Attachment E

Natural Resources Assessments, Mack Point & Sears Island

Contents:

Hydrographic and Marine Geophysical Site Characterization Surveys Mack Point and Sears Island, Searsport, ME and *Side-Scan Sonar Target Report, Mack Point and Sears Island, Searsport, ME* (Steele 2023)

<u>Mack Point:</u>

Coastal Wetland Habitat Functions & Values Assessment Report, Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site, Mack Point (Stantec 2024).

Wetland Delineation Report, Mack Point Study Area, Searsport, Maine (VHB 2024).

*Updated Freshwater Resource Mapping (VHB 2024).

"Eelgrass and Shallow Subtidal Substrate Characterization Survey for the Proposed Mack Point Offshore Wind Terminal – September 2023 Survey Results" (Stantec 2024).

"Lobster and Urchin Dive Survey for the Proposed Mack Point Offshore Wind Terminal – November and December 2023 Survey Results" (Stantec 2024).

<u>Sears Island:</u>

Coastal Wetland Habitat Functions & Values Assessment Report, Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site, Sears Island (Stantec 2024).

Wetland Delineation Report, Sears Island Study Area, Searsport, Maine (VHB 2024).

*Updated Freshwater Resource Mapping (VHB 2024).

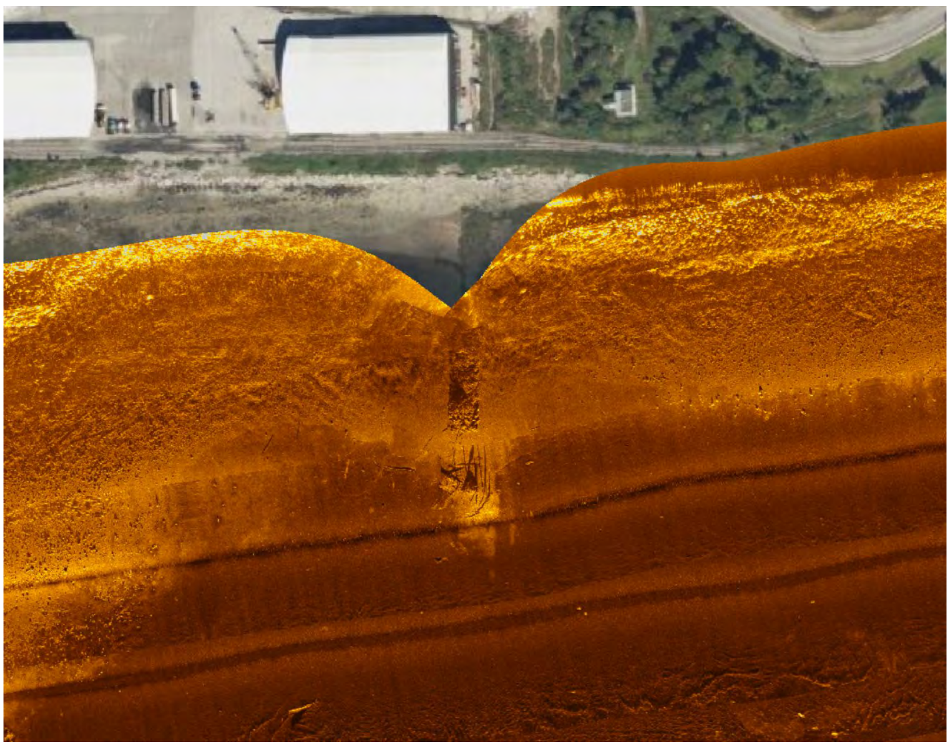
"Eelgrass Survey for the Proposed Sears Island Offshore Wind Terminal – August 2022 and September 2023 Survey Results" (Stantec 2024).

"Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results" (Stantec 2024).

"Proposed Sears Island Offshore Wind Terminal Sand Dune Characterization Memo" (Stantec 2024).

Hydrographic and Marine Geophysical Site Characterization Surveys

Mack Point and Sears Island



Searsport, ME

Survey Dates: October 23-26, 2023

Steele Associates Marine Consultants, LLC
94 Gifford Street
Falmouth, MA 02540
508.540.0001

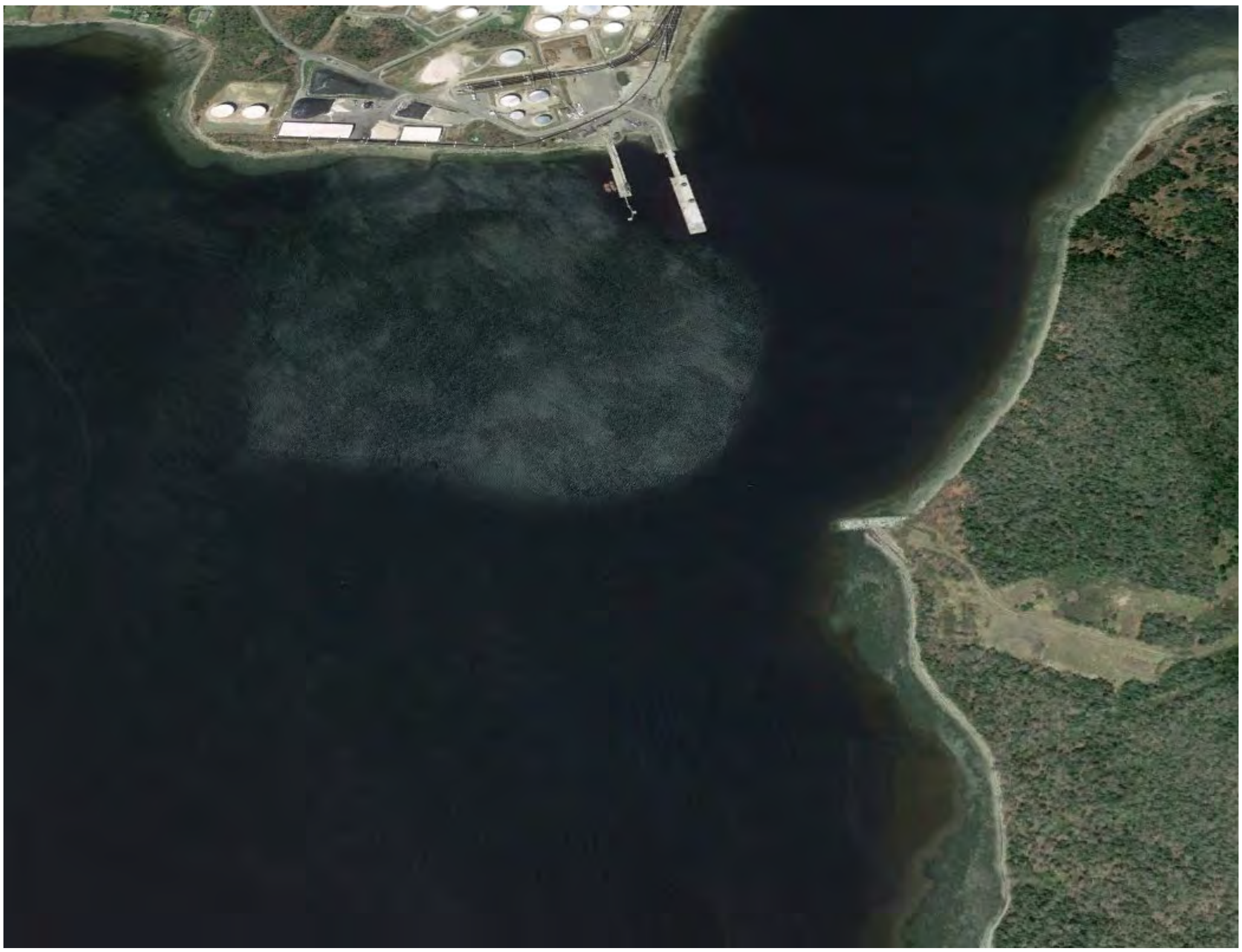
Prepared for:
Stantec

Table of Contents

1. Background

Steele Associates Marine Consultants, LLC (SAMC) was contracted by Stantec to perform multibeam bathymetry, sub-bottom profiling, marine magnetics, and side-scan sonar surveys at Mack Point and Sears Island in Searsport, ME. These surveys were performed under the direction of an NSPS and THSOA Certified Hydrographer. Sub-bottom profile data acquisition and interpretation was performed under the direction of a Senior Marine Geophysicist.

Figure 1. Mack Point and Sears Island Sites



Survey dates: October 23-26, 2023

Survey Personnel:
Kevin Tongue, Project Engineer
Eric Steele, Certified Hydrographer
Douglas Bergersen, PhD, Senior Geophysicist

Survey Grid: NAD83, Maine State Plane, East, Zone ME-1801, US Survey Feet

Vertical Datum: North American Vertical Datum of 1988 (NAVD88). Deliverables have been provided referenced to the Mean Lower Wow Water Datum (MLLW) upon request. MLLW is 5.84-ft below NAVD88.

Survey Vessel: *Marc Robert*, Steele Associates' 29-ft aluminum hull, twin engine vessel

Figure 2. Survey Vessel Marc Robert

Survey Hardware:

Multibeam Bathymetry
Sonar: R2Sonic 2024 multibeam sonar operating at 400-kHz
Inertial Measurement Unit: Applanix POS/MV Wavemaster II
Position and Heading: Applanix POS/MV Wavemaster II Real-time Kinematic GPS utilizing SmartNetNA corrections
Speed of Sound Surface Probe: Valeport MiniSVS
Speed of Sound Profiler: AML Seacast BaseX2
Survey Software: Hypack and Hysweep data acquisition software

Sub-Bottom Profiling
Sub-Bottom Profiler: Innomar Compact parametric sub-bottom profiler operating at 6-kHz and 12-kHz
Position: Applanix POS/MV Wavemaster II Real-time Kinematic GPS utilizing SmartNetNA corrections
Speed of Sound Profiler: AML Seacast BaseX2
Survey Software: Innomar SESWin

Magnetics Survey
Magnetometer: Geometrics G-882 high resolution cesium vapor marine magnetometer
Position: Applanix POS/MV Wavemaster II Real-time Kinematic GPS utilizing SmartNetNA corrections
Software: Hypack and MagEdit

Side-Scan Sonar Survey
Side-scan sonar: Edgetech 4125 600 / 1600-kHz dual frequency sonar
Position: Applanix POS/MV Wavemaster II Real-time Kinematic GPS utilizing SmartNetNA corrections and
Software: Edgetech Discover and Chesapeake SonarWiz

2. Multibeam Bathymetry

Survey dates: October 23-24, 2023

This multibeam bathymetric survey was performed to supplement and expand existing survey coverage of 2022 multibeam surveys performed by others. The survey was performed under the direction of an NSPS / THSOA Certified Hydrographer and in accordance with the U.S. Army Corps of Engineers (USACE) EM Manual 1110-2-1003 for hydrographic surveying.

The multibeam bathymetric survey was performed using an R2Sonic 2024 broadband multibeam bathymetric sonar. Attitude, heading, position, and water level measurements we performed using an Applanix POS MV Wavemaster II inertial measurement unit. Data acquisition and processing were performed using Hypack and Hysweep software.

The survey vessel and equipment have undergone extensive measurements to determine accurate sensor offsets from the vessel’s reference frame. Survey calibration includes a bar check, patch test and a comparison to perpendicular transects crosstie data.

This survey was executed to attain 200% bottom coverage of the site. The nearshore portions of these sites contained large boulders field which limited survey coverage. This was particularly problematic in nearshore areas within the Sears Island footprint.

Surveyed depths range from approximately -54-ft to 2-ft NAVD88 across the Mack Point survey area, and approximately -56-ft to 6-ft NAVD88 within the Sears Island block.

Figure 3. Mack Point Bathymetric Color-Filled Contour Map

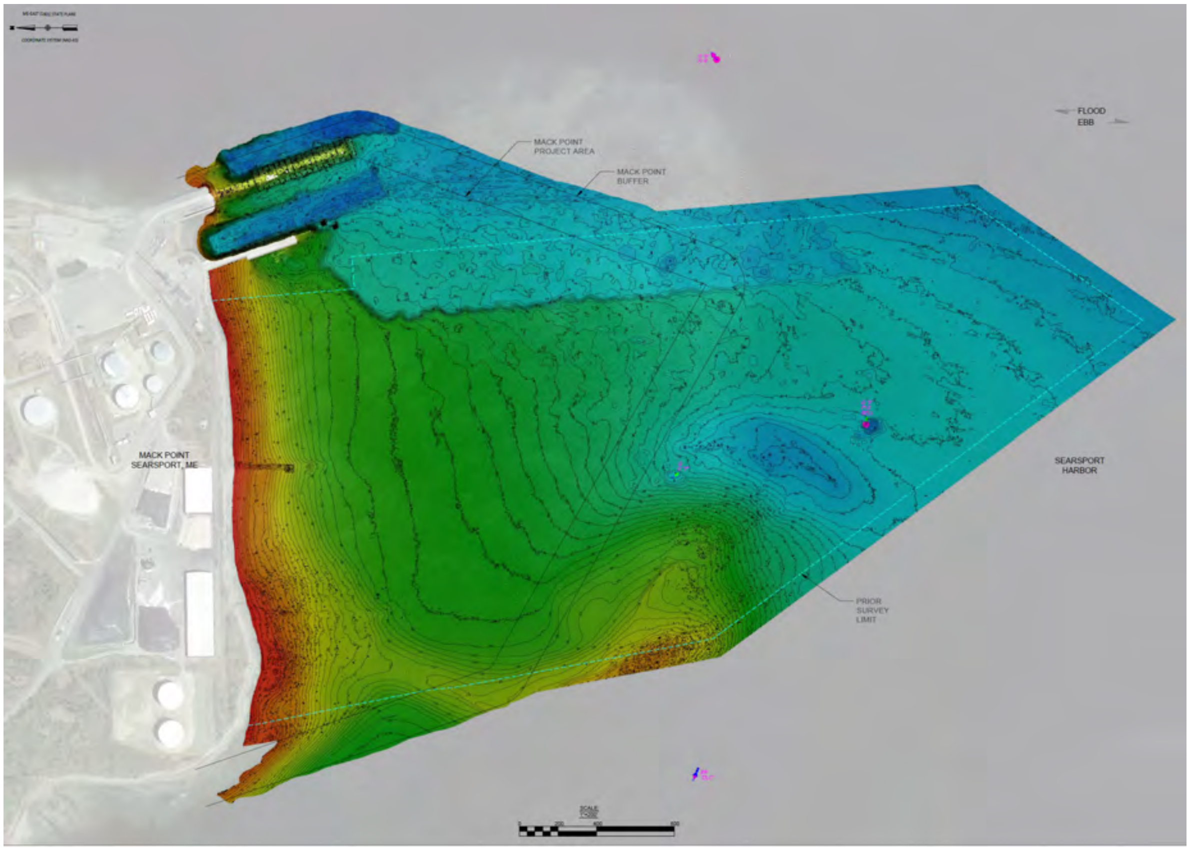
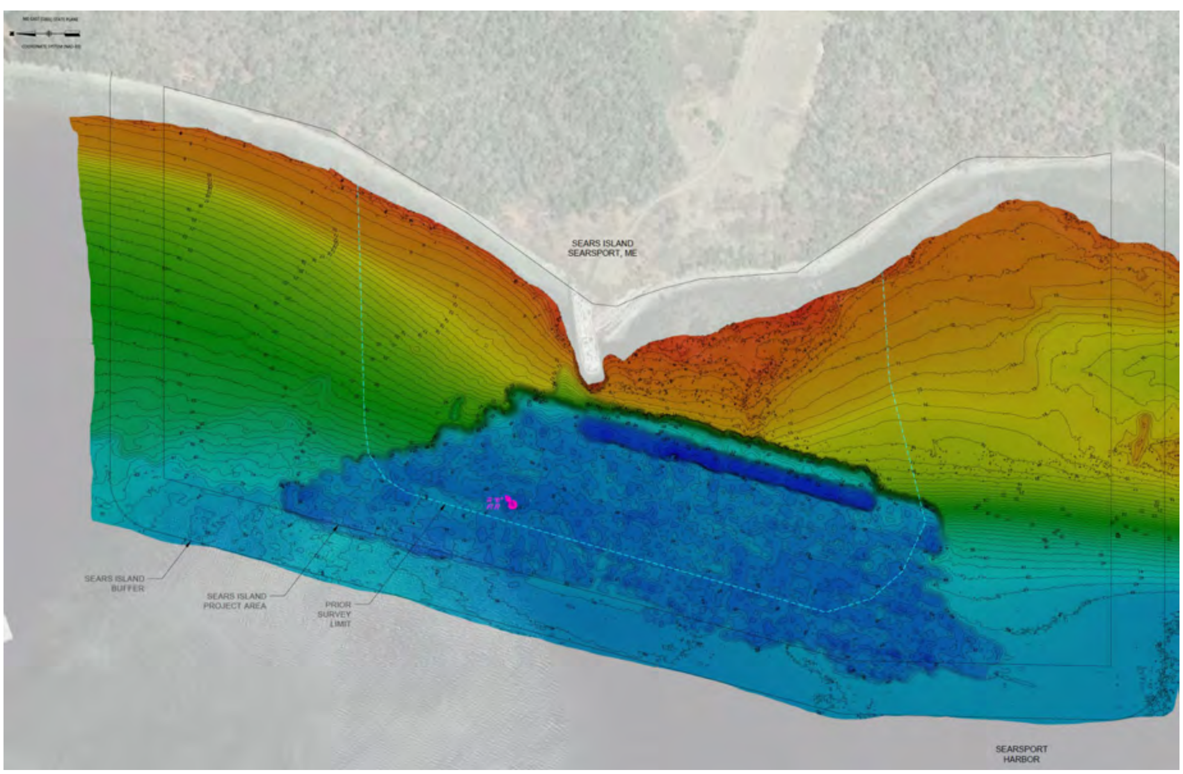


Figure 4. Sears Island Bathymetric Color-Filled Contour Map

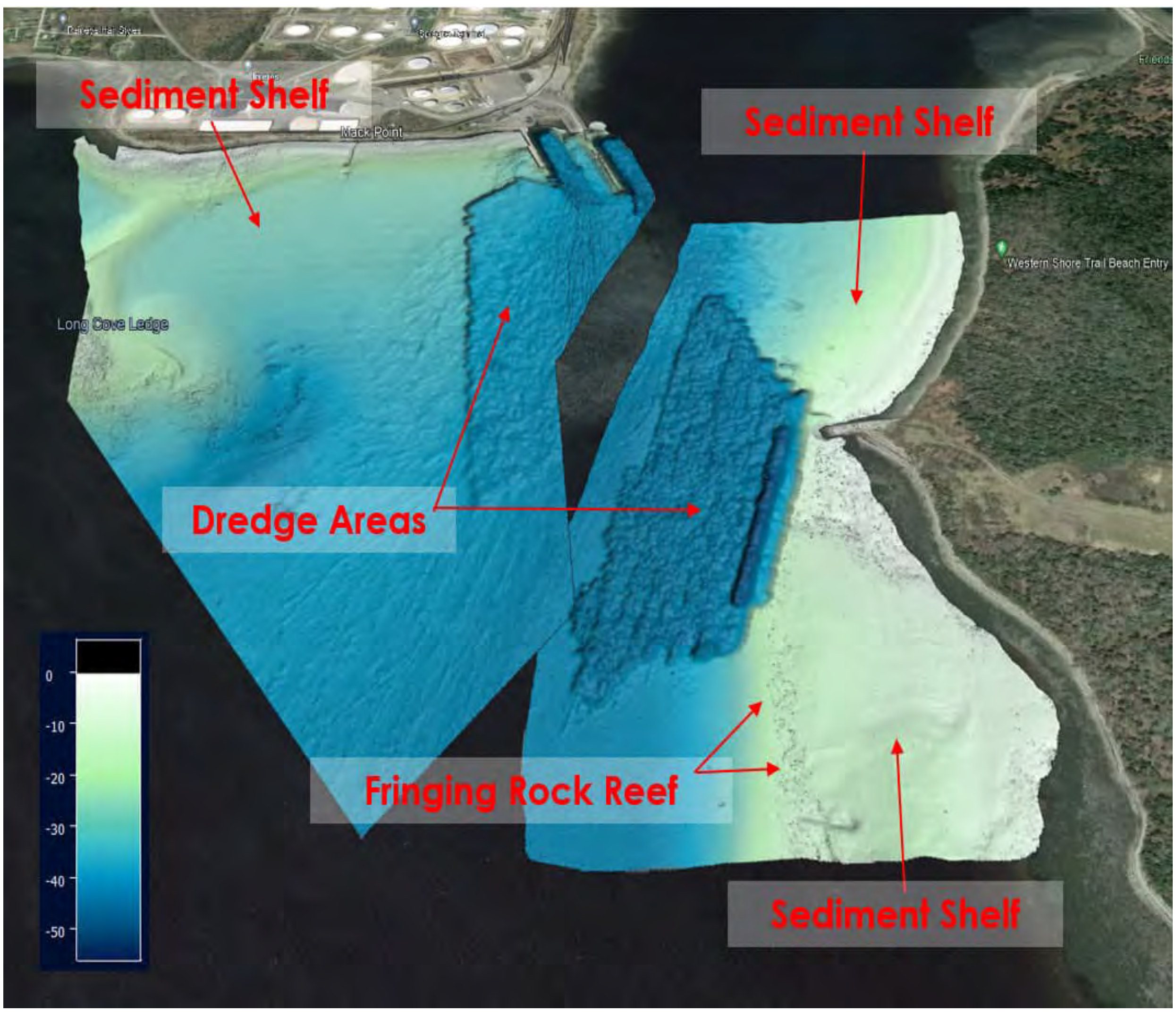


An interpretation of the bathymetric surface from the two survey footprints are shown in Figure 5. Broadly, three physiographic provinces exist across the areas: sediment covered shelves, shelf slopes, and a sediment-filled basin between the two sites.

In the Mack Point area, the southward extending Long Cove Ledge bounds the western edge of the survey block. The bathymetry along the shoreline of Mack Point shows features suggestive of exposed rocks (and hence little sediment accumulation). The shelf narrows to the east across the survey block, with slopes varying between 2°- 4°. A dredge area bounds the eastern edge of the block, and this feeds out into the more regional basin sediments.

Along the western side of Sears Island, the shelf area is broader. The rock jetty at the center of the survey block marks the narrowest portion of the shelf. A linear, fringing rock reef marks the offshore edge of the shelf in the south half of the survey area, and generally suggests thinner sediment coverage across this area. The dredge area lies west of the rock jetty.

