

**TURBIDITY MONITORING PLAN
DREDGING YEAR 1**

**SPARROWS POINT CONTAINER TERMINAL
PATAPSCO RIVER, BALTIMORE COUNTY,
MARYLAND**

FINAL



Prepared for:

Tradepoint TiL Terminals (TTT) LLC
6995 Bethlehem Boulevard, Suite 100
Sparrows Point, Maryland 21219



Prepared by:

EA Engineering, Science, and Technology, Inc., PBC
225 Schilling Circle, Suite 400
Hunt Valley, Maryland 21031

**DECEMBER 2025
Revision No. 01**

This page intentionally left blank

**TURBIDITY MONITORING PLAN
DREDGING YEAR 1**

**SPARROWS POINT CONTAINER TERMINAL
PATAPSCO RIVER, BALTIMORE COUNTY,
MARYLAND**

FINAL

**December 2025
Revision No. 01**



Prepared for:

Tradeport TiL Terminals (TTT) LLC
6995 Bethlehem Boulevard, Suite 100
Sparrows Point, Maryland 21219



Prepared by:

EA Engineering, Science, and Technology, Inc., PBC
225 Schilling Circle, Suite 400
Hunt Valley, Maryland 21031

This page intentionally left blank

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	ii
LIST OF FIGURES	ii
LIST OF ACRONYMS AND ABBREVIATIONS	iii
1. PROJECT OVERVIEW	1
1.1 SCOPE OF TURBIDITY MONITORING PLAN	1
1.2 IN-WATER CONSTRUCTION ACTIVITIES	2
1.3 SEQUENCE AND DURATION OF IN-WATER ACTIVITIES	3
2. TURBIDITY MONITORING APPROACH AND METHODOLOGY	7
2.1 DURATION, LOCATION, AND FREQUENCY OF MONITORING.....	8
2.1.1 Duration	8
2.1.2 Monitoring Locations.....	8
2.1.3 Frequency of Monitoring	9
2.1.4 Contingency Planning.....	10
2.2 RECORD KEEPING	10
2.3 INSTRUMENTATION	11
2.4 QUALITY ASSURANCE AND QUALITY CONTROL.....	11
3. EVALUATION CRITERIA, REPORTING, AND CORRECTIVE MEASURES ..	13
3.1 EVALUATION CRITERIA	13
3.2 DATA QUALITY OBJECTIVES	13
3.3 COMPLIANCE REPORTING	13
3.4 EXCEEDANCE REPORTING AND CORRECTIVE ACTIONS	14
4. LINES OF COMMUNICATION	15
5. REFERENCES.....	17

LIST OF TABLES

- Table 1. In-Water Construction Activities, Location, and Approximate Duration for Sparrows Point Container Terminal

LIST OF FIGURES

- Figure 1. Sparrows Point Container Terminal: Dredging and In-Water Construction Areas and Activities
- Figure 2. Sparrows Point Container Terminal: Dredging Areas
- Figure 3. Sparrows Point Container Terminal: Turbidity Monitoring Locations for North Turning Basin Dredging, In-Water Slag Reclamation, and Revetment Installation
- Figure 4. Sparrows Point Container Terminal: Turbidity Monitoring Zones/Transects for Mid-Channel/Transition Area Dredging and South Channel Dredging
- Figure 5. Sparrows Point Container Terminal: Turbidity Monitoring Locations for Temporary Diffuser Installation, Offshore West Sparrows Point Peninsula near Mouth of Bear Creek

LIST OF ACRONYMS AND ABBREVIATIONS

BMP	best management practice
COMAR	Code of Maryland Regulations
DGPS	Differential Global Positioning System
DMCF	Dredged Material Containment Facility
DQO	data quality objective
ft	foot (feet)
ft/hr	feet per hour
mcy	million cubic yards
MDE	Maryland Department of the Environment
mph	mile per hour
NOAA	National Oceanic and Atmospheric Administration
NTU	nephelometric turbidity unit
SAV	submerged aquatic vegetation
SPCT	Sparrows Point Container Terminal
TiL	Terminal Investment Limited
TOY	Time of Year
TPA	Tradepoint Atlantic
TSS	total suspended solids
TTT	Tradepoint TiL Terminals LLC
USACE	United States Army Corps of Engineers
WQC	Water Quality Certification

This page intentionally left blank

1. PROJECT OVERVIEW

The Sparrows Point Container Terminal (SPCT) project includes the construction of a new terminal on the east side of the Coke Point peninsula in the Patapsco River, Baltimore County, Maryland. The completed facility will consist of a ±3,000-foot (ft) wharf with cranes, a container yard, gate complex, Intermodal/Rail Yard, and various support structures. To provide container vessel access to the wharf, the project also includes dredging and placement of an anticipated 4.2 million cubic yards (mcy) of dredged material for the required widening and deepening of the existing Sparrows Point access channel and turning basin. The dredged material placement plan includes three primary components: (1) placement of a maximum of 1.25 mcy of material at an existing offsite Maryland Port Administration Dredged Material Containment Facility (DMCF), (2) placement of up to 1.7 mcy of material at a newly constructed DMCF at the High Head Industrial Basin on Tradepoint Point Atlantic property; and (3) placement of a maximum of 1.57 mcy of material at the Norfolk Ocean Disposal Site. In addition, approximately 330,000 cubic yards of slag will be excavated for the wharf construction and will be re-used on the project site.

Tradepoint TiL Terminals (TTT) LLC, a joint venture between Tradepoint Atlantic (TPA) and Terminal Investment Limited (TiL), has received a Wetlands License (No. 23-0762; effective date 10 September 2025) from the State of Maryland Board of Public Works and a Water Quality Certification (WQC) (24-WQC-0045; dated 10 July 2025) from the Maryland Department of the Environment (MDE) for the SPCT project. Preparation, approval, and implementation of a Turbidity Monitoring Plan is a requirement under Special Condition M of the Wetlands License and under Special Condition 16 of the WQC. These Special Conditions state the following: (1) No work authorized in the Wetlands License or WQC can commence prior to the Tidal Wetlands Division's approval of the Turbidity Monitoring Plan; (2) The Turbidity Monitoring Plan shall be submitted for review and approval at least 30 days prior to the commencement of any work authorized in the Wetlands License or WQC; (3) The Licensee/Certificate Holder shall implement and comply with the Turbidity Monitoring Plan, which will detail support for the implementation of appropriate practices to protect water quality, marine life, and estuarine habitat, and include testing/monitoring turbidity related to dredging, shoreline stabilization activity, and outfalls; (4) The Turbidity Monitoring Plan will provide benchmarks and corrective actions if those benchmarks are exceeded; and (5) The Turbidity Monitoring Plan can only be modified upon approval by the Tidal Wetlands Division.

