike Alignment	Attachment D, Table 3
Mechanical Dredging – South Channel Improvements	Attachment D, Table 3
Installation of Wharf Pilings	Attachment D, Table 2
Installation of Fill Under Wharf	Attachment D, Table 2
Installation of Stone Revetment Under Wharf	Attachment D, Table 2
Installation of Coal Pier Channel Enclosure Berm/Dike	Attachment D, Table 2
Dredged Material Placement within Coal Pier Channel DMCF	Attachment D, Table 3
Discharge of Effluent from Coal Pier Channel DMCF	Attachment D, Table 3
Discharge of Effluent from High Head DMCF	Attachment D, Table 3
Mitigation	
Dredging and Excavation to Create Open Water and Wetlands	Attachment D, Table 3
Demolition and Removal of In-Water Pier Structures	Attachment D, Table 2
Placement of Habitat Structures and Fill to Improve Bottom Substrate	Attachment D, Table 2
Excavation to Remove Invasive Species (*Phragmites*)	Attachment D, Table 3
Terminal Operations	
Stormwater	Attachment D, Table 4

Monitoring and treatment of stormwater discharges will be conducted pursuant to applicable permits and regulations. It is anticipated that credits from the Sparrows Point regional wet pond stormwater management facility (as noted in Section i(a) of this application) will be utilized for stormwater management during terminal operations. Monitoring of effluent discharges from the DMCFs will be conducted in accordance with the frequency and discharge limits specified in the NPDES permit(s). Monitoring of surface waters during in-water construction activities will be

conducted in compliance with requirements of the water quality certification and a 20-CP General Stormwater Construction Permit.

(j) The date on which the activity will begin or end, if known, and the date or dates on which any discharge may occur.

See Section i(b) and **Exhibit J**.

(k) A description, if applicable, of the methods proposed or employed to monitor the quality and characteristics of any discharge.

(l) A specific and detailed mitigation plan as applicable for projects requiring mitigation.

The proposed Mitigation concepts for the project are presented in Section 3.3 of the DEIS and are detailed in **Attachment E**.

(m) Include a list of all other federal, interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received; Other related permits issued or required (Individual 404 Permit, Nationwide Permit No., Section 10 Permit, Erosion and Sediment Control Plan Approval, NPDES permit (including Stormwater Permits), Regional Permits.

<u>Applicable State/Federal Permits</u>

U.S. Army Corps of Engineers Permit Tracking Number: NAB-2023-61200

- Includes CWA Section 404, Rivers and Harbors Act (RHA) Section 10, RHA Section 408 Approval, and Marine Protection Research and Sanctuaries Act (MPRSA) Section 103

State Wetlands License: Application Tracking Number: 23-WL-0862

Stormwater General Discharge Permits

Industrial Surface Water Discharge Permit/NPDES Permit

Dam Safety Permit

Water Appropriations and Use Permit

New Source Review Permit & Maryland Permit to Construct

(n) Any other information for evaluation of the impact of the activity on water quality. This may include quantitative analysis to demonstrate that the proposed activity may not violate State water quality standards.

The following site-specific studies were conducted to support the evaluation of resources present in the Project Area:

Seasonal Aquatic Resource Surveys

- Surface water nutrients – summer 2023, fall 2023, winter 2023, and spring 2024
- Fish – summer 2023, fall 2023, winter 2023, and spring 2024
- Plankton (zooplankton and ichthyoplankton) – spring and summer 2024
- Crabs – summer 2023, fall 2023, and spring 2024
- Benthic communities and surficial sediment quality – summer 2023
- SAV – spring and summer 2024

High Head Industrial Impoundment Surveys

- Fish – summer 2024
- Flora and fauna – fall 2023 and summer 2024

Coke Point Peninsula Surveys

- Habitat assessment (including wetlands) – fall 2023
- Flora and fauna – summer 2024

Sediment Quality Investigations

- In-Water Geotechnical Borings – summer/fall 2023
- Evaluation of Dredged Material for Ocean Placement – Sparrows Point Channel, South and Mid Channel Segments (2024)
- Evaluation of Dredged Material for Upland Placement – Sparrows Point Channel (2024)

These studies are summarized in the DEIS and are available upon request.

(o) Include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request; If you have not completed this step you may file a Pre-Filing Meeting request with MDE here

A Pre-Filing Meeting Request was submitted on 10/25/24. A copy of the request is provided in **Exhibit L.** Receipt of the request was acknowledged by Mr. Matthew Wallach, MDE Tidal Wetlands Division.

(p) Contain the following statement: 'The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief'; and

This statement is included in the cover letter of this request.

(q) Contain the following statement: 'The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.'

This statement is included in the cover letter of this request.

Exhibit A

Adjacent Property Owners

Properties Adjacent to Tradepoint Atlantic, LLC

Owner Name	Tax ID	Address	Town	State	Zip Code
Beazer Homes LLC	2500019838	John Stricker Ave	Dundalk	MD	21222
CRD Golf LLC	2500005973	919 Wise Ave	Dundalk	MD	21222
Sweetheart Properties LLC	2200020085	8801 Wise Ave	Dundalk	MD	21222
BANP LLC	1514000710	Wise Ave	Dundalk	MD	21222
17 Christina Ct LLC	2200006148	17 Christina Ct	Dundalk	MD	21222
Rukert Lazaretto Corporation	2200000277	2121 Grays Rd	Dundalk	MD	21222
Erasmus Properties Business Trust	2200000278	4505 North Point Rd	Dundalk	MD	21222
F2 LLC	1520301010	4517 North Point Blvd	Dundalk	MD	21222
4601 NPB Holdings LLC	1509350160	North Point Rd	Dundalk	MD	21222
Merritt/Bavar - Grays Rd LLC	1501501020	2301 Grays Rd	Dundalk	MD	21222
AMG Resources Corp	1522900000	2415 Grays Rd	Dundalk	MD	21222
AMG Resources Corp	1800012271	Grays Rd	Dundalk	MD	21222
Amtrol Water Technology LLC	1800012272	2440 Grays Rd	Dundalk	MD	21222
Mukta 2500 Properties Inc	1507582821	Grays Rd	Dundalk	MD	21222
Mukta 2500 Properties Inc	1507582820	2500 Grays Rd	Dundalk	MD	21222
Aging Barns LLC	1800012273	4611 North Point Blvd	Dundalk	MD	21222
Operating Engineers Jt Appren & Training Fundof Int Union of	2500005935	North Point Blvd	Dundalk	MD	21222
CSP Property Holdings Inc	2200001596	5055 North Point Blvd	Edgemere	MD	21219
Wheeler Properties LLC	2200007053	2200 Sparrows Point Blvd	Edgemere	MD	21219
Wheeler Properties LLC	2200007054	Sparrows Point Rd	Edgemere	MD	21219
Millers Island Propeller Inc	1501290052	2200 Sparrows Point Rd	Edgemere	MD	21219
North Point Property Owner LLC	2400001013	5107 North Point Blvd	Edgemere	MD	21219
Baltimore County Maryland	2500018118	Sparrows Point Blvd	Edgemere	MD	21219
Baltimore County Maryland	2500018119	1900 Wharf Rd	Edgemere	MD	21219
8911 Bethlehem Blvd I LLC and 8911 Bethlehem Blvd II LLC	2500007538	8911 Bethlehem Blvd	Edgemere	MD	21219
Reservoir Warehouse LLC	1514000690	2010 Reservoir Rd	Edgemere	MD	21219
Erasmus Properties (Reservoir Rd) Business Trust	2500014687	North Point Blvd	Edgemere	MD	21219
CDL Land Holdings LLC	2500016350	Oxygen Plant Rd	Edgemere	MD	21219
CDL Land Holdings LLC	2500016351	Oxygen Plant Rd	Edgemere	MD	21219
Loders Croklaan USA LLC	2500018121	Bethlehem Blvd	Edgemere	MD	21219

Distribution List for TPA's Community Advisory Board

Organization Name	Contact Name	Email
Beachwood Estates	Vacant	Vacant
Chesapeake Bay Assocation, Southeast Baltimore County Council and		
Millers Island Residents Association	Frank Neighoff	dr.frank.neighoff@gmail.com
Chesapeake Gateway Chamber of Commerce	Sharon Kihn	sharon.kihn@chesapeakegatewaychamber.org
Dundalk Chamber of Commerce	Dawn Frazier	qualitycounts@comcast.net
Dundalk Renaissance Corporation	Vacant	
Essex Middle River Civic Association	Josh Sines	jsjs2424@gmail.com
Fort Howard Community Association	Scott Pappas	mail@forthoward.org
Millers Island Edgemere Business Assocation	Jimmy Meyers	jmeyers1967@verizon.net
North Point Peninsula Council	Fran Taylor	fralintay@comcast.net
North Point Peninsula Council	Ed Crizer	edcrizer@gmail.com
Northpoint Village Civic Association	David Patro	npvca@hotmail.com
P-12 Police Alliance	Will Feuer	feuerwilliam@gmail.com
Turner Station Conservation Teams	Gloria Nelson	glorianelson8@verizon.net
Watersedge Community Association	Scott Smith	breasdaddy14@gmail.com
Wells-McComas Citizens Improvement Association	Robert Zacherl	rzacherl@streettrafficstudies.com
White Marsh Transport	Buddy McGowan	buddy@wmtransport.com
Marine Participants:	Sam Weaver	sam@weaversmarine.net
	Karen Wynn	mdwaterways@gmail.com
	Brian Hall	oldbaymarina@gmail.com
County Executive Johnny Olszewski's Office		D7outreach@baltimorecountymd.gov
Councilman Todd Crandell's Office	Doug Anderson	wdanderson@baltimorecountymd.gov

Exhibit B

Signed Public Notice Billing Approval Form

NOTICE TO APPLICANTS

MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WETLANDS AND WATERWAYS PROGRAM
1800 WASHINGTON BOULEVARD, SUITE 430
BALTIMORE, MARYLAND 21230-1708
410-537-3745

PUBLIC NOTICE BILLING APPROVAL FORM

I agree to pay all expenses associated with the publishing of a public notice for the Water Quality Certification Application submitted by

Tradepoint TiL Terminal

(Applicant's Name), which was dated and signed by you on

11/26/24.

Applicant/Agent Signature

Tom Caso

Printed Name of Signee

Please Print

Billing Address 6995 Bethlehem Blvd

Suite 100

Baltimore, MD 21219

Phone Number 410-382-6667

Exhibit C

General Project Overview Plans


Tradepoint Atlantic Property
Sparrows Point Channel
Baltimore Harbor Channels
157
695
Sparrows Point Country Club
Rocky Point Golf Course
Back River
Peach Orchard Park
158
Bear Creek
Tradepoint Atlantic Property
North Point State Park
Fort McHenry Channel
Coke Point
Old Road Bay
Baltimore City
Baltimore County
Brewerton Angle
Patapsco River
Brewerton Channel
Project Location
0
1
Miles


Coal Pier Channel
Coke Point Cove
Existing Bulkhead
Existing Pier
Brewerton Angle
Brewerton Channel
0
0.5
Miles
N
Tradepoint Atlantic Property
Pavement
Gate Complex
Intermodal/Rail Yard
Maintenance and Repair Area
Wharf Area
Container Storage Yard
Building
Roads
Rails
SPCT Project Area
Sparrows Point Channel Improvements
Existing Sparrows Point Channel
Baltimore Harbor Channels

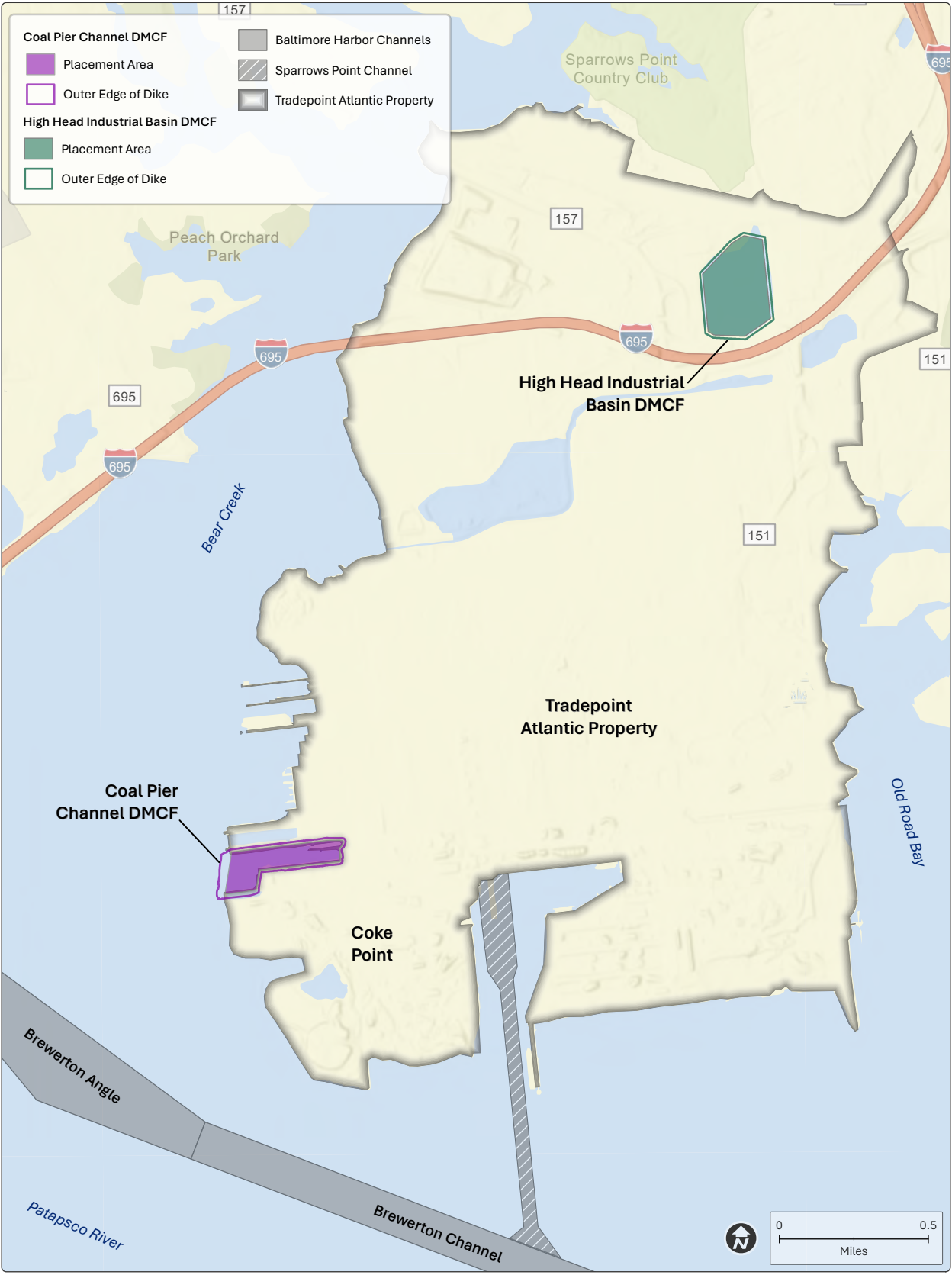

Coal Pier Channel DMCF
Placement Area
Outer Edge of Dike
High Head Industrial Basin DMCF
Placement Area
Outer Edge of Dike
Baltimore Harbor Channels
Sparrows Point Channel
Tradepoint Atlantic Property
Sparrows Point Country Club
Peach Orchard Park
157
695
151
High Head Industrial Basin DMCF
Bear Creek
Tradepoint Atlantic Property
Coal Pier Channel DMCF
Coke Point
Old Road Bay
Brewerton Angle
Brewerton Channel
Patapsco River
0
0.5
Miles

Exhibit D

Project Plans – Wharf

M.H.H.W. CONTOUR
+0.82M

2989'-8"

280'-0"

1312'-4"

1312'-4"

580'-0"

660'-0"

620'-0"

660'-0"

464'-10"

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

0+50.00

4+50.00

9+00.00

13+50.00

18+00.00

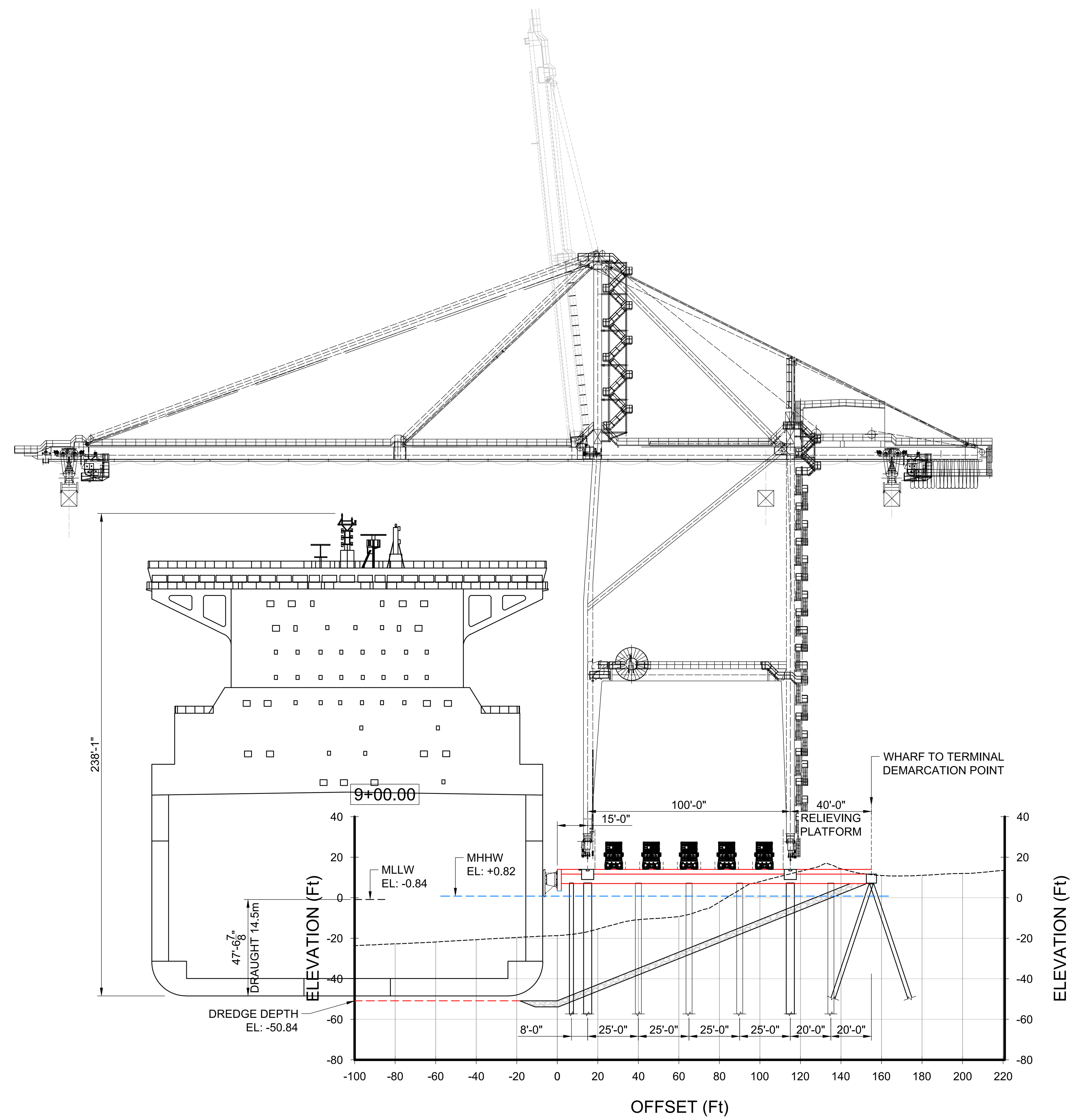
22+50.00

27+00.00

31+49.59

1 SPCT WHARF GENERAL ARRANGEMENT

1" = 100'



A STA: 9+00 - AT MID SECTION OF MSC DIANA

--- 1" = 40'

DRAWING No.	DRAWING TITLE
---	---

REFERENCE DRAWINGS

NAME

SIGNATURE

ENG REG NUMBER

REVISION DATE

ORIGINAL DATE

REG. PROFESSIONAL

No.	DESCRIPTION	BY	CHK'D	DATE
A	ISSUED FOR CLIENT REVIEW		---	2024/10/xx

REVISIONS

HATCH

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	xx	NR	2024/10/xx
DESIGNER		NR	
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER			

DRAWING APPROVAL STATUS: CLIENT REVIEW

SPARROWS POINT CONTAINER TERMINAL

WHARF - GENERAL ARRANGEMENT
SK-1 PIER LAYOUT
SECTION

SCALE AS NOTED OR AS NOTED

DWG. No.

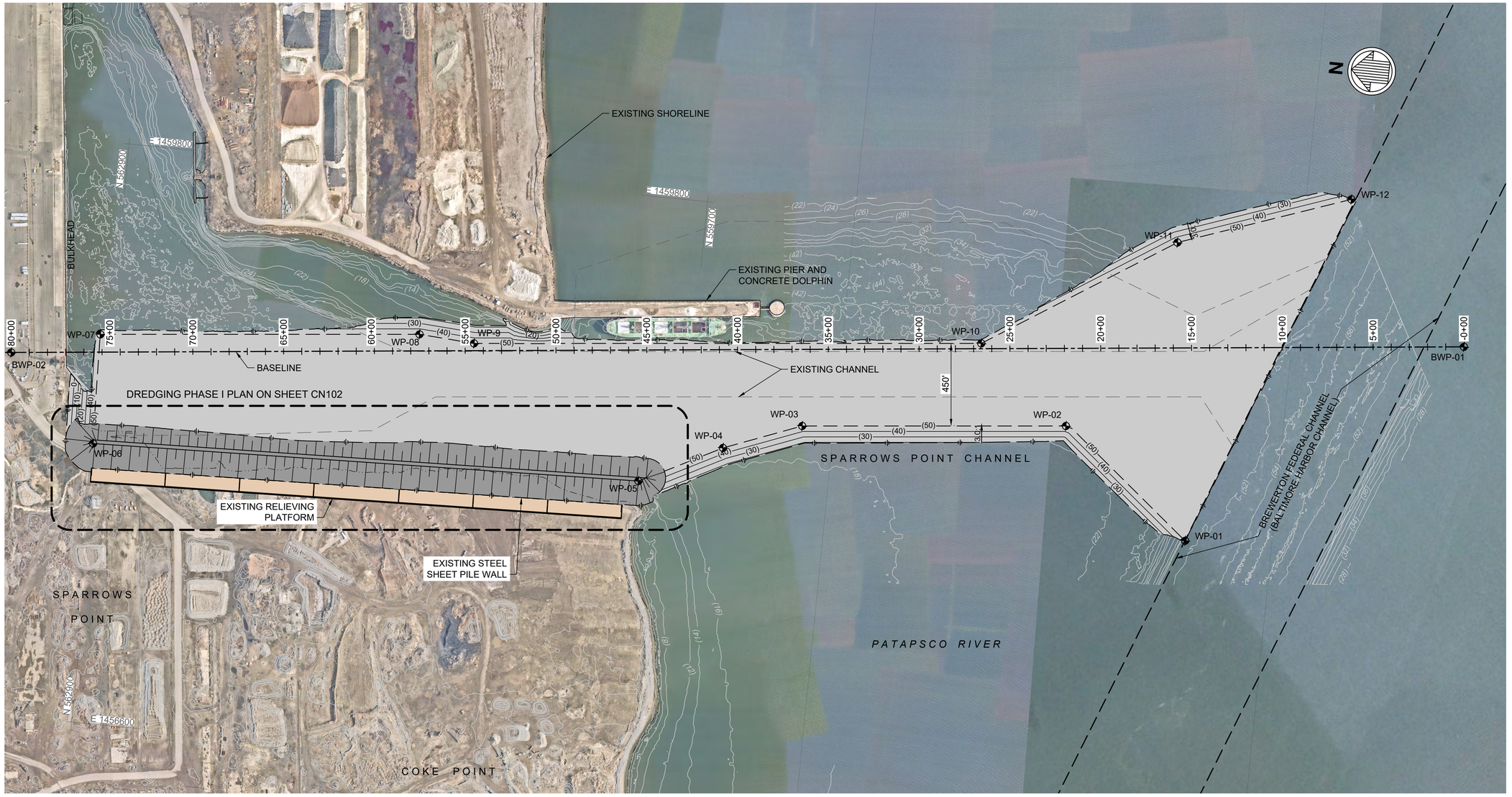
REV A

SHEET SIZE: D

$USERNAME$ $DATE$ $FILE$ $TIME$

Exhibit E

Project Plans – Dredging



B1 / CN101 PLAN - DREDGING GENERAL ARRANGEMENT
SCALE: 1" = 300'

DREDGING CHANNEL WORKING POINTS TABLE		
WP-##	NORTHING	EASTING
WP-01	556896.85	1458202.47
WP-02	557613.46	1458766.30
WP-03	559058.50	1458622.10
WP-04	559480.86	1458458.36
WP-05	559926.17	1458230.66
WP-06	562934.69	1458138.36

DREDGING CHANNEL WORKING POINTS TABLE		
WP-##	NORTHING	EASTING
WP-07	562954.38	1458740.44
WP-08	561205.76	1458915.38
WP-9	560901.83	1458895.46
WP-10	558122.30	1459172.82
WP-11	557102.27	1459832.95
WP-12	556172.88	1460164.75

CHANNEL BASELINE WORKING POINT			
WP-##	NORTHING	EASTING	STATION
BWP-01	555475.65	1459417.84	0+00
BWP-02	563432.98	1458592.66	80+00

LEGEND:

- PHASE 1 DREDGING AREA, AREA TO BE DREDGED TO -50.84 NAVD88, DEPTH WITH SIDE SLOPES AS SHOWN.
- PHASE 2 DREDGING AREA, AREA TO BE DREDGED TO -50.84 NAVD88, DEPTH WITH SIDE SLOPES AS SHOWN.
- (40) DESIGN DEPTH CONTOURS NAVD88
- (34) EXISTING DEPTH CONTOURS NAVD88
- BASELINE

300' 0' 300' 600'
SCALE: 1"=300'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - DREDGING GENERAL ARRANGEMENT

Designed by: PWK
Drawn by: ED
Checked by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
Rev:
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
6886 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN101
INDEX: 23 OF 242

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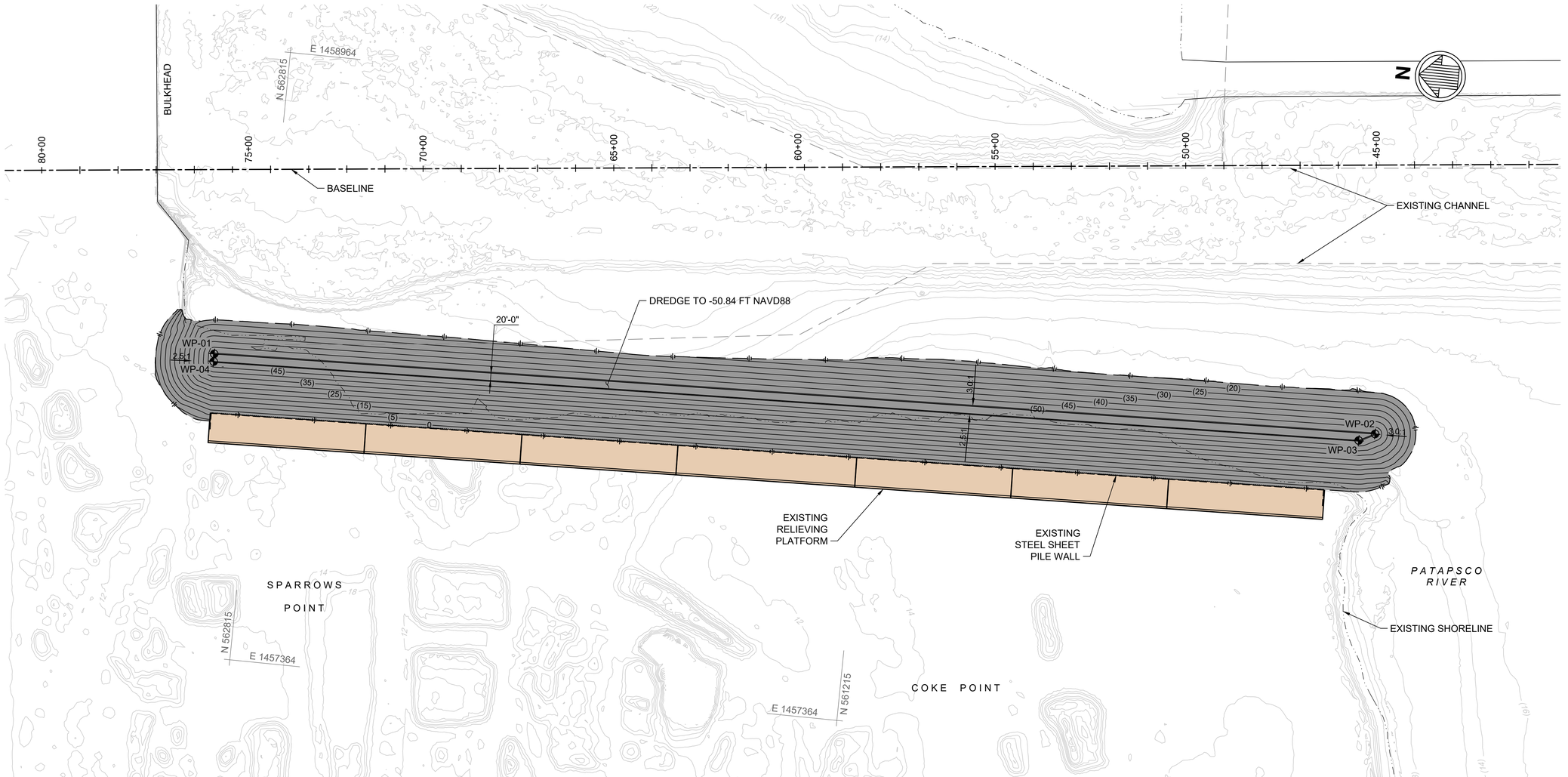
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



C1 / CN101 PLAN - DREDGING PHASE 1
SCALE: 1" = 150"

DREDGING PHASE 1 WORKING POINTS TABLE		
WP-##	NORTHING	EASTING
WP-01	562935.30	1458158.35
WP-02	559885.09	1458251.93
WP-03	559926.17	1458230.66
WP-04	562934.69	1458138.36

LEGEND:

- PHASE 1 DREDGING AREA, AREA TO BE DREDGED TO -50.84 NAVD88, DEPTH WITH SIDE SLOPES AS SHOWN.
- (40) DESIGN DEPTH CONTOURS NAVD88
- (34) EXISTING DEPTH CONTOURS NAVD88
- BASELINE

150' 0' 150' 300'
SCALE: 1"=150'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - DREDGING PHASE 1

Date: 2024-01-30 | Rev.:
M&N Project No. 230329
Drawing code:
Designed by: PWK | Drawn by: ED | Checked by: PGV
Reviewed by: SM
Drawing Scale:
Plot scale: 1:1 (D SHEET)
Submitted by: ERIC D. SMITH, MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
6995 BETHLEHEM BOULEVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN102
INDEX: 24 OF 242

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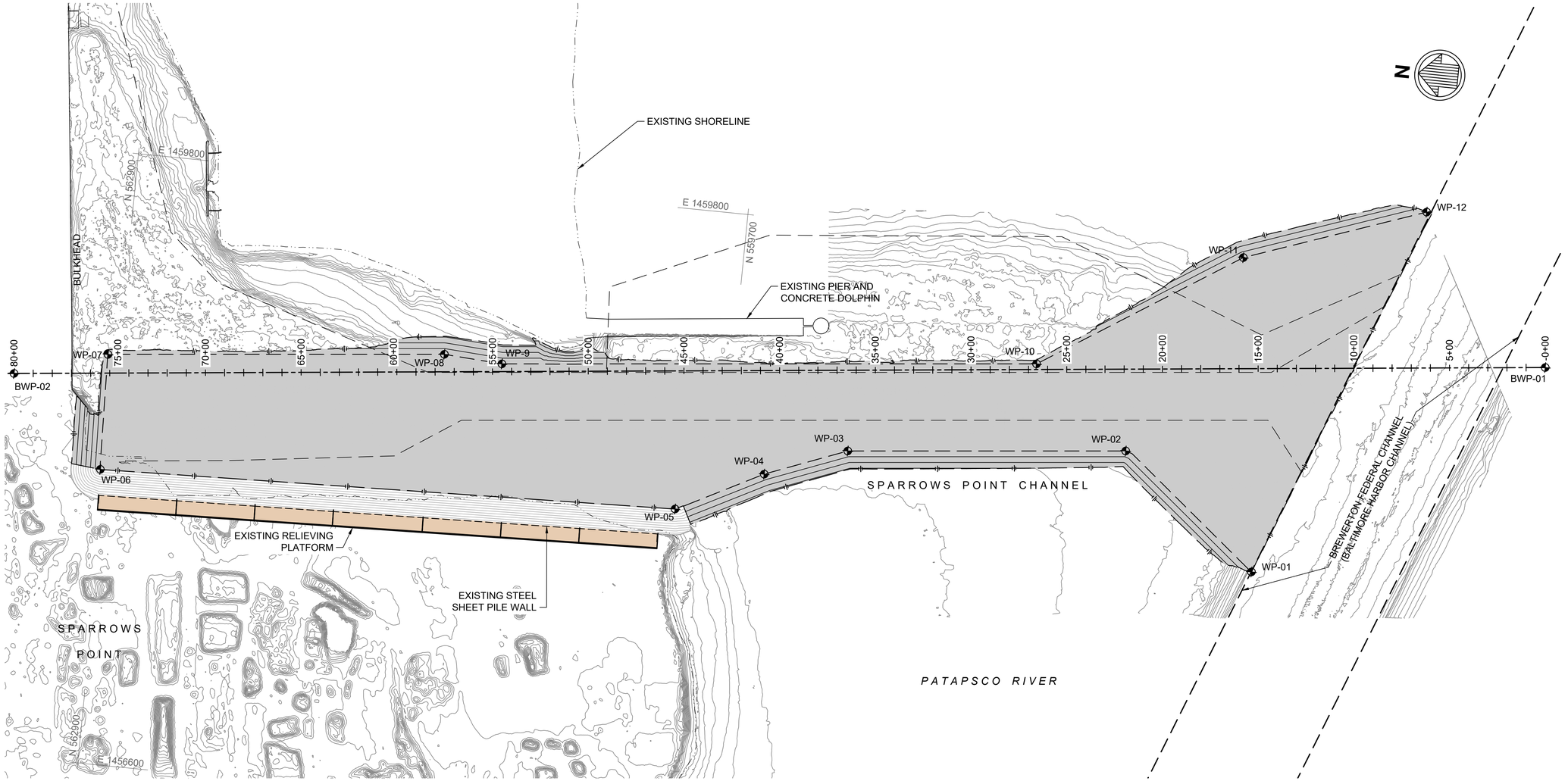
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



C1 / CN101 PLAN - DREDGING PHASE 2
SCALE: 1" = 300'

DREDGING CHANNEL WORKING POINTS TABLE		
WP-##	NORTHING	EASTING
WP-01	556896.85	1458202.47
WP-02	557613.46	1458766.30
WP-03	559058.50	1458622.10
WP-04	559480.86	1458458.36
WP-05	559926.17	1458230.66
WP-06	562934.69	1458138.36

DREDGING CHANNEL WORKING POINTS TABLE		
WP-##	NORTHING	EASTING
WP-07	562954.38	1458740.44
WP-08	561205.76	1458915.38
WP-9	560901.83	1458895.46
WP-10	558122.30	1459172.82
WP-11	557102.27	1459832.95
WP-12	556172.88	1460164.75

LEGEND:

- EXISTING PHASE 1 DREDGE AREA.
- PHASE 2 DREDGING AREA, AREA TO BE DREDGED TO -50.84 NAVD88, DEPTH WITH SIDE SLOPES AS SHOWN.
- (40) DESIGN DEPTH CONTOURS NAVD88
- (34) EXISTING DEPTH CONTOURS NAVD88
- BASELINE

300' 0' 300' 600'
SCALE: 1"=300'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - DREDGING PHASE 2

Designed by: PWK
Drawn by: ED
Cad by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
M&M Project No. 230329
Drawing date:
Drawing Scale:
Plot scale: 1:1 (D SHEET)
Rev:

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
6995 BETHLEHEM BOULVARD SUITE 100 BALTIMORE,MD 21219

Sheet Reference No.
CN103
INDEX: 25 OF 242

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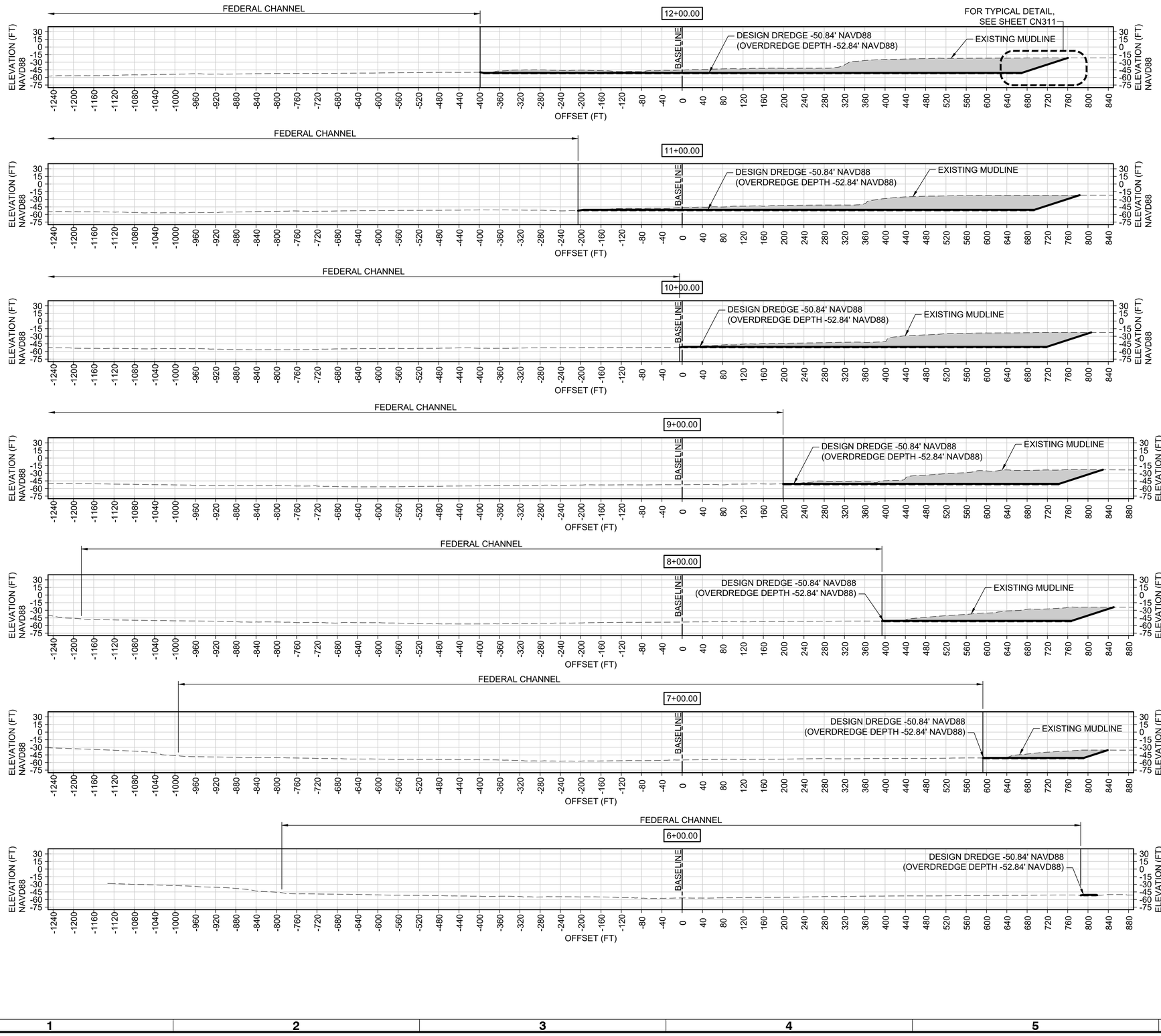

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 1 OF 11)

Designed by: PWK
Drawn by: ED
Checked by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH, MOFFATT & NICHOL
Date: 2024-01-30
Rev:
M&N Project No. 230329
Drawing scale:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
6895 BETHLEHEM BOULVARD SUITE 100, BALTIMORE, MD 21219

Sheet Reference No.
CN301
INDEX: 26 OF 242

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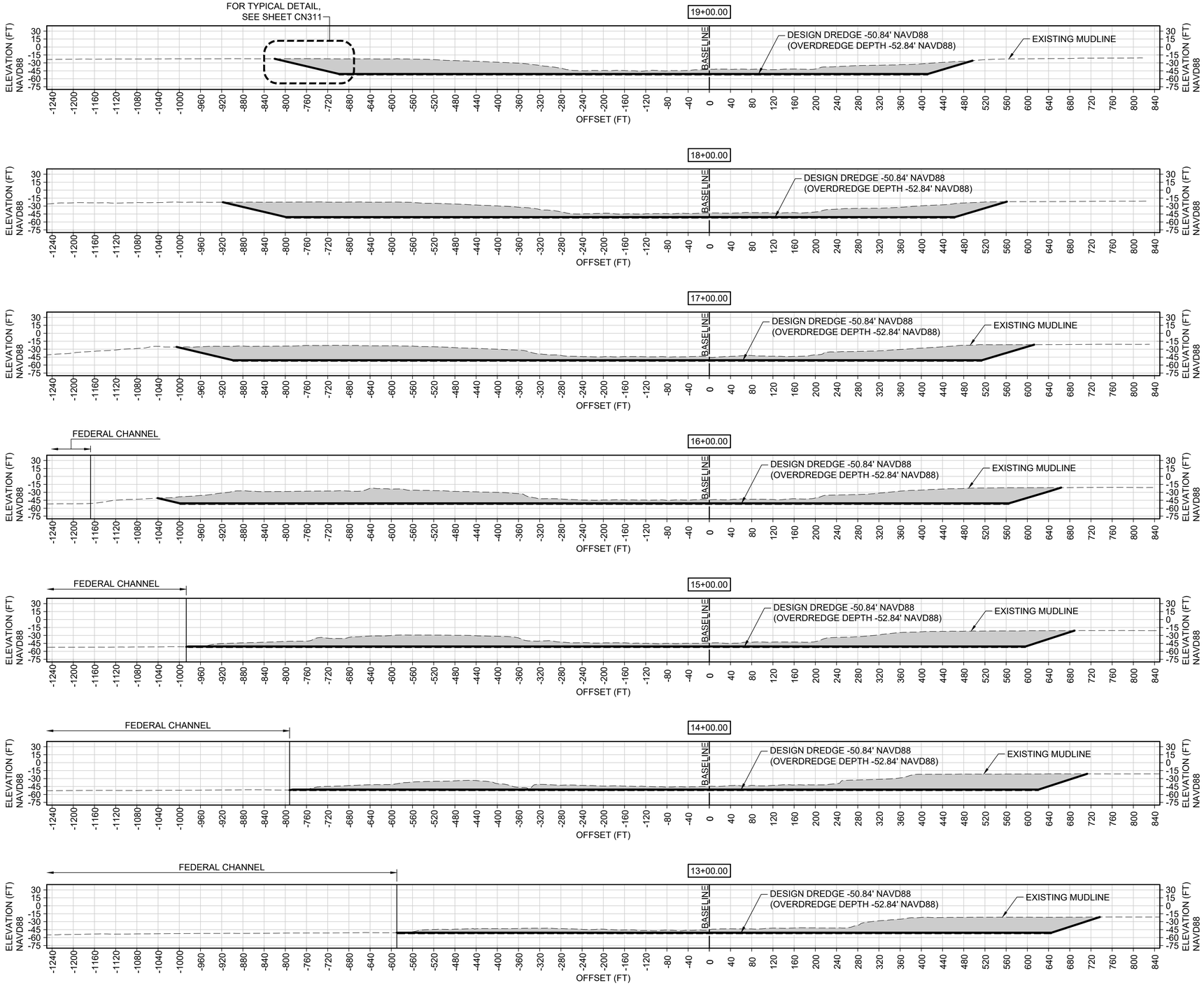

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr.

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 2 OF 11)

Designed by: PWK | Date: 2024-01-30 | Rev:
Drawn by: ED | Cad by: PGV | M&N Project No. 230329
Reviewed by: SM | Drawing scale:
Submitted by: ERIC D. SMITH MOFFATT & NICHOL | Drawing Scale: Plot scale: 1:1 (D SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
moffatt & nichol
6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219
SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.
CN302
INDEX: 27 OF 242

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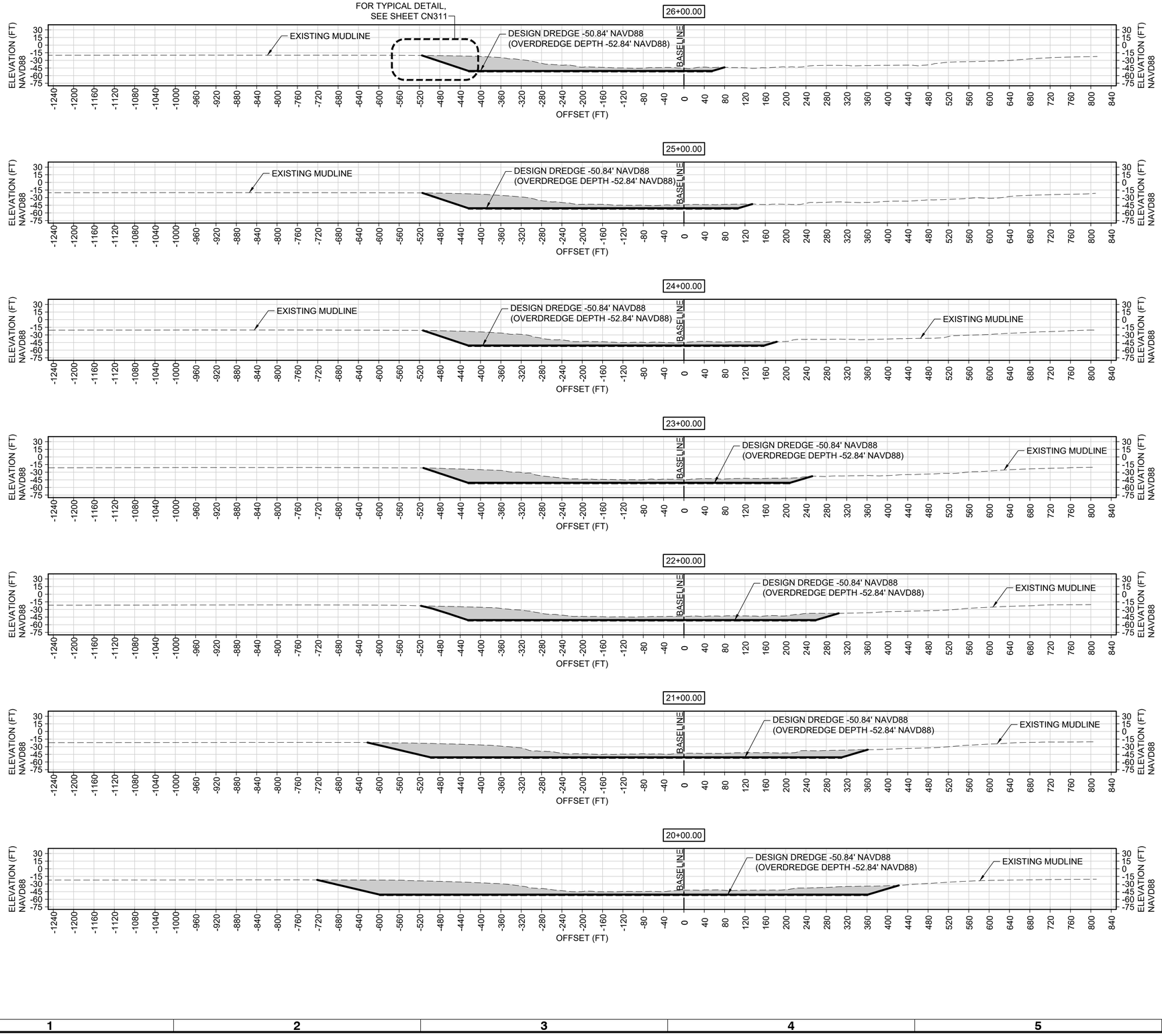

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 3 OF 11)

Designed by: PWK | Date: 2024-01-30 | Rev:
Drawn by: ED | Cad by: PGV | M&N Project No. 230329
Reviewed by: SM | Drawing scale:
Submitted by: ERIC D. SMITH MOFFATT & NICHOL | Drawing Scale: | Plot scale: 1:1 (0 SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
6985 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN303
INDEX: 28 OF 242

File: Q:\BAL\230329\20 CADD_Active_SheetSet\230329CN303 ; Plotted: 1/29/2024 5:59 PM by VOELKER, PAUL ; Saved: 1/26/2024 11:10 AM by EDOMINGUEZ

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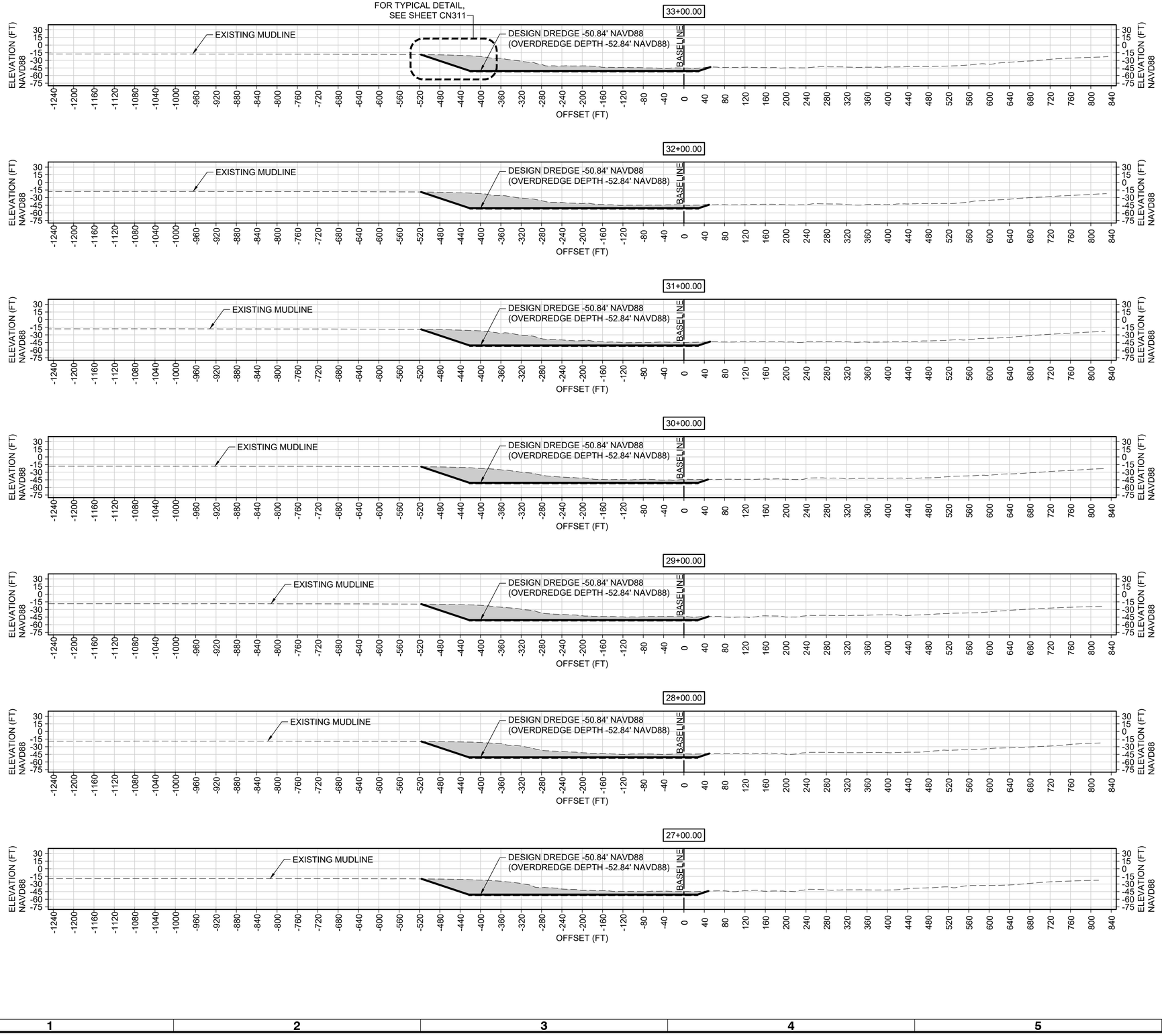


LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

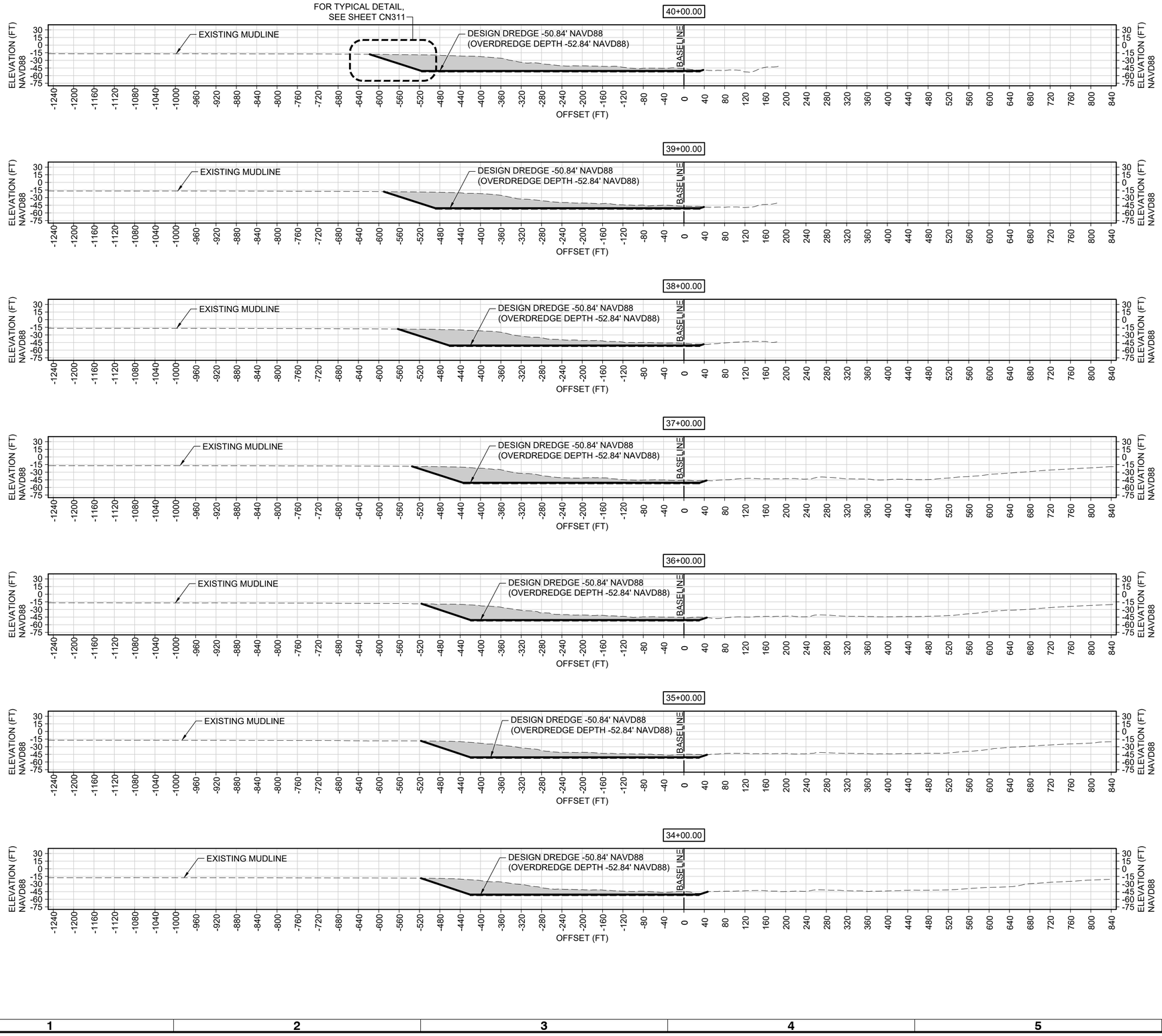
SECTIONS - DREDGING (SHEET 4 OF 11)

Designed by: PWK | Date: 2024-01-30 | Rev:
Drawn by: ED | Cad by: PGV | M&M Project No. 230329
Reviewed by: SM | Drawing scale:
Submitted by: ERIC D. SMITH MOFFATT & NICHOL | Plot scale: 1:1 (D SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
6985 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN304
INDEX: 29 OF 242

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 5 OF 11)

Designed by: PWK	Date: 2024-01-30	Rev:	
Dwn by: ED	Cad by: PGV	M&M Project No. 230329	
Reviewed by: SM	Drawing scale:		
Submitted by: ERIC D. SMITH MOFFATT & NICHOL	Drawing Scale:	Plot scale: 1:1 (0 SHEET)	

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300

moffatt & nichol

6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.

CN305

INDEX: 30 OF 242

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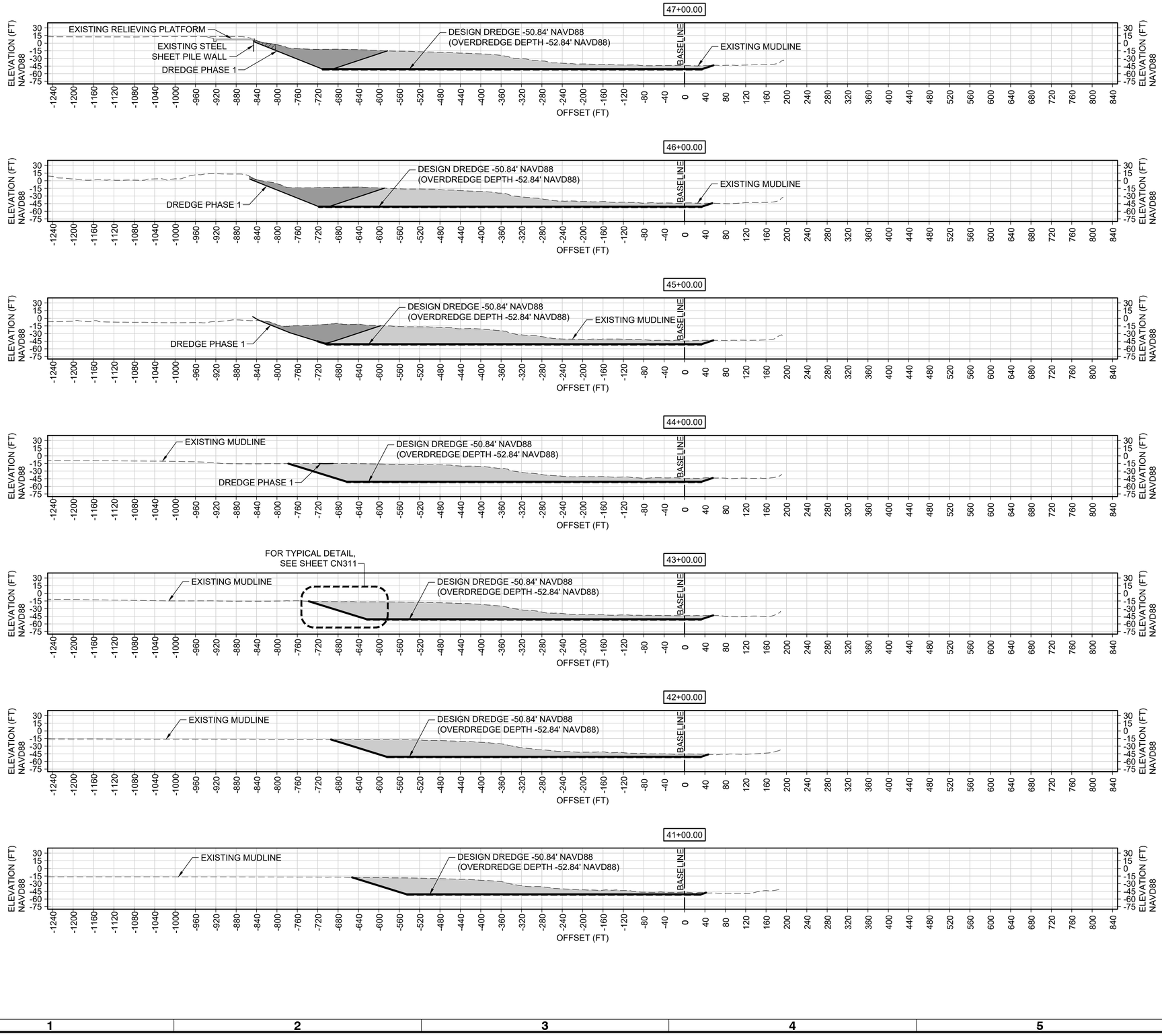

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 6 OF 11)

Designed by: PWK
Drawn by: ED
Checked by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
Rev:
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
moffatt & nichol
6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219
SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.
CN306
INDEX: 31 OF 242

File: Q:\BA\230329\20 CADD_Active_SheetSet\230329OCN306 ; Plotted: 1/29/2024 6:01 PM by VOELKER, PAUL ; Saved: 1/26/2024 11:52 AM by EDOMINGUEZ

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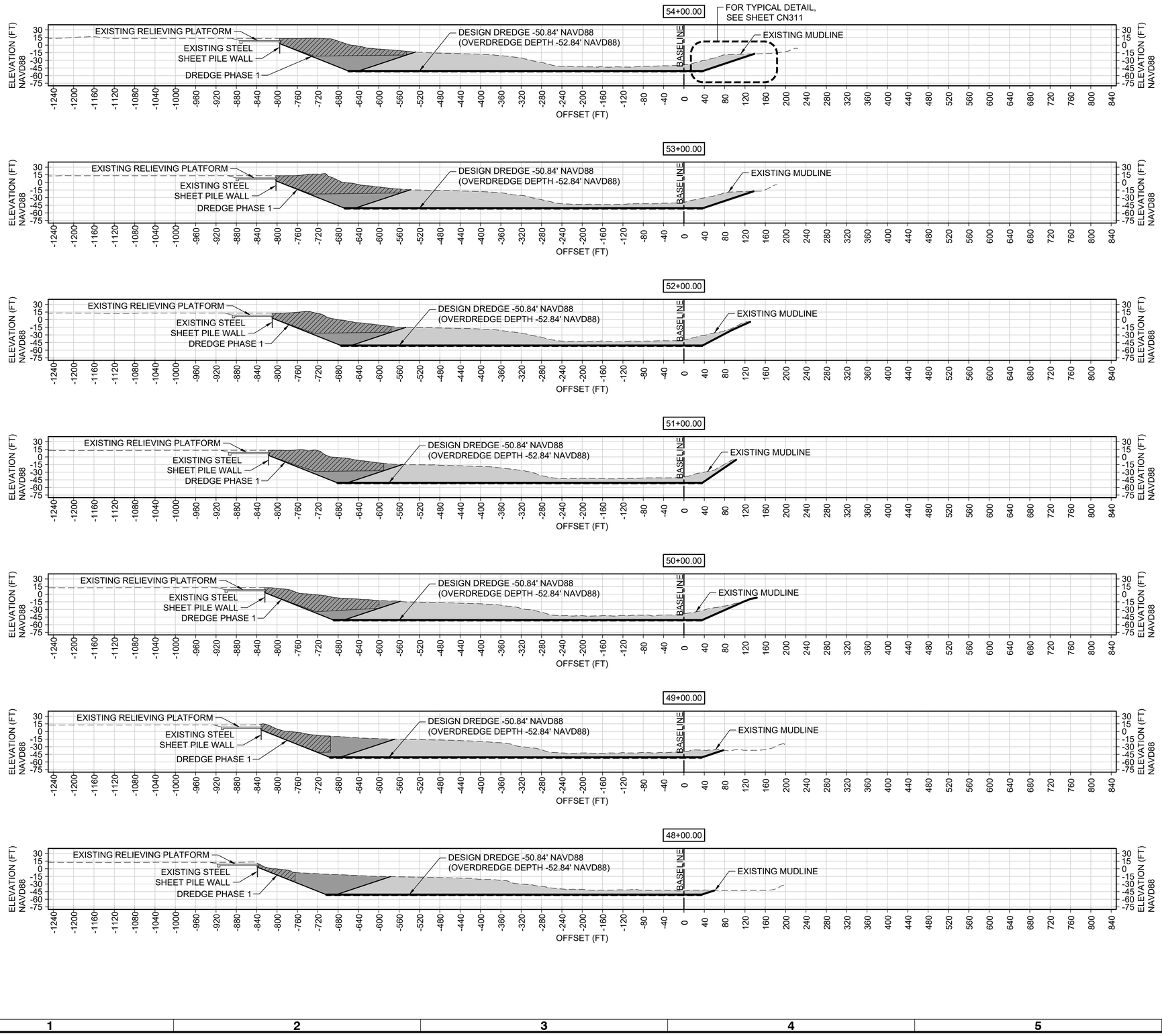

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 7 OF 11)

Designed by: PWK
Drawn by: ED
Cad by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
Rev:
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219
SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.
CN307
INDEX: 32 OF 242

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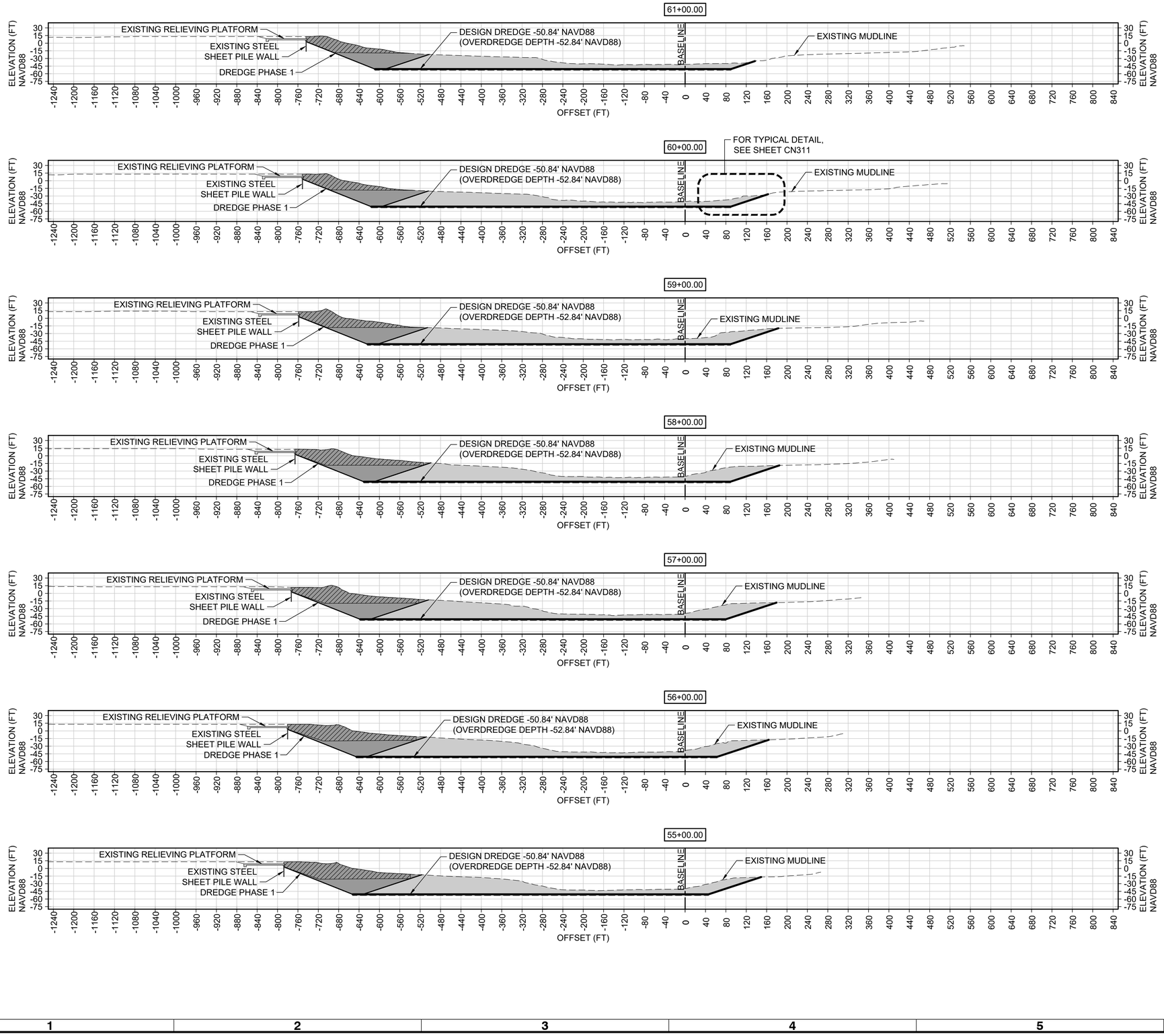
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 8 OF 11)

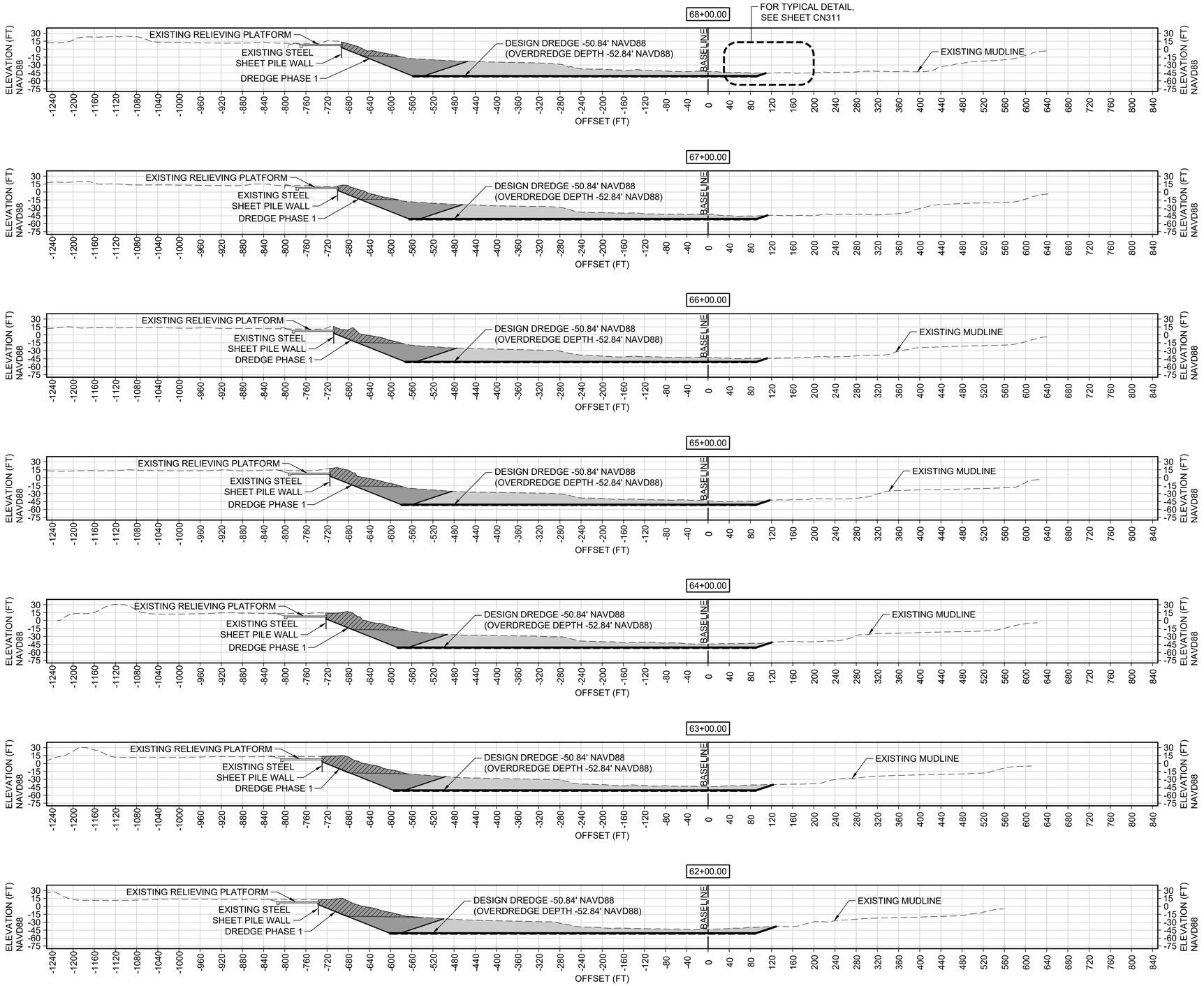
Designed by: PWK
Drawn by: ED
Cad by: PGV
Reviewed by: SM
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
Rev:
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (10 SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN308
INDEX: 33 OF 242

File: Q:\BA\230329\20 CADD_Active_SheetSet\230329CN308 ; Plotted: 1/29/2024 6:02 PM by VOELKER, PAUL ; Saved: 1/26/2024 11:54 AM by EDOMINGUEZ

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 9 OF 11)

Designed by: PWK	Date: 2024-01-30	Rev:	
Dwn by: ED	Cad by: PGV	M&N Project No. 230329	
Reviewed by: SM	Drawing date:		
Submitted by: ERIC D. SMITH MOFFATT & NICHOL	Drawing Scale:	Plot scale: 1:1 (0 SHEET)	

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300

moffatt & nichol

6905 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.