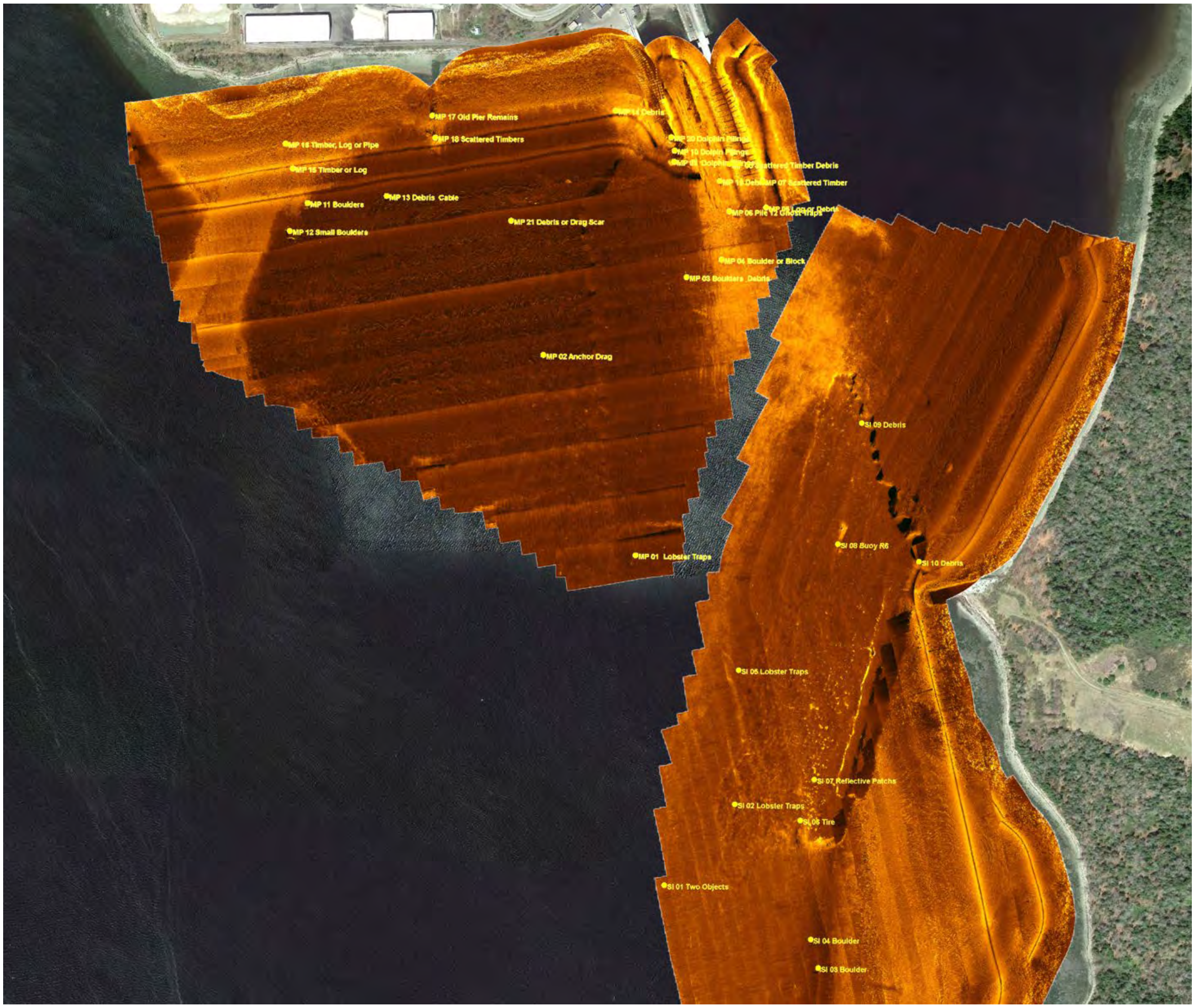
Figure 5. Bathymetric Surface Interpretation Map



3. Side-Scan Sonar

Survey dates: October 25 – 26, 2023

Figure 6. Side-Scan Sonar Mosaic with Target Locations



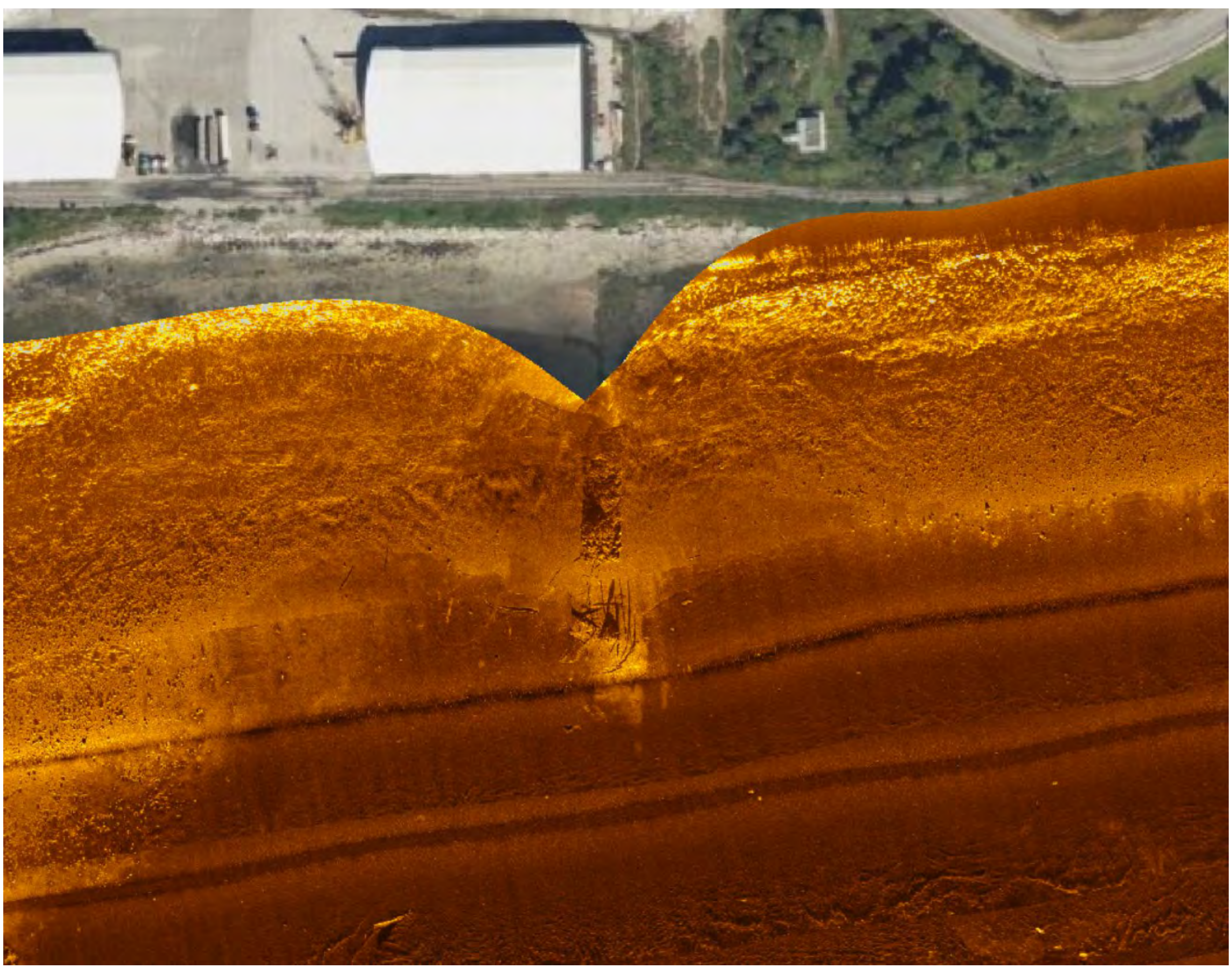
The side-scan sonar survey was conducted at a frequency of 600-kHz. Due to the variable water depth throughout the survey area, the side-scan towfish was secured to the vessel using a shallow-draft tow configuration. This resulted in a fixed cable layback value for side-scan sonar towfish positioning for the entire survey. Side-scan sonar transects were performed at 75-ft intervals oriented parallel to the shoreline. The sonar's range was limited to 50-m to achieve the desired ping rate and maximize across track resolution.

Figure 7. Edgetech 4125 600-kHz / 1600-kHz Side-Scan Sonar

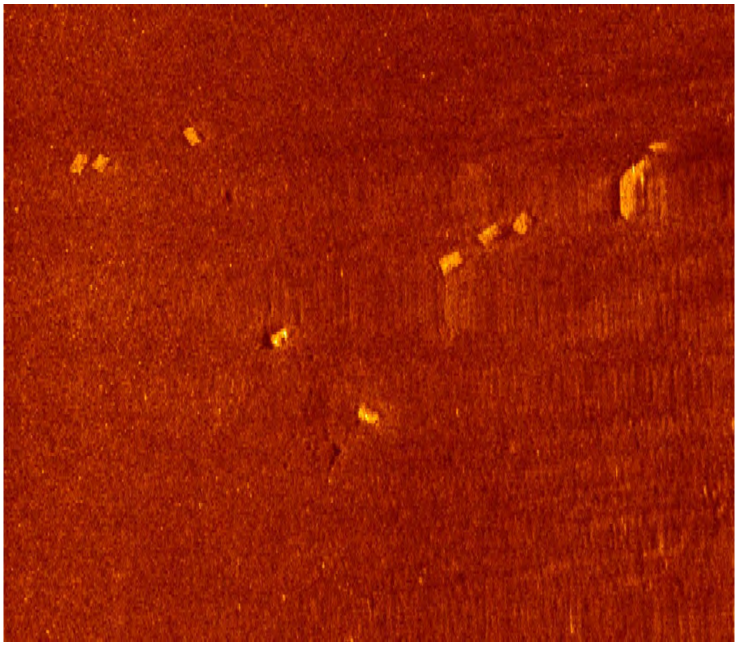
Side-scan sonar data were collected using Edgetech Discover software. Data processing, mosaic generation, and target reporting were performed using Chesapeake SonarWiz software.

While representative lobster traps and boulders are included in the sonar target report, the actual target count is far too great to detail every object identified. Many sonar targets identified in the report consist of miscellaneous debris, ghost lobster traps, and timbers or logs. The remains of the former pier and scattered timbers at Mack Point were clearly visible in in the side-scan data. No obvious objects of archeological or historical significance were detected during the survey.

Figure 8. Targets MP 07 & MP 08, Former Pier and Scattered Timbers, Mack Point



Figures 9 & 10. Targets SI 05 & MP 01, Typical Lobster Traps



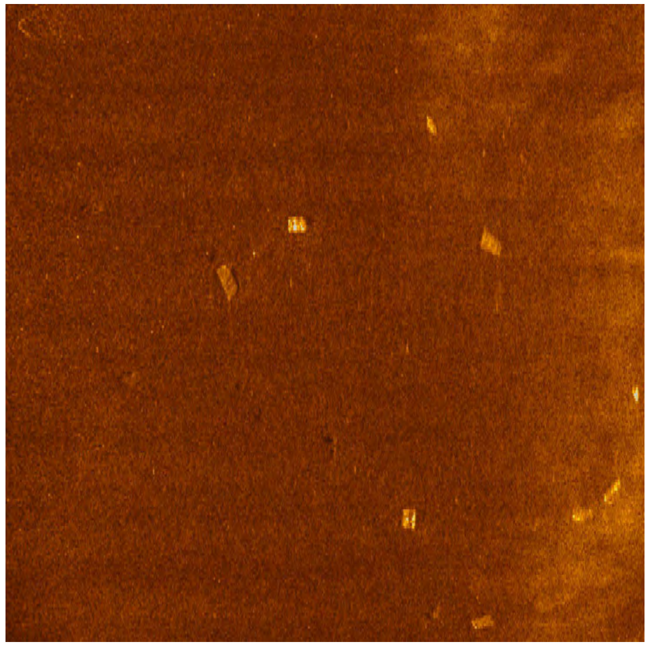


Figure 11. Target MP 19, Debris at Mack Point Near Sprague Terminal

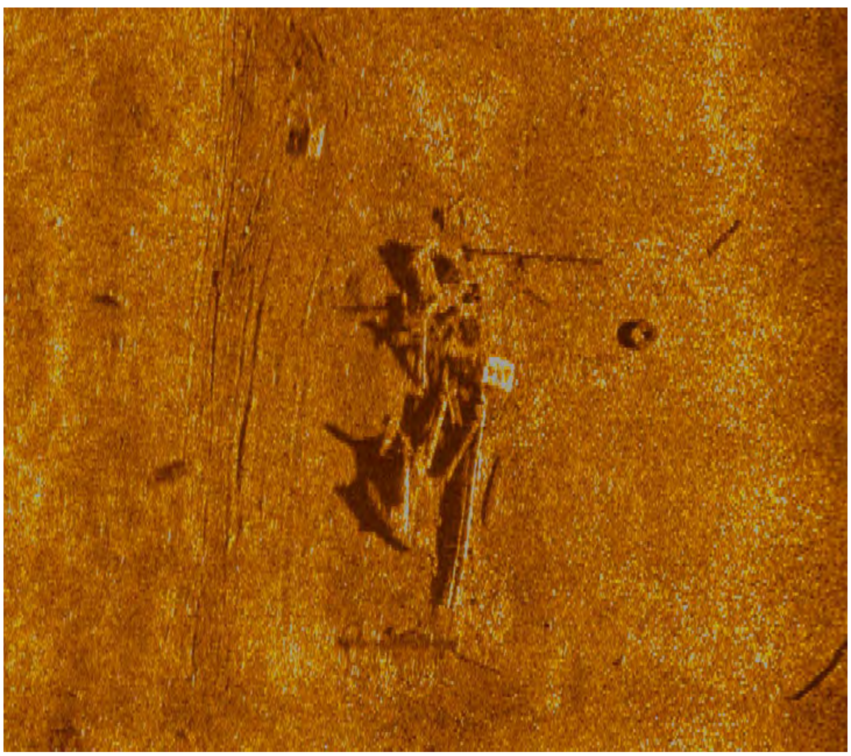


Figure 12. Target SI 10, Debris near Sears Island

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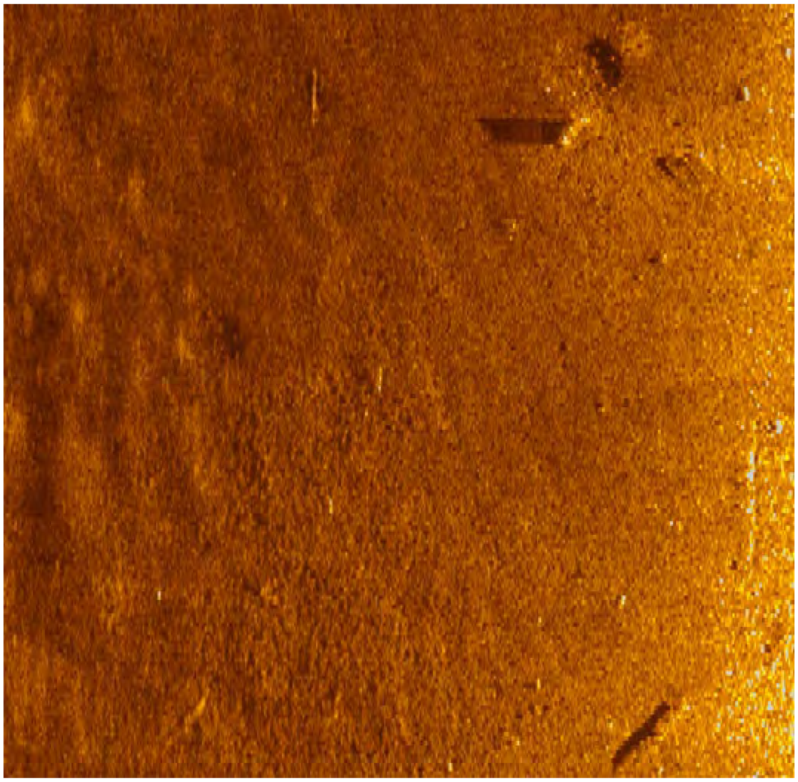


Figure 13. Target SI 07, Reflective Patches of Bottom Adjacent to Sears Island

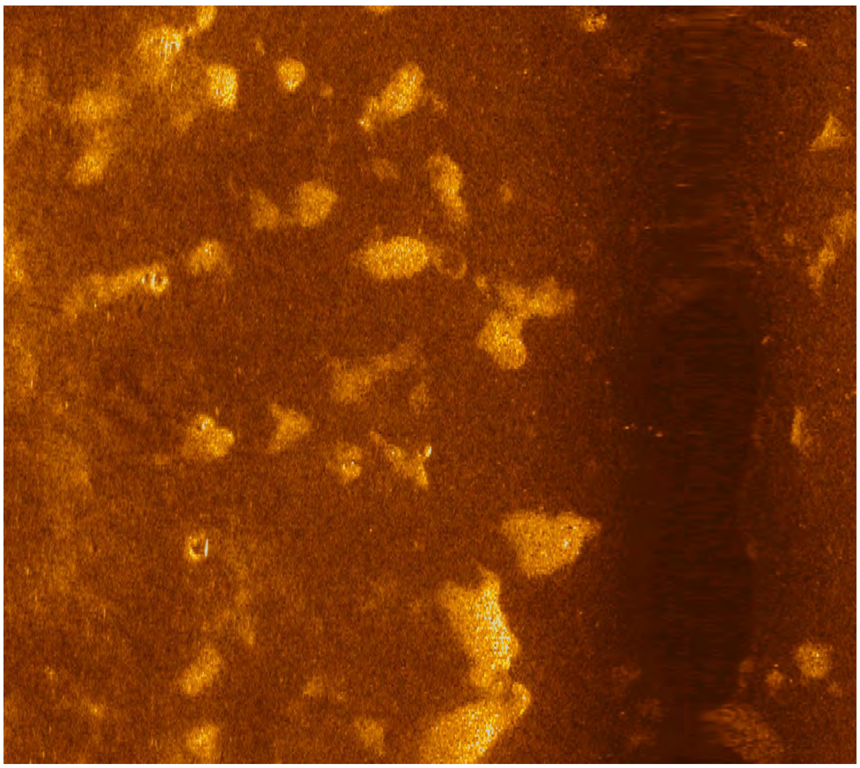
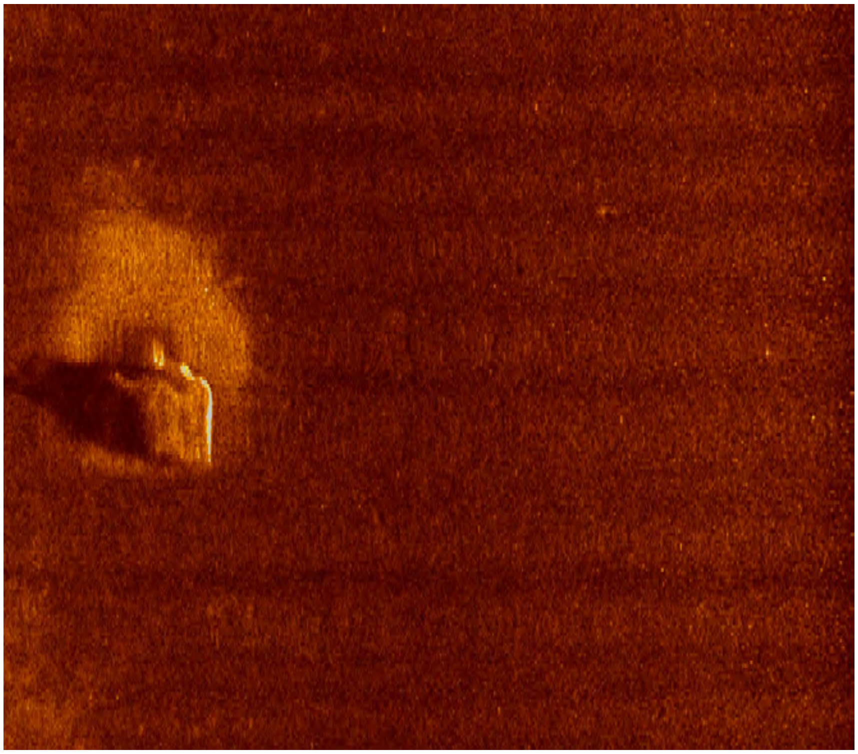


Figure 14. Target SI 03, Nearshore Boulder, Sears Island



Post-processed side-scan sonar acoustic signals were used to generate a backscatter mosaic. Backscatter is determined by the intensity and characteristics of an acoustic return reflected from the seafloor. Different bottom types, material composition, and textures reflect acoustics differently. These differences provide information about the nature of the seafloor and can aid in bottom classification. In the figure below the harder bottom types appear lighter in color with greater reflection intensity, and the less intense return of softer bottom types appear darker as more acoustic energy is absorbed by the bottom.

Figure 15. Side-Scan Backscatter Mosaic and Bottom Types

Table 1. Side-Scan Sonar Target Locations

ID	Description	Easting	Northing
MP 01	Lobster Traps	880094	283953
MP 02	Anchor Drag	879616	285002
MP 03	Boulders, Debris	880368	285405
MP 04	Boulder or Block	880553	285496
MP 05	Log or Debris	880788	285767
MP 06	Ghost Traps	880595	285748
MP 07	Scattered Timbers	880770	285905
MP 08	Scattered Timber, Debris	880596	285997
MP 09	Dolphin Pilings	880307	286010
MP 10	Dolphin Pilings	880311	286067
MP 11	Boulders	878384	285802
MP 12	Small Boulders	878289	285658
MP 13	Debris, Cable	878798	285837
MP 14	Debris	880002	286277
MP 15	Timber, Log	878306	285984
MP 16	Timber Log, Pipe	878270	286115
MP 17	Old Pier Remains	879038	286257
MP 18	Scattered Timbers	879054	286142
MP 19	Debris	880545	285907
MP 20	Dolphin Pilings	880292	286137
MP 21	Debris, Drag Scar	879449	285706
SI 01	Two Objects	880236	282228
SI 02	Lobster Traps	880608	282649
SI 03	Boulder	881042	281790
SI 04	Boulder	881004	281940
SI 05	Lobster Traps	880632	283350
SI 06	Tire	880951	282552
SI 07	Reflective Patches	881025	282776
SI 08	Navigational Aid Buoy R6	881155	284006
SI 09	Debris	881284	284638
SI 10	Debris	881581	283912

4. Marine Magnetics

Marine magnetics data was collected using a Geometrics G-882 total field cesium vapor magnetometer to detect and locate magnetic anomalies. The survey consisted of transects spaced at 75-ft intervals and oriented parallel to the shoreline.

Figure 16. Geometrics G-882 Cesium Vapor Marine Magnetometer

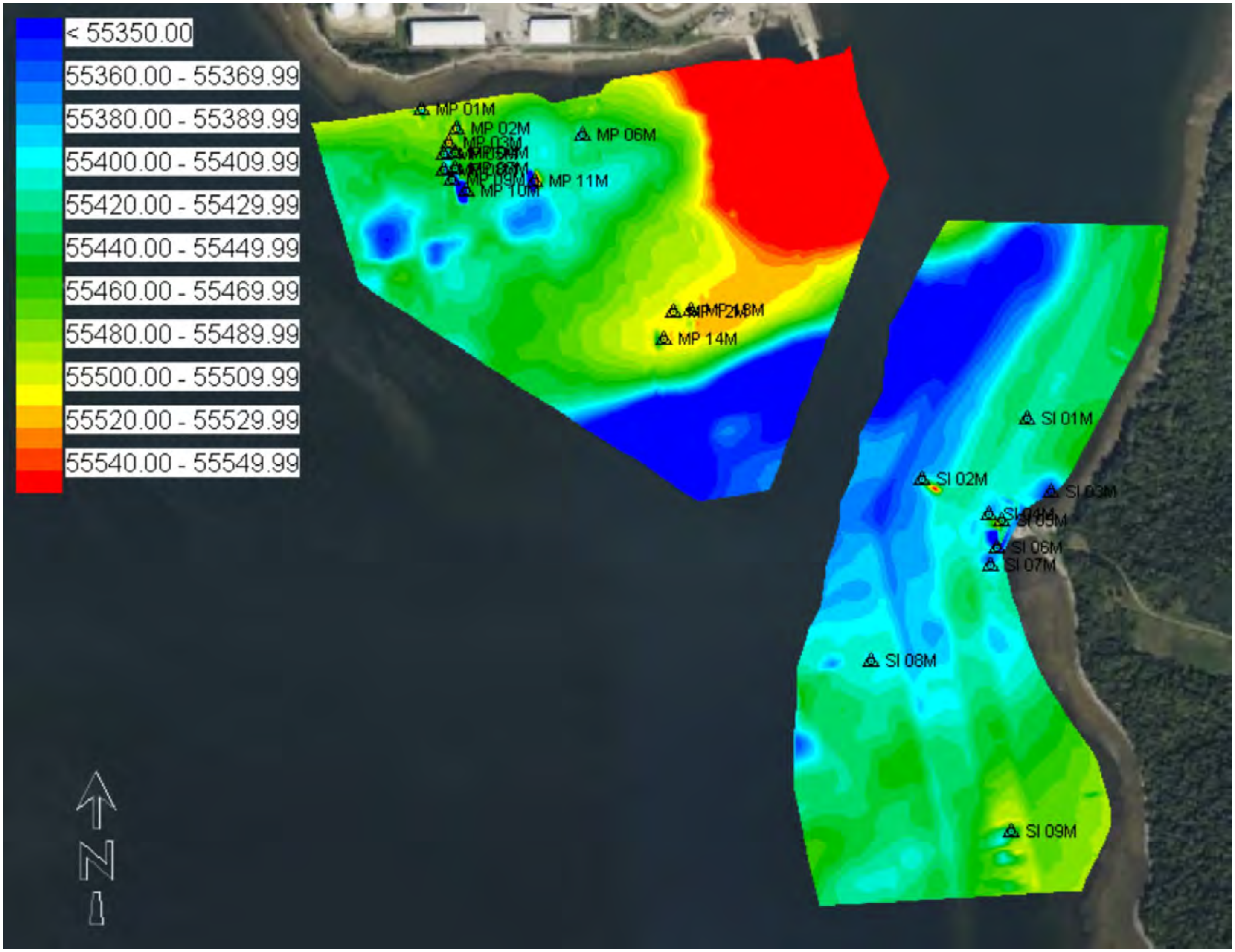
The Geometrics G-882 was selected for its ability to detect relatively small targets at great distances. For reference, this sensor can detect one ton of iron or steel at 100-ft or more, 250-lbs at 50-ft, and 30-lbs at 25-ft. The magnetometer continually measures the intensity of earth's magnetic field and detects variations and anomalies caused by materials containing iron such as local geology and man-made ferrous objects including small artifacts, ships, navigational aids, or pipelines. Contouring of total magnetic field data displays the distortions present within the site and anomalies where the sensor detected a ferrous object presenting dipole structure with a magnetic high and low. While contours may point to the general vicinity of a magnetic distortion, a dipole typically indicates close proximity to the object's location.

Due to the shallow water depth and encountered, the magnetometer towfish was suspended from a towed float at a depth of approximately 4-ft. Towfish position was determined using Hypack's Towfish driver using a fixed layback of 100-ft. The towfish position accuracy was verified by performing reciprocal passes adjacent to a known magnetic target.

Excessive noise was encountered in the vicinity of the Sprague Terminal and area adjacent to the piers. As a result, any potential magnetic targets located in this area are undetectable. The boulders present limited nearshore survey coverage.

Data processing was performed using Hypack's Magnetometer Editor software. International Geomagnetic Reference Field (IGRF) and shore-based corrections from the International Association of Geomagnetism and Aeronomy (IAGA) corrections were applied to the raw readings to remove background gamma. An azimuth-based gamma adjustment was also applied to correct for gamma changes resulting from reciprocal azimuths.

Figure 17. Total Magnetic Field Color Contours with Target Overlay



Several dozen smaller magnetic anomalies were detected which seem to be attributed to the large number of ghost lobster traps present at these sites. This report focuses on the larger magnetic anomalies detected. It is important to note that the location of detected anomalies may not coincide with actual target locations. This is simply the location along the survey transect where the greatest anomaly was detected. Several magnetic hits coincide with locations identified as side-scan sonar targets. These correlate with features identified as debris, boulders, possible pipe, apparent cable, navigational aid buoy, and scattered timber debris. These targets and features are identified below.