1.1 SCOPE OF TURBIDITY MONITORING PLAN

To comply with the Special Conditions of the State of Maryland Wetlands License (23-0762) and the Clean Water Act Section 401 WQC (24-WQC-0045), turbidity monitoring will be performed during dredging and other applicable in-water activities of the SPCT project to protect water quality, marine life, and estuarine habitat in the vicinity of the project area.

This Turbidity Monitoring Plan:

- Describes the in-water activities to be monitored, their locations, and the anticipated duration (Section 1)

- Describes the sequence of construction and in-water activities that may be ongoing concurrently (Section 1)
- Provides the technical approach, proposed locations, and frequency of turbidity monitoring during dredging and other applicable in-water activities (Section 2)
- Identifies the methodology and instrumentation to be used; the calibration, maintenance, and quality assurance/ quality control procedures; and the proposed data quality objectives (DQOs) needed for effective decision-making (Section 2)
- Describes the benchmarks and evaluation criteria to be used (Section 3)
- Provides daily recordkeeping procedures, regulatory reporting procedures for exceedance of benchmarks, and the corrective actions for responding to exceedances (Section 3)
- Provides points of contact and lines of communication (Section 4)

This Turbidity Monitoring Plan will be applied to Dredging Year 1 activities at the SPCT project and may be amended or modified for subsequent construction years (Dredging Years 2 and 3) based on review of data, lessons learned, implementation of best management practices (BMPs), or changes to the in-water construction equipment or sequencing. Based on the results of the first phase of dredging (Dredging Year 1) and the continued evaluation of the availability, data quality, and maintenance associated with stationary monitoring systems, TTT will evaluate implementing a continuous monitoring system for future phases of dredging.

The Turbidity Monitoring Plan for Dredging Year 2 and for Dredging Year 3 will be submitted to MDE for approval a minimum of 30 days prior to the start of dredging or other applicable in-water activities each year. Amendments or proposed modifications to this plan will be discussed with the MDE Tidal Wetlands Division prior to submittal for formal approval and prior to implementation. For the purposes of this plan, the Dredging Years are defined as follows:

Dredging Year 1 = 01 January 2026 through 30 September 2026
 Dredging Year 2 = 01 October 2026 through 30 September 2027
 Dredging Year 3 = 01 October 2027 through 30 September 2028

1.2 IN-WATER CONSTRUCTION ACTIVITIES

Dredging and other in-water construction activities for the SPCT terminal will take place in five primary areas in the vicinity of Coke Point and the Sparrows Point peninsula and will be limited to the following actions (Figure 1):

- 1) Mechanical dredging to widen and deepen the existing access channel extending from the north turning basin southward to the Brewerton Channel
- 2) Mechanical excavation for reclamation of near shore slag using landside long-reach excavators along the eastern shoreline of Coke Point within the north turning basin

- 3) Demolition and removal of an in-water pier structure in the north turning basin
- 4) Installation of in-water hollow steel pipe piles measuring in sizes ranging from 30 to 48 inches in diameter to support the wharf platform
- 5) Placement of engineered fill and slag to fill a cove/inlet area in the wharf revetment footprint, grading of the revetment slope, and placement of concrete slabs and armor rock to stabilize the revetment
- 6) Installation of three stormwater outfalls (one within the north turning basin and two along the southern shoreline of Coke Point)
- 7) Installation of a temporary diffuser approximately 300 to 500 ft offshore of the west side of the Sparrows Point peninsula near the mouth of Bear Creek for discharge of effluent from the High Head Industrial Basin DMCF.

1.3 SEQUENCE AND DURATION OF IN-WATER ACTIVITIES

The duration of construction for the terminal is anticipated to be approximately 3 years. The dredging equipment used, the areas dredged, and the areas of other in-water activities will vary based on the time of year and the overall sequence of project construction.

Mechanical dredging and in-water slag reclamation activities are anticipated to be completed over three Dredging Years (1, 2, and 3) which will each be limited to a 6-month period extending from 01 October through 31 March, unless a Time of Year (TOY) restriction waiver is requested and approved by appropriate regulatory agencies. This 6-month period is specified in the Wetlands License and the WQC for the project. The dredging will occur in three primary locations: the north turning basin and channel, the south channel, and a mid-channel transition area between the turning basin and the south channel (Figure 2). The in-water slag reclamation and the in-water demolition will both occur within the north channel and turning basin area. Dredging, in-water slag reclamation, and in-water demolition activities will occur simultaneously with other in-water construction activities and multiple dredging operations may be ongoing concurrently during each yearly 6-month dredging period.

The placement of fill, grading, and stabilization for the wharf revetment, the installation of the stormwater outfalls, and the installation of the temporary diffuser will be activities that are shorter in duration and will be initiated later in the construction sequence following completion of other necessary in-water and landside improvements. It is anticipated that the installation of the temporary diffuser (offshore west side of Sparrows Point peninsula) will occur in Year 2, and the revetment work (west shoreline of the north turning basin) and the stormwater outfall installation (north turning basin and south shoreline of Coke Point) will occur in Years 2 and 3. Pile driving is anticipated to be ongoing throughout the entire 3-year construction period and up to three hammers (impact or vibratory) may be driving in-water piles concurrently within the wharf footprint along the western shoreline of the north turning basin. Turbidity monitoring is not required by the Wetlands License or the WQC for pile driving activities. The installation of each stormwater outfall is anticipated to be conducted within a cofferdam structure that will isolate the construction activities directly from interaction with surface waters; therefore, turbidity monitoring is not

proposed for outfall installation. The type, location, and approximate duration of each in-water activity is summarized in Table 1.