CN309

INDEX: 34 OF 242

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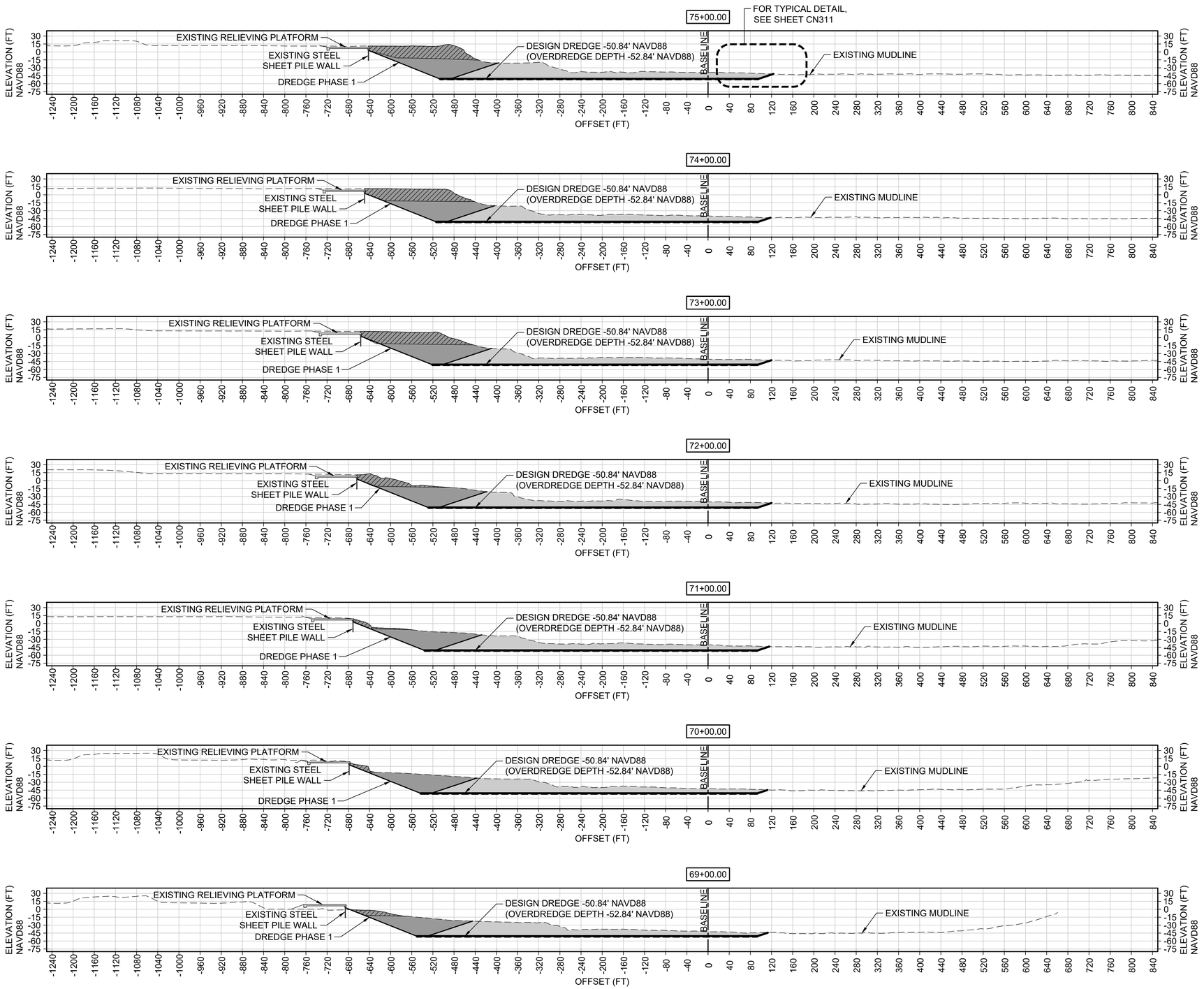

LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 10 OF 11)

Designed by: PWK
Drawn by: ED
Submitted by: ERIC D. SMITH MOFFATT & NICHOL
Date: 2024-01-30
Cad by: PGV
Reviewed by: SM
M&M Project No. 230329
Drawing Scale: 1:1 (10 SHEET)
Plot scale: 1:1 (10 SHEET)
Rev:

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
6985 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CN310
INDEX: 35 OF 242

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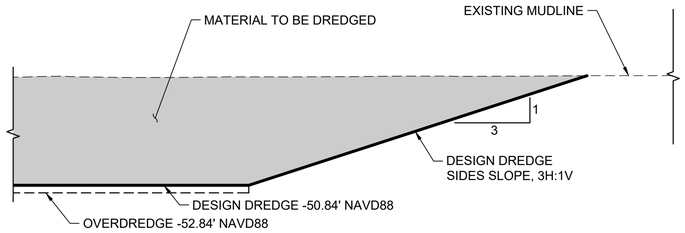
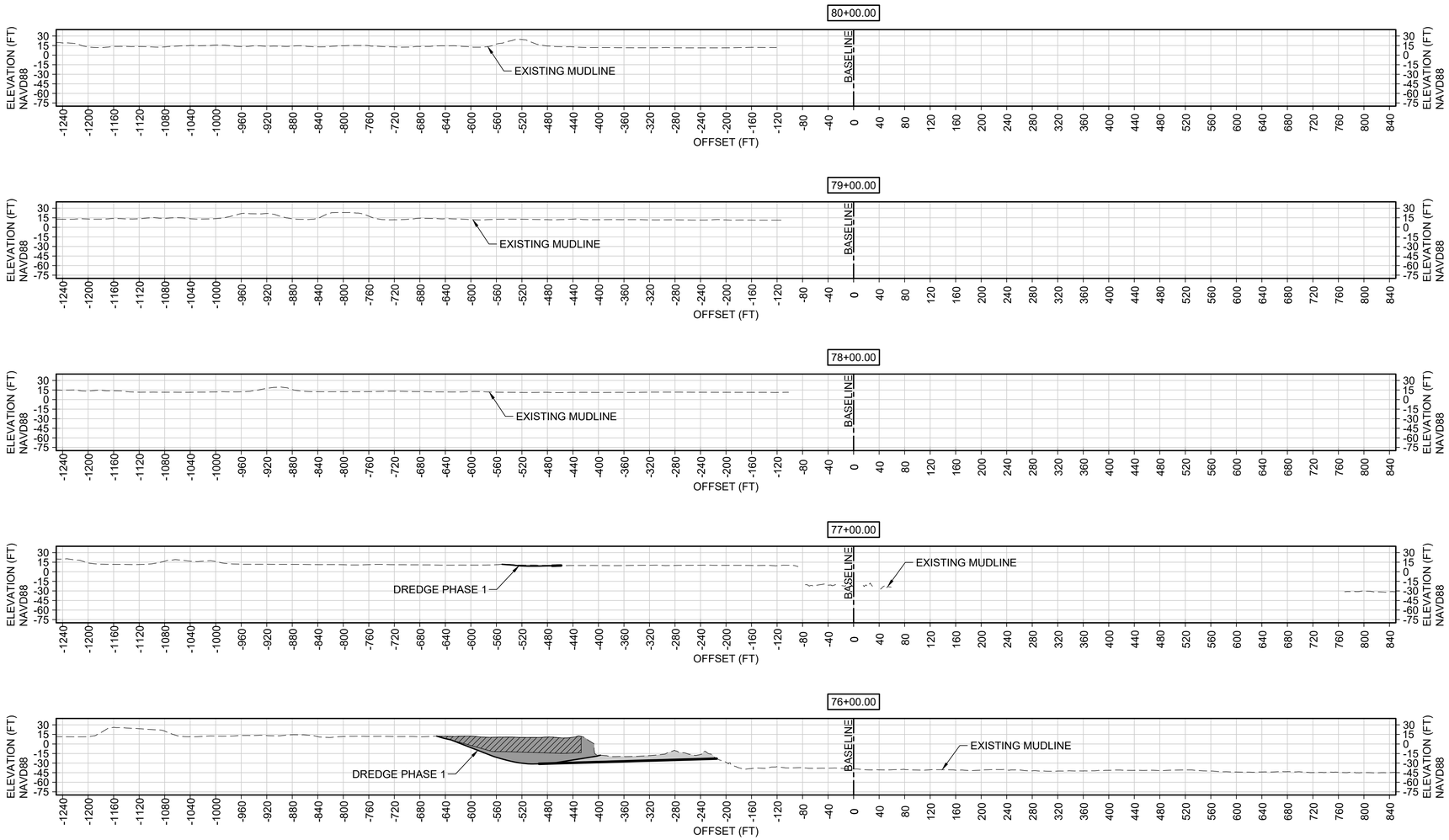


E3 CN311 DETAIL - TYPICAL SIDE SLOPES AND DREDGE

SCALE: 1" = 20'



LEGEND:

- PHASE 1 DREDGING AREA
- PHASE 2 DREDGING AREA
- SLAG AREA
- DESIGN DEPTH
- EXISTING MUDLINE
- OVERDREDGE

100' 0' 100' 200'

SCALE: 1"=100'

30% DESIGN SUBMITTAL
ISSUED: 2024-01-30
NOT TO BE USED FOR CONSTRUCTION

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

SECTIONS - DREDGING (SHEET 11 OF 11)

Designed by: PWK | Date: 2024-01-30 | Rev:
Drawn by: ED | Cad by: PGV | M&M Project No. 230329
Reviewed by: SM | Drawing date:
Submitted by: ERIC D. SMITH MOFFATT & NICHOL | Drawing Scale: Plot scale: 1:1 (10 SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-663-7300
6985 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

SPARROWS POINT CONTAINER TERMINAL

Sheet Reference No.
CN311
INDEX: 36 OF 242

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Exhibit F

Project Plans – Storm Water

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

(12) CONNECT TO EXISTING MANHOLE (BY OTHERS)

SCALE: 1" = 200'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE GENERAL ARRANGEMENT AND KEY

Designed by: DMD | Date: 2024-01-30 | Rev.:
Drwn by: DMD | Chk'd by: MJG | M&N Project No. 230339
Reviewed by: MJG | Drawing date:
Submitted by: SUBMITTERS NAME MOFFATT & NICHOL | Drawing Scale: Plot scale: 1:1 (10 SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-365-7300

moffatt & nichol

6895 BETHLEHEM BLVD, HARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

CG101

INDEX: 50 OF 242

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SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

(12) CONNECT TO EXISTING MANHOLE (BY OTHERS)

SCALE: 1" = 200'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE GENERAL ARRANGEMENT AND KEY

Designed by: DMD | Date: 2024-01-30 | Rev.:
Drn by: DMD | Ckd by: MJG | M&N Project No. 230329 | Drawing date:
Reviewed by: MJG | Submitted by: SUBMITTERS NAME MOFFATT & NICHOL | Drawing Scale: Plot scale: 1:1 (D SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-585-7300
moffatt & nichol
695 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CG101
INDEX: 50 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

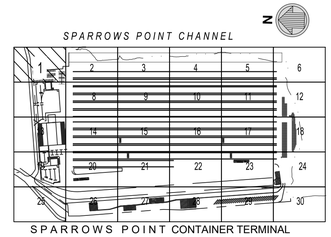
MATCH LINE - SEE SHEET CG103

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

30 15 7.5 0 30

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr.

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 1 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Date: 2024-01-30
Rev.

M&N Project No.
230329

Drawing date:

Reviewed by: MJG

Drawing Scale:
Plot scale: 1:1 (0 SHEET)

Submitted by:
SUBMITTERS NAME
MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST,
STE D BALTIMORE, MD 21224
410-585-7300

moffatt & nichol

8895 BESTGATE ROAD, SUITE 300,
BALTIMORE, MD 21209

Sheet
Reference No.

CG102

INDEX: 51 OF 242

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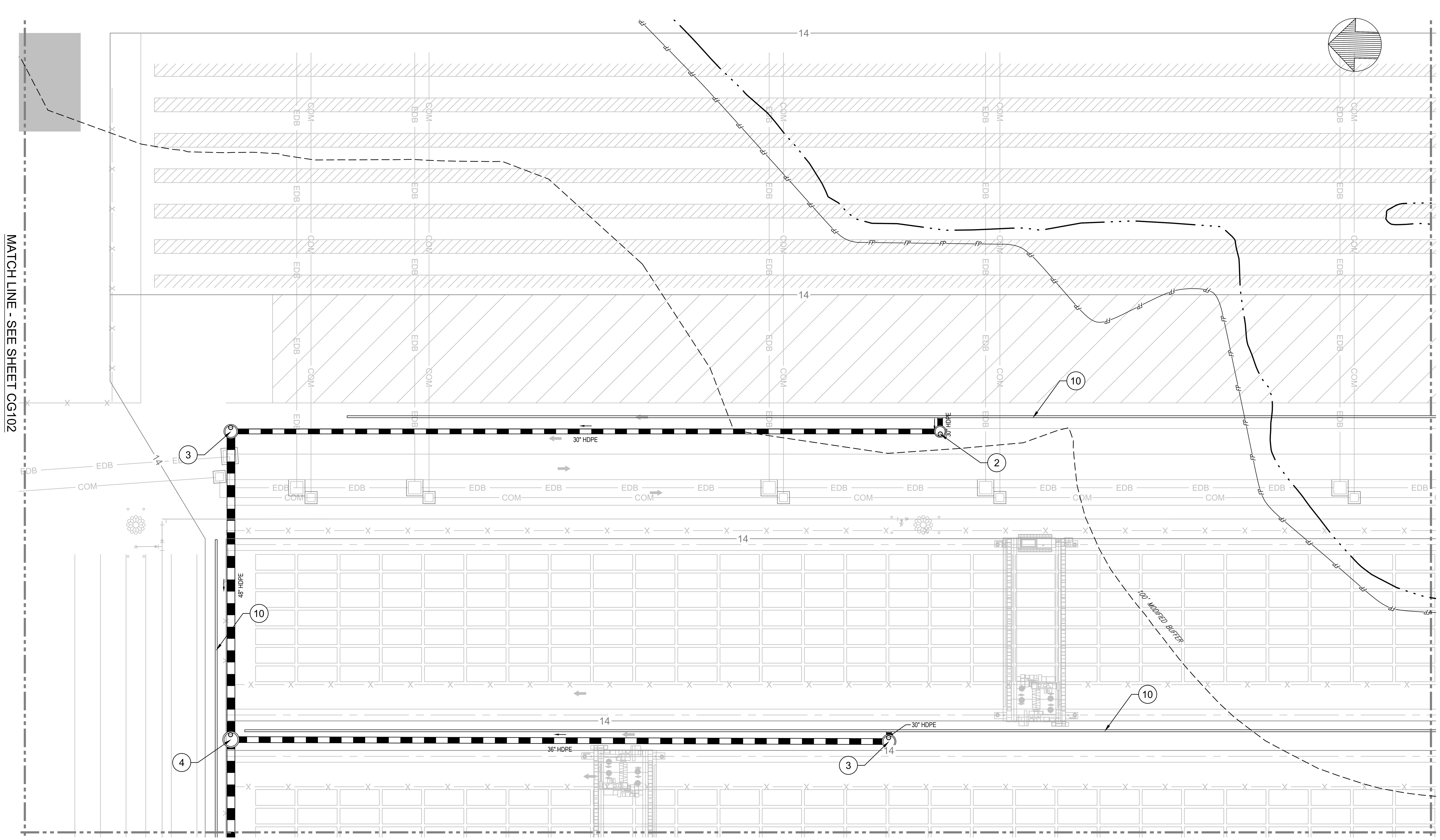
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

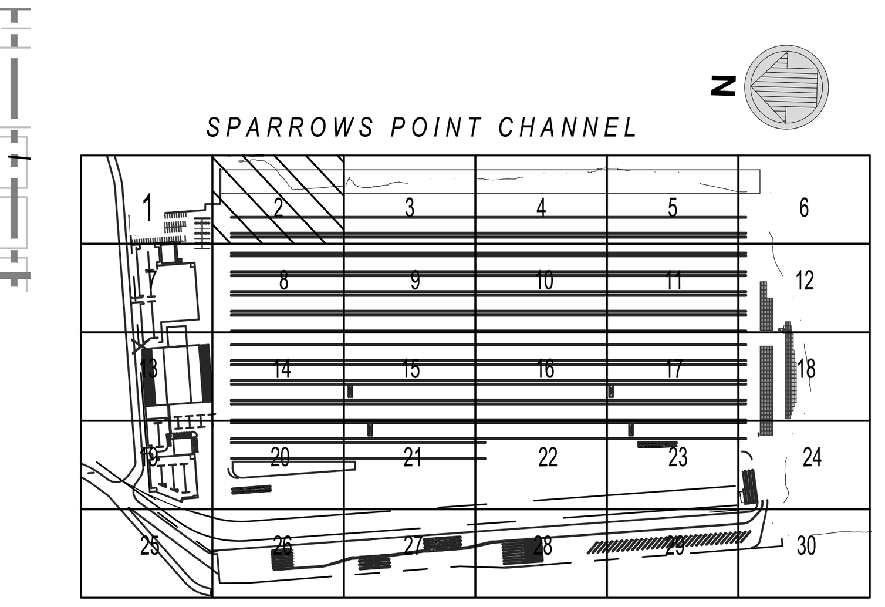


SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER//
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr.

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 2 OF 30)

Designed by: DMD		Date: 2024-01-30	Rev.
Dwn by: DMD	Ckd by: MJG	M&N Project No. 230329	
Reviewed by: MJG		Drawing code:	
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL		Drawing Scale: Plot scale: 1:1 (D SHEET)	

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224
410-563-7300

SPARROWS POINT CONTAINER TERMINAL PORT OF BALTIMORE
6995 BETHLEHEM BOULVARD
SUITE 100
BALTIMORE, MD 21219

Sheet Reference No.

CG103

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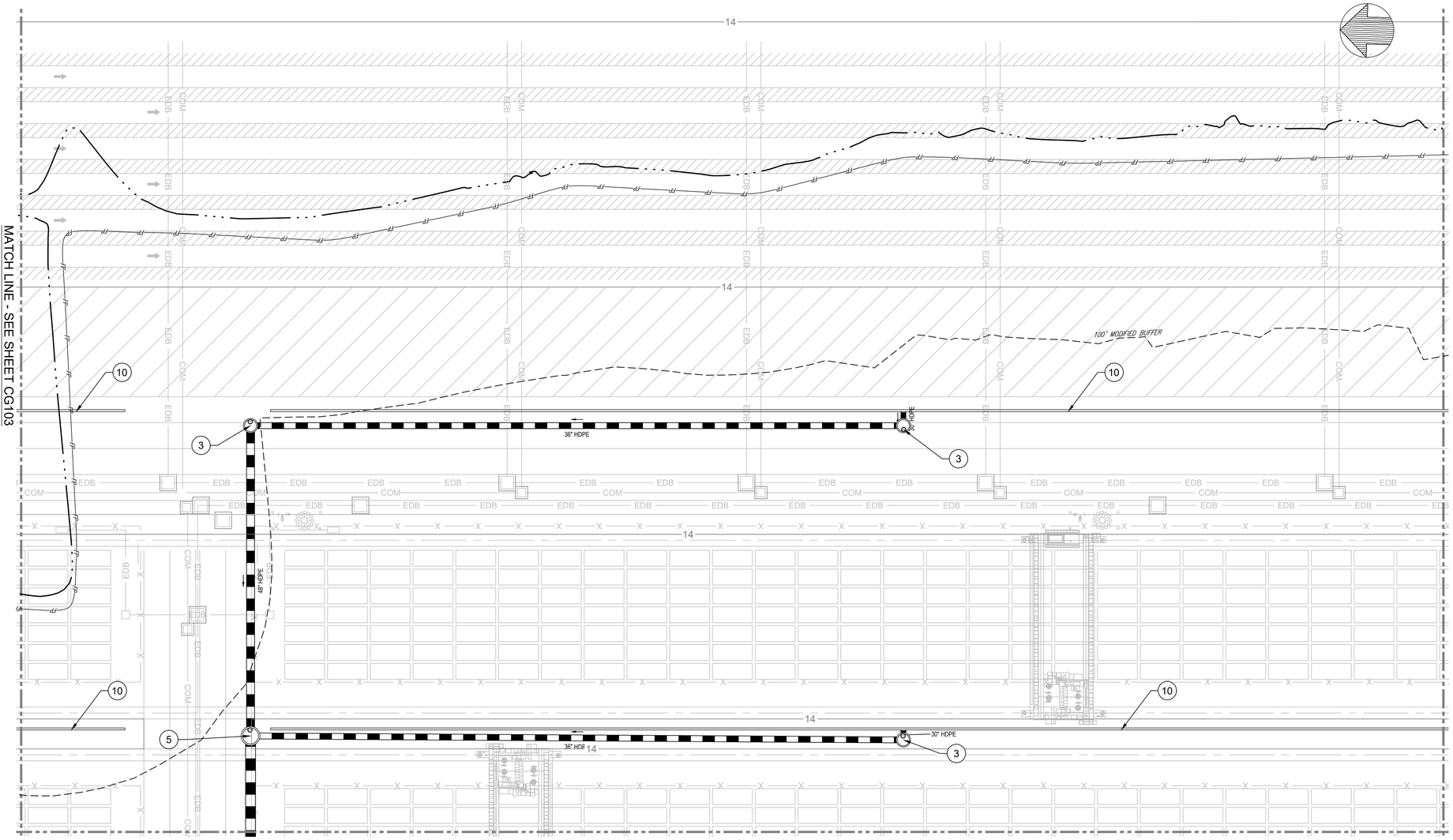
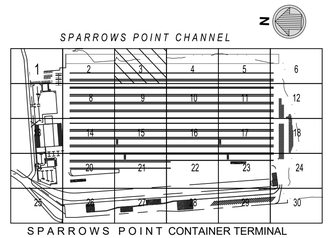


SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 3 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale: 1:1 (0 SHEET)
Plot scale:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Rev.

2780 LIGHTHOUSE POINT EAST, STE.1D BALTIMORE, MD 21224 410-365-7300

moffatt & nichol

6886 BETHLEHEM BLVD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

CG104

INDEX: 53 OF 242

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

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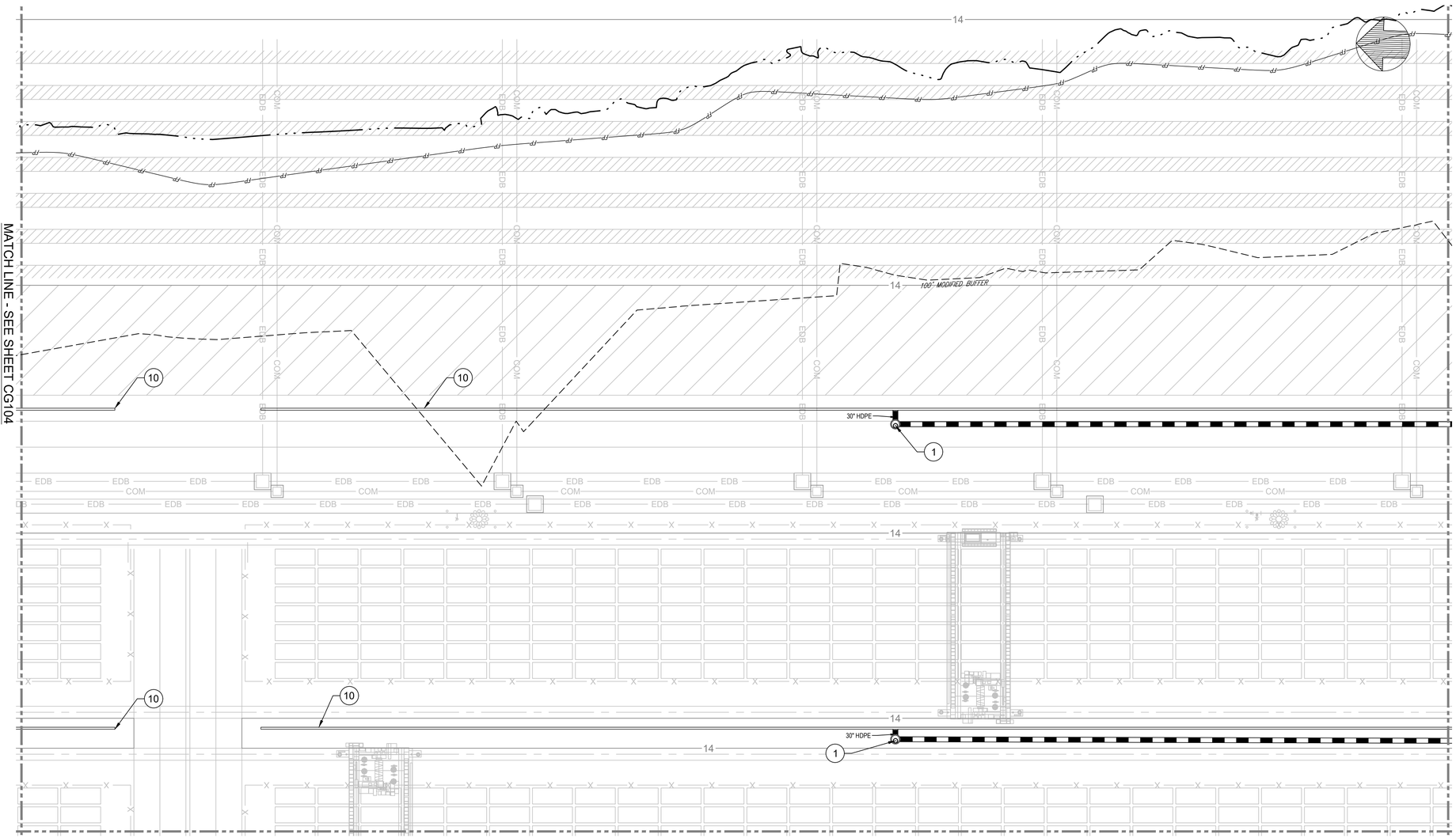

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
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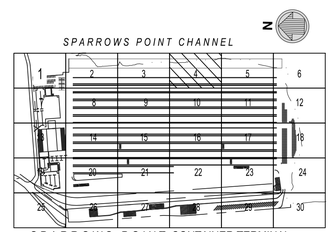
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL
KEY PLAN
SCALE: NTS

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30
SCALE: 1" = 30'

Mark	Description	Date	Appr.

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 4 OF 30)

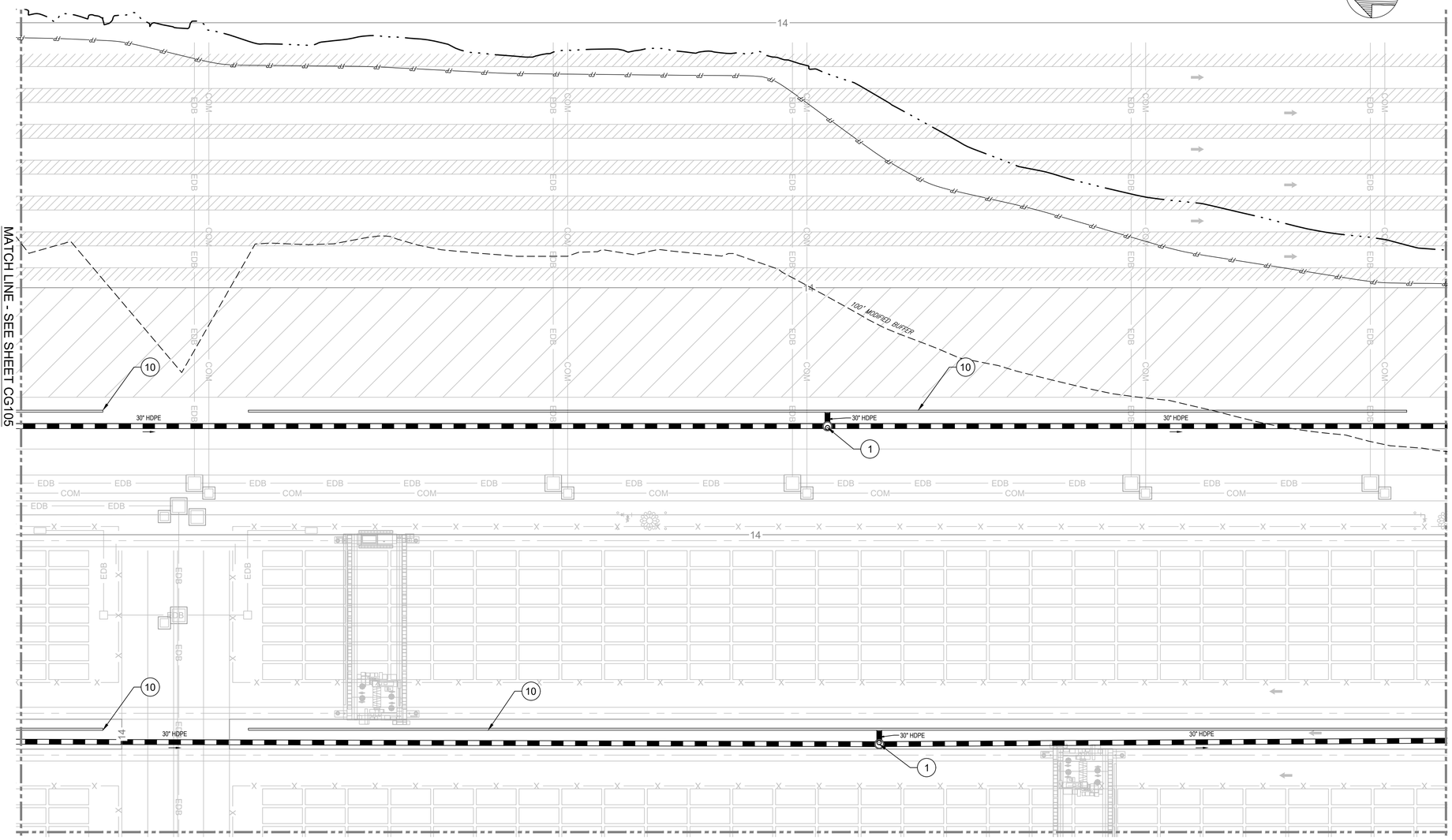
Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, SITE D BALTIMORE, MD 21224 410-565-7300
moffatt & nichol
685 SEVERN EXPO BLVD SUITE 100 BALTIMORE MD 21229

Sheet Reference No.
CG105
INDEX: 54 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\20241-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



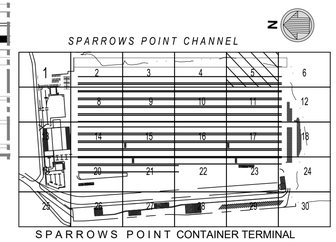
MATCH LINE - SEE SHEET CG112

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER //
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 5 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-685-7300
moffatt & nichol
6985 SETHLEHEM BOULVARD SUITE 100 BALTIMORE MD 21129

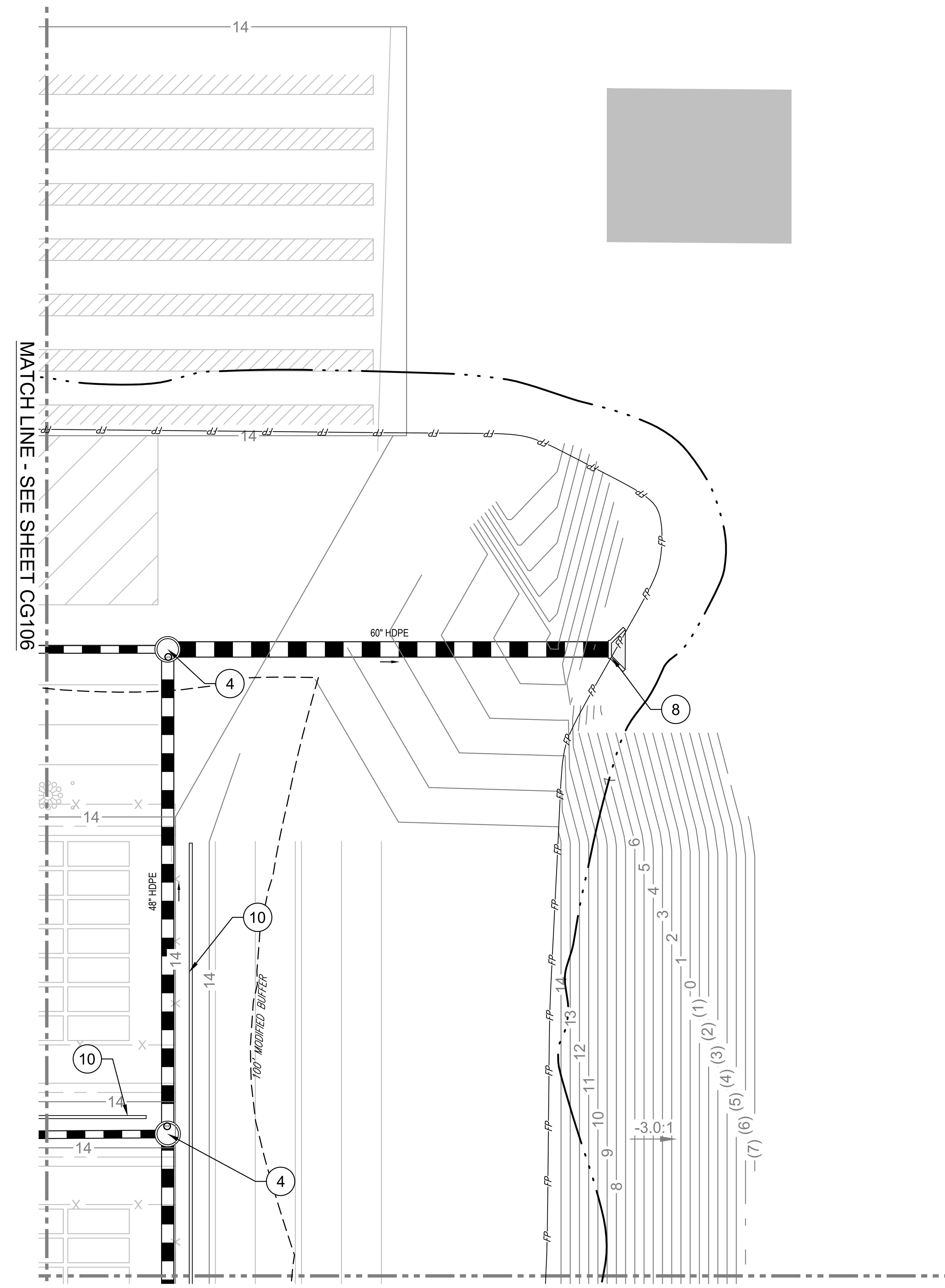
Sheet Reference No.

CG106

INDEX: 55 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

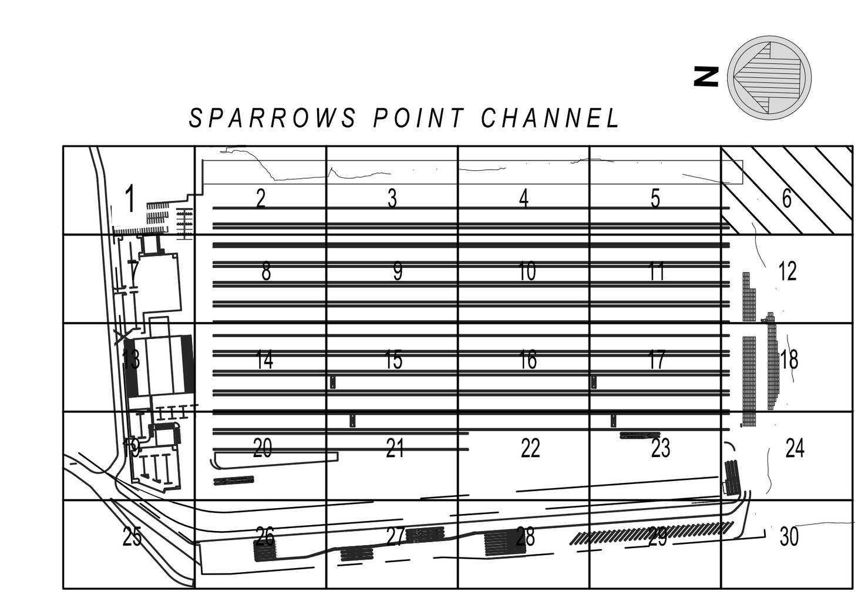


SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1	48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2	60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3	72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4	84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5	96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6	120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7	204" DIAMETER MANHOLE
8	CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9	DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10	TRENCH DRAIN
11	TYPE 'K' INLET (SHA STD. MD-378.11)
12	CONNECT TO EXISTING MANHOLE (BY OTHERS)



KEY PLAN
SCALE: NTS

SCALE: 1" = 30'

BOHLER//
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 6 OF 30)

Designed by: DMD	Date:2024-01-30
Dwn by: DMD	Ckd by: MJG
M&N Project No.	230329
Reviewed by: MJG	Drawing code:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL	Drawing Scale:
Plot scale:	1:1 (D SHEET)

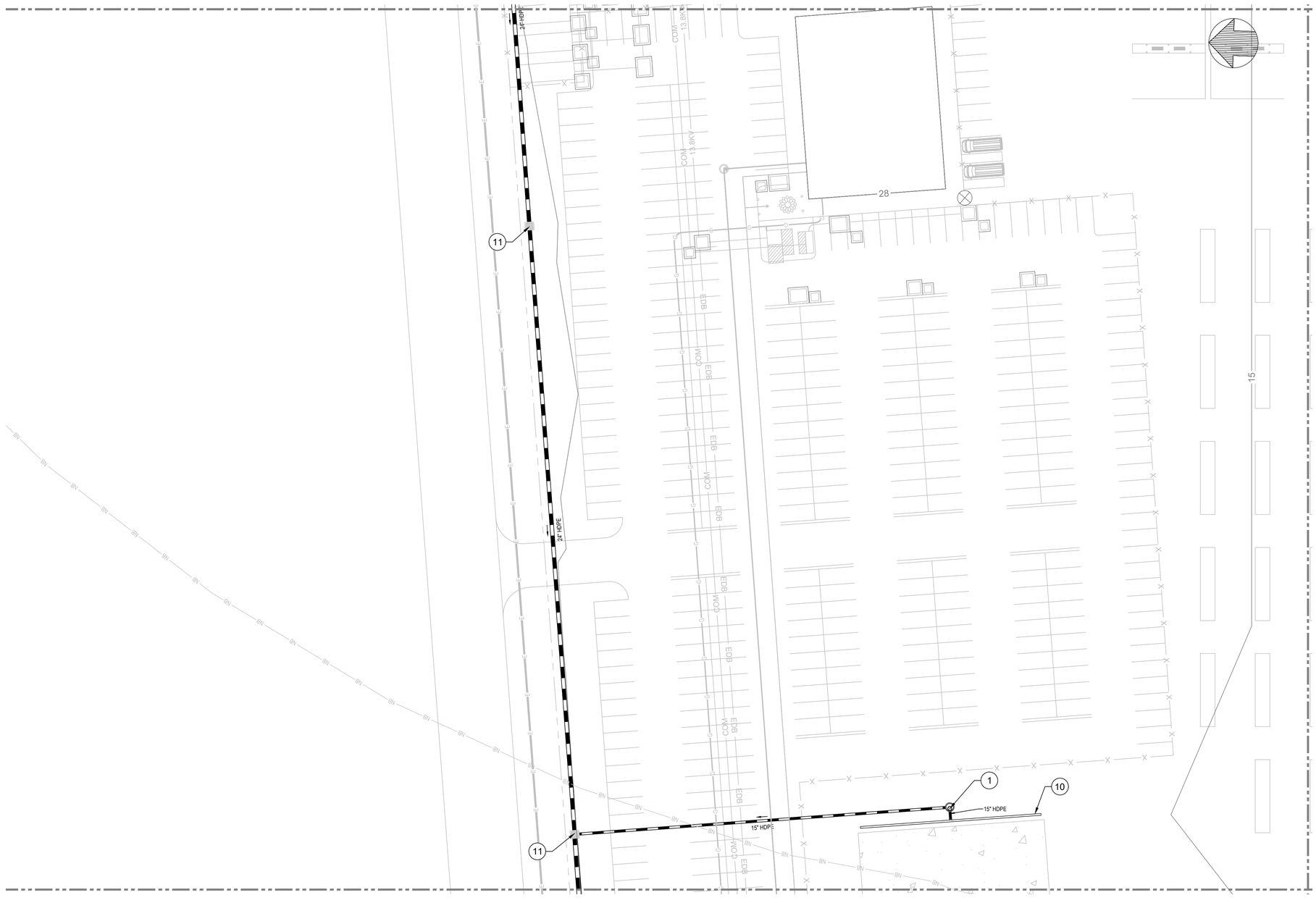
moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224
410-563-7300

SPARROWS POINT CONTAINER TERMINAL
6995 BETHLEHEM BOULVARD
SUITE 100
BALTIMORE, MD 21219

Sheet Reference No.

CG107

MATCH LINE - SEE SHEET CG102



MATCH LINE - SEE SHEET CG114

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
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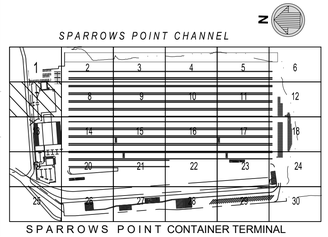
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)

MATCH LINE - SEE SHEET CG109



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 7 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (1) SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300
moffatt & nichol
6906 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 2219

Sheet Reference No.

CG108

INDEX: 57 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DOUGLAS DREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG103

MATCH LINE - SEE SHEET CG108

MATCH LINE - SEE SHEET CG110

MATCH LINE - SEE SHEET CG115

48" HDPE

60" RCP

30" HDPE

36" HDPE

14

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)

SPARROWS POINT CHANNEL

SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

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DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 8 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale: 1:1 (10 SHEET)
Plot scale:
Rev.

2780 LIGHTHOUSE POINT EAST, SITE 'D' BALTIMORE, MD 21224
410-685-7300

moffatt & nichol

685 SEETHE BOULEVARD SUITE 100 BALTIMORE MD 21229

Sheet Reference No.

CG109

INDEX: 58 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

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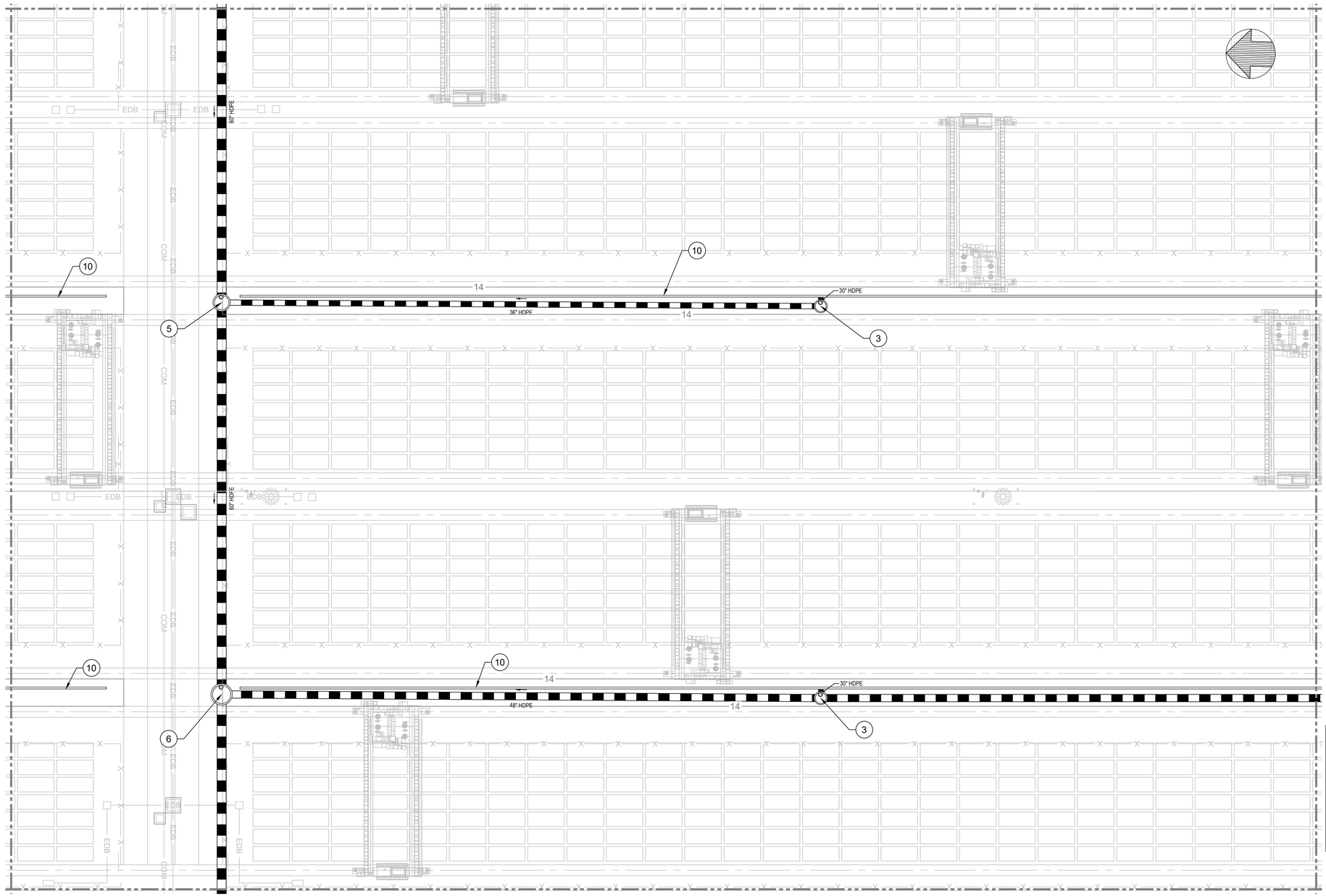

MATCH LINE - SEE SHEET CG109

MATCH LINE - SEE SHEET CG111

MATCH LINE - SEE SHEET CG116

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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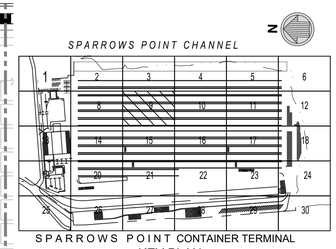
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

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TOWSON, MARYLAND 21204
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Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 9 OF 30)

Designed by: DMD | Drawn by: DMD | Checked by: MJG | Reviewed by: MJG | Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

Date: 2024-01-30 | M&N Project No. 230329 | Drawing date: | Drawing Scale: Plot scale: 1:1 (D SHEET) | Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

6906 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 2219

Sheet Reference No.

CG110

INDEX: 59 OF 242

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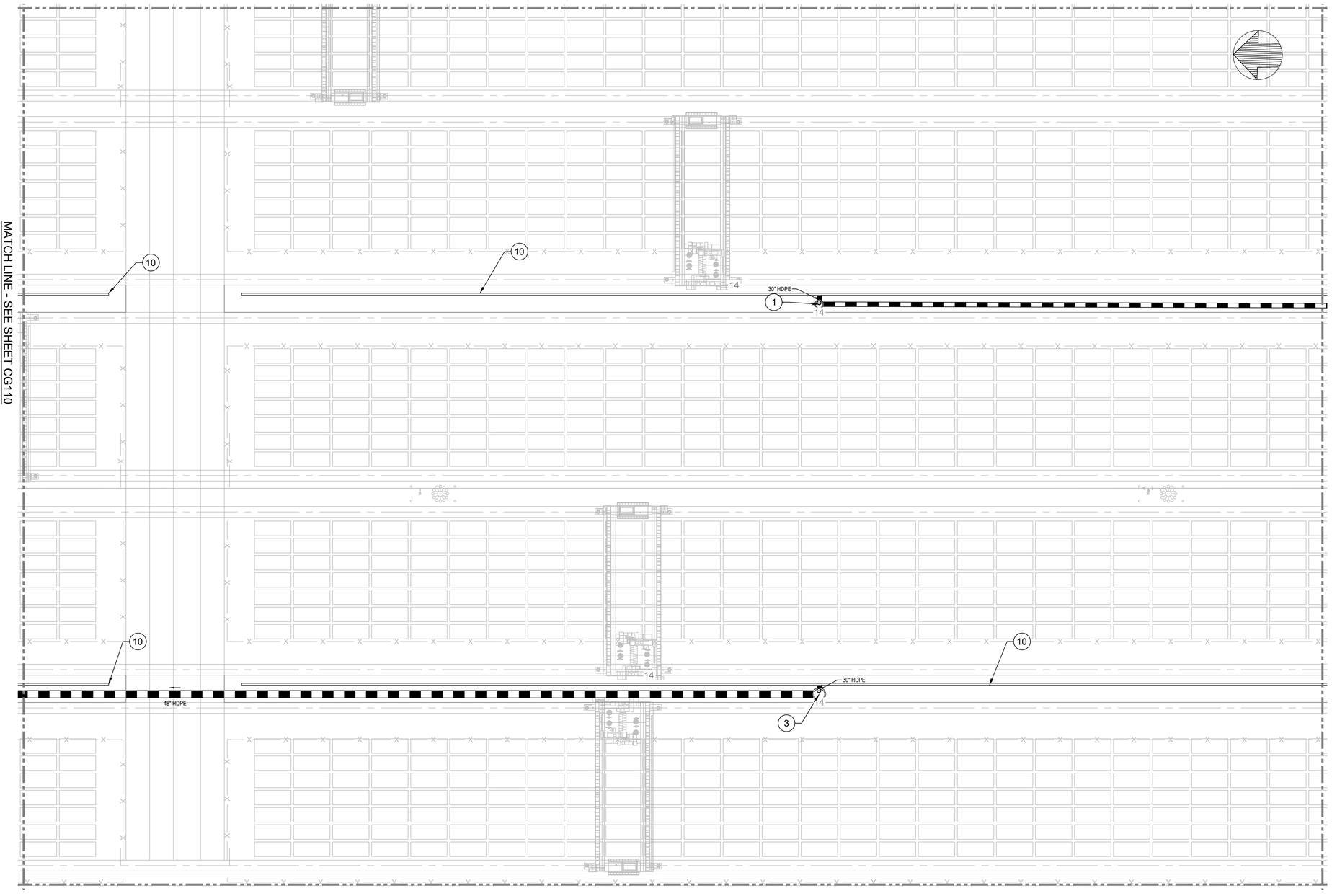
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG105



MATCH LINE - SEE SHEET CG110

MATCH LINE - SEE SHEET CG112

MATCH LINE - SEE SHEET CG117

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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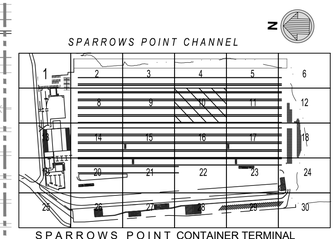
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
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Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 10 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (10 SHEET)
Rev.
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

695 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 2229

Sheet Reference No.

CG111

INDEX: 60 OF 242

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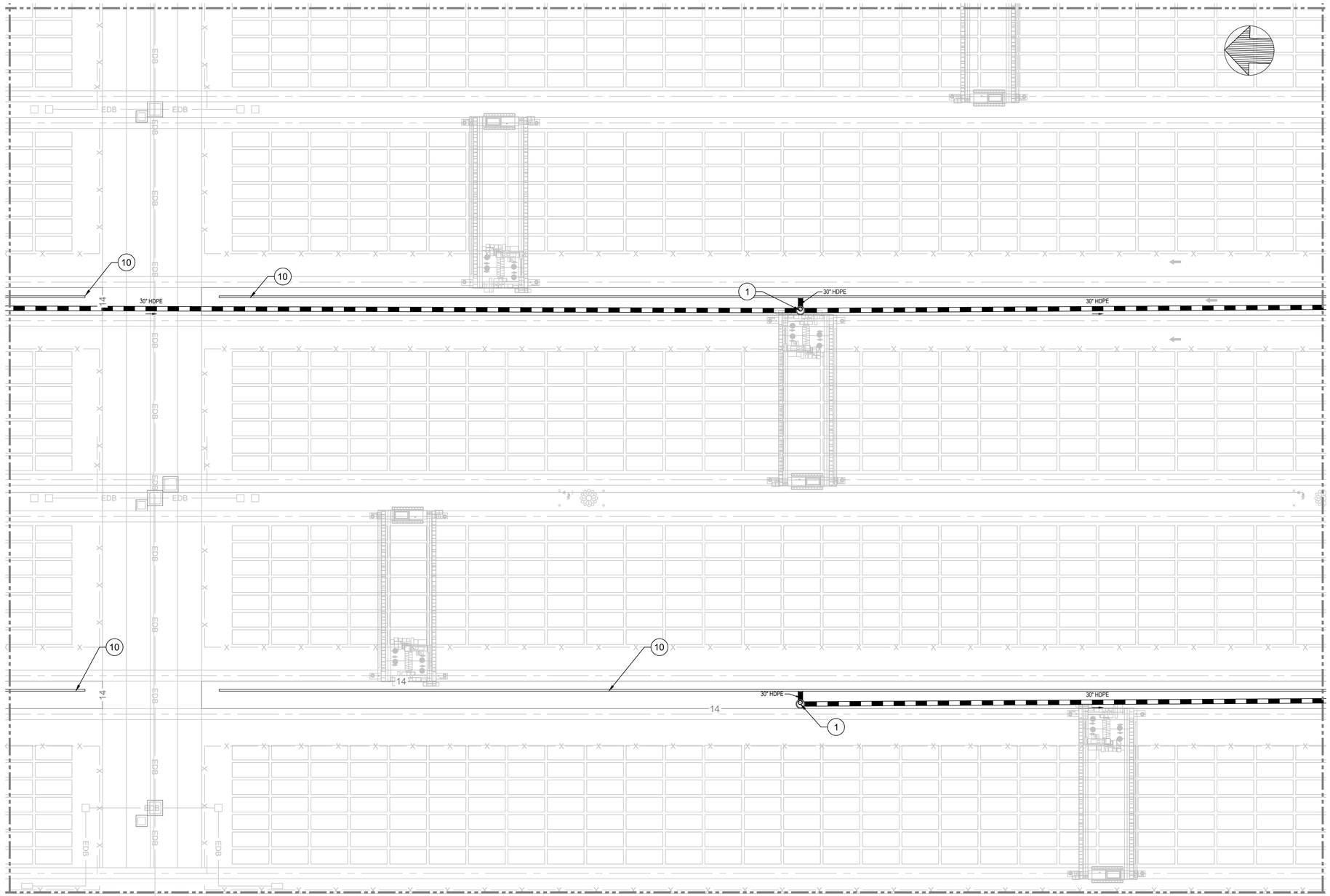
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG106

MATCH LINE - SEE SHEET CG111

MATCH LINE - SEE SHEET CG113



MATCH LINE - SEE SHEET CG118

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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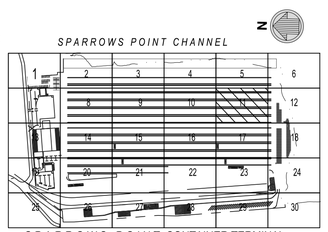
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

30 15 7.5 0 30

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 11 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Submitted by: SUBMITTERS NAME MOFFATT & NICHOL
Drawing Scale
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

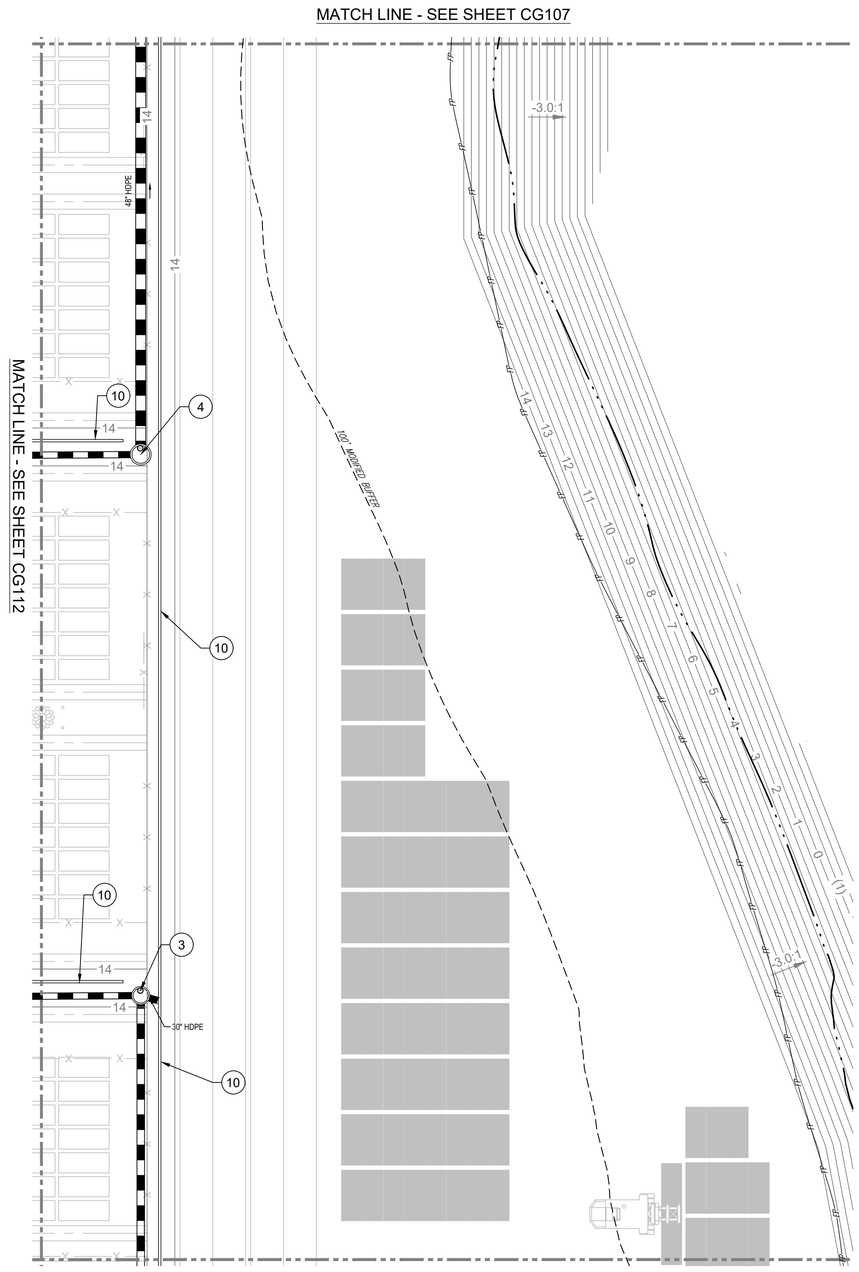
6955 BETHLEHEM BOULVARD SUITE 100 BALTIMORE,MD 21219

Sheet Reference No.

CG112

INDEX: 61 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW



SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
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3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
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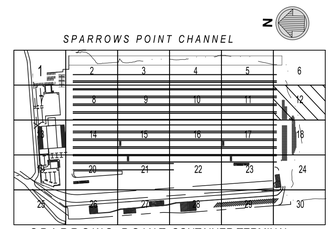
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 12 OF 30)

Designed by: DMD
Drawn by: DMD
Cad by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
8890 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

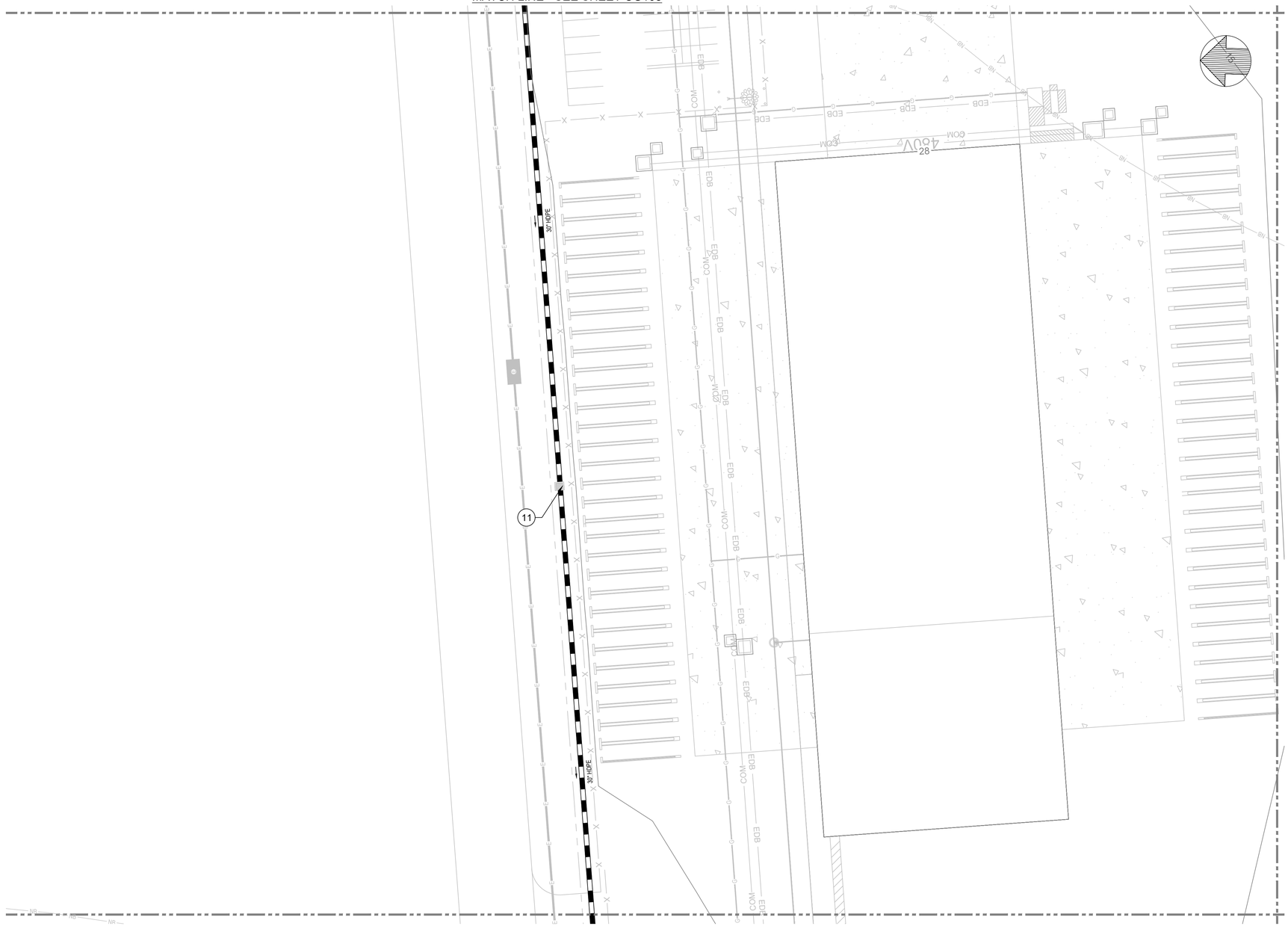
CG113

INDEX: 62 OF 242

File: H:\2022\MD4220013.02\CADTransfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG108



MATCH LINE - SEE SHEET CG115

MATCH LINE - SEE SHEET CG120

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
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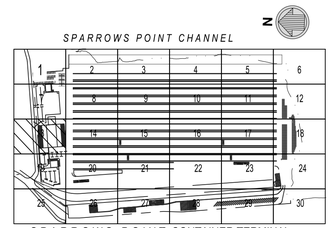


SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 13 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
8995 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21209

Sheet Reference No.

CG114

INDEX: 63 OF 242

File: H:\2022\MD4220013.02\CADTransfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:12 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG109

MATCH LINE - SEE SHEET CG114

MATCH LINE - SEE SHEET CG116

MATCH LINE - SEE SHEET CG121

42" HDPE

72" RCP

60" RCP

30" HDPE

14

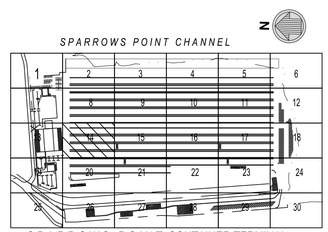
BN

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 14 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale: Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-685-7300

moffatt & nichol

695 SEATHER BOULVARD SUITE 100 BALTIMORE MD 21229

Sheet Reference No.