Figure 18. Side-Scan Sonar Target MP 02 / Magnetometer Target MP 12M: Possible anchor drag scar or debris

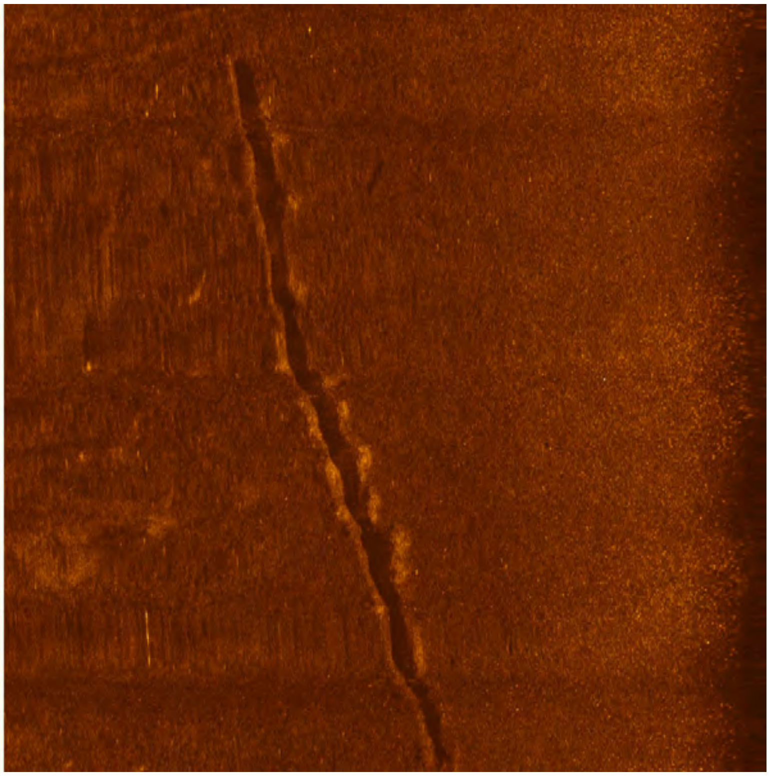


Figure 19. Side-Scan Sonar Target MP 13 / Magnetometer Target MP 11M: Debris and cable

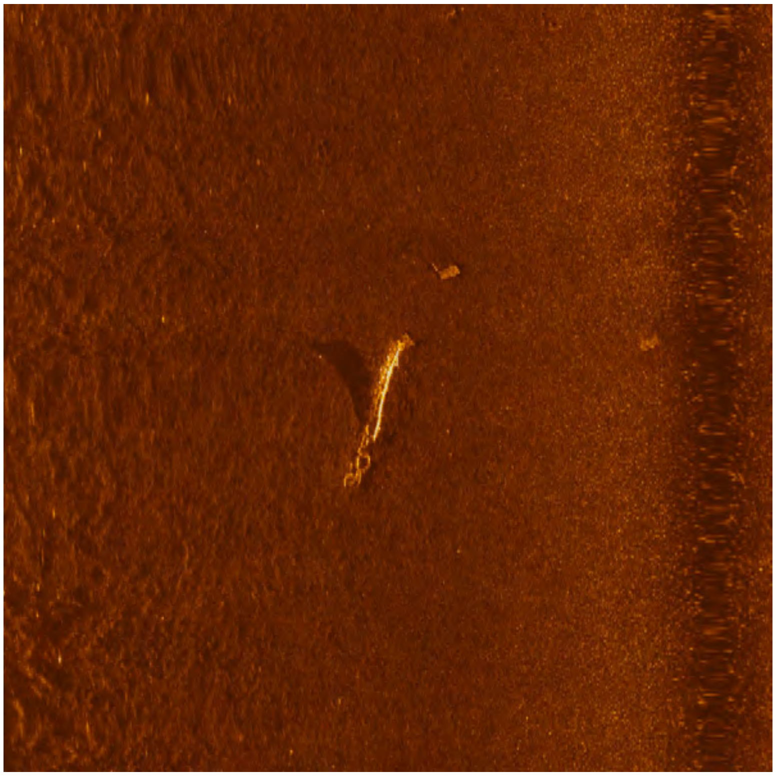


Figure 20. Side-Scan Sonar Target MP 11 / Magnetometer Target MP 10M: Apparent boulders

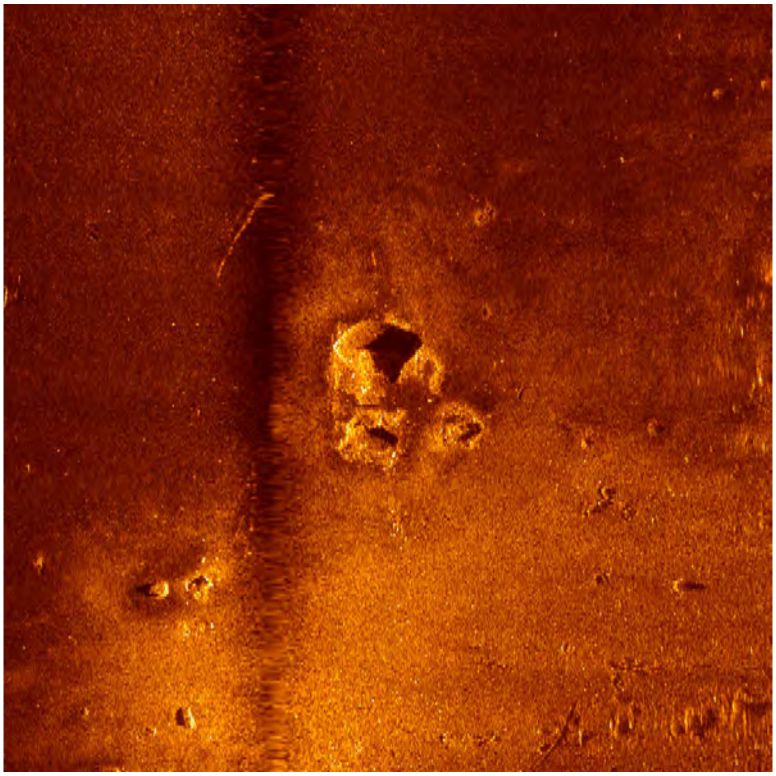


Figure 21. Side-Scan Sonar Target MP 15 / Magnetometer Target MP 05M: Apparent timber, log or pipe

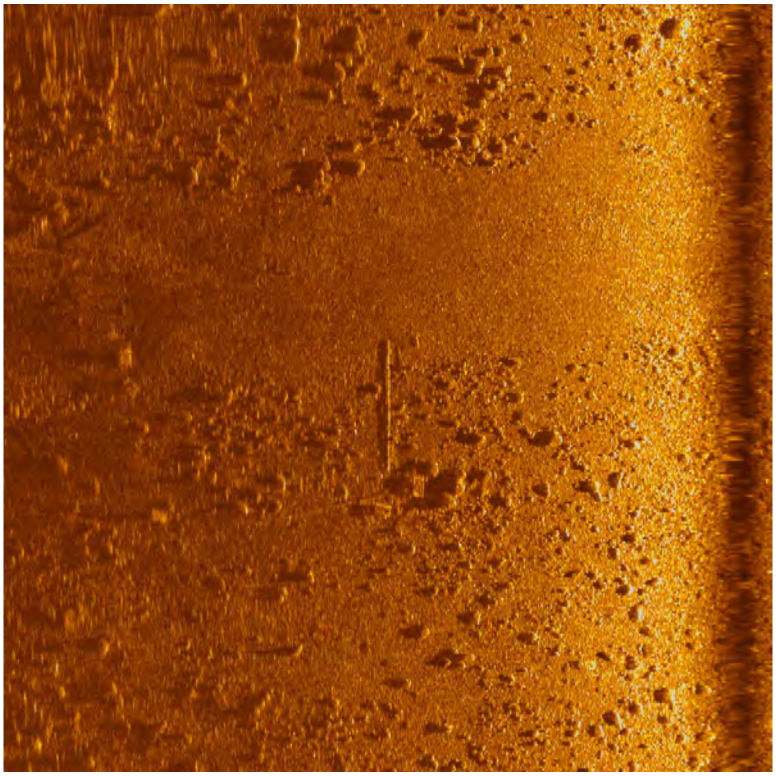


Figure 22. Side-Scan Sonar Target MP 16 / Magnetometer Target MP 02M & 03M: Apparent pipe

Figure 23. Side-Scan Sonar Target MP 18 / Magnetometer Target MP 06M: Scattered timbers

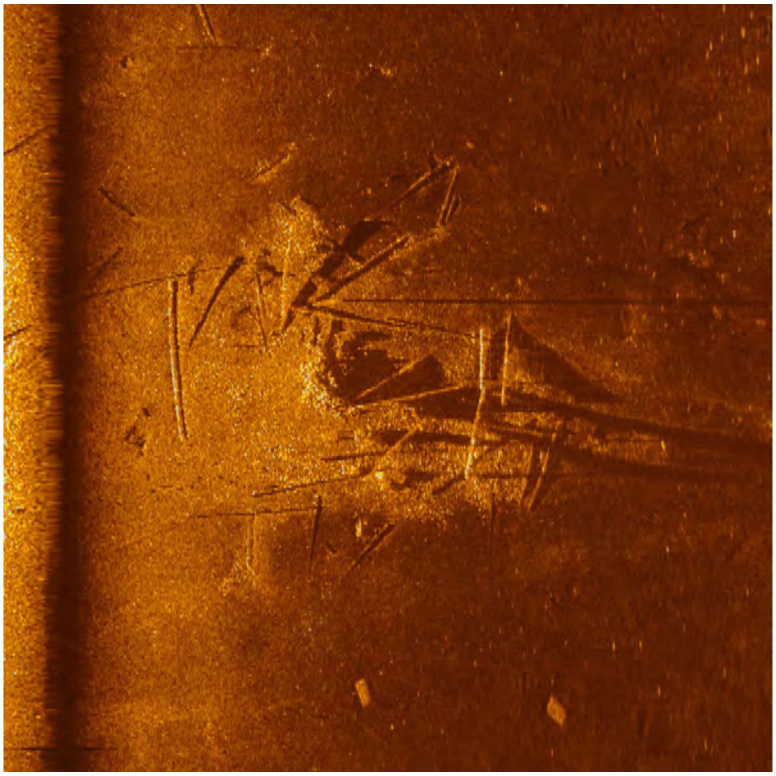


Figure 24. Side-Scan Sonar Target SI 08 / Magnetometer Target SI 02M: Navigational Aid Buoy R6 anchor and chain

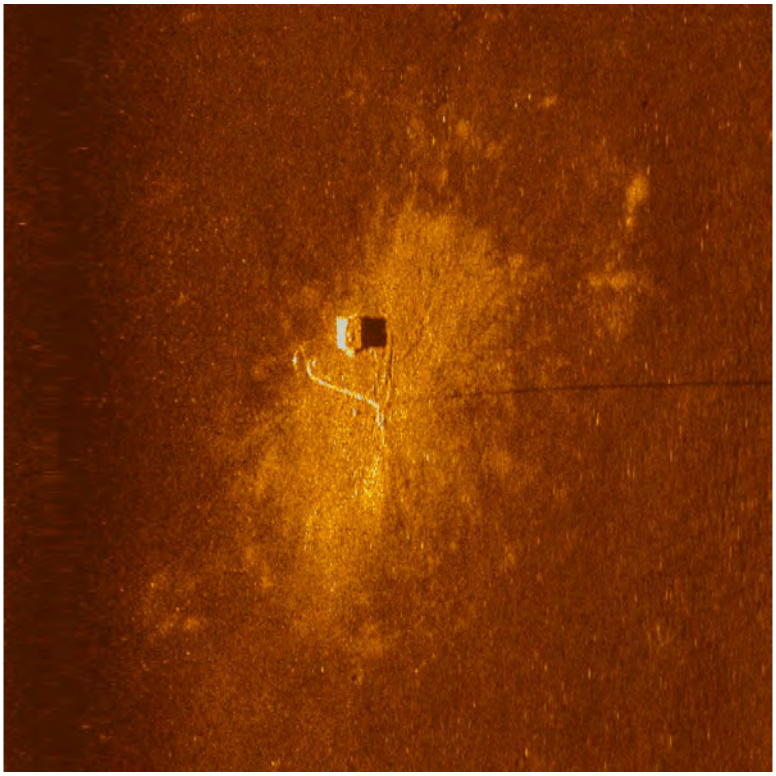


Figure 25. Side-Scan Sonar Target SI 10 / Magnetometer Target SI 04M: Debris

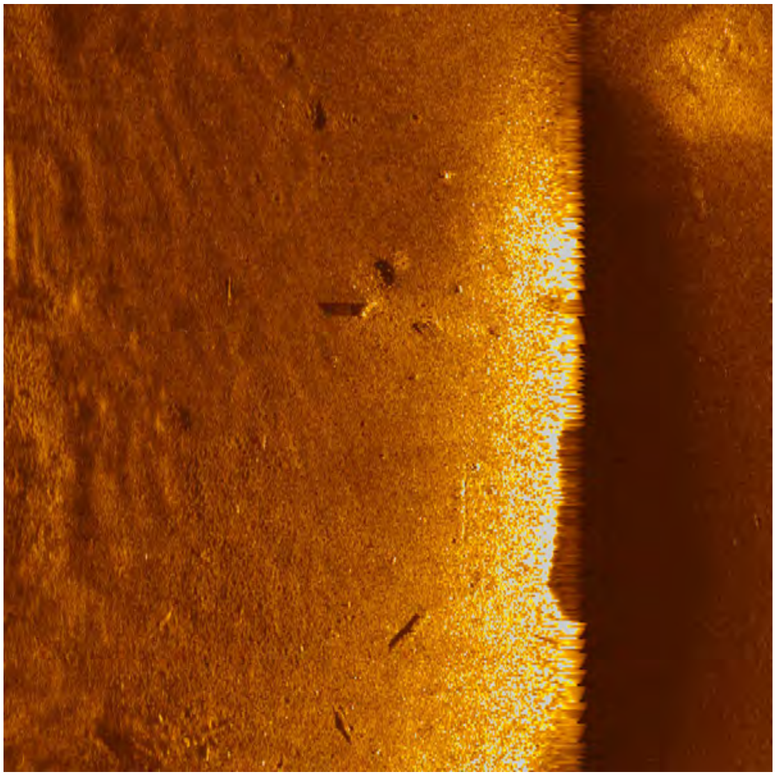


Table 2. Marine Magnetics Approximate Anomaly Locations

ID	Easting	Northing
MP 01M	878137	286259
MP 02M	878344	286147
MP 03M	878300	286060
MP 04M	878330	286005
MP 05M	878264	285993
MP 06M	879095	286108
MP 07M	878332	285915
MP 08M	878266	285906
MP 09M	878314	285841
MP 10M	878404	285778
MP 11M	878804	285839
MP 12M	879629	285055
MP 13M	879735	285073
MP 14M	879576	284896
SI 01M	881728	284422
SI 02M	881109	284065
SI 03M	881868	283988
SI 04M	881503	283856
SI 05M	881580	283818
SI 06M	881547	283660
SI 07M	881514	283554
SI 08M	880806	282986
SI 09M	881632	281975

5. Sub-Bottom Profiling

The SBP data were acquired with an Innomar *compact* parametric sub-bottom profiler system mounted on an over-the-side pole aboard the survey vessel.

The Mack Point survey consisted of 23 transects oriented perpendicular to the shoreline in a N-S direction and 4 transects oriented parallel to shoreline (in a roughly E-W direction). Line spacing for the primary lines was approximately 150-ft and 300-ft for the cross lines (Figure 26). Transect length varied across the survey block.

The Sears Island survey consisted of 36 transects oriented perpendicular to the shoreline in a radiating fashion, changing from NW-SE in the north and WSW-ENE in the south (Figure 26). Cross tie information was provided by 5 transects oriented parallel to shoreline (bending from NE in the north to SE in the south). Line spacing for the primary lines was approximately 150-ft, although this narrowed around the rock jetty extending from the western shore of the island. The cross line spacing was approximately 200-ft. Transect length varied across the survey block.

Figure 26. Sub-Bottom Profile Survey Transects

Parametric sonars take advantage of the non-linear properties of water to create low frequency signals from the high-pressure transmission of two primary higher frequencies. For the Innomar systems the high frequency signals are centered around 100-kHz, with low frequency signals that can be adjusted between 4-kHz to 15-kHz (depending on penetration and resolution requirements). Advantages of parametric systems in comparison to other subbottom profilers include smaller beam footprints, short transmit pulses, constant directivity for different frequencies, no ringing or side lobes to received signal, and high ping rates. All of the above result in the highest possible horizontal and vertical resolution.

The low frequency channel was of primary interest for this survey because the principal objective was mapping the sediment thickness overlying a cemented carbonate platform. The low frequency settings used for this survey was 8kHz with a pulse length of 258 µsec (~15 inches).

Interpretation techniques included automated picking of the seabed reflector from the high frequency (HF) / 100-kHz channel followed by manual adjustment to correct mistakes made by the automated algorithms. This seabed reflector was then applied to the low frequency (LF) / data. The SBP seabed reflector was then aligned with the multibeam bathymetry surface to reduce all data to NAVD88 datum.

Two reflectors were identified and interpreted across the survey area. The first reflector marks the base of an uppermost sediment unit presumed to be largely unconsolidated. The second reflector was deeper and more inconsistent. It marks the top of either a more consolidated unit or the bedrock horizon.

A differencing algorithm was applied between the seabed reflector and the primary subsurface reflector to derive sediment unit thickness using an assumed average velocity of 4800 ft/sec (conversion of the two-way time associated with the SBP trace data to a metric measurement). The same sediment velocity was used to derive reflector depths.

The two reflectors were identified and digitized across both the Mack Point and Sears Island survey blocks. The uppermost reflector marks the base of an interpreted unconsolidated sediment unit that appears to be the focus of dredging efforts. The second reflector is generally deeper and marks either a more consolidated underlying sediment unit or a rock “basement” unit. The upper reflector truncates against the basement reflector across both areas.

Figures 27 through 30 below show the reflector patterns and sediment units in four transects across the Mack Point survey area (from west to east). The uppermost sediment unit is thin in the west, more prominent across the center of the block, and then diminishes again in the east where dredging has occurred.

Horizontal scale lines at 20-ft intervals; vertical lines at 50-ft intervals.

Figure 27. Figure 3: Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and “basement” reflector (green arrows) observed across the Mack Point survey area.

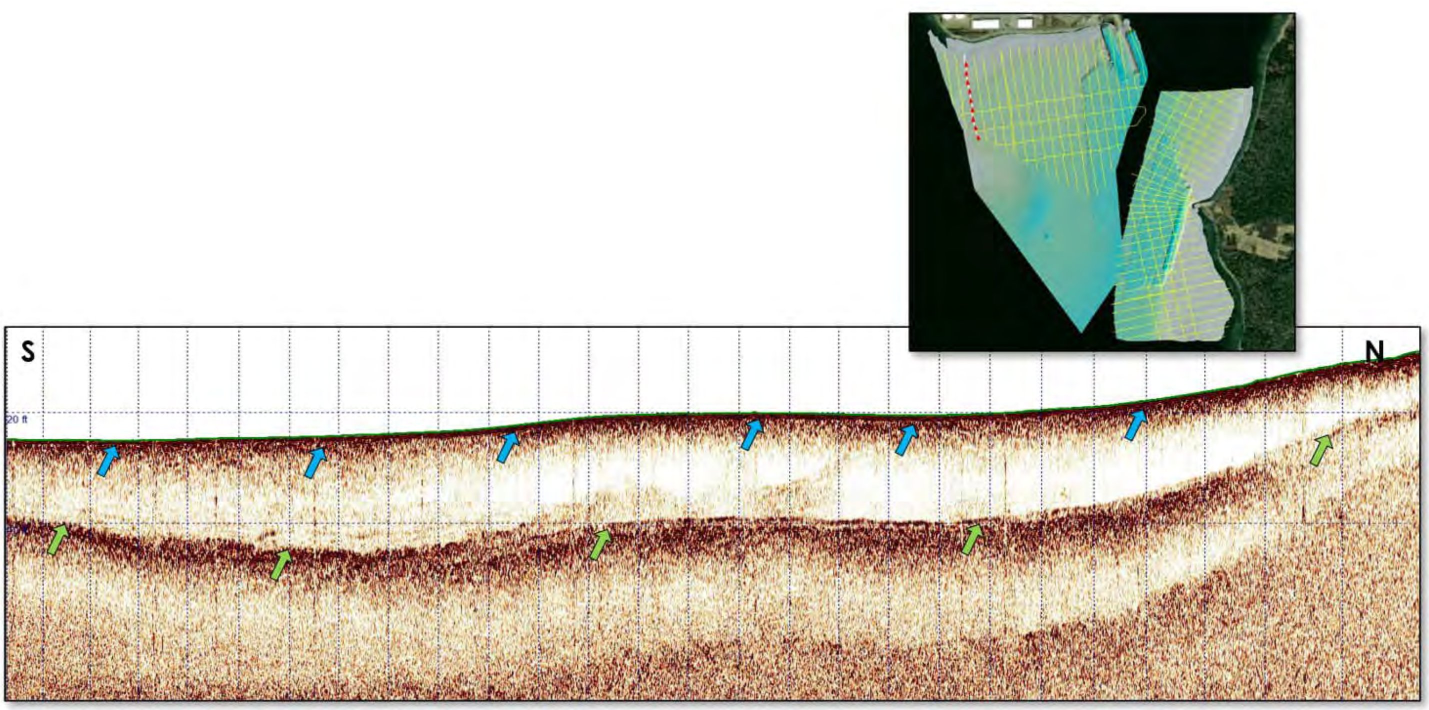


Figure 28. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

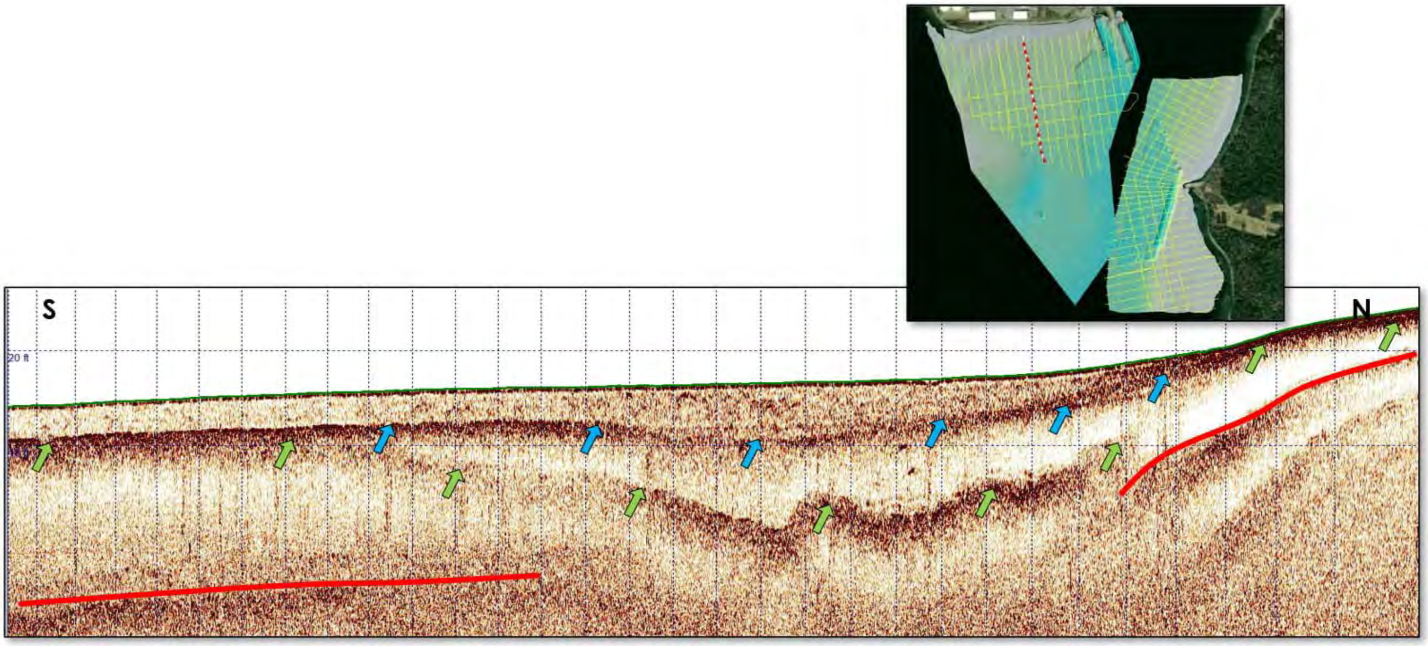


Figure 29. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

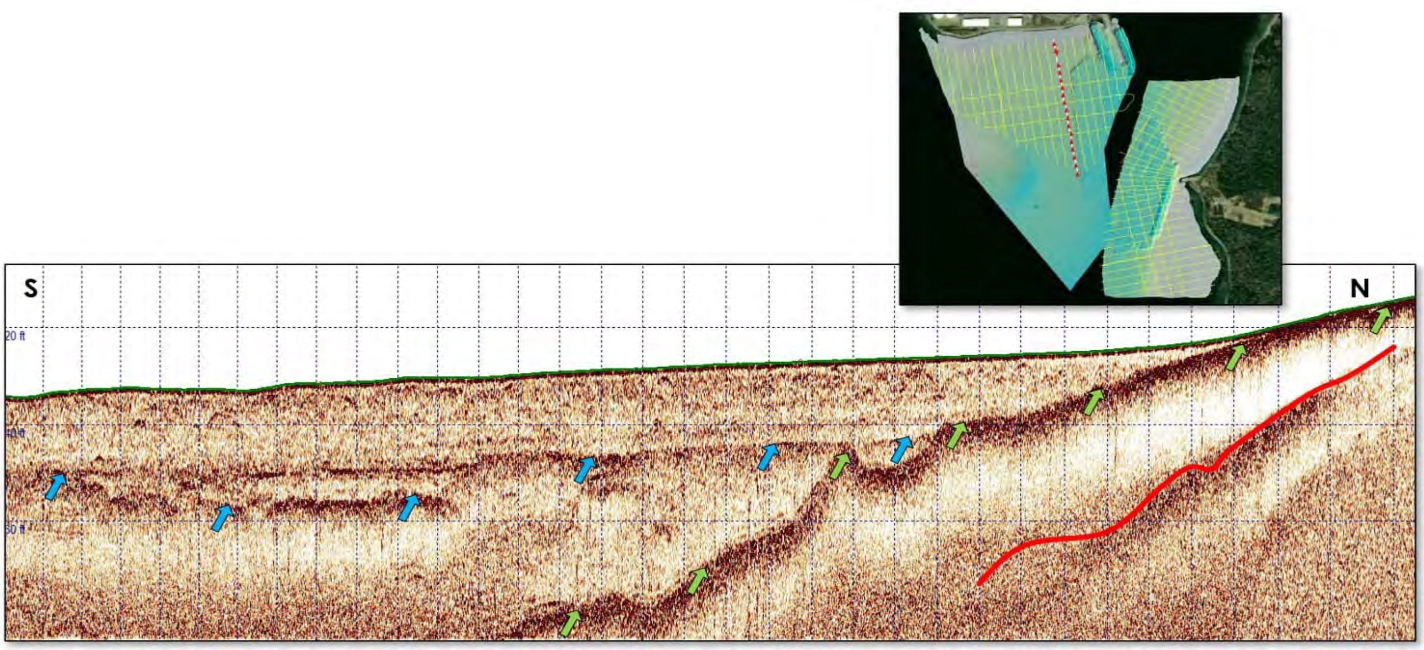


Figure 30. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area.