Table 1. In-Water Construction Activities, Location, and Approximate Duration for Sparrows Point Container Terminal

Activity	Location	Approximate Duration	Year 1	Year 2	Year 3
Mechanical Dredging	Channel – North Turning Basin	6 months each year (01 October through 31 March)	X	X	X
	Channel – Transition Area	6 months each year (01 October through 31 March)		X	X
	Channel – South	6 months each year (01 October through 31 March)	X	X	X
Near Shore Slag Reclamation	North Turning Basin – West Shoreline	Approximately 10 months	X		
In-Water Demolition	North Turning Basin	Approximately 3 to 4 months	X		
Pile Installation*	North Turning Basin – West Shoreline	Continuous during 3-year period	X	X	X
Revetment Fill, Grading, and Stabilization	North Turning Basin – West Shoreline	Intermittent for a combined total of approximately 3 months (12 weeks) during Years 2 and 3		X	X
Stormwater Outfall Installation**	North Turning Basin (1 outfall)	1 month		X	X
	South Coke Point Shoreline (2 outfalls)	1 month for each of the two outfalls		X	X
Temporary Diffuser Installation	West Sparrows Point Peninsula	Approximately 1 month		X	

Notes:

*Monitoring of turbidity is not required during pile driving activities as per the project Wetlands License (23-0762) and the WQC (24-WQC-0045).

** Outfall installation will be conducted within a cofferdam structure that will isolate the construction from surface waters; therefore, turbidity monitoring is not proposed.

The sequence of construction and the approximate schedule for the in-water activities during Dredging Year 1 are provided in the schedule below.

Activity	Location	Dredging Year 1											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Mechanical Dredging	Channel - North Turning Basin												
	Channel - Mid Channel Transition Area												
	Channel - South												
Near Shore Slag Reclamation*	North Turning Basin - West Shoreline												
In-Water Demolition (pier structure)	North Turning Basin												
Pile Installation	North Turning Basin - West Shoreline												
Revetment Fill/Grading/Stabilization	North Turning Basin - West Shoreline												
Stormwater Outfall Installation	North Turning Basin - North Shoreline												
	Coke Point - South Shoreline												
Temporary Diffuser Installation	Offshore West of Sparrows Point Peninsula												
Activity requiring turbidity monitoring													
Activity not requiring turbidity monitoring													
* schedule assumes approval of a TOY restriction waiver for this activity with use of appropriate Best Management Practices (BMPs)													

This page intentionally left blank

2. TURBIDITY MONITORING APPROACH AND METHODOLOGY

Mechanical dredging and near shore slag reclamation are the in-water activities with the highest potential to generate turbidity during the SPCT construction. Many studies have documented the behavior and movement of total suspended solids (TSS) and turbidity associated with mechanical clamshell dredging operations. TPA conducted monitoring of turbidity during maintenance dredging with an environmental bucket in the existing Sparrows Point Channel. The results of these studies indicated that the highest turbidity was localized to the upper portion of the water column in the immediate vicinity of the dredge and dissipated to background concentrations at a distance of approximately 300 ft from the point of dredging. Based on results of these plume studies and based on the low water current velocity in the north channel/turning basin area (approximately 0.02 knots which is equivalent to 0.023 miles per hour [mph] or 122.4 ft per hour [ft/hr]), any suspended sediments resulting from dredging or other in-water activities in the north turning basin would be expected to remain localized within the turning basin. The turning basin acts as a semi-enclosed, confined area and is expected to contain, restrict, and minimize the movement of suspended solids into the adjacent surface waters. The shoreline excavation activities will consist almost entirely of in-water slag reclamation. The slag material is granular, coarse, and heavy; the slag material is expected to settle out of the water column quickly and is not expected to generate substantial turbidity plumes.

Other studies conducted and compiled by the National Marine Fisheries Service have estimated TSS concentrations associated with mechanical dredging of fine-grained material to be several hundred milligrams per liter above background near the bucket (point of dredging), with rapid settlement within a 2,400-ft radius of the dredge location (National Oceanic and Atmospheric Administration [NOAA] 2025). Dredge point monitoring studies of clamshell dredging in the Baltimore Harbor by the U.S. Army Corps of Engineers (USACE) indicated that TSS concentrations were similar to background concentrations within approximately 240 feet from the point of dredging (USACE 2007). Studies conducted by USACE for dredging activities in Newark Bay and the Kill Van Kull indicated that turbidity plumes in the upper water column reached background levels within 600 ft of the point of dredging. The Code of Maryland Regulations (COMAR) 26.24.02.06 (Conditions of a Tidal Wetlands License or Permit) provides a presumptive safe dredging distance of 500 yards (approximately 1,500 ft) from shellfish areas and submerged aquatic vegetation (SAV) during seasonal prohibition periods. Each of these studies provides weight-of-evidence that the movement of suspended sediment from mechanical dredging operations outside of the north turning basin in the Sparrows Point Channel would be limited to a maximum of approximately 0.5 mile from the point of dredging. Based on hydrodynamic modeling conducted for the SPCT Final Environmental Impact Statement (USACE 2025), the water current velocity in the Sparrows Point Channel outside of the turning basin ranges from 0 to 0.19 knots (maximum of 0.22 mph or 1,159.2 ft/hr) and the water current velocity outside of the channel ranges from 0.19 to 0.39 knots (maximum of 0.45 mph or 2,376 ft/hr).

Based on the water current velocity inside and outside the north turning basin, based on review of existing studies, and based on statutory requirements for protection of shellfish and SAV areas in the state of Maryland, a distance of 1,500 ft outside of the north turning basin for activities conducted within the basin and a distance of 1,500 ft from the point of dredging outside of the

turning basin and in the vicinity of the diffuser installation is proposed as a conservative distance for monitoring turbidity for the SPCT project.

2.1 DURATION, LOCATION, AND FREQUENCY OF MONITORING

Turbidity monitoring activities will be conducted during mechanical dredging, in-water slag reclamation, in-water demolition, revetment work (fill placement, grading, and stabilization), and temporary diffuser installation activities. The duration of monitoring, the locations to be monitored, and the frequency of monitoring are detailed in the following sections. In addition, conditions that may preclude or inhibit monitoring and contingency planning are discussed.

2.1.1 Duration

Turbidity monitoring conducted during dredging, in-water slag reclamation, and in-water demolition will be limited to the 6-month dredging window (01 October through 31 March), and during any potential TOY restriction waiver period that may be requested and approved, each construction year. SPCT has requested a TOY restriction waiver for the in-water slag reclamation activities during Year 1. Turbidity monitoring conducted for the revetment stabilization and temporary diffuser installation may be conducted within or outside of the 6-month dredging window.

2.1.2 Monitoring Locations

North Turning Basin – Dredging, In-Water Slag Reclamation, In-Water Demolition, and Revetment Fill/Grading/Stabilization. When dredging, in-water slag reclamation, in-water demolition, and fill placement, grading, and stabilization activities for the revetment are conducted inside of the north turning basin, monitoring of turbidity will be conducted at a distance of approximately 1,500 ft to the south of the entrance to the turning basin (defined as the southern point of the Coke Point peninsula) along the centerline of the Sparrows Point Channel and approximately 1,500 ft in the direction of tidal flow (flood or ebb) from the channel monitoring point (Figure 3). The boundary of this monitoring area will remain the same regardless of where the dredging, slag reclamation, in-water demolition, or revetment work is occurring within and along the western shoreline of the north turning basin.