CG115

INDEX: 64 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

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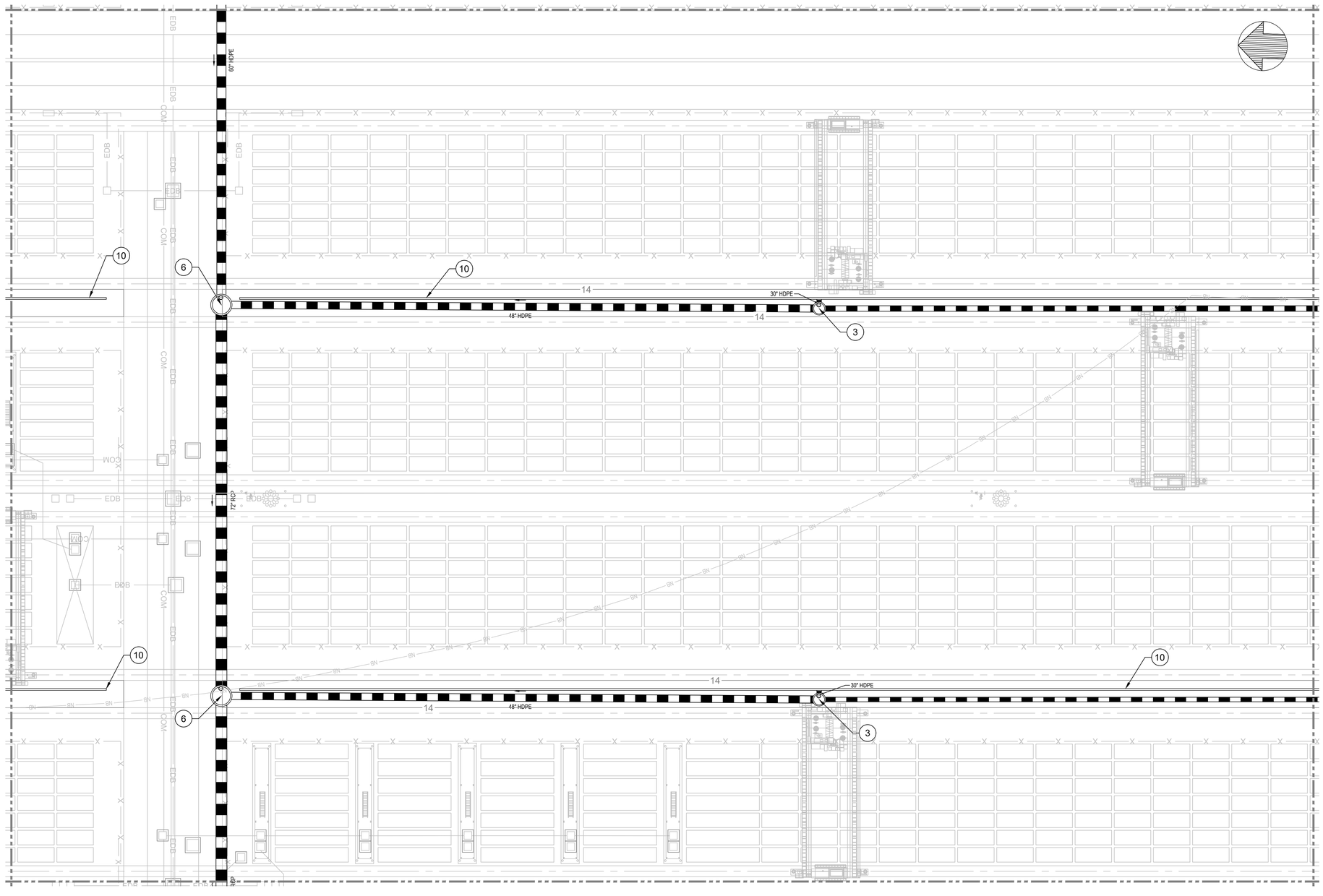
MATCH LINE - SEE SHEET CG110



MATCH LINE - SEE SHEET CG115

MATCH LINE - SEE SHEET CG117

MATCH LINE - SEE SHEET CG122

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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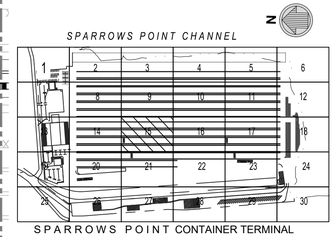
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 15 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

6905 BENJAMIN FRANKLIN DRIVE SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

CG116

INDEX: 65 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DOUGLAS DREW

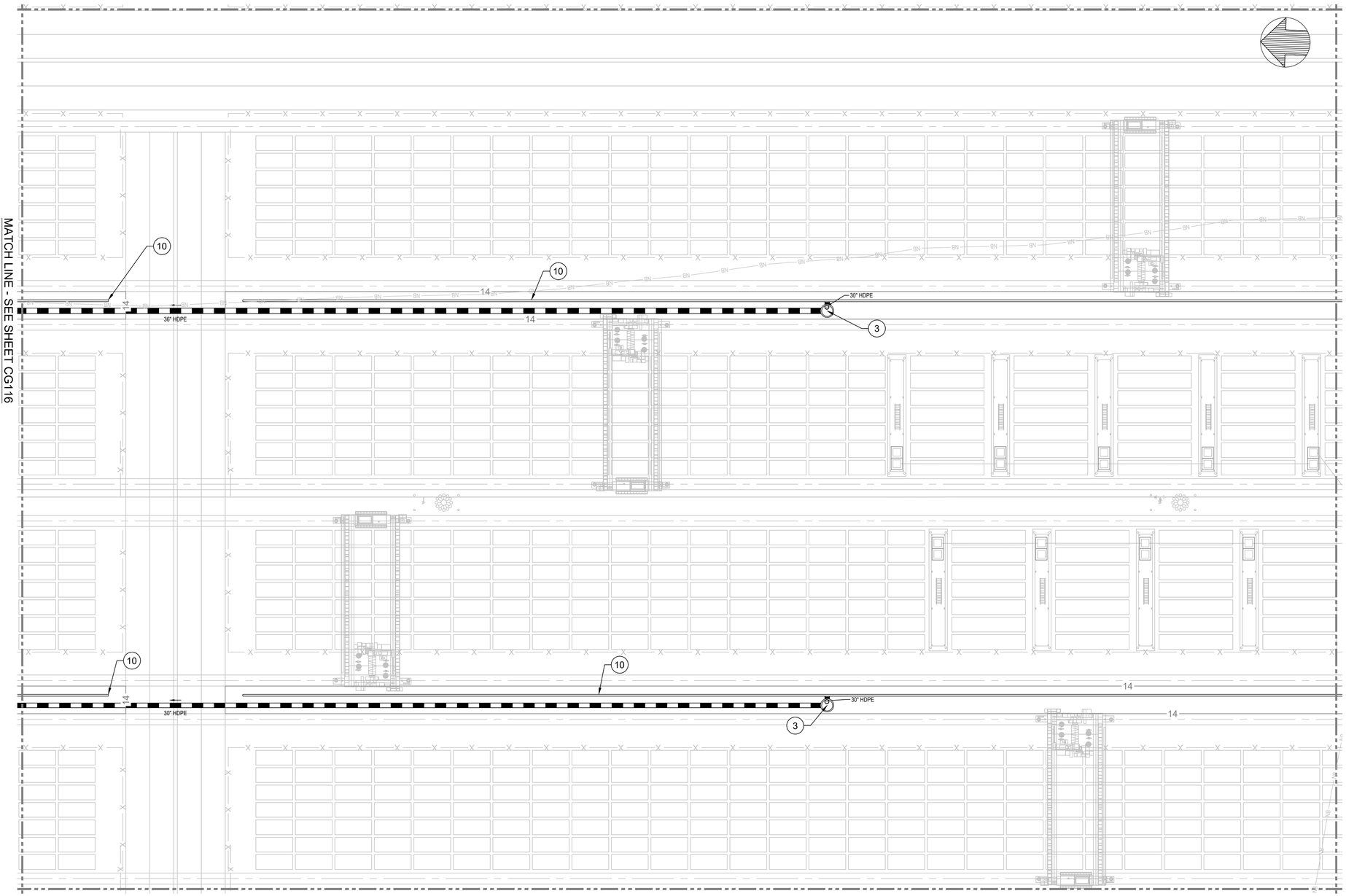
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG111

MATCH LINE - SEE SHEET CG116

MATCH LINE - SEE SHEET CG118

MATCH LINE - SEE SHEET CG123



SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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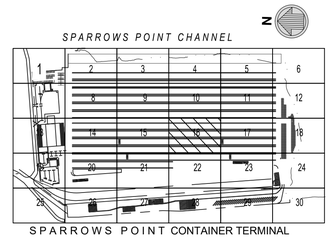
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 16 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Drawing Scale:
Plot scale: 1:1 (10 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-685-7300

moffatt & nichol

6985 RETHERFORD BLVD SUITE 100 BALTIMORE MD 21209

Sheet Reference No.

CG117

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File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG112

MATCH LINE - SEE SHEET CG117

MATCH LINE - SEE SHEET CG119

MATCH LINE - SEE SHEET CG124

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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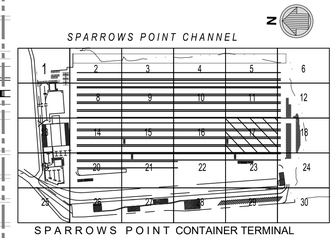


SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 17 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230339
Drawing date:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)
Rev.
Submitted by:
SUBMITTERS NAME
MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

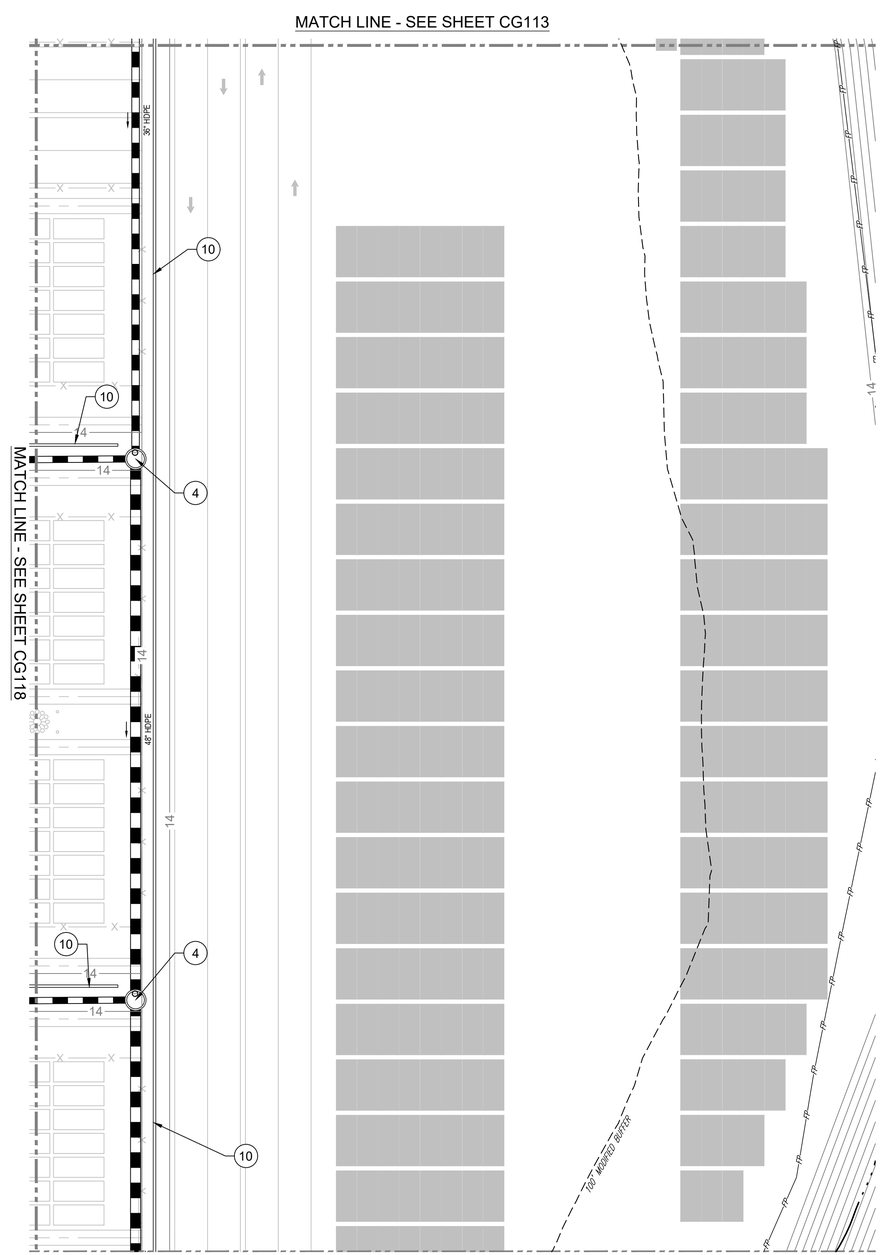
6886 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

CG118

INDEX: 67 OF 242

File: H:\2022\MD4220013.02\CAD\Transfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW



SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
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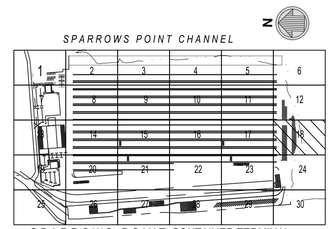
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER //
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 18 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
M&N Project No. 230329
Date: 2024-01-30
Rev.
Drawing date:
Drawing Scale:
Plot scale: 1:1 (0 SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
8890 BETHLEHEM BOULEVARD SUITE 100 BALTIMORE, MD 21219

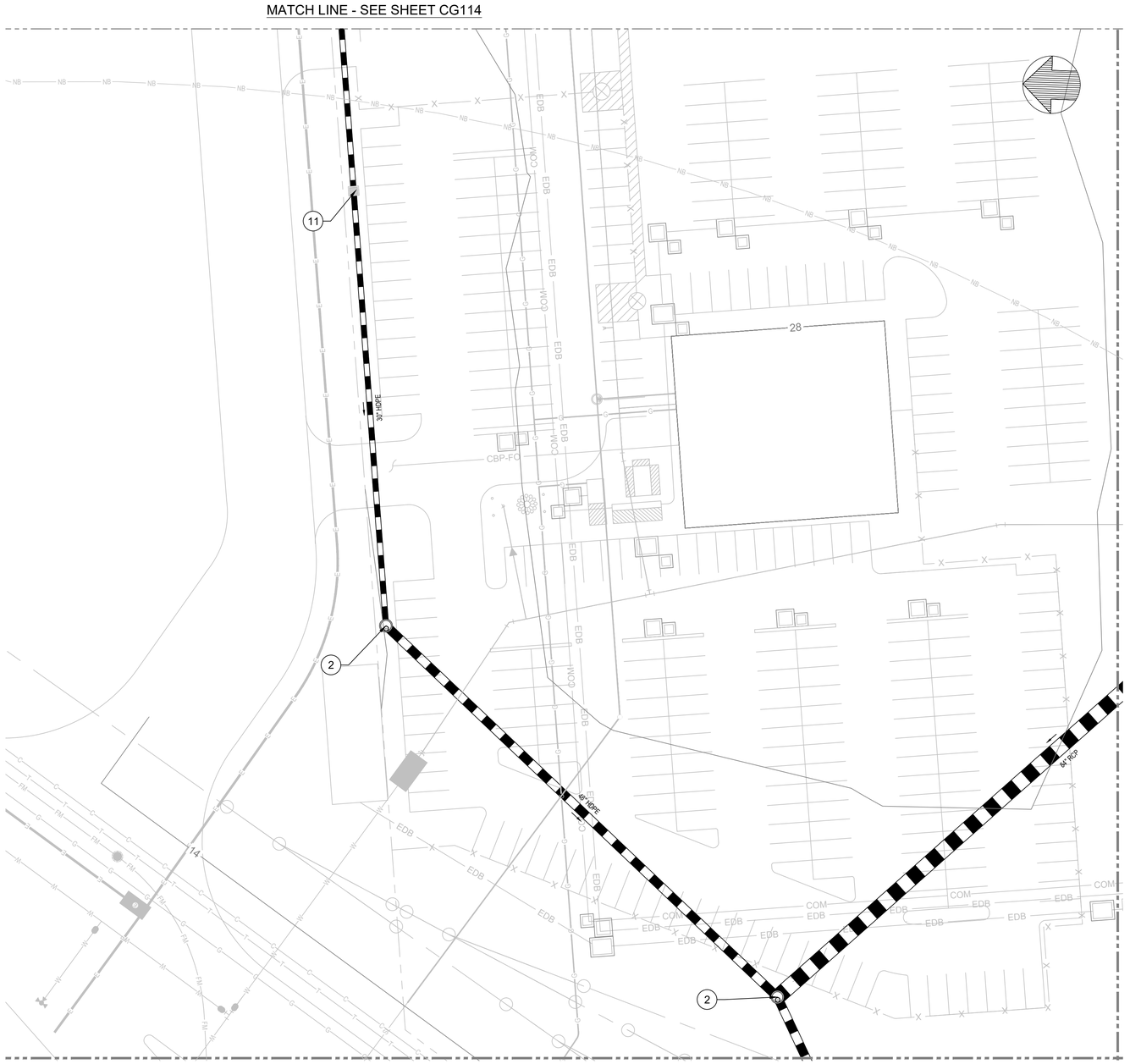
Sheet Reference No.

CG119

INDEX: 68 OF 242

File: H:\2022\MD4220013.02\CADTransfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
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7. 204" DIAMETER MANHOLE
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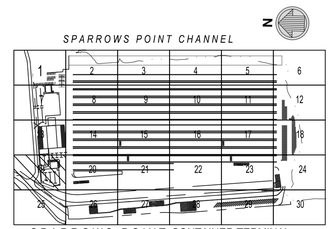
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 19 OF 30)

Designed by: DMD | Rev.
Drawn by: DMD | Chk by: MJG | Date: 2024-01-30
Reviewed by: MJG | M&N Project No. 230329
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL | Drawing date:
Drawing Scale: Plot scale: 1:1 (1 SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-585-7300

moffatt & nichol

6895 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

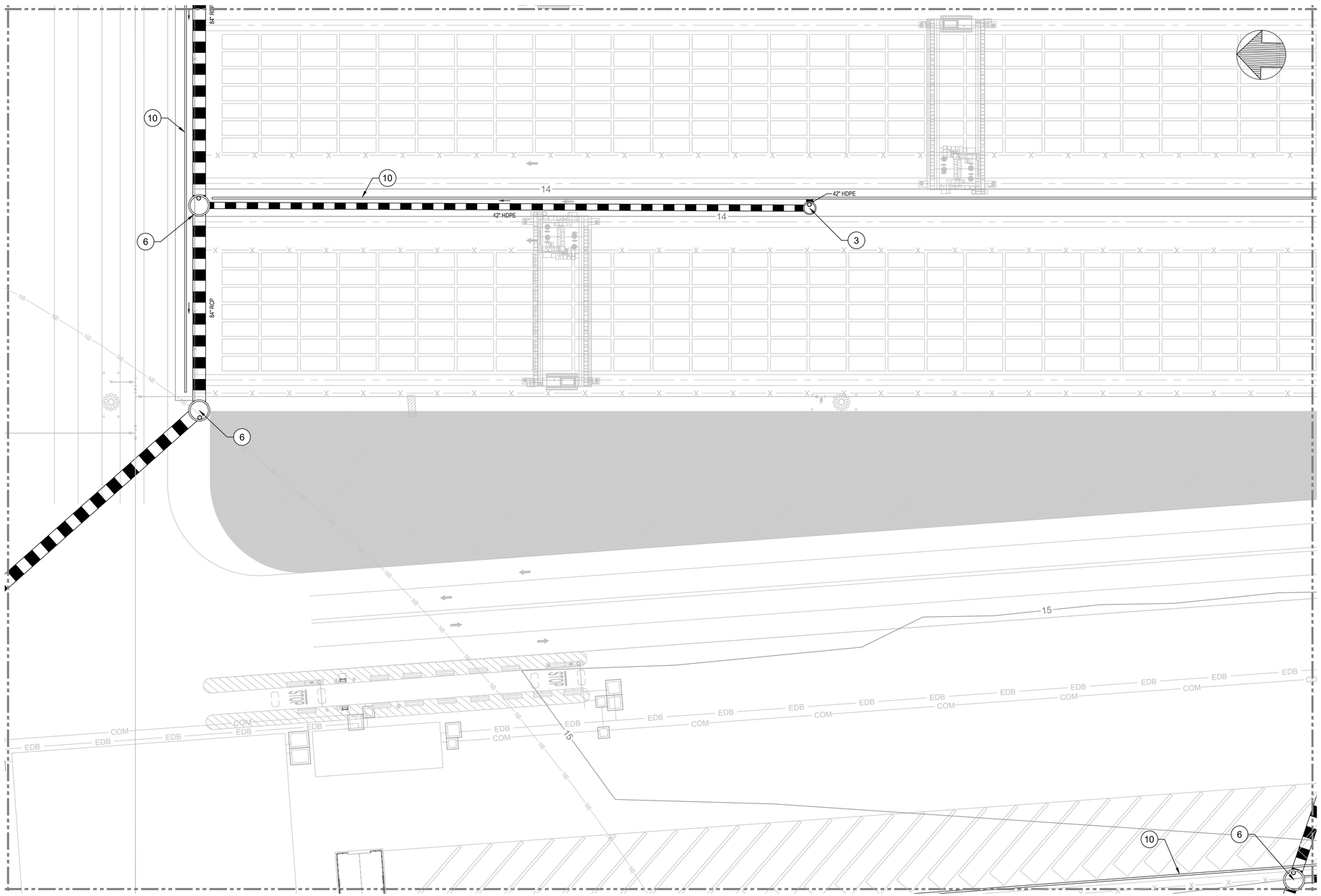
CG120

INDEX: 69 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG115



MATCH LINE - SEE SHEET CG120

MATCH LINE - SEE SHEET CG122

MATCH LINE - SEE SHEET CG127

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
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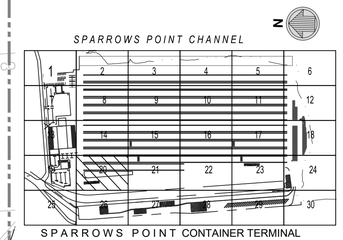
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 20 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTERS NAME MOFFATT & NICHOL
Drawing Scale: 1:1 (10 SHEET)
Plot scale: 1:1 (10 SHEET)
Drawing date:
M&N Project No. 230329
Date: 2024-01-30
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

6886 BETHLEHEM BOULVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.

CG121

INDEX: 70 OF 242

File: H:\2022\MD4220013.02\CAD\Transfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG116

MATCH LINE - SEE SHEET CG121

MATCH LINE - SEE SHEET CG123

MATCH LINE - SEE SHEET CG128

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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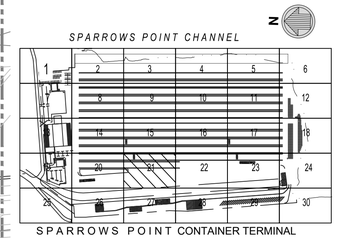
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL
KEY PLAN
SCALE: NTS

SCALE: 1" = 30'

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 21 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing scale:
Drawing Scale
Plot scale: 1:1 (D SHEET)
Rev.

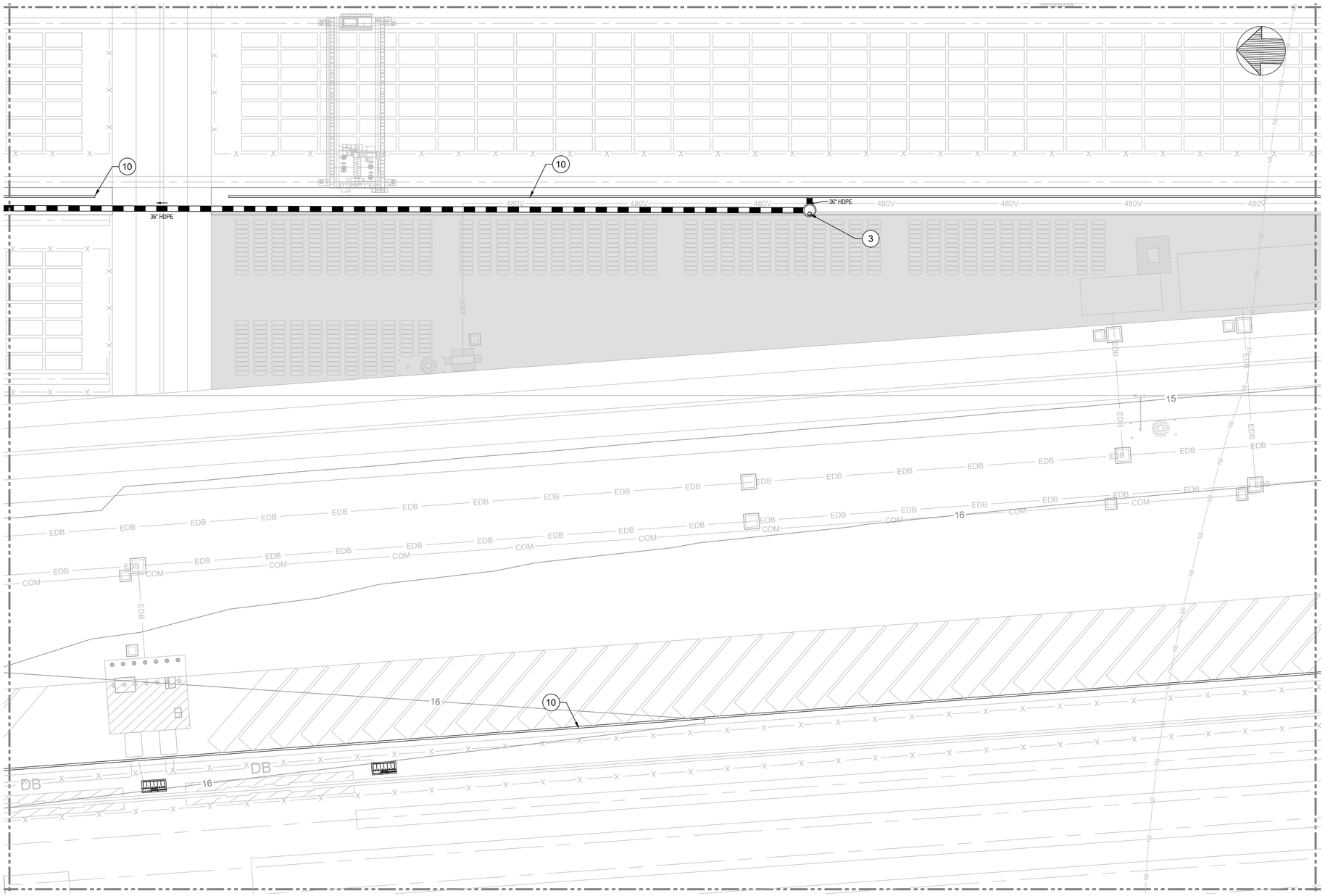
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-685-7300
moffatt & nichol
695 SEVENTEEN HOLLIWD SUITE 100 BALTIMORE MD 21229

Sheet Reference No.
CG122
INDEX: 71 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG117



MATCH LINE - SEE SHEET CG122

MATCH LINE - SEE SHEET CG124

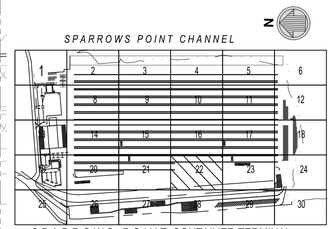
MATCH LINE - SEE SHEET CG129

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 22 OF 30)

Designed by: DMD
Drawn by: DMD
Cad by: MJG
Date: 2024-01-30
Rev.
M&N Project No. 230329
Drawing date:
Drawing Scale
Plot scale: 1:1 (0 SHEET)
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300
moffatt & nichol
8888 BETHLEHEM BOULEVARD SUITE 530 BALTIMORE MD 21219

Sheet Reference No.

CG123

INDEX: 72 OF 242

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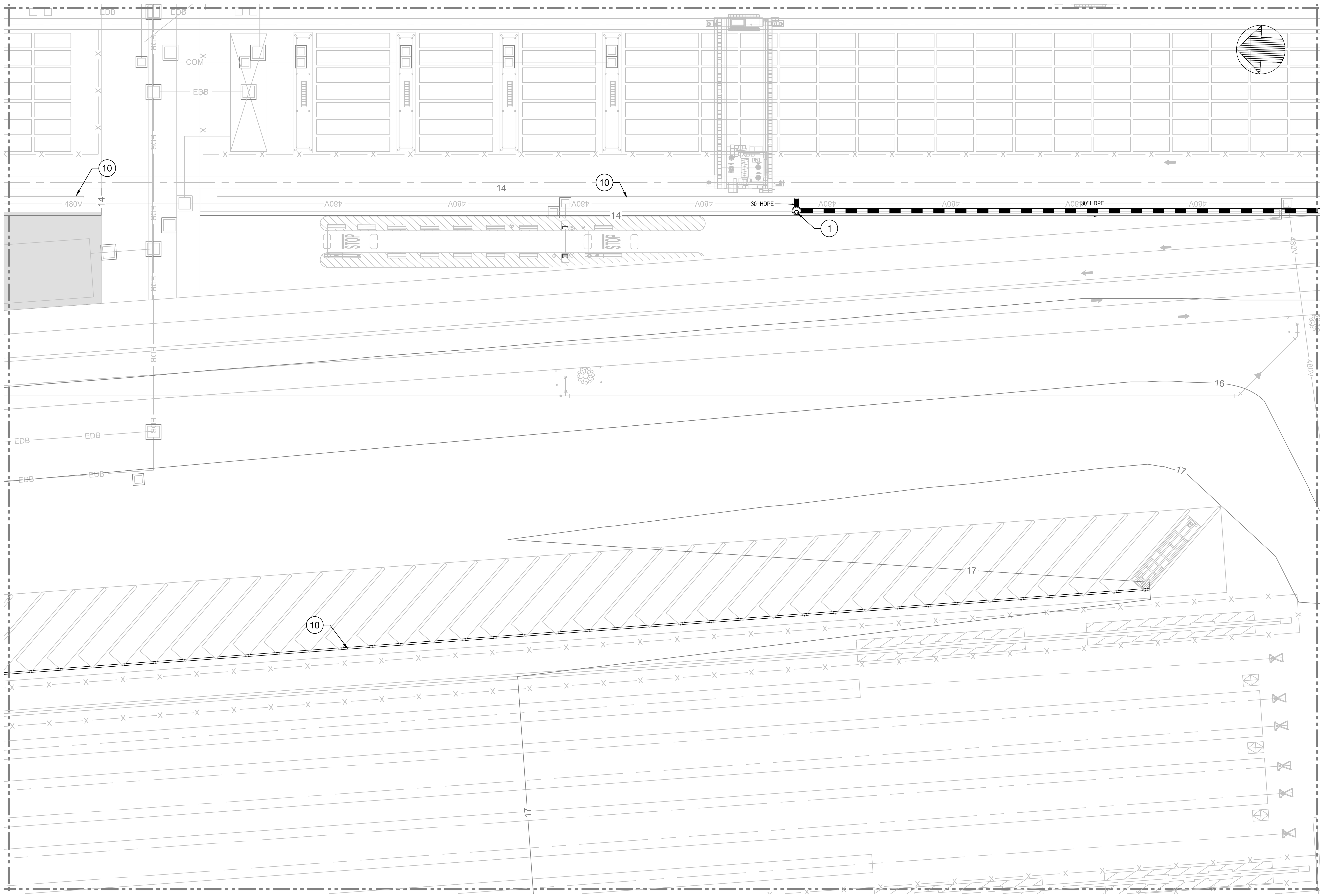
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG118

MATCH LINE - SEE SHEET CG123



MATCH LINE - SEE SHEET CG125

MATCH LINE - SEE SHEET CG130

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
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7. 204" DIAMETER MANHOLE
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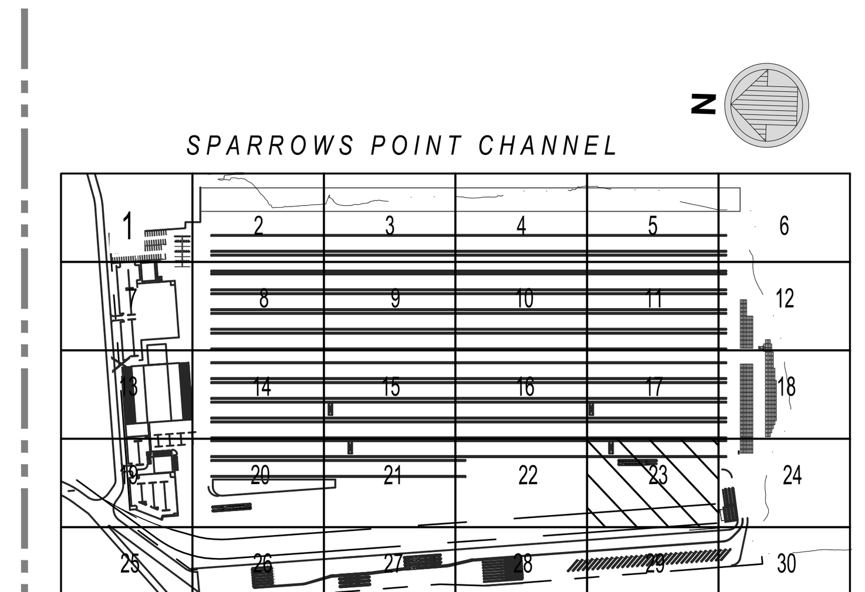
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER//

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 23 OF 30)

Designed by: DMD	Date:2024-01-30
Dwn by: DMD	Ckd by: MJG
M&N Project No.	230329
Reviewed by: MJG	Drawing code:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL	Drawing Scale:
Plot scale:	1:1 (D SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST,
STE. D BALTIMORE, MD 21224
410-563-7300

SPARROWS POINT CONTAINER TERMINAL
6995 BETHLEHEM BOULVARD
SUITE 100
BALTIMORE, MD 21219

Sheet Reference No.

CG124

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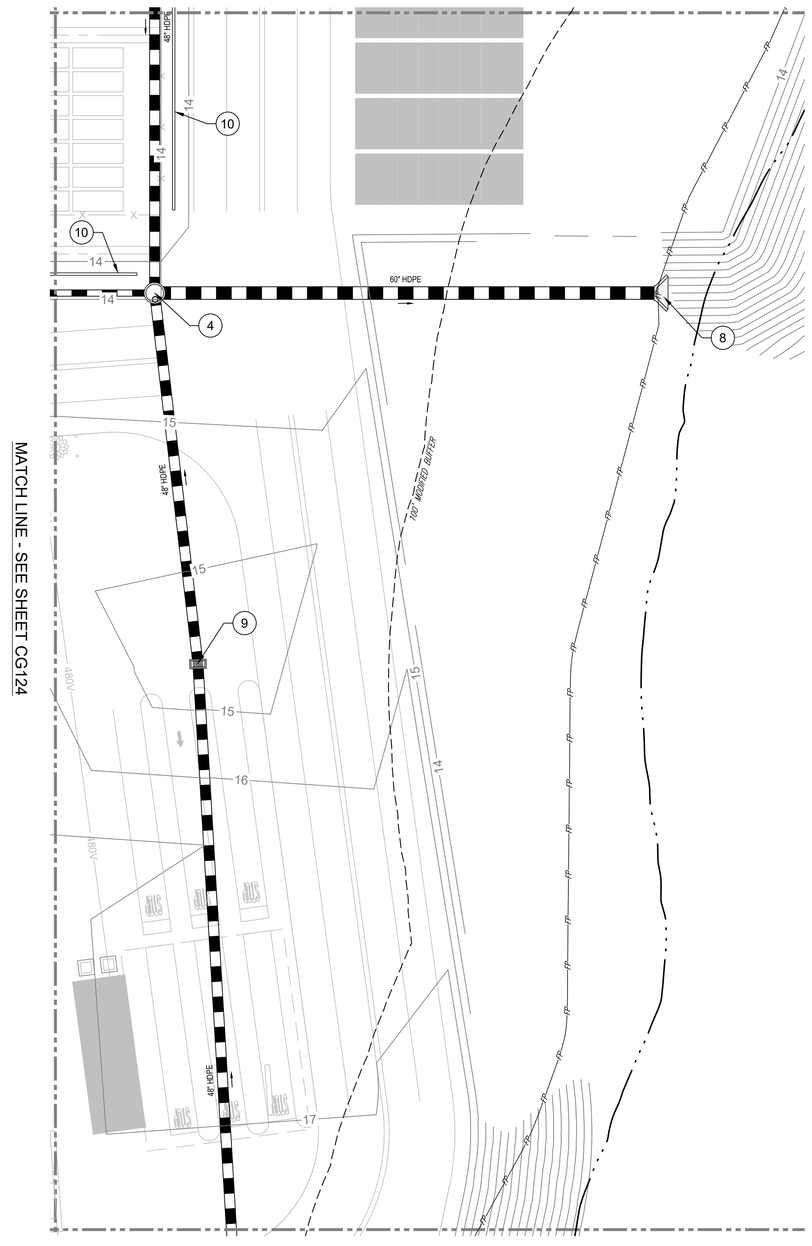
MATCH LINE - SEE SHEET CG119



MATCH LINE - SEE SHEET CG124

MATCH LINE - SEE SHEET CG131

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
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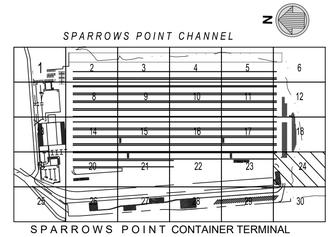
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 24 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Drawing Scale
Plot scale: 1:1 (0 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol

6906 BETHLEHEM BLVD, SUITE 800 BALTIMORE, MD 21219

Sheet Reference No.

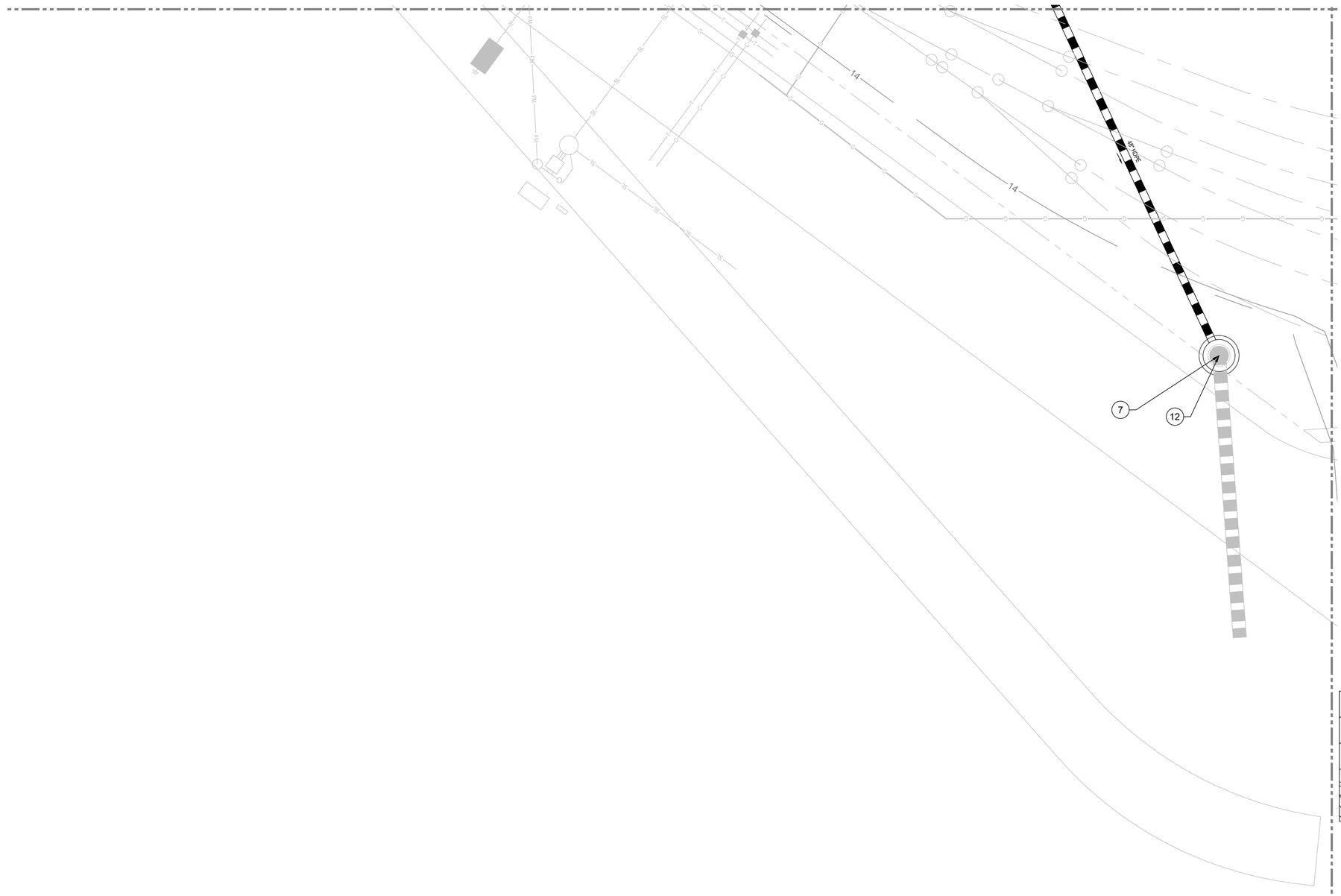
CG125

INDEX: 74 OF 242

File: H:\2022\MD2220013.02\CAD\Transfers\2024-11-15\MD2220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG120



MATCH LINE - SEE SHEET CG127

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
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10. TRENCH DRAIN
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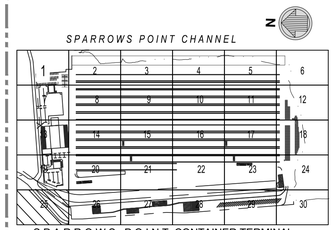
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30

SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 25 OF 30)

Designed by: DMD
Drawn by: DMD
Cad by: MJG
Date: 2024-01-30
Rev.
M&N Project No. 230329
Drawing date:
Reviewed by: MJG
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Drawing Scale
Plot scale: 1:1 (0 SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-558-7300
moffatt & nichol
8888 BETHLEHEM BOULLVARD SUITE 530 BALTIMORE, MD 21219

Sheet Reference No.

CG126

INDEX: 75 OF 242

File: H:\2022\MD4220013.02\CAD\Transfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG121

MATCH LINE - SEE SHEET CG126

MATCH LINE - SEE SHEET CG128

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
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6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)

SPARROWS POINT CHANNEL

SPARROWS POINT CONTAINER TERMINAL
KEY PLAN
SCALE: NTS

SCALE: 1" = 30'

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 26 OF 30)

Designed by: DMD | Drawn by: DMD | Checked by: MJG | Reviewed by: MJG | Date: 2024-01-30 | M&N Project No. 230329 | Drawing date: | Drawing Scale: Plot scale: 1:1 (0 SHEET) | Rev.

Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

685 SEVENTH AVENUE SUITE 100 BALTIMORE MD 21129

Sheet Reference No.

CG127

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File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

MATCH LINE - SEE SHEET CG122

MATCH LINE - SEE SHEET CG127

MATCH LINE - SEE SHEET CG129

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
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10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)

SPARROWS POINT CHANNEL

SPARROWS POINT CONTAINER TERMINAL

KEY PLAN

SCALE: NTS

SCALE: 1" = 30'

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 27 OF 30)

Designed by: DMD | Date: 2024-01-30 | Rev.
Drawn by: DMD | Chk'd by: MJG | M&N Project No. 230329
Reviewed by: MJG | Drawing code:
Submitted by: SUBMITTERS NAME MOFFATT & NICHOL | Drawing Scale: Plot scale: 1:1 (0 SHEET)

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300

moffatt & nichol

685 SERVERN DRAKE WAY SUITE 100 BALTIMORE, MD 21229

Sheet Reference No.

CG128

INDEX: 77 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:13 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

MATCH LINE - SEE SHEET CG123

MATCH LINE - SEE SHEET CG128

MATCH LINE - SEE SHEET CG130

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
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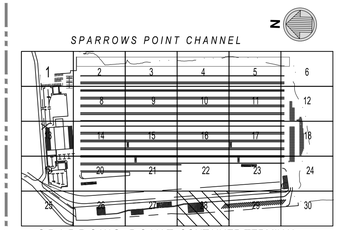
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL
KEY PLAN
SCALE: NTS

SCALE: 1" = 30'

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 28 OF 30)

Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing date:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Drawing Scale
Plot scale: 1:1 (0 SHEET)
Rev.

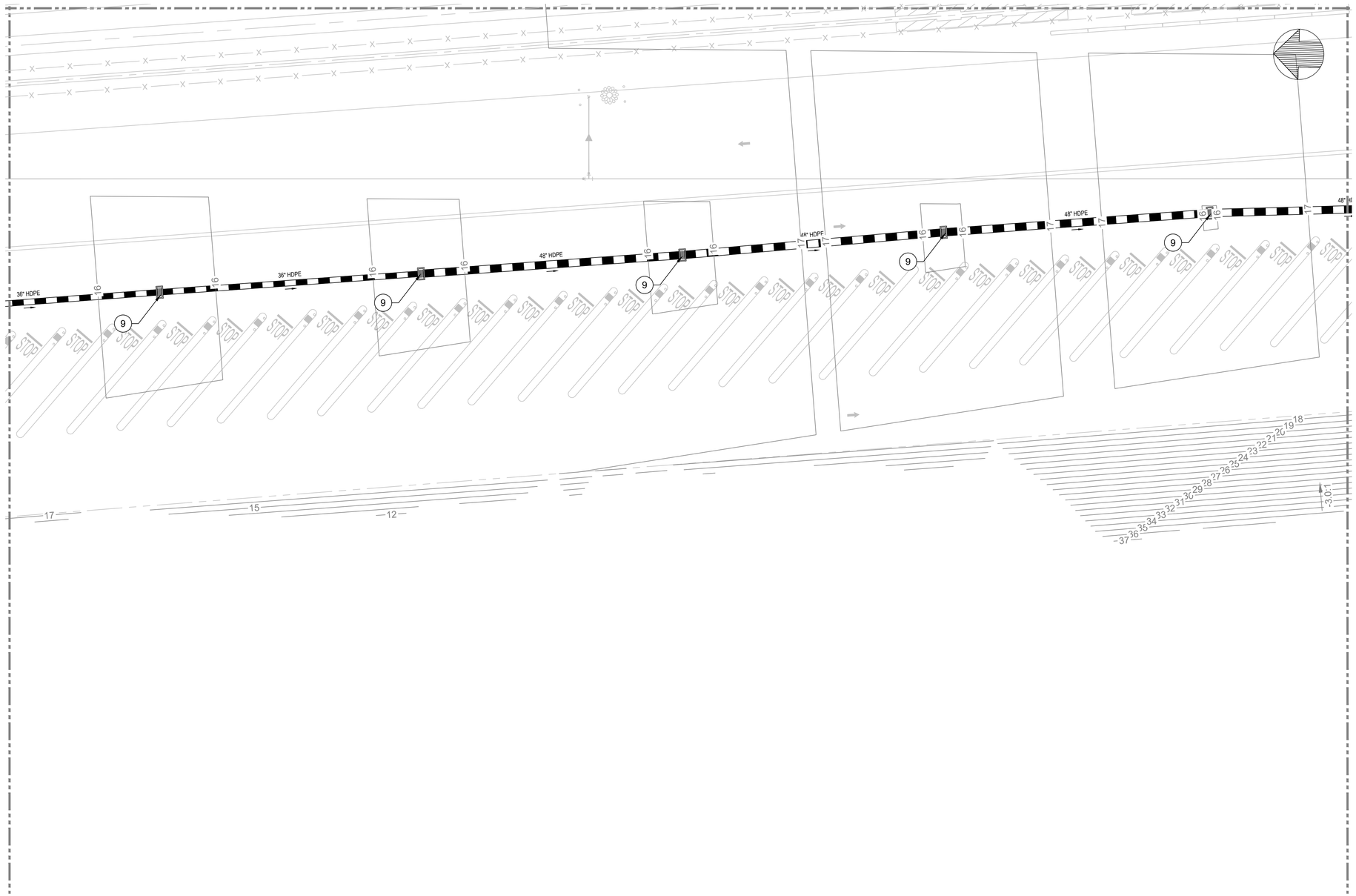
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-563-7300
moffatt & nichol
8890 BETHLEHEM BOULEVARD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CG129
INDEX: 78 OF 242

File: H:\2022\MD4220013.02\CADTransfers\2024-11-15\MD4220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:14 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DOUGLAS DREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

MATCH LINE - SEE SHEET CG124



MATCH LINE - SEE SHEET CG129

MATCH LINE - SEE SHEET CG131

SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
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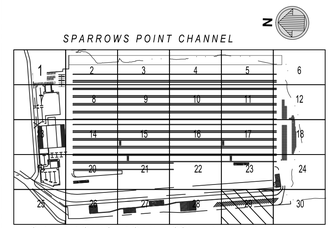
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



SPARROWS POINT CONTAINER TERMINAL
KEY PLAN
SCALE: NTS

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

30 15 7.5 0 30
SCALE: 1" = 30'

Mark	Description	Date	Appr

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 29 OF 30)

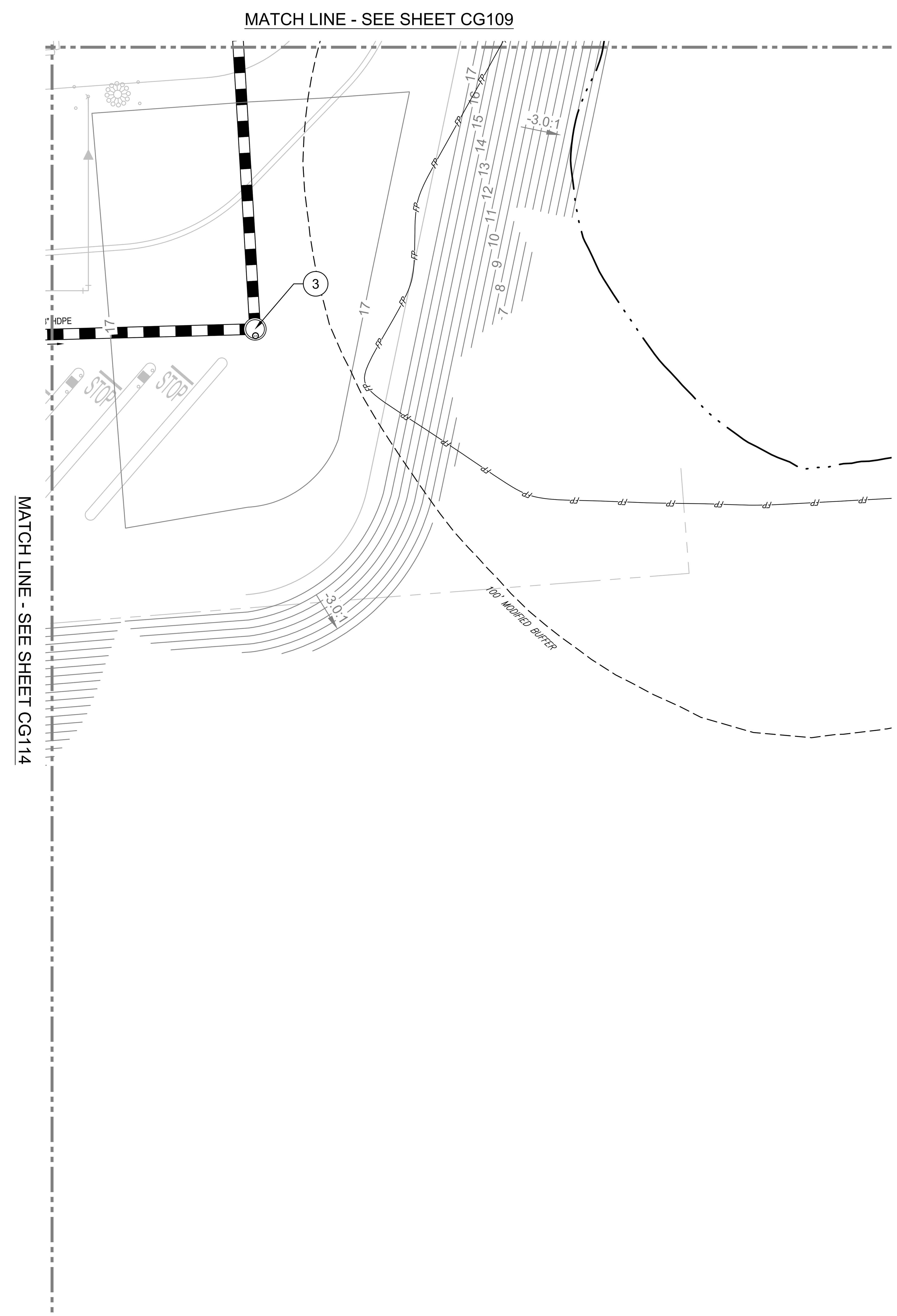
Designed by: DMD
Drawn by: DMD
Checked by: MJG
Reviewed by: MJG
Date: 2024-01-30
M&N Project No. 230329
Drawing code:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Drawing Scale:
Plot scale: 1:1 (10 SHEET)
Rev.

2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224 410-565-7300
moffatt & nichol
6895 BETHLEHEM BLVD SUITE 100 BALTIMORE, MD 21219

Sheet Reference No.
CG130
INDEX: 79 OF 242

File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD - Plotted: 11/15/2024 9:14 AM by DOUGLAS DREW - Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

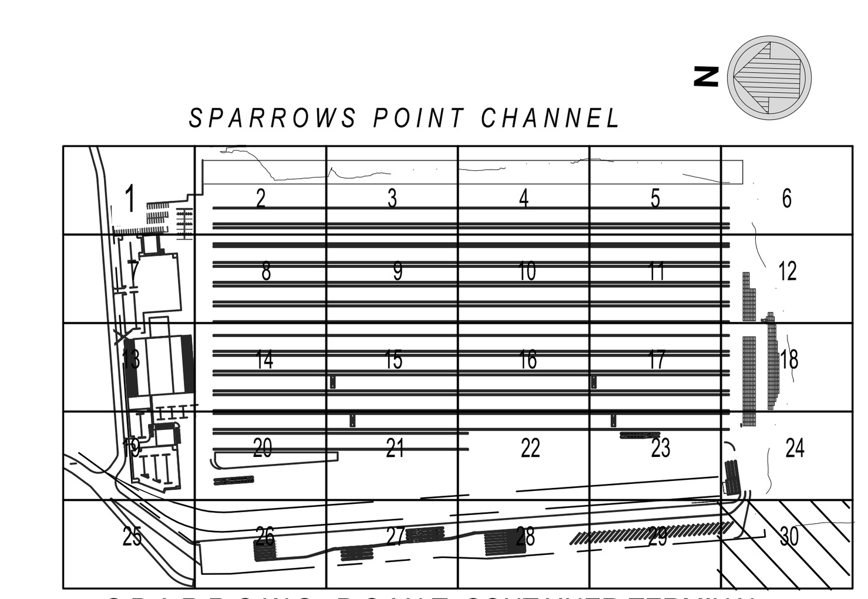


SHEET NOTES

1. FOR ABBREVIATIONS, SEE SHEET G-004.
2. FOR GENERAL NOTES, SEE SHEET G-006.
3. FOR PROPOSED GRADED AND STORM DRAIN, SEE SHEETS CG101 THROUGH CG131

KEY NOTES

1. 48" DIAMETER MANHOLE (SHA STD. MD-384.01)
2. 60" DIAMETER MANHOLE (SHA STD. MD-384.03)
3. 72" DIAMETER MANHOLE (SHA STD. MD-384.05)
4. 84" DIAMETER MANHOLE (SHA STD. MD-384.07)
5. 96" DIAMETER MANHOLE (SHA STD. MD-384.09)
6. 120" DIAMETER MANHOLE (SHA STD. MD-384.11)
7. 204" DIAMETER MANHOLE
8. CONCRETE HEADWALL (MD. SHA. STD. 352.01)
9. DOUBLE TYPE 'S' INLET (SHA STD. MD-374.70)
10. TRENCH DRAIN
11. TYPE 'K' INLET (SHA STD. MD-378.11)
12. CONNECT TO EXISTING MANHOLE (BY OTHERS)



KEY PLAN
SCALE: NTS

BOHLER//
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

SCALE: 1" = 30'

SPARROWS POINT CONTAINER TERMINAL
TRADEPOINT TIL TERMINAL LLC
BALTIMORE MARYLAND 21219

PLAN - GRADING AND DRAINAGE (SHEET 30 OF 30)

Designed by: DMD	Date: 2024-01-30
Dwn by: DMD	Ckd by: MJG
M&N Project No.	230329
Reviewed by: MJG	Drawing code:
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL	Drawing Scale:
Plot scale:	1:1 (D SHEET)

moffatt & nichol
2780 LIGHTHOUSE POINT EAST, STE. D BALTIMORE, MD 21224
410-563-7300

SPARROWS POINT CONTAINER TERMINAL PORT OF BALTIMORE
6995 BETHLEHEM BOULVARD
SUITE 100
BALTIMORE, MD 21219

Sheet Reference No.
CG131
INDEX: 80 OF 242

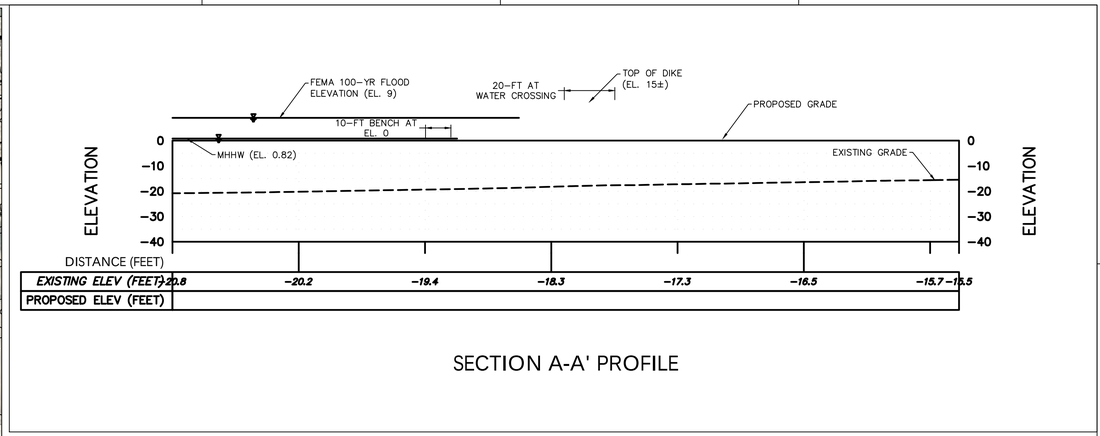
File: H:\2022\MDA220013.02\CAD\Transfers\2024-11-15\MDA220013.02 - Hatch - Grading and Drainage Plan - CAD ; Plotted: 11/15/2024 9:14 AM by DOUGLAS DREW ; Saved: 11/15/2024 8:53 AM by DDREW

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Exhibit G

Project Plans – Coal Pier Channel DMCF

DWG. No. H374437-2300-2B5-251-0006



SECTION A-A' PROFILE

		NAME	THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF TRADEPOINT TIL TERMINAL, LLC ("CLIENT") AND IS ISSUED PURSUANT TO THE ENGINEERING SERVICES AGREEMENT DATED 2ND AUGUST 2024 BETWEEN CLIENT AND HATCH ASSOCIATES CONSULTANTS, INC ("HATCH"). UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING, (A) HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR MISUSE OF THIS DRAWING BY CLIENT, AND (B) THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS EMBODIED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF HATCH.	LANGAN				HATCH				Client DWG. No.	
		SIGNATURE		Consultant DWG. No.									
		ENG REG NUMBER						DRAFTSPERSON	RS	NR	11/21/2024	SPARROWS POINT CONTAINER TERMINAL	
		REVISION DATE						DESIGNER	RS	NR	11/21/2024		
		ORIGINAL DATE						CHECKER				PLAN - NEARSHORE DMCF - COAL PIER CHANNEL	
DRAWING No.	DRAWING TITLE		No.	DESCRIPTION	BY	CHK'D	DATE	DESIGN COORD.					
								RESP. ENG.					
								LEAD DISC. ENG.					
								ENG. MANAGER					
								PROJ. MANAGER					
REFERENCE DRAWINGS		REG. PROFESSIONAL	REVISIONS					DRAWING APPROVAL STATUS:				SCALE 1"=150' OR AS NOTED	DWG. No. H374437-2300-2B5-251-0006 REV -; SHEET SIZE: D

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11/21/2024 4:51:39 PM
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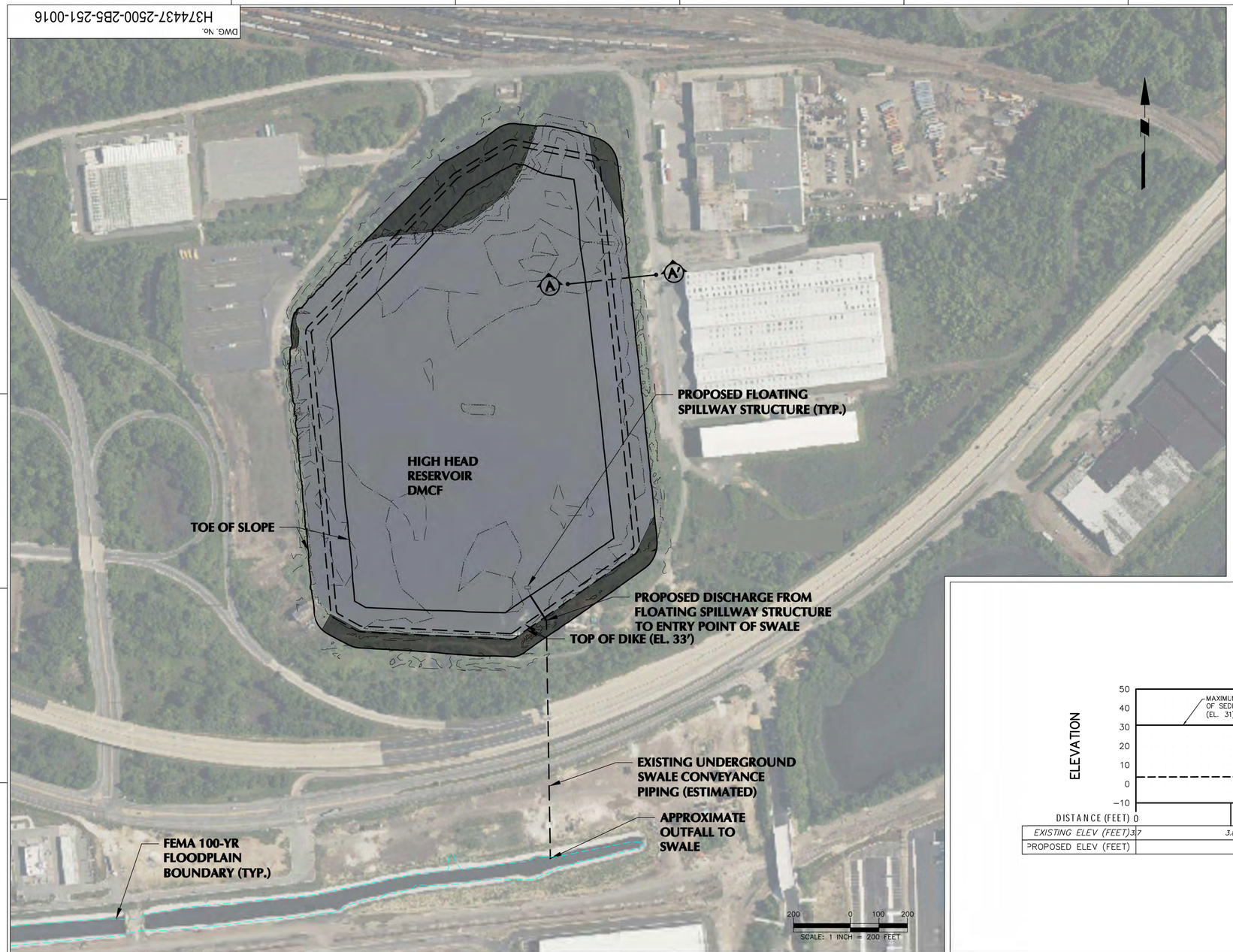
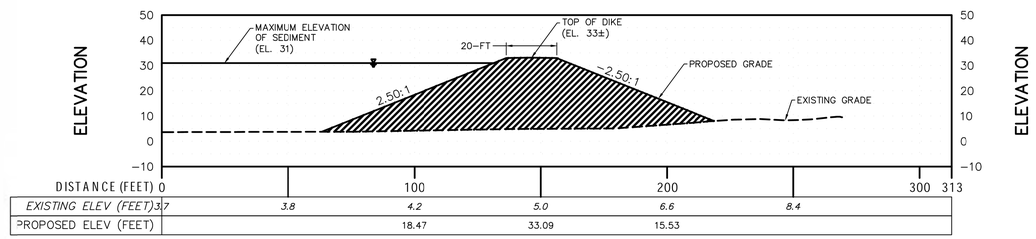
Exhibit H

Project Plans – High Head DMCF

DWG. No. H374437-2500-2B5-251-0016





EXISTING ELEV (FEET)	3.7	3.8	4.2	5.0	6.6	8.4
PROPOSED ELEV (FEET)			18.47	33.09	15.53	

SECTION A-A' PROFILE

30 0 15 30
SCALE: 1 INCH = 30 FEET

THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF TRADEPOINT TIL TERMINAL, LLC ("CLIENT") AND IS ISSUED PURSUANT TO THE ENGINEERING SERVICES AGREEMENT DATED 2ND AUGUST 2024 BETWEEN CLIENT AND HATCH ASSOCIATES CONSULTANTS, INC.("HATCH"). UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING: (A) HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR MISUSE OF THIS DRAWING BY CLIENT, AND (B) THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS EMBODIED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF HATCH.

LANGAN

Consultant DWG. No.

HATCH

Client DWG. No.