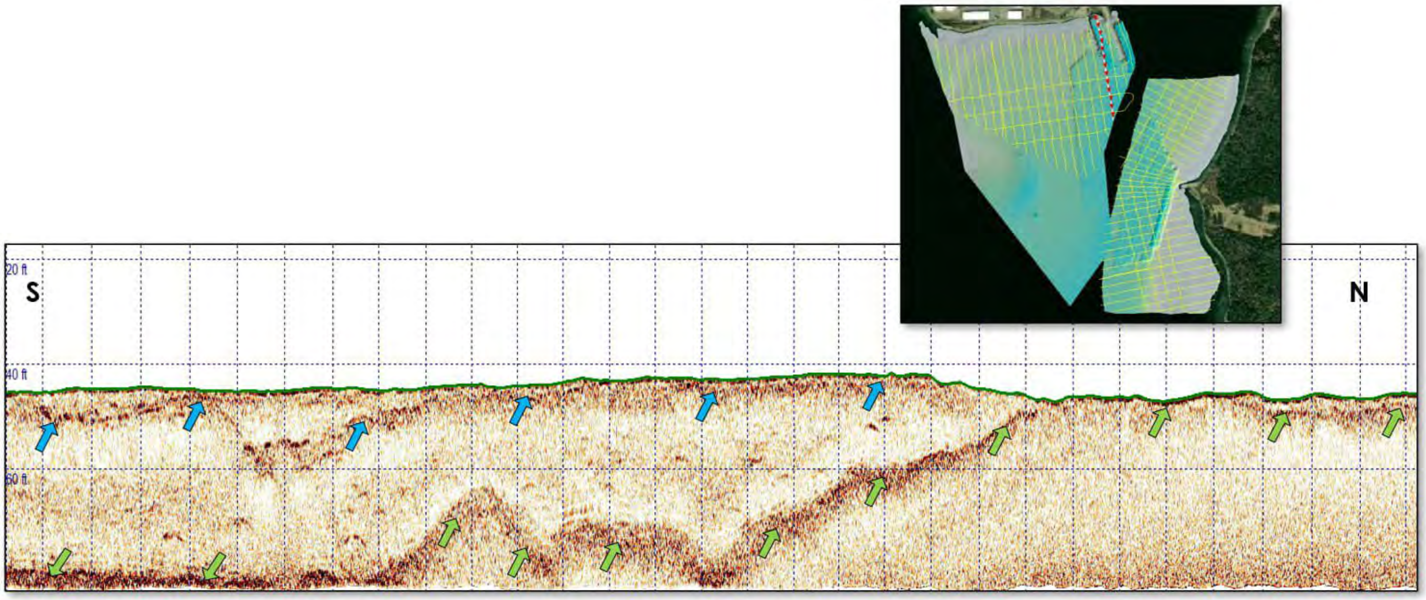
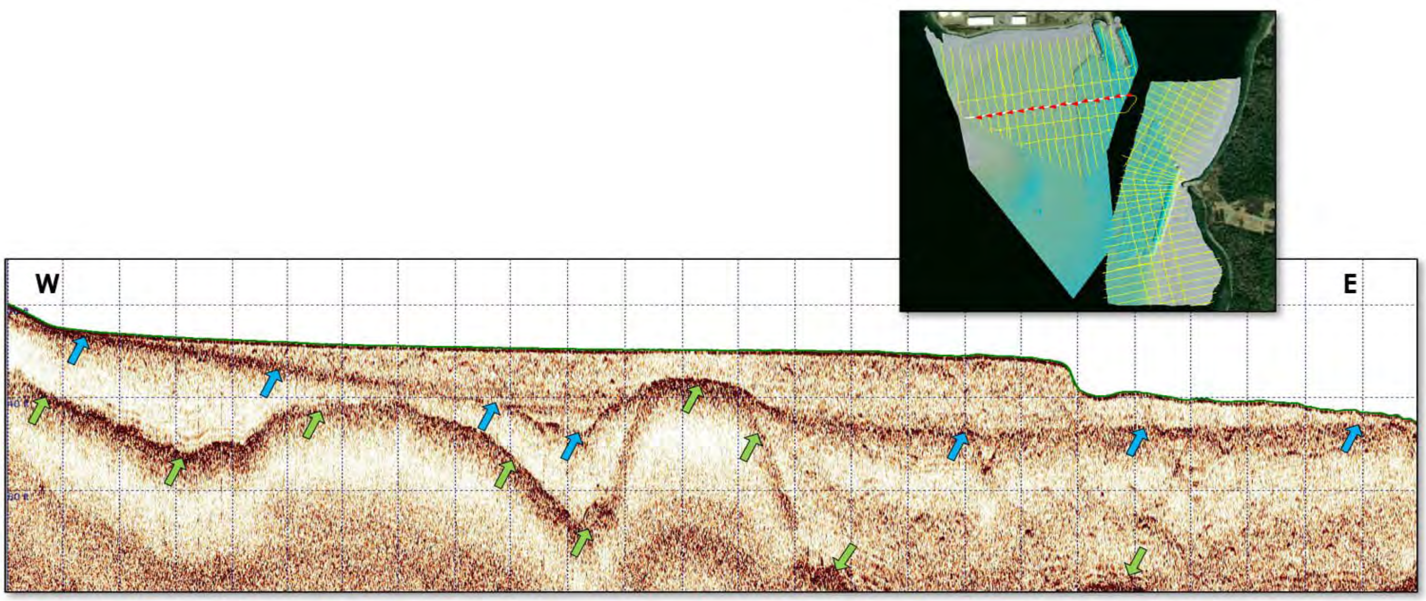


Figure 31 shows a transect oriented parallel to the shoreline across the Mack Point survey block. This helps illustrate the sediment thickness patterns discussed in the paragraphs below.



The pair of isopach maps in Figures 32 and 33 show the sediment thickness above the interpreted unconsolidated unit reflector and the “basement” reflector, respectively. The unconsolidated unit thickness diminishes on the east and west sides of the survey block, and adjacent to the Mack Point shoreline in the north. A thick sequence of sediment fills a trough across the middle of the survey area which is disrupted by a N-S orientated ridge-like feature that’s also apparent in the basement unit thickness isopach map. This feature lies west of the current dredge area in Mack Point.

The basement isopach map isn’t as extensive as the unconsolidated sediment unit isopach simply because the basement reflector could not be tracked across the entire survey block. Sediment thickness diminishes towards the Long Cove Ledge bathymetric feature and as noted above across the N-S ridge located at the center of the block.

Figure 32. Unconsolidated sediment unit thickness for Mack Point

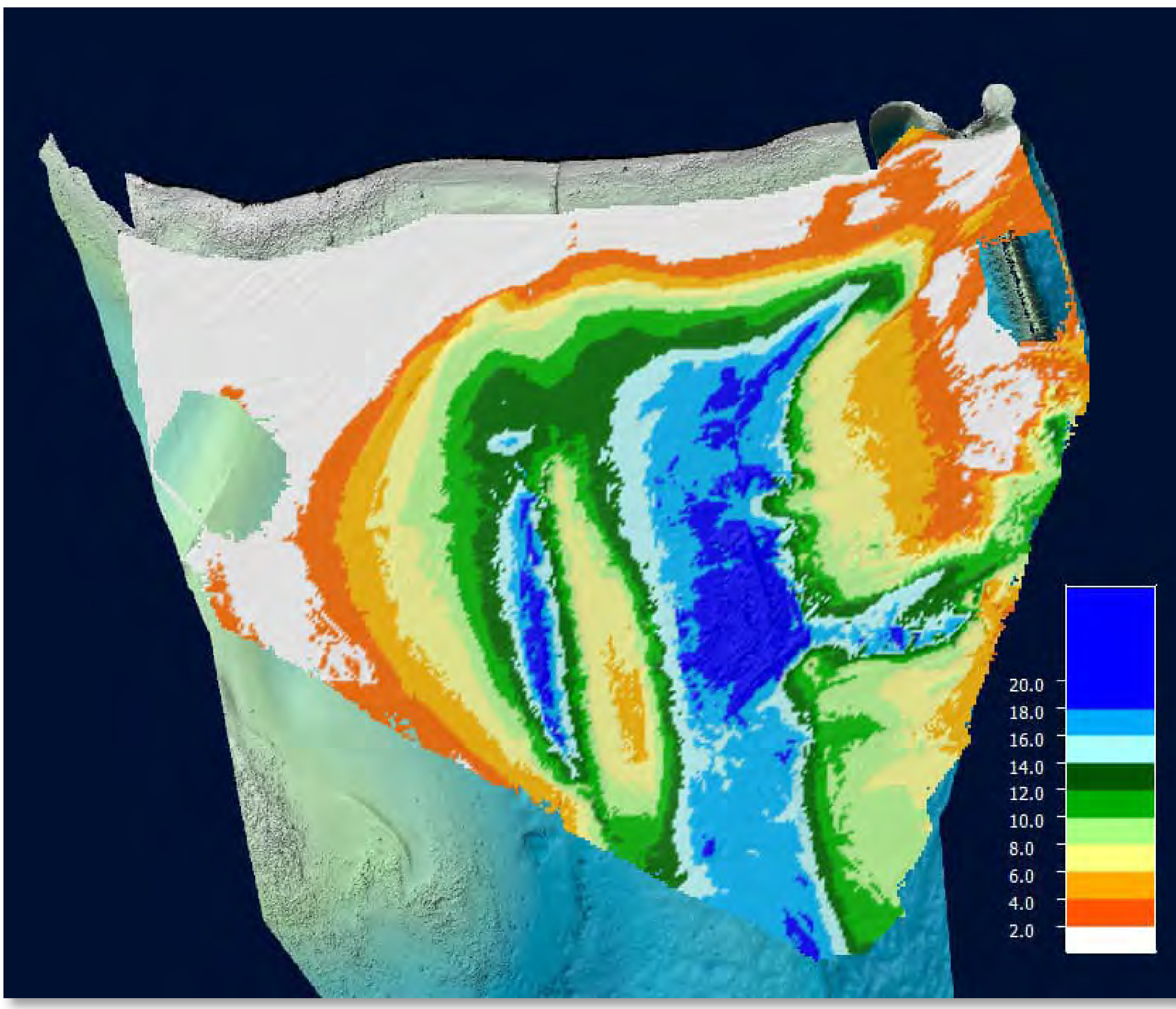
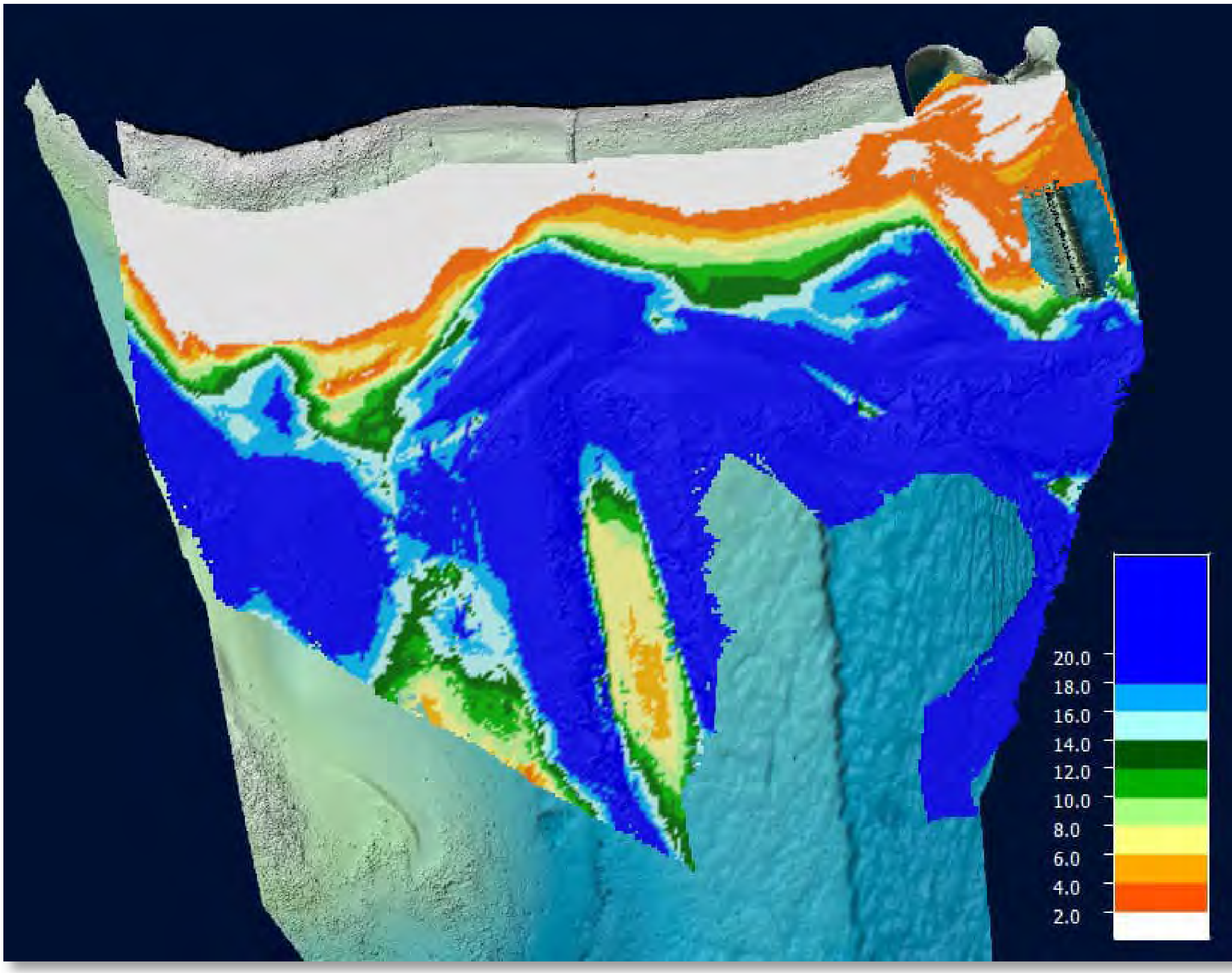


Figure 33: Sediment unit thickness above the interpreted basement reflector for Mack Point.



As noted previously, the same two reflectors were digitized across the Sears Island survey block.

Figures 34 through 37 show the reflector patterns and sediment units for four transects oriented perpendicular to the Sears Island shoreline (from south to north), and Figures 38 and 39 show the isopach maps for the unconsolidated unit and the entire sediment unit above the basement reflector.

The unconsolidated sediment unit extends across the Sears Island shelf across the northern half of the survey area but appears to pinch out on the basement reflector across the southern half. A thicker accumulation (up to 20-ft) resides in a depression to the north of the current dredge activity location. Thickness of unconsolidated sediments across the Sears Island dredge area range from ~6-ft to <0.5-ft.

The basement isopach map (Figure 39) shows a shelf depression south of the Sears Island rock jetty and behind the fringing rock reef marking the edge of the shelf. This depression is illustrated in the SBP transect shown in Figure 41. Sediment thickness within this depression exceeds 25-ft. A smaller sediment accumulation lies west of the shelf depression, at the southern extent of the current dredge area. This might be related to redistributed dredge sediments. Sediment thickness across the shelf is generally less than 2-ft.

Horizontal scale lines at 20-ft intervals; vertical lines at 50-ft intervals.

Figure 34. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

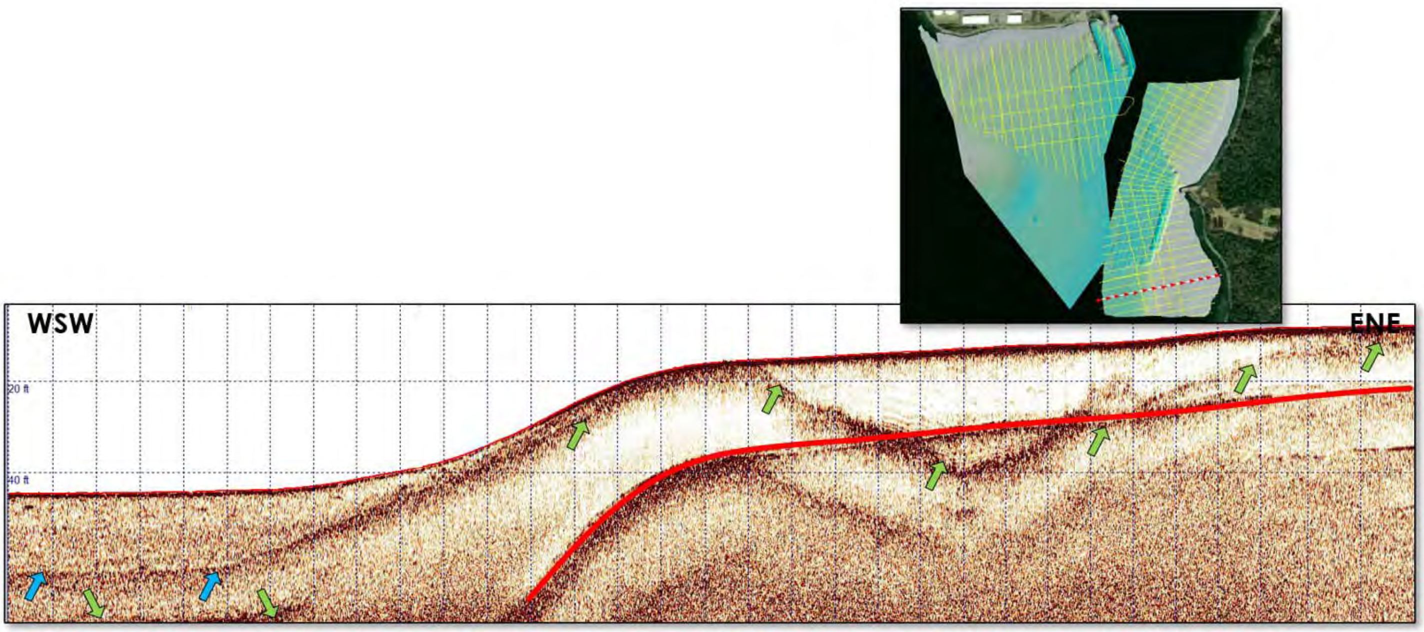


Figure 35. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

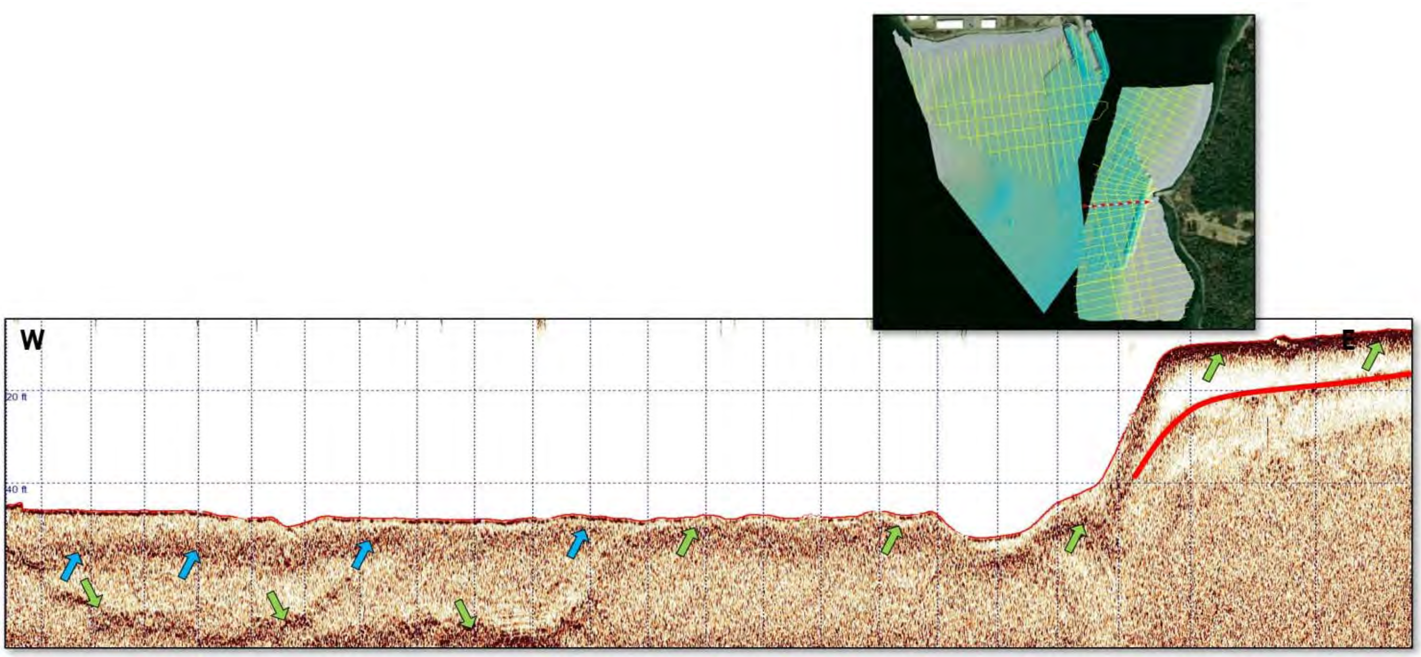


Figure 36. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

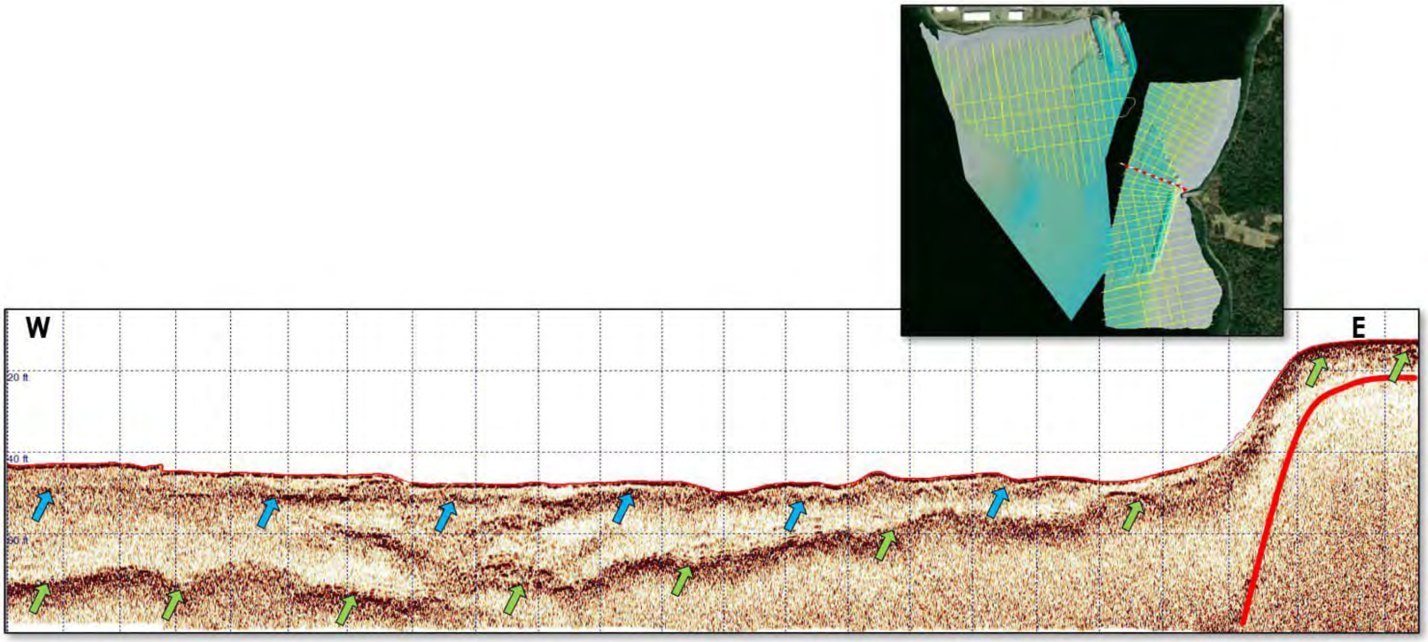


Figure 37. Reflectors showing the base of the unconsolidated sediment unit (blue arrows) and "basement" reflector (green arrows) observed across the Mack Point survey area. Seabed multiple shown by red line.