Mid-Channel/Transition Area and South Channel Dredging. When dredging occurs outside of the north turning basin either within the mid-channel/transition area or within the south channel area, monitoring of turbidity will occur 1,500 ft in the direction of tidal flow (flood or ebb) from the boundary of the dredging footprint at the point of dredging (Figure 4). The 1,500-ft monitoring location(s) will shift either north or south within the monitoring zone depending upon the point location of the active dredging operation.

Offshore West Sparrows Point Peninsula Temporary Diffuser Installation. During in-water installation activities for the temporary offshore diffuser, monitoring of turbidity will occur 1,500 ft in the direction of tidal flow (flood or ebb) from the installation point (Figure 5).

Multiple/Concurrent Activities. If multiple dredging or in-water activities occur simultaneously both inside and outside of the north turning basin, additional monitoring locations will be sampled

to collect data representative for the activity in each area. If two dredging actions occur concurrently outside of the north turning basin within the mid channel/transition area and/or south channel area, monitoring and background locations for both dredging actions will be sampled in the direction of tidal flow. Likewise, if the temporary diffuser installation occurs concurrently with the dredging/excavation or revetment fill actions, multiple locations will be monitored.

2.1.3 Frequency of Monitoring

Turbidity will be monitored five of every seven calendar days, targeting five days with active dredging, in-water slag reclamation, in-water demolition, revetment fill/grading/stabilization, and temporary diffuser installation activities. Monitoring locations will be determined each day based on communication with the dredging contractor and the landside contractor conducting either in-water slag reclamation, in-water demolition, revetment fill/grading/stabilization, or other applicable activities.

Turbidity monitoring will be conducted from a survey-type vessel during daylight hours during either peak flood or peak ebb tidal flow conditions. Water current velocity varies within each tidal cycle, reaching a maximum velocity during peak ebb and flood before decreasing in between the cycles. Sampling during the peak flood or ebb condition (defined as the period of approximately 1.5 hours before to 1.5 hours after the estimated peak current velocity) will provide a conservative estimate with respect to the maximum distance that suspended sediment would be expected to move with a single tidal cycle. The estimated peak flood and peak ebb current conditions will be predicted each day using data provided by the NOAA tide gauge at Baltimore, Maryland (station 8574680). Real-time data for this gauge and tide predictions can be accessed via website ([Tides and Currents](#)). The peak current velocities are expected to occur at the approximate midpoint between high and low tide. Using this tidal-based approach, monitoring data will be generated each day to address either peak flood or ebb tide conditions.

A spring and neap tide event will each occur approximately twice each month and will also be reflected in the monitoring data. At each monitoring location, water column turbidity will be measured at three depths: surface (1 ft below), mid-depth, and bottom (approximately 3 ft above sediment surface); the vertical depth of the sampling/measurements in the water column will change and be adjusted from the sampling vessel as the water column depths change. Additionally, near-field and far-field background locations (located upstream and downstream in the direction of tidal flow) will be sampled once daily during approximate peak flood or ebb tidal flows. The near-field and far-field background locations will be located at distances of approximately 2,640 ft (0.5 mile) and 5,280 ft (1 mile), respectively, in the direction of tidal flow from the monitoring point location (noted on Figures 3, 4, and 5). Data collected from each 1,500-ft monitoring location will be compared to the near-field and far-field background values (i.e., for interpreting turbidity data; see Section 3.1).

The five-of-seven-day monitoring frequency will provide a target of 20 monitoring days and 20 turbidity values per month and will provide flexibility for equipment downtime as well as adverse weather conditions. Extended equipment downtime or unfavorable weather conditions could result in less than 20 days of monitoring each month. To provide eight additional data points per month, two of the five-of-seven monitoring days will target data collection on both peak flood and peak

ebb conditions. This additional monitoring for both a peak flood and peak ebb condition on a single day would be conducted if the tide and weather conditions allow monitoring during daylight hours and during active in-water operations.

2.1.4 Contingency Planning

Turbidity monitoring will be conducted only during active dredging and applicable in-water activities. Dredging and in-water activities will be underway for a minimum of 90 minutes prior to collection of turbidity data. Adverse weather (such as wind, fog, thunderstorms, small-craft advisories, or extreme icing) or other situations that create unsafe conditions for small-vessel operations may preclude the collection of turbidity data on a given day. Monitoring within the target window during peak flood or ebb flow conditions will be conducted to the extent practicable based on weather, time of peak flood and ebb during daylight hours, and in-water work being performed. If monitoring cannot be performed, monitoring will resume when conditions allow.

Monitoring locations will be determined each day based on the location of the in-water activity. The monitoring field crew will communicate with construction contractor staff each morning to determine what, when, and where in-water activities are expected to occur. In-water activities may be temporarily disrupted or intermittent within a workday. If daily in-water activities are intermittent or temporarily disrupted during peak tidal flows, daily monitoring will be conducted outside of the window of peak tidal flow after in-water activity resumes. The monitoring will be initiated or will resume within approximately 90 minutes following re-initiation of in-water activity.

2.2 RECORD KEEPING

A daily log of the type, duration, and location of in-water activity will be maintained by the Project Environmental Compliance Manager. If dredging or applicable in-water activities are suspended for a period of 24 hours or longer, monitoring will resume within 24 hours of the re-start of the dredging or in-water activity. If a sample cannot be collected for any reason (e.g., no in-water activity occurred during daylight hours or due to adverse/unsafe weather conditions), the rationale shall be documented in the daily monitoring report.