SPARROWS POINT CONTAINER TERMINAL

DRAFTSPERSON	RS	NR	11/21/2024
DESIGNER	RS	NR	11/21/2024
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER			

SPARROWS POINT CONTAINER TERMINAL

PLAN - UPLAND DMCF - HIGH HEAD RESERVOIR DMCF

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

NAME
SIGNATURE
ENG REG NUMBER
REVISION DATE
ORIGINAL DATE
REG. PROFESSIONAL

No.	DESCRIPTION	BY	CHK'D	DATE
REVISIONS				

DRAWING APPROVAL STATUS:

ROLE	NAME	SIGNATURE	DATE

SCALE 1" = 200' OR AS NOTED

DWG. No. H374437-2500-2B5-251-0016

REV -

SHEET SIZE: D

rsantos
11/21/2024 3:04:21 PM
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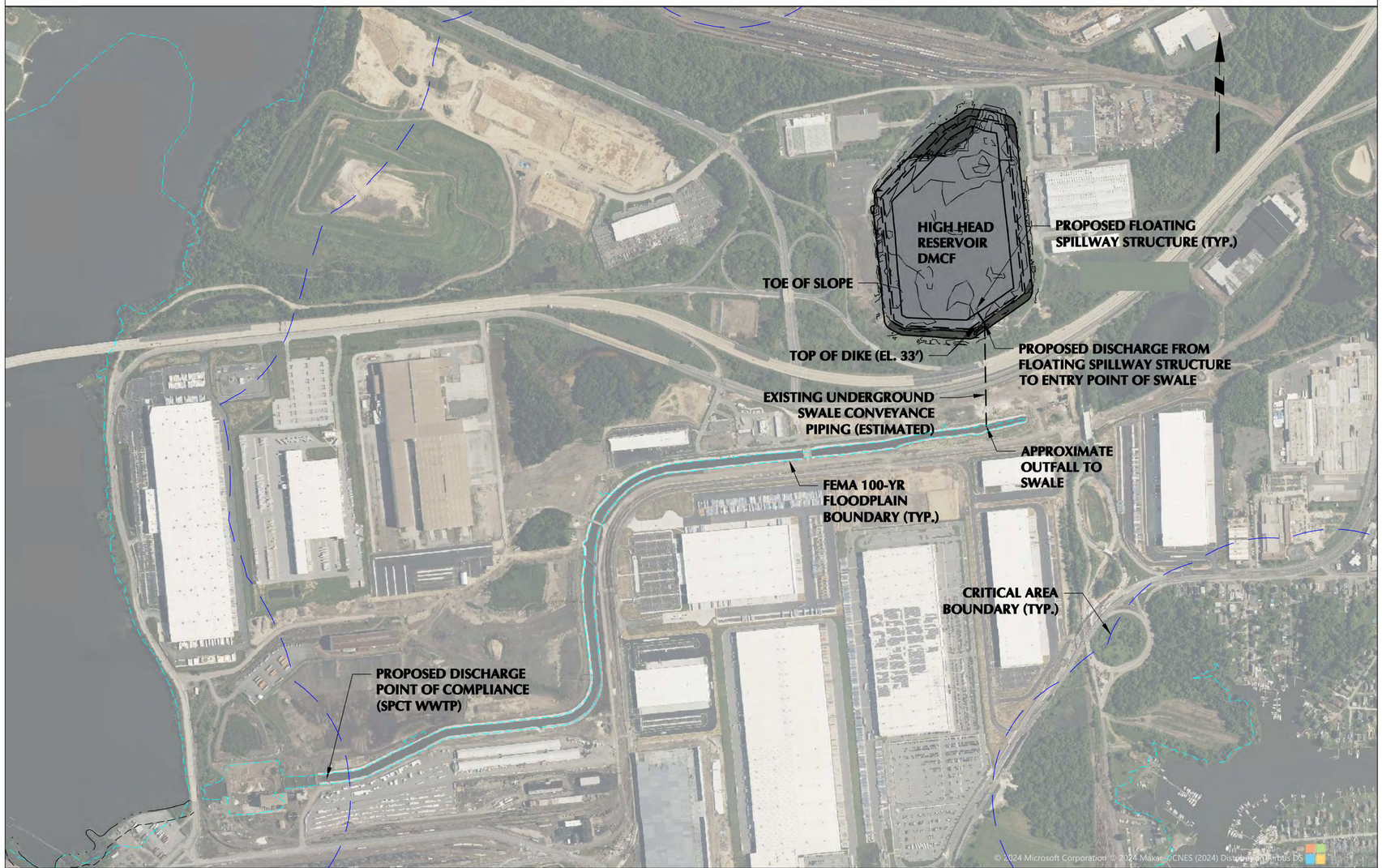
DWG. No. H374437-2500-2B5-251-0015



500 0 250 500
SCALE: 1 INCH = 500 FEET

			THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF TRADEPOINT TIL TERMINAL, LLC ("CLIENT") AND IS ISSUED PURSUANT TO THE ENGINEERING SERVICES AGREEMENT DATED 2ND AUGUST 2024 BETWEEN CLIENT AND HATCH ASSOCIATES CONSULTANTS, INC.("HATCH"). UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING, (A) HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR MISUSE OF THIS DRAWING BY CLIENT, AND (B) THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS EMBODIED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF HATCH.	LANGAN				HATCH				Client DWG. No.	
				Consultant DWG. No.								SPARROWS POINT CONTAINER TERMINAL	
		NAME						DRAFTSPERSON	RS	NR	11/21/2024	SPARROWS POINT CONTAINER TERMINAL	
		SIGNATURE						DESIGNER	RS	NR	11/21/2024		
		ENG REG NUMBER						CHECKER				OVERALL PLAN - UPLAND DMCF - HIGH HEAD RESERVOIR DMCF	
		REVISION DATE						DESIGN COORD.					
								RESP. ENG.					
								LEAD DISC. ENG.					
								ENG. MANAGER					
								PROJ. MANAGER					
DRAWING No.	DRAWING TITLE	ORIGINAL DATE	No.	DESCRIPTION	BY	CHK'D	DATE	ROLE	NAME	SIGNATURE	DATE	SCALE 1" = 500' OR AS NOTED	DWG. No. H374437-2500-2B5-251-0015 REV -
REFERENCE DRAWINGS		REG. PROFESSIONAL	REVISIONS					DRAWING APPROVAL STATUS:				SHEET SIZE: D	

rsantos
11/21/2024 3:05:03 PM
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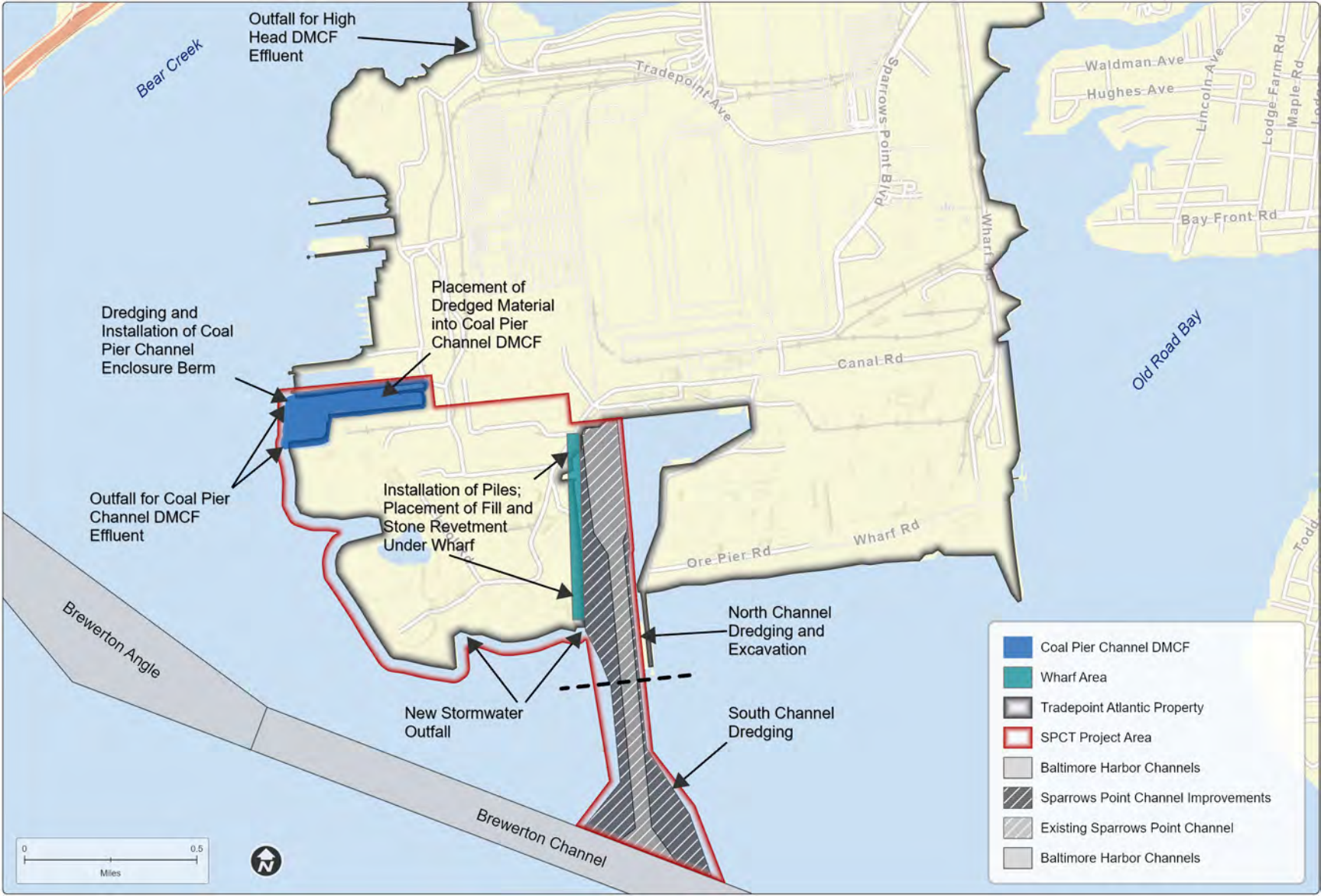
Exhibit I

Discharge Locations


Outfall for High Head DMCF Effluent
Bear Creek
Tradepoint Ave
Sparrows Point Blvd
Wharf
Waldman Ave
Hughes Ave
Lincoln Ave
Lodge Farm Rd
Maple Rd
Bay Front Rd
Old Road Bay
Placement of Dredged Material into Coal Pier Channel DMCF
Dredging and Installation of Coal Pier Channel Enclosure Berm
Canal Rd
Outfall for Coal Pier Channel DMCF Effluent
Installation of Piles; Placement of Fill and Stone Revetment Under Wharf
Ore Pier Rd
Wharf Rd
North Channel Dredging and Excavation
Brewerton Angle
New Stormwater Outfall
South Channel Dredging
Brewerton Channel
0
0.5
Miles
Coal Pier Channel DMCF
Wharf Area
Tradepoint Atlantic Property
SPCT Project Area
Baltimore Harbor Channels
Sparrows Point Channel Improvements
Existing Sparrows Point Channel
Baltimore Harbor Channels


Cornwall Rd
Dundalk Ave
Peach Orchard Park
Bear Creek
Peninsula Expy
Peninsula Expy
Dundalk Ave
Bethlehem Blvd
Bethlehem Blvd
695
695
Bethlehem Blvd
Fleming Park
Excavation to Remove Invasive Species (Phragmites)
Placement of Habitat Structures and to Fill to Improve Bottom Substrate
Riverside Dr
CSX Railroad
CSX Railroad
Warehouse Rd
Humphrey Creek
Warehouse Rd
Riverside Dr
Humphries Rd
Plate Mill Rd
0
1500
Feet
Perimeter Sill
Shallow Water Bottom Substrate and Habitat Improvements
Tidal Wetland Creation with Nature-based Solutions and Shallow Water Habitat Improvements
Tidal Wetland Enhancement and Phragmites Control
SPCT Project Area
Tradepoint Atlantic Property


Excavation to Remove Invasive Species (Phragmites)
Demolition and Removal of In-Water Pier Structures
Excavation to Remove Invasive Species (Phragmites)
Dredging and Excavation to Create Open Water and Wetlands; Placement of Habitat Structures
Excavation to Remove Invasive Species (Phragmites)
Dredging and Excavation to Create Open Water and Wetlands; Placement of Habitat Structures
Dredging and Excavation to Create Open Water and Wetlands; Placement of Habitat Structures
151
Sparrows Point Blvd
J St
Wharf Rd
Waldman Ave
Hughes Ave
Geise Ave
Lincoln Ave
N Dakota Ave
Ellen Av
Bay Fro
CSX Railroad
CSX Railroad
Canal Rd
Wharf Rd
Wharf Rd
Old Road Bay
Dock. Slip, and Post Removal
Tidal Wetland Enhancement and Phragmites Control
Upland to Tidal Open Water and Tidal Wetland Creation
0
1000
Feet

Exhibit J

Construction Schedule, Sequence, and Concurrent Discharge Activities

	2025				2026												2027												2028											
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Baseline Date for Start of Construction - September 1, 2025	x																																							
Stormwater																																								
Dredging and Excavation – North Channel Improvements																																								
Dredging and Excavation – Coal Pier Channel Dike Alignment																																								
Dredging – South Channel Improvements																																								
Installation of Wharf Pilings																																								
Installation of Fill Under Wharf																																								
Installation of Stone Revetment Under Wharf												Intermittent Throughout																														
Installation of Coal Pier Channel Enclosure Berm/Dike																																								
Dredged Material Placement within Coal Pier Channel DMCF												Intermittent Throughout												Intermittent Throughout																

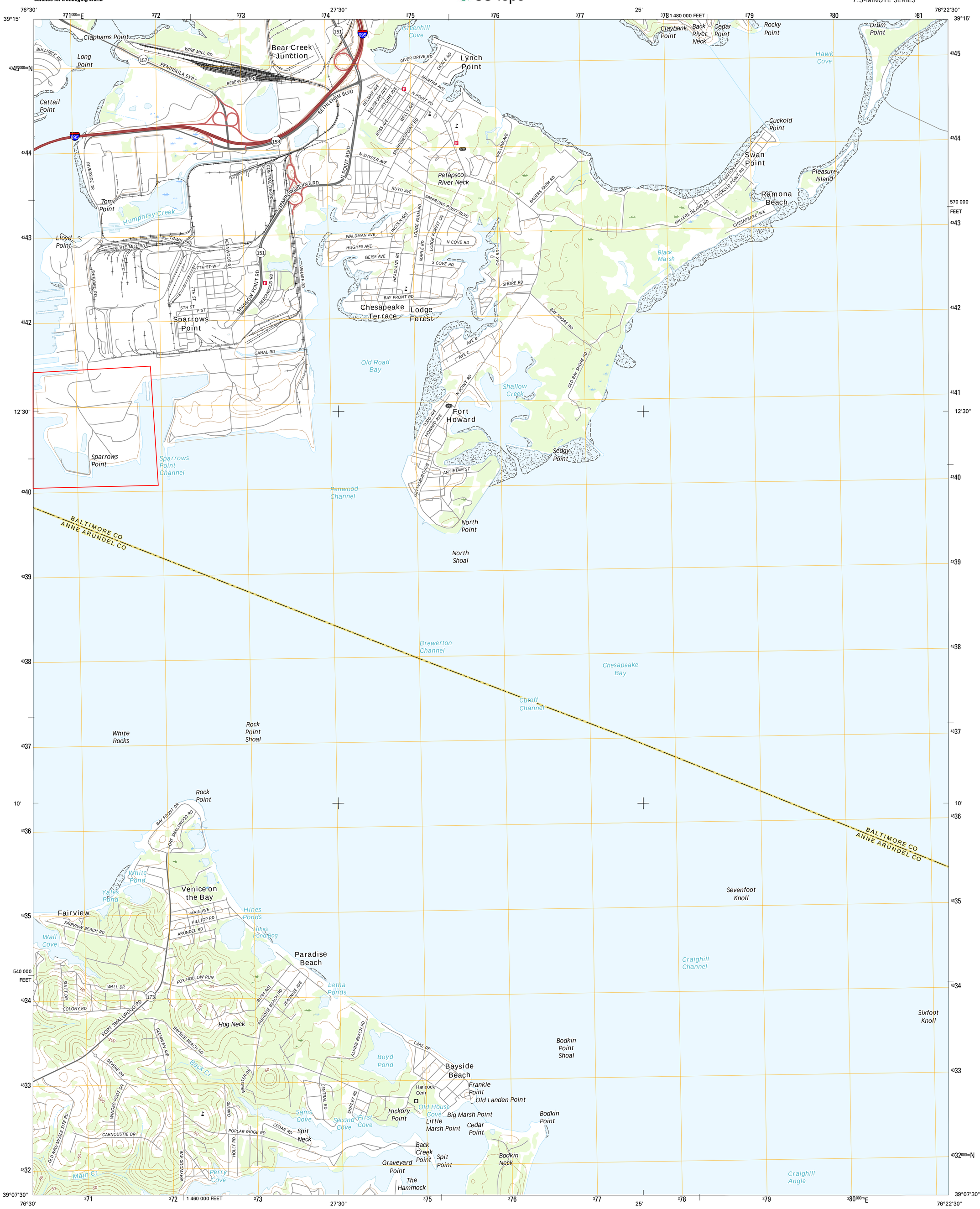
Exhibit K

USGS Quadrangle Map

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

SPARROWS POINT QUADRANGLE
MARYLAND
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 18S
10 000-foot ticks: Maryland Coordinate System of 1983

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, September 2015
Roads.....U.S. Census Bureau, 2015 - 2016
Names.....GNIS, 2016
Hydrography.....National Hydrography Dataset, 2015
Contours.....National Elevation Dataset, 1999
Boundaries.....Multiple sources; see metadata file 1972 - 2016

Wetlands.....FWS National Wetlands Inventory 1977 - 2014

UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
MN 11° 14′ 200 MILS
GN 0° 54′ 16 MILS

U.S. National Grid
100,000-m Square ID
UJ
Grid Zone Designation
18S

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
MILES
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.19

QUADRANGLE LOCATION

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Baltimore East
2 Middle River
3 Gunpowder Neck
4 Curtis Bay
5 Swan Point
6 Round Bay
7 Gibson Island
8 Love Point

SPARROWS POINT, MD
2016

NSN, NGA REF NO. USGSX24K24212

Exhibit L

Pre-Filing Meeting Request

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Water and Science Administration ● Wetlands and Waterways Program
1800 Washington Boulevard ● Suite 430 ● Baltimore, Maryland 21230
410-537-3745 ● 800-633-6101 ● www.mde.maryland.gov

Pre-Filing Meeting Request

All fields with an asterisk * are required unless noted otherwise.
Use the *SUBMIT by EMAIL* button to send your request. READ the sending instructions.
Optionally, save this form, attach it to an email, and return it to: *wetlandspreap.mde@maryland.gov*

Project Location

Complete all of the following project location fields

http://www. latlong.net

Site Address

If a site address is not available, be sure to describe the project location in the available field below.

House, lot, or location number
Street name: 6995 Bethlehem Boulevard, Suite 100
* City: Baltimore
* State: MD
* Zip: 21219

*** Latitude / * Longitude**: 39.211212 / -76.490349

***County**: Select a county: Baltimore County

***ADC Map**

(ADC map coordinates not required for Allegany, Garrett or Somerset counties)

Map#	Alpha	Number	Edition
90	F	6	

Describe project location
(eg.,200 yards NE of Rte 50 / Tempo Road)
Not needed if exact address is shown above.

The project will be on the Coke Point peninsula within the TPA development at Sparrows Point.

Property Owner

Mailing address may be different from Project location address.

** At least one telephone*

* Full name	Tradepoint TiL Terminals LLC
* Mailing address	6995 Bethlehem Boulevard, Suite 100
* City, State Zip	Baltimore, MD 21219
Telephone Home	
Work	410-382-6667
Cell	
Email	tcaso@tradepointatlantic.com

Primary Contact

** At least one telephone*

* Full name	Tom Caso
Company	Tradepoint TiL Terminals LLC
* Mailing address	6995 Bethlehem Boulevard, Suite 100
* City, State Zip	Baltimore, MD 21219
Telephone Work	410-382-6667
Cell	
Email	tcaso@tradepointatlantic.com

Project

*** This project request is:**
(Place an 'x' in the box for WQC)

Water Quality Certification (WQC): X

Description of Project
Include the following (if known): ACOE Category, ACOE reviewer, Tracking # and AI #

See attachment A

By submitting this form, the property owner grants permission to the representatives of the Maryland Department of the Environment to enter the property during business hours for the purpose of making observations of the proposed project site. If this form is being submitted by the primary contact and not the property owner, the primary contact certifies that he or she is the agent authorized to act on behalf of the property owner and, as the agent, has obtained the property owner's permission for the representatives of the Maryland Department of the Environment to enter the property during business hours for the purpose of making observations of the proposed project site.

Submit by Email | Print Form | Clear Form

Background

The Maryland Department of the Environment (MDE) received a Joint Permit Application August 22, 2023 for the proposed Sparrows Point Container Terminal (SPCT) project to construct a new container terminal (the terminal) in the Port of Baltimore (Port). The permit was submitted by Tradepoint TiL Terminal, LLC (TTT or applicant), a joint venture between Tradepoint Atlantic (TPA) and Terminal Investments Limited. MDE responded with an acknowledgement letter on August 25, 2023, providing the following information: tracking number: 202361200; permit number: 23-NT-0178; and AI number: 141713.

The US Army Corps of Engineers, Baltimore District (Corps), received an application for a Department of the Army permit (Corps number NAB–2023–61200) on August 25, 2023 for the proposed SPCT project. The permit was submitted by TTT.

Overview of the Applicant's Proposed Project

The proposed SPCT would be located in Baltimore County, Maryland within the TPA property on a 330-acre area on the southwest peninsula of Sparrows Point known as Coke Point Peninsula (Coke Point) (Figure 1). The historical uses of this site include coking operations as part of the former Bethlehem Steel Mill. The site is entirely human-made land, created by filling in a portion of the Patapsco River with steel mill slag over several decades. Previously developed areas within the site are currently undergoing demolition and razing of structures. Sparrows Point, with its industrial history, is an example of a brownfield. In recent years, Sparrows Point has been undergoing a major redevelopment initiative aimed at transforming the site into a hub for modern industrial and commercial activities. The SPCT project would continue to redevelop the site.

The proposed terminal would consist of a +/- 3,000-foot marginal wharf with ship-to-shore (STS) cranes, a container yard, gate complex, intermodal/rail yard, and various support structures. To provide vessel access to the wharf, the project would include deepening and widening of the existing Sparrows Point Channel and turning basin, which would require dredging and placement of approximately 4.2 million cubic yards (MCY) of dredged material. The proposed project would include the construction of an offshore dredged material containment facility (DMCF) in the Coal Pier Channel adjacent to Coke Point and an upland DMCF on TPA property at the High Head Industrial Basin, as well as use of exiting permitting nearshore DMCFs managed by MPA (Cox Creek and/or Masonville DMCFs), and an ocean placement site (Norfolk Ocean Disposal Site [NODS]).

The proposed project would increase the overall container capacity of the Port by 70%. The project represents a long-term commitment by TTT to link the world's largest containership company, Mediterranean Shipping Company, to the Port for the next century. The terminal would leverage the Howard Street Tunnel Vertical Clearance Improvement Project by providing the closest link from an East Coast port to the American Midwest. This link, along with the increased capacity that would be provided by the terminal, would give the Port a major competitive advantage over other regional ports along the Eastern Seaboard of the United States. The new terminal would be located less than 50 miles from Washington, DC and would directly serve the third largest consumer market in the United States. Nearly $1 billion would be invested in the terminal with project development estimated to create more than 1,100 direct local jobs. The project would serve as an important economic driver for the region by promoting other indirect economic growth while also providing environmental benefits by addressing legacy

environmental contamination through site remediation and capping. The project would be built using sustainable best practices through electrification efforts to greatly reduce the facility's carbon footprint.

Purpose of the Proposed Action

The purpose of the proposed action is to develop the SPCT, a new terminal and associated facilities that would be located on Coke Point within the Patapsco River in Baltimore, Maryland.

Need for the Proposed Action

The applicant's proposed project would address several economic and shipping logistical concerns. The SPCT project would enhance the economic strength of the Port by increasing its overall container capacity. This, along with the on-dock rail and Howard Street Tunnel Vertical Clearance Improvement Project, would increase the throughput of containers through the Port. The proposed project would not only provide direct jobs at the project site but would also provide a foundation for sustained regional economic growth within the Port and throughout the region. By strengthening and growing the Port, the project aligns with Presidential Executive Order 14017, "America's Supply Chains," which aims to enhance the United States' supply chain efficiencies and resiliency.

Figure 1. SPCT Proposed Project

Attachment A

DEIS Sediment Quality

Sediment

Sediment consists of particulate matter that has settled to the bottom of a waterbody. Sediment provides a substrate and food resource for benthic organisms and other wildlife, and people may come into contact with sediment while swimming, fishing, or working in shallow water areas. Sediment serves as a repository for materials and chemical constituents that enter waterways, including nutrients from agricultural practices, chemical constituents from industrial processes and discharges and from stormwater runoff. Sediments may be redistributed from the bottom of a waterbody back to surface water if storms, fish and wildlife activity, or human activities disturb bottom sediments.

Sediments are described by physical and chemical properties. The site-specific physical and chemical characteristics of sediment are used to determine the quality of the sediment with respect to suitability for supporting aquatic life and for determining placement options for dredged sediments. The quality of surface sediment is used to assess potential impacts on aquatic life and the quality of the entire column of sediment to be dredged (both surface and sub-surface sediment) is used to assess potential impacts related to sediment disturbance/dredging and to identify appropriate placement options for dredged material.

Affected Environment

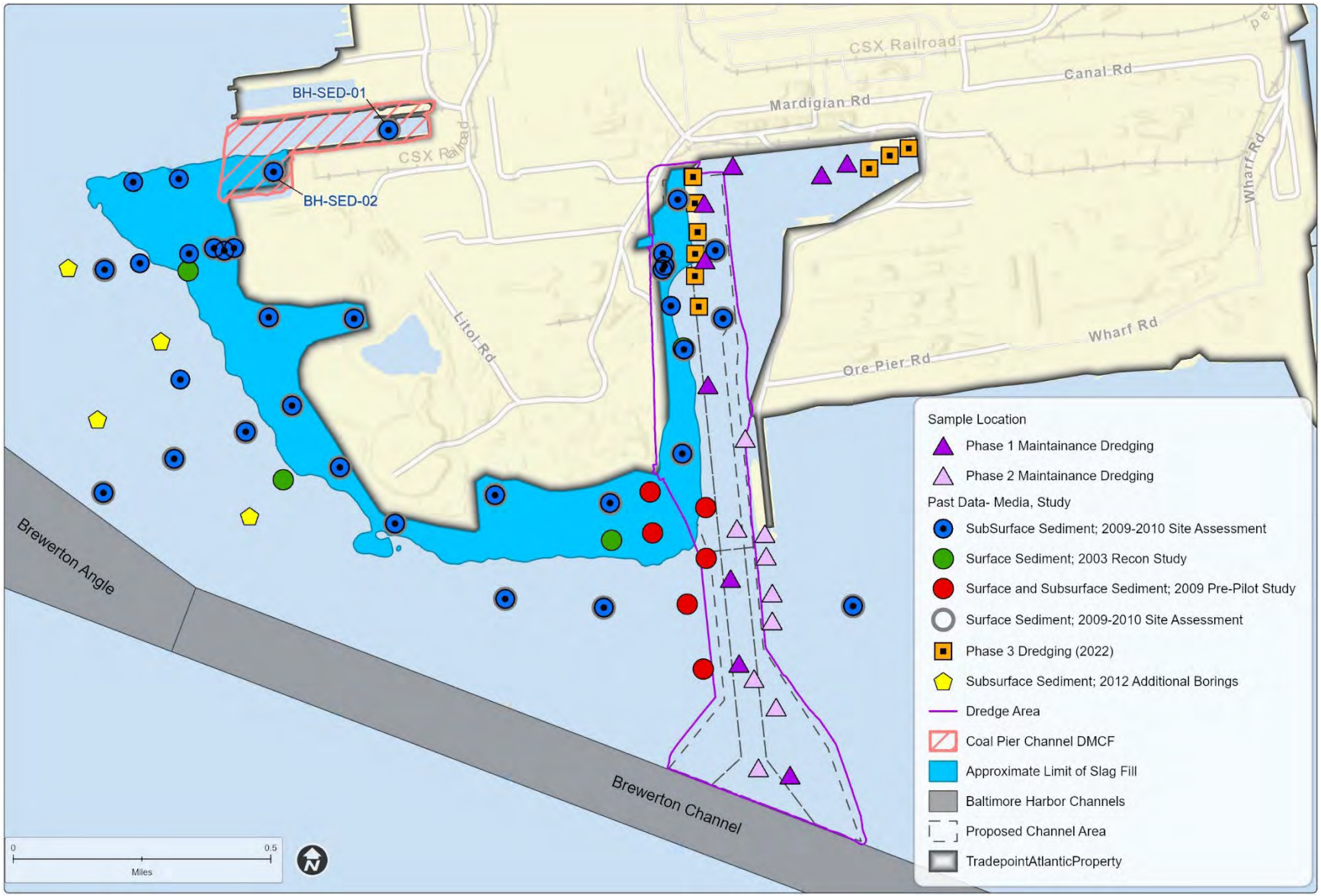
Sediments that could be affected by the SPCT project are sediments in the Patapsco River around Coke Point, including sediments in and adjacent to the existing Sparrows Point Channel where dredging would occur, sediments on the west side of Coke Point in the area proposed for construction of the Coal Pier Channel DMCF, and sediments present in the High Head Industrial Basin. Characterization of sediments in this section is based on both historical data and data collected specifically for this project.

Summary of Sediment Studies

Past Studies – Sediments immediately offshore of Coke Point have been the subject of numerous past investigations (EA Engineering, Science, and Technology, Inc., PBC [EA] 2003a, 2009, 2010a, 2010b, 2011). Figure 1 shows historical sampling locations from previous offshore sediment studies conducted from 2003 through 2011.

Prior to purchase by TPA, MPA conducted due diligence/site assessment studies between 2009 and 2011with the intent to purchase the property for development of a DMCF that would use existing upland area and extend offshore west side of Coke Point. The due diligence/site assessment studies included an investigation of the distribution of contaminants in the upland soils and groundwater, as well as in the offshore sediments (EA 2009, 2010a, 2010b). The offshore investigations included both surface and sub-surface sediments, focused on the west side of Coke Point where the proposed DMCF would be located and also included sediments on the south side of Coke Point to assist with the identification of potential habitat improvement areas. A pre-pilot sediment characterization study evaluated horizontal and vertical delineation of impacts on the offshore sediments and identified potential constituents of concern in areas that were targeted for dredging as part of the proposed DMCF project (EA 2010a). The studies of offshore sediment identified elevated concentration of metals, semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). Generally, concentrations of contaminants were highest in the surficial sediments and decreased with depth below sediment surface and in areas further away from the Coke Point shoreline.

Figure 1. Historical Sampling Locations from Previous Sediment Studies (2003 through 2011) and Slag Limits



The chemical data for the surficial offshore sediments in combination with water quality, fish and crab tissue, benthic community, and clam and worm tissue bioaccumulation data were used for the preparation of an ecological and human health risk assessment (EA 2011). The risk assessment work plan and results were reviewed extensively by both USEPA Region 3 and MDE, and the results identified several offshore areas with impacted sediments on the west and south side of Coke Point contributing to elevated risk for human health and ecological communities.

Other past studies relevant to the quality of sediments in the proposed channel improvements footprint include recent geotechnical investigations (Kozera 2023), maintenance dredged material characterizations for the existing Sparrows Point Channel (Robert Balter Company 2018, 2019; EA 2022), and past characterization of maintenance material for the Brewerton Channel (EA 2014, 2020).

Sediment Studies to Support Assessment of Aquatic Resources – Surficial sediment quality was evaluated as a component of the summer aquatic resource surveys that were performed for the SPCT project area (EA 2024a). Sediment quality samples were co-located with the benthic community assessment locations. Samples were tested for physical properties and a full suite of chemical constituents, including metals, PCBs, PAHs, pesticides, dioxin and furans, and nutrients. Concentrations of chemical constituents were compared to sediment quality guidelines (SQGs) for aquatic life, specifically Threshold Effects Levels (TELs) and Probable Effects Levels (PELs) (Long et al. 1998, Long et al. 1995, MacDonald et al. 1996). TELs typically represent concentrations below which adverse biological effects are rarely observed, while PELs typically represent concentrations in the middle of the effects range and above which effects are more frequently observed. Concentrations that are between the TEL and PEL represent the concentrations at which adverse biological effects occasionally occur.

Sediment Studies to Support SPCT Channel Dredging – Comprehensive studies were conducted to evaluate the sediments proposed for dredging to widen and deepen the existing Sparrows Point Channel (EA 2024b, 2024c). The proposed dredging footprint was divided into 28 dredging units (DUs) for evaluation: 15 DUs located in the southern section of the Sparrows Point Channel (South Channel) and 13 DUs located in the northern section of the Sparrows Point Channel (North Channel) (Figure 3, Figure 4, and Figure 5). A summary of location, material type, volume, and characterization depth for each DU is provided in Table 1.

Sediment Quality Guidelines (SQGs) are standards or benchmarks used to assess the potential impact of sediment-bound contaminants on aquatic life. These guidelines help in evaluating whether concentrations of specific chemicals in sediment could be harmful to organisms living in or around aquatic environments. SQGs are typically derived from toxicity studies and field data.

The **Threshold Effects Level (TEL)** is the concentration below which adverse biological effects on aquatic life are rarely observed. Sediment concentrations at or below the TEL suggest a low risk of harmful effects to benthic species.

The **Probable Effects Level (PEL)** is the concentration in the middle of the effects range and above which effects are more frequently observed. It represents a threshold where there is a higher probability that exposure to contaminants will result in adverse biological effects.

Dredging units (DUs) are standardized measurements used to quantify the volume or mass of material removed during dredging activities (e.g., cubic yards), which indicate the volume of sediment or soil extracted from a water body or channel. These measurements help assess the scope, cost, and environmental impact of dredging projects.

Figure 2. Surficial Sediment Sampling Locations for the 2023 Aquatic Resources Studies

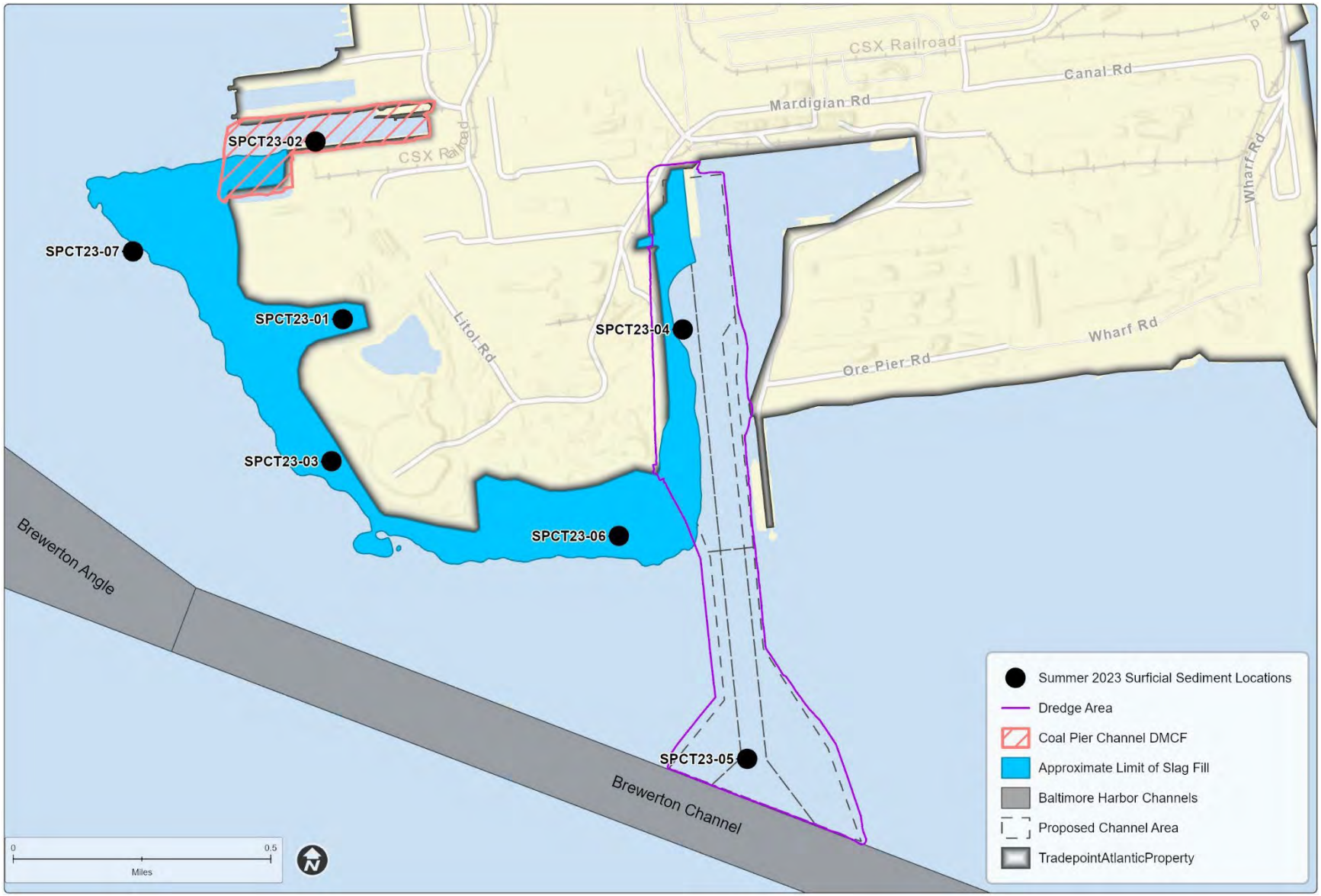


Figure 3. Dredging Units for the North Channel (Existing Sparrows Point Channel and West Widener/Revetment DUs Combined)

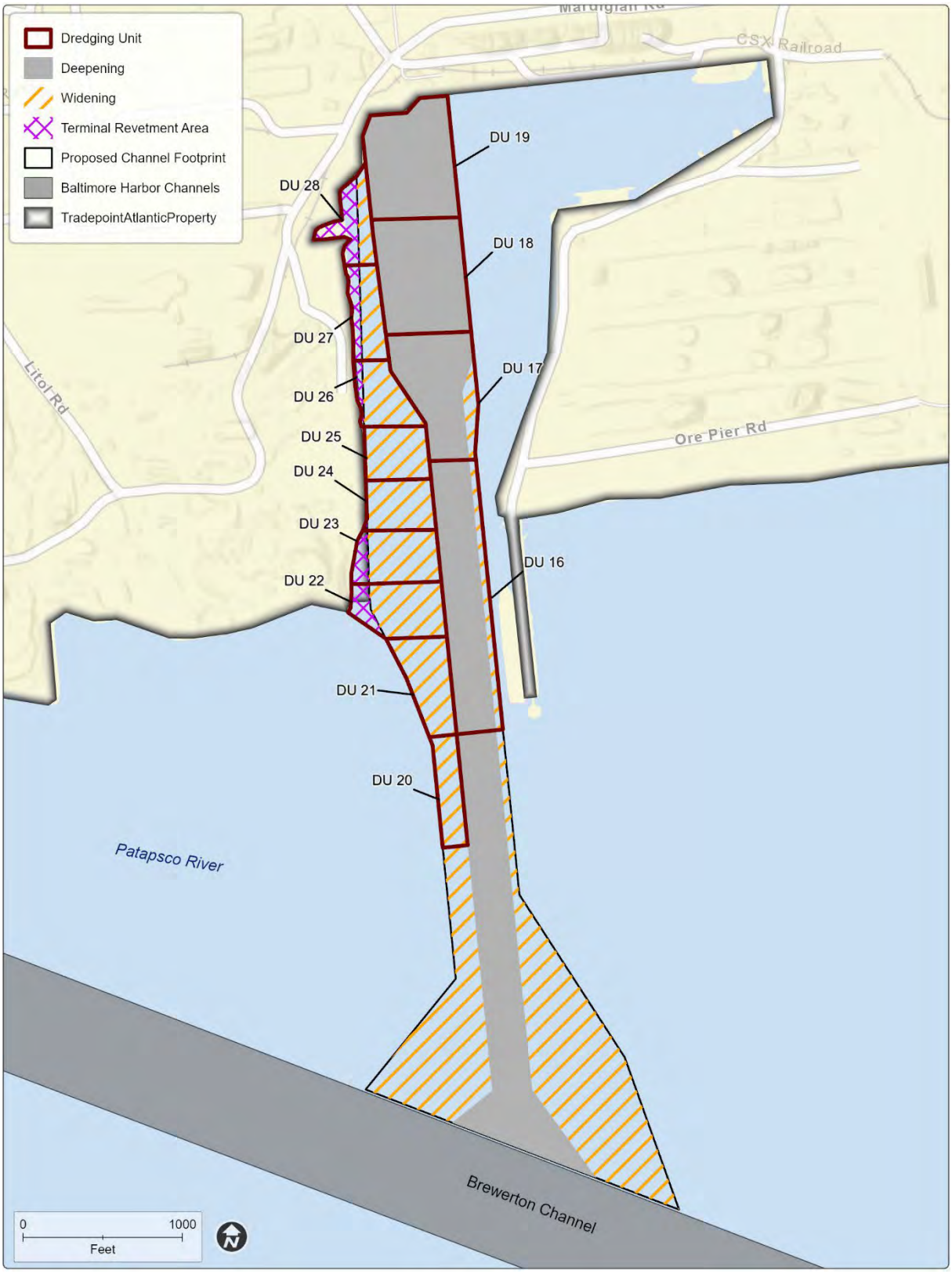


Figure 4. Dredging Units for the South Channel (Existing Sparrows Point Channel DUs and Top DUs for Wideners)

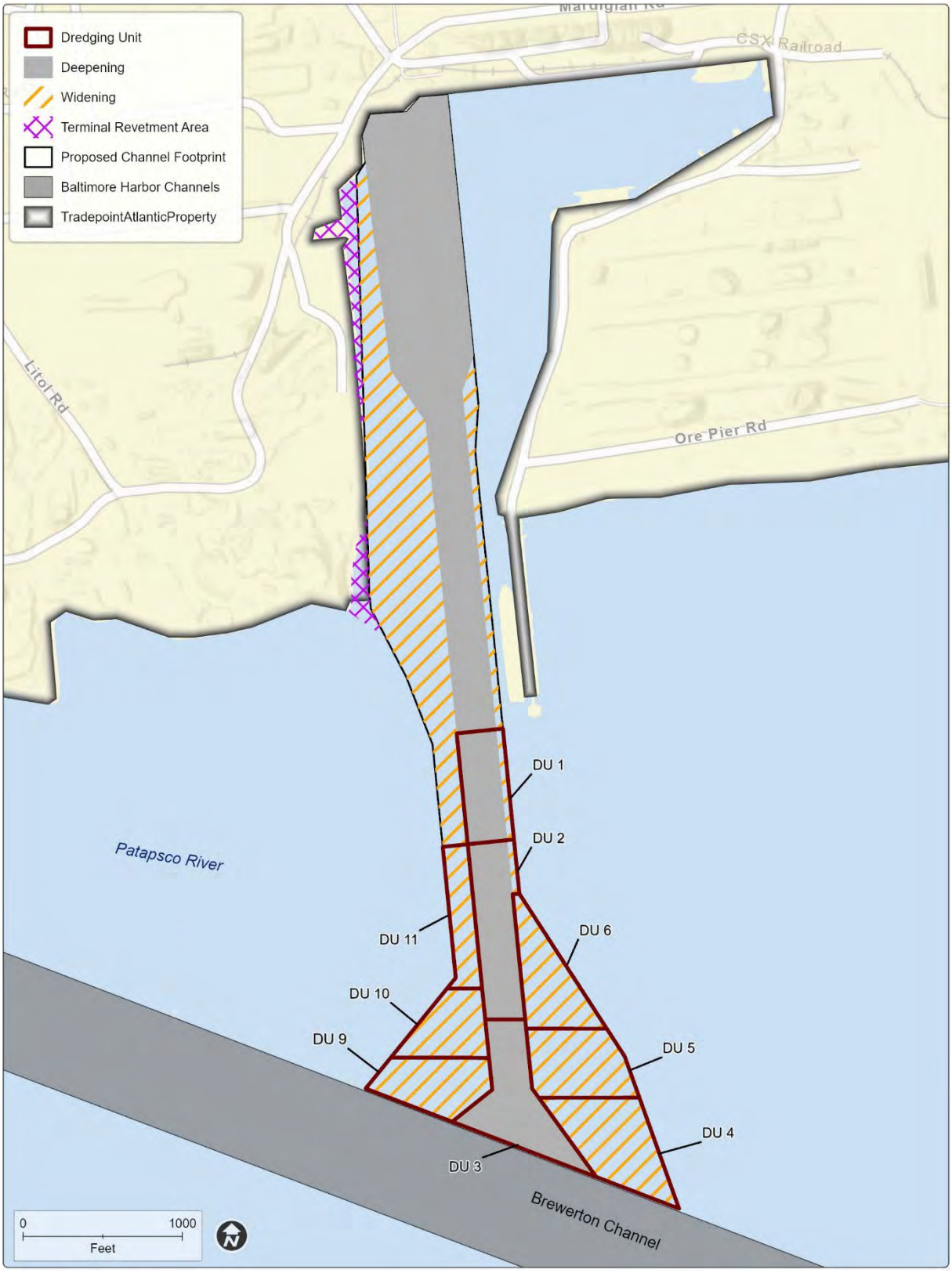


Figure 5. Dredging Units for the South Channel (Bottom DUs for Wideners)

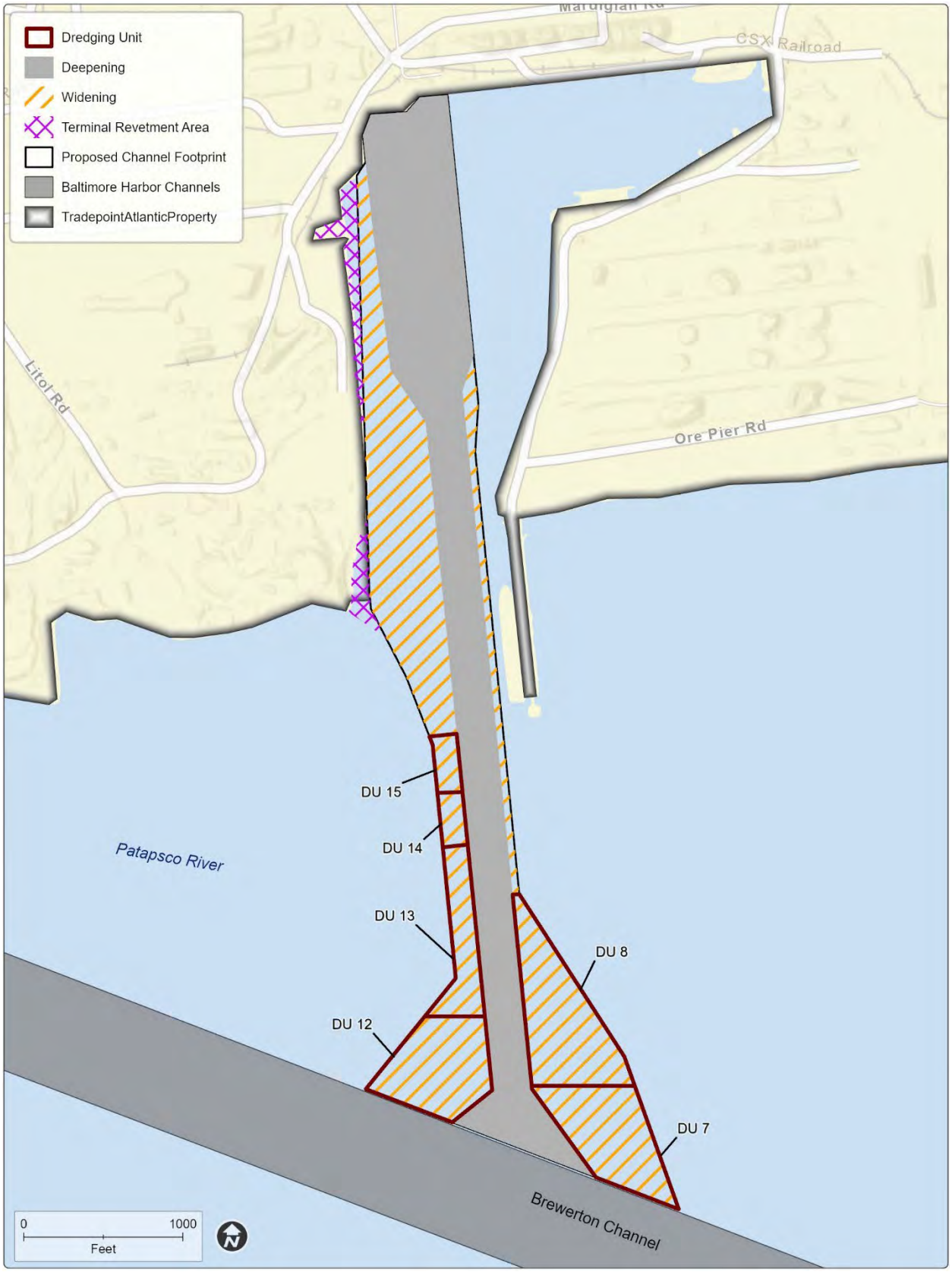


Table 1. Number of Sampling Locations, Sediment Characterization Depth, and Estimated Dredged Material Volume for Each Dredging Unit

Channel Segment	Dredging Unit	Material to be Characterized	Number of Sampling/Coring Locations	Sediment Characterization Depth	Approximate Dredging Unit Volume (CY)[1]	Placement Options Evaluated
South	DU1	Maintenance / Deepening	3	-52 feet MLLW	100,000	Upland/Ocean
South	DU2	Maintenance / Deepening	3	-52 feet MLLW	100,000	Upland/Ocean
South	DU3	Maintenance / Deepening	3	-52 feet MLLW	80,000	Upland/Ocean
South	DU4	East Widener – Top	3	surface to 7 feet bss	80,000	Upland/Ocean
South	DU5	East Widener – Top	3	surface to 7 feet bss	80,000	Upland/Ocean
South	DU6	East Widener – Top	3	surface to 7 feet bss	80,000	Upland/Ocean
South	DU7	East Widener – Bottom	3	7 feet bss to -52 feet MLLW[2]	185,000	Upland/Ocean
South	DU8	East Widener – Bottom	3	7 feet bss to -52 feet MLLW[2]	185,000	Upland/Ocean
South	DU9	West Widener – Top	3	surface to 10 feet bss	90,000	Upland/Ocean
South	DU10	West Widener – Top	3	surface to 10 feet bss	90,000	Upland/Ocean
South	DU11	West Widener – Top	3	surface to 10 feet bss	90,000	Upland/Ocean
South	DU12	West Widener – Bottom	3	10 feet bss to -52 feet MLLW[2]	185,000	Upland/Ocean
South	DU13	West Widener – Bottom	3	10 feet bss to -52 feet MLLW[2]	185,000	Upland/Ocean
South	DU14	West Widener – Bottom	3	10 feet bss to -52 feet MLLW[2]	60,000	Upland/Ocean
South	DU15	West Widener – Bottom	3	10 feet bss to -52 feet MLLW[2]	60,000	Upland/Ocean
North	DU16	Maintenance / Deepening	4	-52 feet MLLW[2]	220,000	Upland
North	DU17	Maintenance / Deepening	4	-52 feet MLLW[2]	230,000	Upland
North	DU18	Maintenance / Deepening	4	-52 feet MLLW[2]	250,000	Upland
North	DU19	Maintenance / Deepening	4	-52 feet MLLW[2]	230,000	Upland
North	DU20	West Widener	4	-52 feet MLLW[2]	140,000	Upland
North	DU21	West Widener	4	-52 feet MLLW[2]	220,000	Upland
North	DU22	West Widener / Revetment	4	-52 feet MLLW[2]	215,000	Upland
North	DU23	West Widener / Revetment	4	-52 feet MLLW[2]	215,000	Upland
North	DU24	West Widener	4	-52 feet MLLW[2]	185,000	Upland
North	DU25	West Widener	4	-52 feet MLLW[2]	185,000	Upland
North	DU26	West Widener / Revetment	4	-52 feet MLLW[2]	185,000	Upland

Channel Segment	Dredging Unit	Material to be Characterized	Number of Sampling/Coring Locations	Sediment Characterization Depth	Approximate Dredging Unit Volume (CY)[1]	Placement Options Evaluated
North	DU27	West Widener / Revetment	4	-52 feet MLLW[2]	150,000	Upland
North	DU28	West Widener / Revetment	4	-52 feet MLLW[2]	125,000	Upland

Notes:

CY = cubic yards

bss = below sediment surface

MLLW = mean lower low water

1 – Approximate maximum volume based on bathymetric surveys from September/October 2023. Volume based on characterization depth of -52 feet MLLW.

2 – Characterization depth = -50 feet MLLW + 2 feet overdepth allowance

Sediment cores were collected to the maximum dredging depth of -52 feet MLLW (-50 feet + 2 feet overdepth allowance) from multiple locations within each DU using either vibracoring or sonic drilling equipment. Composite sediment samples representative of the material to be dredged were created and tested for each DU. The testing program for the North Channel DUs was designed to evaluate the suitability of the sediments for upland placement at onsite or offsite DMCFs. The testing program for the South Channel DUs was designed to evaluate the suitability of sediments for upland placement at onsite or offsite DMCFs and for ocean placement at the NODS. MDE and MPA reviewed and approved the Sampling and Analysis Plan (SAP) for the DMCF evaluation and the USEPA Region 3 reviewed and approved the SAP for the ocean placement evaluation prior to the initiation of the sampling/testing program. A total of 52 locations were sampled in the North Channel and 45 locations were sampled in the South Channel (Figure 6, Figure 7, and Figure 8). Each sediment composite sample was tested for a comprehensive list of physical properties and chemical characteristics:

Overdepth refers to the additional depth below the target depth that is intentionally dredged or sampled to ensure that the desired depth is fully achieved. Overdepth is usually specified as a tolerance or margin of error to account for factors like sediment unevenness, equipment limitations, and sediment resettling.

Physical Properties

- Grain Size
- Specific Gravity
- Atterberg Limits
- Total Solids
- Unified Soil Classification System
- pH
- Percent Moisture

Chemical Constituents

- Metals
- Mercury
- Chlorinated pesticides
- Organophosphorus pesticides
- PCB congeners
- Tributyltin
- SVOCs
- PAHs
- Dioxins and furan congeners
- Cyanide, total
- Cyanide, free
- Total sulfide
- Total sulfate
- Ammonia (as nitrogen)
- Total Kjeldahl nitrogen
- Total phosphorus
- Nitrate
- Nitrite
- Total organic carbon/dissolved organic carbon
- Acid volatile sulfide and simultaneously extracted metals (cadmium, copper, lead, nickel, and zinc)
- Hexavalent chromium
- Volatile organic compounds (VOCs)
- PCB Aroclors
- Total petroleum hydrocarbons (TPH) – gasoline range organics (C6 to C10)
- TPH – diesel range organics (DRO) (C10 to C34)
- TPH – oil range organics (C22 to C32)
- Oil and grease
- Toxicity characteristic leaching procedure

Figure 6. Sediment Sample Locations for the North Channel (Existing Sparrows Point Channel and West Widener/Revetment DUs Combined)

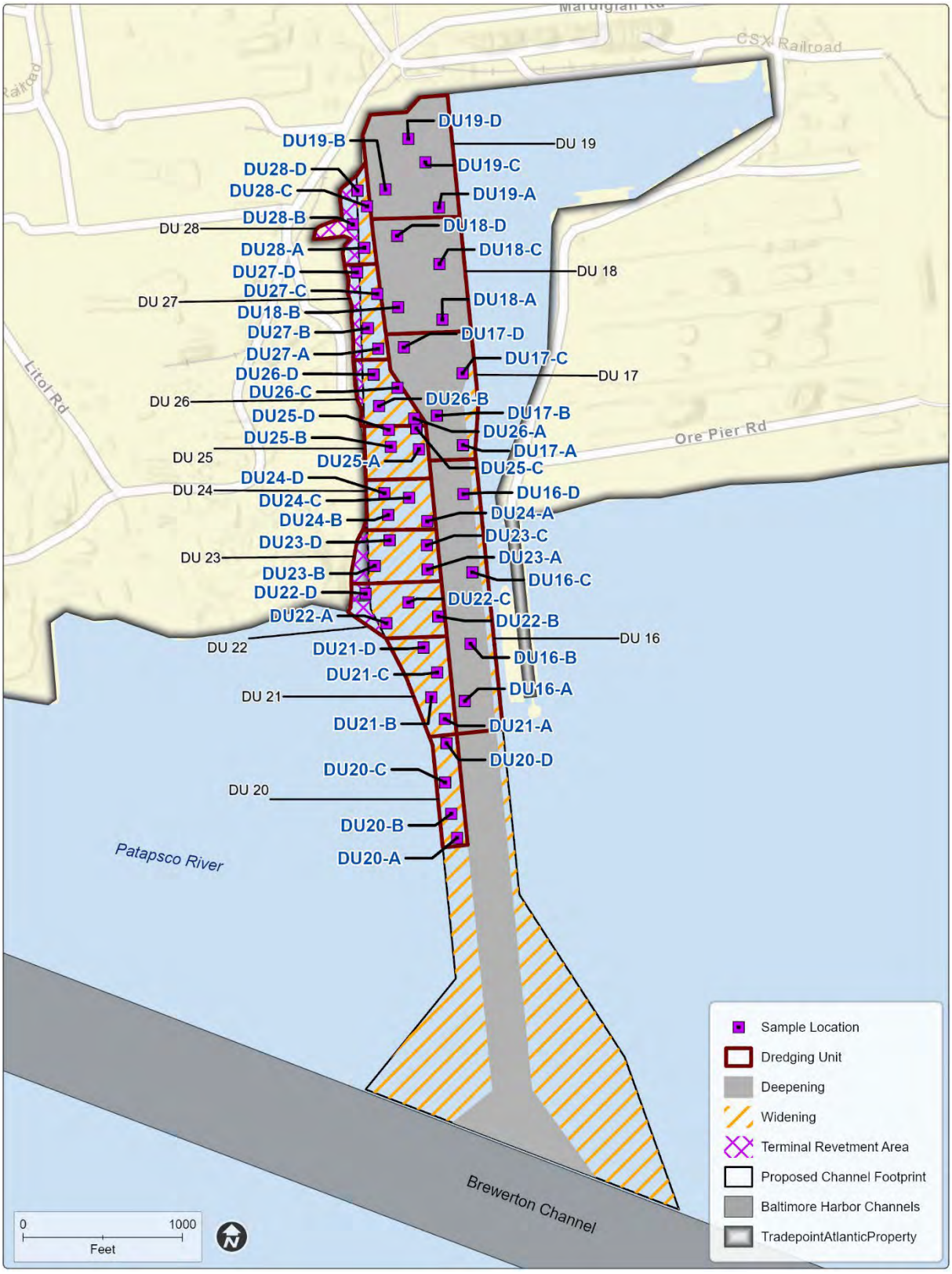


Figure 7. Sediment Sample Locations for the South Channel (Existing Sparrows Point Channel Dredging Units and Top Dredging Units for Wideners)

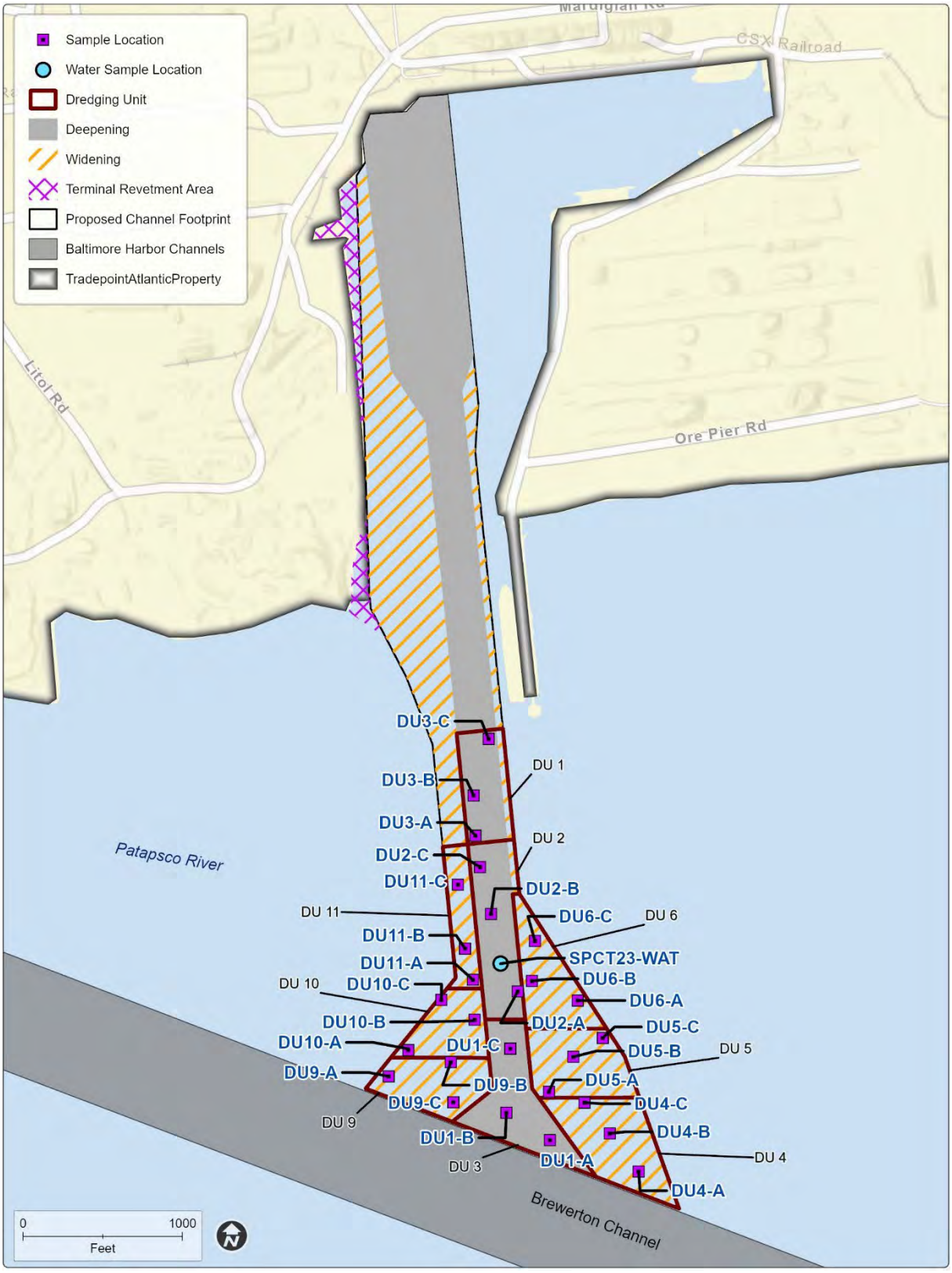
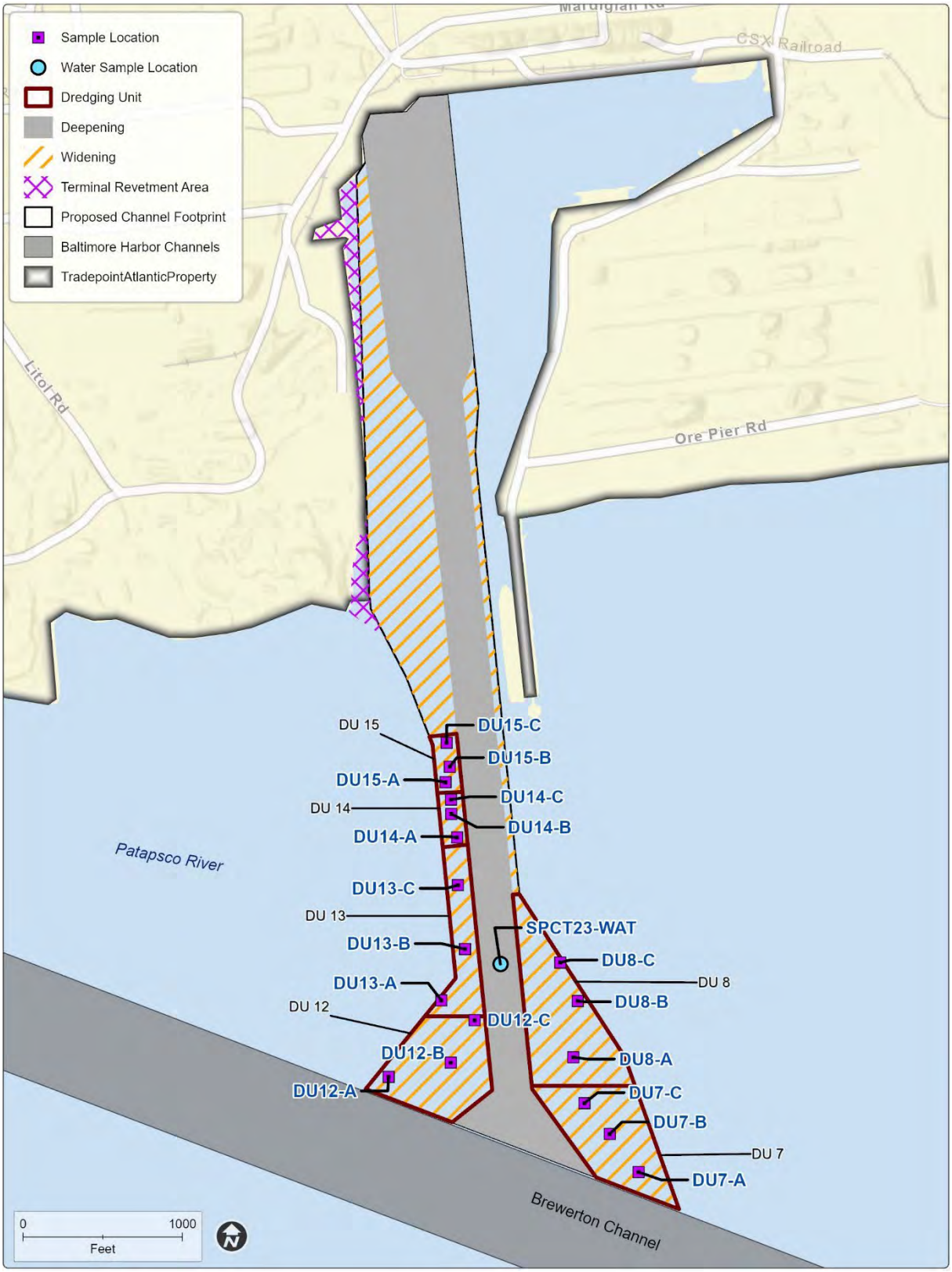


Figure 8. Sediment Sample Locations for the South Channel (Bottom Dredging Units for Wideners)



To assess the sediment quality with respect to upland placement of the material within onsite DMCFs, the chemical data were compared to USEPA Regional Screening Levels (RSLs) for soils (USEPA 2024a). Chemical concentrations that exceeded RSLs were included in risk calculations to classify the material within each DU based on the MDE Innovative Reuse categories (MDE 2019). In addition, the chemical data from the Toxicity Characteristic Leaching Procedure (TCLP) analysis were compared to the regulatory criteria in 40 CFR 261.24 to verify that the material would not be classified as a hazardous waste. To assess the sediment quality with respect to upland placement of the material at offsite DMCFs managed and operated by the MPA, the chemical data were compared to Baseline Control Limits (BCLs) that have been established for the MPA facilities (MPA 2022).

Ocean placement requires evaluation of the sediments with respect to the potential for adverse effects to aquatic organisms at the ocean placement site. Additional ocean placement testing for the South Channel DUs included the creation and chemical testing of standard elutriate samples, water column bioassays, whole sediment bioassays, and 28-day laboratory bioaccumulation studies (EA 2024b). These studies were conducted, and the data were evaluated in accordance with USEPA and Corps protocols (USEPA 2000; USEPA and Corps 1991, 2008). The results of the elutriate chemical tests and water column bioassays (using larval fish, mysid shrimp, and blue mussel embryos) were used to model the material placement, movement of the elutriate within the ocean placement site, and the potential for effects to aquatic organisms within the water column. The results of the whole sediment bioassays (using two amphipod species) were used to determine if the sediments were toxic to benthic organisms. The results of the bioaccumulation studies were used to assess uptake of contaminants from sediment to the tissue of clams and marine worms' exposure to the sediments and to assess the potential for movement of contaminants through the food chain.

Overview of Sediment Quality around Coke Point

Sediments around Coke Point consist of a soft, fine-grained silty top layer above deep layers of clay and sands. Some surficial sediments along the shoreline of Coke Point contain slag or gravel mixed with the soft, fine-grained sediments from activities on land and from the human-made construction of Coke Point. Within the vicinity of the channel improvements,

Regional Screening Levels (RSLs) are contaminant concentration thresholds developed by the USEPA to assess environmental and human health risks at contaminated sites. These screening levels provide a baseline for determining whether contaminants present in sediment, soil, or water require further investigation or remediation.

Toxicity Characteristic Leaching Procedure (TCLP) is a laboratory test established by the USEPA) to simulate leaching of contaminants from solid materials, like sediments or industrial waste, into groundwater. By analyzing the leachate, it can be determined whether the material qualifies as hazardous waste.

Bioaccumulation studies measure the extent to which organisms absorb and accumulate contaminants from their environment, particularly from sediments or water. Organisms are exposed to contaminated sediment, and their tissues are later analyzed to quantify contaminant levels. These studies provide insight into the potential for pollutants to move up the food chain and impact broader ecosystems.

Standard elutriates are water/sediment mixtures used to simulate the potential release of contaminants from sediment when it is disturbed (e.g., during dredging or natural sediment resuspension). This mixture is analyzed to assess the concentration of contaminants that could leach into the water column, helping predict environmental impacts on aquatic life.

Water column bioassays are tests conducted to determine the toxicity of water samples, often collected from environments affected by sediment disturbance, dredging, or contamination. In these bioassays, organisms such as fish, algae, or invertebrates are exposed to the water sample, and their responses (e.g., mortality, growth inhibition) are observed to evaluate the sample's potential impact on aquatic life.

Whole sediment bioassays are tests that expose benthic organisms directly to sediment samples to assess the toxic effects of contaminants bound within the sediment. These bioassays provide information on how sediment contaminants may affect sediment-dwelling species, helping evaluate risks to benthic ecosystems.

the silty surface layer overlays deep materials that predominantly consist of native clays in the South Channel and consist of a combination of native clays and sands in the North Channel (Kozera 2023; EA 2024b and 2024c).

The column of sediment in the South Channel is uniform with little layering or stratification of material types. Within the deepening area of the South Channel segment, the sediments are primarily comprised of a combination of silt and clay that extend to the depth to which the Sparrows Point Channel would be deepened (-50 feet MLLW). In the South Channel wideners, the silty top materials extend from the sediment surface to depths ranging from approximately 7 to 10 feet below sediment surface (bss) and are underlain by native silty clays extending below the proposed dredging depth (-50 feet MLLW).

The column of sediment in the North Channel includes layers of differing material types. Within the deepening area in the North Channel and in the west widener, the silty top materials extend from the sediment surface to varying depths. Native clays and sands are present at depth within the dredging prism and extend below the proposed dredging depth (-50 feet MLLW).

Chemical constituents associated with human activities, such as metals, PAHs, and PCBs, are present in the surface and upper sediment column, while deeper sediments have lower concentrations of chemical constituents that represent natural background concentrations.

The chemical testing of surficial sediments (EA 2024a) at seven locations surrounding Coke Point (Figure 2) indicated that surficial sediment quality varies by location and distance offshore. PAHs and metals are the constituents that most frequently exceed PELs for aquatic life. Collectively, nine metals, 13 individual PAHs, total PAHs, and dioxin toxic equivalents (TEQs) exceeded PELs in the offshore surficial sediments surrounding the peninsula. The highest total PAHs were detected in surficial sediments in Coke Point Cove on the west side (SPCT23-01) and along the southeast side (SPCT23-06) of Coke Point with concentrations in Coke Point Cove approximately ten times higher than concentrations on the southeast side of the peninsula. The highest concentrations of metals were detected in the nearshore area on the southwest side of Coke Point (SPCT23-03). The location near the Brewerton Channel (SPCT23-05) was furthest offshore and had the fewest PEL exceedances.

Tests of sediment physical properties (EA 2024a, 2024b, 2024c) indicate that surface sediments close to the shoreline west of Coke Point and in Coke Point Cove are a mix of sands, silts, and clay, and sediments in the Coal Pier Channel, within the Sparrows Point Channel, and south of Coke Point contain mostly silt and clay. Nutrient constituents, including ammonia, nitrate, nitrite, and total phosphorus are present in the sediments with highest concentrations in surface samples. Total organic carbon concentrations in the sediments range from 1 to 11% with highest concentrations in surface samples.

Sediment Quality in the Area of the Proposed Coal Pier Channel DMCF

Surface sediments within the Coal Pier Channel DMCF footprint consist of fine-grained silts and clays in the east and central portion of the channel and are predominantly comprised of sand (approximately 80%) near the mouth of the channel (EA 2009, 2024a). Chemical concentrations of six metals (chromium, copper, lead, nickel, silver, and zinc), two PAHs (acenaphthylene and naphthalene), and the dioxin TEQ in surficial sediments in the central portion of the channel (SPCT23-02; Figure 2) exceeded PEL values (EA 2024a). Benzene, ethylbenzene, and toluene were detected in the subsurface sediment near the mouth Coal Pier Channel (sampling location BH-SED-02; Figure 1), and sheens and hydrocarbon odors were

noted in the subsurface samples on the east side of Coal Pier Channel (BH-SED-01) and at the mouth of Coal Pier Channel (BH-SED-02) (EA 2009).

Sediment Quality in the High Head Industrial Basin

Surficial sediment sampling was conducted at 12 locations in the High Head Industrial Basin in early 2023 (ARM Group 2023). Arsenic, lead, TPH –DRO, oil and grease, and several PCB Aroclors were detected at elevated concentrations in the sediments. Concentrations of arsenic and lead in a portion of the samples exceeded composite worker/industrial soil RSLs.