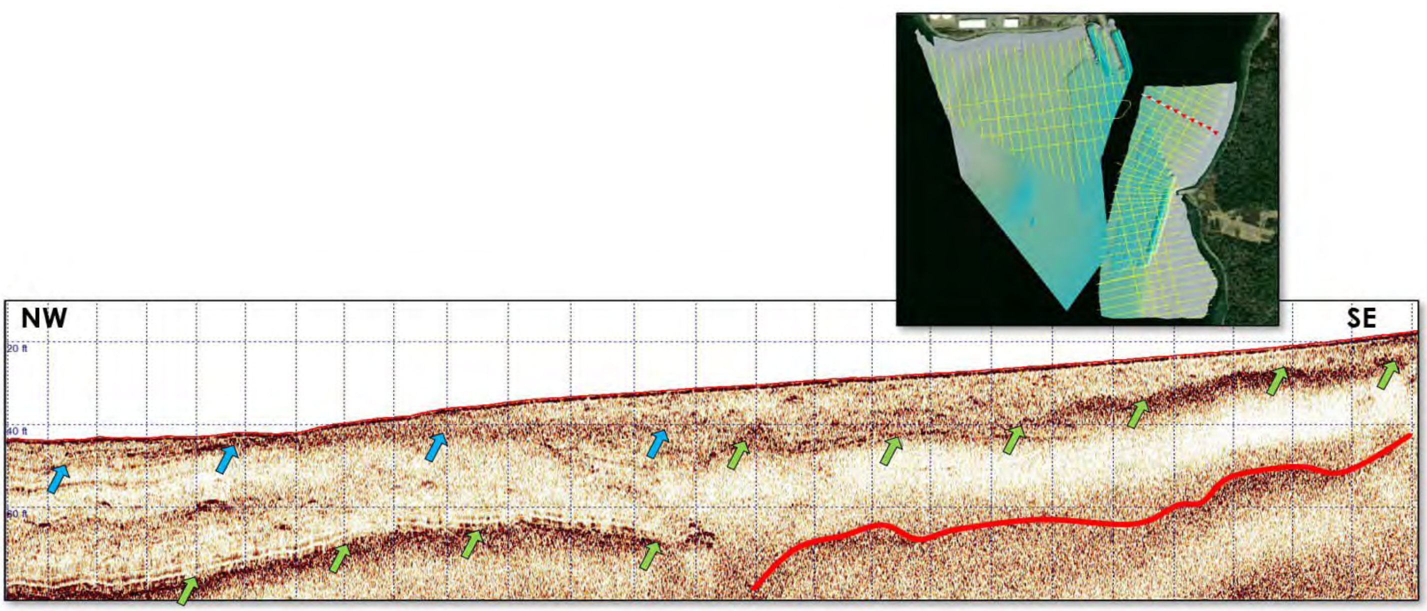


Figure 38. Unconsolidated sediment unit thickness for Sears Island

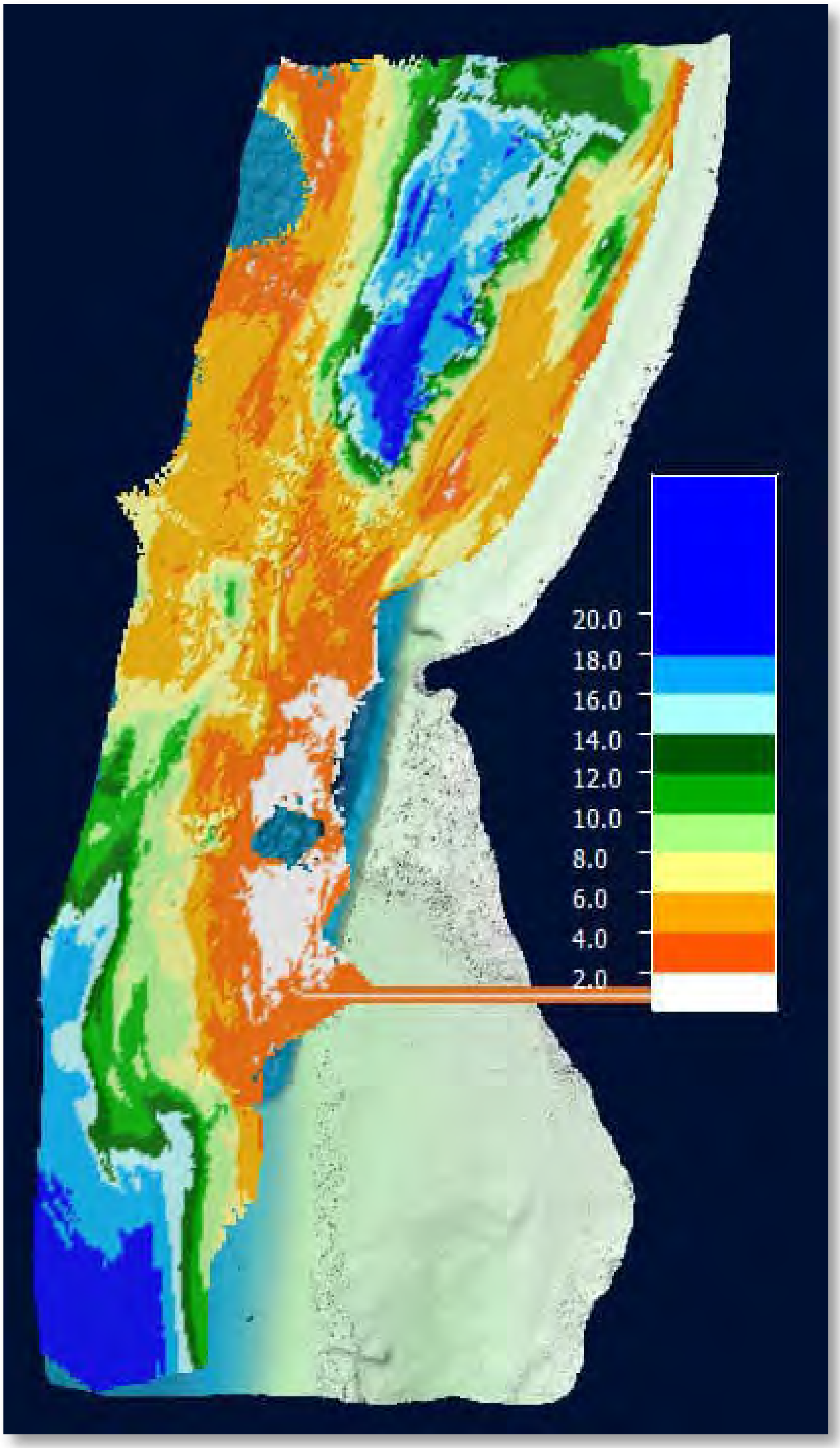
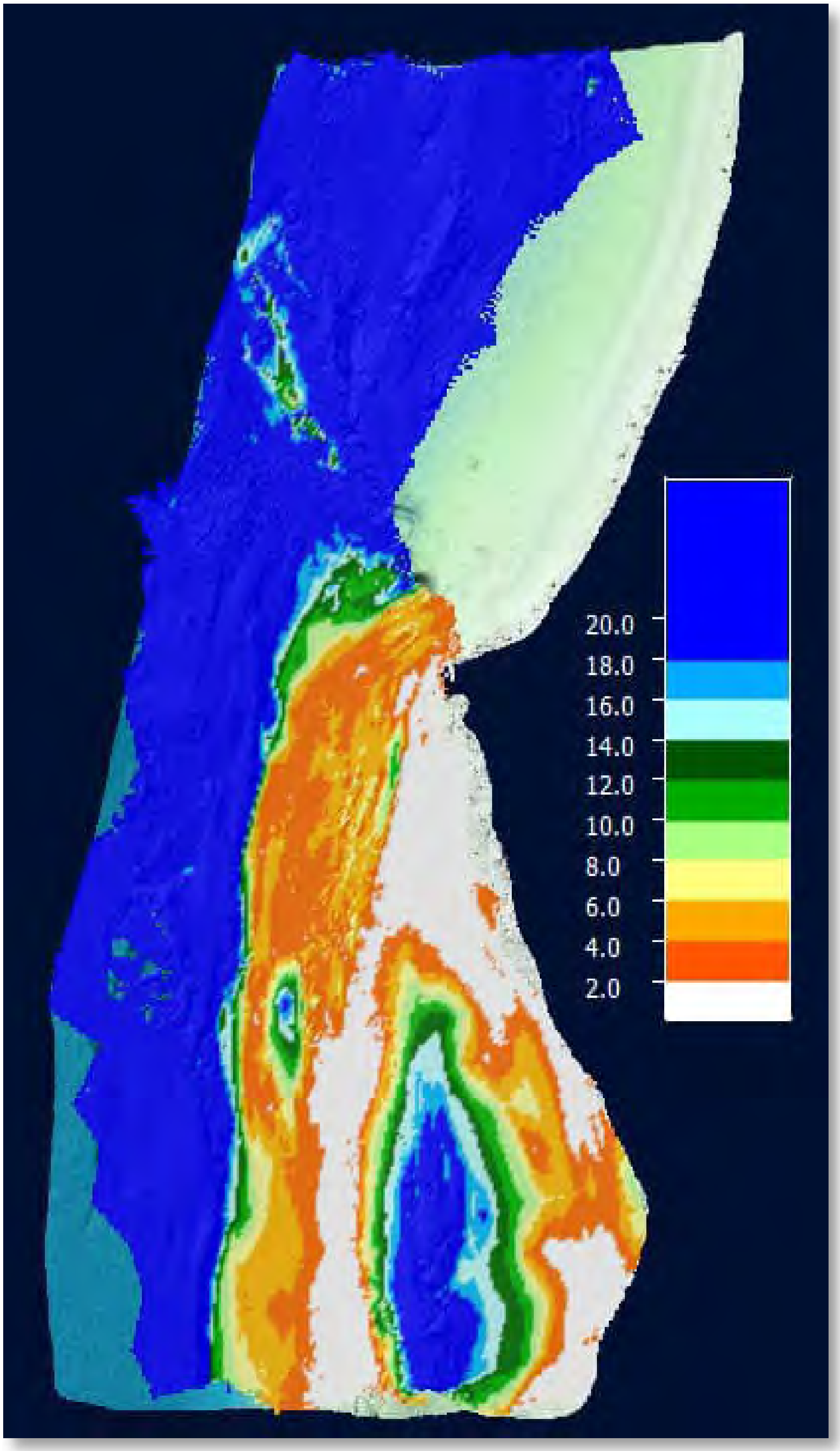


Figure 39. Sediment unit thickness above the interpreted basement reflector for Sears Island.



6. Summary

The multibeam bathymetric data reveals three physiographic provinces exist across the survey areas: sediment covered shelves, shelf slopes, and a sediment-filled basin between the two sites.

The Mack Point shoreline shows features suggestive of exposed rocks and little sediment accumulation. The shelf narrows to the east and slopes to a dredged area.

The western side of Sears Island contains a broader shelf area with a rock jetty at the center marking the narrowest portion of the shelf. A fringing rock reef marks the offshore edge of the shelf in the south half of the survey area, and generally suggests thinner sediment coverage across this area. A dredged area lies west of the rock jetty.

Side-scan sonar backscatter data supports this assessment. High backscatter intensity areas along both the Mack Point and Sears Island shorelines suggests rocky hard bottom which transitions to silty sands with boulders, and finally a silty bottom with boulders present.

Sub-bottom profile reflector patterns across both sites suggest two primary sediment units exist across the area. The uppermost reflector marks the base of an interpreted unconsolidated sediment unit which appears to be the focus of current dredge operations. The lower reflector marks the top of either a consolidated sediment unit or rock basement. The depth of this reflector could have implications for dredging operations.

For the Mack Point survey area, the unconsolidated sediment unit thickness diminishes on the east and west sides of the survey block, and adjacent to the Mack Point shoreline in the north. A thick sequence of sediment fills a trough across the middle of the survey area.

A N-S orientated ridge-like feature results in thinning of the unconsolidated unit west of the current dredge area. This feature relates to the basement reflector. Sediments also thin across and adjacent to the Long Cove Ledge.

For the Sears Island survey area, the unconsolidated sediment unit extends across the northern half of the Sears Island shelf but appears to pinch out on the basement reflector across the southern half. A thicker accumulation (up to 20-ft) resides in a depression to the north of the current dredge activity location. Thickness of unconsolidated sediments across the Sears Island dredge area ranges from ~6-ft to less than 0.5-ft.

The basement isopach map for Sears Island shows a shelf depression filled with sediment south of the Sears Island rock jetty and behind the fringing rock reef marking the edge of the shelf. Sediment thickness within this depression exceeds 25-ft. A smaller sediment accumulation lies west of the shelf depression at the southern extent of the current dredge area. This might be related to redistributed dredge sediments. Sediment thickness across the Sears Island shelf is generally less than 2-ft.

7. Survey Disclaimer

These hydrographic and geophysical surveys were conducted for informational purposes only. The results and interpretations provided are subject to limitations and uncertainties inherent in the hydrographic and geophysical survey process. The accuracy of the survey data is influenced by numerous factors, including equipment limitations, environmental and site conditions, and the nature of the survey. The data must be interpreted with caution, and professional judgement is required for accurate understanding and application. Use of this data acknowledges that factors outside of the surveyor's control may affect the data, and that Steele Associates Marine Consultants, LLC and its agents are not liable for errors, omissions, or inaccuracies in the survey data or data products. The user accepts full responsibility for any decisions made based on the survey results and agrees that Steele Associates Marine Consultants, LLC and its agents are not responsible for any loss, damage, or injury arising from the use of this survey data. The user agrees to indemnify and Steele Associates Marine Consultants, LLC, and its agents harmless from any claims or liabilities arising from use of this survey data. Steele Associates Marine Consultants, LLC reserves the right to modify or update this disclaimer as necessary.

8. Deliverables

Multibeam bathymetric survey deliverables include the following:

- Combined bathymetric data with previous surveys performed by others
- PDF color contour plots
- XYZ point files as 3-ft by 3-ft average and minimum depth per cell
- CAD DXF files containing 1-ft contours and spot soundings

Side-Scan Sonar survey deliverables include the following:

- PDF Mosaic plots with target locations, backscatter bottom classification
- Mosaic GeoTiffs
- Side-Scan Sonar Target Report and Location Table

Marine Magnetics survey deliverables include the following:

- PDF Total field contour plots with target locations
- Total magnetic field contours as DXF
- Marine magnetics target location table

Sub-Bottom Profile survey deliverables include the following:

- PDF isopach color contour plots
- XYZ point files for sediment unit thickness
- CAD DXF files containing isopach contours

STEELE

Side-Scan Sonar
Target Report

Mack Point and Sears Island
Searsport, ME

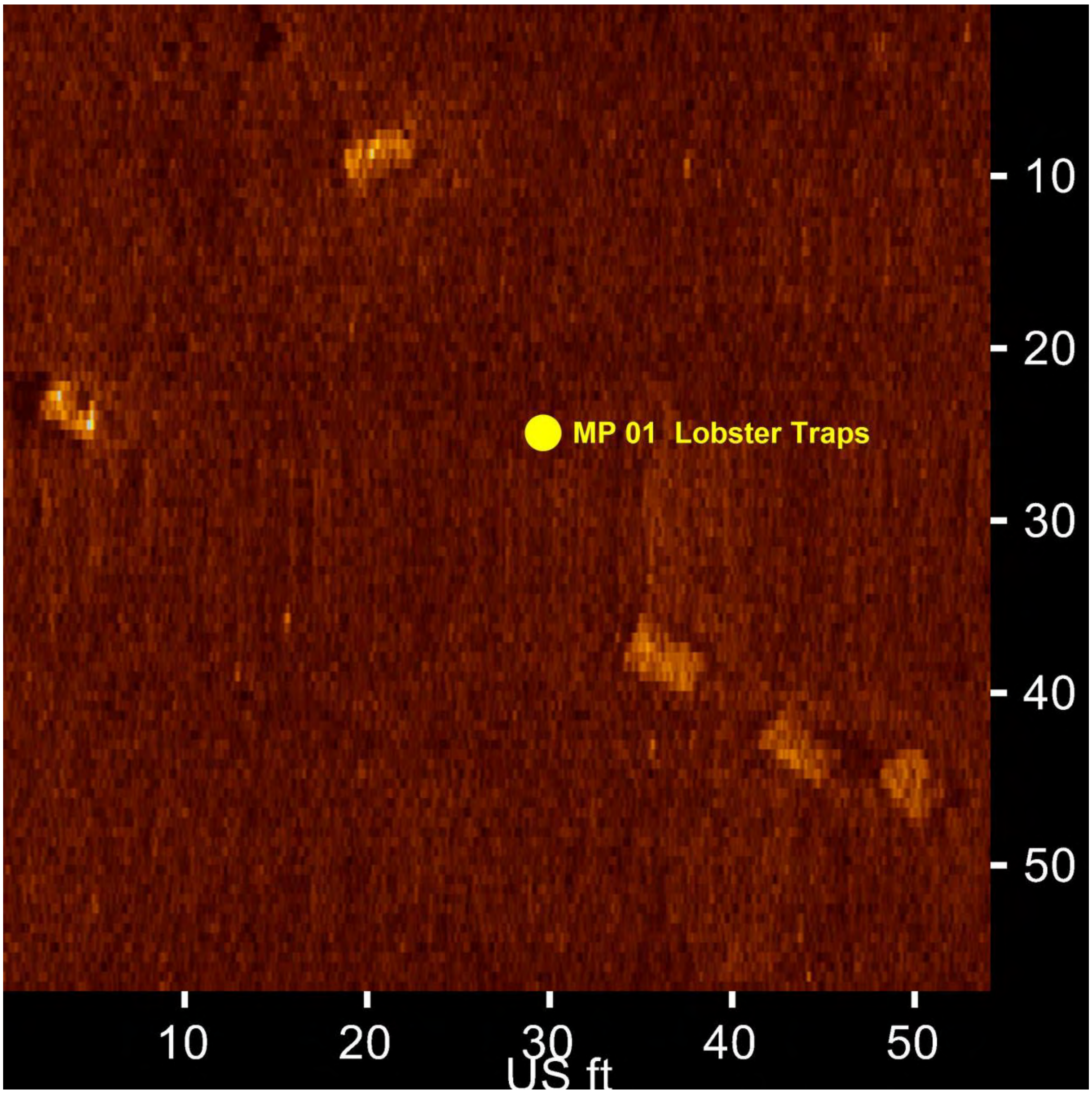
Survey Dates: October 25-26, 2023

Edgetech 4125 600-kHz / 1600-kHz

Edgetech Discover

Chesapeake SonarWiz

Steele Associates Marine Consultants, LLC
94 Gifford Street
Falmouth, MA 02540
508.540.0001

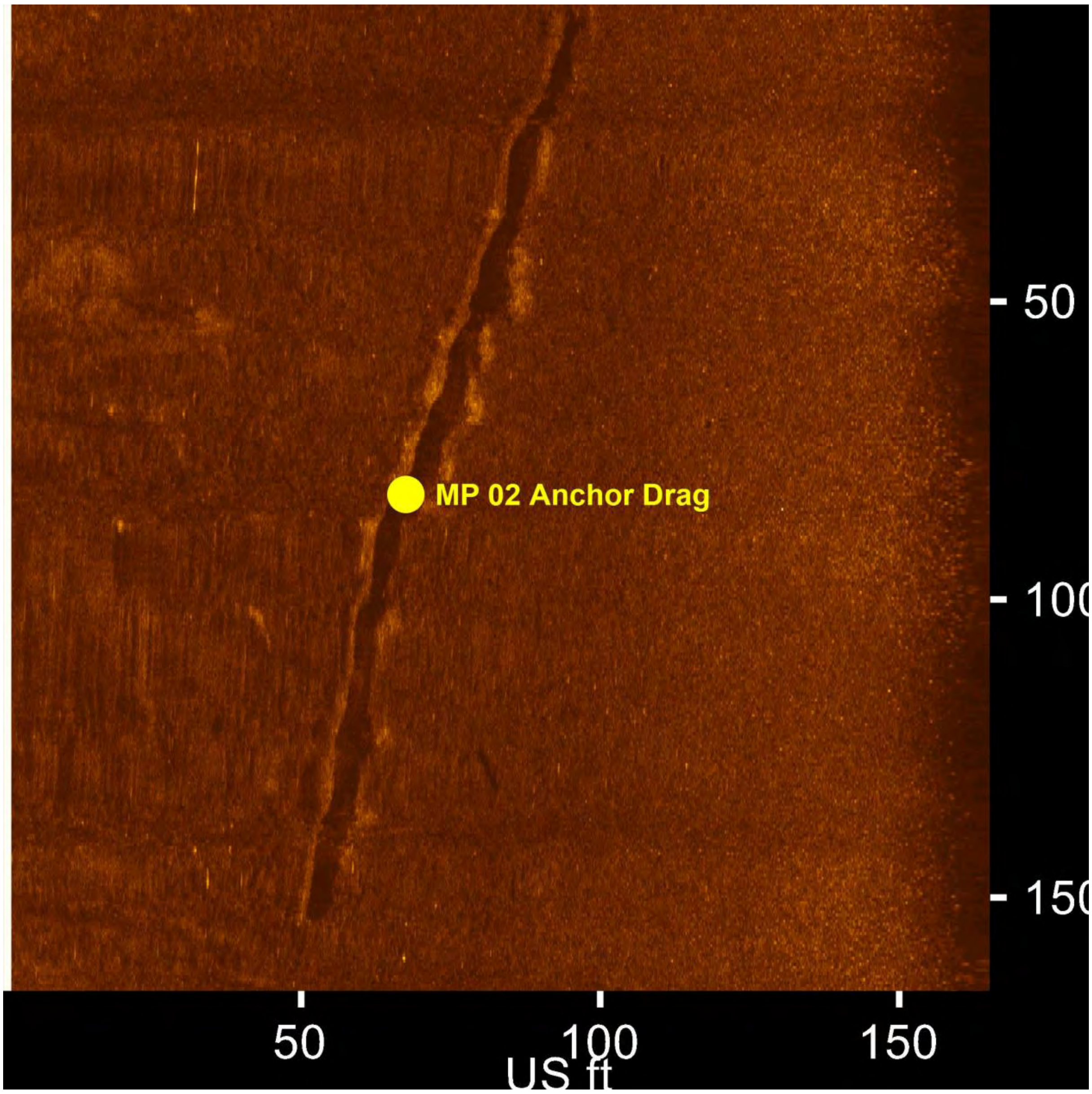


MP 01 Lobster Traps

- Sonar Time at Target: 10/25/2023 5:25:54 PM
- Click Position
  (X) 508048.93 (Y) 4921302.14 (Projected)
  44° 26.69440' N 068° 53.96065' W (NAD27LL)
  44° 26.69850' N 068° 53.93087' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025172504.jsf
- Course Made Good: 83.750 Degrees

Dimensions and attributes

- Target Width: 0.72 US ft
- Target Height: 0.00 US ft
- Target Length: 1.21 US ft
- Target Shadow: 0.00 US ft

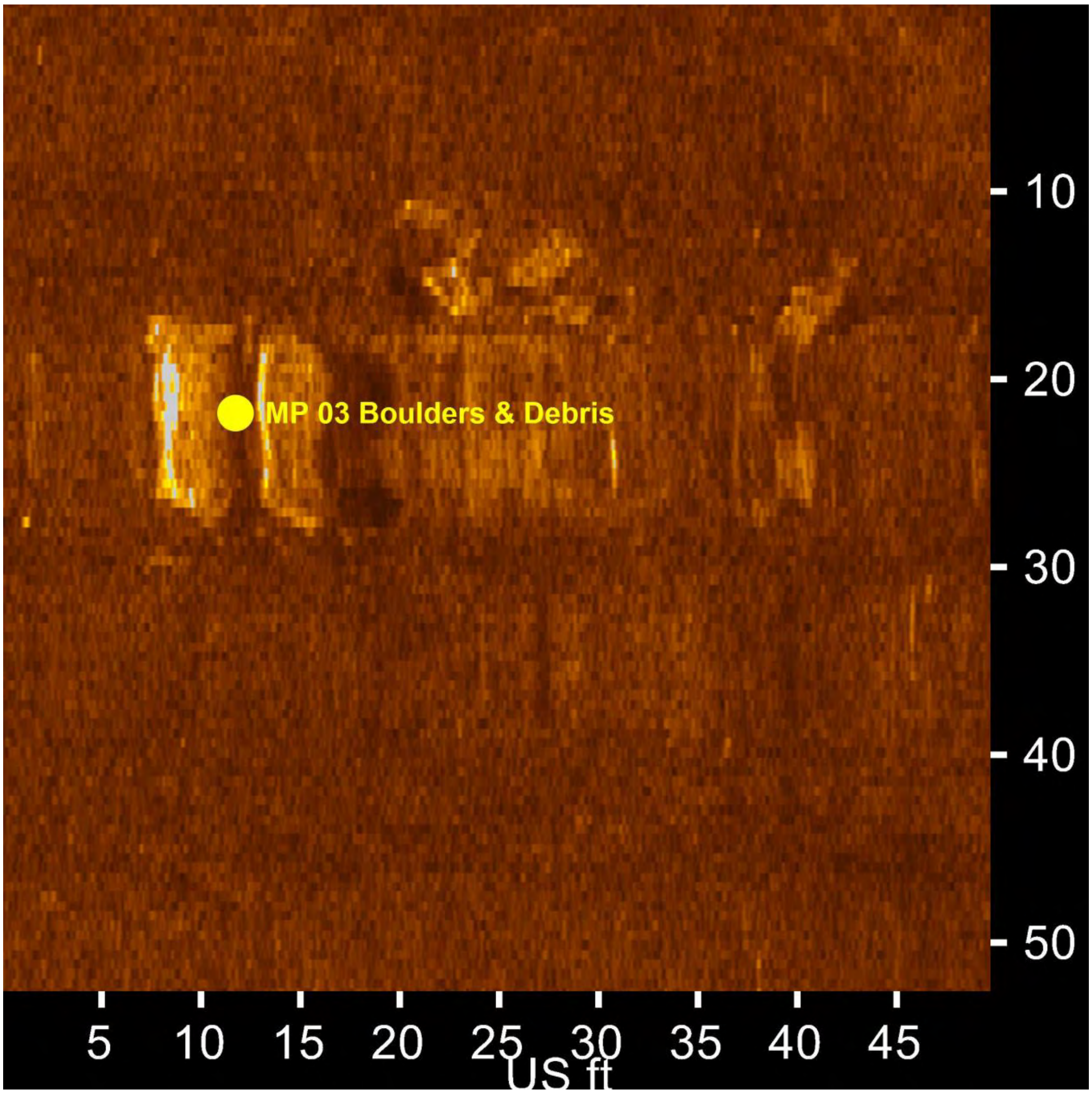


MP 02 Anchor Drag

- Sonar Time at Target: 10/25/2023 6:13:38 PM
- Click Position
  (X) 507901.44 (Y) 4921620.78 (Projected)
  44° 26.86662' N 068° 54.07158' W (NAD27LL)
  44° 26.87071' N 068° 54.04179' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025181051.jsf
- Course Made Good: 81.424 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