The determination and reporting of coordinates for each target monitoring station and actual sample location will be based in the Maryland State Plane coordinate system (FIPS-1900) in the units of U.S. survey feet and the horizontal control of North American Datum of 1983 (NAD 83). At each location where turbidity is measured, the position coordinates will be recorded in the field using a Differential Global Positioning System (DGPS). Visual observations (such as weather conditions and the presence/absence of a visible turbidity plume) will also be recorded daily for each sampling location. The water column depth (ft) for each measurement (surface, mid, and bottom) will also be recorded. A field logbook and/or data sheets will be completed in indelible ink each day and will be initialed by the personnel recording the information. The logbook and/or data sheets will include the following:

- Date/Time (local)
- Sampling personnel

- Weather conditions (wind direction and approximate velocity/sea state/precipitation)
- Equipment serial number(s)
- Departure time from dock
- Results of daily navigation quality control check
- Results of daily turbidity instrumentation quality control check
- Predicted time of high and low tide
- Tide condition (flood/ebb)
- Predicted time of peak flood or ebb condition based on predicted high and low tide
- Station location and coordinates (northing/easting)
- Visibility of surface plume
- Turbidity value (NTU) and water depth (surface, mid, and bottom)
- Time of turbidity measurements
- Pertinent field observations that could influence the monitoring data/measurements

2.3 INSTRUMENTATION

An electronic water quality sonde (e.g., Hydrolab, YSI, CTD, or other comparable electronic instrumentation) with real-time output will be used to measure turbidity as nephelometric turbidity units (NTU). Detection limits for turbidity will be approximately 0.1 NTU. Vessel positioning will be conducted using a DGPS with sub-meter accuracy.

2.4 QUALITY ASSURANCE AND QUALITY CONTROL

Electronic field equipment will be calibrated weekly and will undergo a daily quality control check as specified for the specific instrumentation used. The water quality/turbidity sonde will be calibrated according to the manufacturer's instruction manual. Calibration and quality control checks for each probe will be recorded on pre- and post-sampling field calibration/quality control sheets. Instrument models, serial numbers, and lot numbers and expiration dates of calibration standards will also be recorded. The accuracy of the DGPS will be checked daily by positioning the sampling vessel at a consistent, fixed location and comparing the DGPS coordinates against the actual coordinates. These checks will be recorded in the daily field logbook.

This page intentionally left blank

3. EVALUATION CRITERIA, REPORTING, AND CORRECTIVE MEASURES

3.1 EVALUATION CRITERIA

The water quality criteria to be achieved for this turbidity monitoring program is 150 NTU instantaneous maximum and 50 NTU monthly average (COMAR 26.08.02.03-3 – Water Quality Criteria Specific to Designated Uses). Operational controls or other BMPs during in-water activities will be considered successful if turbidity at the 1,500-ft distance from the dredging or in-water activity is less than or equal to 50 NTU above background at surface, mid-depth, and the bottom of the water column. A measurement of 150 NTU or higher above background will trigger a work stop event to assess implementation of additional operational controls or BMPs to reduce water column turbidity below the instantaneous maximum. The monthly average NTU value will be based on the average water column turbidity (average for surface, mid-depth, and bottom measurements combined) for the sampling events completed within a calendar month. The five-of-seven-day monitoring frequency targets 20 turbidity values per month.

Daily values and monthly averages will be evaluated with respect to exceedances of the criterion above near-field and far-field background concentrations. Water column turbidity (measured as NTU) may be elevated and influenced by regional storm events and by the presence of algae and zooplankton in the water column.

3.2 DATA QUALITY OBJECTIVES

DQOs are necessary to ensure that data collected are sufficient and suitable for decision-making. DQOs for this project include the type, quantity, and quality of data needed to allow for identification of elevated turbidity values that could adversely affect the aquatic environment. The turbidity values measured daily approximately 1,500 ft from the location of in-water activity will be compared to established water quality criteria and measured background values to determine if, and the magnitude by which, turbidity values are elevated above MDE criteria and background/ambient concentrations. The collected data will allow for identification and implementation of corrective actions, BMPs, and operational changes (if needed and as appropriate), to minimize and reduce turbidity throughout the project construction period.

Field instrumentation will be capable of and suitable for measuring turbidity ranging from 0 to 1,000 NTU (with a detection limit of approximately 0.1 NTU). The accuracy of the water quality sonde/electronic instrumentation with a turbidity probe will be sufficient to meet the DQOs of the turbidity monitoring plan for this project.

3.3 COMPLIANCE REPORTING

The monitoring contractor will develop a spreadsheet where monitoring data from the sampling locations will be added for each sampling event to address the MDE turbidity criteria. This spreadsheet will be submitted to MDE for each calendar month by the Project Environmental Compliance Manager and will compare monitoring data to the acute turbidity criterion (150 NTU), the monthly chronic turbidity criterion (50 NTU monthly average) with respect to near-field and far-field ambient background measurements. The reporting spreadsheet will present the measured in situ turbidity concentrations at surface, mid-depth, and bottom of the water column, as well as

the water column average for each sampling event, and the monthly water column average concentration. Turbidity monitoring data (with the exception of exceedance events) and background concentrations will be reported to MDE in spreadsheet format 15 business days following the end of each calendar month. An electronic copy of the daily log of the type, duration, and location of in-water activity (maintained by the project's environmental compliance manager) will also be provided with the monthly monitoring report.

Based on the results of the monitoring during Dredging Year 1, the reduction in the frequency of monitoring may be discussed with MDE. Any requested reduction would be based on consistently negligible turbidity values above background for a recurring activity, and/or may be applicable to certain types of in-water activities that do not generate substantial turbidity based on the collected data.

3.4 EXCEEDANCE REPORTING AND CORRECTIVE ACTIONS

If the measured turbidity exceeds the instantaneous maximum (150 NTU above background) at any of the monitoring locations, the monitoring team leader will immediately contact the site supervisor and the Project Environmental Compliance Manager. The work source generating turbidity will be stopped upon receipt of the exceedance notification and implementation of BMPs to effectively reduce turbidity will be assessed. Repeated or substantial exceedances of the turbidity goal (50 NTU) such that the monthly average may be exceeded may also require adjustments to equipment or operational BMPs, or inclusion of additional BMPs to reduce suspended solids.