Sediment Quality in the Dredging Footprint

The physical and chemical properties of the sediment within the footprint of the proposed Sparrows Point Channel deepening and widening varies within the North Channel and South Channel and varies by DU (EA 2024b, 2024c). The DUs are described in relation to the categories established by MDE's Innovative Reuse and Beneficial Use of Dredged Material Program, described in the text box to the right.

- *South Channel* – The South Channel segment is comprised of DU1 through DU15 and includes approximately 1.65 MCY of sediment. Sediments in the South Channel dredging area are predominantly comprised of fine-grained silts and clays. Metals, PCBs, PAHs, SVOCs, chlorinated pesticides, and dioxin/furan congeners were detected most frequently in the sediments; the specific analytes detected, and their concentrations varied by DU (EA 2024b, 2024c). Highest concentrations of metals and PAHs were present in the sediments from DUs 1, 2, and 3 (channel deepening), DU8 (east widener), and DU11 (west widener). Arsenic concentrations in each DU and the dioxin TEQ concentration in DU3 exceeded the industrial soil RSLs. Risk calculations indicated that five of the South Channel DUs are classified as Category 1 (Residential Unrestricted Use Soil and Fill Material) and ten of the DUs are classified as Category 2 (Non-Residential Restricted Use Soil and Fill Material). Overall, approximately 675,000 CY of material is classified as Category 1 and approximately 975,000 CY of material is classified as Category 2. The MDE Innovative Reuse category for each South Channel DU is provided in Table 2 depicted in Figure 9 and Figure 10.

MDE's Innovative Reuse and Beneficial Use of Dredged Material Program is an initiative aimed at promoting the sustainable and productive use of dredged material from Maryland's waterways. Given the significant volume of dredged material generated annually through the maintenance of navigational channels in the Chesapeake Bay and surrounding waters, this program seeks to reduce the environmental impact of disposal while turning dredged material into valuable resources.

Dredged material may be categorized into one or more of four categories based on results of a full sediment characterization and comparison to screening criteria.

Category 1: Residential Unrestricted Use Soil and Fill Material – Material is considered clean and free of contaminants, making it suitable for unrestricted use, including in residential settings, parks, schools, and other areas with high potential for human contact. This material can be used without special restrictions or controls.

Category 2: Non-Residential Restricted Use Soil and Fill Material – Material has low levels of contaminants that limit its use to non-residential areas, such as industrial or commercial sites, where human exposure is limited. This material is safe for controlled applications in settings with less frequent human contact.

Category 3: Restricted Use Soil and Fill Material, Cap Required – Material contains contaminants at levels that require additional protective measures, such as a physical cap or barrier, to prevent exposure. This material typically restricted to specific, non-sensitive locations (e.g., industrial sites, closed landfills) where exposure to humans and the environment can be minimized and controlled.

Category 4: Ineligible for Soil and Fill Material – Material is considered unsuitable for use as soil or fill material due to high levels of contaminants that pose significant risks to human health or the environment. This material cannot be used in any applications where it might come into contact with people, plants, animals, or water sources, and it requires special handling, treatment, or disposal in a secure, permitted facility.

Table 2. MDE Innovative Reuse Categories, Approximate Placement Volume, and Placement Options for Each Dredging Unit

Dredging Unit	MDE Innovative Reuse Category [1]	Placement Options			Approximate Material Volume (CY)
		Offsite MPA DMCF	Onsite DMCF [2]	Ocean Placement at NODS	
DU1	2	✓	✓	✓	100,000
DU2	2	✓	✓	✓	100,000
DU3	2	✓	✓		80,000
DU4	2	✓	✓	✓	80,000
DU5	2	✓	✓	✓	80,000
DU6	2	✓	✓	✓	80,000
DU7	1	✓	✓	✓	185,000
DU8	2	✓	✓	✓	185,000
DU9	2	✓	✓	✓	90,000
DU10	2	✓	✓	✓	90,000
DU11	2	✓	✓	✓	90,000
DU12	1	✓	✓	✓	185,000
DU13	1	✓	✓	✓	185,000
DU14	1	✓	✓	✓	60,000
DU15	1	✓	✓	✓	60,000
DU16	2	✓	✓		220,000
DU17	3		✓		230,000
DU18	3		✓		250,000
DU19	2	✓	✓		230,000
DU20	2	✓	✓		140,000
DU21	1	✓	✓		220,000
DU22	2	✓	✓		215,000
DU23	2	✓	✓		215,000
DU24	1	✓	✓		185,000
DU25	2	✓	✓		185,000
DU26	2	✓	✓		185,000
DU27	1	✓	✓		150,000
DU28	2	✓	✓		125,000

Notes:

CY = cubic yards

1 – MDE 2019. *Innovative Reuse and Beneficial Use of Dredged Material Guidance Document*.

Category 1 = Residential Unrestricted Use Soil and Fill Material

Category 2 = Non-Residential Restricted Use Soil and Fill Material

Category 3 = Restricted Use Soil and Fill Material, Cap Required

2 – Onsite DMCFs include High Head Industrial Basin DMCF and Coal Pier Channel DMCF

Figure 9. MDE Innovative Reuse Categories for the South Channel (Existing Sparrows Point Channel Dredging Units and Top Dredging Units for West Widener Combined)

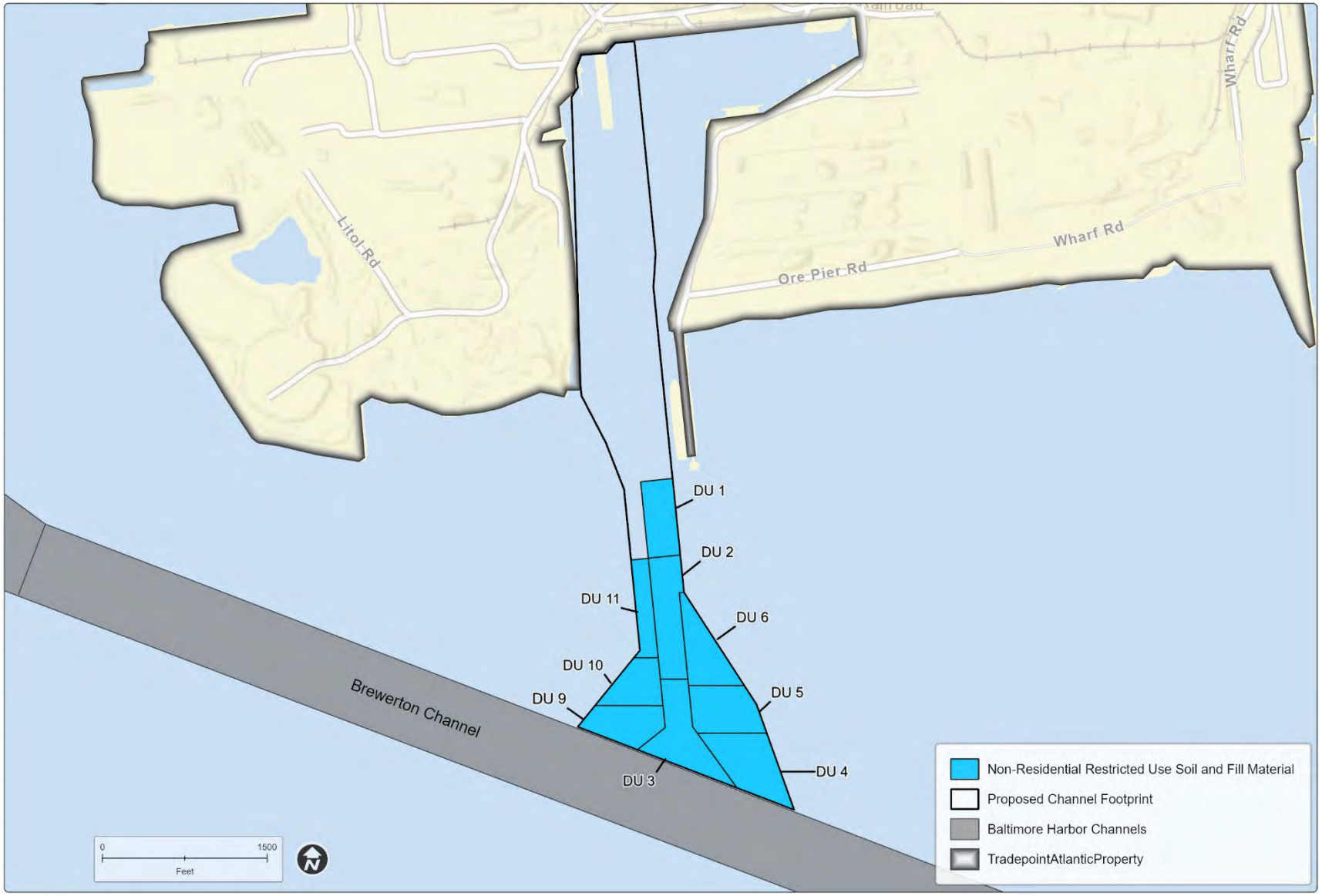
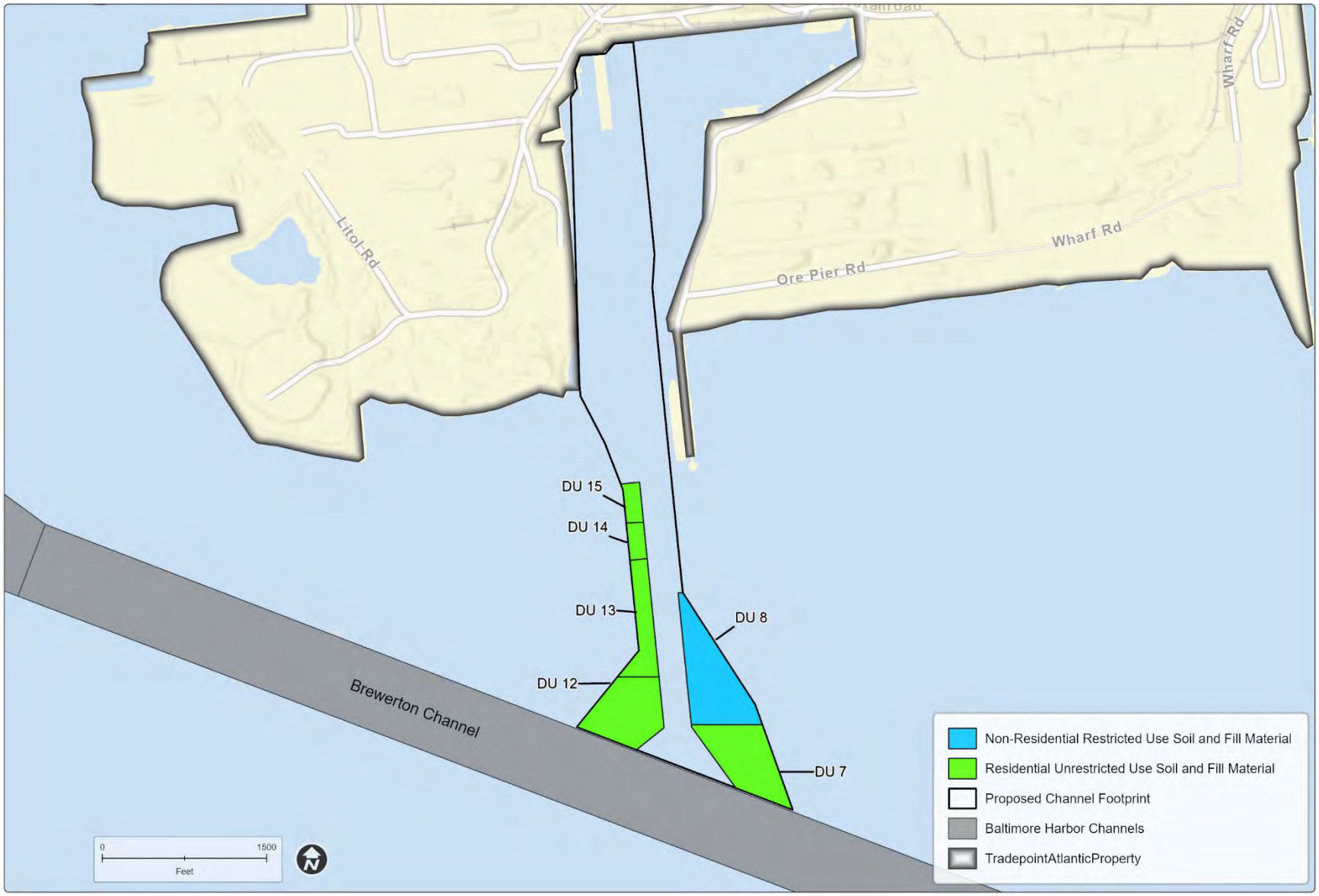


Figure 10. MDE Innovative Reuse Categories for the South Channel (Bottom Dredging Units for Wideners)



With respect to comparisons to BCLs for MPA DMCFs, the concentration of naphthalene for DU3 and DU11 exceeded the BCL; however, total PAH concentrations did not exceed the BCL. Several other individual constituents exceeded BCLs in varying DUs, but the constituent concentrations were not substantially higher than the BCLs, indicating that the concentrations were similar to those of materials previously placed in MPA DMCFs.

With respect to ocean placement criteria, each of the South Channel DUs, with the exception of DU3, met the Limiting Permissible Concentration (LPC) for water quality criteria, water column toxicity, benthic toxicity, and benthic bioaccumulation in accordance with 40 CFR 220-228.

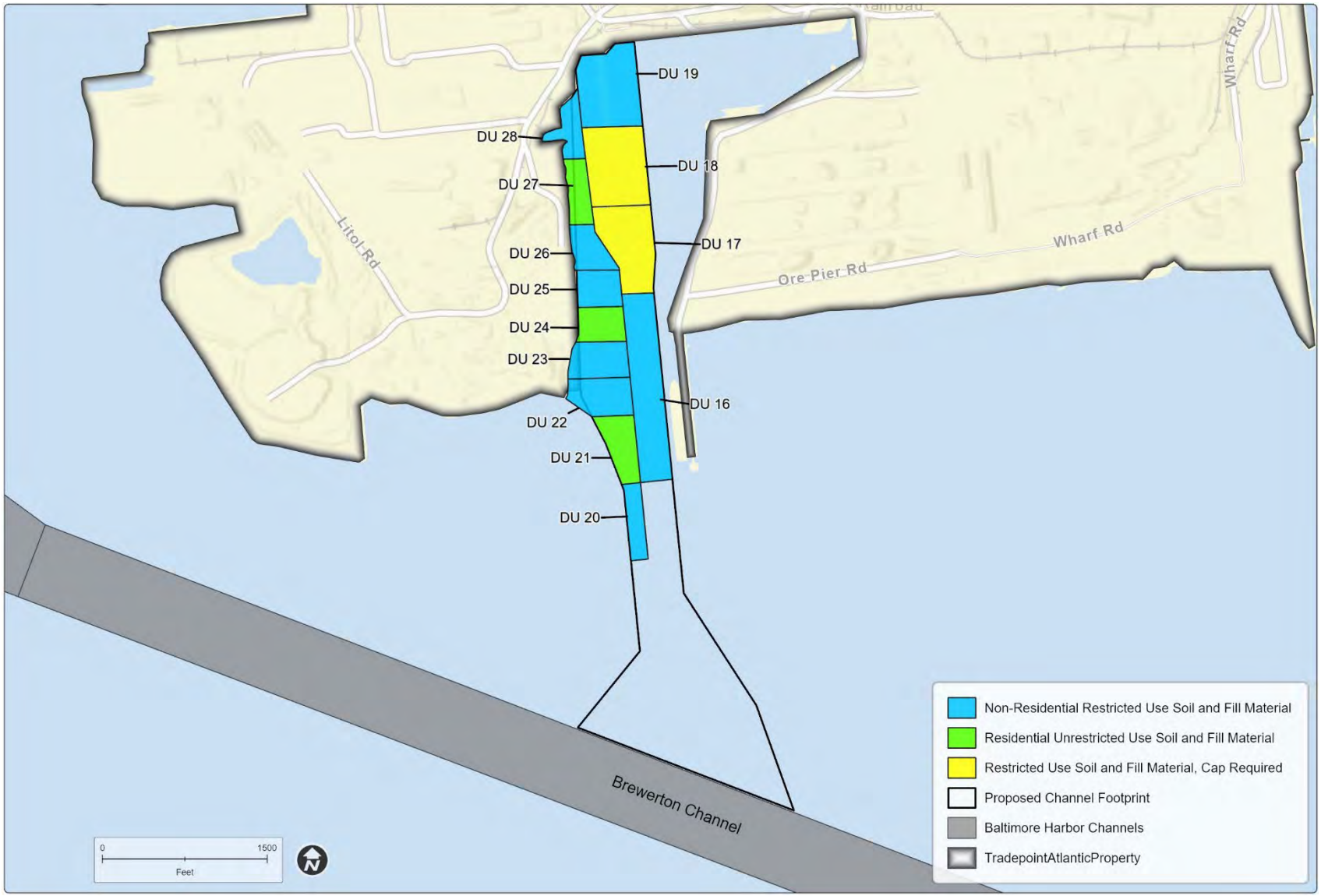
Results of the TCLP testing indicated that none of the tested materials in the South Channel DUs were classified as hazardous waste. A summary of dredged material placement options for each South Channel DU (based on sediment chemical characteristics) is provided in Table 2.

- *North Channel* – The North Channel is composed of DU16 through DU28 and includes approximately 2.55 MCY of sediment. Sediments in the North Channel are a combination of sand and fine-grained silts and clays with highest proportions of sand (29 to 38.6%) in the northern DUs in the west widener (DU24, DU25, DU26, DU27, DU28). Metals, PCBs, PAHs, SVOCs, chlorinated pesticides, dioxin/furan congeners, VOCs, TPH, and oil and grease were detected most frequently in the sediments; the specific analytes detected, and their concentrations varied by DU (EA 2024c). Highest concentrations of total PAHs were present in the sediments from DUs 16, 17, 18 (channel deepening) and DUs 26 and 28 (west widener). Arsenic concentrations in each DU, the dioxin TEQ concentration in DU16, and three PAHs (1-methylnaphthalene, naphthalene, and benzo(a)pyrene) in DU18 exceeded the industrial soil RSLs. Risk calculations indicated that three of the North Channel DUs are classified as Category 1 (Residential Unrestricted Use Soil and Fill Material), eight of the DUs are classified as Category 2 (Non-Residential Restricted Use Soil and Fill Material), and two DUs (17 and 18) are classified as Category 3 (Restricted Use Soil and Fill Material, Cap Required). Overall, approximately 555,000 CY of material is classified as Category 1, approximately 1,515,000 CY of material is classified as Category 2, and approximately 480,000 CY of material is classified as Category 3. The MDE Innovative Reuse category for each North Channel DU is provided in Table 2 and is depicted in Figure 11.

  With respect to comparisons to BCLs for MPA DMCFs, the concentrations of multiple individual PAHs and total PAHs exceeded the BCLs in DUs 16, 17, 18, 19, 23, 26, and 28. Concentrations of lead in DUs 17 and 23, concentrations of zinc in DUs 16, 17, and 19, concentration of dibenzofuran in DU18, and concentrations ethylbenzene and toluene in DU22 also exceeded BCLs. Several other individual constituents exceeded BCLs in various DUs, but the concentrations were not substantially higher than the BCLs, indicating that the concentrations were similar to those of materials previously placed in MPA DMCFs.

  Results of the TCLP testing indicated that none of the tested materials in the North Channel DUs were classified as hazardous waste. A summary of dredged material placement options for each North Channel DU (based on sediment chemical characteristics) is provided in Table 2.

Figure 11. MDE Innovative Reuse Categories for the North Channel (Existing Sparrows Point Channel and West Widener/Revetment Dredging Units Combined)



Environmental Consequences

No-action Alternative

Under the No-action Alternative, bedded sediments and chemicals associated with the sediments would stay in place. Sediments in the existing Sparrows Point Channel would be subject to disturbance by future periodic maintenance dredging. Surficial sediments throughout the Coke Point offshore area would be subject to disturbance by storm events and vessel traffic. Based on the risk assessment performed for Coke Point sediments (EA 2011) and other supporting studies, there would be an ongoing potential for ecological risk in offshore areas west and south/southeast of Coke Point and a limited potential for human health risk.

Combined Options Alternative – Terminal Development and Channel Improvement

The dredging and removal of sediments east of the peninsula to widen and deepen the channel and construct the terminal wharf and revetment structure would permanently remove 4.2 MCY of sediments. These materials include legacy contaminants from historical industrial activities and would leave behind deeper native sediments with natural background concentrations of metals and other constituents. The removal of sediments impacted by metals, PAHs, PCBs, and other constituents would result in a permanent net improvement of surficial sediment conditions (approximately 52 acres within the existing channel and 60 acres in the channel wideners) for fish, crabs, benthic organisms, and humans. In addition, it would reduce the surface area for surficial chemical exposures of persistent organic contaminants (such as PCBs and dioxins) that have the potential to accumulate in benthic organisms and fish tissue and bioconcentrate in the food chain.

Dredging may resuspend some sediments that would settle back to the bottom of the dredging area and adjacent areas. Dredging BMPs (such as those described in Attachment D) would be used where practicable and necessary based on sediment chemistry and site conditions to minimize the release of sediment and contaminants to the water column during dredging operations. Any resuspension or incidental release of sediment during dredging operations, particularly in the South Channel and near the Brewerton Channel, would be comparable to maintenance dredging operations performed in the federal channel. Therefore, adverse impacts on surficial sediment quality from redeposition are expected to be minimal.

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

Placement of dredged material in the High Head Industrial Basin would result in the permanent removal of approximately 40 acres of impounded water and would result in the encapsulation of existing sediments that contain elevated concentrations of arsenic, lead, TPH-DRO, oil and grease, and PCBs. Filling of the High Head Industrial Basin DMCF would result in the creation of bermed upland habitat, and the placed sediments would be dewatered and managed as soils. Although the site is currently used by fish, wildlife, and birds, it is a managed industrial facility. The long-term land use of the High Head Industrial Basin DMCF is expected to remain industrial. The majority of sediments placed in the DMCF would be classified as either MDE Innovative Reuse Category 1 (Residential Unrestricted Use Soil and Fill Material) or Category 2 (Non-Residential Restricted Use Soil and Fill Material); these materials are suitable as fill in an industrial use area. Any sediments that are classified as MDE Innovative Reuse

Category 3 (Restricted Use Soil and Fill Material, Cap Required) would be placed early during the material inflow/filling cycle and would be capped or buried by subsequent placement of either Category 1 or Category 2 material. Human health risks associated with placement of Category 3 material would be mitigated through the capping requirement.

Coal Pier Channel DMCF

Placement of dredged material in a DMCF at the Coal Pier Channel would result in the permanent loss of 19.6 acres of open water habitat. The existing channel would be filled and converted to bermed, upland habitat, and a net loss of 19.6 acres of sediment surface that functions as habitat for benthic communities would occur. Based on the summer aquatic survey data (EA 2024a), this benthic habitat is degraded and subject to seasonal low dissolved oxygen (hypoxia), and the sediments contain elevated concentrations of metals, PAHs, benzene, ethylbenzene, and toluene. Filling the channel would encapsulate impacted sediments and would eliminate exposure pathways for chemicals to benthic organisms, crabs, and fish.

The majority of sediments placed in the DMCF would be classified as either MDE Innovative Reuse Category 1 (Residential Unrestricted Use Soil and Fill Material) or Category 2 (Non-Residential Restricted Use Soil and Fill Material); these materials are suitable as fill in an industrial use area. Sediments that are classified as MDE Innovative Reuse Category 3 (Restricted Use Soil and Fill Material, Cap Required) would be placed early during the material inflow/filling cycle and would be capped or buried by subsequent placement of either Category 1 or Category 2 material. Therefore, human health risks associated with placement of Category 3 material would be mitigated through the capping requirement.

The sediment along the alignment of the channel enclosure dike is anticipated to consist of a soft surface layer approximately 4 feet in thickness underlain by consolidated sand. Based on the shallow depth of the soft overburden material, it is not anticipated that sediments would be substantially displaced or would create a mud wave during dike construction. It is anticipated that some sediments may be resuspended during the placement of material for the construction of the enclosure dike, and these sediments have the potential to re-deposit on adjacent bottom sediments. BMPs for in-water construction (such as those described in Attachment D) would be used where practicable and necessary to minimize the resuspension of sediment and contaminants to the water column during in-water placement of dike construction material. Construction methodologies would be implemented in accordance with all applicable permit conditions. Therefore, adverse impacts on adjacent surficial sediment quality outside the enclosure dike from resuspension and redeposition are expected to be minimal.

Existing MPA DMCFs

No impacts would be expected as a result of placement of the dredged material at either the Cox Creek or Masonville DMCFs. Both facilities are permitted to accept dredged material from the Baltimore Harbor channels and the Patapsco River. The MPA has indicated that a maximum of 1.25 MCY of placement capacity is available for the SPCT project during a 4-year placement period. Only those DUs that meet MPA BCL requirements and that are classified as MDE Innovative Reuse Category 1 (Residential Unrestricted Use Soil and Fill Material) and Category 2 (Non-Residential Restricted Use Soil and Fill Material) would be placed at the MPA DMCFs. Material placed at MPA facilities would be conducted in phases that do not exceed the annual operational capacity for the facilities. Therefore, no change to DMCF site conditions, operations, or practices at these facilities would be expected and no impact to

capacity needs for other federal, state, or local projects would be anticipated as a result of dredged material placement from the SPCT project.

Existing Ocean Disposal Site

Placement of dredged material at the NODS is regulated under Section 103 of the Marine Protection Research and Sanctuaries Act (MPRSA). Tier II (sediment and elutriate) and Tier III (ecotoxicological) testing of the dredged material has been conducted in conformance with the requirements under Section 103 of the MPRSA and 40 CFR 220-228. Results of the testing for 14 DUs have demonstrated that no adverse impact to the marine environment at the NODS would occur as a result of the material placement. Only those 14 DUs that meet the LPC for water quality criteria, water column toxicity, benthic toxicity, and benthic bioaccumulation would be placed at the NODS. The NODS was designated to accept material that meets these requirements (USEPA 1992). Placement of the material at the NODS would comply with the requirements stipulated in the Site Management and Monitoring Plan (USEPA and Corps 2019). The materials would be evenly dispersed across a designated placement zone to avoid mounding. Progress surveys of portions of the active zone during placement periods would be conducted and used, if warranted, to ensure proper placement/distribution of materials.

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Attachment B

DEIS Surface Waters

Surface Water

Surface water provides habitat and resource for fish and wildlife, means for shipping of goods and for transit of people, and a place for recreation and fishing. Surface waters are also used to support the economy through agriculture, industrial processes, and power production. Site-specific physical and chemical characteristics of surface water are used to determine the quality of the water with respect to suitability for supporting aquatic life and human uses. The quality of surface water may be influenced by watershed and local inputs, including non-point source land and agricultural practices, groundwater, regulated point-source industrial discharges and stormwater, and displacement or resuspension of underlying sediments during storm events, during vessel movements, and during waterfront and marine construction activities.

Affected Environment

State of Maryland surface waters affected by the SPCT project are the tidal waters of the Patapsco River in the vicinity of Coke Point and near the mouth of Bear Creek. This includes waters in the vicinity of the existing Sparrows Point Channel where dredging would occur, waters on the east side of Coke Point where the wharf would be constructed, waters on the southeast side of Coke Point where stormwater from the terminal would be discharged, waters on the west side of Coke Point where the proposed Coal Pier Channel DMCF would be constructed, and waters within or near the mouth of Bear Creek where effluent from dewatering of onsite DMCFs would be discharged.

The tidal waters surrounding the project area and extending eastward into the Upper Chesapeake Bay are classified as Use Class II (Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting) by MDE. The individual designated uses of Use Class II waters include: growth and propagation of fish, other aquatic life, and wildlife; water contact sports; leisure activities involving direct contact with surface water; fishing; agricultural water supply; industrial water supply; propagation and harvesting of shellfish; seasonal migratory fish spawning and nursery use; seasonal shallow-water SAV use; open-water fish and shellfish use; seasonal deep-water fish and shellfish use; and seasonal deep-channel refuge use.

Under section 303(d) of the Clean Water Act, waterbodies that do not meet established water quality standards are subject to Total Maximum Daily Loads (TMDLs). TMDLs establish the maximum limits for impairing substances or pollutants that a waterbody can receive from combined sources and meet water quality standards for its designated use(s). TMDLs distribute

MDE classifies the state's waterbodies into **Waterbody Use Classes** to define the intended uses and water quality standards needed to support those uses. By setting and enforcing standards for each class, MDE aims to manage pollution sources and preserve water quality across its diverse waterways. Each class has specific criteria to protect activities (e.g., swimming, fishing, providing habitats for aquatic life). Waterbodies are classified based on location, ecological significance, and recreational or commercial value.

Class I: Water Contact Recreation and Protection of Nontidal Warmwater Aquatic Life – Protects waters for recreational activities involving direct contact, like swimming, and ensures aquatic life (other than trout) can thrive. Provides agricultural and industrial water supply.

Class II: Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting – Intended for estuarine and coastal waters that support marine life and shellfish, ensuring these areas are suitable for harvesting seafood safely.

Category III: Nontidal Cold Waters – Protects waters suitable for supporting naturally reproducing trout populations and other coldwater obligate species.

Category IV: Recreational Trout Waters – Designed for waters where trout are managed for recreational fishing but may not reproduce naturally. Allows for slightly warmer temperatures but still supports stocked trout populations for recreational fishing.

the total limited load between point and nonpoint sources, also known as a Waste Load Allocation (WLA).

The Chesapeake Bay TMDL, approved by USEPA in 2010, established watershed limits for nutrients (nitrogen and phosphorus) and total suspended solids (TSS). In Maryland, the USEPA approved a Baltimore Harbor TMDL specifically for nutrients (nitrogen and phosphorus), chlordane in sediments, trash and debris for the Middle Branch and Northwest Branch Portions of the Patapsco River, and PCBs in fish tissue within the Patapsco River. Point-source discharges, including discharges from DMCFs are subject to the Chesapeake Bay TMDL and the WLAs. WLAs are enforced in Maryland under the National Pollutant Discharge Elimination System (NPDES) permit program through individual discharge permits.

Total Maximum Daily Load (TMDL) is a regulatory term of the Clean Water Act that represents the maximum amount of a pollutant that a waterbody (e.g., river, lake, estuary) can receive daily while still meeting water quality standards. TMDLs are established to restore impaired waters by addressing pollutants that cause water quality degradation. Once a TMDL is established, states and local agencies implement strategies to limit pollutant levels to help improve water quality and support designated uses, such as recreation, drinking water, and aquatic habitats.

Waste Load Allocations (WLAs) set the amount of specific pollutants that can be safely released into a river, lake, or other body of water from specific sources, such as factories or treatment plants, without harming the water's health or quality. WLA is an essential part of the TMDL calculation. These limits help ensure that water quality objectives are met and are essential for managing and reducing pollution in streams, rivers, lakes, and coastal waters.

Overview of Surface Water Quality Adjacent to Coke Point

Coke Point is surrounded by the Patapsco River to the west and south, the mouth of Bear Creek to the northwest, and the existing Sparrows Point Channel to the east. Surface water quality in these areas is affected by river flow and precipitation, daily tides, and the groundwater flow patterns under Coke Point. Surface water physical measurements, nutrient data, and chemical data from past and present data sources are used to describe the surface water quality of the SPCT project area. In addition, known inputs and sources to adjacent surface waters from stormwater and groundwater are also described. Data sources include past studies that assessed surface water quality in combination with offshore sediment quality between 2003 and 2011 (EA 2003, 2009, 2010a, 2010b, 2011), nutrient data and in situ (in place) water quality measurements collected during seasonal aquatic resource surveys in 2023 and 2024 (EA 2024a, 2024d, 2024e, 2024f), and data collected from project-specific dredged material characterization studies (EA 2024b, 2024c, 2024g).

Physical Conditions and Water Quality Measurements

Baltimore Harbor includes an approximate 15-statute mile tidal portion of the Patapsco River with water depths generally less than 20 feet with the exception of the federal navigation channels and other state and private access channels that are dredged to provide safe navigation for waterborne commerce (Wang et al. 2004). Surface water circulation and exchange within the harbor are governed by the effects of wind, tides, salinity-based density gradients, and river flows (Garland 1952; Boicourt et al. 1982). Vertical stratification of the water column is common, particularly in areas of deeper waters (such as the navigation channels) where denser (heavier), saltier and cooler bottom waters move upstream with incoming tides and remain below less dense (lighter) freshwater or low salinity surface waters moving downstream towards the Chesapeake Bay. Due to water column density, salinity stratification, limited vertical mixing, and use of dissolved oxygen by organisms and chemical degradation processes, low dissolved oxygen concentrations in deep bottom waters are often present below the requirements to support aquatic life, particularly in the late summer and fall seasons. The severity of this condition in the

Patapsco River varies from year to year based on precipitation and freshwater inflow and is most common in deep water areas, including the navigation channels.

Water depths in the SPCT project area vary and range from less than 2 feet up 15 feet in the nearshore areas, from approximately 15 feet up to 45 feet in the west and south offshore areas, and from approximately 10 feet up to 47 feet in the proposed channel improvements footprint. Water quality measurements recorded at seven locations in the vicinity of Coke Point (Figure 1) during seasonal nutrient surveys in summer and fall 2023 and winter and spring 2024 (EA 2024a, 2024d, 2024e, 2024f) indicated that water temperature, salinity, pH, and dissolved oxygen varied by season and water depth. Within the project area, salinities are typically classified as oligohaline (≤ 0.5 to 5 parts per thousand [ppt]) within the winter and spring and as either low mesohaline (≥5 to 12 ppt) or high mesohaline (≥12 ppt to 18 ppt) during the summer and fall. During the seasonal surveys, salinities in the project area ranged from 1.6 to 17.8 ppt with highest salinities measured in the summer and fall season bottom waters. Water temperature ranged from 41.2 to 81.7 ºF (degrees Fahrenheit) with highest and lowest water temperatures measured in summer and winter season surface waters, respectively. Dissolved oxygen ranged from 0.5 to 13.4 mg/L with low dissolved oxygen and hypoxic conditions measured in the summer season bottom waters. pH ranged from 7.1 to 10.2, with highest and lowest pH values measures in the winter and spring/summer, respectively. Turbidity (measured as nephelometric turbidity units or NTUs) ranged from 1.0 to 32.3 NTU and tended to be higher in bottom waters, regardless of season.

Nutrients

Nutrients are important for support of aquatic life, but in excess and through degradation, nutrients may consume and deplete dissolved oxygen in the water column. Nutrients (nitrogen and phosphorus) may be present in dissolved form or bound to particles within the water. Excess nitrogen and phosphorus have been identified as a concern for Baltimore Harbor surface waters, and the inputs and the TMDL for these nutrients are managed and regulated by MDE through the NPDES process.

Surface water nutrient samples were collected from seven locations in the vicinity of the SPCT project area in summer and fall 2023 and winter and spring 2024 (Figure 1) (EA 2024a, 2024d, 2024e, 2024f). Overall, total nitrogen concentrations were higher in the winter and spring (between 1 and 2 milligrams per liter [mg/L]) and lower in summer and fall (less than 1 mg/L). Most nitrogen was present in dissolved form in the winter and spring and was as a combination of particulate and dissolved nitrogen in the summer and fall. Total phosphorus concentrations were generally higher in summer and fall and varied by sampling location. Most phosphorus was present bound to particulates in the fall, winter, and spring; highest dissolved phosphorus was present during the summer season. Organic carbon concentrations in the SPCT project area surface waters ranged from 2.4 mg/L in the winter to 4.4 mg/L in the summer.

Figure 1. Surface Water and Nutrient Sampling Locations

Chemical Constituents

Characterization of surface water chemistry around Coke Point has been investigated through several decades of study of the offshore area. The most comprehensive evaluation of existing conditions from chemical impacts in surface water was a series of due diligence investigations performed by the MPA (EA 2003, 2009, 2010a, 2010b, 2011). During multiple sampling events conducted for these studies, approximately 96 surface water samples were collected and tested for metals, PAHs, SVOCs, VOCs, PCBs, dioxins, and other constituents (Figure 2). Chemical concentrations in surface water, sediment, and bioaccumulation tests (tissue) samples were used to model potential risks to human health, fish, benthos, and wildlife and to identify the geographic areas contributing the most to risks. Most chemicals in surface water were either below benchmarks protective of human health or aquatic life or were comparable to concentrations found throughout the Lower Patapsco River. PAHs were the only chemicals identified in surface water as posing potential risks. For aquatic life, PAHs in surface water posed risks in the western and southern offshore areas of Coke Point. For human health, the same PAH concentrations in surface water were identified as potentially posing a risk for recreational use for swimming. However, because people are unlikely to frequently and repeatedly swim in the nearshore areas where these high PAH concentrations were found, these risks were considered to be conservative and overestimated.

Additional studies of surface water chemistry were conducted in 2018 and 2019 to support ongoing remediation activities at Coke Point (Enviroanalytics Group and ARM Group 2018, 2019). The studies included joint sampling of groundwater, porewater, and surface water and focused on specific areas of potential groundwater inputs to surface water. A total of 95 samples from 50 locations were collected as part of these studies, and samples were analyzed for either PAHs, VOCs, or both dependent on potential sources of chemicals in groundwater nearby. Results of these studies are included in the discussion of inputs to surface water from groundwater.

Inputs to Surface Water

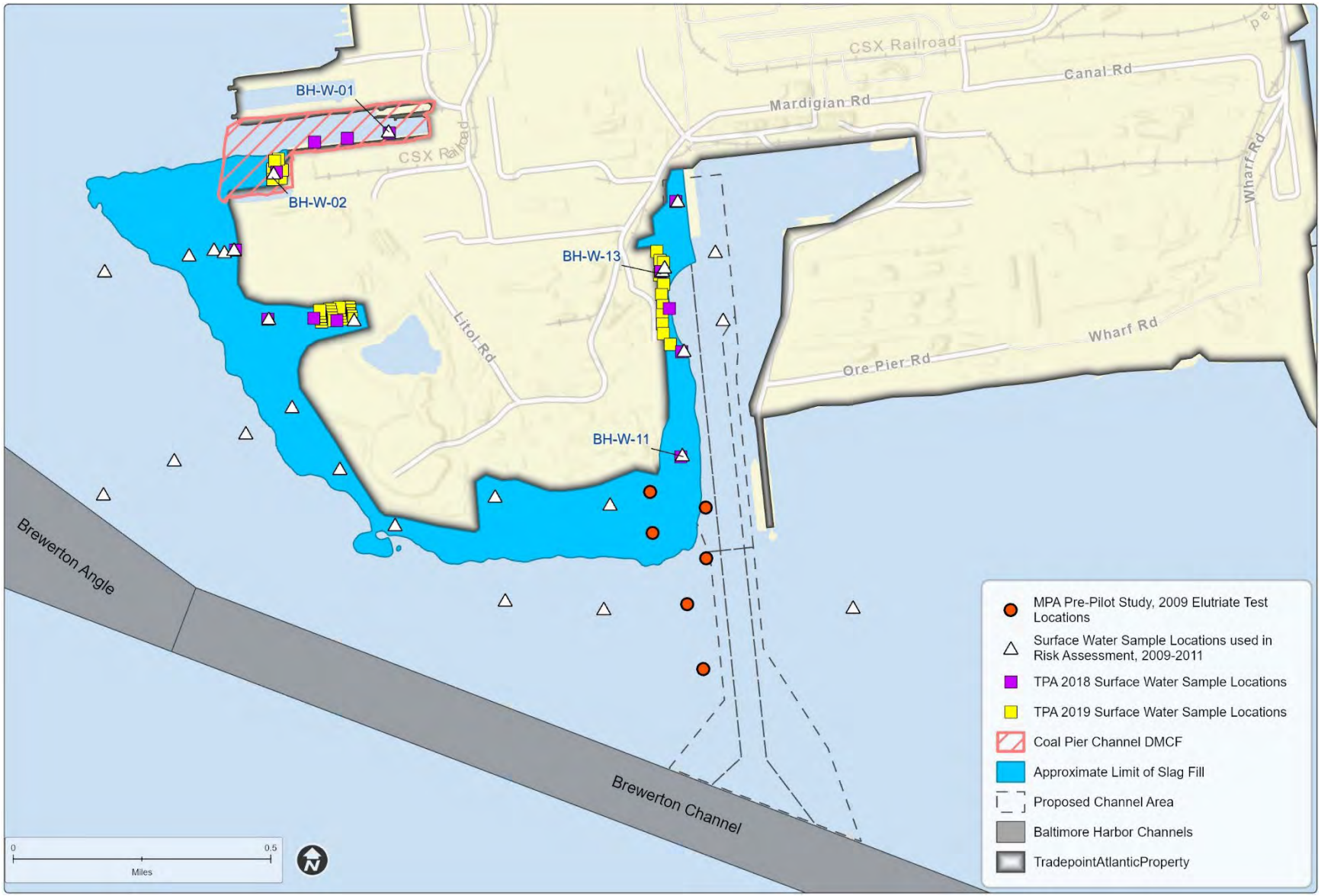
Surface water may receive inputs for stormwater discharges and runoff, leaching from groundwater, and resuspension of sediments from storm events, vessel movements, maritime activities, and periodic maintenance dredging. Existing contributions of nutrients, chemical constituents, and particulates/sediment to surface water from Coke Point via runoff/stormwater and via groundwater inputs are discussed below.

- *Stormwater/Runoff* – Onsite stormwater and runoff is managed using controls such as drainage ways, settling ponds, and monitored outfalls that form a system for routing water away from loose soils and into basins where it can collect, and solids can settle out. Stormwater management at Sparrows Point is governed by a Sitewide NPDES permit (State Discharge Permit No. 05-DP-0064, NPDES Permit No. MD0001201) that establishes approved discharge locations (outfalls) and includes specific monitoring requirements and discharge limits for nutrients, organics, metals, and total suspended solids. These discharge limits include both maximum loadings for nitrogen, phosphorus and suspended solids and concentration-based limits for pH, select metals, oil and grease, and select PAHs and VOCs. Discharge monitoring and sampling at the permit-specified outfalls has demonstrated compliance with NPDES permit limits (TPA 2023c). In addition to current stormwater controls, TPA has worked with Baltimore County to develop a sitewide stormwater management strategy that includes construction of a regional wet pond stormwater facility on the site. This regional wet pond stormwater facility will provide 5,502,794 cubic feet

of water quality treatment for 946 acres of impervious area, including 299 acres of the adjacent community. Prior to the runoff being pumped into the regional wet pond, a pre-treatment volume of approximately 2,359,230 cubic feet will be provided within the existing Tin Mill Canal. Based on the substantial capacity and the excess treatment of this new system, TPA and Baltimore County have agreed to a credit system for future projects so that individual stormwater management is not required on a project-by-project basis. The new system is currently under construction and is anticipated for completion and use in 2026.

- *Groundwater – P*ast industrial activities at Coke Point have contributed to chemical impacts of groundwater. TPA has been actively working with the USEPA and MDE and implementing measures to remove these chemicals. There are some areas where groundwater containing chemicals remain within the pores of slag and soil. This groundwater may flow underground and upward through sediments and provide a source of chemicals to surface waters. Two specific areas on Coke Point are known to have had groundwater plumes moving in the direction of surface water (CH2M Hill 2001; EA 2009). One of these areas is located in the northwestern part of Coke Point where groundwater contains benzene, naphthalene, and related VOCs; this area is immediately south of the Coal Pier Channel. The other area is located in the east-central portion of Coke Point where groundwater contains naphthalene and other semi-volatile compounds; this area is west of the proposed SPCT wharf and revetment. Past sampling found elevated concentrations of naphthalene and benzene in surface water samples collected immediately offshore of these areas. Naphthalene and benzene were detected in surface waters samples west of the graving dock on the west side of Coke Point, in Coke Point Cove, and on the east side of Coke Point near the north end of the channel turning basin (EA 2009, 2010a; Enviroanalytics Group and ARM Group 2018, 2019). Over the past decade, both of these areas have been subject to remediation. In 2010, RCRA IMs were initiated in both areas of groundwater plumes to remove or reduce sources of naphthalene, benzene, and other chemicals in groundwater. The remedial actions have included excavating a source area of non-aqueous phase (oily) liquids on the east side of Coke Point and installing systems to pump out water and treat it to remove chemicals at both areas (TPA 2023a). Annual reports summarize the progress of IMs in addressing groundwater impacts (TPA 2023a). Sampling of surface water in 2018 and 2019 found that benzene and naphthalene concentrations were less than the Maryland surface water quality standards east of Coke Point and near the Coal Pier Channel; concentrations of benzene, but not naphthalene, exceeded benchmarks in a few samples in Coke Point Cove (Enviroanalytics Group and ARM Group 2019). Continuation of activities to remediate source areas are expected to decrease and eventually eliminate the potential for naphthalene, benzene, or other constituents to reach surface water.

Figure 2. Historical Sampling Locations from Previous Surface Water Studies (2003 through 2011) and Slag Limits



Surface Water Quality on the East Side of Coke Point and Sparrows Point Channel

Surface water quality data for the Sparrows Point Channel and for east side of Coke Point include physical measurements and nutrient data collected during the 2023-2024 aquatic resource surveys (EA 2024a, 2024d, 2024e, 2024f), historical chemical data (EA 2003, 2009, 2010a, 2010b, and 2011), and chemical data of site water (surface water) collected to support the dredged material testing for the proposed widening and deepening of the channel (EA 2024b, 2024c, 2024g). Seasonal water column measurements collected in 2023 and 2024 from two locations in the vicinity of the Sparrows Point Channel (SCPT23-04 and SPCT23-05; Figure 1) indicated a stratified water column with respect to salinity at both locations (approximately 30 feet and 45 feet deep, respectively). The combined seasonal data for these locations indicated that salinity ranged from approximately 2 to 11 ppt in surface waters and from approximately 5 to 18 ppt in bottom waters throughout the year. Water column stratification with hypoxic conditions (low dissolved oxygen concentrations) was present in bottom waters in the summer at both locations. Concentrations of nutrients in surface water were consistent with those described for the overall surface waters adjacent to Coke Point.

Historical surface water samples from with the northern portion of the turning basin on the east side of Coke Point (EA 2003, 2009, 2010a, 2010b, 2011) indicated that concentrations of PAHs, specifically naphthalene, were detected above background concentrations in surface waters along the shoreline in the north part of the turning basin (location BH-W-13, Figure 2) and off the southeast tip of Coke Point (location BH-W-11, Figure 2). Recent chemical analysis of three surface water samples area (SPCT24-NORTH-01-WAT, SPCT24-NORTH-02-WAT, and SPCT24-WAT) (Figure 1) indicated that low concentrations of nutrients (nitrate-nitrite, total Kjeldahl nitrogen, and total phosphorus), eleven metals, one chlorinated pesticide (4,4’-DDD), and one SVOC [bis(2-ethylhexyl)phthalate] were detected in the surface waters (EA 2024b, 2024c, 2024g). Each of the detected concentrations was well below USEPA and State of Maryland water quality criteria/standards for aquatic life. Other tested organic constituents (PCBs, PAHs, dioxin/furan congeners, and butyltins) were not detected above the laboratory reporting limits in the surface water samples.

Surface Water Quality in the High Head Industrial Basin

High Head Industrial Basin is an industrial impoundment and is not a regulated surface waterbody. High Head Industrial Basin is approximately 40 acres in size with a water depth ranging from approximately 2 to 10 feet. High Head Industrial Basin receives treated effluent from the Baltimore City Back River Wastewater Treatment Plant, as well as stormwater runoff from local surrounding areas (TPA 2023b). Water is released from the south end of the basin via a pipeline that runs westward to an outfall near the mouth of Bear Creek.

Surface water sampling was conducted at eight locations in the High Head Industrial Basin in early 2023 (ARM Group 2023). Low concentrations of oil and grease and TPH-DRO were detected below concentrations that would be expected to pose risks to human health or aquatic life based on the current site industrial use. Concentrations of detected metals were below ecological benchmarks. Low concentrations of two SVOCs and three VOCs were also detected in the surface water samples (ARM Group 2023).

Surface Water Quality in the Area of the Proposed Coal Pier Channel DMCF

Surface water quality data for the Coal Pier Channel includes physical measurements and nutrient data collected during the 2023/2024 aquatic resource surveys (EA 2024a, 2024d, 2024e, 2024f) and historical chemical data (EA 2011). Seasonal water column measurements collected in 2023 and 2024 from one central location in the Coal Pier Channel (SCPT23-02; Figure 1) indicated a uniform water column with respect to water temperature and pH. Higher salinities in bottom waters were measured in summer, fall, and winter. Hypoxic conditions were present in the bottom waters during the summer sampling event; dissolved oxygen was measured at a concentration of 1.3 mg/L at a bottom depth of approximately 22 feet. Concentrations of nutrients in surface water were consistent with those described for the overall surface waters adjacent to Coke Point.

Historical surface water samples collected at two locations in the Coal Pier Channel DMCF footprint (BH-W-01 and BH-W-02, Figure 2) indicated that PAHs in surface waters exceeded ecological risk benchmarks (EA 2011).

Surface Water Quality in the Vicinity of the MPA DMCFs

The Masonville and Cox Creek DMCFs are upland facilities with adjacent surface waters of the Patapsco River. Surface waters in the vicinity of the Masonville and Cox Creek DMCFs are subject to the same physical processes and watershed-based inputs as other locations within the Patapsco River. Discharges from both facilities to the surface waters of Patapsco River are managed through the NPDES process with consideration of the Baltimore Harbor TMDLs and WLA requirements.

Surface Water Quality at the NODS

The NODS is located in marine surface waters of the Atlantic Ocean. The NODS has a surface area of approximately 50-square nautical miles with water depths ranging from approximately 43 to 85 feet (USEPA and Corps 2019). The water column at the NODS is typically well mixed, with little to no evident stratification. To support the dredged material evaluation for ocean placement, a surface water sample was collected from mid-depth of the water column at the NODS in early March 2024. Surface water chemical data were used to assess water quality criteria compliance for the NODS receiving water and were used as input to the model that predicts the dilution achieved within the water column with distance and time following material discharge/placement (EA 2024b). Results of testing indicated that low concentrations of total phosphorus, arsenic, vanadium, and di-n-butyl phthalate were the only constituents detected above laboratory reporting limits in the receiving water and each concentration was well below established USEPA water quality criteria for aquatic life. Water quality measurements of temperature, salinity, pH, dissolved oxygen, and turbidity from mid-depth of the water column at the time of water collection were consistent with a well-mixed offshore marine environment.

Environmental Consequences

No-action Alternative

Under the No-action Alternative, surface water would continue to be subject to existing physical conditions and watershed inputs. Sediments and chemicals associated with sediment in the project area would stay in place. Existing sediment and surface water interactions would continue. Surface water quality in the vicinity of Coke Point would be potentially affected by resuspension of chemicals found in surficial sediment during storm events, as well as ongoing inputs from groundwater. However, IMs to reduce chemicals in groundwater would continue. Based on the risk assessment performed for surface

water, sediment, and bioaccumulation (tissue) data, there would be an ongoing potential for movement of chemicals to surface waters and an ongoing potential for ecological risk from offshore areas west and south/southeast of Coke Point. Stormwater and runoff from existing landside areas and from future development of landside areas would be managed under current or future NPDES permits and planned controls, and the construction and subsequent use of the regional stormwater wet pond facility would occur. Future in-water activities would be limited to periodic maintenance dredging of the existing channel that would be conducted in accordance with permit conditions.

Combined Options Alternative – Terminal Development and Channel Improvements

Construction of the wharf would require multiple in-water activities, including dredging and mechanical excavation, demolition of limited relic pier structures, pile installation, and placement of rock and fill for the revetment structure (underneath the open wharf structure), and the capping of the revetment structure with armor stone at the interface between the land and water. These in-water construction activities have the potential to resuspend sediment and contaminants to surface waters. In-water construction BMPs (such as those described in Attachment D) would be used where practicable and necessary based on the sediment chemistry and site conditions to minimize resuspension of sediment and contaminants to surface waters. Any resuspension or incidental release of sediment during in-water activities would be short-term and localized and contained to the immediate work area using BMPs. In addition, all in-water construction methodologies would be conducted in accordance with all applicable permit conditions to protect surface waters. Therefore, adverse impacts on adjacent surface waters during in-water construction would be expected to be minimal.

The dredging needed to construct the wharf and widen and deepen the channel would permanently remove 4.2 MCY of sediments that include legacy contaminants from historical industrial activities and would leave behind deeper native sediments with natural background concentrations of metals and other constituents on the east and southeast side of the peninsula. The removal of sediments impacted by metals, PAHs, PCBs, and other constituents would result in a permanent net improvement of surficial sediment conditions (approximately 52 acres within the existing channel and 60 acres in the channel wideners) for fish, crabs, benthic organisms, and humans. The removal of the sediments would improve the quality of the sediment at the surface-water interface, and it would reduce the overall (net) surface area in the vicinity of Coke Point where impacted surficial sediments and surface waters interact.

Mechanical dredging may resuspend some sediments to surface waters that would settle back to the bottom of the dredging area and adjacent areas. Dredging BMPs (such as those described in Attachment D) would be used where practicable and necessary based on sediment chemistry and site conditions to minimize the release of sediment and contaminants to the water column during dredging operations. Studies conducted by multiple entities have documented that fine-grained sediments resuspended from dredging operations settle within several hundred feet of the point of dredging (Burton 1993; Wilber and Clarke 2001, EA 2003, TPA 2024). Any resuspension or incidental release of sediment to surface waters during dredging in the north channel would be short-term and localized (due to low current velocity). Any resuspension or incidental release of sediment to surface waters during dredging operations in the south channel area and near the Brewerton Channel would be expected to be comparable to routine maintenance dredging operations performed within the federal channel. With respect to the potential for release of dissolved chemical constituents from the sediments during dredging, recent and historical site-specific dredged material studies using elutriate testing have shown that the majority of contaminants would be bound to particulates and not readily released in dissolved form (EA 2010b, 2024b, 2024g). Overall,

adverse impacts on surface waters from dredging would be expected to be minimal, temporary, localized, and controlled. Dredging activities would be conducted in accordance with all applicable permit conditions to protect surface waters.

The construction of the wharf and terminal facilities would result in impervious surfaces throughout the terminal facility. The planned stormwater conveyance system would consist of a series of pipes that would discharge stormwater effluent to surface waters through two permitted outfalls at the south end of Coke Point. It is anticipated that the stormwater discharge from the new terminal would be incorporated into the regional stormwater plan for the Sparrows Point facilities. It is anticipated that these discharges would use credits generated through the over-treatment of local Sparrows Point stormwater by the regional wet pond stormwater facility that is currently under construction at Sparrows Point. Therefore, stormwater discharges from the new terminal would not be expected to adversely impact surface waters.

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

Use of the High Head Industrial Basin as a DMCF would require removal of water from the existing basin, hydraulic offloading and pumping of dredged material to the site, and management and discharge of effluent from the de-watering of the dredged material. It is anticipated that the water in the industrial basin would be removed through the existing pump, conveyance pipe/system, and permitted outfall in Bear Creek that is currently used for the managed release and discharge of water from the facility. The future DMCF discharges would be regulated under a NPDES permit; therefore, no impacts on surface water would be expected for the removal and discharge of the existing water.

Material from the channel footprint would be mechanically dredged and placed in scow barges and transported by waterway to an offloading location on the east side of Bear Creek. The material would be slurried with surface water and hydraulically pumped to the High Head Industrial Basin DMCF. The water required to slurry the material would be withdrawn from Bear Creek at the offloading location. To the extent possible, slurry water from the DMCF would be recirculated and reused in this process. The use of surface waters and the volume of water withdrawn from Bear Creek would comply with conditions of a Water Appropriation and Use Permit issued by MDE. Therefore, no impacts on surface waters would be expected for water use to slurry and pump dredged material to the DMCF.

Dewatering of the dredged material would be required for drying and consolidation of the material in the DMCF. Following pumping of the slurried material to the DMCF, the solids would settle and separate. The overlying water (or effluent) would be pumped westward via pipe or conveyance system to discharge through a permitted outfall in Bear Creek. Modified elutriates (Corps 2003), which conservatively predict total and dissolved constituents that may be in effluent released during the DMCF dewatering process, were prepared and tested for the north channel dredging units (EA 2024g). These data indicated that the majority of chemical constituents predicted in effluent would be bound to sediment particles, and the concentrations of most constituents detected in the effluent would not be expected to exceed the existing maximum daily discharge limits stipulated in TPA's sitewide NPDES permit. Additional settlement or treatment would address constituents detected in the effluent that could exceed the existing maximum daily discharge limits stipulated in TPA's sitewide NPDES permit. It is anticipated that the discharge from the High Head Industrial Basin DMCF would be incorporated into TPA's existing sitewide NPDES permit, and the quantity and quality of the discharge would be subject to the conditions of the permit.

Therefore, managed DMCF effluent discharges would not be expected to adversely impact surface waters.

As part of construction of the High Head Reservoir DMCF, filling the basin would eliminate its use for receipt of both local stormwater from nearby portions of Sparrows Point and inputs from the Back River Wastewater Treatment Plant. Stormwater inputs would be incorporated into TPA's existing sitewide NPDES permit and re-routed to a permitted outfall. Inputs from the Back River Wastewater Treatment Plant would be rerouted to a Baltimore City permitted outfall and incorporated into the plant's NPDES permit. In both cases, the quantity and quality of the discharges would be subject to the conditions of each respective permit and would not be expected to adversely impact surface waters.

Coal Pier Channel DMCF at Sparrows Point

The Coal Pier Channel DMCF would require in-water construction of an approximate 600-foot berm or dike at the west end to enclose the channel prior to placement of dredged material within the DMCF. The dike would be constructed using clean sand from an offsite source and would be protected with rock sized to stabilize the structure and withstand future storm events and sea-level rise. The sediment present within and adjacent to the alignment of the channel enclosure dike is anticipated to consist of a soft surface layer approximately 4 feet thick underlain by consolidated sand. Based on the shallow depth of the soft overburden material, it is not anticipated that sediments would be substantially displaced into surface waters or would create a mud wave during dike construction.

In-water placement of fill associated with berm/dike construction would have the potential to resuspend sediment and contaminants to surface waters. In-water construction BMPs (such as those described in Attachment D) would be used where practicable and necessary based on the sediment chemistry and site conditions to minimize resuspension of sediment and contaminants to surface waters. Any resuspension or incidental release of sediment during in-water berm/dike construction would be short-term and localized and contained to the immediate work area using BMPs. In addition, all in-water construction methodologies would be conducted in accordance with all applicable permit conditions to protect surface waters. Therefore, adverse impacts on adjacent surface waters outside the enclosure dike from resuspension of sediments would be expected to be minimal.

Following completion of the enclosure dike, hydraulic offloading and pumping of dredged material into the DMCF and management and discharge of effluent from the de-watering of the dredged material would be required. Material from the channel footprint would be mechanically dredged and placed in scow barges and transported by waterway to an offloading location immediately adjacent to the Coal Pier Channel DMCF. The material would be slurried with surface water and hydraulically pumped into the Coal Pier Channel DMCF. The water required to slurry the material could be withdrawn from the Patapsco River (near the mouth of Bear Creek) at the offloading location. To the extent possible, slurry water would be recirculated from the Coal Pier Channel DMCF and reused in this process. The use of surface waters and the volume of water withdrawn from the Patapsco River would comply with the conditions of a Water Appropriation and Use Permit issued by the MDE. Therefore, no impacts on surface waters would be expected for water use to slurry and pump dredged material to the DMCF.

Dewatering of the dredged material would be required for drying and consolidation of the material in the DMCF. Following pumping of the slurried material into the DMCF, the solids would settle and separate. The overlying water (or effluent) would be managed and discharged through a permitted outfall on the west enclosure dike. Modified elutriates (Corps 2003), which conservatively predict total and dissolved

constituents that may be in effluent released during the DMCF dewatering process, were prepared and tested for the north channel dredging units (EA 2024g). These data indicate that the majority of chemical constituents predicted in effluent wound be bound to sediment particles, and concentrations of most constituents detected in the effluent would not be expected to exceed the existing daily maximum discharge limits stipulated in TPA's sitewide NPDES permit. Additional settlement or treatment would address constituents detected in the effluent that could exceed the existing maximum daily discharge limits stipulated in TPA's sitewide NPDES permit. It is anticipated that the discharge from the Coal Pier Channel DMCF would be incorporated into TPA's existing sitewide NPDES permit, and the quantity and quality of the discharge would be subject to the conditions of the permit. Therefore, managed DMCF effluent discharges would not be expected to adversely impact surface waters.

Following completion of dredged material placement, the existing Coal Pier Channel would be capped. This conversion from open water to upland would remove 19.6 acres of impacted sediments at the sediment-water interface and provide a net improvement/benefit to surface waters by removing the sediment to surface water exposure pathway for aquatic resources.

Existing MPA DMCFs

Both Masonville and Cox Creek are permitted DMCFs that accept dredged material from the Baltimore Harbor channels and the Patapsco River west of the North Point-Rock Point line. These facilities discharge effluent from dredged material dewatering through permitted outfalls to the Patapsco River in accordance with NDPES requirements. Only those dredging units that meet MPA BCL requirements and that are classified as MDE Innovative Reuse Category 1 (Residential Unrestricted Use Soil and Fill Material) and Category 2 (Non-Residential Restricted Use Soil and Fill Material) would be placed at the MPA DMCFs. Therefore, the effluent from the dewatering of the SPCT dredged material would not be expected to differ substantially from effluent from materials previously and currently being placed in the facilities. No change to DMCF site conditions, operations, practices, or discharges to surface water would be expected as a result of the SPCT dredged material placement at either the Cox Creek DMCF or the Masonville DMCF.

Existing Ocean Disposal Site

Placement of dredged material at the NODS is regulated under Section 103 of the MPRSA. Tier II (sediment and elutriate) and Tier III (ecotoxicological testing) testing of the dredged material has been conducted in conformance with the requirements under Section 103 of the MPRSA and 40 CFR 220-228 (EA 2024b). These tests included chemical and ecotoxicological analysis of standard elutriate samples, which are used to evaluate chemical and biological impacts on surface waters. Results of the elutriate testing indicated that each of the 14 dredging units proposed for placement at the NODS demonstrated no adverse impact to marine surface waters; each of the 14 dredging units met the LPC for water quality criteria and water column toxicity. Therefore, no impacts on marine surface waters in the Atlantic Ocean would be expected from ocean placement of material from the SPCT project. Placement of the material at the NODS would comply with the requirements stipulated in the Site Management and Monitoring Plan for the disposal site (USEPA and Corps 2019).

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Attachment C

DEIS Aquatic Resources

Benthic Fauna

Affected Environment

Benthic fauna encompasses a wide range of bottom-dwelling organisms, including mollusks, crustaceans, and macroinvertebrates, among others. Benthic macroinvertebrates are important in the trophic structure of the Chesapeake Bay (USEPA 1994) and serve as a food/prey resource for bottom-feeding fish. Benthic macroinvertebrates are typically soft-bodied, greater than 0.02 inch in size, and include organisms such as polychaete worms, bivalves (e.g., clams, oysters, mussels), and amphipods.

Benthic organisms live within or on the surface of the sediments. The majority of bottom sediments in the Chesapeake Bay are soft bottom habitat (e.g., mud, sand) (Chesapeake Bay Biological Monitoring Program [CBBMP] 2004). The Chesapeake Bay is home to several commercially important benthic species, including razor clams (*Tagelus plebius*), soft-shell clams (*Mya arenaria*), eastern oysters (*Crassostrea virginica*), blue crabs (*Callinectes sapidus*), and horseshoe crabs (*Limulus polyphemus*) (Corps 2009). Some benthic organisms provide a critical service to the Chesapeake Bay by filtering material from the water column, improving water quality and clarity.

The overall health of the benthic macroinvertebrate community is a key indicator of the environmental stresses that may be affecting a water body (USEPA 1994). Benthic communities serve as a biological measure of environmental conditions that can be used in conjunction with other physical and chemical indicators (USEPA 1994). Benthic organisms that are classified as pollution-sensitive are more susceptible to the physical and chemical conditions caused by pollution, are long-lived, and are typically found in areas with undisturbed conditions in a water body. Pollution-indicative organisms are more tolerant to fluctuating physical and chemical conditions in a water body.

The health of benthic communities in the Chesapeake Bay has been studied under the CBBMP since 1984 (Versar 2022). The Chesapeake Bay Benthic Index of Biotic Integrity (B-IBI) is used as the primary means to understand the health of a benthic community. The B-IBI is based on habitat metrics (e.g., abundance, biomass, diversity) that are evaluated and compared to conditions at established reference sites. Between 1984 and 2017, the abundance, species diversity, and biomass of many benthic species declined in the Chesapeake Bay with significant decline in these metrics and the overall benthic community score noted in sampling stations in the Baltimore Harbor (Versar 2017). The decline in these community metrics at the Baltimore Harbor stations was attributed to seasonal hypoxic (low oxygen in bottom waters) conditions.

Benthic Community

Sampling for benthic fauna was conducted in the summer of 2023 (EA 2024a) at seven locations within the SPCT project area: one location within Coal Pier Channel (SPCT23-02), one location within Coke Point Cove (SPCT23-01), two locations west of the Coke Point shoreline (SPCT23-03 and SPCT23-07), two locations within the proposed dredging footprint for the Sparrows Point Channel (SPCT23-04 and SPCT23-05), and one location along the southern shoreline of Coke Point (SPCT23-06) (Figure 1). At these locations, a ponar grab sampler was used to collect benthic macroinvertebrates in the top 6 inches of sediment. *In situ* water quality measurements were recorded at each location and co-located surficial sediment samples were collected for physical and chemical analyses.

Figure 1. Benthic Fauna and Crab Pot Sampling Locations

Benthic Macroinvertebrates

Several types of information are presented in this section to characterize the benthic fauna and bottom habitat. Data on the benthic community composition collected at each location (species present, number of individuals, and biomass (weight)) are presented and used to calculate standard metrics that describe a benthic community. Diversity, abundance, biomass, species dominance, evenness, and pollution tolerance are standard metrics used (Weisberg et al. 1997; EA 2024a) to describe benthic communities. The results of these metrics are combined to provide a condition assessment using the criteria that have been defined for the Chesapeake Bay B-IBI. The following sections describe the summer condition of the benthic community in the SPCT project area. The focus on the summer condition is prescribed by the B-IBI protocol.

Habitat Classification

The habitat at each benthic sampling location was classified based on the physical characteristics of sediment (grain size) and the salinity of the bottom water. These attributes are primary factors that influence benthic community structure (Versar 2002). The salinity and bottom substrate at each location was classified as one of the following:

- tidal freshwater (0 to 0.5 ppt)
- oligohaline (≥ 0.5 to 5 ppt)
- low mesohaline (≥ 5 to 12 ppt)
- high mesohaline sand (≥ 12 to 18 ppt) and 0 to 40% silt-clay content by weight
- high mesohaline mud (≥ 12 to 18 ppt) and > 40% silt-clay content by weight
- polyhaline sand (≥ 18 ppt) and 0 to 40% silt-clay content by weight
- polyhaline mud (≥ 18 ppt) and > 40% silt-clay content by weight

Based on the water column salinity measurements at the time of summer sampling, three SPCT sampling locations were classified as low mesohaline (SPCT23-01, SPCT23-03, and SPCT23-06), and four SPCT sampling locations were classified as high mesohaline (SPCT23-02, SPCT23-04, SPCT23-05, and SPCT23-07). Based on the physical analysis of surface sediments from each location, the substrate at six sampling locations (SPCT23-02, SPCT23-03, SPCT23-04, SPCT23-05, SPCT23-06, and SPCT23-07) was classified based on grain size as mud habitat (containing greater than 40% silt/clay content). The grain size at SPCT23-01 consisted of a combination of sand, gravel, and silt/clay. See Figure 1 for the sampling locations.

Community Composition

For the combined seven sampling locations in the SPCT project area, 22 unique benthic macroinvertebrate taxa were collected. Of these, nine taxa were polychaetes (bristle worms), five were bivalves (clams and mussels), and three were crustaceans. The remaining taxa included ribbon worms, segmented worms, and snails. Nineteen of the 22 taxa were collected at SPCT23-01 (Coke Point Cove); one taxon was collected at SPCT23-02 within the Coal Pier Channel; no taxa were recovered from samples collected at SPCT23-05 (deep water channel habitat near the Brewerton Channel). For the remaining locations, the number of unique taxa ranged from four (SPCT23-04 within the Sparrows Point Channel) to 13 (SPCT23-06 along the southern Coke Point shoreline). The total benthic mean abundance

(number of organisms per meter squared [m^2]) varied substantially among the six sample locations where organisms were recovered. A notable difference in total benthic mean abundance was evident between locations SPCT23-01 (Coke Point Cove) and SPCT23-02 (Coal Pier Channel). SPCT23-01 had a benthic abundance of 13,170 organisms/m^2, and SPCT23-02 had a benthic abundance of only 6.8 organisms/m^2. Overall, the community abundance at SPCT23-01 (west cove area) was at least five times higher than the locations with the next highest abundance (SPCT23-03 (western Coke Point shoreline) and SPCT23-07 (Coke Point offshore)). Hypoxia was present in bottom waters at five of the seven sampling locations and likely influenced the benthic community structure and condition at these locations. SPCT23-01, which had the highest number of recovered organisms, did not have hypoxic conditions present in the area at the time of sampling.