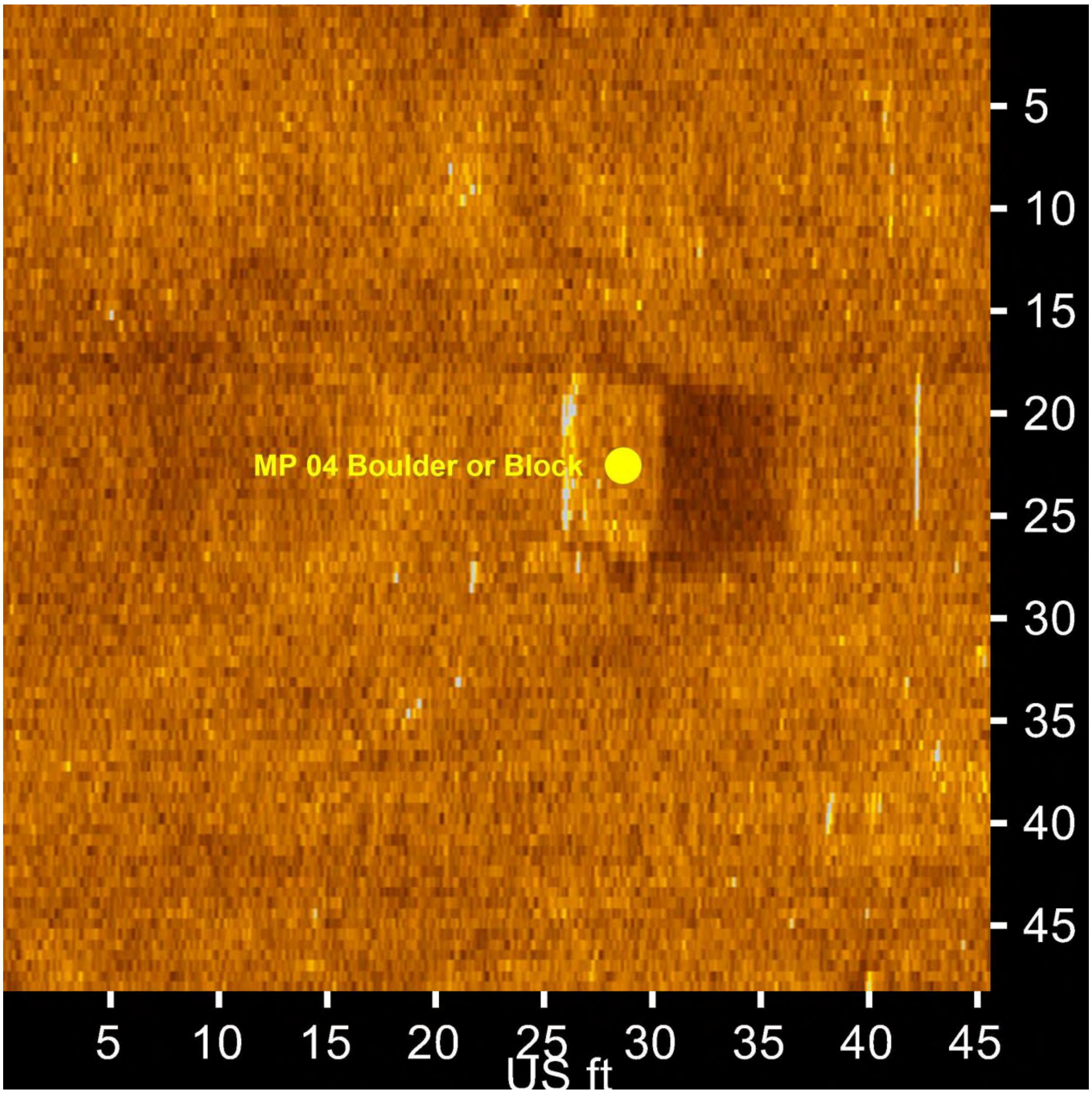


MP 03 Boulders & Debris

- Sonar Time at Target: 10/25/2023 6:46:21 PM
- Click Position
  (X) 508129.69 (Y) 4921745.06 (Projected)
  44° 26.93360' N 068° 53.89934' W (NAD27LL)
  44° 26.93769' N 068° 53.86955' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025184534.jsf
- Course Made Good: 259.529 Degrees

Dimensions and attributes

- Target Width: 0.94 US ft
- Target Height: 0.97 US ft
- Target Length: 2.63 US ft
- Target Shadow: 2.77 US ft

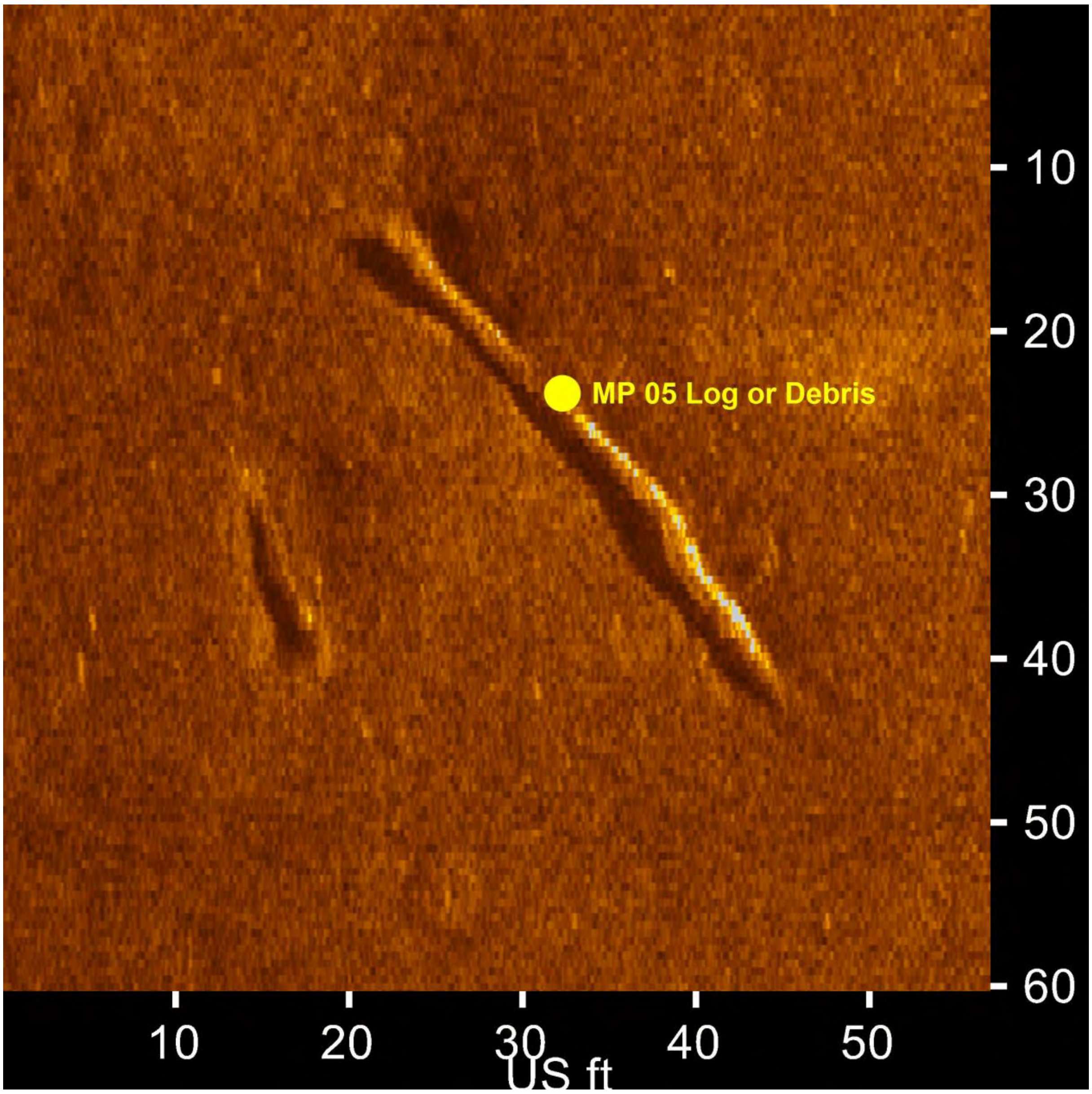


MP 04 Boulder or Block

- Sonar Time at Target: 10/25/2023 6:45:55 PM
- Click Position
  (X) 508185.90 (Y) 4921773.11 (Projected)
  44° 26.94872' N 068° 53.85693' W (NAD27LL)
  44° 26.95281' N 068° 53.82714' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025184534.jsf
- Course Made Good: 259.762 Degrees

Dimensions and attributes

- Target Width: 1.64 US ft
- Target Height: 0.00 US ft
- Target Length: 2.37 US ft
- Target Shadow: 0.00 US ft

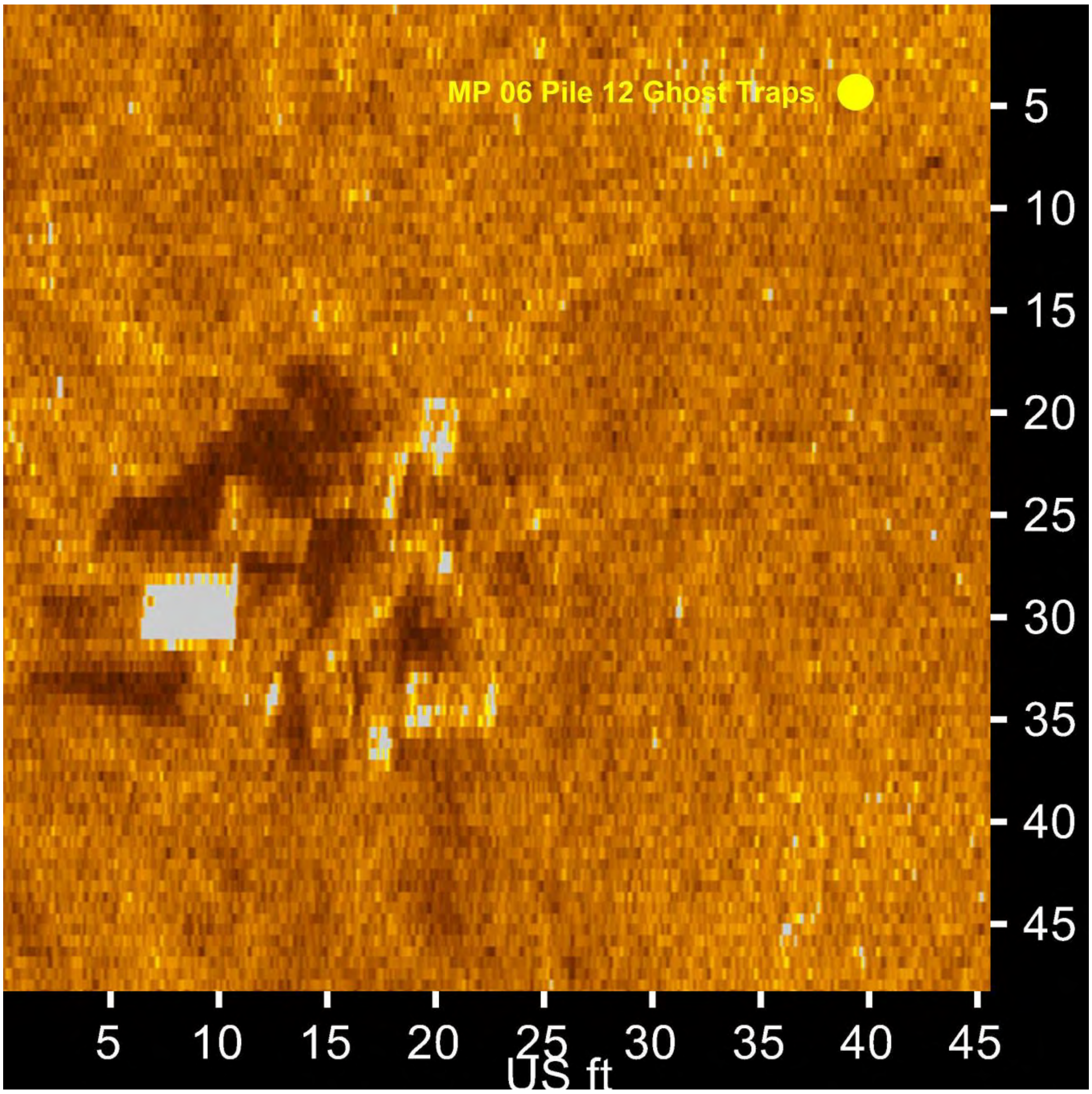


MP 05 Log or Debris

- Sonar Time at Target: 10/25/2023 7:32:21 PM
- Click Position
  (X) 508257.03 (Y) 4921855.99 (Projected)
  44° 26.99343' N 068° 53.80321' W (NAD27LL)
  44° 26.99752' N 068° 53.77342' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025193201.jsf
- Course Made Good: 262.491 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.42 US ft
- Target Length: 12.13 US ft
- Target Shadow: 0.89 US ft

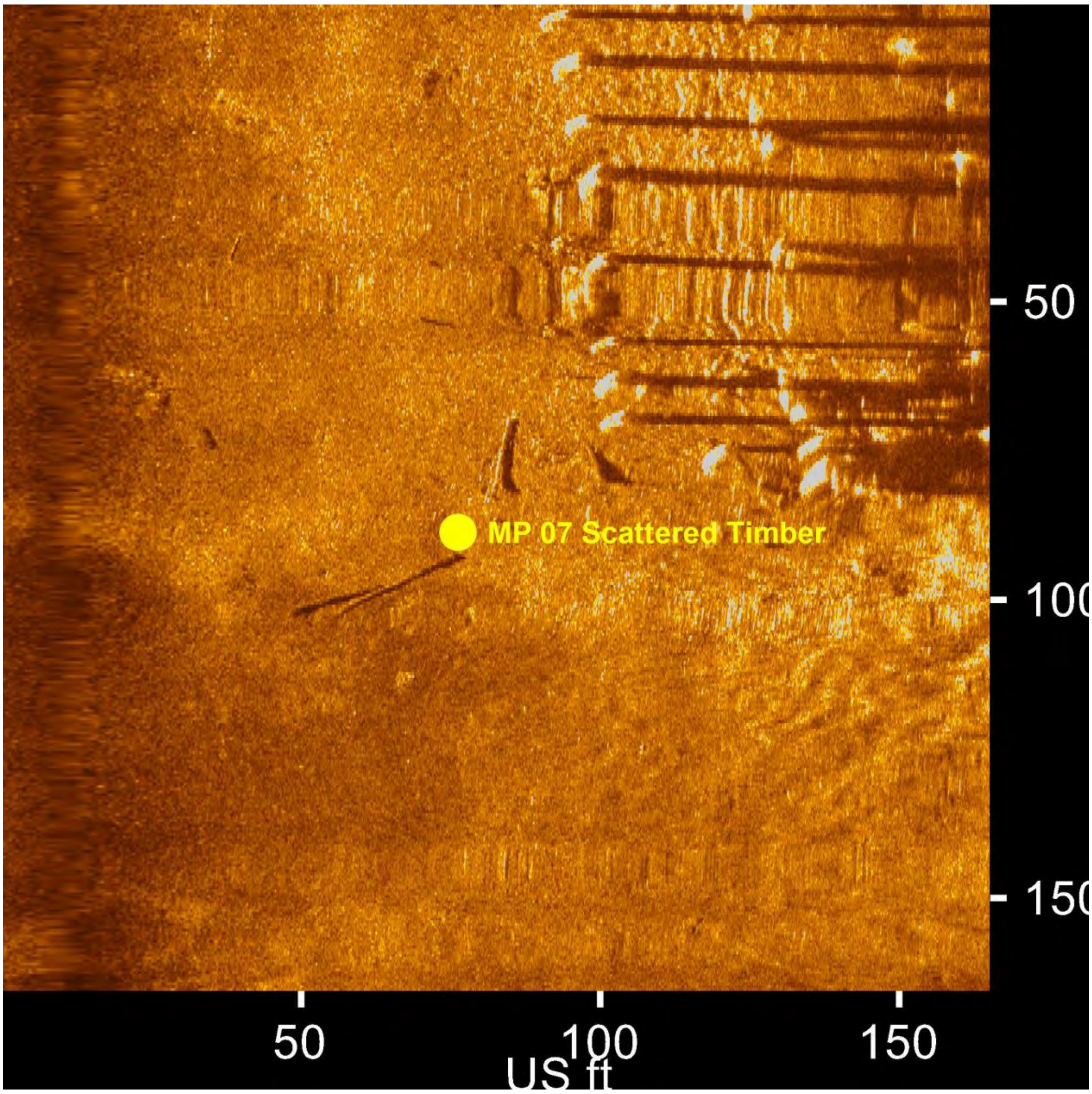


MP 06 Pile 12 Ghost Traps

- Sonar Time at Target: 10/25/2023 7:32:44 PM
- Click Position
  (X) 508198.39 (Y) 4921850.09 (Projected)
  44° 26.99029' N 068° 53.84744' W (NAD27LL)
  44° 26.99438' N 068° 53.81765' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025193201.jsf
- Course Made Good: 261.982 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

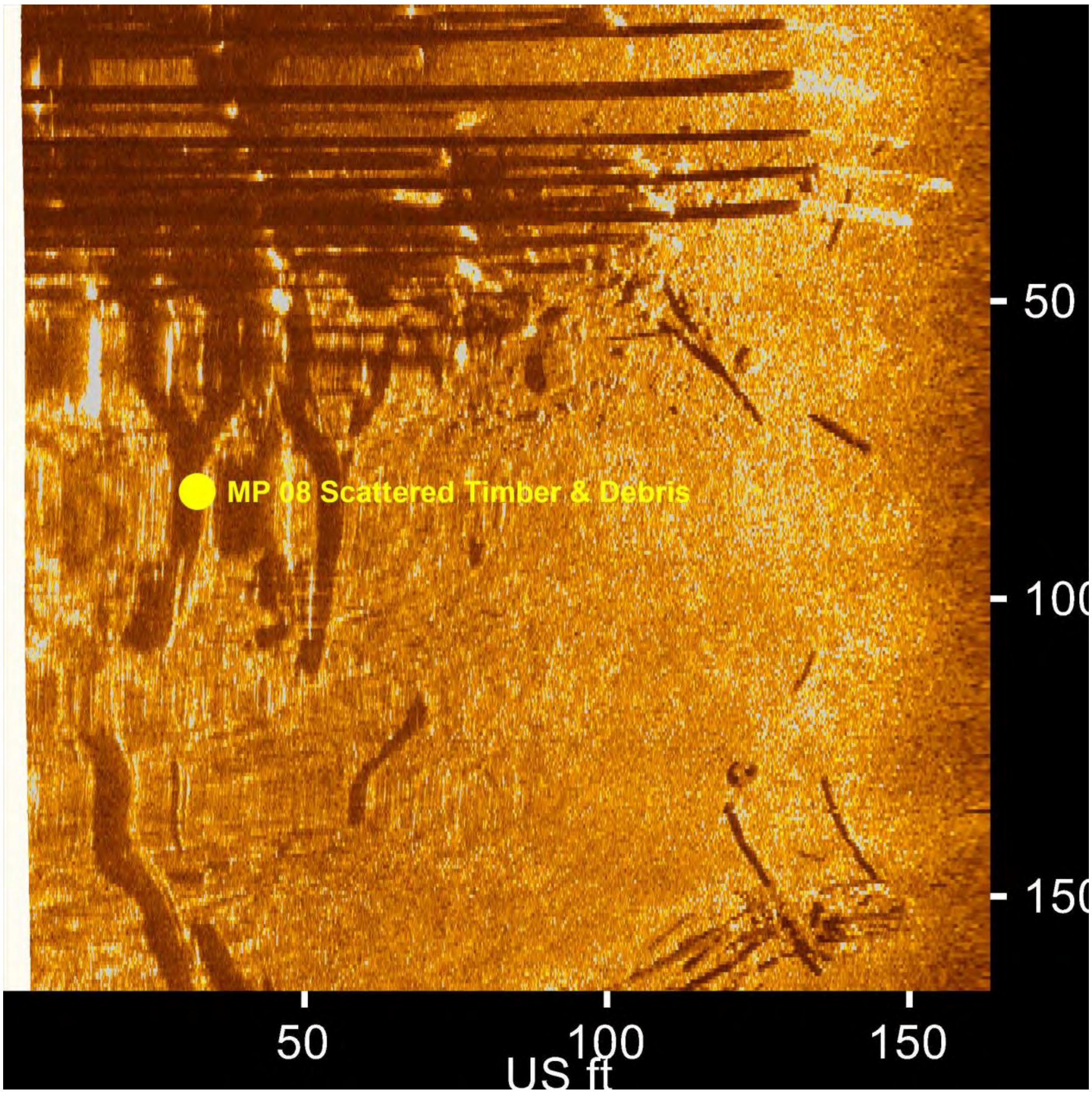


MP 07 Scattered Timber

- Sonar Time at Target: 10/25/2023 7:32:23 PM
- Click Position
  (X) 508251.27 (Y) 4921898.17 (Projected)
  44° 27.01622' N 068° 53.80751' W (NAD27LL)
  44° 27.02031' N 068° 53.77772' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025193201.jsf
- Course Made Good: 262.496 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

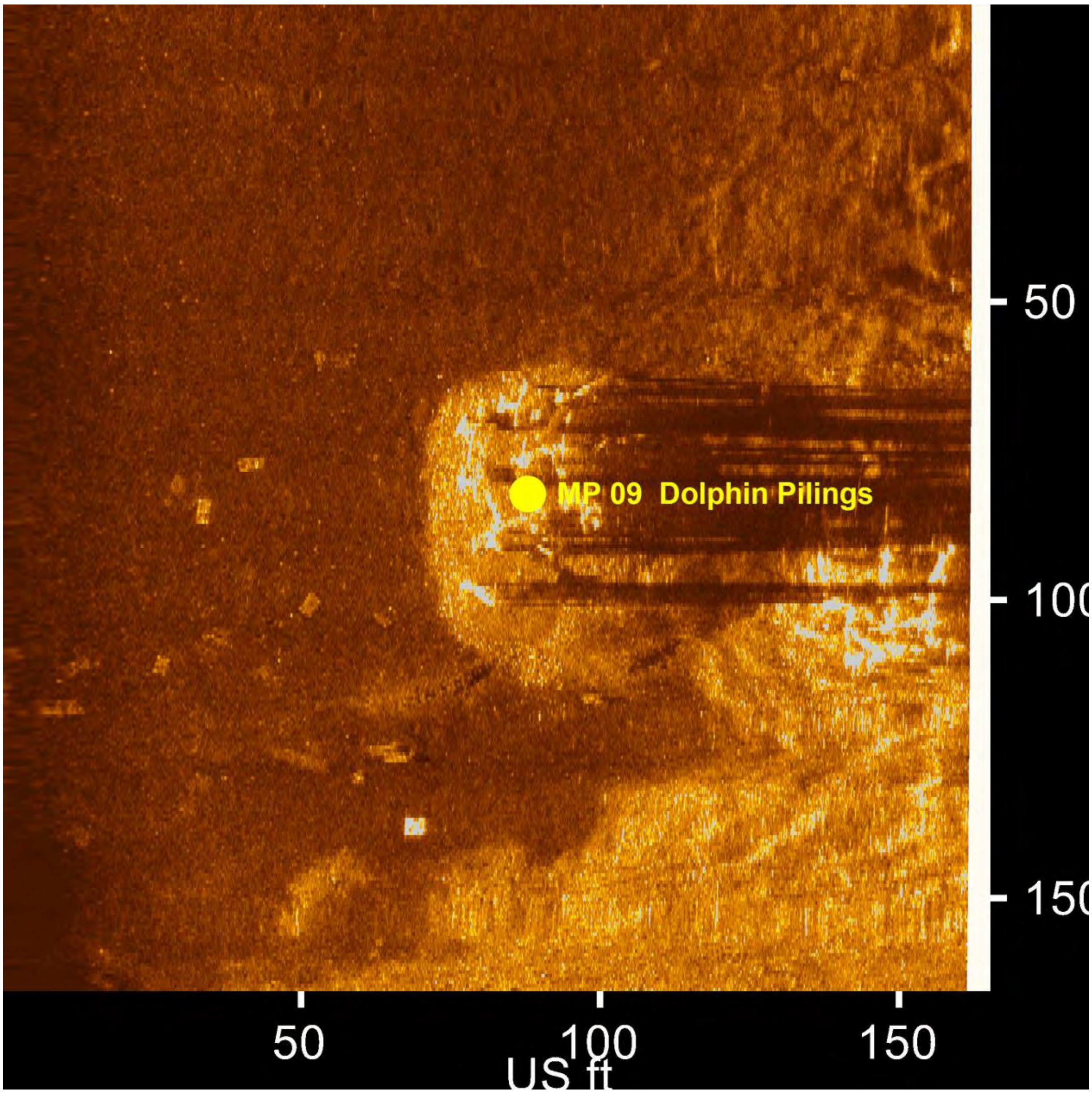


MP 08 Scattered Timber & Debris

- Sonar Time at Target: 10/25/2023 7:45:50 PM
- Click Position
  (X) 508198.09 (Y) 4921925.76 (Projected)
  44° 27.03116' N 068° 53.84759' W (NAD27LL)
  44° 27.03525' N 068° 53.81780' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025194010.jsf
- Course Made Good: 79.393 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