BMPs to reduce turbidity may include:

- Use of an environmental-type bucket, where practicable (and not already in use)
- Use of a turbidity curtain, if feasible based on the site conditions and water depth
- Dredging operational controls, such as avoiding overflow of the bucket, and controlling the speed of bucket ascent and descent in the water column

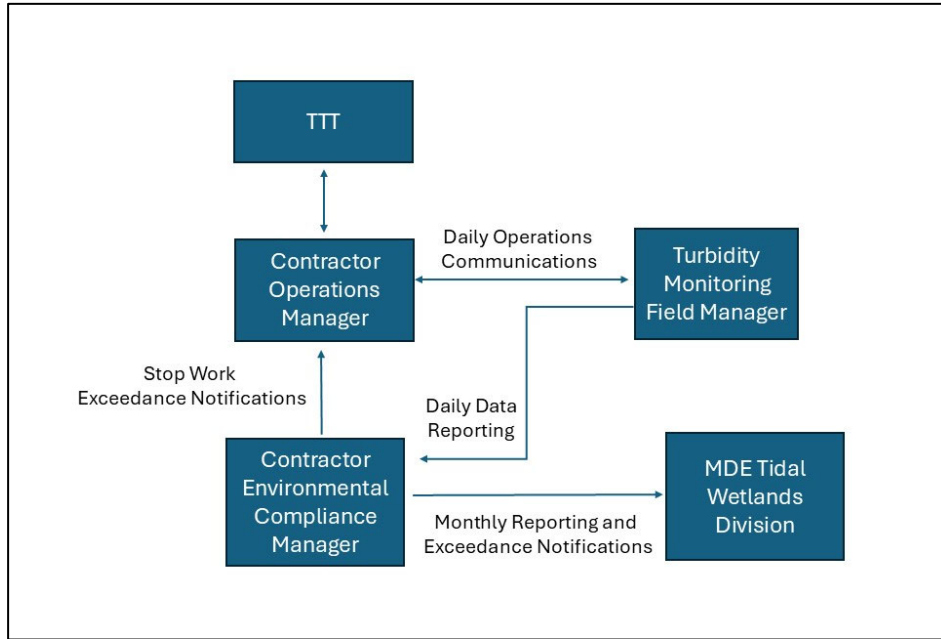
BMPs for dredging are detailed in the Dredged Material Disposal and BMP Plan for the project.

Exceedances of the instantaneous maximum criterion and a description of corrective actions will be reported by the Project's Environmental Compliance Manager to MDE verbally (via phone call) and via email within 8 business hours following notification of the exceedance event from the monitoring team. A written memorandum will be transmitted via email to MDE within 24 hours of the exceedance event or on the next business workday if it occurs outside of normal work hours.

4. LINES OF COMMUNICATION

The roles, responsibilities, and lines of communication for daily field data collection, daily and monthly data reporting, and for reporting of exceedances are depicted in the organization flow chart below.

Following contractor award notifications and identification of key staff that will be assigned to each position, a contact list with email and cell phone information will be added to this plan.



This page intentionally left blank

5. REFERENCES

- National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS). 2025. *Section 7 Effects Analysis: Turbidity in the Greater Atlantic Region*. Last updated 11 September 2025. <https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-effects-analysis-turbidity-greater-atlantic-region>.
- U.S. Army Corps of Engineers (USACE). 2015. *New York and New Jersey Harbor Deepening Project – Dredge plume dynamics in New York/New Jersey Harbor: Summary of Suspended Sediment Plume Surveys Performed During Harbor Deepening*. 133 pages. April.
- . 2025. *Sparrows Point Container Terminal Final Environmental Impact Statement*. EISX-202-00-E1R-1731946234. September.
- U.S. Army Corps of Engineers (USACE), Baltimore District. 2007. *Dredge Point Monitoring: Clamshell Dredging in the Upper Chesapeake Bay Approach Channels to the Port of Baltimore and Baltimore Harbor Channels*. April.

This page intentionally left blank

Figures

This page intentionally left blank

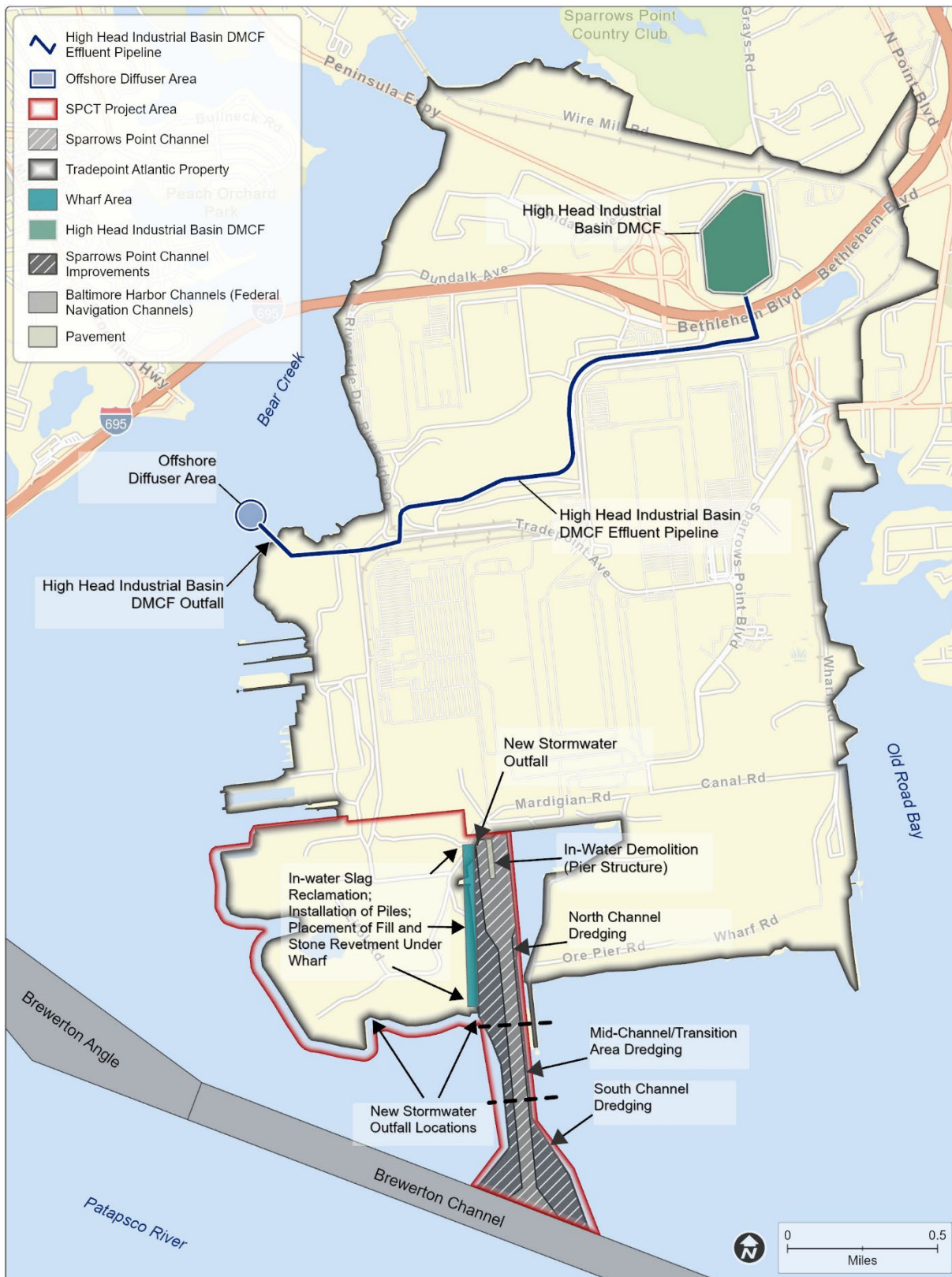


Figure 1. Sparrows Point Container Terminal: Dredging and In-Water Construction Areas and Activities