Overall, polychaetes were present in the highest numbers at each sampling location where organisms were recovered and comprised more than 50% of the community organisms at all locations. Biomass (weight of each taxon in grams per meter squared [g/m^2]) ranged between 0.007 g/m^2 at SPCT23-04 (within the proposed dredging footprint) and 5.61 g/m^2 at SPCT23-06 (southeast of Coke Point). By weight, bivalves were dominant at locations along the western and southern Coke Point shoreline, and polychaetes were dominant by weight at the remaining sampling locations.

Community Condition

The Chesapeake Bay B-IBI approach involves scoring habitat metrics as 5, 3, or 1, depending on whether its value at a site approximates (5), deviates slightly (3), or deviates greatly (1) from conditions measured at established reference sites (Weisberg et al. 1997). The values for each metric at each location are presented in Table 1 and discussed below (definitions of each metric are in the footnotes on Table 1). Each metric value is given a score (5, 3, or 1) and the final Chesapeake Bay B-IBI score is derived by summing individual scores for each metric (diversity, abundance, biomass, species dominance, evenness, abundance of omnivores and carnivores, and pollution tolerance) and calculating an average overall B-IBI score for each sampling location (Table 2).

The B-IBI was used to establish benthic restoration goals for Chesapeake Bay (Weisberg et al. 1997). The Chesapeake Bay Restoration Goal Index (RGI; Ranasinghe et al. 1994) was patterned after the same approach used to develop the Index of Biotic Integrity (IBI) for freshwater systems (Karr et al. 1986). A Chesapeake Bay RGI score of 3 represents the minimum restoration goal. RGI values less than 3 are indicative of a stressed community, and scores of 3 or greater indicate habitats that meet or exceed the Chesapeake Bay restoration goals (Ranasinghe et al. 1994).

Based on the Chesapeake Bay RGI, the CBBMP classifies the benthic community into four levels (Versar 2002):

- Meets goals (B-IBI that is ≥ 3.0)
- Marginally degraded (B-IBI of 2.7 to 2.9)
- Degraded (B-IBI of 2.1 to 2.6)
- Severely degraded (B-IBI that is ≤ 2.0)

Table 1. Benthic Community Metrics

Metric	Metric Values						
	SPCT23-01	SPCT23-02	SPCT23-03	SPCT23-04	SPCT23-05	SPCT23-06	SPCT23-07
Habitat Classification	LM	HMM	LM	HMM	HMM	LM	HMM
Abundance (#/m^2)	13,063	6.8	2,414	187	--	1,680	2,319
Total Biomass (g/m^2)	2.33	0.008	0.229	0.007	--	5.61	0.255
Shannon-Wiener Diversity	2.27	0	1.65	0.729	--	2.42	1.1
Abundance Pollution-Sensitive Taxa (%)	NC	NC	NC	NC	--	NC	NC
Abundance Pollution-Indicative Taxa (%)	42.7	NC	49.5	NC	--	23.2	NC
Abundance of Carnivores/ Omnivores (%)	NC	100	NC	0	--	NC	1.26
Biomass of Pollution-Sensitive Taxa (%)	8.41	0	23.8	0	--	0.526	44.2
Biomass of Pollution-Indicative Taxa (%)	NC	0	NC	19.5	--	NC	14.1

Source: EA 2024a

Notes:

The calculations in this table exclude species not meeting B-IBI macrofaunal criteria.

Abundance = number of benthic organisms per square meter.

Total biomass = the total mass (weight) of benthic organisms in a square meter.

Shannon-Weiner diversity = a measurement of the proportional abundances of each species at a location to determine diversity of the community.

Pollution-sensitive taxa = organisms that are most likely to be impacted by a change in physical or chemical conditions of a water body.

Pollution-indicative taxa = organisms that are more likely to be tolerant of polluted conditions in a water body.

Carnivores and omnivores = percent abundance contribution of taxa currently classified as carnivores or omnivores to the total number of organisms.

#/m^2 = number per square meter

g/m^2 = grams per square meter

LM = Low mesohaline

HMM = High mesohaline mud

-- = No species recovered

NC = Metric not calculated for habitat class

Table 2. Benthic Community IBI Scores

Metric	B-IBI Scores						
	SPCT23-01	SPCT23-02	SPCT23-03	SPCT23-04	SPCT23-05	SPCT23-06	SPCT23-07
Habitat Classification	LM	HMM	LM	HMM	HMM	LM	HMM
Abundance (#/m^2)	1	1	5	1	--	5	5
Total Biomass (g/m^2)	3	1	1	1	--	5	1
Shannon-Wiener Diversity	3	1	1	1	--	3	1
Abundance Pollution-Sensitive Taxa (%)	NC	NC	NC	NC	--	NC	NC
Abundance Pollution-Indicative Taxa (%)	1	NC	1	NC	--	1	NC
Abundance of Carnivores/Omnivores (%)	NC	5	NC	1	--	NC	1
Biomass of Pollution-Sensitive Taxa (%)	1	1	1	1	--	1	3
Biomass of Pollution-Indicative Taxa (%)	NC	5	NC	3	--	NC	3
Overall B-IBI Score	1.8	2.33	1.8	1.33	--	3	2.33
Benthic Community Classification	Severely degraded	Degraded	Severely degraded	Severely degraded	--	Meets restoration goals	Degraded

Source: EA 2024a

Notes:

The overall B-IBI score calculations exclude species not meeting B-IBI macrofaunal criteria. The scores presented in this table are the mean of the metric scores. B-IBI scores are classified as follows: ≥ 3.0 = meets restoration goals; 2.7-2.9 = marginal; 2.1-2.6 = degraded; ≤ 2.0 = severely degraded.

#/m^2 = number per square meter

g/m^2 = grams per square meter

LM = Low mesohaline

HMM = High mesohaline mud

-- = No species recovered

NC = Metric not calculated for habitat class

Only one benthic sampling location (SPCT23-06 along the southeast shoreline of Coke Point) met the RGI with an average score of 3, meaning that location is not classified as degraded (Table 2). The sampling locations in the Coal Pier Channel and the furthest location offshore to the west of Coke Point were classified as degraded (scores of 2.33 each), and the remaining three locations with benthic taxa present were classified as severely degraded (scores between 1.3 and 1.8) (Table 2).

Summary and Influence of Water Quality Conditions

Overall, the benthic community condition was the best (no degradation) along the southeast shoreline of Coke Point (SPCT23-06); this benthic community met the RGI and also had the highest benthic biomass and a dominant pollution-sensitive polychaeta taxa. Additionally, this location had the highest bottom dissolved oxygen concentration. These conditions likely supported the high biomass and second-highest number of unique taxa (13) comprising a more suitable environment for benthic fauna. Although the highest number of individual unique taxa and the highest overall benthic abundance were found in Coke Point Cove (SPCT23-01), this location had the second lowest total B-IBI score (1.8) indicating the community, while abundant and taxonomically diverse, is severely degraded. Bottom dissolved oxygen concentrations at SPCT23-02, SPCT23-03, SPCT23-04, SPCT23-05, and SPCT23-07 showed hypoxic conditions, which is typical for the lower Patapsco River in summer months.

Blue Crabs

Crab pots were placed at each of the seven sampling locations to capture blue crabs in the summer and fall of 2023 (EA 2024a, 2024d) and in the spring of 2024 (EA 2024f). The crab pots used were square wire mesh pots containing two funnels that allowed crabs to enter but not escape the pots. Four pots were deployed approximately one meter apart at each location and retrieved after a maximum of 48 hours in the water. Although some blue crabs (24 individuals) were caught incidentally as part of the fish sampling, the community discussed here pertains to the individuals collected during sampling specifically for crabs. During the summer sampling, a combined total of 33 blue crabs were caught at six of the crab pot locations (22 males, nine females, and two immature crabs); no crabs were caught at SPCT23-02 within the Coal Pier Channel (Figure 1) (EA 2024a). The highest number of crabs were captured at SPCT23-04 and SPCT23-06, in the Sparrows Point Channel and south of Coke Point, respectively (8 individuals at each) (EA 2024a). During the fall sampling, a combined total of four individual blue crabs (all males) were caught at two of the sampling locations (SPCT23-01 in Coke Point Cove and SPCT23-02 in Coal Pier Channel); crabs were not captured at the other sampling locations during the fall survey (EA 2024d). During spring sampling, a combine total of 13 individual blue crabs (all males) were caught at five of the sampling locations; no crabs were caught at SPCT24-01 and SPCT24-07 (EA 2024f). The highest number of crabs were collected from location SPCT24-02 (5 individuals), which was relocated during the summer 2024 sampling effort from within the Coal Pier Channel to just outside the Coal Pier Channel due to high level of vessel activity resulting in the loss of three crab pots.

Environmental Consequences

No-action Alternative

Benthic fauna would continue to be subject to existing physical and chemical sediment quality and water quality conditions. Benthic fauna within the existing channel would be impacted by maintenance dredging with recovery of the community after dredging (impacts from dredging are discussed in detail in Section

0). Although Coke Point could be developed under the no-action alternative, there would be no in-water construction activities outside of routine maintenance dredging, so no additional benthic impacts would occur. If the High Head Industrial Basin were to be filled, approximately 40 acres of aquatic habitat within the industrial basin would be permanently removed. High Head Industrial Basin is not managed to support aquatic habitat; however, any benthic-dwelling organisms present in the basin would be lost if the basin were filled and the area repurposed.

Combined Options Alternative – Terminal Development and Channel Improvements

Dredging the Sparrows Point Channel would remove or entrain benthic organisms and would potentially create temporary water column turbidity that could affect filter-feeding species. Turbidity refers to the clarity of water and is measured by the amount of light that is scattered and absorbed by materials (such as suspended sediment or phytoplankton) within the water column (Johnson 2018). BMPs would be implemented to reduce the impacts from resuspension of sediment during wharf construction and dredging activities (see Attachment D).

Construction of the wharf would require the excavation of the existing shoreline to provide the angle required for the preferred wharf alignment, this excavation would create 6.3 acres of new open water habitat. The newly constructed wharf would block sunlight to both existing open water (3.3 acres) and a portion of the newly created open water (5.6 acres) below the structure, resulting in a permanent shading of 8.9 acres of water. Shading of this area reduces primary production in the water column and the waters beneath the wharf may be less capable of supporting a diverse benthic community or usage by fish and other aquatic organisms. Construction of the wharf and mooring dolphins would result in permanent structures (pilings and dolphins) installed in the sediment bottom. Placement of these structures would result in mortality of any benthic organisms present in that footprint and would also cause a loss of approximately 0.2 acre of available bottom habitat.

Removal of the river bottom sediments would cause mortality for any non-mobile organisms living on or within the sediments; however, studies have shown that the benthic community typically recolonizes quickly following dredging activities (Brooks et al. 2006). Recolonization in dredging areas typically follows successive and progressive steps similar to those in disturbed terrestrial systems. Opportunistic organisms with high reproductive rates typically characterize the initial communities, followed by slower-growing specialists. Eventually, the community would succeed toward pre-disturbed levels of diversity following cessation of dredging activity and disturbance. The existing channel is periodically disturbed by maintenance dredging, and the community has been previously disturbed during these events. The deep channel areas are also subject to seasonal hypoxic conditions, which limits the ability of benthic organisms to colonize these areas. When benthic organisms are disturbed (through anthropogenic or natural events), communities in mud and silt substrates generally recover/recolonize slower than communities in clean sand areas (Dernie et al. 2003), and recovery can typically take between one and five years across all substrate types (Blake et al. 1996). Recent studies conducted following dredging of the New York and New Jersey Harbor show that in an estuarine (mud and silt substrate) environment, the post-dredging benthic community metrics (measured by abundance, richness, diversity, etc.) generally recovered to pre-dredging conditions within 1.5 years (Corps 2017a).

Deepening of the channel would create deepwater habitat. Benthic communities in deeper waters are subject to different physical and geochemical conditions, which can impact the community condition and structure as a whole. The deepened channel would be more subject to low dissolved oxygen conditions during the summer, as the sediment surface is further removed from atmospheric exchange and sunlight

and stratification of the water column occurs with higher salinity (salt content) and lower dissolved oxygen in bottom water, and lower salinity and higher dissolved oxygen in surface water. No benthic organisms were found in deepwater channel habitat in the existing Sparrows Point Channel near the Brewerton Channel during sampling conducted in the summer of 2023; therefore, it is likely that benthic communities would not recolonize in the deepened and widened channel created by dredging. This would result in a loss of the benthic habitat in the channel.

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

Placement of dredged material in the High Head Industrial Basin DMCF would convert the basin to upland habitat. Any benthic organisms present in the High Head Industrial Basin would be permanently lost to burial.

Coal Pier Channel DMCF at Sparrows Point

Construction of and placement of dredged material in the Coal Pier Channel DMCF would result in burial of the existing benthic communities in the channel (approximately 19.6 acres). Coal Pier Channel has been dredged for historical use and the existing sediment is anticipated to consist of a soft surface layer approximately 4 feet in thickness underlain by consolidated sand. Based on the shallow depth of the soft overburden material, the small size of the dike, and the proximity to the shore, it is not anticipated that sediments would be substantially displaced or would create a mud wave during dike construction. BMPs for in-water construction (such as those described in Attachment D) would be used where practicable and necessary to minimize the resuspension of sediment and contaminants to the water column during in-water placement of dike construction material. Therefore, sediments resuspended during dike construction would be expected to be minimal, which would minimize the area outside of the dike footprint where benthic organisms could be buried.

Existing Nearshore MPA DMCFs

No new impacts on benthic organisms would occur because the MPA DMCFs are existing upland placement sites.

Existing Ocean Disposal Site

No new impacts on benthic organisms would occur because NODS is an existing USEPA-designated ocean placement site.

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Fish

Affected Environment

Regional Fish Community Overview

The Chesapeake Bay supports 348 species of fish at some point in their life cycle (NMFS 2024a). The distribution of fish populations is dependent upon water quality factors (temperature, pH, salinity), larval recruitment, availability of prey species (fish and benthic organisms), and migration patterns (Lippson and Lippson 1994). The Bay supports both resident and migratory species. Migratory species either spawn in the ocean and reside for the rest of their life cycle in the Chesapeake Bay or spawn in the Chesapeake Bay and spend the remaining time in the open ocean (Corps 2009). The Chesapeake Bay has many fish species that are recreationally and commercially harvested. In Maryland, fisheries are managed by MDNR. Atlantic menhaden (*Brevoortia tyrannus*) has been the top fishery in the Chesapeake Bay for several decades with over 150,000 metric tons caught per year. The striped bass (*Morone saxatilis*) fishery stocks suffered a decline during the 1970s and 1980s due to overfishing and are in the recovery process. Although not currently overfished, stocks remain low, largely due to loss of spawning habitat and pollution in the Chesapeake Bay (Chesapeake Bay Program [CBP] 2020).

Important predator fish species (including those that are part of commercially significant fisheries) rely on smaller prey species, such as bay anchovy (*Anchoa mitchilli*), Atlantic menhaden, and American shad (*Alosa sapidissima*) (Zastrow and Houde 1991, CBP 2020). Smaller forage species provide a critical food source and may also break down plant detritus on the seafloor (CBP 2020). Most forage fish species in the Chesapeake Bay use a variety of habitats and rely on phytoplankton, zooplankton, and benthic invertebrate communities for food sources. Water quality and food availability largely determine fish abundance and distribution in the Bay, particularly during juvenile life stages (CBP 2015).

Fish Community

To understand the fish community both within and adjacent to the SPCT project area, fisheries surveys were conducted in summer and fall 2023 and early winter and spring 2024 (EA 2024a, 2024d, 2024e, 2024f). Sampling locations and procedures were reviewed by USFWS, NMFS, and MDNR before the surveys were conducted. The study area for fish includes the in-water portion of the SPCT project area and surrounding areas, as depicted in Figure 2; the High Head Industrial Basin was also surveyed for fish. The surveys were performed using different types of fish collection equipment: beach seine, gillnet, and bottom trawl. Each gear type targeted collection of fish species within a specific area of the water column or bottom habitat. Use of the combination of sampling methods provides a comprehensive view of the fish assemblages in different habitat types (shallow nearshore, deeper water, middle of the water column, and near the bottom sediments) and captures fish at various life stages, as they use the portion of the Patapsco River in and around the SPCT project area. Each of the three collection methods were used During the spring, summer, and fall surveys; only gillnet and bottom trawl collections were performed during the winter survey. For the 2024 sampling events, one gillnet location and one trawl location had to be moved (as noted on Figure 2) due to the collapse of the Key Bridge in March 2024. At each location, the captured fish were identified to species, counted, measured, and weighed. At the gillnet locations, plankton tows were also performed during the spring and summer 2024 surveys to characterize the zooplankton (tiny, often microscopic animals that drift with currents) and ichthyoplankton (eggs and larvae of fish) community in and around the project area. Additional data to understand water quality

during sampling were collected during the surveys and included water temperature, dissolved oxygen, and salinity.

A summary of the fish collected by each method in each season is provided in the following sections, along with a description of the seasonal variation of fish collected by each type of equipment. Sampling for each method was conducted at several locations directly within the SPCT project area (near or within the proposed offshore DMCF footprint and the proposed dredging footprint), as well as one location each upstream and downstream of the SPCT project area (Figure 2).

Nearshore Fish (Beach Seine Surveys)

A **beach seine** is a fishing net that is set from the shore and used to encircle fish. Beach seines are used to collect fish that live in shallow waters close to the shoreline.

Beach seines are deployed in an arc shape perpendicular to the shoreline and then towed by hand along a section of shoreline. The beach seine sampling locations within and around the SPCT project area were selected based on the presence of and accessibility to shallow water areas that were large enough to complete adequate tows of the seine. Seasonal fish collection data for beach seine surveys are summarized in Table 3. Four of the species caught — Atlantic silverside (*Menidia menidia*), inland silverside (*Menidia beryllina*), banded killifish (*Fundulus diaphanus*), and striped killifish (*Fundulus majalis*) — were only caught by the seine method.

In the summer, the nearshore fish community was largely comprised of Atlantic silverside (71% of all fish caught by seine) and Atlantic menhaden (18% of all fish caught by seine). Eleven unique fish species were collected from the combined sample locations. One location outside of the SPCT project area had the most diversity; 10 different species were collected at this location (Seine 4 in Figure 2). Overall, a total of 1,070 individual fish (all species combined) were collected from the seine locations during the summer season. The largest number of total fish collected at one sampling location was 591 individuals collected along the southern shoreline of Coke Point within the SPCT project area (Seine 3 in Figure 2).

During the fall season, Atlantic silverside was also the most abundant species (81% of all fish caught by seine) collected in the nearshore habitat. Six unique fish species were collected across all locations. Within the SPCT project area, a total of four unique fish species were present in nearshore sampling areas. A total of 660 individual fish were collected by beach seine in the fall sampling season with the most fish (273 individuals) collected along the southern shoreline of Coke Point (Seine 3 in Figure 2).

In spring 2024, herring (*Alosa* spp.) was the most abundant taxon collected in the nearshore habitat (83% of all fish caught by seine). Eight unique fish species were collected across all locations. Within the SPCT project area, a total of four unique fish species were present in nearshore sampling areas. A total of 5,629 individual fish were collected by beach seine in the spring sampling season, with the most fish (2,650 individuals) collected along the southern shoreline of Coke Point (Seine 3 in Figure 2).

Figure 2. Fish Survey Locations

Pelagic Fish (Gillnet Surveys)

> A **gillnet** is a fishing net that hangs vertically in the water with floats on the top and weights on the bottom. Gillnets can be set at various depths and are used to catch fish in pelagic (water column) habitat within a water body.

Pelagic fish live in the open water column, spending little time close to the shore or near the seafloor. A single 150-foot-long gillnet with five, 30-foot panels made of varying-sized mesh (designed to capture fish of a range of sizes) was deployed at five sampling locations in the SPCT project area to capture pelagic species (Figure 2). Gillnets were deployed for one to two hours based on surface water temperatures (one hour when temperature was equal to or exceeded 68 °F, and two hours when temperatures were below 68°F). Gillnets were checked after the appropriate duration and were repeated if no fish were collected during the first soak. Seasonal fish collection data for gillnet surveys are summarized in Table 3.

During the summer surveys, the pelagic fish community was largely comprised of Atlantic menhaden (77% of all fish caught by gillnet) and striped bass (10% of all fish caught by gillnet). A combined total of seven unique fish species and 96 total individual fish were collected from the gillnet sample locations. One of the seven species (bluefish (*Pomatomus saltatrix*) was only caught during the summer gillnet surveys. The sampling location downstream of the SPCT project area (Gillnet 5 in Figure 2) had the most diversity with five unique species collected. A total of 56 individual fish (all species combined) were collected from the location along the southern shoreline of Coke Point (Gillnet 4 in Figure 2), which was the highest number of individual fish collected at any location.

In the fall gillnet survey, gizzard shad (*Dorosoma cepedianum*) was the most abundant fish species caught by gillnet (80% of all fish caught). Only one other species (pumpkinseed sunfish (*Lepomis gibbosus*)) was caught. No fish were caught at the sampling locations within the offshore DMCF footprint or along the southern shoreline of Coke Point (Gillnets 3 and 4 in Figure 2).

In the winter survey, no pelagic fish were caught by gillnet at any of the sampling locations, even with a second two-hour deployment of a net at each area (four hours total time in the water per location).

In the spring gillnet survey, Atlantic menhaden was the most abundant fish species caught by gillnet (58% of all fish caught). No fish were caught at the sampling location along the southern shoreline of Coke Point (Gillnet 3 in Figure 2). Twenty-three individual fish were caught across all sample locations.

Table 3. Summary of Individual Fish Collected by Each Method per Season

Fish Species	Sampling Method and Season										
	Beach Seine			Gillnet				Bottom trawl			
	Summer	Fall	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring
Atlantic croaker (*Micropogonias undulatus*)	6	0	72	2	0	0	0	26	2	3	342
Atlantic menhaden (*Brevoortia tyrannus*)	195	0	0	74	0	0	9	4	0	1	0
Atlantic silverside (*Menidia menidia*)	755	539	263	0	0	0	0	0	0	0	0
Banded killifish (*Fundulus diaphanus*)	1	7	5	0	0	0	0	0	0	0	0
Bay anchovy (*Anchoa mitchilli*)	6	78	557	0	0	0	0	379	151	8	231
Bluefish (*Pomatomus saltatrix*)	0	0	0	3	0	0	0	0	0	0	0
Blueback herring (*Alosa aestivalis*)	0	3	0	0	0	0	1	0	0	0	2
Gizzard shad (*Dorosoma cepedianum*)	5	0	0	1	4	0	3	0	0	0	0
Herring (*Alosa* spp.)	0	0	4,662	0	0	0	0	0	0	0	0
Hogchoker (*Trinectes maculatus*)	0	0	0	0	0	0	0	1	0	0	1
Inland silverside (*Menidia beryllina*)	4	0	61	0	0	0	0	0	0	0	0
Northern pipefish (*Syngnathus fuscus*)	0	0	0	0	0	0	0	1	0	0	0
Pipefish species	1	0	0	0	0	0	0	0	0	0	0
Pumpkinseed sunfish (*Lepomis gibbosus*)	22	0	0	0	1	0	0	0	0	0	0
Spot (*Leiostomus xanthurus*)	0	0	0	4	0	0	8	170	0	0	1
Striped bass (*Morone saxatilis*)	1	0	0	10	0	0	2	0	0	0	0
Striped killifish (*Fundulus majalis*)	0	33	8	0	0	0	0	0	0	0	0
Summer flounder (*Paralichthys dentatus*)	0	0	0	0	0	0	0	3	0	0	0
Weakfish (*Cynoscion regalis*)	0	0	0	2	0	0	0	3	0	0	0
White perch (*Morone americana*)	74	3	1	0	0	0	0	19	0	0	19
Total individuals	**1,070**	**660**	**5,629**	**96**	**5**	**0**	**23**	**606**	**153**	**12**	**596**

Deepwater and Demersal Fish (Bottom Trawl Surveys)

> A **bottom trawl** is a fishing net that is towed by boat along the sea floor. This type of net targets collection of both fish that use the deepest part of the water column and bottom-dwelling species that spend most of their life on the seafloor.

Seasonal fish collection data for the bottom trawl surveys is summarized in Table 3. During the summer surveys, the deepwater and demersal (bottom-dwelling) fish community was largely comprised of bay anchovy (*Anchoa mitchilli*) (63% of all fish caught by trawl) and spot (*Leiostomus xanthurus*) (28% of all fish caught by trawl). Nine unique fish species and 606 total individuals (all species combined) were collected across the trawl sample locations. The southern shoreline of Coke Point (Trawl 3 in Figure 2) had the highest number of unique fish species with eight different species collected. The highest number of fish (all species combined) collected at a single location was 167 fish at the sampling location downstream from the SPCT project area (Trawl 5 in Figure 2). Overall, more individual fish were collected at the upstream and downstream locations than within the SPCT project area.

In the fall, two fish species were collected in the trawl surveys. Bay anchovy was the most abundant fish species caught by trawl (99% of all fish caught), although individuals caught in the fall were smaller in length and weight than those caught in the summer. Atlantic croaker (*Micropogonias undulatus*) was also caught by trawl during the fall survey. A total of 153 individual fish were collected during fall trawl surveys. Almost half (68 individuals) of the total collected fish were caught at the sampling location upstream from the SPCT project area (Trawl 1 in Figure 2).

The winter bottom fish community was comprised of Atlantic menhaden, Atlantic croaker, and bay anchovy. Only 12 total individuals (all species combined) were collected in the winter trawl survey with the most (eight individuals) collected offshore near the entrance to the Sparrows Point Channel (Trawl 4 in Figure 2). No fish were collected by trawl off the western shoreline of Coke Point (Trawl 2 in Figure 2) or at the downstream sampling location (Trawl 5 in Figure 2).

The spring bottom fish community was comprised of six unique taxa. A total of 596 individuals were collected, with the most individuals (171) collected at the sampling location along the southern shoreline of Coke Point (Trawl 3 in Figure 2). Atlantic croaker had the highest abundance (57%) across all sampling locations with juveniles measuring less than 4 inches comprising most of the individuals captured. Bay anchovy had the next highest abundance (38%), and white perch, blueback herring, spot, and hogchoker (*Trinectes maculatus*) comprised 3.9% abundance.

Plankton Community

Zooplankton are small, water-column organisms and include crustaceans, copepods, and insect larvae. They are important in the aquatic food chain as a food source for invertebrate and fish predators and can function as indicators of nutrient water quality due to their sensitivity to nutrient pollution (USEPA 2024b). Ichthyoplankton are the eggs and larvae of fish that are generally found in near-surface waters. These early stages in the fish life cycle are brief but form the basis of the estuarine fish community and stock (Zhang et al. 2022). Distribution of zooplankton in the Chesapeake Bay is largely driven by salinity, temperature, and food availability (CBP 2024a).

Plankton surveys (tows) were conducted at the locations shown in Figure 2. These are generally co-located with the gillnet locations, although due to the Key Bridge collapse in March 2024, the upstream plankton tow location was moved to avoid a restricted zone around the former bridge. Plankton sampling

consisted of a near-surface and near-bottom tow (using a fine-mesh size net) traveling against and in parallel to the prevailing flood tide.

A total of 3,150 individual zooplankton were collected during the spring surveys. Plankton 1 (upstream of the SPCT project area, see Figure 2) had the highest number of individuals (3,014) and density (the number of organisms within a unit volume of water). Copepods and mollusks (including *Acartia tonsa*) were the dominant zooplankton taxa collected across all sample locations. The next highest number of zooplankton (119 individual mollusks) was found at Plankton 2 off the western shoreline of Coke Point. In the summer, 15,943 individual zooplankton were collected. The highest number of individuals (7,383) were collected at Plankton 2 off the western shoreline of Coke Point near the Coal Pier Channel. Zooplanknton collected at this location consisted largely of crab, copepod, and shrimp larvae (Table 4). The next highest number of zooplankton was found at Plankton 3 also along the western shoreline of Coke Point, south of Plankton 2. The community captured here also consisted of crab, copepod, and shrimp larvae.

Ichthyoplankton were collected at each location in spring 2024 except for Plankton 3 on the western shoreline of Coke Point. No ichthyoplankton were collected in bottom waters at Plankton 1 or 4, and Plankton 5 had no ichthyoplankton collected in the surface tows. In all samples, the only ichthyoplankton collected were yolk sac larvae of inland silverside fish. Only 28 larvae were collected during the spring survey across the combined five plankton sampling locations. In the summer survey, ichthyoplankton were more diverse across the sampling locations. Ichthyoplankton of six fish tax (Table 5) were collected with the majority being yolk-sac larvae and post yolk-sac larvae of bay anchovy. The highest number of individual ichthyoplankton was collected at Plankton 5 downstream of the project area (98 total individuals).

Table 4. Zooplankton Communities in Spring and Summer 2024

Group/Common Name	Spring (number of individuals)	Summer (number of individuals)
Water flea	3,010	18
Copepod	18	458
Mollusk	120	0
Barnacle	2	0
Crab	0	15,045
Shrimp	0	405
Jellyfish	0	10
Mysid	0	6

Table 5. Ichthyoplankton Communities in Spring and Summer 2024

Group/Common Name	Spring (number of individuals)	Summer (number of individuals)
Inland Silverside	28	16
Bay Anchovy	0	143
Northern Pipefish	0	2
Naked Goby	0	119
Herring	0	27
Feather Blenny	0	1
Unidentified	0	3

Electrofishing at High Head Industrial Basin

An electrofishing survey was completed at High Head Industrial Basin in June 2024. Two species of fish were identified during this survey, pumpkinseed sunfish and mummichog (*Fundulus heteroclitus*). A total of 340 individuals (216 pumpkinseed sunfish and 124 mummichog) were collected during sampling of both the perimeter of the basin and transects across the basin. Pumpkinseed sunfish was the most abundant species with the majority of individuals captured along the perimeter habitat of the basin.

Electrofishing is a survey method used in freshwater environments. This technique involves using low electric current to temporarily stun fish, making them easier to collect for identification, study, and monitoring.

Summary and Influence of Water Quality Factors on the Fish Community

The highest number of unique species was observed in the summer with 17 unique species (1,772 individual fish) collected in the waters in and around the SPCT project area. During the fall collections, the number of unique and total number of individual fish collected declined to nine unique species and 818 individual fish. In the winter, even fewer unique species and individual fish were captured in the vicinity of the project area (three unique species and 12 individual fish for all locations combined). The following spring (2024), 5,629 total fish were captured with most of the individuals collected along the southern shoreline of Coke Point and downstream of the project area. While some hypoxic conditions were present in the bottom and pelagic waters during the summer months, there were still significantly more fish present across all habitat types than in the fall or winter season. Table 6 presents the water quality data collected during the seasonal fisheries surveys in 2023 and 2024.

Table 6. Water Quality Parameters Collected during Fisheries Surveys

The water quality measurements reported here present the range (lowest and highest values) recorded during each survey across the sampling locations. These measurements represent the conditions at near-bottom at the time of the surveys.

Water Quality Parameter	Summer Survey		Fall Survey		Winter Survey		Spring Survey	
	Low	High	Low	High	Low	High	Low	High
Dissolved oxygen (mg/L)	0.5	5.7	6.2	9.9	7.2	13.4	2.7	10.8
Salinity (ppt)	9.7	15.7	13.1	17.8	3.8	16.2	2.7	10.8
Water temperatures (°F)	76.4	79.7	56.6	58.8	41.1	42.4	11.4	17.0

Notes:

mg/L = milligrams per liter; ppt = parts per thousand; °F = degrees Fahrenheit

Based on the seasonal survey data, fish assemblages and abundance in habitats in and around the SPCT project appear to be highly driven by seasonal water temperature and salinity. In the spring, hypoxia was only present at sampling location 5 (downstream of the SPCT project area), which had the lowest bottom dissolved oxygen and bottom temperature. Low dissolved oxygen during the summer months in the deeper water areas may also affect fish distribution, as pelagic species are mobile and will avoid areas area with low dissolved oxygen. Fish moving upstream from the Chesapeake Bay can thrive in the higher summer salinities and move downstream away from the project area as the salinity and water temperature decrease throughout the water column in the late fall and winter months. Among the individual sampling stations, the number of unique species found in the fish communities outside of the direct SPCT project area (the upstream and downstream locations) and within the SPCT project area were largely consistent

with only one or two additional unique species found at the downstream location in the summer. The overall number of nearshore fish collected was higher at locations within the SPCT project area than the locations outside the SPCT project area in the summer and fall, while the upstream and downstream locations had a larger bottom-dwelling fish community. In the spring, total numbers of nearshore fish were highest at the downstream location and within shallow water areas on the south side of Coke Point.

Environmental Consequences

A variety of important predator fish species (including those that are part of commercially significant fisheries), as well as smaller prey species (e.g., bay anchovy, Atlantic menhaden, blueback herring) use the SPCT project area. Although commercial species occur in the project area, no commercial operations are active in the Baltimore Harbor at this time. This impact analysis includes consideration of construction activities and dredging and material placement effects on all fish species, as well as their potential invertebrate prey sources.

No-action Alternative

Fish species would be subject to existing conditions in and around the SPCT project area. There would be no change in the aquatic habitat potentially used by fish. Fish using habitat within the existing channel and immediately adjacent to the existing channel would be temporarily disrupted by periodic maintenance dredging activities (see the following section for a full discussion on dredging impacts on fish). Similarly, invertebrate prey species would be adversely affected by periodic maintenance dredging, as discussed in the Benthic Fauna Section. Implementation of the No-action Alternative would not involve in-water construction and therefore would have no additional impacts on fish. If the High Head Industrial Basin were to be filled in and the area repurposed, approximately 40 acres of aquatic habitat would be lost; however, the industrial basin is not managed to support aquatic habitat. While only two species of fish were found during sampling at High Head Industrial Basin, these individuals would be lost if the basin were filled.

Combined Options Alternative – Terminal Development and Channel Improvements

Impingement/Entrainment of Fish and Plankton from Dredging Operations

Fish species could potentially be caught by the equipment used to mechanically dredge the SPCT channel and to hydraulically offload the material to a placement area. Fish can potentially become impinged or entrained (depending upon size and life stage) in the clamshell dredge bucket. When water is pumped to slurry dredged material for hydraulic offloading, fish may become caught on the pipe screen (depending upon the size of the fish and the size of the openings of any fish screen that may be used on the pipe) or be pulled into the pipe past the screen. Eggs and larvae would be the life stages most susceptible to entrainment in the hydraulic pipe, as mobile life stages would be more likely to move away from the area of the operation. Capture by clamshell dredge bucket is uncommon and would only impact demersal fish that are unable to move away from the operation. The hydraulic dredging operation would comply with any requirements from

Impingement is the process when aquatic organisms, such as fish or other large marine life, are trapped against water intake screens or barriers. This occurs when these organisms are unable to avoid being drawn into the intake flow, leading to injury or death.

Entrainment occurs when smaller aquatic organisms, such as fish eggs, larvae, and plankton, are drawn into and carried through the water intake systems. These organisms are usually small enough to pass through intake screens, often resulting in their death due to mechanical or thermal stress.

MDNR to reduce impingement/entrainment impacts, which may include using an intake screen with a specific size mesh openings and limiting intake velocities.

Underwater Noise from Pile Driving

Noise impacts from anthropogenic sources (e.g., in-water construction activities) have the potential to impact fish, sea turtles, and other marine species that rely on hearing underwater to forage, communicate, detect predators, and navigate (NMFS 2022a). Receptor response to noise varies by the types and characteristics of the noise source, distance from the source, water depth, receptor sensitivity, and temporal scale. Noise can be intermittent or continuous, steady or impulsive, and it may be generated by either mobile or stationary sources.

Noise Impact Types and Scenario Overview

Construction activities that could generate noise with the potential to impact fish are associated with construction of the SPCT terminal. These activities include:

1. Installation of steel pilings during construction of the marginal wharf with piling diameters of 24, 30, and 36 inches
2. Installation of steel pilings during construction of mooring dolphins with piling diameters of 24 inches
3. Water-based near-shore demolition activities before construction of the terminal
4. Potential concurrent construction of the marginal wharf and mooring dolphins

Noise that would rise to the level of affecting fish could also be associated with vessel traffic during construction, operation, and dredging activities. During construction, the noise generated by pile driving would far outweigh that of vessel traffic. These activities are the scenarios that were modeled to assess underwater noise impacts on fish.

The details on the pile driving activities for each construction scenario are summarized in Table 7. During the terminal design process, measures to reduce the overall number of piles necessary for the terminal wharf structure were used to the extent practicable.

Table 7. In-water Pile Driving Activities

Activity	Approximate Activity Duration (days)	Average Number of Piles Installed per Day	Number and Diameter of Steel Piles	Method of Pile Driving
Wharf piling installation	243	6	150 24-inch piles 600 30-inch piles 600 36-inch piles	Impact and vibratory
Mooring dolphin piling installation	20	3	60 24-inch piles	Impact and vibratory
Concurrent wharf piling and mooring dolphin piling installation	20	9	120 36-inch piles (maximum expected for wharf piling) 60 24-inch piles	Impact and vibratory
Water-based demolition	20	NA	Varied	Vibratory

Notes:
NA = not applicable

Both vibratory and impact hammers are proposed to be used to install piles for the terminal construction. This Draft EIS presents an overview of the noise modeling inputs and methods and the model results for the scenarios that have the potential to produce the largest noise impact to fish. Detailed discussion of the model inputs and results is included in Appendix E.

Acoustic thresholds for the onset of underwater acoustic impacts from pile driving activities were calculated for fish in the project area using the Optional Multi-Species Pile Driving Calculator Tool, VERSION 1.2-Multi-Species: 2022 (Multi-Species Tool), provided on the NMFS website (NMFS 2022b). The calculations were used to create a multi-ring buffer of isopleths (i.e., sound contours) diminishing in 1 decibel (dB) increments from the sound source. These thresholds are the lowest level where injury could occur (Fisheries Hydroacoustic Working Group [FHWG] 2008) and are used to indicate the distance from the noise source where fishes are anticipated to potentially be exposed to injury or disturbance.

Root mean square (RMS) pressure calculation provides a consistent measure of sound exposure, even in environments with fluctuating noise levels.

Peak sound pressure level (SPL_{peak}) is the measure of the highest-pressure variation in a sound signal, providing an indication of the loudest moment within the underwater sound wave.

Cumulative sound exposure level (SEL_{cum}) is used to quantify the total sound energy exposure over an extended period, aggregating multiple noise events into a single metric that reflects the overall noise exposure during that period.

Different types of sound pressure effects can cause different reasonable noise source levels that may result from pile driving. The peak pressure effect occurs from impact driving, as opposed to vibratory driving, which creates a more constant sound pressure with no peak decibel level. The modeled fish thresholds for physical injury and behavioral disturbance were used to determine the distances to onset of physical injury and behavioral disturbances (Table 8). Physical injuries to fish from noise sources can include inner ear tissue damage and hearing loss (Casper et al. 2013) and rupture or damage to the swim bladder (California Department of Transportation [Caltrans] 2020). Behavioral disturbances include showing a brief awareness of the sound, small movements, or escape responses to move away from the noise source entirely (University of Rhode Island [URI] 2017). Thresholds for these effects are measured by evaluating the cumulative sound exposure level over the duration of a noise event (SEL_{cum}), the maximum instantaneous sound pressure over the duration of a noise event (SPL_{peak}), and the average intensity of the sound signal over time (RMS).

Table 8. Fish Impact Pile Driving Injury Guidance

Fish Weight	Onset of Physical Injury		Onset of Behavioral Disturbance
	SEL_{cum}	SPL_{peak}	RMS
Fishes weighing 2 grams or more	187 dB	206 dB	150 dB
Fishes weighing less than 2 grams	183 dB	206 dB	150 dB

Notes:
RMS = root mean square; SEL^{cum} = cumulative sound exposure level over the duration of a noise event; SPL^{peak} = maximum instantaneous sound pressure over the duration of a noise event; dB = decibel

A sound reduction measure was included in the modeling for noise impacts from SPCT construction. The NMFS Multi-Species Tool used for noise modeling does not include a sound reduction for use of a cushion block but does include a 5 dB reduction for use of a bubble curtain surrounding the work area. A cushion block is frequently used during pile driving to reduce sound propagation. TPA evaluated recent studies and reports along with recently accepted sound reductions for modeling fish impacts for wharf construction projects in the Philadelphia area. The Washington Department of Transportation (Washington State Department of Transportation [WSDOT] 2006a) conducted a study to evaluate the effectiveness of wood, micarta, and nylon cushion blocks in reducing underwater sound during the driving of 12-inch diameter steel pipe piles generation (Molnar et al. 2020). A range of decibel reduction for wood cushion blocks was reported to be between 11 and 26 dB (WSDOT 2006b as cited in Caltrans 2009). The range of 11 to 26 dB reduction for wood cushion blocks originated from a technical report that measured sound levels during pile driving using different cap materials (Laughlin 2006). The study is limited and included use of a wood cushion block while pile driving one 12-inch diameter standard steel pile and one 12-inch pile with 1.5-foot-wide interlocking steel 'wings' at two different water depths at the Cape Disappointment boat launch facility near Ilwaco, Washington (Laughlin 2006). At least two recent Endangered Species Act (ESA) Biological Opinions from NMFS Greater Atlantic Regional Fisheries Office (NMFS 2022c, 2022d) the parameters used in the acoustic calculator tool included proxy sound levels with a 11 dB attenuation to account for a cushion block.

Cushion blocks are used in reducing the impacts of pile driving to absorb and distribute the energy from the hammer blows, thus reducing the intensity of the underwater noise generated during pile driving. Cushion blocks can be made from wood, nylon, or other materials of varying thickness.

During impact pile driving at SPCT, a combination of a bubble curtain and wood cushion block may be used to reduce underwater sound. To be conservative, a reduction of 11 dB was applied for the modeling. The actual BMPs employed to attain a sufficient zone of passage during the spring anadromous fish migration period would be determined in consultation with NMFS (see Appendix E for detail). This decibel reduction applies only to the use of an impact hammer for driving piles, as cushion blocks are not used on vibratory hammers. Therefore, the results presented in this Draft EIS show the distances to onset of behavioral disturbance from a vibratory hammer (with no sound reduction measure) and physical injury and behavioral disturbance from an impact hammer (for the largest noise producing activity) with the use of a cushion block. Noise modeling results are presented in figures (Figure 3 through Figure 6) based on two in-water sound source locations for the SPCT pile driving activities — one location within the embayment on the east side of Coke Point and one location outside the embayment on the south tip of the Coke Point peninsula.

Figure 3. Maximum Distance to Noise Impacts from Impact Hammer with Cushion Block Near Construction within the Wharf

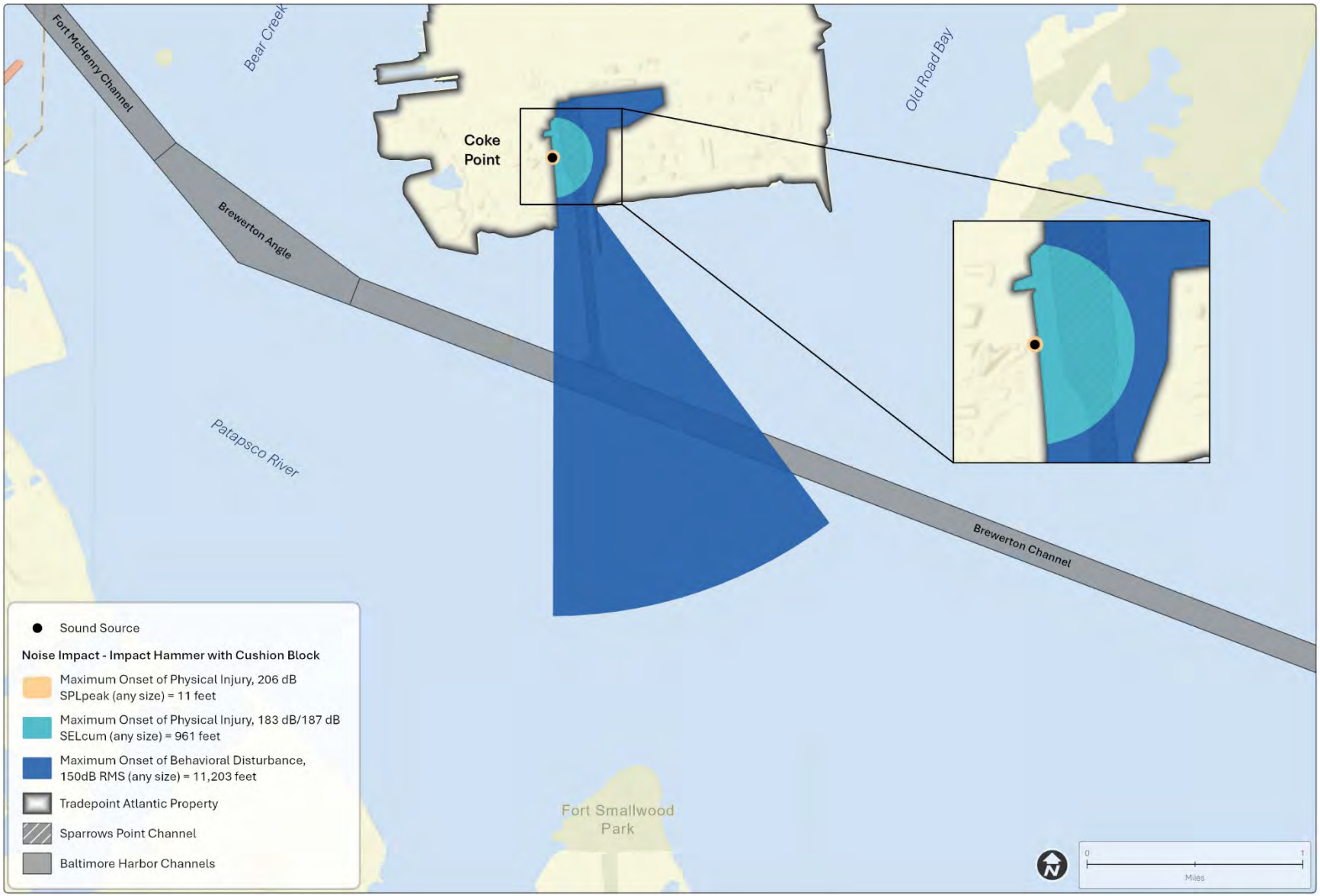


Figure 4. Maximum Distance to Noise Impacts from Impact Hammer with Cushion Block Near Construction on the Edge of the Wharf

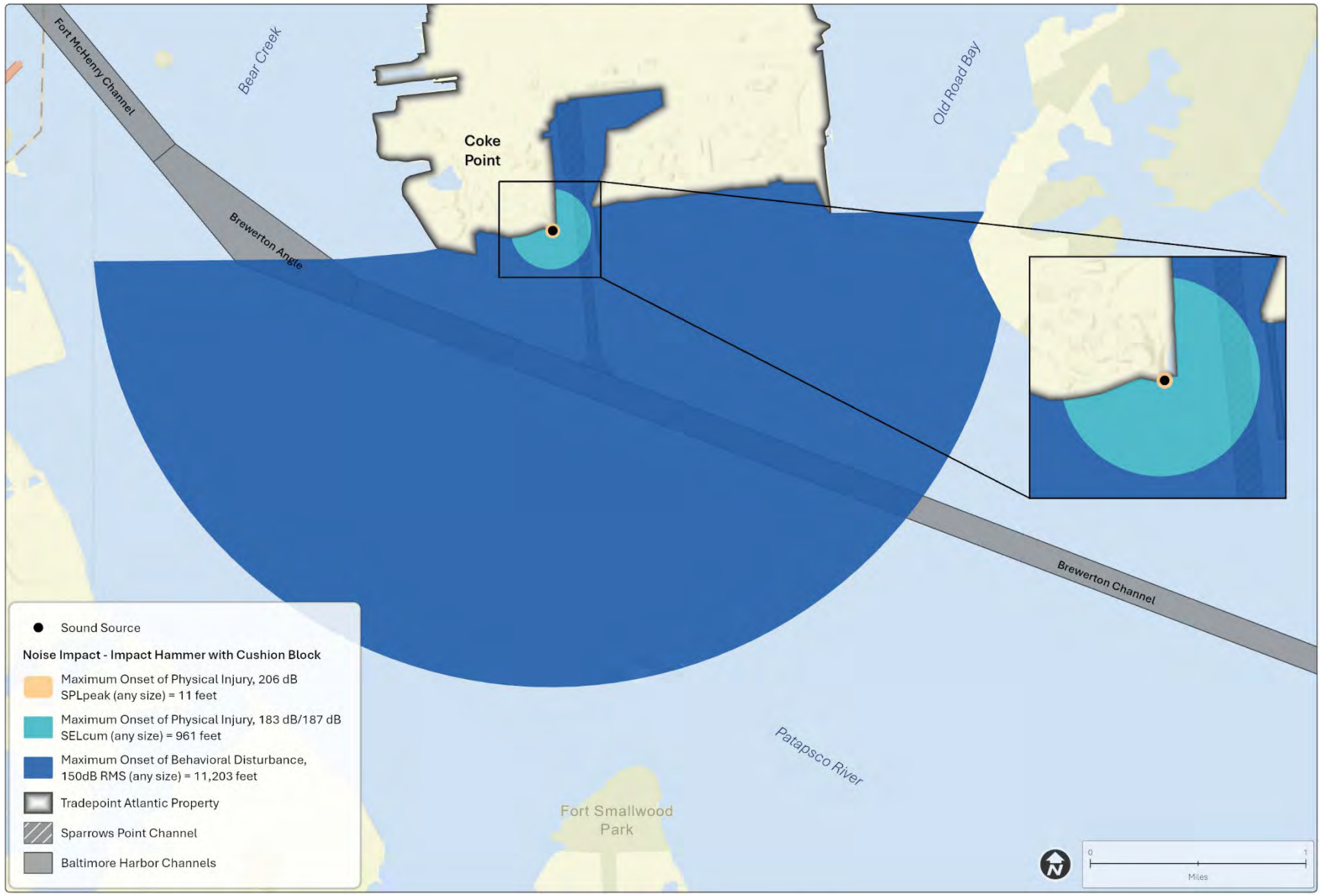


Figure 5. Maximum Distance to Noise Impacts from Vibratory Hammer Near Construction within the Wharf

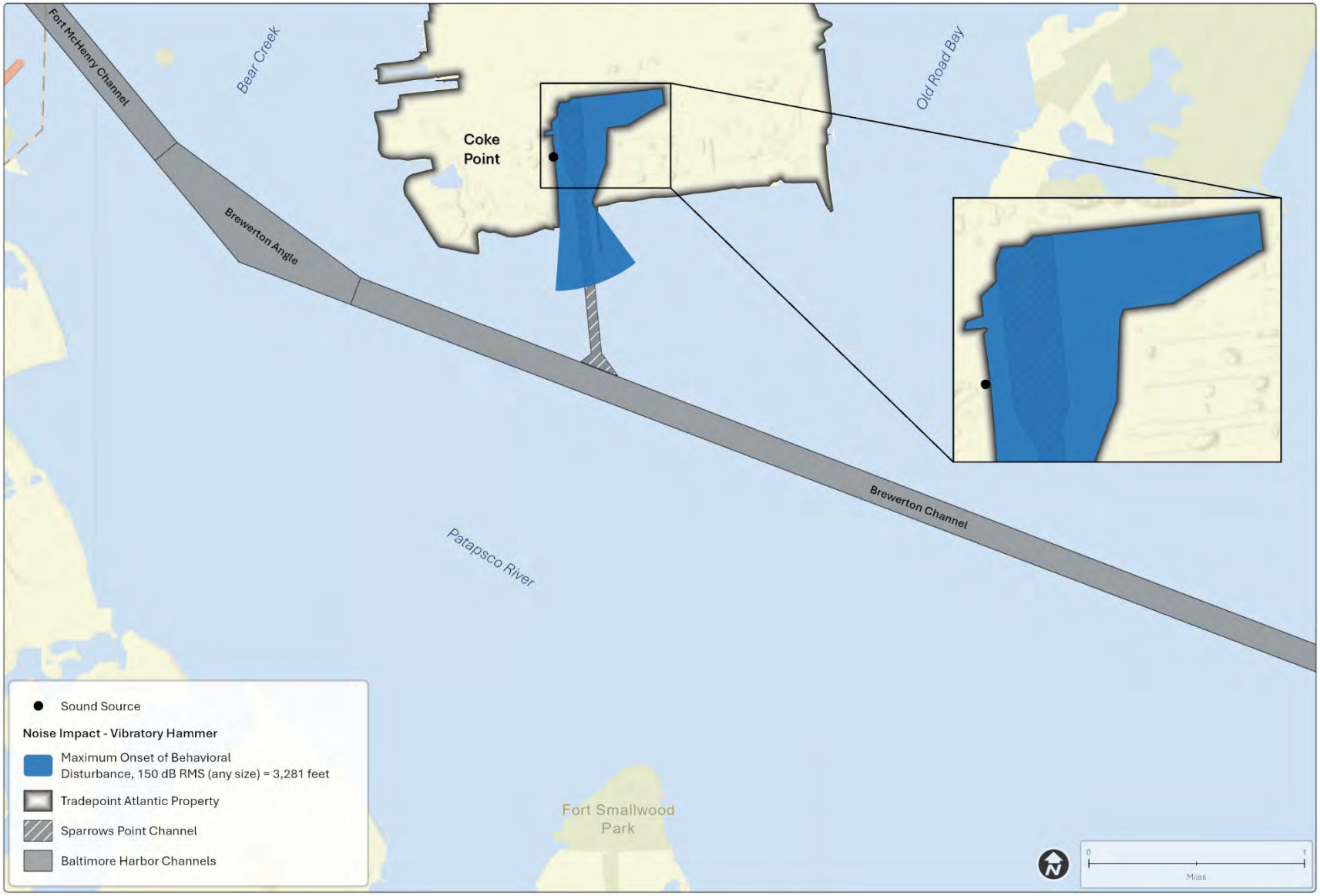
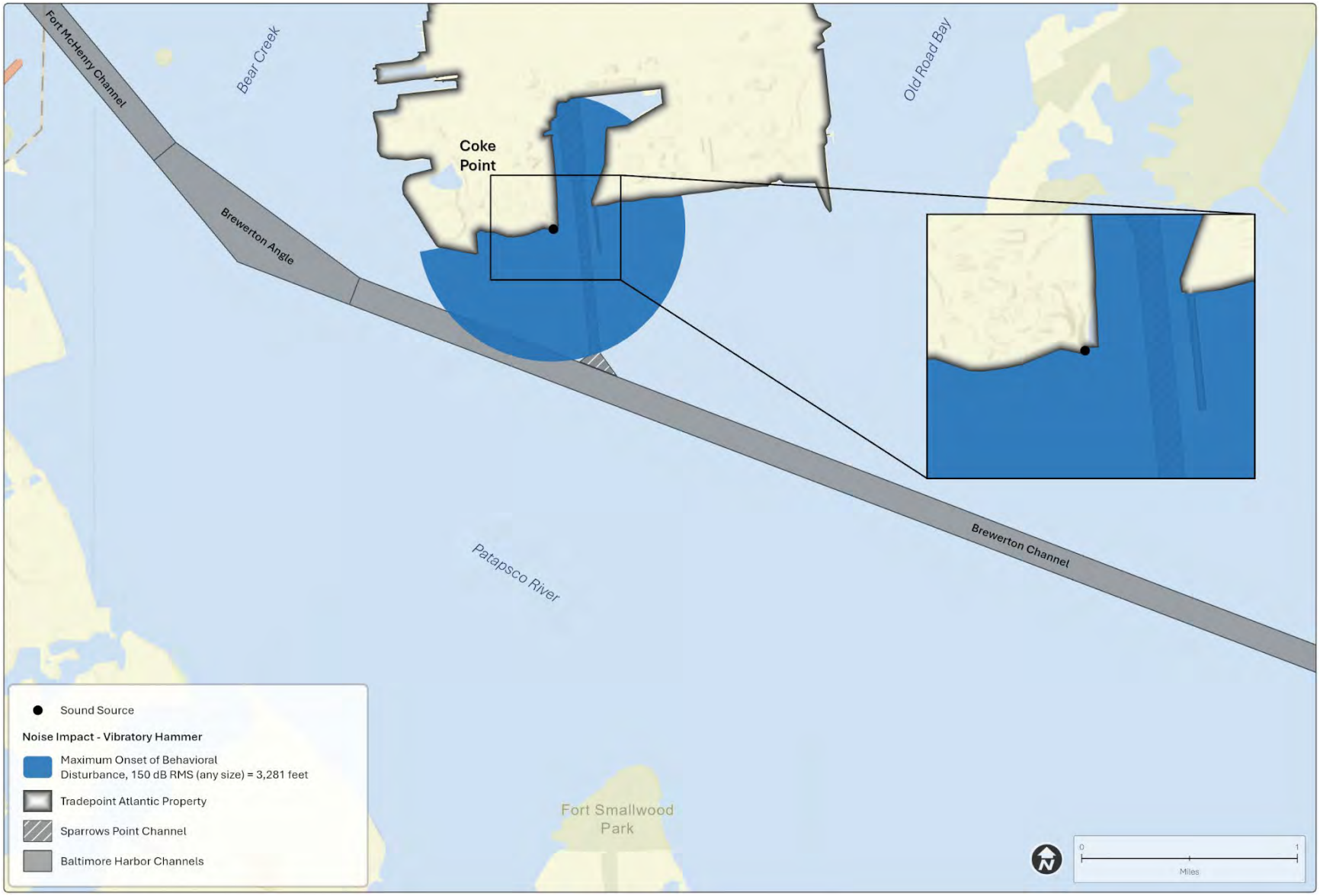


Figure 6. Maximum Distance to Noise Impacts from Vibratory Hammer Near Construction on the Edge of the Wharf



Noise Impacts

The full modeling results of each pile driving activity are included in Appendix E. The models indicate concurrent wharf and mooring dolphin piling installation has the largest potential noise impact area due to impact pile driving. The concurrent wharf and mooring dolphin piling installation can potentially impact fish over 11 miles away due to behavioral disturbance and approximately 1 mile away due to physical injury without any mitigative measures.

Due to the large areas of potential disturbance, the concurrent wharf and mooring dolphin piling installation was also modelled with the use of a wood cushion block to reduce the impacts from operation of the impact hammers. The maximum distances the sound from impact pile driving could have the potential to affect fish with the cushion block are presented in Table 9. For the concurrent wharf and mooring dolphin piling installation with an impact hammer and a cushion block, the distance to the peak onset of physical injury for any size fishes is 11 feet and the distance for physical injury is 961 feet (Table 9). Behavioral disturbance onset from impact pile driving occurs within 11,203 feet (or 2.1 miles) from either sound source location. For pile driving activities occurring inside the embayment, the noise impact distance would leave a zone of passage in the mainstem of the Patapsco River approximately 4,000 feet wide where fish could transit and avoid noise impact (Figure 3). A zone of passage approximately 2,000 feet wide would be present when pile driving activities occur closer to the mouth of the embayment (Figure 4). In addition to use of a cushion block, a soft start (gradual startup of impact pile driving) may be used to produce small sound waves that would encourage fish to move away from the project area before pile driving begins. Construction within the embayment may be phased to avoid impact driving of steel piles during the time-of-year restriction window for fish.

Concurrent wharf and mooring dolphin piling installation and water-based demolition activities were modeled for a vibratory hammer. For behavioral disturbance, the maximum distance to onset of impact is 3,281 feet from the sound source from water based demolition (Figure 5 and Figure 6); concurrent wharf and mooring dolphin piling installation would have a maximum distance of 1,523 feet. For activities inside and near the mouth of the embayment, the noise impact distance would leave a zone of passage in the mainstem of the Patapsco River approximately 12,000- and 10,700- feet wide where fish could transit and avoid noise impact, respectively. No sound mitigation was modeled for vibratory pile driving.

Table 9. Maximum Distances to Fish Sound Thresholds

The values presented in this table are the distances to fish sound thresholds from a vibratory hammer and impact hammer (showing both behavioral disturbance and physical injury distances). The onset of behavioral disturbance from a vibratory hammer is without a cushion block or other sound mitigation. The impact distances shown are for use of impact hammer with a cushion block.

Activity	Pile Count and Size/Type	Vibratory Hammer Distance to Onset of Behavioral Disturbance (feet)	Impact Hammer Distance to Onset of Behavioral Disturbance (feet)	Impact Hammer Distance to Onset of Physical Injury (feet)	
		150 dB RMS (any size fish)	150 dB RMS (any size fish)	206 dB SPL_{peak} (any size fish)	183 dB/187 dB SEL_{cum} (any size fish)
Concurrent wharf piling and mooring dolphin piling installation (with cushion block for impact hammers)	120 36-inch steel pipe piles (maximum size for wharf piling) 60, 24-inch steel pipe piles	1,523	11,203	11	961
Water Based Demolition	Varied	3,281	NA	NA	NA

Notes:

RMS = root mean square; SEL^{cum} = cumulative sound exposure level over the duration of a noise event; SPL^{peak} = maximum instantaneous sound pressure over the duration of a noise event; dB = decibel

NA = not applicable

Turbidity and Habitat Alteration from Channel Dredging and Deepening

Dredging operations could affect egg, larval, juvenile, and adult life stages of fishes within the project area through direct removal or burial, turbidity/siltation effects, temporary shifts in dissolved oxygen during dredging operations, entrainment, visual and noise disturbances, and alteration of habitat. Turbidity is measured in the field in NTU. Water with higher turbidity will often have higher concentrations of TSS, which can be measured in samples sent to a laboratory. Although there are natural contributors to turbidity within a water body (e.g., storm events, plankton blooms), construction activities such as dredging can increase turbidity. NMFS has estimated TSS concentrations associated with certain in-water activities, including mechanical dredging of fine-grained material, based on numerous studies in the greater Atlantic region. Based on these studies, elevated suspended sediment concentrations at several hundreds of mg/L above background may be present near the bucket but would settle rapidly within a 2,400-foot radius of the dredge location. The TSS levels expected for mechanical dredging (up to 445.0 mg/L) are below those shown to have adverse effects on fish (typically up to 1,000 mg/L; see summary of scientific literature in Burton 1993; Wilber and Clarke 2001). It can be noted, however, that studies have also shown effects at lower than 1,000 mg/L in certain species and life stages that are present in the project area. For striped bass and white perch, hatching can be delayed by TSS as low as 100 mg/L in one day exposure time. Larval stages of striped bass, American shad, yellow perch (*Perca flavescens*), and white perch showed higher mortality rates with TSS levels of 500 mg/L or lower for up to four days (Wilber and Clarke 2001). Feeding rates of several species that use the project area (Atlantic silverside and Atlantic croaker) are reduced in waters with higher turbidity (and therefore higher correlated TSS) conditions. Atlantic silverside and white perch are some of the most sensitive estuarine species when evaluating lethal responses to suspended sediment with up to 10% mortality at TSS concentrations below 1,000 mg/L. Turbid conditions during dredging can be controlled to minimize impacts on fish by using BMPs (Attachment D) and completing activities during times of year when certain species are less active within the project area.

Eggs, larvae, and species with limited swimming ability would be at the highest risk of impacts from dredging, as they cannot move to avoid the operations. The physical removal of bottom from the dredging area, as well as resuspended sediment, has the potential for direct loss or injury to eggs and larvae present within or adjacent to the dredging footprint. Based on SPCT project area sampling, the fish community is most abundant during the summer season. Resuspended sediment can affect all life stages of fish, though egg and larval stages can be particularly vulnerable (Auld and Schubel 1978; Nelson and Wheeler 1997; Burton 1993; Wenger et al. 2018). In addition, the extent of the resuspended sediment along with its character (i.e., suspended contaminants), timing, and duration should also be considered when analyzing effects on fish. Based on the nature and extent of the turbidity and the availability of unaffected areas, a seasonal restriction on dredging in certain parts of the dredging footprint may be necessary to limit the delivery of contaminants to the estuarine food web and/or protect anadromous fish migrations. Any time-of-year restrictions on dredging activities to reduce impacts on eggs, larvae, and less mobile species would be determined through consultation with NMFS and MDNR. Removal of the river bottom sediments from dredging to deepen the channel would create deeper water habitat within the channel. As discussed in the Benthic Fauna Section, water column stratification results in lower dissolved oxygen concentrations in deep bottom water, particularly in the summer months. This can also affect fish usage of bottom waters, as they will avoid waters that do not contain enough oxygen. This would also reduce potential prey sources for fish that consume benthic organisms.

Time-of-year restrictions on dredging would also reduce impacts on adult, juvenile, and larval fishes. Dredging BMPs, such as use of an environmental bucket, could also be implemented to minimize impacts related to resuspended sediment. During dredging, the impacts on adult and juvenile fish would be short-term and temporary. Based on sediment plume studies in similar environments, it is anticipated that the sediment plume from the dredging operations would only affect a portion (approximately 2,400 feet or 0.5 mile or 17.1%) of the total width of the Patapsco River near the edge of the embayment area (approximately 14,000 feet or 2.6 miles). This gives juvenile and adult individuals significant areas of similar pelagic (open water) or demersal (river bottom) habitat to use outside of and adjacent to the direct dredging area.

Dredging the channel to attain the preferred alignment for the wharf would include removal of existing shoreline, resulting in the creation of approximately 6.3 acres of new open water habitat. Construction of the wharf would result in shading approximately 8.9 acres of open water habitat — 3.3 acres of existing open water and 5.6 acres of new open water habitat. Shading of these areas would impact benthic and water column productivity. Installation of the mooring dolphins and wharf pilings would result in the permanent loss of 0.2 acres of bottom habitat. These habitat changes would cause localized impacts on benthic organisms and prey thus impacting fish in the area.

Water Quality Impacts

Planned paving and construction of buildings on Coke Point for the proposed terminal would result in approximately 95% of Coke Point being considered impervious to infiltration, thus increasing stormwater runoff. The terminal would be developed with a gentle grade to direct sheet flow to trench drain collectors, and stormwater would be routed by way of lateral drains to pipe culverts for discharge. This runoff could carry pollutants into the Patapsco River. In shallow water areas, where dilution is limited, these contaminants can accumulate, degrading water quality and impacting aquatic life. Elevated runoff also raises turbidity, reduces light penetration, and can disrupt habitats critical for fish and other aquatic life. See Attachment B for additional information on impacts on surface water.

Vessel Traffic

Vessel traffic in the Patapsco River can impact fish populations by causing underwater noise, physical disturbances, and water quality degradation. Noise from engines and propellers can disrupt fish behaviors, such as feeding and spawning, and interfere with their communication, affecting reproduction and social interactions. Physical disturbances from propeller wash and vessel presence can include damage to habitats and fish injury.

The SPCT project area is located within the Port, which is in the top 20 ports in the United States by tonnage and number of vessels handled annually (US Department of Transportation [USDOT] 2024a), including a variety of ship types (e.g., bulk carriers, general cargo ships, tankers, container ships). More than 2,500 vessels call on the Port in 2021 (USDOT 2024b). During construction, there will be a small increase in boat activity, likely not more than 10 vessels operating at any one time, which will not materially alter vessel traffic in the area. Once constructed, operation of the SPCT would increase vessel traffic by approximately 500 vessels per year, an increase of approximately 20% over the Port calls logged in 2021 (USDOT 2024b). Fish would be expected to move away from the areas of the activity and would not be impacted.

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

All fish present in the High Head Industrial Basin would be lost to burial by placement of SPCT dredged material. This area would be upland following completion of the DMCF.

Coal Pier Channel DMCF at Sparrows Point

Turbidity from Material Placement

Placement of material to build the sand dike for the Coal Pier Channel DMCF could cause temporary turbidity in surrounding waters. Sand is a coarser-grained material that settles out of the water column faster than finer-grained material, resulting in suspended sediment remaining in the water column in a localized area for a short duration. Placement of the sand could also disturb existing sediments at the mouth of Coal Pier Channel. Movement of the bottom sediments during placement of the sand would be limited due to the shallow sediment depth, the small size of the dike, and the proximity to the shore. Depending on site conditions, BMPs to reduce sediment resuspension (e.g., turbidity curtain) could be employed (see Attachment D). Therefore, sediments resuspended during dike construction would be expected to be minimal. Given that the material to create the perimeter dike would be sand and the soft sediments underlying the Coal Pier Channel are shallow, the impacts would be limited to temporary and localized effects on the water column during construction, having minimal impact on fish species.

Species that currently use this open-water habitat would be displaced to similar nearby habitats within the river. Fish within the dike alignment may be trapped or buried as the material is placed, especially eggs or larvae. Impacts in the DMCF footprint would affect a limited portion of the local fish community, and the action is not anticipated to have adverse impacts at the population level.

Habitat Alteration/Impacts on Prey Species

Construction and placement of material in the Coal Pier Channel DMCF would permanently remove the substrate condition and fish habitat type within the DMCF footprint. The Coal Pier Channel provides sheltered, shallow water habitat and the DMCF in this location would result in a loss of foraging, refuge, and spawning habitat for smaller fish. The DMCF would also bury the benthic organisms within its footprint, removing the benthic communities as a possible food source for fish. Sediment sampling results along the western shoreline of Coke Point indicate that historical contamination is present in the sediment and the benthic community assessment indicates most of this area has a degraded benthic community (see the Benthic Fauna Section); therefore, the area where the DMCF would be constructed does not represent high-quality habitat for benthic organisms or fish species. This area is, however, well used by fish. The areas immediately surrounding the DMCF and elsewhere within the vicinity of the Patapsco River and lower Bear Creek would provide suitable forage areas for fish, both during construction and after the project is complete.

Vessel Traffic

During construction of the perimeter dikes, barges would be transiting from a nearby location along the Patapsco River to the DMCF footprint to deliver sand for construction of the dike. This would temporarily increase vessel traffic in the area. Fish would have ample space within the surrounding river area to avoid vessels and use other adjacent habitats. A temporary increase in the number of vessels in the

area would not increase the risk that any vessel in the area would strike an individual or would increase it to such a small extent that the effect of the action (i.e., any increase in risk of a strike caused by the project) cannot be meaningfully measured or detected. Therefore, the increase in vessel traffic would not have an adverse impact on the fish community.