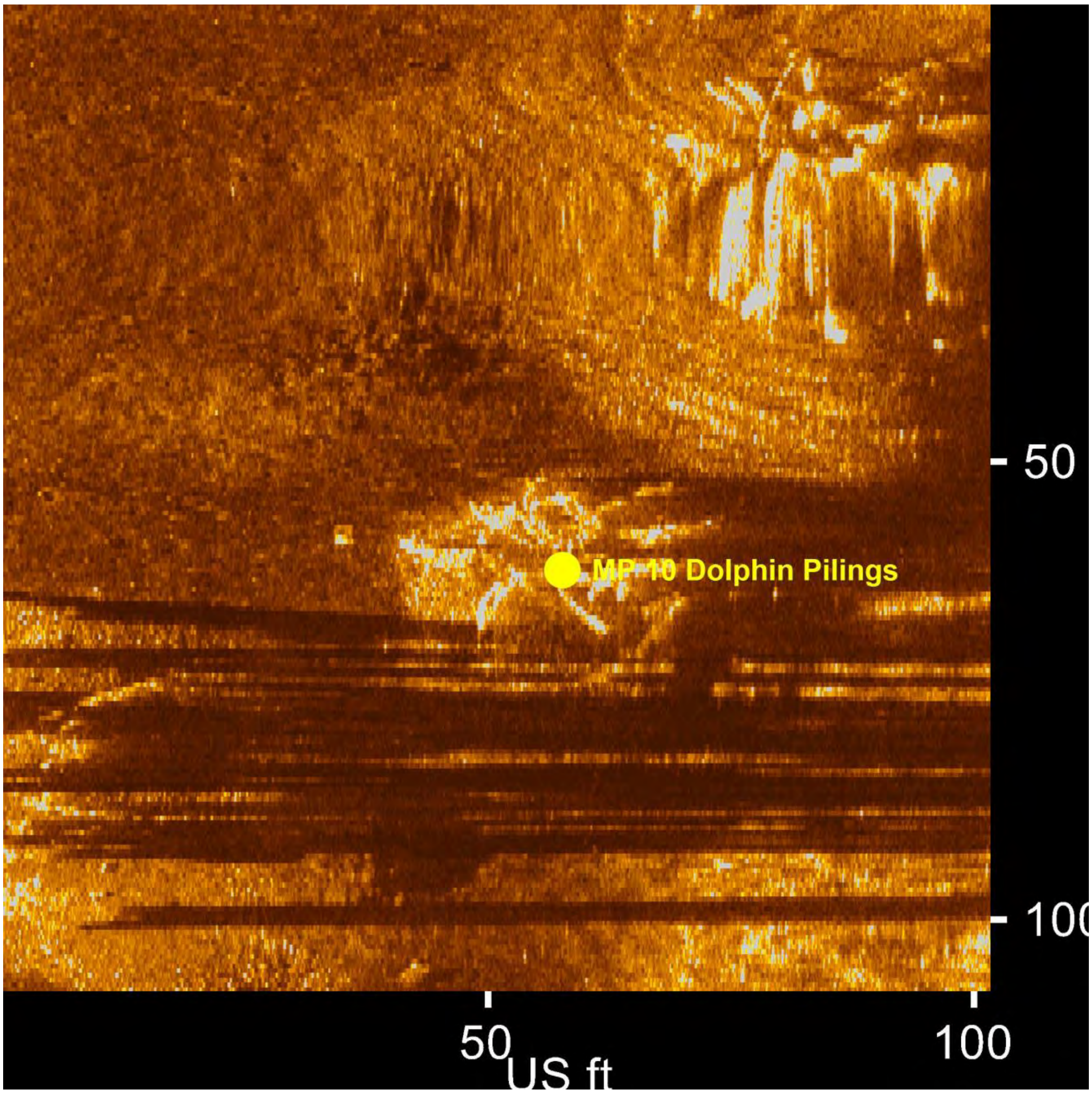


MP 09 Dolphin Pilings

- Sonar Time at Target: 10/25/2023 7:49:36 PM
- Click Position
  (X) 508109.87 (Y) 4921929.11 (Projected)
  44° 27.03303' N 068° 53.91412' W (NAD27LL)
  44° 27.03712' N 068° 53.88433' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025194845.jsf
- Course Made Good: 261.549 Degrees

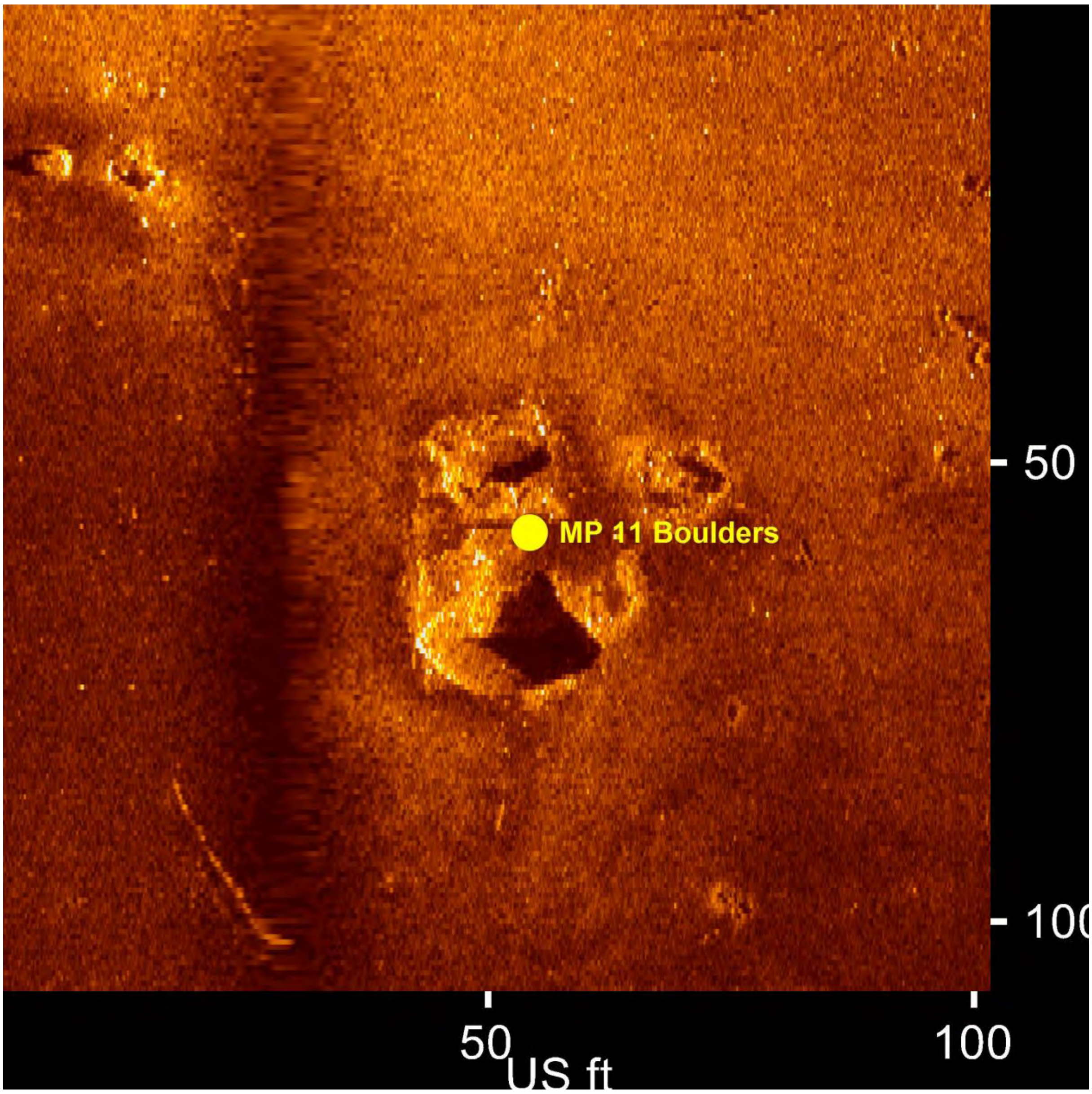
Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft



MP 10 Dolphin Pilings
- Sonar Time at Target: 10/25/2023 8:04:04 PM
- Click Position
  (X) 508111.19 (Y) 4921946.72 (Projected)
  44° 27.04255' N 068° 53.91310' W (NAD27LL)
  44° 27.04664' N 068° 53.88331' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025200357.jsf
- Course Made Good: 303.236 Degrees

Dimensions and attributes
- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

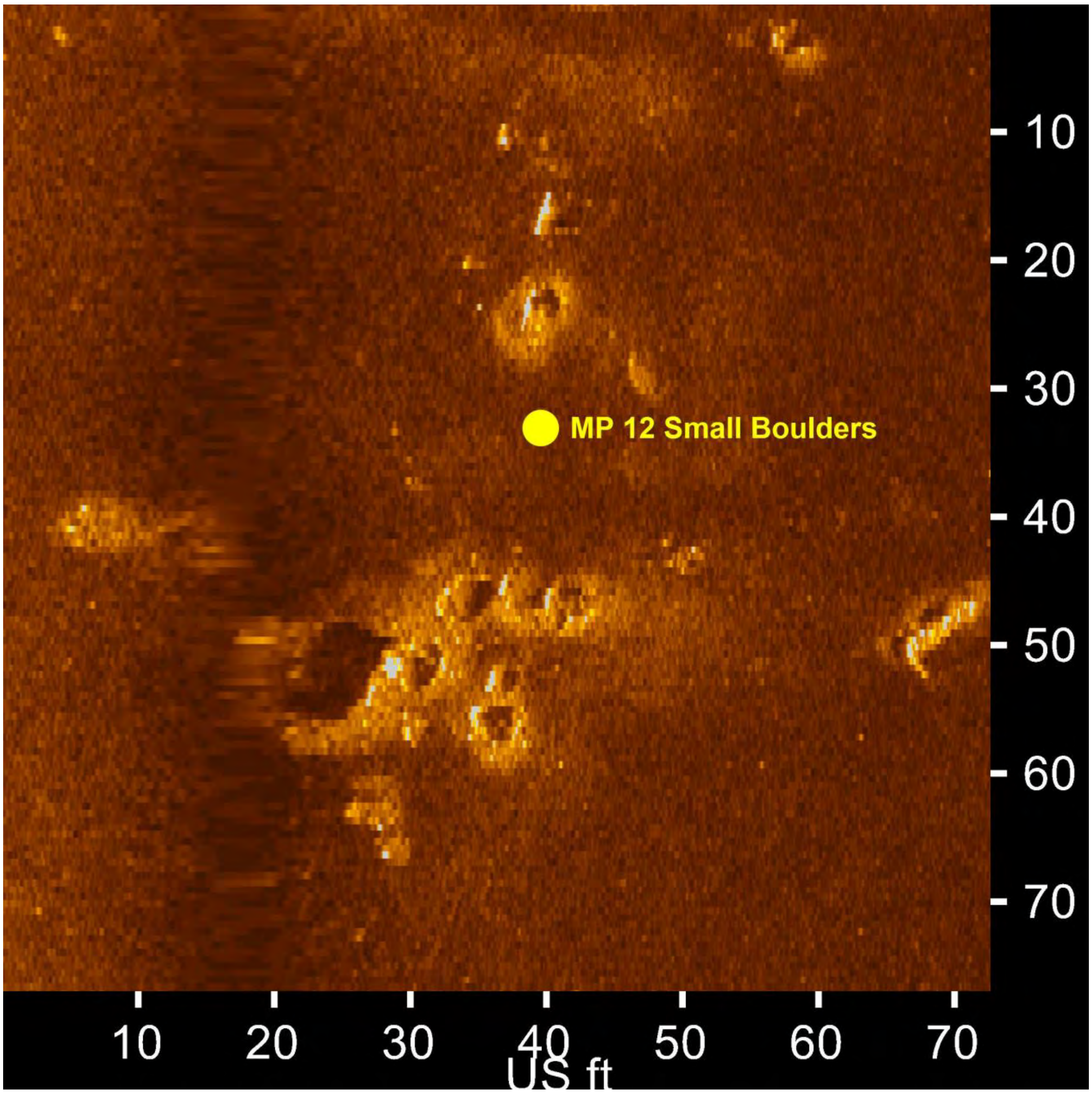


MP 11 Boulders

- Sonar Time at Target: 10/25/2023 8:08:05 PM
- Click Position
  (X) 507524.35 (Y) 4921862.25 (Projected)
  44° 26.99731' N 068° 54.35573' W (NAD27LL)
  44° 27.00139' N 068° 54.32593' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025200357.jsf
- Course Made Good: 259.421 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

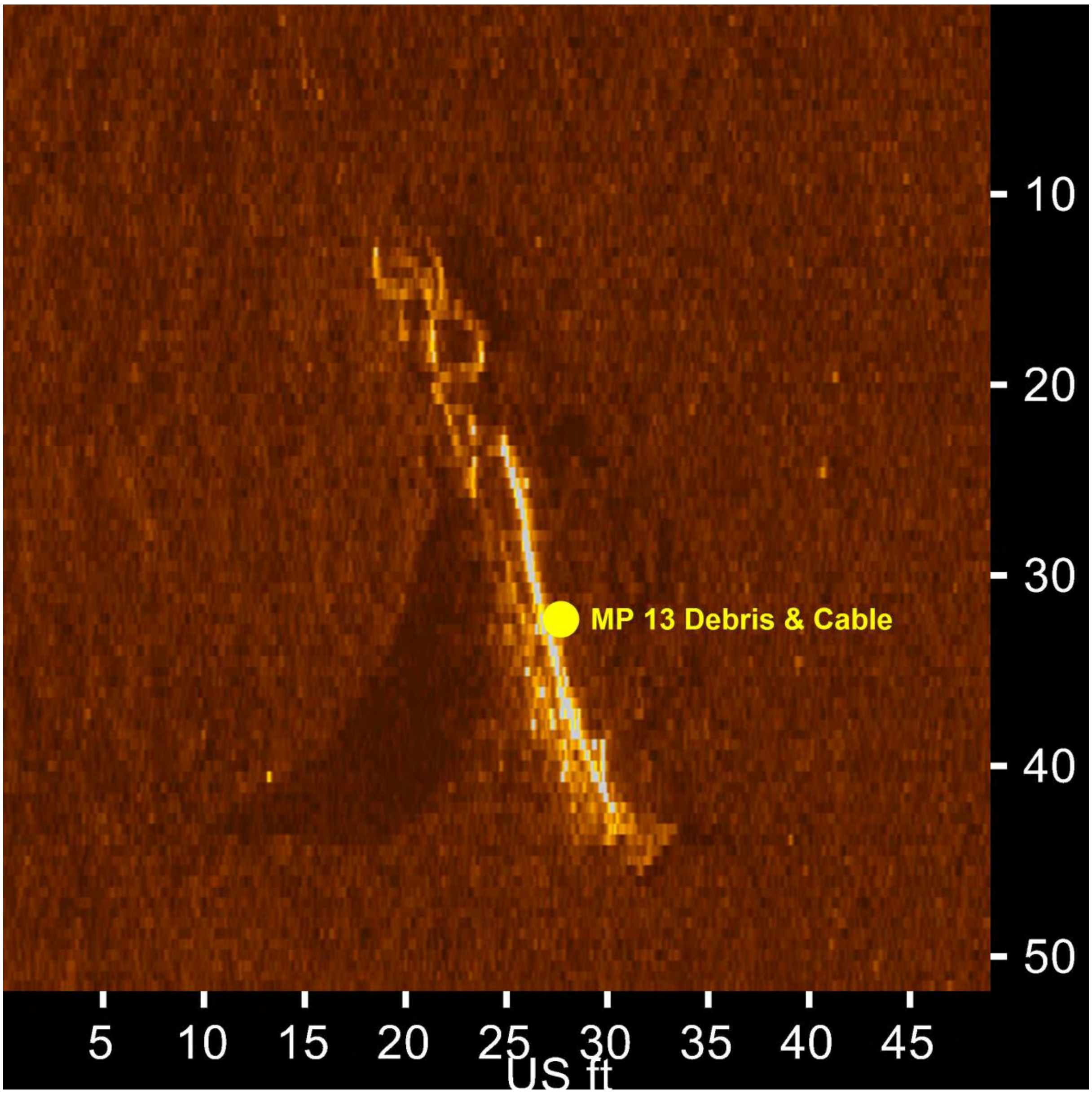


MP 12 Small Boulders

- Sonar Time at Target: 10/25/2023 7:57:43 PM
- Click Position
  (X) 507495.71 (Y) 4921818.18 (Projected)
  44° 26.97352' N 068° 54.37736' W (NAD27LL)
  44° 26.97760' N 068° 54.34756' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025195624.jsf
- Course Made Good: 73.582 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

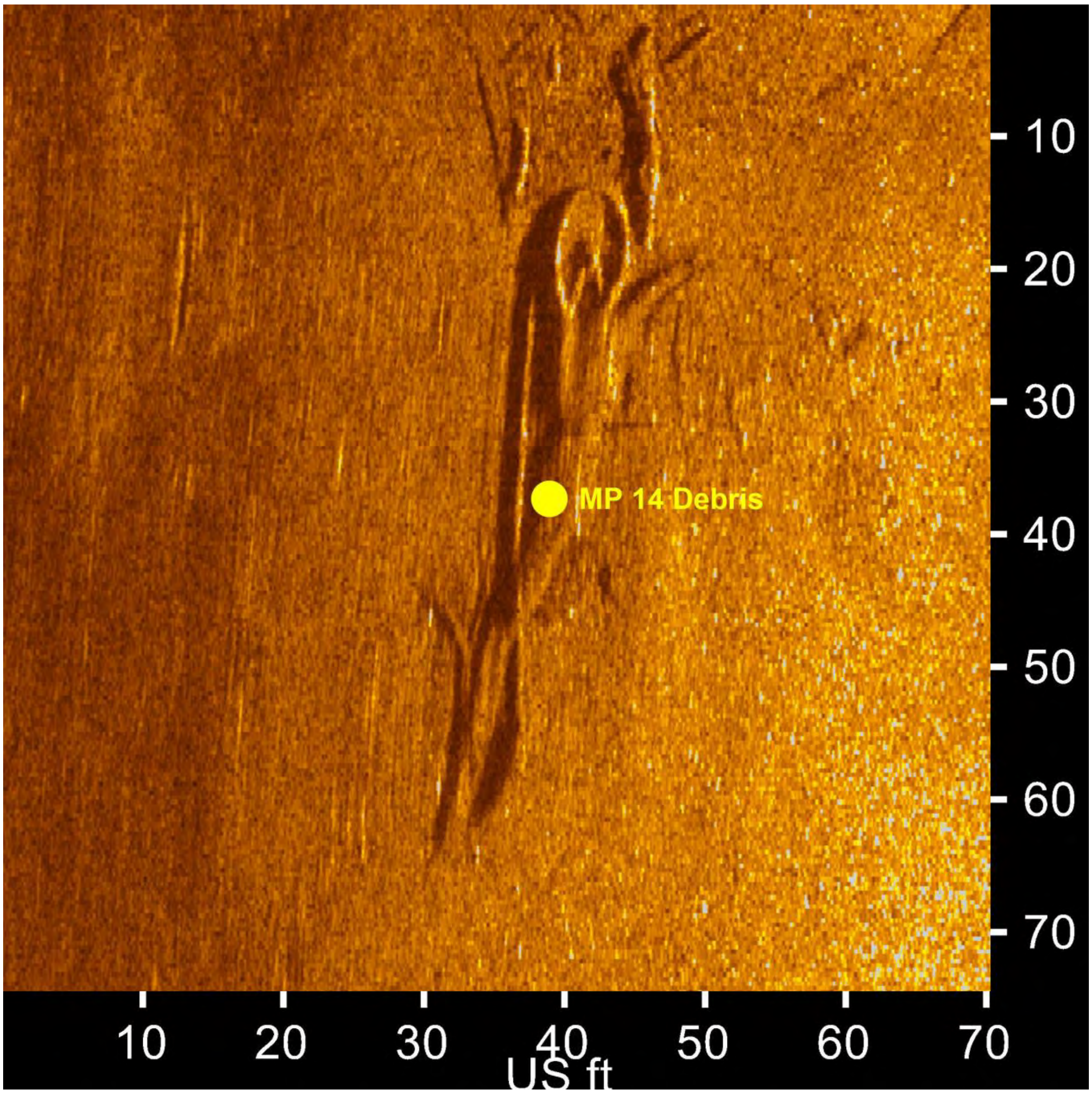


MP 13 Debris & Cable

- Sonar Time at Target: 10/25/2023 7:58:52 PM
- Click Position
  (X) 507650.50 (Y) 4921873.62 (Projected)
  44° 27.00337' N 068° 54.26058' W (NAD27LL)
  44° 27.00745' N 068° 54.23078' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025195624.jsf
- Course Made Good: 81.801 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

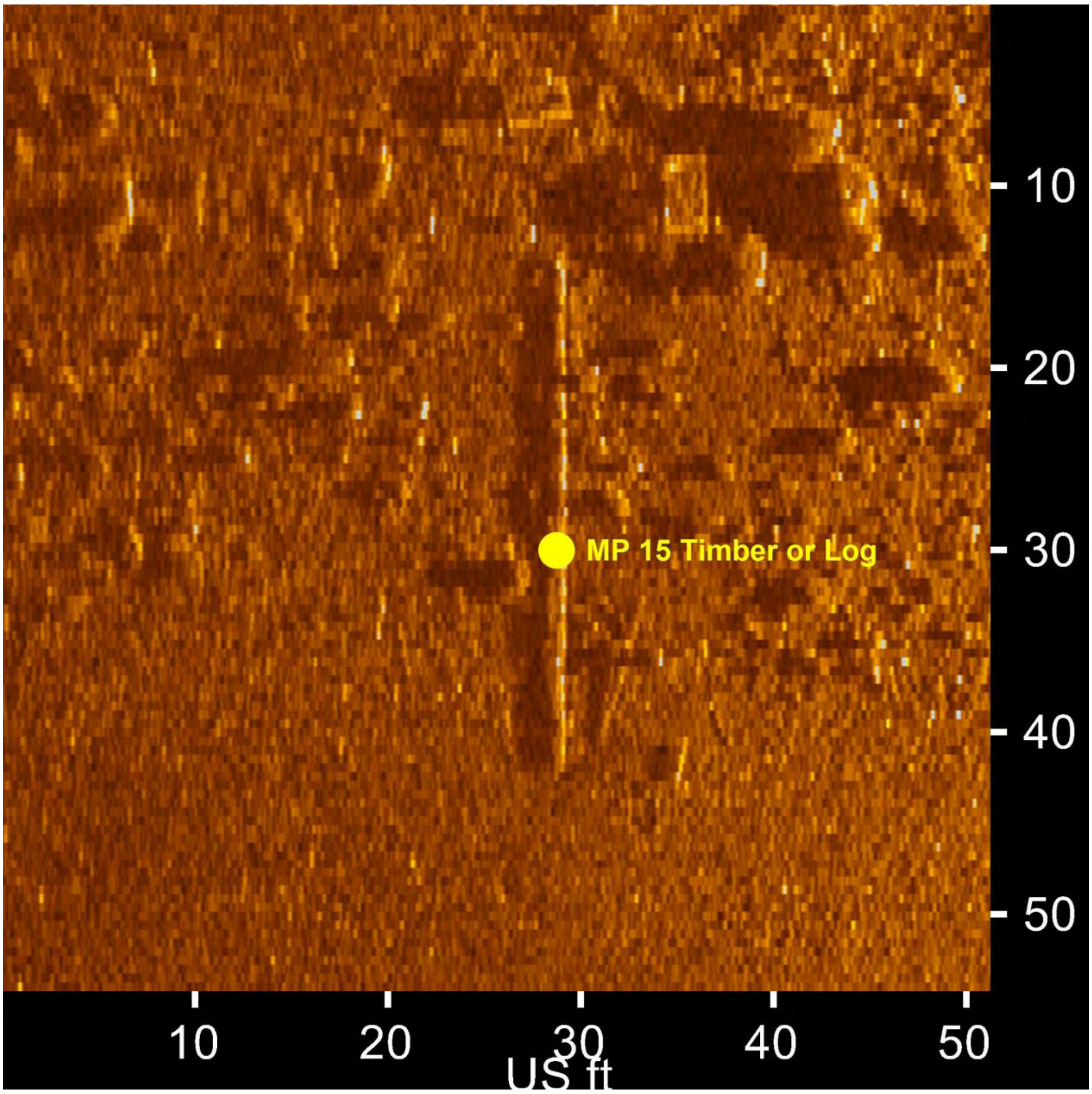


MP 14 Debris

- Sonar Time at Target: 10/26/2023 1:38:03 PM
- Click Position
  (X) 508016.53 (Y) 4922010.00 (Projected)
  44° 27.07679' N 068° 53.98443' W (NAD27LL)
  44° 27.08088' N 068° 53.95464' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026133736.jsf
- Course Made Good: 272.764 Degrees

Dimensions and attributes

- Target Width: 1.60 US ft
- Target Height: 0.00 US ft
- Target Length: 6.04 US ft
- Target Shadow: 0.00 US ft

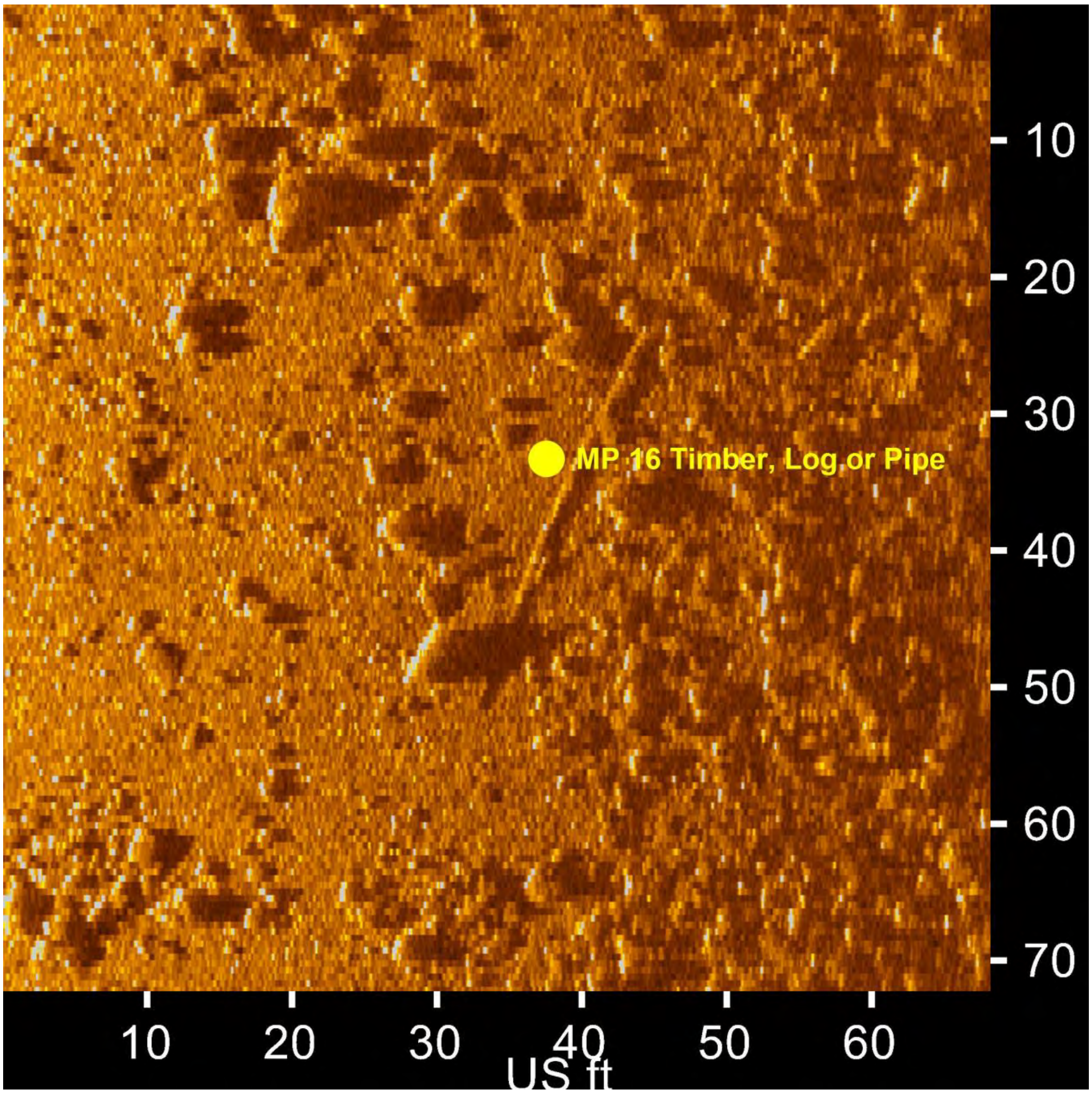


MP 15 Timber or Log

- Sonar Time at Target: 10/26/2023 1:42:08 PM
- Click Position
  (X) 507500.44 (Y) 4921917.51 (Projected)
  44° 27.02717' N 068° 54.37371' W (NAD27LL)
  44° 27.03125' N 068° 54.34391' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026133736.jsf
- Course Made Good: 261.170 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 8.87 US ft
- Target Shadow: 0.00 US ft