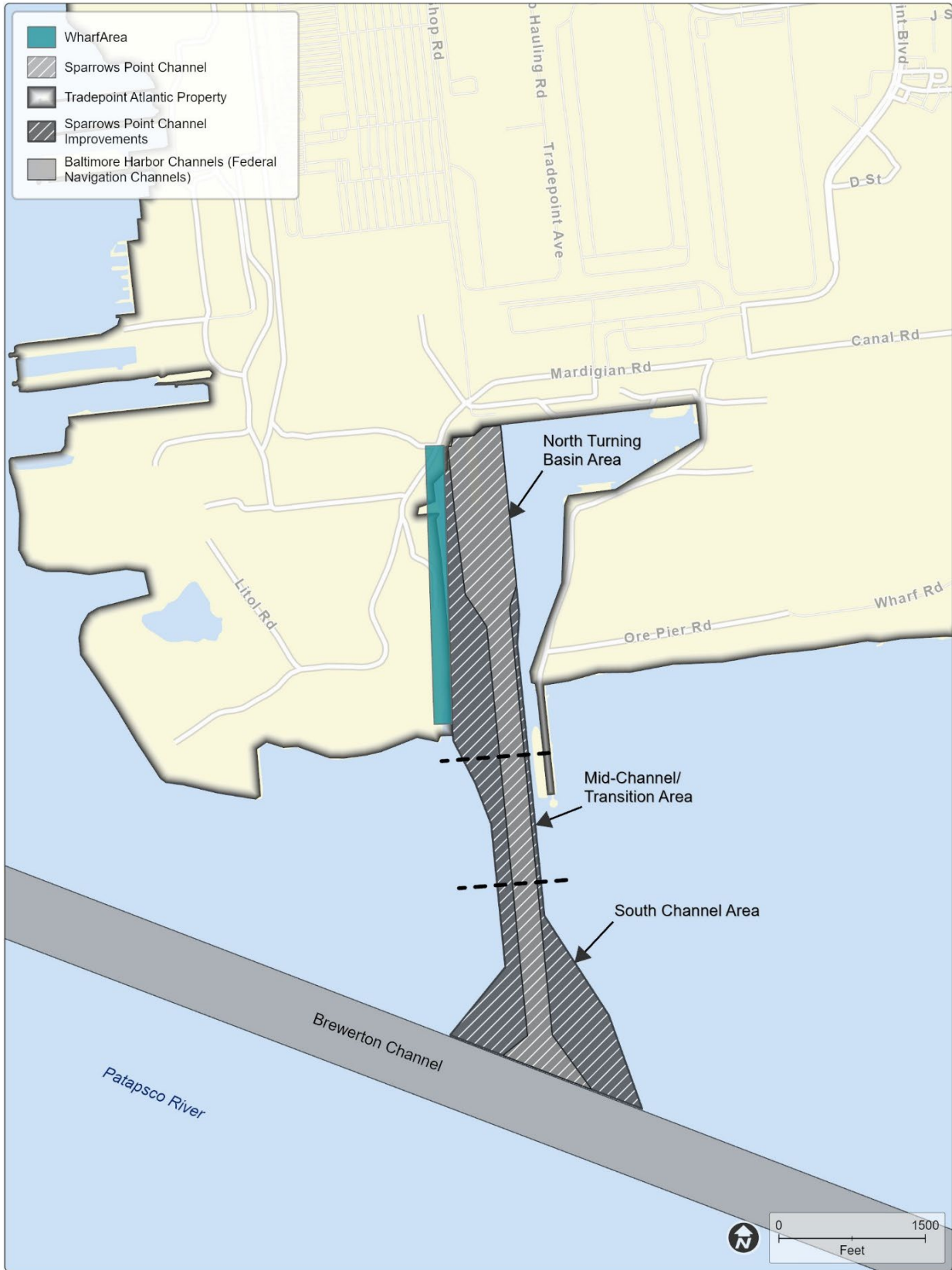


Figure 2. Sparrows Point Container Terminal: Dredging Areas

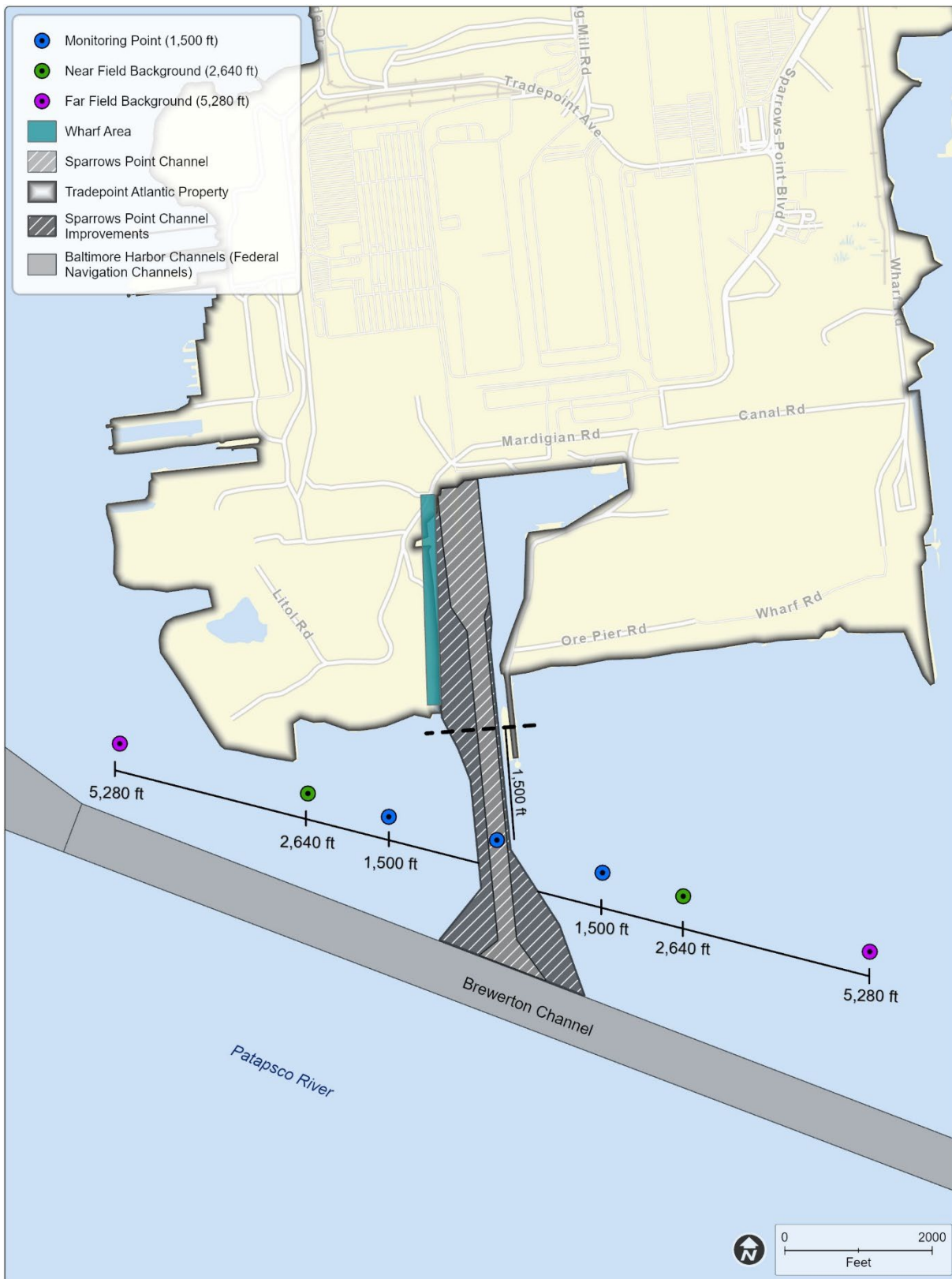


Figure 3. Sparrows Point Container Terminal: Turbidity Monitoring Locations for North Turning Basin Dredging, In-Water Slag Reclamation, and Revetment Installation

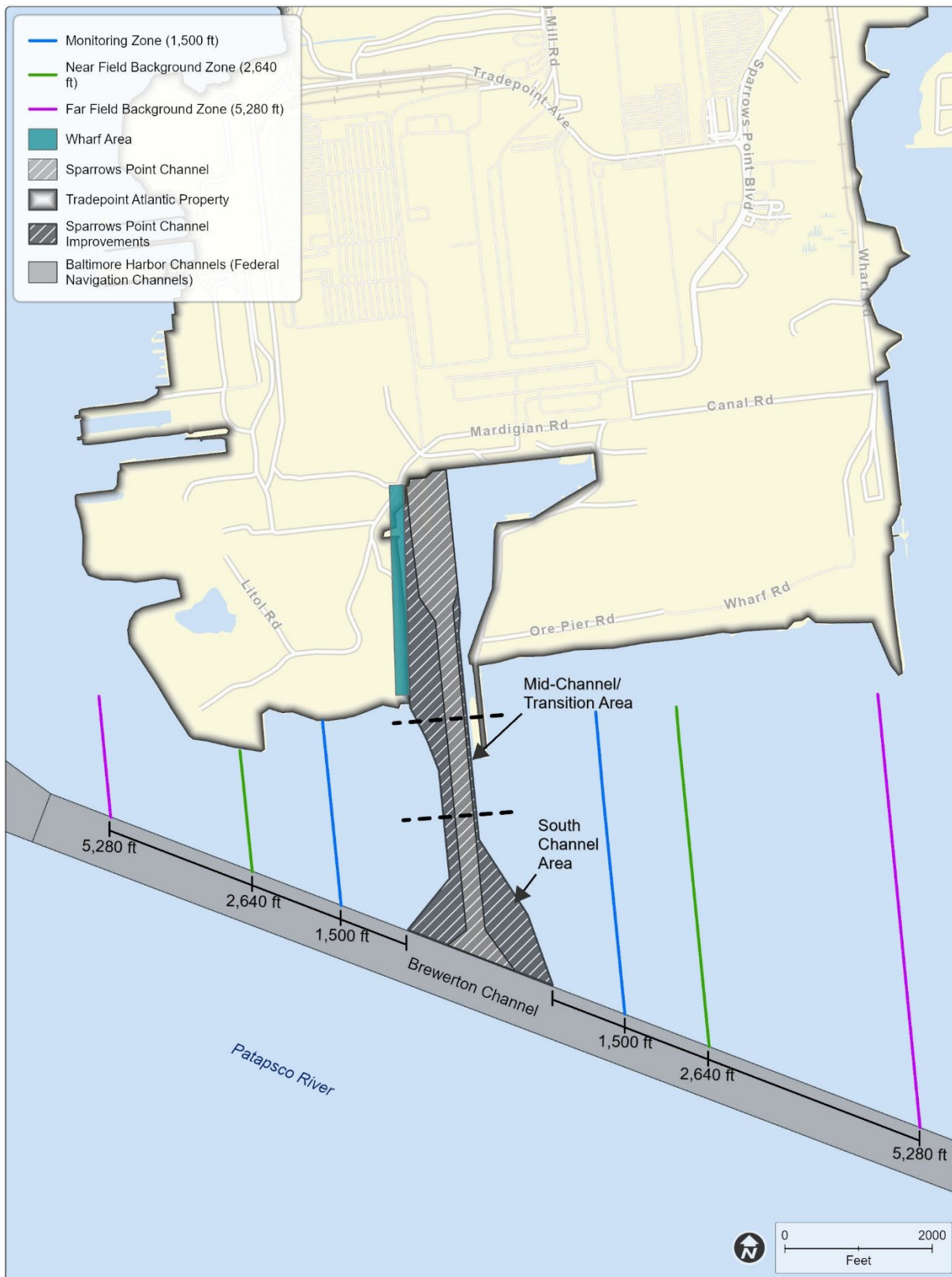


Figure 4. Sparrows Point Container Terminal: Turbidity Monitoring Zone/Transects for Mid-Channel/Transition Area Dredging and South Channel Dredging



Figure 5. Sparrows Point Container Terminal: Turbidity Monitoring Locations for Temporary Diffuser Installation, Offshore West Sparrows Point Peninsula near Mouth of Bear Creek

This page intentionally left blank