Existing Nearshore MPA DMCFs

No new impacts on fish would occur because the MPA DMCFs are existing upland placement sites.

Existing Ocean Disposal Site

No new impacts on fish would occur because NODS is an existing USEPA-designated ocean placement site.

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Essential Fish Habitat

Affected Environment

Regulatory Background

The Magnuson-Stevens Fisheries Conservation and Management Act of 1976 (MSA; Public Law 94-265) establishes guidelines to prevent overfishing, rebuild overfished stocks, increase long-term economic benefits, ensure a safe and sustainable supply of seafood, and protect habitat that fish need to spawn, breed, grow, and feed to reach maturity (NMFS 2024b). EFH is designated for certain species by NMFS, pursuant to the MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-27). The Sustainable Fisheries Act requires that EFH be identified for those species actively managed under federal fishery management plans. This includes species managed by the eight regional Fishery Management Councils (FMCs) established under the MSA, as well as those managed by the NMFS under fishery management plans developed by the Secretary of Commerce (NMFS 1996).

Essential fish habitat or EFH typically encompasses a broad range of habitats used by managed species and is focused on the habitat needs of individual species.

As described by the MSA, one of the greatest long-term threats to the viability of commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats. The MSA promotes the conservation of EFH in the review of projects conducted under federal permits, licenses, or other authorities that affect or have the potential to affect such habitat. The MSA requires federal agencies to consult with the Secretary of Commerce, through NMFS, concerning "any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH identified under this Act" (16 USC § 1855(b)(2)). As such, federal agencies must prepare an EFH assessment that describes the proposed project and the EFH present in the project area and fully evaluates the potential adverse effects on federally managed fish, their habitats, prey species, and other area resources (50 CFR 600.905). The MSA includes provisions for managing prey species, emphasizing the role they play in supporting sustainable fisheries and healthy marine ecosystems. Identifying, conserving, and managing EFH includes considering the habitat needs of prey species essential for the growth, survival, and reproduction of predator fish. An adverse effect to EFH is defined as, "any impact, which reduces quality and/or quantity of EFH…" and may include direct, indirect, site-specific, or habitat impacts, including individual, cumulative, or synergistic consequences of actions.

EFH in the SPCT Project Area

Under the MSA, EFH is specifically defined as, "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." To interpret the definition of EFH:

- "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate.
- "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities.
- "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem.
- "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

An EFH assessment was prepared and submitted to NMFS as part of the NEPA and permitting processes. This section describes the designated EFH and species potentially present within the project area. The full EFH assessment is included in Appendix F.

The Mid-Atlantic FMC manages more than 65 species in federal coastal waters and in the exclusive economic zone (extending from 3 to 200 miles off the coast) of New York, New Jersey, Pennsylvania, Delaware, Maryland, and Virginia (Mid-Atlantic FMC 2024). The Patapsco River at its confluence with the mainstem Chesapeake Bay is designated as EFH for a variety of federally managed fish species. The NMFS EFH mapper tool identified nine EFH species and one habitat area of particular concern (HAPC) as potentially present within the SPCT project area.

Habitat areas of particular concern or HAPCs are a subset of areas within EFH that have extremely important ecological functions or are especially vulnerable to anthropogenic degradation and impact. An HAPC can be a specific location (e.g., spawning location on a nearshore shelf) or a specific type of habitat (e.g., SAV beds).

During public scoping in February 2024, NMFS recommended that the EFH assessment focus on six of the nine EFH species (Table 10; NMFS 2024c), as the EFH descriptions match the conditions observed in the project area. Based on this screening analysis, scup (*Stenotomus chrysops*), red hake (*Urophycis chuss*), and Atlantic herring (*Clupea harengus*) are not evaluated further as part of the Draft EIS or the EFH assessment. Although the EFH mapper identified the summer flounder (*Paralichthys dentatus*) SAV HAPC as potentially occurring in the project area, the NMFS scoping letter did not identify the SAV beds that comprise this HAPC as being present within the project area. Further site-specific surveys have confirmed the absence of SAV within the direct project area (EA 2024h), although some SAV has been documented in the lower portion of Bear Creek and Jones Creek, north of Old Road Bay (Virginia Institute of Marine Science [VIMS] 2024). However, three individual summer flounder were captured in the summer 2023 fish surveys, indicating some usage of the project area by this EFH species. As such, summer flounder HAPC is included in the analysis. Summer flounder HAPC is defined as “all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH” (Packer et al. 1999).

Coordination with NMFS also indicated that several prey species, such as bay anchovy, spot, and white perch use the waters in the navigation channel as feeding, resting, and winter refugia habitat. The benthic habitats in the project area support a variety of invertebrate prey species, including polychaete worms, bivalves, and crustaceans (see the Benthic Fauna Section). During the SPCT fish surveys, these prey species were documented in the project area (EA 2024a, 2024d, 2024e, 2024f).

Table 10 describes the species for which EFH has been designated in the project area, identified by early coordination with NMFS. As part of the seasonal aquatic surveys conducted to collect baseline ecological information within the SPCT project area, fish sampling was conducted using a variety of methods. Summer flounder and bluefish were captured in the project area during the summer fish surveys (three individuals of each species) and prey species including bay anchovy, white perch, and spot were also captured (EA 2024a).

Table 10. EFH Species Potentially Present in the SPCT Project Area

EFH Species	Life Stage				EFH Characteristics for Life Stages Potentially Present in the Project Area
	Eggs	Larvae	Juvenile	Adults	
Windowpane flounder *Scophthalamus aquosus*			✓	✓	Juveniles – Sandy and muddy bottoms of bays and estuaries from the shoreline up to 197 feet of water depth Adults – intertidal and subtidal benthic habitats, particularly mud and sand substrates of the intertidal zone up to 230 feet
Summer flounder *Paralichthys dentatus*		✓	✓	✓	Larvae – Nearshore waters at water depths greater than 30 feet Juveniles – Estuarine and open bay areas, as well as marshy creek areas with water temperatures greater than 37°F and salinities from 10 to 30 ppt Adults – Sandy seafloor areas of shallow coastal waters and estuaries in the late spring and early summer.
Bluefish *Pomatomus saltarix*			✓	✓	Juveniles – Chesapeake Bay estuary, May to October in zones of mixed salinity Adults – Chesapeake Bay estuary, April to October with distribution varying by the size of the individuals within the schools
Atlantic butterfish *Peprilus triacanthus*	✓	✓	✓	✓	Eggs – Inshore estuaries and bays (in the upper 656 feet), water temperatures between 43.7 and 69.8°F Larvae – Inshore estuaries, bays, and areas, bottom depths between 134 and 1,148 feet, and water temperatures between 47.3 to 70.7°F Juvenile – Estuaries, bays, and areas with depths between 33 and 919 feet and temperatures between 47.3 and 70.7°F and salinity above 5 ppt Adult – Water depths of 108 to 2,690 feet with salinity above 5 ppt and 15 ppt for spawning
Black sea bass *Centropristis striata*			✓	✓	Juvenile – Estuaries with warmer waters (greater than 43°F), salinity greater than 18 ppt, and rough bottom habitat or shellfish and eelgrass beds Adult – Inshore estuaries from May to October, particularly areas with hard bottom and temperatures greater than 43°F (for adults)

EFH Species	Life Stage				EFH Characteristics for Life Stages Potentially Present in the Project Area
	Eggs	Larvae	Juvenile	Adults	
Clearnose skate *Raja eglanteria*			✓	✓	Juvenile – Bottom habitat with sand, gravel, or mud substrate from the shoreline to 1,312 feet water depth with water temperatures between 39.2 and 60.8°F Adult – Bottom habitat with sand, gravel, or mud substrate from the shoreline to 1,312 feet water depth with water temperatures between 41 and 59°F
Summer Flounder HAPC	-	-	-	-	All native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH

Sources: Mid-Atlantic FMC 1988, 1996a, 1996b, 1998a, 1998b, 2011; Nelson et al. 2017; NMFS 2018, 2023a, 2024d, 2024e, 2024f, 2024g

Notes:

EFH has been designated for a given species and life stage.

°F = degrees Fahrenheit; ppt = parts per thousand

Environmental Consequences

The NMFS guidelines for completing an EFH assessment (NMFS 2021) were used to identify the stressors associated with the project activities. These stressors and their effects are described below for both of the project alternatives.

No-action Alternative

EFH would be subject to existing conditions in and around the SPCT project area, which include impacts from routine maintenance dredging as permitted by the appropriate regulatory agencies and the presence of existing contaminated sediments offshore of Coke Point. Future development of Coke Point would not involve in-water work and would not change the aquatic habitat in the project area, and therefore, would have no additional impact on EFH. The High Head Industrial Basin does not contain EFH; therefore, the No-action Alternative would have no impact if the basin were to be filled in and the area repurposed.

Combined Options Alternative – Terminal Development and Channel Improvements

Underwater Noise from Pile Driving

Underwater noise impacts on EFH from construction activities would be the same as the noise impacts described for all fish species (both managed and non-managed) and are described in the Fish Section.

Turbidity and Bottom Alteration from Channel Dredging

The impacts associated with dredging, bottom alteration, and channel deepening are described in detail in the Fish Section.

The sediment plume from the dredging operations would affect a small portion of the total width of the Patapsco River (2,400 feet [0.4 mile] or 17.1 % of the total 14,000 feet [2.6 miles] of available river

width), leaving similar pelagic or demersal habitat for juveniles and adults outside of the direct dredging area. There is also similar available habitat outside of the work area within the river from the former Key Bridge to Rock Point (approximately 22,000 feet or 4 miles). The silty or muddy bottoms of bays/estuaries that are required for most life cycles of the EFH species are abundant in the Patapsco River. EFH species that use more protected embayment areas similar to where the dredging and west side DMCF(s) is proposed would have other areas in the vicinity of the SPCT project area, including coves and inlets, that could be used during dredging operations when turbidity increases.

Specific to EFH species, dredging impacts on habitat used by juveniles and adults would be short-term and temporary. The removal of bottom sediment from the dredging area, as well as any resuspended sediment, has the potential to impact EFH eggs and larvae (for summer flounder and Atlantic butterfish) if they are present within or adjacent to the dredging footprint. Overall, the turbidity and removal of bottom sediment resulting from channel dredging would impact demersal EFH species (skates and flounders) more than pelagic species, as eggs and larvae of demersal species are likely present in the vicinity of dredging and would have limited ability to move away from impacts. In addition, juveniles and adult demersal EFH species may have less opportunity to relocate to other suitable habitats before dredging. Both summer flounder and bluefish were captured during the fish surveys; however, both EFH species were only found at the upstream and downstream sampling locations (Gillnet 1 and Gillnet 5, Figure 2). It is therefore anticipated that the potential for impact on these species from channel dredging would be low. As noted in the Fish Section, time-of-year restrictions on dredging may be required and would be determined through agency consultation. Deepening of the channel through dredging would decrease dissolved oxygen concentrations in bottom water as described in the Fish Section. Since the Sparrows Point Channel would be dredged to maintain the depth, the more hypoxic conditions created by deepening the channel would permanently degrade EFH.

Dredging the channel to attain the preferred alignment for the wharf would include removal of existing shoreline, resulting in the creation of new open water habitat, shading of existing and new open water, and loss of bottom foraging habitat from the installation of wharf piles. Impacts on fish habitat from these activities are described in the Fish Section.

Vessel Traffic

Impacts on EFH species from vessel traffic would be the same as described in the Fish Section.

Habitat Alteration/Impacts on Prey Species

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

No impacts on EFH would occur because the High Head Industrial Basin does not contain EFH.

Coal Pier Channel DMCF at Sparrows Point

Turbidity from Material Placement

Impacts of constructing a sand dike for the Coal Pier Channel DMCF would occur both outside and within the footprint. Impacts from turbidity from placement of the sand to create the dike and resuspension of the soft sediments of the channel during sand placement would be the same as discussed

in the Fish Section. Juvenile and adult EFH individuals outside of the dike perimeter would relocate to similar nearby habitats following the start of material placement and would likely avoid suspended sediment; mobile EFH individuals would experience adverse but temporary impacts from displacement. Turbidity can hinder vision and disrupt foraging behaviors of EFH species, but juvenile and adult species would avoid the area during construction. Eggs or larvae may be trapped and destroyed as the material is placed, and any individual adults and juveniles within the dike footprint could be trapped by the placed material as well. Turbidity following construction of the dike would eventually return to concentrations suitable for EFH species. Therefore, the impacts from construction would not result in a meaningful change to EFH species populations. Any turbidity related to offloading of dredged material would be contained within the dike and would not impact the surrounding habitat for EFH species.

Habitat Alteration/Impacts on Prey Species

Placement of material in the Coal Pier Channel DMCF would result in a permanent loss of sheltered aquatic habitat, removing potential foraging, refuge, and spawning habitats for EFH and their prey species. The impacts on EFH species would be the same as described in the Fish Section. Eggs and larvae of EFH species within the DMCF footprint would be buried by material placement. Juvenile or adult pelagic and demersal individuals can move away from construction and therefore impacts would be less than those on eggs or larvae. EFH food sources within the DMCF footprint would also be lost by habitat conversion. Sediment, benthic, and fish studies in the DMCF area indicate that the sediment in the DMCF footprint is impacted by elevated concentrations of metals, PAHs, and sheens/odors, and the area is being used by fish and benthic resources. The footprint of the DMCF represents only a portion of bottom habitat available in the project area to EFH species that require this habitat during their life cycle. In addition, the areas immediately surrounding the DMCF and elsewhere within the vicinity of the Patapsco River or Lower Bear Creek would provide comparable forage areas for EFH species to use both during construction and after the project is complete. For juvenile and adult pelagic species, impacts from habitat alteration are unlikely, as individuals would not be present within the DMCF footprint.

Vessel Traffic

Impacts on EFH species from vessel traffic would be the same as those described for all fish species in the Fish Section.

Existing Nearshore MPA DMCFs

No new impacts on EFH would occur because the MPA DMCFs are existing upland placement sites.

Existing Ocean Disposal Site

No new impacts on EFH would occur because NODS is an existing USEPA-designated ocean placement site.

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Aquatic Special Status Species

Affected Environment

The Endangered Species Act of 1973 (ESA) is intended to conserve endangered and threatened species and habitats that are critical to their survival. Endangered species are in danger of extinction throughout all or a significant portion of their range. Threatened species are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. *Special status species* is a collective term for species that are listed as threatened, endangered, or of special concern by a federal or state regulatory agency.

Special Status Species in the Project Area

Federally Listed Species

Federal special status species can fall under the jurisdiction of USFWS, (terrestrial and freshwater species) or NMFS (marine and anadromous species). Under Section 7(a)(2) of the ESA, federal agencies must consult with USFWS and NMFS when any project or action they take might affect an ESA-listed species or designated critical habitat. For this project, no aquatic species under USFWS jurisdiction are potentially present in the project area. Terrestrial special status species potentially present in the project area were dismissed from full analysis (see Appendix D).

Consultation with NMFS pursuant to the ESA was initiated in 2023 and will continue throughout the NEPA and project permitting processes. The applicant consulted NMFS's ESA Section 7 Mapper (NMFS 2022e), an online mapping tool, which indicated that Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*) may be present in the SPCT project area. In a letter dated February 16, 2024, NMFS identified the two sturgeon species plus four federally listed sea turtle species under its jurisdiction that may occur in the waters in or adjacent to the SPCT project area (NMFS 2024c; Table 11); the project area does not contain any designated critical habitat.

Table 11. ESA Species under NMFS Jurisdiction Potentially Present in the SPCT Project Area

Species	Life Stage			
	Larvae	Juvenile	Sub-adult	Adults
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)		✓	✓	✓
Shortnose Sturgeon (*Acipenser brevirostrum*)				✓
Green sea turtle (*Chelonia mydas*)		✓		✓
Loggerhead sea turtle (*Caretta caretta*)		✓		✓
Kemp's ridley sea turtle (*Lepidochelys kempii*)		✓		✓
Leatherback sea turtle (*Dermochelys coriacea*)		✓		✓

The following paragraphs describe the six species identified by NMFS during consultation that could occur in the project area. No special status species were observed during the seasonal aquatic surveys conducted to collect baseline ecological information within the project area (see the Fish Section).

Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). Atlantic sturgeon are present in the waters of the Chesapeake Bay and its adjacent bays and tributaries. Atlantic sturgeon are born in freshwater, move to

estuarine waters to grow and mature, migrate to the sea, and return to freshwater areas to spawn (NMFS 2023b). Spawning within the Chesapeake Bay occurs largely in Virginia tributaries, outside of the project area and larger Baltimore Harbor area. Due to the habitat and salinity in the Chesapeake Bay, spawning and early life stages are not expected to occur within the project area (NMFS 2024c). Juveniles and adults may be transient in the project area, but typically stay near their natal rivers. Only subadult and adult Atlantic sturgeon could occur within the Patapsco River area. Atlantic sturgeon consume prey found on the seafloor, including crustaceans, worms, mollusks, and smaller bottom fish (NMFS 2023b; USFWS 2024).

This species had historically large populations throughout the Chesapeake Bay; however, their populations have declined largely due to heavy fishing and degradation of spawning and nursery habitat (VIMS 2009). The New York Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPSs) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Atlantic sturgeon are also listed as endangered by MDNR.

Shortnose Sturgeon (*Acipenser brevirostrum*). Shortnose sturgeon is federally listed as endangered throughout its range and listed as endangered by MDNR. NMFS implemented a recovery plan for shortnose sturgeon in 1998 (NMFS 1998). Unfavorable water conditions, such as low oxygen, pollution, and habitat alteration, have caused significant declines in the Chesapeake Bay population. Transient adult shortnose sturgeon could be present in the waters of the Chesapeake Bay and adjacent bays and tributaries to opportunistically forage; however, recent studies have indicated that shortnose sturgeon in the Chesapeake Bay are rare with only one individual observed in the lower Chesapeake Bay and just over 70 in the upper Chesapeake Bay over ten years (1996 through 2006) (Balazik 2017). The most recent report of a shortnose sturgeon in the lower Chesapeake Bay and tributaries was a catch in the Potomac River near the Chain Bridge in April 2021 (Blankenship 2021).

Adult shortnose sturgeon use low-salinity bottom waters of estuaries for much of the year. They feed on a variety of benthic organisms including mollusks, crustaceans, and worms. Individuals in the Chesapeake Bay spend most of the year in the lower part of the river in which they were born, migrating to deeper waters in winter (CBP 2024b). Due to the habitat and salinity in the Chesapeake Bay, spawning and early life stages are not expected to occur within the project area (NMFS 2024c).

Sea Turtles. Four species of ESA-listed threatened or endangered sea turtles under NMFS jurisdiction are seasonally present in Chesapeake Bay —Northwest Atlantic Ocean DPS of loggerhead sea turtle (*Caretta caretta*; threatened), North Atlantic DPS of green sea turtle (*Lepidochelys kempii*; threatened), Kemp's ridley sea turtle (*Lepidochelys kempii*; endangered), and leatherback sea turtle (*Dermochelys coriacea*; endangered) (NMFS 2024c).

Sea turtle species share similar habitats and are widely distributed throughout their range occupying vast open ocean habitat and inshore areas. Juvenile sea turtles live a pelagic existence before returning inshore as they mature. The primary diet of sea turtles can vary by species and includes marine vegetation, benthic invertebrates, and other small marine animals (NMFS 2023c). Although some sea turtle individuals have been observed as far north as Maine, the Chesapeake Bay is typically the northernmost limit for their range (Funk 2020).

The Chesapeake Bay is an important developmental and foraging habitat for sea turtles in the summer months (Evans et al. 1997; Litwiler and Insley 2014), but loggerhead, green, Kemp's ridley, and leatherback sea turtles are not likely to be as far north in the Chesapeake Bay as the SPCT project area.

Loggerheads, leatherback, and green sea turtles are typically found in the Chesapeake Bay in Maryland in the southern portions of the state near Worcester County (MDNR 2016, 2024c, 2024d, 2024e. 2024f). Kemp's ridley turtles use eelgrass beds in the lower portions of the Chesapeake Bay during summer months (CBP 2024c). In the project area (and larger Baltimore Harbor), suitable vegetation and salinity for sea turtles is not available. For this reason, only those impacts on sea turtles associated with increased vessel traffic in the Lower Chesapeake Bay (where barges and other vessels may be transiting to the project area) and from the SPCT project area to the NODS are the impacts evaluated as part of this Draft EIS.

State-listed Species

The Nongame and Endangered Species Conservation Act of 1975 (Annotated Code of Maryland 10-2A-01) governs the legal listing of threatened and endangered species in Maryland. The Act is supported by regulations (Code of Maryland Regulations [COMAR] 08.03.08) that define listing criteria for endangered, threatened, in need of conservation, and endangered extirpated species; lists the species included in each category; establishes the purpose and intent of research and collection permits; and lists prohibited activities.

The protection of state-listed species is under the jurisdiction of the MDNR. The applicant reviewed MDNR's List of Rare, Threatened, and Endangered Species of Baltimore County (MDNR 2021) and identified four aquatic species (mussels) that could potentially be present within the SPCT project area. Table 12 lists these mussel species with a description of the required habitat for each. Based on the species habitat requirements, these four species are unlikely to be present in the project area; therefore, these species were dismissed from full analysis.

MDNR also maintains a list of fish species that are endangered, threatened, or in need of conservation for the state of Maryland (MDNR 2024g). This list was reviewed, and the majority of species require higher salinity waters than are present within the SPCT project area and would not likely be found using these waters. In addition to Atlantic and shortnose sturgeon discussed above under federally listed species, Table 12 lists five fish species that could potentially use the habitat within the project area.

Table 12. Potential for Presence of State-listed Aquatic Species and Aquatic Species in Need of Conservation in Baltimore County in the SPCT Project Area

Species	State Status or Rank	Required Habitat	Potentially Present in SPCT Project Area?
Northern map turtle (*Graptemys geographica*)	S1, E	Found in deep or shallow waters of the lower Susquehanna River only.	No, the project area is not within the habitat distribution for this species.
Brook floater (*Alasmidonta varicosa*)	S1	Larger streams and rivers with moderate flow: often found near river islands with depositional substrate.	No, this is a freshwater species, and waters of the project area are brackish.
Eastern lampmussel (*Lampsilis radiata*)	SU	Generally restricted to tidal freshwater with sandy shoals or shorelines with moderate tidal fluctuation and wave action.	No, this is a freshwater species, and waters of the project area are brackish.

Species	State Status or Rank	Required Habitat	Potentially Present in SPCT Project Area?
Triangle floater (*Alasmidonta undulata*)	S1S2, T	Prefers smaller headwaters of streams with slow-moving water and coarse or fine gravel substrate; avoids larger rivers and streams.	No, the aquatic habitat within the dredging and Coal Pier Channel DMCF footprints are within a larger river environment without suitable habitat for this species.
American shad (*Alosa sapidissima*)	In need of conservation	Spawn in freshwater tributaries of Chesapeake Bay.	Yes; suitable habitat for foraging is available.
Atlantic menhaden (*Brevoortia tyrannus*)	In need of conservation	Found in all salinity zones within the Chesapeake Bay.	Yes; found in project area fish surveys.
Hickory Shad (*Alosa mediocris*)	In need of conservation	Spawn in freshwater tributaries of estuaries and bays.	Yes; suitable habitat for foraging is available.
Striped bass (*Morone saxatilis*)	In need of conservation	Found in fresh or salt water in estuaries and bays.	Yes; found in project area fish surveys.
Yellow Perch (*Perca flavescens*)	In need of conservation	Found in brackish waters of Chesapeake Bay.	Yes; suitable habitat is available.

Sources: MDNR 2016; MDOT 2016; MDNR 2024g

Notes:

S1 = highly state rare; S2 = State rare; SU = possibly rare; T = threatened; E = endangered

Bottlenose Dolphin

According to consultation with NMFS PRD, bottlenose dolphins (*Tursiops truncatus*) have the potential to be present in the lower Patapsco River of the project area. Bottlenose dolphins are typically found in warm marine (salt-water) environments and are able to use the lower reaches of rivers (CBP 2024d). Bottlenose dolphins primarily use the Chesapeake Bay in the summer with most usage near the James and Elizabeth Rivers in Virginia. Dolphins are commonly sighted in areas far south of the SPCT area including the mouths of the Potomac and Rappahannock Rivers (Bay Journal 2021). The most robust sighting data near the mouth of the Patapsco River is based on citizen science, where reports are logged via the Dolphin Watch app supported by University of Maryland, Center for Environmental Science. Data are available from 2017 through 2022, where sightings have been increasing due to more dolphins within the region and/or increased awareness of the public to log the sightings. Most dolphin sightings are recorded in June and July; the greatest record is 500 sightings in July 2022. There are 1 to 2 sightings per summer month in the Patuxent River; however, this is likely an underestimate as data are dependent upon citizen reporting. Sightings are less frequent farther north in the Patapsco River and Baltimore Harbor areas and typically occur when these waters have higher than normal salinity. Recent observations near the project area include a single dolphin using waters in the Inner Harbor (north of SPCT; ABC Baltimore 2023) and at the mouth of the Patapsco River (approximately 5 miles south of SPCT; The Washington Post 2018).

Environmental Consequences

A biological assessment (BA) was prepared and submitted to NMFS as part of the Draft EIS and permitting processes. The BA is included in Appendix G. This section describes the potential impacts on special states species (both federally and state listed) from implementation of the alternatives. The two sturgeon species are quite similar with respect to habitat requirements and life history information. Therefore, this impacts analysis is integrated to cover both sturgeon species.

No-action Alternative

Under the no-action alternative, sturgeon would be subject to existing conditions in and around the SPCT project area. Existing impacts include noise from shoreline industrial activities (that may produce sound underwater), as permitted by the appropriate regulatory agencies, and impacts from maintenance dredging of the Sparrows Point Channel (e.g., potential take within a mechanical dredge bucket, deposition of suspended sediment from dredging on potential spawning and foraging areas, loss of benthic feeding area) (NMFS 2010). There are also existing impacts on species from the contaminated sediments offshore of Coke Point; under the no-action alternative, these sediments and habitat would remain available to sturgeon in a contaminated state, which could contribute to the uptake of contaminants into the food chain. Implementation of the No-action Alternative would not involve in-water work and therefore would have no additional impact on sturgeon or the state species in Need of Conservation beyond those found under existing conditions. The High Head Industrial Basin does not support special status species; therefore, the No-action Alternative would have no impact if the basin were to be filled in and the area repurposed.

Combined Options Alternative – Terminal Development and Channel Improvements

Underwater Noise from Pile Driving

Fish

Underwater noise impacts from anthropogenic sources (e.g., construction activities) have the potential to impact fish, including sturgeon species and state species in Need of Conservation, that rely on hearing underwater to forage, communicate, detect predators, and navigate (NMFS 2022a). Noise impacts on special status species from construction activities would be the same as the noise impacts described for fish species (both managed and non-managed) and are described in the Fish Section.

Bottlenose Dolphins

The NMFS Multi-Species Tool for modeling underwater noise impacts was used to estimate the impacts of construction activities on bottlenose dolphins that could be in the project area. Assuming an 11 dB reduction in sound mitigation provided by use of the wood cushion block for impact pile driving the anticipated zones of impact for injury and behavior disturbance are found in Table 13.

The maximum distance to onset of behavioral disturbance for marine mammals from an impact hammer (with a cushion block for sound attenuation reduction) is 7,068 feet (1.3 miles) from the installation of 30-inch wharf piles. The maximum distance to onset of physical injury from impact driving occurs at 0.3 feet from both installation of a 36-inch wharf piling and concurrent wharf and mooring dolphin piling installation.

Distances of behavioral effects from vibratory pile driving are largest from both installation of a 36-inch wharf piling and concurrent wharf and mooring dolphin piling installation (152,283 feet or 28 miles) and for physical injury from vibratory driving, distances are largest during water-based demolition activities (270 feet).

Table 13. Maximum Distances to Mid-Frequency Cetacean Sound Thresholds from Impulsive Sources

Activity (with wood cushion block for impact hammers)	Pile Count and Size/Type	Distance to Onset of Behavioral Disturbance for All Marine Mammals (feet)		Distance to Onset of Physical Injury for Mid-Frequency Cetacean (feet)		
		Impact Hammer 160 dB RMS	Vibratory Hammer 120 dB RMS	Impact Hammer 230 dB SPL_{peak}	Impact Hammer 185 dB PTS SEL_{cum}	Vibratory Hammer 198 dB PTS SEL_{cum}
Wharf piling	150, 24-inch steel pipe piles	2,414	5,200	0.2	24	3
Wharf piling	600, 30-inch steel pipe piles	7,068	96,084	2	126	56
Wharf piling	600, 36-inch steel pipe piles	2,070	152,283	0.3	66	117
Mooring dolphin piling	60, 24-inch steel pipe piles	1,120	5,200	0.2	15	2
Concurrent wharf and mooring dolphin piling	120, 36-inch steel pipe piles[1] 60, 24-inch steel pipe piles	2,414	152,283	0.3	80	142
Water-based demolition	Varied	NA	328,084	NA	NA	270

Notes:

1 – For concurrent wharf and mooring dolphin piling installation, it is unknown which size piles will be installed at that time and the maximum size for wharf pile installation was assumed. The average daily pile installation rate for the wharf piling activity (6 piles per day) was assumed to estimate the number of wharf piles that would be installed in this 20-day time period and the average daily pile installation rate for mooring dolphin activity is 3 piles per day, therefore, a total of 9 piles per day.

dB = decibel; RMS = root mean square; SEL_{cum} = cumulative sound exposure level over the duration of a noise event; SPL_{peak} = maximum instantaneous sound pressure over the duration of a noise event; NA = not applicable

Turbidity and Bottom Alteration from Channel Dredging

The impacts associated with dredging to widen and deepen the existing Sparrows Point Channel are described in detail in the Fish Section. Turbidity would also be generated during some construction activities, such as pile driving, but this would be expected to be less than would be generated during dredging activities.

Studies of the effects of turbid water on fish suggest that concentrations of suspended solids can reach thousands of mg/L before an acute toxic reaction is expected (Burton 1993). Minor temporary increases in turbidity and TSS levels from dredging with a clamshell bucket would be minimized to the extent possible. When considered in addition to baseline conditions, the increases in TSS levels would not have a measurable or detectable increase in turbidity or TSS levels. Studies have shown that sturgeon may alter their normal movements due to suspended sediments, but juvenile and adult sturgeon are anticipated to swim through sediment plumes to avoid the area (NMFS 2023d). In addition, turbidity may temporarily impact the availability of prey species (including those that are listed in Need of Conservation), but it is anticipated that areas of high turbidity would quickly recolonize following sediment settlement (NMFS 2023d).

Effects of dredging on sturgeon are expected to be short-term and temporary. The sediment plume from the dredging operations would be only a portion (approximately 2,400 feet or 0.5 mile or 17.1%) of the total width of the river at the project location (approximately 14,000 feet or 2.6 miles), providing ample habitat for sturgeon to escape adverse conditions during dredging activities. Sturgeon would be expected to swim through the sediment plumes or avoid the area during dredging operations.

Vessel Traffic

Vessel traffic would increase slightly during construction of the terminal and dredging of the channel causing a minor increase in the risk of striking special status species. Operation of the proposed terminal would result in an overall increase in vessel traffic in the region by approximately 20% (see the Fish Section). Although the increase in vessel traffic would be relatively small in an area that is already highly trafficked, due to their size, sturgeon (particularly Atlantic sturgeon, which are often larger than shortnose) are frequently impacted by vessel strikes especially in large ports and could be more vulnerable to vessel impacts (NMFS 2010). For sea turtles, impacts from vessel traffic would be limited to transit routes for barges and other vessels traveling to the project area from the lower Chesapeake Bay.

Combined Options Alternative – Dredged Material Placement

High Head Industrial Basin DMCF

No impacts would occur; no special status species are present within the High Head Industrial Basin.

Coal Pier Channel DMCF at Sparrows Point

Turbidity from Material Placement

Placement of material to build the sand dike for the Coal Pier Channel DMCF could cause temporary turbidity in surrounding waters. Impacts from turbidity would occur from placement of the sand to create the dike and resuspension of the soft sediments of the channel during sand placement (see the Fish Section). Sturgeon species may exhibit behavioral and physiological effects when exposed to increased

turbidity levels of 1,000 mg/L above ambient conditions for more than two weeks (NMFS 2023d). However, the mobile life stages of Atlantic sturgeon (juvenile, subadult, and adult) and shortnose sturgeon (adult) potentially present in the area would be able to move away from the construction area to avoid these impacts from turbidity and decreased dissolved oxygen. It is unlikely that impacts on Atlantic and shortnose sturgeon would rise above minor and short term from the minor changes to the water column. Any turbidity resulting from pumping the dredged material into the DMCF would be contained within the dike and would not impact the surrounding habitat for special status species.

Two fish species in need of conservation (striped bass and Atlantic menhaden) comprised a large portion of the summer fish community. Striped bass comprised 70% of the population in summer 2023 and would potentially be impacted by material placement within the DMCF footprint dependent upon timing of the placement. Atlantic menhaden were found in much smaller numbers, but as they have been documented using the project area, they could be affected by the construction of the sand dike.

Habitat Alteration/Impacts on Prey Species

Placement of material in the Coal Pier Channel DMCF would cause a complete loss of the substrate and sheltered habitat type within the channel. Once the material placement is complete, the DMCF would be at an elevation that is considered upland habitat. Benthic organisms within the footprint would be lost, removing the communities as a possible food source for Atlantic and shortnose sturgeon, as well as the state-listed fish species with Need of Conservation status. However, as previously stated, sediments in the Coal Pier Channel are degraded from historical contamination and the benthic communities are also degraded. Atlantic sturgeon typically forage on benthic invertebrates and small bottom-dwelling fishes and could be marginally impacted by the loss of this bottom area. The areas immediately surrounding the DMCF and elsewhere in the Patapsco River would provide forage area for Atlantic and shortnose sturgeon and state-listed fish species to use both during construction and after the project is complete.

Vessel Traffic

Vessel traffic would increase slightly during construction of the perimeter dike, as barges would be transiting from the Sparrows Point Chaneel to the DMCF to deliver sand. Atlantic and shortnose sturgeon and state-listed fish species would be expected to have ample space within the surrounding river area to avoid vessels and use other adjacent habitats. The increase in vessel traffic would not have a meaningful impact on federally or state-listed species. The baseline risk of a vessel strike with special status fish species in the vicinity of the SPCT project area is unknown; however, given that the addition of vessels would be limited to the direct project area and considering the heavy vessel traffic that already exists in the area, this alternative would not likely increase the risk of vessel strikes to Atlantic and shortnose sturgeon or state-listed fish species.

Existing Nearshore MPA DMCFs

No new impacts would occur because the MPA DMCFs are existing upland placement sites.

Existing Ocean Disposal Site

Any impacts on special status species would be limited to potential for strikes from barge transit from the SPCT project area to the NODS. The type of vessel traffic impact is expected to be similar to those already present in this highly trafficked route.

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Attachment D

Best Management Practices and Environmental Controls

Best Management Practices During Construction

Best management practices (BMPs) and environmental controls during construction activities are often used for certain environmental resources in the SPCT project area (Table 1 through Table 4). BMPs and environmental controls for construction-related noise would benefit both the in-water and upland environments. BMPs and environmental controls implemented during certain in-water construction activities and locations would be protective of aquatic resources and would reduce turbidity, reduce the potential for sedimentation impacts on water column and bottom communities, and reduce the potential for release of contaminants to surface waters in and around the SPCT project area.

Table 1. Benefits of Potential Construction BMPs and Environmental Controls for Pile Installation

Construction Activity	Resource Area Protection			
	Fish/ Aquatic Life	Terrestrial Wildlife/ Birds	Surface Water Quality	Upland/ Community Resources
Complete in-water pile driving in adherence with time-of-year restrictions (if required by regulatory agencies) to avoid impacts on sensitive life stages of fish and other aquatic resources.	✓			
Use a "soft start" method for impact hammer. Begin hammering at a reduced energy, which serves as a warning for mobile aquatic/marine life to move away from the project area. This method would also be conducted following re-start after a period where pile driving has not occurred for more than 30 minutes.	✓			
Use a cushion block during impact driving of piles to reduce the intensity and distance for underwater noise propagation.	✓	✓		✓
Use bubble curtains if required during certain times of year during impact driving of piles to reduce the intensity and distance for underwater noise propagation.	✓	✓		✓
Use a vibratory hammer (if/where feasible) followed by use of an impact hammer for individual piles to reduce the duration of the underwater noise created by impact hammer.	✓	✓		✓
Limit the daily window for pile driving activities to 10 to 12 hours or less of daytime operations.	✓	✓		✓

Table 2. Benefits of Potential Construction BMPs and Environmental Controls for General In-Water Construction and Demolition Activities

Construction Activity	Resource Area Protection			
	Fish/ Aquatic Life	Terrestrial Wildlife/ Birds	Surface Water Quality	Upland/ Community Resources
Operate construction vessels in adequate water depths to avoid propeller scour and grounding at all tides. Use shallow draft vessels that maximize the navigational clearance between the vessel and the bottom in shallow areas.	✓		✓	
Orient or shield site lighting to avoid illumination of the surrounding waters at night.		✓		✓
Include a sufficient zone of passage that allows listed and managed species to safely traverse around noise and/or turbidity.	✓			
Remove piles with a vibratory hammer where feasible and vibrate the pile to break the bond between the sediment and pile to minimize the pile breakage and reduce sediment sloughing during removal.	✓		✓	
Cut the existing pile(s) at the mudline (where possible) to avoid sediment resuspension during extraction.	✓		✓	
To the extent that the work generates a sheen, complete in-water work within oil-absorbent booms to contain any surface sheens generated.	✓		✓	
Surround the area of demolition, pile removal, and (as applicable) other bottom disturbing construction activities (e.g., pre-drilling slag for wharf pile installation, material placement for DMCF dike construction) with a full-height, weighted turbidity curtain in areas where sediment contaminants may be present at concentrations of concern and may have the potential to move away from to prevent displaced sediments from leaving the immediate vicinity of the work area, as determined by permit conditions.	✓		✓	
Prohibit direct discharge of any water or effluent that has been used for wash purposes or other similar operations avoiding discharge of associated sand, silt, cement, oil, drilling fluid, and other substances into the river.	✓		✓	
Dispose of construction waste and demolition materials in an approved upland facility. Recycle materials to the extent practicable.	✓	✓	✓	✓

Table 3. Benefits of Potential Construction BMPs and Environmental Controls for Dredging and Dredged Material Transport, Handling, and Placement

Construction Activity	Resource Area Protection			
	Fish/ Aquatic Life	Terrestrial Wildlife/ Birds	Surface Water Quality	Upland/ Community Resources
Dredge using mechanical methods that reduce localized turbidity and potential fish entrainment when compared to hydraulic methods.	✓		✓	
Adhere to time-of-year restrictions for dredging operations (if/as determined by regulatory agencies) to avoid impacts on sensitive life stages of fish and other aquatic resources.	✓		✓	
Use an environmental-type bucket where feasible and where necessary based on sediment chemical data to minimize sediment release from the bucket while ascending through the water column.	✓		✓	
Implement operational controls during dredging, which may include: 1. Perform dredging such that the dredge bucket is not overfilled on each deployment, reducing release of sediment. 2. Control the ascent of the bucket in the water column to minimize incidental release while moving through the water column. 3. Control the descent of the bucket to minimize hard contact with the bottom and resuspension of sediment upon bucket contact. 4. Prohibit dragging of the dredge bucket along the sediment surface.	✓		✓	
Place dredged material in a barge or scow in a manner that maintains sufficient freeboard to eliminate the potential for material leaving/spilling from the barge during transport to the material offloading or placement area.	✓		✓	
Deploy a full-length weighted turbidity curtain with an oil-absorbent boom and enclose the dredging operation in areas where sediment contaminants may be present at concentrations of concern and may have potential to move away from immediate dredge area during dredging.	✓		✓	
Use watertight barges or sealed split-hulled scows for sediment transport to offloading or placement locations.	✓		✓	

Construction Activity	Resource Area Protection			
	Fish/ Aquatic Life	Terrestrial Wildlife/ Birds	Surface Water Quality	Upland/ Community Resources
Use surface water to slurry dredged material when needed for offloading/pumping to upland DMCFs in compliance with Water Appropriation Use Permit. Recycle slurry water to the maximum extent practicable.	✓		✓	
Treat (if required) and discharge dredged material effluent to surface waters in compliance with National Pollution Discharge Elimination System (NPDES) permit requirements.	✓		✓	
Following completion of dredging for the wharf revetment, stabilize slopes with graded riprap (heavy stone) to reduce the potential for slope erosion and subsequent sediment release into the water column.	✓		✓	
Provide landward slopes of the dredged areas with a protective layer (e.g., riprap) to prevent sloughing.	✓	✓	✓	

Table 4. Benefits of Potential Construction BMPs and Environmental Controls for Upland Construction Activities

Construction Activity	Resource Area Protection			
	Fish/ Aquatic Life	Terrestrial Wildlife/ Birds	Surface Water Quality	Upland/ Community Resources
Site project components in upland areas already under industrial use to avoid impact to forested areas.		✓		✓
Implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan.	✓	✓	✓	✓
Implement erosion and sediment controls under the Maryland NPDES Program and project permit.	✓	✓	✓	✓
Manage stormwater in accordance with project permits under the MDE General Discharge Permit.	✓	✓	✓	✓
Locate new storm drain outfalls to avoid direct discharge into sensitive habitats.	✓		✓	

Attachment E

Mitigation Plan (Conceptual)

DRAFT PHASE I TIDAL MITIGATION PLAN

Introduction / Mitigation Site Description and Objectives

Description of the Impact Project

- Location: 6995 Bethlehem Boulevard, Baltimore, Maryland, 21219; latitude: 39.211222/longitude: -76.490349
- Resource type impacted – tidal waters
- Amount impacted (square feet/acreage) – tidal waters: 19.8 acres

Proposed Mitigation Sites

The proposed mitigation for the impacts described above includes a combination of on-site in-kind, on-site out-of-kind, and off-site out-of-kind mitigation with one off-site project located within the same 8-digit watershed (02130903) and the other located within the adjacent 8-digit watershed (02139997). The on-site mitigation projects are located along the shoreline of Bear Creek adjacent to Bethlehem Boulevard, within the Patapsco River at the point on the east side of the southeast peninsula, along Old Road Bay at the Craighill Lighthouse Peninsula, along Jones Creek at the Pleasant and North Point Yacht Clubs, and within the embayment of the Sparrows Point site at the High Pier Wharf. The off-site mitigation projects are tentatively located within waters of the Middle Chesapeake Bay watershed near the mouth of the Patapsco River or near Hart-Miller Island, and at a location yet to be determined. Maps of the proposed locations are included in Figure C-1, Figure C-2, and Figure C-3. Table C-1 identifies the minimum square feet / acreage of the proposed mitigation to be provided at each site.

The proposed mitigation package includes a combination of restoration, creation, and enhancement of tidal open water, tidal wetlands, and shallow water habitat areas. It may also include remediation of historically distressed areas located on-site, as necessary. Further study is needed to determine the need and level of remedial activities and type of remediation actions best suited to address these areas.

Based on agency input, Tradepoint TiL Terminal, LLC (TTT or applicant), a joint venture between Tradepoint Atlantic (TPA) and Terminal Investments Limited (TiL), understands that tidal open water restoration, including oyster reef creation off-site and creation of tidal open water and wetlands in upland areas on-site would receive a mitigation credit ratio of 1:1, while other tidal wetland and shallow water habitat restoration and creation activities would receive a mitigation credit ratio of 2:1. Tidal wetland enhancement is anticipated to receive a mitigation credit ratio of 4:1. Removal of derelict crab traps has a mitigation credit ratio that has been defined by the Maryland Department of the Environment (MDE) for another similar project based on a comparison of crab trap value to mitigation in lieu fee charges per acre. A detailed description of the anticipated functions of each of the mitigation projects proposed to address watershed needs is included in the Proposed Mitigation Workplans below.

Figure C-1. Proposed Limits and Type of Mitigation at Bethlehem Boulevard, and High Pier Wharf

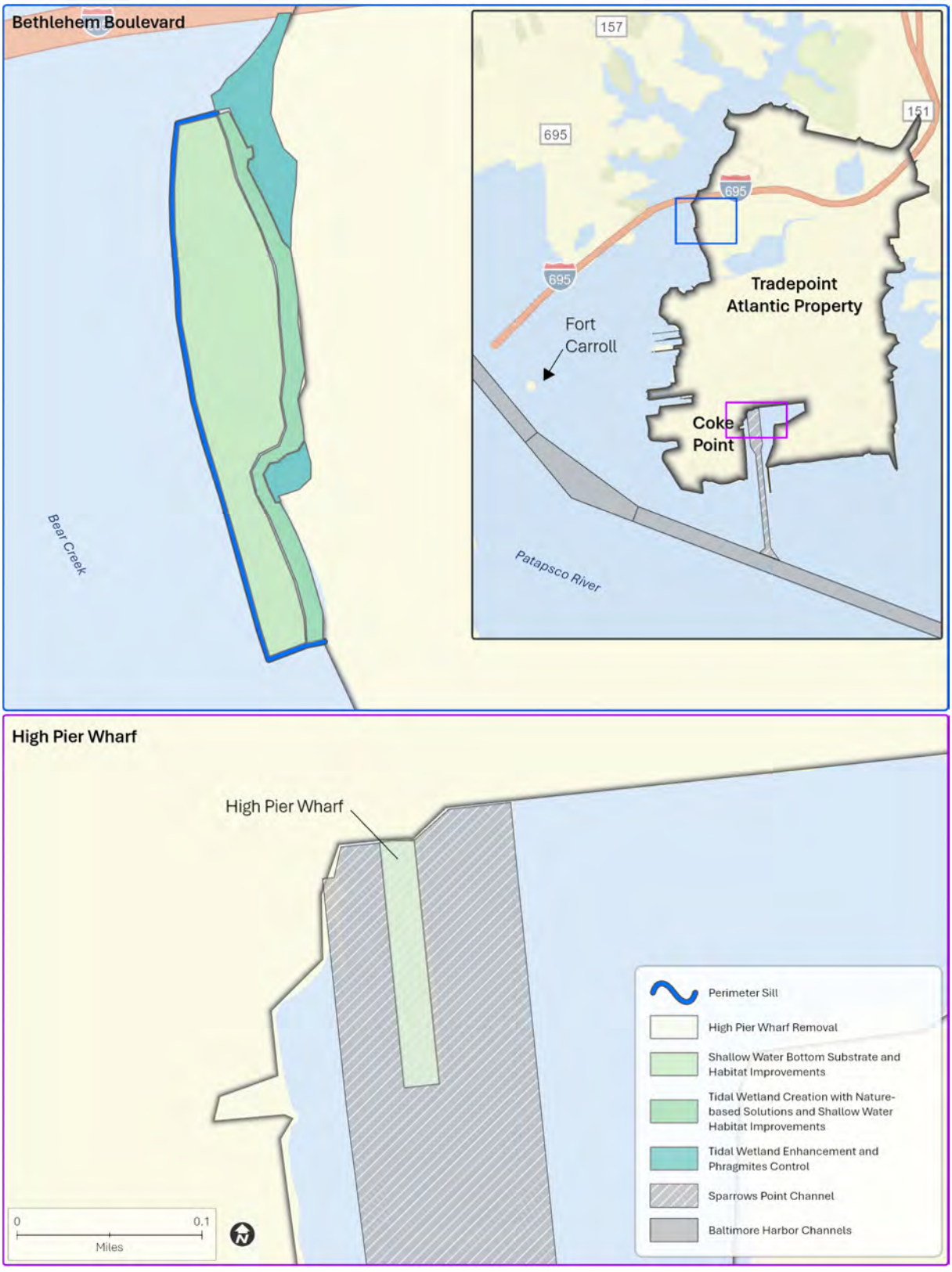

Figure C-2. Proposed Limits and Type of Mitigation at North Point and Pleasant Yacht Clubs, Craighill Lighthouse Peninsula, and the Southeast Peninsula

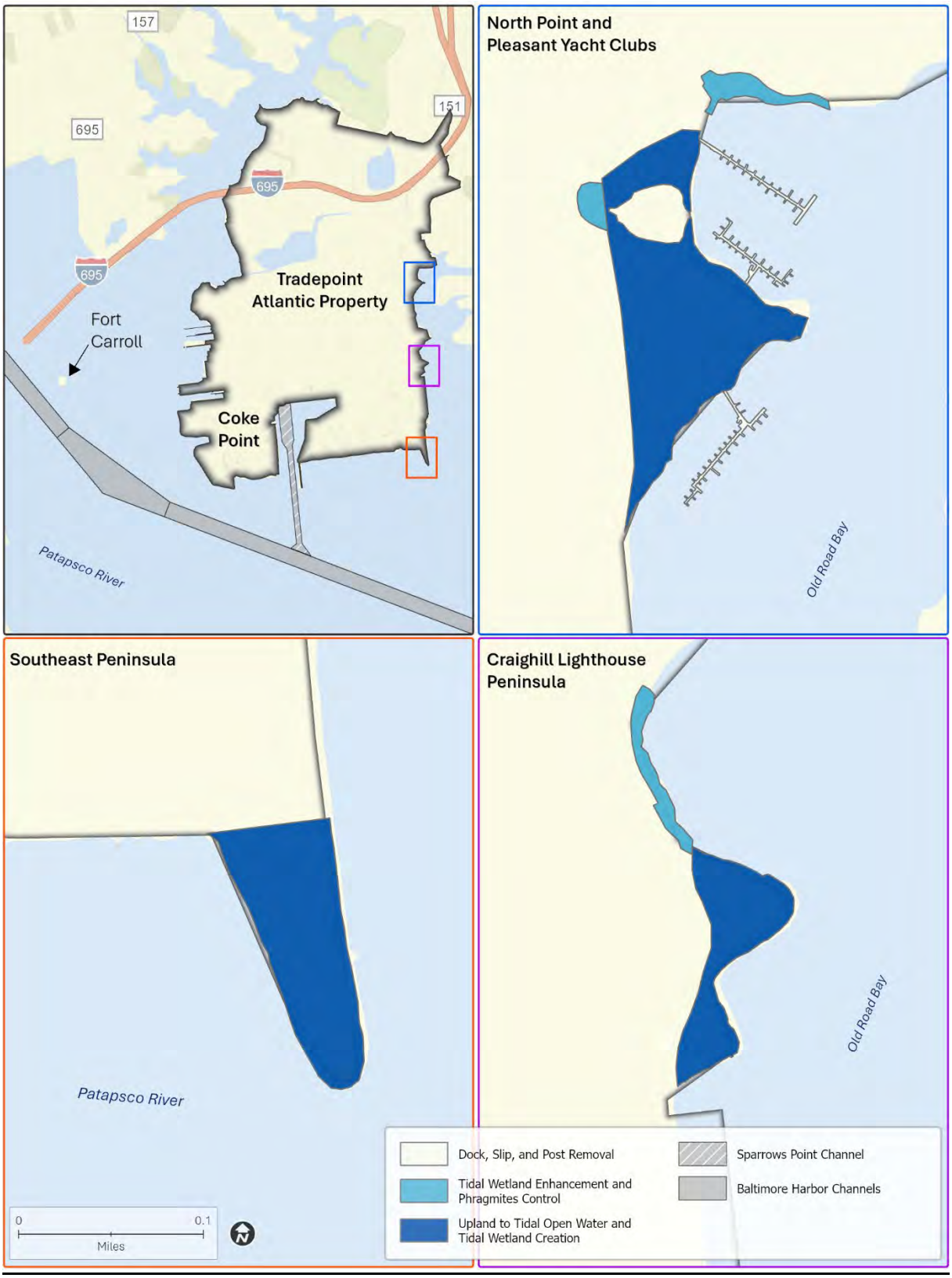

Figure C-3. Recreational Fishing Grounds in the Middle Chesapeake Bay and Potential Locations for Removal of Derelict Crab Traps

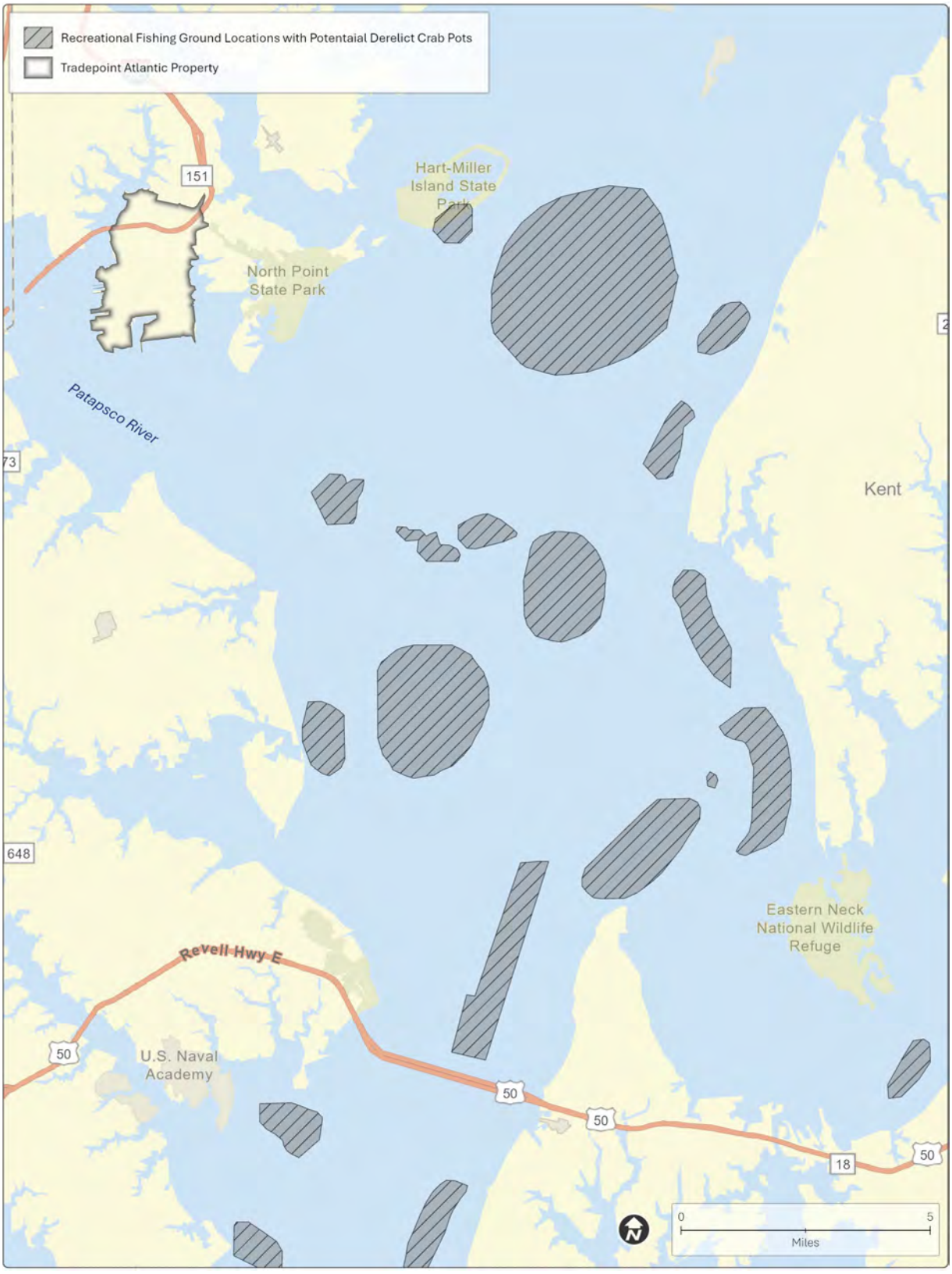

Table C-1. On-Site and Off-Site Mitigation Concepts for Recommended Sites

Mitigation Type	Mitigation Measure	Proposed Mitigation Ratio	Credit (acres)	Yacht Basins, Craighill Lighthouse Peninsula and Southeast Peninsula	High Pier Wharf	Bethlehem Boulevard
Open water restoration action [1]	Uplands conversion to tidal open water and tidal wetlands / multi-habitat restoration and creation	1:1		11.6 acres		
	Tidal open water restoration with wharf / dock and pier removal and shallow to deepwater habitat improvements	1:1		0.34 acres / 2,660 linear feet	1.62 acres	
Multi-habitat restoration and creation action [2]	Perimeter sill (natural stone sill, reef castles / balls)	2:1				0.21 acres / 1,850 linear feet (0.105 acres credit)
	Shallow water bottom substrate and habitat improvements	2:1				6.5 acres (3.25 acres credit)
	Tidal wetland creation with Nature-based Solutions and shallow water habitat improvements	2:1				1.75 acres (0.875 acres credit)
Enhancement and terrestrial action [2]	Tidal wetland enhancement / *Phragmites* control	4:1		1.05 acres (0.26 acres credit)		1.8 acres (0.45 acres credit)
Derelict crab trap removal [3]	Derelict crab trap removal in middle Chesapeake Bay		1.3			
Oyster reef creation / replenishment [3]	Oyster reef restoration / seeding at location to be determined		TBD			
Totals credits [4]	**Total credits provided = 19.8 acres**		**1.3 acres**	**12.2 acres**	**1.62 acres**	**4.68 acres**

Notes:

1 - On-Site, In-Kind Mitigation Efforts

2 - On-Site, Out-of-Kind Mitigation Efforts

3 - Off-Site, Out-of-Kind Mitigation Efforts – Acreage may be adjusted if additional mitigation acreage needed

4 – Based on mitigation ratios

Intended Outcome of the Mitigation Project

To achieve the goals of the proposed mitigation package, TTT is seeking regulatory agency concurrence for the recommended sites and projects described below. Once initial concurrence is granted, additional detailed studies for some of the project sites would be scheduled to gather additional data and information required to finalize a revised Phase I Tidal Mitigation Plan and ultimately the Phase II Tidal Mitigation Plan. The mitigation projects proposed are anticipated to replace the acreage to be impacted and improve the overall quality and functionality of the existing habitats surrounding the TPA site and nearby off-site areas.

Site Selection

Shoreline areas along TPA property were analyzed to assess the existing shoreline conditions and determine areas where there may be potential for on-site mitigation opportunities to mitigate for proposed tidal open-water wetland impacts associated with the development of the Sparrows Point Container Terminal (SPCT) by TTT. Areas investigated included nine separate shorelines areas, including four areas along Bear Creek on the north and west sides of the property, two areas along the Patapsco River on the south side of the property, and four areas along Jones Creek and Old Road Bay on the east side of the property. The shoreline limits for each area were defined by distinct landmarks and/or similar site conditions.

Desktop analysis of the on-site shoreline conditions included a review of the Maryland Department of Natural Resources (MDNR) *MERLIN – Maryland's Environmental Resource & Land Information Network* (MDNR 2024a) and *Maryland Coastal Atlas* (MDNR 2024b) interactive geographic information system (GIS) websites, and current and historic aerial imagery available on Google Earth. Measurements of each shoreline area or feature were taken using one or more of these sources. The primary GIS resource layers that were reviewed included historical shorelines and shoreline rates of change, shoreline inventory of key features (e.g., bank cover, shoreline bank height and condition, marsh and beach buffers, stabilization structures, and invasive common reed (*Phragmites australis*)), recent and historic submerged aquatic vegetation (SAV), sea level rise vulnerability, coastal resiliency assessment, living resources, and finfish habitat.

Site visits to document conditions at each of the areas were conducted on June 12, 14 and 15, 2024. Photographs of each area and some of the key features identified were taken at each site. In addition, several local successful shoreline stabilization projects that implemented a combination of nature-based solutions (NbS) and human-made solutions were visited as potential reference sites to help guide the development of potential mitigation options.

Recommended mitigation opportunities and preliminary concepts have been developed for five sites based on the initial findings from the desktop and site investigations. Although there may be multiple approaches that could be taken to create out-of-kind mitigation options for each area, the preliminary concepts described below present a

Nature-based solutions (**NbS**) are actions that protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges, such as climate change, disaster risk, and food and water security, while simultaneously providing benefits for biodiversity and human well-being. NbS emphasize working with nature rather than against it, offering a holistic approach to environmental management that enhances ecosystem health and resilience. Examples of NbS include restoring wetlands, reforestation, and green infrastructure in urban areas.

range of approaches for the creation of multiple habitat types to mitigate for potential impacts on tidal open water associated with the development of a dredged material containment facility (DMCF) within the Coal Pier Channel at the proposed SPCT site.

The proposed mitigation package also includes two projects located offsite within nearby waters within the Middle Chesapeake Bay near Hart-Miller Island and/or the mouth of the Patapsco River, and at a location yet to be determined that were added to supplement the on-site mitigation. The proposed off-site and out-of-kind mitigation includes partnering, coordinating, and implementing projects that involve the removal of derelict crab traps to improve bottom habitats within portions of the Bay where the traps are prevalent, and the creation of a new oyster reef or replenishment of an existing oyster reef and. Each of the descriptions provided below presents information on the site location, site visit and desktop analysis findings, and provides a description of the mitigation opportunities and preliminary concepts. Representative site photographs of each site and of some examples of the proposed mitigation concept are included in the description.

Site Protection Instrument

The proposed on-site mitigation area at Bethlehem Boulevard is situated adjacent to the TPA property below mean high water (MHW) at the mouth of Bear Creek, which is Waters of the State of Maryland. Following excavation of the three TPA-owned upland areas at the Yacht Clubs, Craighill Peninsula, and the Southeast Peninsula to elevations below MHW in Jones Creek, Old Road Bay, and the Patapsco River, respectively, each of those on-site mitigation areas would also be in Waters of the State of Maryland. Under Maryland State Environment Article Title 16 and Code of Maryland Regulations (COMAR) 26.24, MDE is authorized to regulate activities related to filling, construction, and dredging within tidal Waters of the State; therefore, an easement or other site protection instrument is likely not required. In addition, federal, state, and local agencies, and special interest groups including non-profits and academic institutions would work together to protect these tidal waters.

If the regulatory agencies require TTT to develop an alternative form of site protection mechanism, such as a Conservation Land Use Agreement in coordination with revisions to the property Master Plan, Management Plans, etc., TTT would seek guidance on the form of the site protection mechanism and incorporate it into a revised Phase I Tidal Mitigation Plan. The agreement would include language identifying the sites that are being used for mitigation and a statement that the sites would be conserved and maintained to benefit the aquatic resources established as part of the mitigation project and specified in the Phase II Tidal Mitigation Plan. The site protection mechanism would also ensure that the regulatory agencies have access to the site for compliance and enforcement of the site protection instrument, that all incompatible uses are prohibited, and that the site protection instrument includes a clause requiring 60-day notification to the Corps and MDE when there is a proposal to amend the site protection mechanism.

Baseline Information for On-Site Mitigation Sites

Bear Creek Shoreline along Bethlehem Boulevard

Site Location and Desktop Analysis

The Bear Creek shoreline along Bethlehem Boulevard west of 6001 Bethlehem Boulevard, extending from Interstate 695 (I-695) south approximately 1,900 linear feet is sparsely vegetated with trees and

shrubs including numerous invasive species, such as tree-of-heaven (*Ailanthus altissima*) and bush honeysuckles (*Lonicera* spp.). According to MERLIN (MDNR 2024a), the historic shoreline surveyed in 1975 extended up to 100 feet west of the existing shoreline from an arm of land covered in *Phragmites* that juts out into Bear Creek north to the powerline crossing. A recent aerial photograph provided by TPA of this area shows shallow areas where the shoreline has eroded, and numerous tires are visible below the water surface. Elsewhere within the area, both the 1975 and 1994 shorelines appear to be similar to the current shoreline.

The Maryland Coastal Atlas (MDNR 2024b) indicates that 100% of the shoreline has total bank cover with a bank height and condition of 0 to 5 feet with low erosion. According to the Atlas, there are no mapped marshes or beach buffers along the shoreline, although site visits revealed otherwise. Much of the shoreline is stabilized with riprap, and although *Phragmites* is not mapped for this area, large stands of *Phragmites* are evident on recent aerial photographs for approximately 45 to 50% of the shoreline. Shoreline erosion levels mapped over the last 10 years depict approximately 940 linear feet of slight erosion in three locations and 460 linear feet of accretion in two areas along the shoreline. Based on sea level rise vulnerability of up to 5 feet of inundation, none of the infrastructure in this area appears to be at risk. There are no current or historic SAV beds mapped within this portion of Bear Creek. Finfish habitat in this portion of Bear Creek includes white perch (*Morone americana*) spawning habitat, herring juvenile habitat, and tidal finfish adult habitat. Wave hazards in the northern portion of the area are rated as moderate and in the southern portion are rated as low.

Google Earth historic aerial imagery from April 7, 1994, appears to indicate that the shoreline was sandy at one time. Newer aerials (2002, 2008, 2014, 2018, 2019, and 2022) that were likely taken during low tide conditions appear to indicate that there are sandy shoals and sand movement immediately offshore in the northern portion of the area (Google Earth 2024).

Site Visit Findings

The shoreline along Bethlehem Boulevard is dominated by a thick stand of *Phragmites* in the northern area near Riverside Drive and an overhead utility crossing. The shoreline narrows to the south for 1,000 feet encroaching to within 50 feet of Bethlehem Boulevard. Trees and shrubs within the narrow roadway slope and buffer are dominated by staghorn sumac (*Rhus typhina*) and invasive tree-of-heaven.

The buffer expands to 250 to 300 feet wide at the south end of the area. Trees within the buffer are generally species that grow in poor soil, including sumac, tree-of-heaven, mulberry (*Morus* spp.), and black locust (*Robinia pseudoacacia*). The shoreline is dominated by *Phragmites*. Much of the shoreline in this area is rocky rather than sandy at the base of the slope, with a mix of cobble to gravel size rocks and a considerable amount of rubble and construction debris (most of which is slag). Tires can be seen in shallow waters off the narrow area in a recent aerial photograph shown below.

Jones Creek Shoreline at Pleasant and North Point Yacht Clubs

Site Location and Desktop Analysis

The Pleasant and North Point Yacht Clubs are located along Wharf Road on the eastern shoreline of the TPA site along Jones Creek, south of Sparrows Point Boulevard (MD 151) with Pleasant Yacht Club to the immediate north of the North Point Yacht Club. TPA plans to keep a functioning boat ramp and parking area for the community to be able to use and put boats into Jones Creek for pleasure boating.

The shoreline along Jones Creek at the Pleasant Yacht Club to the north and the North Point Yacht Club to the south measures approximately 1,700 linear feet. Much of the shoreline area is developed with infrastructure to support the boating activities at each yacht club, but there is also a tidal pond with a narrow buffer separating the two clubs, and several patches of forest buffer along the North Point Yacht Club peninsula. According to MERLIN (MDNR 2024a), the historic shorelines surveyed in 1975 and

1994 were relatively similar to the current conditions, with the exception of in 1994, the shoreline mapping included the entire tidal pond.

The Maryland Coastal Atlas (MDNR 2024b) indicates that 100% of the shoreline has total bank cover with a bank height and condition of 0 to 5 feet with low erosion. There are no marsh or beach buffers mapped in the area, although site visits revealed otherwise, and the shoreline has been in the same relative location since 1930. Stabilization structures along most of the shoreline are designated as marina with less than 50 slips, and there is no *Phragmites* areas mapped along the shoreline, although recent aerials indicate a signature similar to other mapped *Phragmites* stands in several locations. Shoreline erosion levels mapped over the last 10 years indicate no erosion areas and approximately 220 linear feet of accretion along the south shoreline of the North Point Yacht Club. Based on sea level rise vulnerability of up to 5 feet of inundation, a significant portion of the Pleasant Yacht Club is as risk of being flooded and areas near the boat ramp at the North Point Yacht Club are at risk of being flooded, while Wharf Road does not appear to be at risk.

The entire shoreline along the Pleasant Yacht Club, within the tidal pond, and along the north side of the North Point Yacht Club are mapped as having SAV in 2022. The Pleasant Yacht Club shoreline and tidal pond also exhibited SAV beds in 2019, 2020, and 2021, while SAV beds in 2019 were along the south shore of the North Point Yacht Club. In 2021, SAV beds were found along both the north and south shorelines at the North Point Yacht Club between the shore and the docks. Offshore areas within this portion of Jones Creek are mapped as waterfowl concentration and staging areas. Finfish habitat in this portion of Jones Creek includes white perch juvenile habitat, herring juvenile habitat, and tidal finfish adult habitat. Wave hazards along the yacht clubs are rated as low.

Google Earth historic aerial imagery shows a narrow approximately 80-foot-long beach near the southern dock at the North Point Yacht Club, but the aerials do not appear to indicate any significant sand movement or beach formation anywhere else along the shoreline in this area (Google Earth 2024).

Site Visit Findings

The Pleasant Yacht Club includes a main boat dock with slips and a smaller dock and boat ramp for placing boats into the water. The shoreline to the north is covered in *Phragmites* but a narrow fringe of native marsh grasses is found along the toe of the riprap reinforced bank between the docks. South of the main dock the shoreline is grass leading to rock reinforcement with some salt tolerant shrub species that appear to be cut back. There is a tidal pond within the cove separating the two yacht clubs that is surrounded by *Phragmites* and groundsel tree (*Baccharis halimifolia*). Upland areas consist of a gravel parking lot and driveway, gardens, picnic areas, boat laydown areas, maintained lawn, and the Pleasant Yacht Club building and appurtenant structures.

North Point Yacht Club includes two large boat docks with slips and a series of three smaller docks and a boat ramp for putting boats into the water. The shoreline near the northern boat dock with slips is dominated by *Phragmites*. The shoreline near the boat ramp is primarily a mix of concrete and rubble with minimal vegetation, but then leads to another patch of *Phragmites* along the shoreline close to the southern boat dock and slips.

Old Road Bay Shoreline at Craighill Lighthouse Peninsula

Site Location and Desktop Analysis

The Craighill Lighthouse Peninsula is located just south of the security gate along Wharf Road on the eastern shoreline of the TPA property. The shoreline runs along Old Road Bay, beginning just north of the Pennwood Channel and continuing for approximately 1,650 linear feet to a cove north of the peninsula and just south of the mouth of Jones Creek. Vegetation along the shoreline ranges from sparse trees and shrubs along the peninsula to a more solid forested buffer on the peninsula to the immediate

north, where past forest mitigation plantings have been implemented. The buffer separating the shoulder of Wharf Road and the shoreline is relatively narrow and consists of a mix of trees, shrubs, and *Phragmites*.

The Maryland Coastal Atlas (MDNR 2024b) indicates that 100% of the shoreline has total bank cover with a bank height and condition of 0-5 feet with low erosion. There is no marsh buffer mapped but there is a 300-foot beach buffer on the southeast side of the peninsula to the north. There are no stabilization structures or *Phragmites* areas mapped along the shoreline, although recent aerials indicate a signature similar to other mapped *Phragmites* stands in several locations. Shoreline erosion levels mapped over the last 10 years depict accretion along much of the shoreline of the Craighill Lighthouse Peninsula south to the Pennwood Channel. Based on sea level rise vulnerability of up to 5 feet of inundation, none of the infrastructure currently in this area appears to be at risk. Approximately 825 feet of shoreline to the north and 300 feet within the bend of the peninsula are mapped as having SAV in 2022, 2019, and 2018.

Offshore areas within Old Road Bay are mapped as waterfowl concentration and staging areas. Finfish habitat in this portion of Old Road Bay includes white perch juvenile habitat, herring juvenile habitat, and tidal finfish adult habitat. Wave hazards along the shoreline of Old Road Bay are rated as moderate. Google Earth historic aerial imagery from April 7, 1994, appears to indicate that there were narrow sandy beaches in this area. Newer aerials (2002, 2008, 2014, 2018, 2019, and 2022) that were likely taken during low tide conditions appear to indicate that there is sand movement immediately offshore (Google Earth 2024). Historic aerials by Nationwide Environmental Title Research (NETR) Online (NETR 2024) indicate that the water's edge was closer to the Craighill Lighthouse in 1957, and the Lighthouse Peninsula was reshaped with fill material/slag added into Jones Creek on the north side and into Old Road Bay to form the lower lobe of the peninsula on the south side between 1957 and 1966, when the current configuration was completed.

Site Visit Findings

The cove north of the Craighill Lighthouse Peninsula is dominated by *Phragmites* and a poor-quality riparian buffer. The peninsula has several gravel roads and appears to be used frequently as a temporary staging and stockpile/laydown area. The shoreline is predominantly a mix of gravel, cobble, and boulders, as well as a considerable amount of slag that was used when building out the peninsula and some asphalt that has been dumped. Some of the shoreline is sparsely vegetated with a mix of salt-tolerant shrub species, such as groundsel tree, marsh elder (*Iva frutescens*), false indigo bush (*Amorpha fruticosa*), and wax myrtle (*Morella cerifera*). A 100-foot-long narrow gravel and sandy beach with scattered debris that has washed up from offshore is located in the bend between the two lobes of the peninsula, near the lighthouse. The lighthouse is in a state of disrepair but is still functioning. A mature diamondback terrapin (*Malaclemys terrapin*) was found in the slag/rubble on this peninsula during a site visit in June 2024.

Patapsco River Shoreline at Southeast Peninsula

Site Location and Desktop Analysis

The Patapsco River shoreline, beginning at the finger pier extending from the entrance of the embayment, continuing south of the Lafarge Cement Plant, and proceeding east to the finger that extends south of Pennwood Wharf (i.e., a small peninsula extending south from the southeastern shore of Sparrows Point), measures approximately 6,000 linear feet. Vegetation along the western half of this area is very sparse with small patches of trees and shrubs, and the eastern half of the area below the Lafarge Plant has an

approximate 150- to 200-foot forest and wetland buffer. According to MERLIN (MDNR 2024a), the historic shoreline surveyed in 1975 was from 75 to 300 feet landward of the current shoreline in the western half of the area, and from 120 to 220 feet further out into the river in the eastern portion of the area. The 1994 shoreline survey indicated that the shoreline was relatively similar to the current shoreline.

The Maryland Coastal Atlas (MDNR 2024b) indicates that 100% of the shoreline has total bank cover with a bank height and condition of 0 to 5 feet with low erosion. According to the Atlas, there are no marshes or beach buffers along the shoreline, which was built out into the Patapsco River to its current location between 1930 and 1990, although site visits revealed otherwise. Approximately 60% of the shoreline is stabilized with riprap and there are no mapped areas of *Phragmites*, although recent aerials indicate a signature similar to other mapped *Phragmites* stands throughout the wetland buffer in the eastern portion of the area. Shoreline erosion levels mapped over the last 10 years depict no areas of erosion or accretion along this shoreline. Based on sea level rise vulnerability of up to 5 feet of inundation, none of the infrastructure currently in this area or proposed for this area appears to be at risk but the wetland buffer floods. There are no current or historic SAV beds mapped within this portion of the Patapsco River. Offshore areas within the Patapsco River along the shoreline are mapped as waterfowl concentration and staging areas. Finfish habitat includes white perch juvenile habitat, herring juvenile habitat, and tidal finfish adult habitat. Wave hazards in the area are rated as moderate.

Google Earth historic aerial imagery does not appear to indicate any significant sand movement or beach formation anywhere along the shoreline (Google Earth 2024).

Site Visit Findings

The shoreline west of the Lafarge Cement Plant site was the only area readily accessible during the site investigation, and therefore site photographs of the peninsula that juts out into the Patapsco River from the Pennwood Wharf area were taken from a distance. Further investigation is needed into this area once site access is cleared. Directly south of the Lafarge Cement Plant, there is a forested buffer, wetlands, and stands of *Phragmites* that were viewed from a distance. Much of the shoreline throughout this area is made of land consisting of slag that historically had been pushed into the open waters to extend the Sparrows Point land. Banks range from about 10 to 30 feet in height and are heavily eroding, slumping, and sloughing off into open waters due to wave action. Much of the vegetation is sparse and it generally consists of pioneer species that commonly grow on poor quality soil.

High Pier Wharf

Site Location and Project History

The High Pier wharf was located within the embayment area near the proposed location of the SPCT site. Based on historic aerials and topographic maps, it appears that the wharf was at this location for over a century, well before Coke Point was built-out into the Patapsco River. In 2018, the approximate 100-foot by 700-foot wharf was proposed for demolition by TPA, restoring the area to tidal open water. Below, a view of the High Pier wharf taken in 2014 is shown in the left aerial photograph, and a view of the restored tidal open water following demolition of the High Pier structure is shown in 2018 in the right aerial photograph.

Determination of Mitigation Ratio / Credit

The SPCT project with the wharf development and the offshore DMCF would impact 19.8 acres of tidal open water, including shallow water habitat. The proposed on-site mitigation incorporates both in-kind mitigation at a mitigation ratio of 1:1, as well as out-of-kind mitigation at a ratio of 2:1 and tidal wetland enhancement at a ratio of 4:1. Table C-2 presents the minimum mitigation area needed for each of the multipliers, given the 19.8 acres of tidal open water impacts.

Table C-2. Mitigation Areas Required Based on Multipliers

Impacted Area	Mitigation Ratio for Impacted Resource	Mitigation Multiplier (for in-kind, out-of-kind, and enhancement)	Minimum Required Mitigation Area
19.8 acres tidal open water	1:1	1:1 for in-kind	19.8 acres at 1:1
		2:1 for out-of-kind	39.6 acres at 2:1
		4:1 for enhancement	79.2 acres at 4:1

Proposed Mitigation Workplan

This section provides an overview of the on-site mitigation concepts being proposed for the SPCT project, including multi-habitat restoration and creation in existing offshore area distressed from historic operations; conversion of uplands to tidal open water and tidal wetlands/multi-habitat restoration and creation; removal of docks, slips, and posts from tidal open waters; and enhancing existing tidal wetlands with *Phragmites* control. Descriptions of each action and the benefits anticipated for each are described below.

Multi-Habitat Restoration and Creation at Area Distressed from Historic Operations

Multiple types of tidal emergent wetland and aquatic habitat restoration are proposed at the Bethlehem Boulevard shoreline area along Bear Creek, which is an area of the property and adjacent tidal waters that have shown signs of distress from historic operations at the Sparrows Point site (see Figure C-1). The multi-habitat restoration and creation would create a more natural shoreline that provides multiple habitat benefits. This would include:

- Placing an approximate 1,850 linear foot (0.21 acre) perimeter sill of natural rock and/or other man-made or proprietary NbS structures (e.g., reef castles, reef balls) that maintain maximum aquatic connectivity along the shallow water interface and edge areas to promote use of the site by multiple types of aquatic species, attenuate wave energy, and contain materials used to create other nearshore habitats
- Improving the bottom surface substrate in approximately 6.5 acres of shallow water habitat areas immediately behind the perimeter sill or reef structures by introducing a zone featuring natural rock/boulder piles, natural cobble, gravel, and sand materials sourced from a nearby quarry, adding shell bags or loose shell materials to promote use by multiple aquatic species, and removing and replacing human-made materials (e.g., slag, tires) that appear to currently underlie or sit on the surface in some of the area

- Introducing woody debris, potentially with attached root wads, and other NbS habitat structures or improvements, and seeding for native SAV within the same 6.5-acre shallow water zone with species, such as wild celery (*Vallisneria americana*) (Note: total mitigation acreage in zone is not duplicated)
- Creating or restoring approximately 1.75 acres of low to high marsh tidal emergent wetlands with scattered woody debris structures to improve shoreline habitat in nearshore areas

If man-made or proprietary NbS structures are proposed at the site, TTT would contact the manufacturers of those structures to discuss alternative materials that could be used to reduce carbon dioxide-releasing concrete emissions during production of the structures. Tidal wetland boundaries would need to be delineated and surveyed to identify the limits of existing wetlands and existing land, and topographic and bathymetric surveys of the surrounding waters would be conducted to accurately depict existing land conditions above and shallow water habitat conditions below MHW to the proposed limits of the work.

The multi-habitat restoration and creation actions would provide greater edge to water ratio than what currently exists, which would promote use and provide greater protection for multiple aquatic species, including species in need of conservation. The layered effect of the actions would provide multiple ecological benefits and considerable ecological uplift at the project site as compared to creating a single habitat type. The location of the site near the mouth of Bear Creek and immediately north of and adjacent to the US Environmental Protection Agency Superfund project site would provide a contiguous extension to more natural shoreline areas where SAV has been mapped north of I-695.

The improved substrate and habitat structures introduced into the shallow water areas would improve benthic conditions, provide potential shellfish attachment sites, and provide habitat improvements including feeding, foraging, and cover areas for tidal adult finfish, juvenile herring, and white perch spawning. The reduced boat wake and wave action along the shoreline would allow the shallow water habitat zone to be seeded with native SAV species. The tidal emergent wetlands in the nearshore areas along with the SAV would provide vegetative diversity using a mix of shallow water aquatic and low to high marsh zones that would transition to native scrub-shrub species near the toe of the slope.

Wetlands enhanced by the introduction of woody materials or other NbS features would allow for increased finfish forage and refuge areas and would enhance herpetofauna, wading bird, and waterfowl foraging opportunities. The wetlands would also improve water quality and filtering of waters at the site in this highly urban watershed. The SAV provides cover for crabs, juvenile and small fish, and foraging

sites for larger fish species. The predominant fish species known to use these areas are species that would benefit from more consistent SAV occurrence and diversity.

Cobble and gravel substrate and/or other reef making materials introduced into waters immediately behind the perimeter sill structures to the edge of the shallow water areas would improve open water habitat and vertical structure. Substrate improvements would improve benthic conditions, which would improve the forage opportunities for fish. An increase in three-dimensional structure of the bottom substrate would provide additional habitat for epibenthic colonization, cover for crabs, juvenile and small fish, and foraging sites for larger fish species. Many of the fish species known to use the waters surrounding the TPA site are species that would benefit from the improved refugia, especially compared to some of the human-made land that extends into the waters currently that included historic pushing of slag and other waste materials towards and into the open waters. The hard vertical structure may also provide substrate for encrusting bivalves, such as fresh to brackish water native mussels or potentially oysters.

More detail on this mitigation concept would be developed as additional information has been collected at the site, including wave and boat wake action to inform the size and strength of materials and the engineering design to ensure stability of the sill and habitat features to be installed, and the concept would be updated in a revised Phase I Mitigation Plan following agency approval of this initial concept. Additional information regarding the need for and type of remedial actions that may need to be undertaken within the proposed mitigation area and/or landward of the area to address historical contamination issues would also be provided in the plan. The revised plan would also include information on the proposed sources of natural stone and materials (e.g., cobble, gravel, sand, shell, woody debris) to improve substrate within the mitigation areas, and a monitoring and adaptive management plan that outlines clear performance criteria, interim checkpoints, and suggested corrective measures for the proposed mitigation. In addition, a maintenance schedule would be developed for ongoing removal of trash and debris that washes up onto shore within the mitigation areas as part of the revised plan.

Tidal Open Water and Tidal Wetlands / Multi-Habitat Restoration and Creation in Existing Uplands

Tidal open water and tidal wetlands / multi-habitat restoration and creation is proposed at three separate upland areas within the TPA property, where the existing shoreline would be pulled back and restored without encroaching channelward into Waters of the United States/Waters of the State, including tidal waters and existing shallow water habitat areas. The proposed locations and minimum acreages of anticipated restoration and creation include: 5.5 acres at the Pleasant and North Point Yacht Clubs; 2.1 acres at the Craighill Lighthouse Peninsula; and 4.0 acres at the Southeast Peninsula point (see Figure C-2).

Tidal wetland boundaries would need to be delineated at each of the sites and surveyed to identify the limits of existing wetlands and existing land and the surrounding waters would be surveyed (topographic and bathymetric surveys) to accurately depict existing land conditions above and shallow water habitat conditions below MHW. Geotechnical borings or test pits would also be conducted at each of the land areas to characterize the materials to be removed, including historic fill. The Sparrows Point material reuse screening program would be implemented for this material.

During detailed design, appropriate elevations would be determined for the newly created tidal open waters, shallow water habitat areas, and / or low to high marsh tidal wetlands along new shoreline areas. This would include determining if there is a potential need for over-excavation to subgrade elevations followed by placement of clean fill materials appropriate for the establishment of wetland vegetation and for providing improved substrate for shallow water habitat areas. The detailed design would include grading that focuses on improving the edge to water ratio (e.g., creation of coves for tidal adult and juvenile finfish habitat), erosion and sediment control (e.g., silt or super silt fence on land, turbidity curtains in water), existing habitat protection, and native wetland species planting plans with the goal of creating multiple tidal open water and wetland habitat types within each area.

The multi-habitat restoration and creation efforts would be similar to those described above for the Bethlehem Boulevard site and would provide similar ecological benefits to these former upland areas. More detail on this mitigation concept would be developed as additional information has been collected at the sites and the concepts would be updated in a revised Phase I Mitigation Plan following agency approval of this initial concept.

Removal of Docks, Slips, and Posts from Tidal Open Waters

Existing docks, slips, and pilings at the Pleasant Yacht Club cover an area of approximately 860 linear feet or 0.11 acre and include one main “T” shaped dock that extends into Jones Creek with approximately 30 slips (depending upon boat sizes). At the North Point Yacht Club, two separate large docks with slips and pilings and three smaller docks cover areas of approximately 1,800 linear feet or 0.23 acre, including the northern dock with between 35 and 40 slips and the southern dock with between 40 and 50 slips. One small dock at the Pleasant Yacht Club adjoining the existing boat ramp is anticipated to remain for local boaters to use to put boats into Jones Creek at the ramp. Removal of the docks at both yacht clubs could result in up to 0.34 acre of tidal open water being restored, depending on how mitigation credits for the removal actions are approved by the agencies.

The High Pier wharf structure removed from within the embayment totaled 70,400 square feet (1.62 acres) in size. Pursuant to guidance from MDE, TPA submitted a letter to MDE referencing their issued

Tidal Wetland License No. 13-0966(R) on April 27, 2018, in which they noted that they were evaluating and deliberating forthcoming berth projects that would involve impacts to tidal open water areas. They requested that the 1.62 acres of tidal open water restoration associated with the demolition of the existing High Pier wharf structure be documented and recognized as advanced mitigation (TPA 2018). The High Pier was demolished in its entirety and the structure was removed to restore the area to open water in 2018. The notification to MDE was made in anticipation of the tidal open water mitigation needs for the forthcoming SPCT and other marine projects proposed at the site. A copy of the relevant correspondence is attached at the end of this draft mitigation plan (Attachment 1).

Tidal Wetland Enhancement and *Phragmites* Control

Several stands of *Phragmites* that are immediately adjoining areas proposed for new tidal wetland and multi-habitat restoration and creation are proposed for tidal emergent wetland enhancement and *Phragmites* control. Removal of existing plant stems and rhizome and control of the *Phragmites* is recommended to prevent the spread of the invasive plant into newly created wetlands (see Figure C-1 and Figure C-2). The proposed locations and minimum acreages of anticipated tidal wetland enhancement and *Phragmites* control include: 0.6 acre in two locations at the Pleasant and North Point Yacht Clubs; 0.45 acre along the north side of the Craighill Lighthouse Peninsula; and 1.8 acres in three locations at the Bethlehem Boulevard area, excluding any mitigation credit for *Phragmites* control undertaken within the powerline right-of-way.

The mitigation concept includes *Phragmites* spot treatment and large patch control, consisting of a minimum of two years of fall herbicide treatment using herbicides approved in Maryland for aquatic use, such as glyphosate or imazapyr. It would also include mowing or cutting the plants to ground level when not in seed and physical removal of plant materials, followed by excavation and removal of the upper 1- to 2-foot layer of rhizomes to lower the wetland marsh plain elevations where feasible. This would help to promote reestablishment of native high to low-marsh wetland species in these areas. Supplemental plantings of native wetland species would be introduced on the new marsh plain elevations to prevent recovery of *Phragmites* in these areas.

A detailed *Phragmites* Control Plan would be developed detailing the protective measures to be implemented to contain the herbicide application and reduce exposure to non-targeted species, as well as the overall restoration and enhancement process and seasonality of the proposed mitigation action as part of a revised Phase I Tidal Mitigation Plan following agency approval of this initial concept. The plan would also include a long-term monitoring and adaptive management plan to ensure the long-term ecological function of the enhanced areas.

The enhancement of these *Phragmites* dominated tidal wetlands to native tidal emergent wetland habitats would provide a greater degree of vegetative diversity by using a mix of high to low-marsh species with a scrub-shrub buffer around the perimeter and/or near the toe of slope. Removal of the invasive species in areas immediately adjoining other proposed mitigation areas would also help to prevent establishment of *Phragmites* in newly created or restored tidal wetlands and improve the visual appearance of the shoreline to boaters and properties on the opposite shorelines from the site. The improved substrate conditions and wetland habitat would increase finfish forage and refuge opportunities, and enhance wading bird, herpetofauna, and waterfowl foraging opportunities. The enhanced wetlands would also improve water quality and filtering of waters draining to the site in this highly urbanized portion of the watershed.

Mitigation Ratio / Credits Anticipated for Proposed Actions

Table C-1 provides a breakdown of the proposed mitigation ratio anticipated for each of the on-site in-kind and on-site out-of-kind mitigation actions proposed above, as well as the anticipated mitigation credits to be achieved for the two off-site mitigation projects.

Maintenance Plan

Following agency approval of the proposed mitigation concepts, TTT would prepare a detailed maintenance plan that addresses each type of multi-habitat restoration proposed. The maintenance plan would be incorporated into the revised Phase I Tidal Mitigation Plan. Per the MDE's *Guidance for Tidal Mitigation Plans* (MDE 2024a), at a minimum, the maintenance plan would include the following elements:

1. *Tidal wetland creation* – The plan would provide a description and schedule of maintenance requirements to ensure the project is set to meet the outlined performance standards. A Mitigation Monitoring Report would be submitted that would include the following information:
    - Project identifying information (State Agency Interest number, Tidal Wetlands License number, site address, project name)
    - Date of inspections
    - Project completion date or current status of the project
    - Estimate of percent plant coverage by dominant species
    - Photographs showing the current condition of the site
    - If performance standards are not met, the Mitigation Monitoring Report would include a description of the performance standards that are not being met and proposed remediation measures. This may include:
        - A description of limiting factors to plant growth if native vegetation coverage is not met
        - A description of limiting factors to controlling invasive species grown if invasive coverage is not met
        - A description of the remedial actions that would be taken to meet the native coverage and/or invasive coverage requirements
2. *Habitat for benthic species* – The plan would provide a description and schedule of maintenance requirements to ensure the project is set to meet the outlined performance standards. TTT understands that maintenance may not be required for an artificial reef creation project. However, maintenance activities may be required if there is no increase in biomass on the substrate upon completion of the monitoring period.
3. *Oyster reefs/seeding* – The plan would provide a description and schedule of maintenance requirements to ensure the project is set to meet the outlined performance standards. TTT understands that maintenance may not be required for an oyster reef creation/seeding project. However, maintenance activities may be required if there is no increase in biomass on the substrate upon completion of the monitoring period. Current State monitoring protocols for oyster reefs require that the area be surveyed every three years. Additional oyster spat-on-shell may need to be added periodically to ensure their continued viability.

4. *SAV restoration/creation* – The plan would provide a description and schedule of maintenance requirements to ensure the project is set to meet the outlined performance standards. TTT understands that when restoring SAV, it may be necessary to add additional seeds in the years following the original planting to achieve restoration success as defined in the performance standards.

Performance Standards

Following agency approval of the proposed mitigation concepts, TTT would prepare a description of the performance standards that would need to be met for each of the multi-habitat restoration types, based on the overall goals of the onsite mitigation. The performance standards for tidal wetlands would be prepared in accordance with the *Performance Standards and Monitoring Protocol for Tidal Wetland Mitigation Banks* (Corps 2016), in lieu of more recent agency-issued guidance for permittee-responsible tidal mitigation sites. Performance standards for habitat for benthic species and for oyster reefs/seeding would be prepared in accordance with the *Artificial Reef Management Plan for Maryland* (Loftus and Stone 2007), *Science-Based Restoration Monitoring of Coastal Habitats, Volume Two: Tools for Monitoring Coastal Habitats* (Thayer et al. 2005), or similar guidance provided by the agencies. Performance standards for SAV restoration/creation would be prepared in accordance with "Chapter 11 – Monitoring and Success Criteria" of *Small-scale SAV Restoration in Chesapeake Bay: A Guide to the Restoration of Submerged Aquatic Vegetation (SAV) in Chesapeake Bay and its Tidal Tributaries* (Jasinski et al. 2021) or similar guidance provided by the agencies. All of these performance standards would be incorporated into the revised Phase I Tidal Mitigation Plan.

Monitoring Requirements

Following agency approval of the proposed mitigation concepts, TTT would prepare a detailed onsite mitigation monitoring plan that clearly states what would be monitored for each of the on-site mitigation types to be implemented so MDE can determine progress towards meeting the performance standards. The monitoring protocols used would follow those described above under Performance Standards, as approved by the agencies. Monitoring would include both qualitative (description based on observation) and quantitative (based on sampling and measurement) methods. The plan would outline the monitoring requirements, including:

- Time and frequency of monitoring activities
- Methods to be used for monitoring
- Parties responsible for conducting the monitoring
- Parties responsible for submitting the mitigation monitoring reports
- Frequency for submitting monitoring reports
- Biological (of invertebrates and fish populations), fishing success, and socioeconomic assessments if creating habitats for benthic species

In accordance with MDE's Guidance for Tidal Mitigation Plans (MDE 2024a), mitigation monitoring reports would include supporting documents such as the following:

- Narrative
  - Overview
  - Requirements
  - Summary data
  - Map/Plan
  - Conclusion
- Supporting data
  - As-builts
  - Maps
  - Photographs
  - Assessment results
  - Raw data and interpretation

The mitigation monitoring reports would also meet the requirements of the Corps, in accordance with *Performance Standards and Monitoring Protocol for Tidal Wetland Mitigation Banks* (Corps 2016), in lieu of more recent agency-issued guidance for permittee-responsible tidal mitigation sites.

TTT would submit the first monitoring report the year the mitigation planting occurs, unless it occurs after April 15 of that year, in which case, the first monitoring report would be submitted at the end of the next year. For each monitoring report, vegetative monitoring would be conducted between June 15 and September 30, and the site visits would be conducted during a period with normal hydrologic conditions. As an example, if the mitigation planting occurs in May 2026, the first vegetative monitoring effort would be completed between June 15 and September 30, 2027, and the first monitoring report would be submitted in December 2027.

If TTT is required in the authorization to submit an as-built report/survey to MDE, it would be completed and submitted within 60 days following completion of the construction and planting of the mitigation site or as otherwise specified in the authorization. As-built reports/surveys would depict the completed portions of the mitigation site, including a plan view of the constructed/restored wetlands with locations of all the permanent sampling and photo stations, the survey of the finished grades, cross-sections of the planting zones, and densities. The report would describe the site's performance relative to the performance standards and would be used as a baseline measure for deviations from the approved mitigation plan. It would also include photographs of the completed mitigation site taken from designated photo stations.

Long-Term Management Plan

If requested by the agencies following approval of the proposed mitigation concepts, TTT would prepare a long-term management (LTM) plan for the on-site mitigation efforts. The plan would provide a description of how the mitigation project would be managed after performance standards have been met and mitigation monitoring by MDE and the Corps has finished to ensure long-term sustainability of the mitigation areas. A template LTM Plan would be submitted for approval by the agencies, if requested, as part of the approval process for the Phase II Tidal Mitigation Plan. Details would be provided on the long-

term financing mechanisms established by TTT and the party or parties responsible for LTM activities for each of the mitigation sites (i.e., long-term stewards).

The Phase II Tidal Mitigation Plan would include realistic detailed cost estimates for LTM with estimates to be provided from at least two separate contractors, if required. The Nature Conservancy's long-term stewardship calculator and handbook (Nature Conservancy 2024) would be used to provide additional detailed cost estimates for the LTM Plan.

Adaptive Management Plan

If an adaptive management plan is required by the agencies, TTT would prepare a description of activities associated with that plan and responsible parties for implementing the plan and include the adaptive management plan in the Phase II Tidal Mitigation Plan for approval. The adaptive management plan would tie the specific performance standards to actions (e.g., the site does not meet the hydrologic regimes anticipated so should be regraded), It is meant to guide decisions for revising mitigation plans and implementing measures to address any unforeseen circumstances and changes in site conditions, such as local land use development, heavy storms, and rapid spread of invasive species on site that adversely affect mitigation success. The plan would include a "trigger level" and an associated "potential management response." For example, if 15% of the relative vegetation cover is invasive species during monitoring, then glyphosate would be sprayed in late July through October to control the invasives. This serves as an action plan should any circumstances negatively impact the site's success during the monitoring period and should be reevaluated every couple of years. TTT understands that some adaptive management techniques would require prior authorization from MDE.

Financial Assurances

TTT would provide the fiscal resources necessary for final design, implementation, monitoring and remediation or adaptive management, and possible long-term management of each of the onsite mitigation areas in accordance with the financial assurances section of *Components of a Compensatory Mitigation Plan – Guidance for Developing Wetland and Waterway Mitigation in Maryland* (MDE 2024b). If required by the permits, TTT would establish an agency acceptable funding mechanism (e.g., bond, escrow, endowment) to provide separate financial assurances to ensure the overall success of the onsite mitigation projects, which may include the following: 1) construction fund; 2) maintenance and monitoring fund; 3) catastrophic event fund, and 4) long-term management fund.

All funds would be placed in separate interest-bearing accounts at a federally insured financial institution. The proposed funding mechanism to be used by TTT and rate of funding would be determined following consultation with the agencies with a goal of ensuring at least a 4% return. An estimate describing the itemized tasks and associated dollar amounts required for each fund would be presented to the agencies for approval prior to their approval of the Phase II Tidal Mitigation Plan. TTT understands that typically, the construction, maintenance and monitoring, and catastrophic event fund financial assurances must be in place prior to commencing impacts at the SPCT site and that the long-term management fund, if required, may be fully funded later. Elements of the four funds would typically include the following:

1. *Construction Fund* – This financial assurance would account for all costs associated with providing replacement mitigation, including land acquisition, design, engineering, permitting, legal fees, mobilization, and construction. TTT understands that if the mitigation is completed prior to impacts commencing, this financial assurance may not be required.
2. *Maintenance and Monitoring Fund (MM Fund)* – This financial assurance would account for all costs associated with the required period of maintenance and monitoring (e.g., site inspections, installing monitoring equipment, preparing monitoring reports, replanting, treating invasive species, repairing minor erosion). The cost estimates would need to be verified from an independent third-party estimate, for similar project costs in the area.
3. *Catastrophic Event Fund (CE Fund)* – The Corps and MDE intend that mitigation sites and their functions and values be self-sustaining and not incur any more catastrophic events than similar acreages, functions and values that exist within natural systems. TTT understands that this fund is intended to provide money to remediate damage caused by catastrophic events to systems that are not as natural or self-sustaining and that are likely more vulnerable to such damage because of their location, design and/or construction to ensure that they continue to provide adequate compensatory mitigation. No CE Fund monies would be used to finance work or activities other than those repairs to the mitigation site necessitated by catastrophic events as would be defined by the Phase II Mitigation Plan, unless approved by the regulatory agencies. TTT also understands that the CE Fund may be rolled into the MM Fund or the LTM Fund to allow more flexibility. However, use of the money would still need to be approved by the regulatory agencies.
4. *Long-Term Management Fund (LTM Fund)* – The Corps and MDE intend that mitigation sites and their functions and values be self-sustaining and not require any more long-term maintenance and monitoring than similar areas occurring naturally. The goal of the proposed mitigation actions is to establish self-sustaining systems that do not require long-term maintenance and monitoring after the initial monitoring period and mitigation site closure. If an LTM Fund is required by the permits, TTT will meet with the agencies to discuss the elements, timing, and necessary funding required to fund long-term management of the mitigation sites.

TTT would electronically submit to the regulatory agencies a financial report by January 30 of each monitoring year and every subsequent year until mitigation site closure. The report would contain information on the balances and yearly fees for the MM Fund, LTM Fund, and CE Fund.

Off-Site Mitigation Project #1 – Derelict Crab Trap Removal

Introduction / Mitigation Site Description and Objectives

The proposed mitigation package also includes a project located offsite within nearby waters within Chesapeake Bay near Hart-Miller Island and / or the mouth of the Patapsco River that was added to supplement the on-site mitigation. The proposed off-site and out-of-kind mitigation includes partnering, coordinating, and implementing a project that involves the removal of derelict crab traps to improve bottom habitats within portions of the Bay where the traps are prevalent.

The following describes this off-site mitigation project and the benefits it would provide. This mitigation project was recommended by the Maryland Board of Public Works during and following a Joint Evaluation Committee Meeting held on June 26, 2024. MDNR maps recreational fishing grounds within

the Chesapeake Bay and its larger estuarine tributaries on the Maryland Coastal Atlas website (MDNR 2024b). These areas are also locations where "ghost" or derelict crab traps are found. There is no recreational fishing grounds located within the 8-digit Patapsco River watershed (02130903), but numerous mapped recreational fishing grounds are located within the adjacent Middle Chesapeake Bay 8-digit watershed (02139997), north of the Chesapeake Bay Bridge. These include several near the mouth of the Patapsco River and between Hart-Miller Island and Tolchester Beach in Kent County, Maryland (see Figure C-3).

Derelict crab trap removal is considered a form of restoration of tidal open waters, and tidal open water is the type of impact proposed by the SPCT project that requires mitigation. The exact location where the project would take place would be determined as part of the project workplan, as described below. The overall goal for TTT for this effort is to achieve a minimum of 2.0 acres of mitigation credit.

Site Selection

As mentioned above, the site search for potential mitigation sites where derelict crab traps are likely to be found began with a review of information mapped by the Maryland Coastal Atlas website. No recreational fishing grounds were identified within the same 8-digit watershed as the SPCT project site; therefore, the adjoining 8-digit watershed to the east was selected for consideration. While the mapped areas are currently assumed to be "feasible" sites for this type of mitigation, confirmation that one or more sites are viable sites for achieving the overall mitigation goals for this project would be a part of the project workplan, as would identifying a project partner and resources to perform the mitigation.

If possible, the sites chosen for initial study would focus on areas mapped closer to the mouth of the Patapsco River to improve overall connectivity of the project to the impact site. The project is anticipated to have a positive impact on other relevant resources, including potential federal and state-listed rare, threatened, and endangered species and their habitats, shallow open water habitats, and habitat for other aquatic species. Based on the positive results of a similar mitigation project completed by the Maryland Department of Transportation (MDOT) State Highway Administration (SHA) in an area northeast of Hart-Miller Island near the mouth of the Gunpowder and Middle Rivers in 2017 / 2018, the likelihood of success of this mitigation project is good.

Site Protection Instrument

The mitigation site(s) is located within Chesapeake Bay and is owned in its entirety by Maryland, and therefore, an easement is not required. Under Maryland State Environment Article Title 16 and COMAR 26.24, MDE is authorized to regulate activities related to filling, construction, and dredging within tidal Waters of the State. In addition, special interest groups including federal and state agencies, local governments, non-profits, and academic institutions would work together to protect the Bay.

Baseline Information

A study led by researchers at William & Mary's Virginia Institute of Marine Science (VIMS) showed that "ghost" crab traps are the most common type of derelict fishing gear in Chesapeake Bay. These have significant impacts bay-wide on the environment and on crabbers' financial resources. There are now efforts to find and remove derelict traps and keep them from being lost in the first place. The Chesapeake Bay crabbing industry continues to be a significant source of local revenue and watermen use a trap called a crab "pot" to harvest blue crabs (*Callinectes sapidus*) for sale. The traps are baited to attract and capture

crabs and are designed to have minimal escapement to minimize loss of harvest. Traps often get lost for various reasons and become derelict crab pots, which are a prevalent form of marine debris in the Bay (National Oceanic and Atmospheric Administration [NOAA] and Versar 2010).

In 2005, NOAA, Chesapeake Bay Office created the Derelict Fishing Gear Program to address the negative impacts that derelict crab traps were having on blue crabs and other species in the Chesapeake Bay. The traps are typically lost during storms, vandalized, or abandoned by fishers and are estimated to persist for one to seven years (Arthur et al. 2014). During this time, they continue to trap blue crabs as well as other marine organisms known as bycatch, such as white perch, oyster toadfish (*Opsanus tau*), black seabass (*Centropristis striata*), and American eel (*Anguilla rostrata*). Diamondback terrapins (*Malaclemys terrapin*) are considered high risk for active crab traps and have been found in derelict traps recovered from Chesapeake Bay waters (VIMS 2010). NOAA estimates that more than 250,000 commercial crab traps are deployed in Chesapeake Bay per day during the summer (NOAA and Versar 2010). A report by VIMS estimates that 50,000 to 150,000 traps (10 to 30%) of deployed commercial traps are lost annually (VIMS 2010). Yearly estimates indicate that 3.3 million blue crabs, or approximately 4.5% of the annual harvest are trapped in derelict crab traps within the Chesapeake Bay (Bilkovic et al. 2016). Past projects in the Chesapeake Bay have shown that the removal of derelict crab traps can have a noticeable impact on blue crab populations after only one season. Increasing blue crab populations and reducing capture of bycatch species provide ecological and economic benefit.

Determination of Mitigation Ratio/Credits

According to MDE, based on previous crab pot mitigation projects, MDE determined that the value of removing one crab pot is $83.33. Based on a mitigation in lieu fee of $90,000 per acre, crab pot removal would be acceptable to MDE as mitigation based on 1,080 crab pots per acre of required mitigation. It is understood that these prices may differ in today's market and further coordination with the agencies would be needed to refine the mitigation crediting for this activity (MDE 2024c).

For a crab pot removal mitigation project completed by the MDOT SHA in the winter 2017 / 2018, a fleet of up to 25 watermen were able to remove 1,451 derelict pots over a period of approximately 10 working days. This would equate to approximately 1.34 acres of mitigation credit based on the calculations provided by MDE. The final amount of mitigation TTT achieves from the derelict crab trap removal efforts would be based on the quantity of traps removed over a set amount of time that the watermen hired for the activity work.

Proposed Mitigation Workplan

The proposed mitigation effort would initially include conducting research into recent and available bathymetric and hydrographic surveys using side-scan sonar to map the bottom of the Chesapeake Bay and identify potential derelict crab traps at the recreational fishing grounds nearest the mouth of the Patapsco River, as well as between Hart-Miller Island and Tolchester Beach in Kent County, Maryland. If recent bathymetric and hydrographic surveys are unavailable, TTT would subcontract with a firm or partner with an organization to complete new surveys of these areas, similar to the work they did for the MDOT SHA in an area northeast of Hart-Miller Island near the mouth of the Gunpowder and Middle Rivers in 2012 for a similar derelict crab trap removal mitigation project.

Once an area with a high density of derelict crab traps is located, TTT would develop a more detailed mitigation work plan and work with their partner to hire and train a fleet of waterman on methods to

remove the traps during the winter season when the mitigation efforts would take place. Ideally, potential watermen to assist on this project would first be identified from within environmental justice communities in the vicinity of the TPA site that are familiar with the nearby waters, before locating watermen from other areas around the Bay, where available.

A specified number of days of work would be dedicated to the removal of derelict crab traps by the watermen hired by TTT. Fleet operations would be conducted to maximize derelict trap recovery, focusing on the area with the greatest mapped trap concentrations. The total number of derelict crab traps and gear removed would be tallied each day and the recovered traps and gear would be inspected for trapped organisms and documented by the watermen. Any traps and gear recovered would be disposed of at the nearby Eastern Sanitary Landfill in Baltimore County following procedures outlined in the work plan.

Based on the previous MDOT SHA project completed during the winter of 2017 / 2018, it is estimated that 25 watermen with vessels and crews working for five days could be capable of removing 1,200 pieces or more of derelict gear from an approximate 3,000-acre mitigation site for an estimated total cost of $150,000 to $200,000, based on inflation. Of that amount, nearly 75% would be used to pay the licensed watermen and crews performing the work in the winter months when watermen are typically not working. This cost would be adjusted based on the number of days and pieces of derelict gear expected to be removed in the final mitigation plan, and the mitigation credit ratios provided for the efforts.

Maintenance Plan

TTT does not plan to implement a maintenance plan for the derelict crab trap mitigation site(s). The proposed mitigation is a one-time effort, and therefore, is considered complete once the derelict crab traps and fishing gear are removed. No additional or future maintenance is planned once the removal effort has been completed.

Performance Standards

TTT would be responsible for the performance of the derelict crab trap mitigation plan. During the removal, TTT would provide personnel onsite to oversee activities and make recommendations, as necessary, if site conditions should vary from those that are anticipated. Watermen would be trained to properly document gear recovered and trapped species observed. Following the completion of the one-time removal, TTT in coordination with their partner, would provide a final report documenting gear and organisms recovered during the effort that would be submitted for agency approval. Coordination with MDE and the Corps during the removal effort would occur to ensure that the minimum standards have occurred, which include spending at least 10 days on the water using 25 watermen.

Monitoring Requirements

The proposed derelict crab trap mitigation is a one-time effort, and therefore, is considered complete once the 10-day minimum effort is complete. No monitoring of the mitigation site is planned.

Long-Term Management Plan

TTT does not plan to implement long-term management of the derelict crab trap mitigation site(s). The proposed mitigation is a one-time, minimum 10-day effort to remove derelict crab traps from the

mitigation site(s). Derelict crab traps in Chesapeake Bay are estimated to persist for one to seven years (Arthur et al. 2014). Although the proposed mitigation is a one-time effort, the ecological benefits of removing the derelict crap traps would have a long-term positive impact on the mitigation site(s).

Reducing the concentration of derelict crab traps from the area would improve site-specific annual mortality of blue crab and other resident aquatic species. Individuals not captured in traps would have the potential to be captured commercially or recreationally or would provide longer term ecological benefits by contributing to the populations through spawning or serving as prey for other species.

The positive socioeconomic and ecological benefits from the proposed mitigation are expected to continue for many years until derelict trap concentrations reach pre-removal densities. While derelict crab trap accumulation rates at the mitigation site are unknown, the concentrations of derelict traps are not expected to reach pre-removal levels within the next 10 years. In the short-term, the positive socioeconomic benefit to potential watermen used to perform the mitigation from environmental justice communities would benefit those individuals and communities, especially during winter months when they are typically not making money on the water.

Adaptive Management Plan

The mitigation site would remain under the ownership of the State of Maryland and would continue to be protected under state law and by special interest groups. TTT would be responsible for implementing the proposed mitigation and ensuring that the site meets the minimum proposed parameters which would be submitted in the Phase II Mitigation Plan. TTT would provide personnel onsite to oversee activities and make recommendations as necessary if site conditions should vary from those that are anticipated. For example, if recovery numbers begin to slow or are lower than anticipated during the removal effort, TTT may recommend expanding the removal effort to include additional areas shown in Figure C-3. Coordination with MDE and the Corps during the removal effort would occur to ensure that the minimum standards are met as agreed upon in the Phase II Mitigation Plan.

Financial Assurances

TTT would provide the fiscal resources necessary for implementation of the derelict crab trap mitigation project. Bonding for the one-time effort should not be necessary.

Off-Site Mitigation Project #2 – Oyster Reef Creation

Introduction / Mitigation Site Description and Objectives

The proposed mitigation package also includes a project that would involve oyster reef creation or seeding at a location and of an acreage yet to be determined within the Chesapeake Bay that was added to supplement the on-site mitigation. The proposed off-site and out-of-kind mitigation would include partnering, coordinating, and implementing the project at a location acceptable to the agencies. The acreage of new oyster reef creation will depend upon the remaining mitigation needs of the project following implementation of the on-site mitigation projects and off-site mitigation project #1.

The National Marine Fisheries Service (NMFS) recommended a similar project at the nearby Fort Carroll Sanctuary in comments received on the initial draft mitigation package submitted to the agencies for review in October 2024. That project would entail placement of suitable bedding material (e.g., stone), the

addition of spat on shell on top of the foundation stone, and subsequent application of additional spat on shell at 5- to 10-year intervals to ensure sustained ecological function. The long-term maintenance of any new reef created at Fort Carroll should be coordinated with MDNR. TTT is seeking agency feedback on oyster reef mitigation options, sustainable reef locations, and anticipated crediting before planning this mitigation project.

Site Selection

The site recommended by NMFS is the nearby Fort Carroll Sanctuary, which is managed by MDNR and is the location of two other successful oyster reefs. There may be more sustainable sites lower in Chesapeake Bay where salinity is higher, but these sites would be outside of the 8-digit watershed where the impacts are proposed or an adjoining watershed. There are also several areas mapped on the Maryland Coastal Atlas of historic oyster bottom and historic/recent oyster plantings within the neighboring Middle Chesapeake Bay 8-digit watershed, with several areas near where derelict crab trap removal is proposed. The regulatory agencies may want to consider these areas for the mitigation package as well.

Site Protection Instrument

The Fort Carroll site or alternative sites would be located within Chesapeake Bay at locations owned in their entirety by Maryland, and therefore, an easement would not be required. In addition, the Fort Carroll site is an existing sanctuary managed by MDNR, providing further site protection mechanisms. Under Maryland State Environment Article Title 16 and COMAR 26.24, MDE is authorized to regulate activities related to filling, construction, and dredging within tidal waters of the state. In addition, special interest groups including federal and state agencies, local governments, non-profits, and academic institutions would work together to protect the Bay.

Baseline Information

The Fort Carroll Sanctuary is in the Patapsco River, approximately 0.5 miles southeast of the former Francis Scott Key Bridge and approximately 1.0 mile west of the proposed DMCF site at the Coal Pier Channel on the TPA property. The sanctuary is in a low salinity (less than 12 parts per thousand) region of the upper Chesapeake Bay. It was created in 1995 for educational programs run by the Living Classrooms Foundation, and as of 2016, the entire sanctuary encompasses 30 acres. There was no historic oyster bottom in the location of the sanctuary (MDNR 2016b).

Two oyster reefs, each approximately 1 acre in size, have been established at the Fort Carroll Sanctuary. Since at least 1999, nine-month-old oysters from Chesapeake Bay Foundation's (CBF's) Oyster Gardening program have been planted annually at the reef directly adjacent to Fort Carroll. The rectangular oyster reef to the northeast of Fort Carroll was constructed in 2017 in partnership with Maryland Environmental Service (MES) as compensatory mitigation for Maryland Port Administration activities and is known as the MES Reef, and it. The MES Reef is made of stone built to a height of 6 inches off the bottom. CBF seeded the substrate with more than 6 million spat on shell oysters over a two-year period (2017 through 2019). Multiple plantings were included to ensure multiple year classes of oysters were present on the reef. Overall, at the two reefs, CBF has planted over 9 million oysters at the site (NMFS 2024).

In early 2024, the CBF Reef was sampled by dredge and there was evidence found of natural oyster reproduction at this location in the Upper Bay where natural recruitment is rare. For the MES Reef, diver

surveys conducted in 2017 and 2018 indicated over 80% survival of the initial 2017 planting and the presence of multiple size classes of oysters, suggesting natural recruitment. In September 2024, another diver-led survey was conducted, and evidence was found of at least three-year classes and an average density of 81 oysters per square meter. Based on the results of these surveys, all indicators suggest that the Fort Carroll reefs are healthy, as they support high oyster growth and survival rates and support emergent reef habitat that has been sustained over time (NMFS 2024).

The Fort Carroll reefs are healthy and there is more capacity for oyster reef restoration at this site. The potential spawning event witnessed in spring of 2024, as well as the presence of multiple year classes suggest a promising future for oyster reefs in this area. This site could be a suitable site for future oyster restoration work to benefit the tidal Patapsco River. Future oyster gardening would help sustain initial mitigation efforts across multiple years.

Baseline information on alternative oyster reef creation sites in areas with higher salinity within the Bay where creation may be more sustainable would need to be gathered if the agencies approve this mitigation concept and the additional mitigation is necessary.

Determination of Mitigation Ratio/Credits

As the oyster reef creation activities would directly improve habitat in tidal open waters, a 1:1 mitigation ratio is anticipated for these efforts. The acreage of oyster reef creation proposed for this mitigation package will depend on the need for additional mitigation beyond the on-site mitigation projects and off-site mitigation project #1.

Proposed Mitigation Workplan

The details of this mitigation project would need to be discussed further with the regulatory agencies. TTT would consider working with partners for this project to create and seed additional acres of oyster reefs for mitigation credit and / or to replenish the oyster population within existing reefs. Coordination between TTT and these entities to discuss additional partnering arrangements still needs to take place prior to developing a more detailed work plan for the oyster reef restoration. At this time, TTT is seeking feedback from the agencies on this mitigation option and mitigation crediting for these activities before proceeding further with a detailed work plan.

At a minimum, the oyster reef creation work plan would include:

- The geographic boundaries of the project
- Reef construction methods
- Timing and sequence of reef construction
- Amount of oyster spat to be deployed (if applicable)
- Timing and sequence of oyster spat seeding (if applicable)

Maintenance Plan

Following agency approval of the proposed mitigation concept, TTT would prepare a detailed maintenance plan that addresses the oyster reef creation proposed. The maintenance plan would be incorporated into the revised Phase I Tidal Mitigation Plan. Per the MDE's *Guidance for Tidal Mitigation Plans* (MDE 2024a), at a minimum, the maintenance plan would include the following element:

- *Oyster Reefs/Seeding* – The plan would provide a description and schedule of maintenance requirements to ensure the project is set to meet the outlined performance standards. TTT understands that maintenance may not be required for an oyster reef creation/seeding project. However, maintenance activities may be required if there is no increase in biomass on the substrate upon completion of the monitoring period. Current State monitoring protocols for oyster reefs require that the area be surveyed every three years. Additional oyster spat-on-shell may need to be added periodically to ensure their continued viability.

Performance Standards

Following agency approval of the proposed mitigation concept, TTT would prepare a description of the performance standards that would need to be met for the oyster reef creation project. Performance standards for oyster reefs/seeding would be prepared in accordance with the *Artificial Reef Management Plan for Maryland* (Loftus and Stone 2007), *Science-Based Restoration Monitoring of Coastal Habitats, Volume Two: Tools for Monitoring Coastal Habitats* (Thayer et al. 2005), or similar guidance provided by the agencies. The final performance standards would be incorporated into the revised Phase I Tidal Mitigation Plan.

TTT, in conjunction with their project partners, would be responsible for the performance of the oyster reef creation mitigation plan. During the initial reef construction, TTT would provide personnel onsite to oversee activities and make recommendations, as necessary, if site conditions should vary from those that are anticipated. Following the completion of the initial construction and oyster seeding of the reef, TTT in coordination with their partners, would provide a final report documenting the as-built conditions and quantity of oysters planted that would be submitted for agency approval.

Typically, the reef would be monitored at the three-year and six-year marks to track if it is meeting the standards for a "restored reef." A restored reef must meet a set of criteria that includes having a proper oyster density, reef size, and reef height, among other standards. To monitor reefs, TTT and their partners would use sonar, divers, and patent tongs, which are hydraulic claws attached to boats that pick-up oyster samples. If available at the time of monitoring, TTT would use a new Rapid Assessment Protocol which uses underwater cameras to monitor reefs to lower the cost of the monitoring. Coordination with MDE, MDNR, and the Corps during the final design and Phase II Tidal Mitigation Plan efforts would be conducted to refine the minimum standards as well as following the reef creation efforts to ensure that the minimum standards have been met.

Monitoring Requirements

Following agency approval of the proposed mitigation concept, TTT would prepare a detailed oyster reef creation monitoring plan that clearly states what would be monitored so MDE can determine progress towards meeting the performance standards. The monitoring protocols used would follow those described above under Performance Standards, as approved by the agencies. Monitoring would include both

qualitative (description based on observation) and quantitative (based on sampling and measurement) methods. The plan would outline the monitoring requirements, including:

- Time and frequency of monitoring activities
- Methods to be used for monitoring
- Parties responsible for conducting the monitoring
- Parties responsible for submitting the mitigation monitoring reports
- Frequency for submitting monitoring reports
- Biological (of invertebrates and fish populations), fishing success, and socioeconomic assessments if creating habitats for benthic species

In accordance with MDE's *Guidance for Tidal Mitigation Plans* (MDE 2024a), mitigation monitoring reports would include supporting documents such as the following:

- Narrative
  - Overview
  - Requirements
  - Summary data
  - Map/Plan
  - Conclusion
- Supporting data
  - As-builts
  - Maps
  - Photographs
  - Assessment results
  - Raw data and interpretation

The mitigation monitoring reports would also meet the requirements of the Corps, in accordance with *Performance Standards and Monitoring Protocol for Tidal Wetland Mitigation Banks* (Corps 2016), in lieu of more recent agency-issued guidance for permittee-responsible tidal mitigation sites.

TTT would submit the first monitoring report following completion of the reef monitoring activities conducted in year three following the initial reef creation with the second monitoring report occurring following completion of year six monitoring activities, if required by the permits.

If TTT is required in the authorization to submit an as-built report/survey to MDE, it would be completed and submitted within 60 days following completion of the construction and seeding of the oyster reef or as otherwise specified in the authorization. As-built reports/surveys would depict the limits of the bed materials placed for the reef with locations of all planned permanent monitoring stations. The report would describe the site's performance relative to the performance standards and would be used as a baseline measure for deviations from the approved mitigation plan. It would also include photographs of the completed mitigation site taken from designated photo stations.

Long-Term Management Plan

If requested by the agencies following approval of the proposed mitigation concept, TTT would prepare an LTM Plan for the off-site oyster reef creation. The plan would provide a description of how the mitigation project would be managed after performance standards have been met and mitigation monitoring by MDE and the Corps has finished to ensure long-term sustainability of the reef. A template LTM Plan would be submitted for approval by the agencies, if requested, as part of the approval process for the Phase II Tidal Mitigation Plan.

Adaptive Management Plan

The mitigation site would remain under the ownership of the State of Maryland and would continue to be protected under state law and by special interest groups. TTT would be responsible for implementing the proposed mitigation and ensuring that the site meets the minimum proposed parameters which would be submitted in the Phase II Tidal Mitigation Plan. TTT would provide personnel onsite to oversee activities and make recommendations as necessary if site conditions should vary from those that are anticipated. For example, if site conditions warrant, TTT may recommend shifting the site slightly, and/or adding directly onto one of the other reefs. Coordination with MDE, MDNR, and the Corps during the reef siting and creation effort would occur to ensure that the minimum standards are met as agreed upon in the Phase II Tidal Mitigation Plan.

As part of the adaptive management and the long-term management plans, TTT would consider partnering with others for the periodic replenishment of the reef with new oysters over time.

Financial Assurances

TTT would provide the fiscal resources necessary for implementation of the oyster reef creation and supplemental oyster reef replenishment for this mitigation project. This would include the fiscal resources necessary for final design, implementation, monitoring and remediation or adaptive management, and possible long-term management of the off-site oyster reef creation area. If required by the permits, TTT would establish an agency acceptable funding mechanism (e.g., bond, escrow, endowment) to provide separate financial assurances to ensure the overall success of the oyster reef creation project, which may include the following: 1) construction fund; 2) maintenance and monitoring fund; 3) catastrophic event fund, and 4) long-term management fund. For further details regarding how the financial assurances would be addressed for this off-site mitigation project, see the information provided on financial assurances above under the on-site mitigation concepts section.

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Attachment 1: Agency Correspondence

TRADEPOINT ATLANTIC

April 27, 2018

Maryland Department of the Environment
Water Management Administration
Regulatory Services Coordination Office
1800 Washington Boulevard, Suite 430
Baltimore, Maryland 21230

Attn: Mr. Robert Rushlow

Re: Tidal Wetlands License No. 13-0966(R)
Tradepoint Atlantic - Sparrows Point Terminal
High Pier Demolition

Tradepoint Atlantic is pursuing demolition of the existing High Pier structure located in the Turning Basin area at Sparrows Point Terminal, 1600 Sparrows Point Boulevard, Baltimore, Maryland 21219. The approximate geographic coordinates of the High Pier are Latitude 39°12'38.00"N, Longitude 76°29'4.00"W. The High Pier is a timber structure, 704 feet long by 100 feet wide, totaling 70,400 square feet (1.62 acres) in area. Attached are record drawings of the High Pier ("High Wharf") showing the overall pier dimensions and a typical section. Pertinent information is marked in red on the record drawings.

Tradepoint Atlantic is in the process of rebuilding infrastructure at the Sparrows Point Terminal, including renovation and rehabilitation of the waterfront structures and port facilities. In accordance with the Code of Maryland Regulations (COMAR) Section 26.24.05.01., MDE may recommend mitigation for the alteration of tidal wetlands, and the mitigation activity shall be "designed to replace the values and function associated with the wetlands to be impacted." The regulations also prefer that mitigation be located on-site.

Tradepoint Atlantic is currently evaluating and deliberating forthcoming berth projects that will involve impacts to tidal open water areas; accordingly, Tradepoint Atlantic requests the **1.62 acres of tidal open water restoration** associated with demolition of the existing High Pier structure be documented and recognized. The High Pier will be demolished in its entirety, removing the structure and restoring the area to open water. This notification and filing is made in anticipation of the forthcoming marine projects.

If you have any questions or require additional information, please contact me at 443-649-5055.

Thank you.

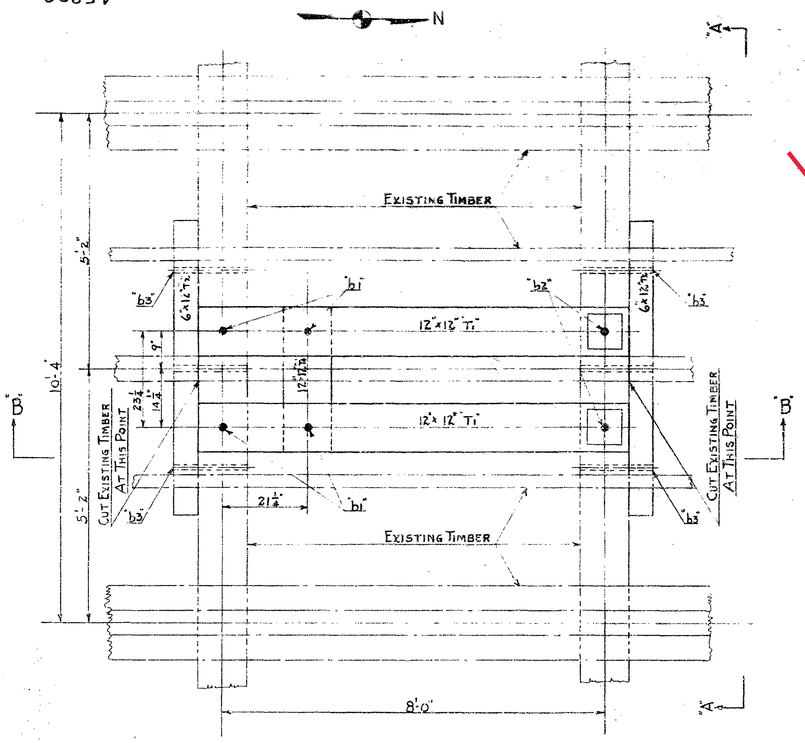
TRADEPOINT ATLANTIC

P Haid

Peter Haid
Senior Director of Environmental

Cc: Maria Teresi, USACE
Paul Nevenglosky, NMP Engineering Consultants, Inc.

45789



PLAN OF PIER WITH DECK REMOVED (SHOWING TIMBERS)

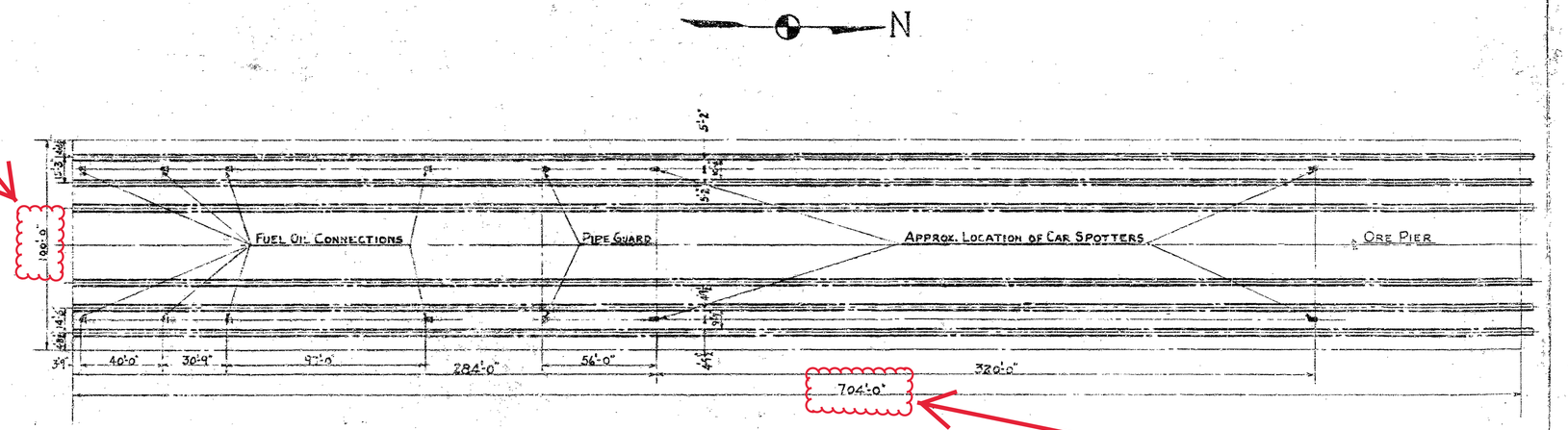
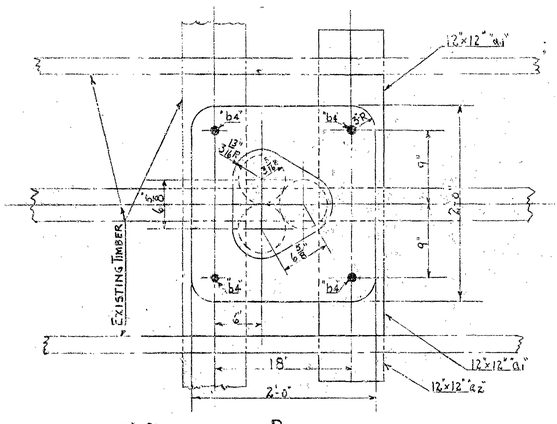
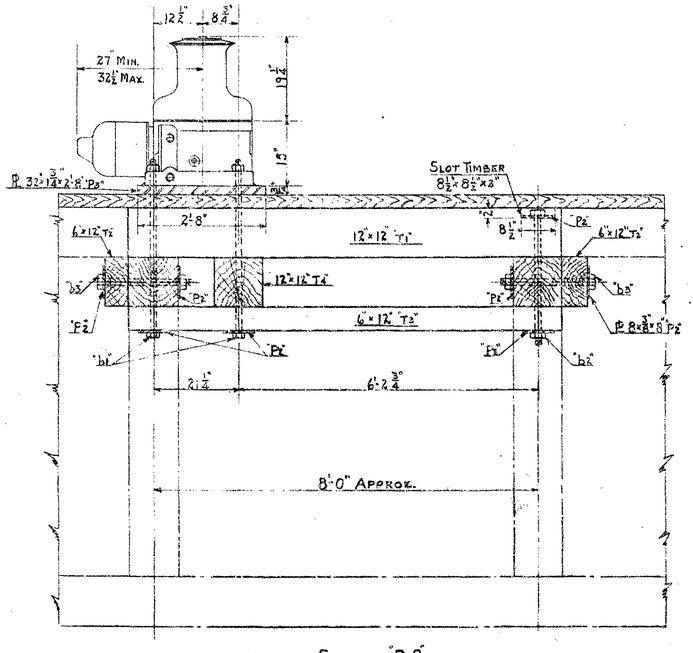


DIAGRAM SHOWING LOCATION OF CAR SPOTTER AND PIPE GUARD ON HIGH WHARF

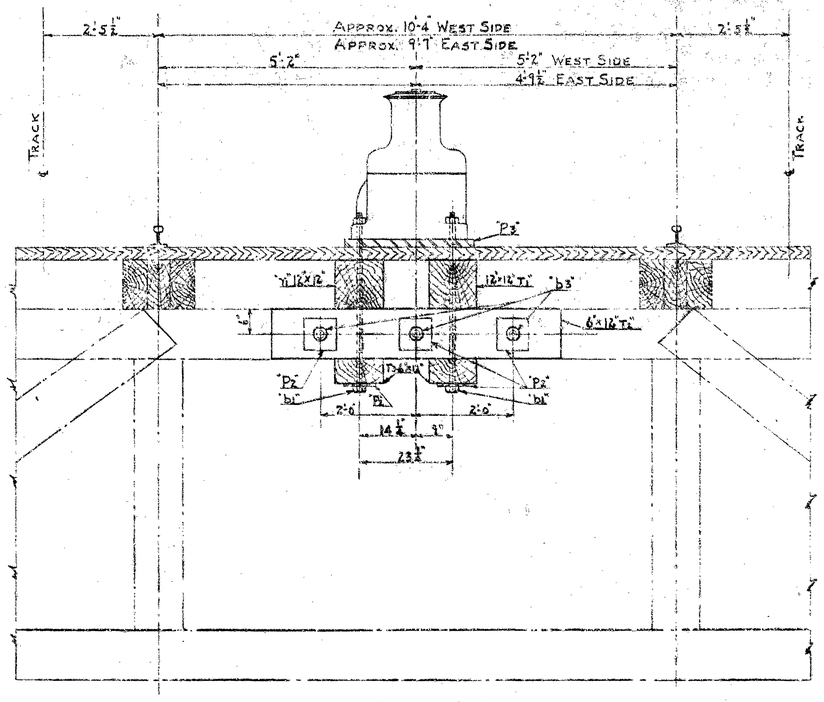
High Pier Area =
100' x 704' = 70,400 SF = 1.62 AC



DETAIL OF PIPE GUARD



SECTION B-B



SECTION A-A
WEST SIDE

ADA-35177	WORKS ORDER
DRWG. No	REFERENCE

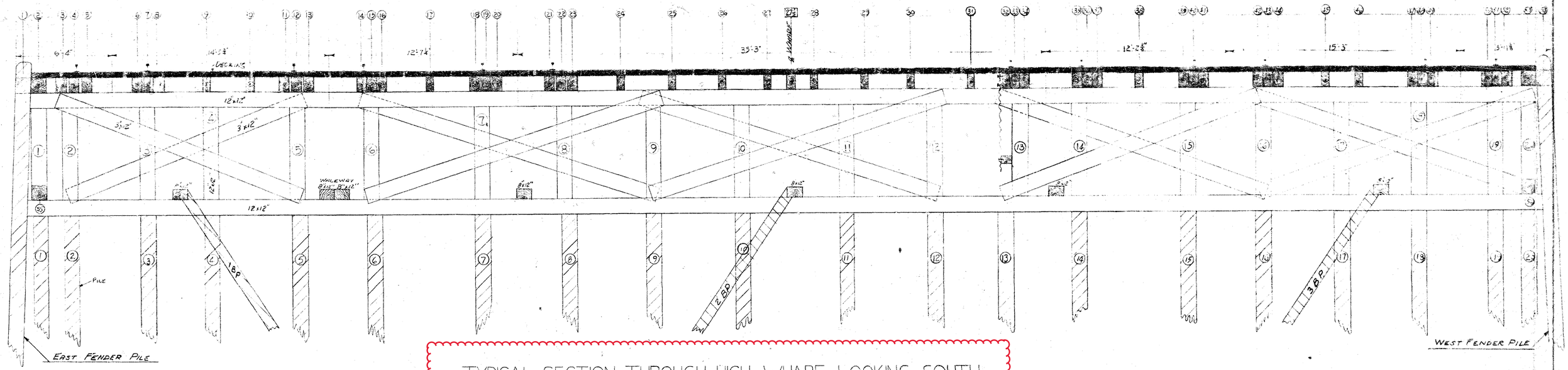
BETHLEHEM STEEL COMPANY,
SPARROWS POINT PLANT, SPARROWS POINT, MD.

REVISION NUMBER		
M	7/54	GREEN

FOR BLAST FURNACE DEPT.
PLACE HIGH WHARF
SUBJECT CAR SPOTTERS & PIPE GUARDS
PART ARRANGEMENT & SECTIONS
SCALE 3/4"-1'-0" 1 FOOT
JOB NO
APPROVED

45989

CHECKED BY G.N.G. 7/8/46 DRAWN BY S.L.Z. 8-2-46 TRACED BY FILE NO.



TYPICAL SECTION THROUGH HIGH WHARF - LOOKING SOUTH

LEGEND

- PILES
- FRAMING - 12" x 12"
- STRINGERS - 8"x12" UNDER TRACKS - 6"x12" BETWEEN
- DECKING - 3"x12"

SURFACE FINISH STANDARD

UNDERSCORED FINISHES ARE PREFERRED

SYMBOLS WERE TOOL STANDARD ROUGHNESS SPECIMENS AS ADOPTED BY THE A.S.A.

SYMBOL	MICRO-INCH R.M.S. VALUE	SYMBOL	MICRO-INCH R.M.S. VALUE	SYMBOL	MICRO-INCH R.M.S. VALUE	SYMBOL	MICRO-INCH R.M.S. VALUE	SYMBOL	MICRO-INCH R.M.S. VALUE
▽	4	▽	18	▽	63	▽	250	▽	1000
▽	8	▽	32	▽	125	▽	500	▽	2000

BETHLEHEM STEEL COMPANY

SPARROWS POINT PLANT, SPARROWS POINT, MD.

REVISION NUMBER		
1	5-31-47 C.H.S. GENERAL MINOR REVISION	M

FOR BLAST FURNACE DEPARTMENT

PLACE HIGH WHARF

JOB TYPICAL SECTION - LOOKING SOUTH

PART FIELD MEASUREMENTS

SCALE 3/8" = 1 FOOT

JOB NO. 53448

APPROVED

CHECKED BY ..... DRAWN BY MMM TRACED BY ..... FILE NO. .....

PIER DEMOLITION PLAN

NOTES

1. DEMOLISH EXISTING TIMBER HIGH PIER (APPROXIMATELY 70,400 SF)

LEGEND

DEMOLITION

DATUM

MEAN LOW WATER (MLW) = 0.0
SOUNDINGS IN FEET

APPLICATION BY:
TRADEPOINT ATLANTIC
1600 SPARROWS POINT BLVD.
BALTIMORE, MARYLAND 21219

AGENT: NMP ENGINEERING CONSULTANTS, INC.

SPARROWS POINT TERMINAL
MAINTENANCE DREDGING

PROJECT LOCATION:
PATAPSCO RIVER
BALTIMORE, MARYLAND

0 500' 1000'
1"=500'

DATE: JUNE 7, 2017
REVISED: APRIL 02, 2018

SHEET 9 OF 10

File: i:\2017\17-082-001-TPA Permit Renewal & Modification\CAD\17082001-P009 - Aerial; Plotted: 4/24/2018 4:15 PM by KATHLEEN HAYES; Saved: 4/24/2018 4:14 PM by KHAYES