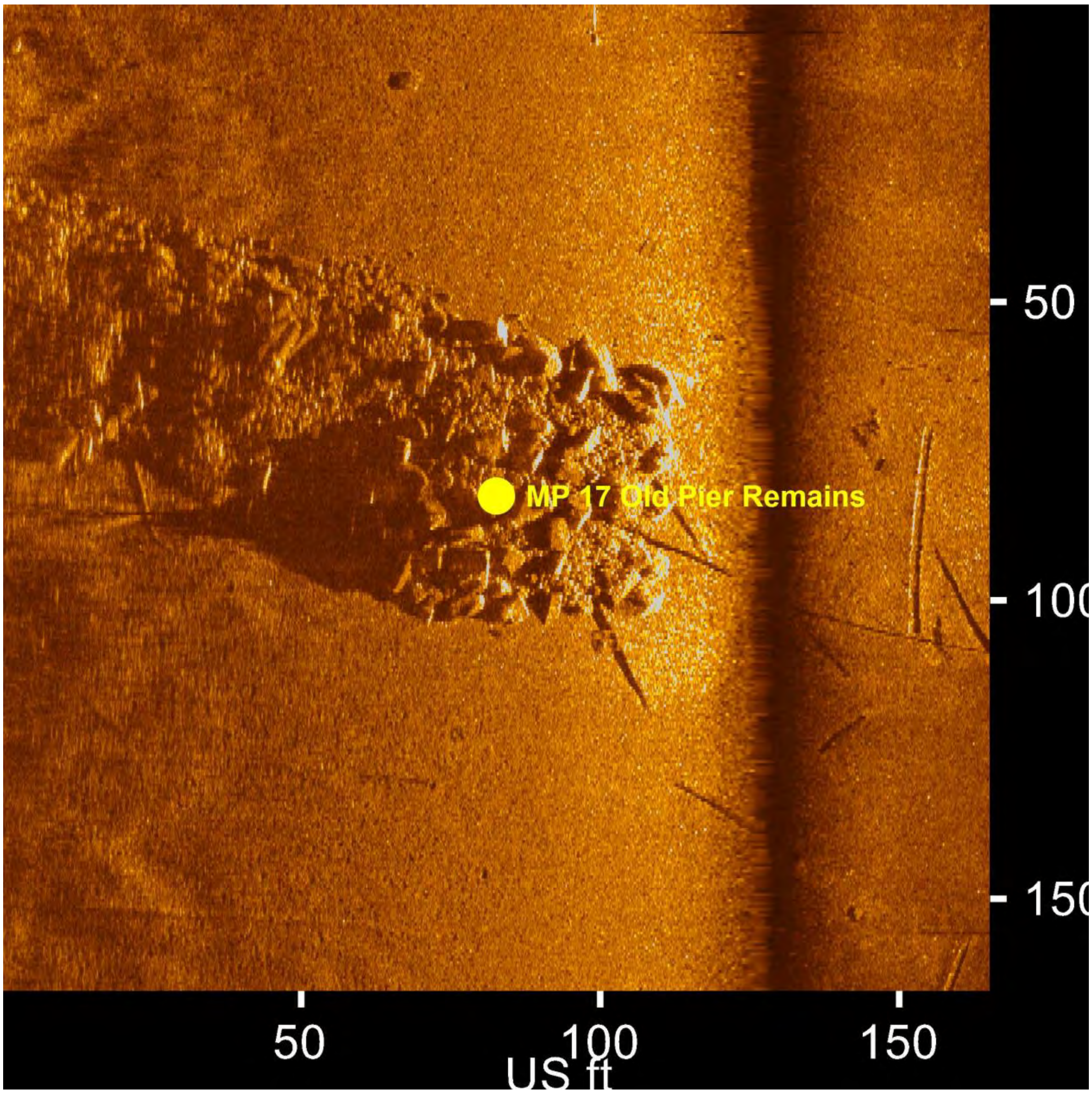


MP 16 Timber, Log or Pipe

- Sonar Time at Target: 10/26/2023 1:42:10 PM
- Click Position
  (X) 507489.05 (Y) 4921957.27 (Projected)
  44° 27.04866' N 068° 54.38226' W (NAD27LL)
  44° 27.05274' N 068° 54.35246' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026133736.jsf
- Course Made Good: 261.400 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 9.11 US ft
- Target Shadow: 0.00 US ft

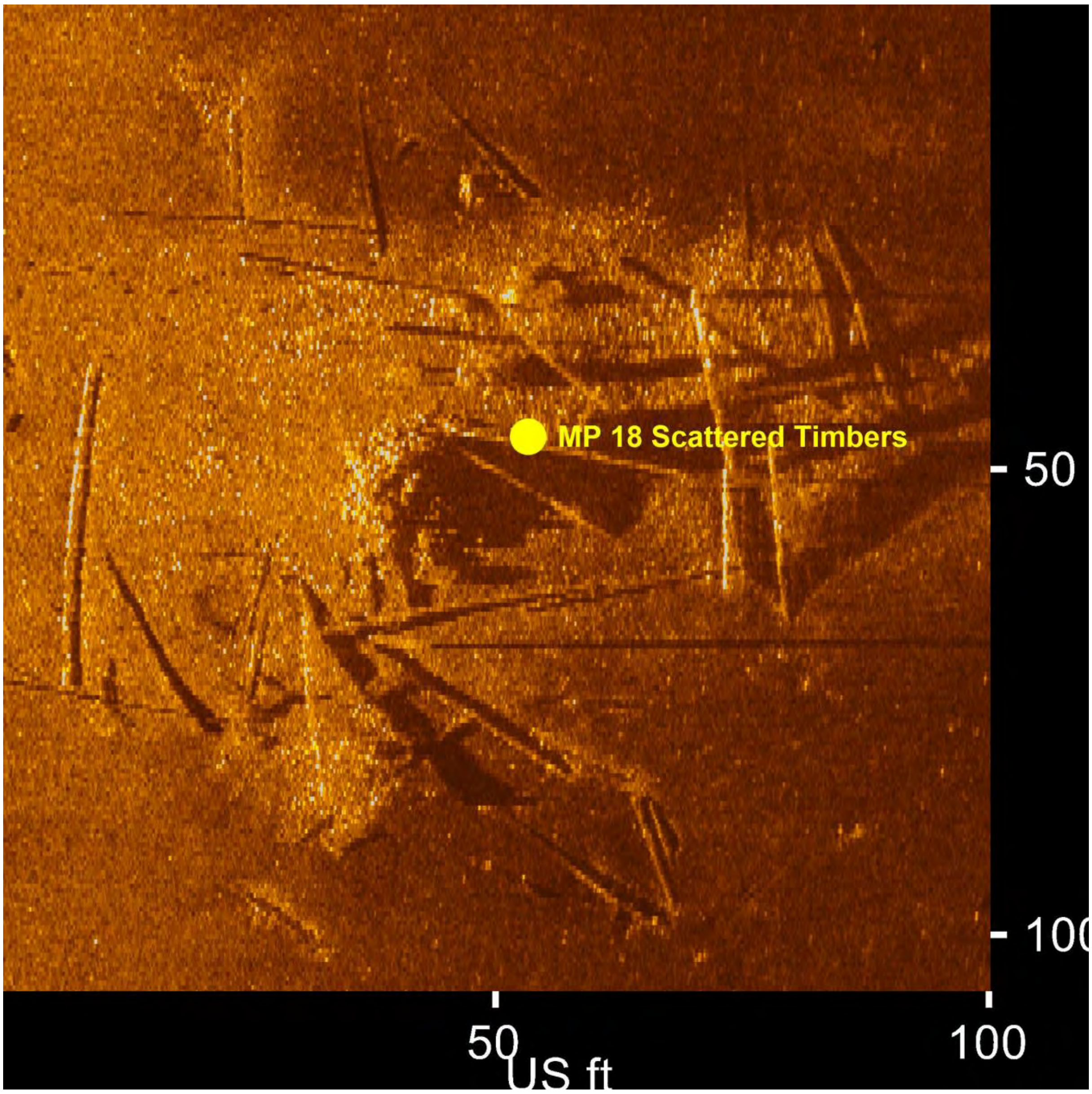


MP 17 Old Pier Remains

- Sonar Time at Target: 10/26/2023 1:49:28 PM
- Click Position
  (X) 507723.04 (Y) 4922002.04 (Projected)
  44° 27.07269' N 068° 54.20577' W (NAD27LL)
  44° 27.07677' N 068° 54.17597' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026134547.jsf
- Course Made Good: 82.168 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

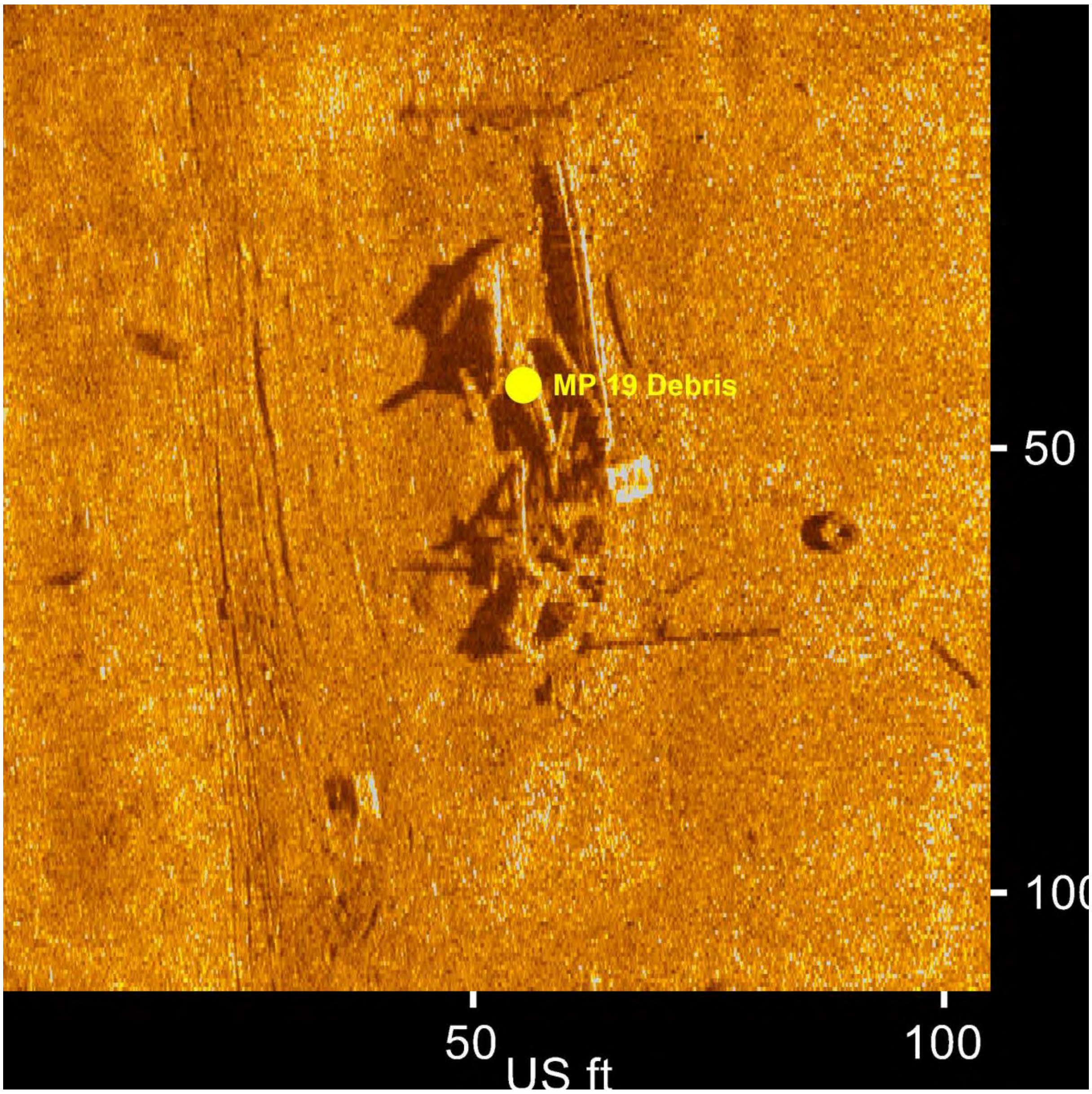


MP 18 Scattered Timbers

- Sonar Time at Target: 10/26/2023 1:49:28 PM
- Click Position
  (X) 507728.07 (Y) 4921967.00 (Projected)
  44° 27.05376' N 068° 54.20201' W (NAD27LL)
  44° 27.05784' N 068° 54.17221' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026134547.jsf
- Course Made Good: 82.121 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

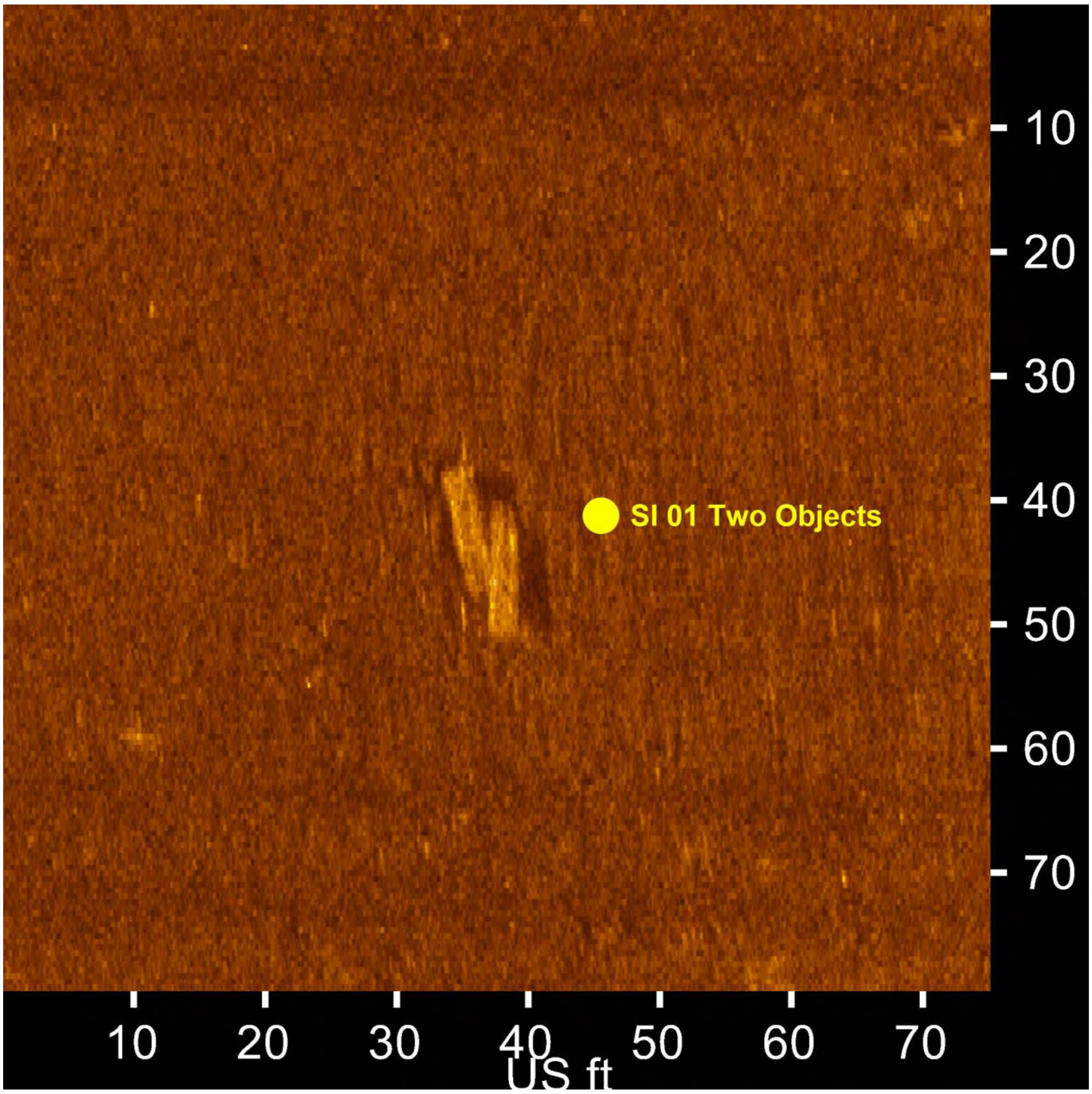


MP 19 Debris

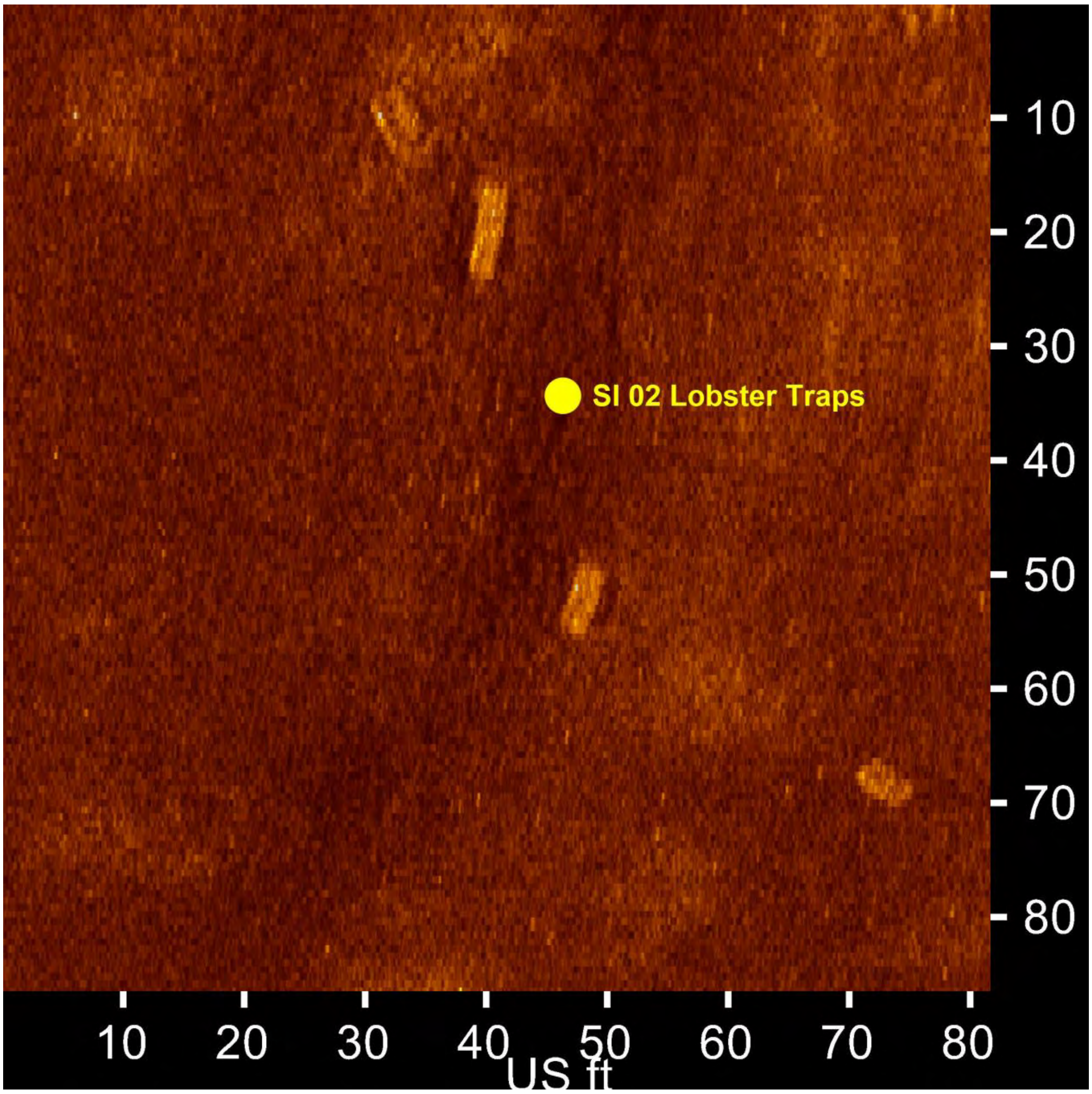
- Sonar Time at Target: 10/25/2023 8:34:24 PM
- Click Position
  (X) 508182.81 (Y) 4921898.39 (Projected)
  44° 27.01639' N 068° 53.85914' W (NAD27LL)
  44° 27.02048' N 068° 53.82935' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025203402.jsf
- Course Made Good: 342.215 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft



SI 01 Two Objects	Dimensions and attributes
• Sonar Time at Target: 10/25/2023 3:30:13 PM • Click Position (X) 508095.33 (Y) 4920776.56 (Projected) 44° 26.41047' N 068° 53.92615' W (NAD27LL) 44° 26.41456' N 068° 53.89637' W (LocalLL) • Map Projection: EPSG:32619 • Acoustic Source File: 20231025153005.jsf • Course Made Good: 169.159 Degrees	• Target Width: 0.49 US ft • Target Height: 0.39 US ft • Target Length: 2.95 US ft • Target Shadow: 1.28 US ft

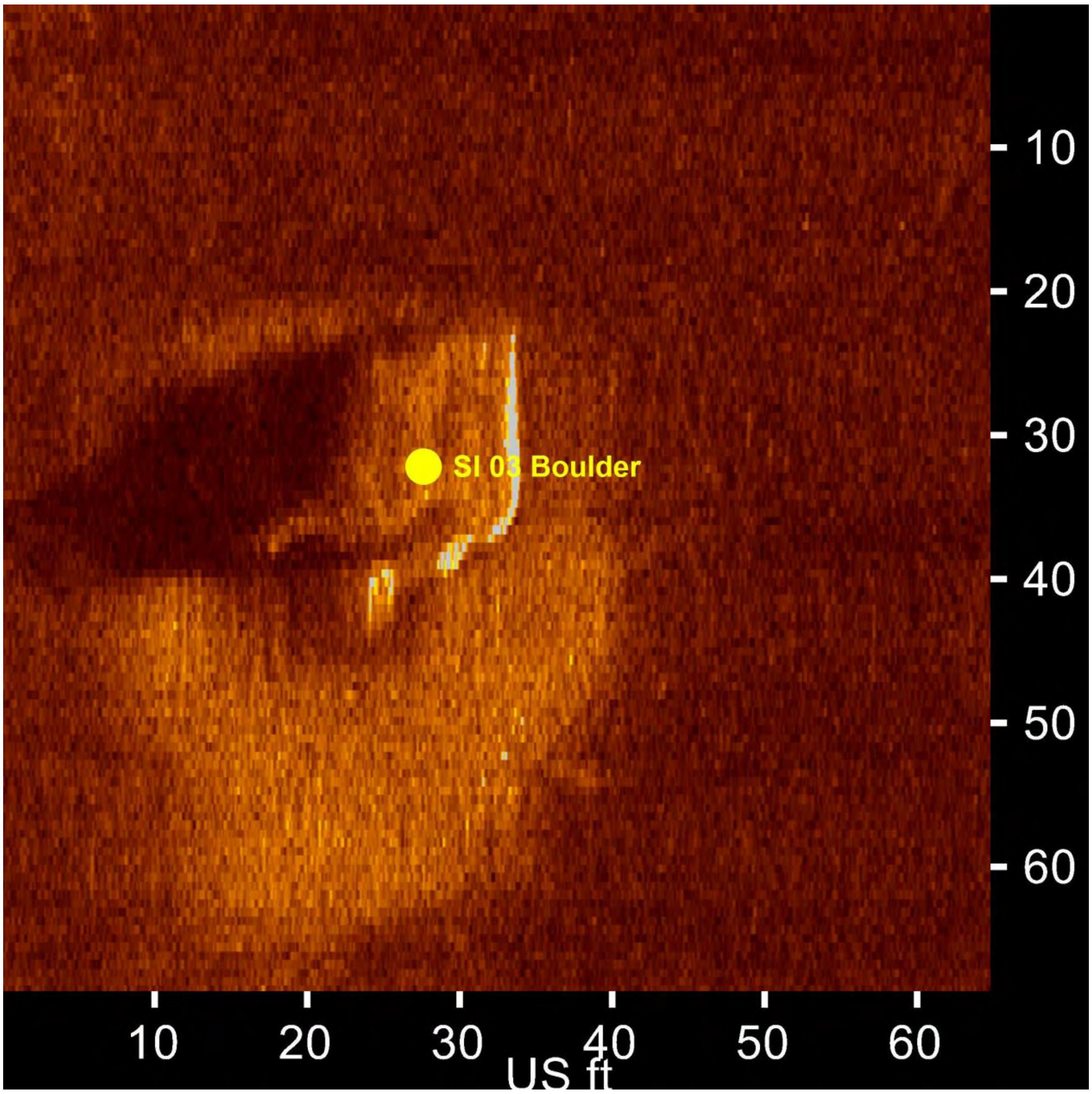


SI 02 Lobster Traps

- Sonar Time at Target: 10/25/2023 3:44:35 PM
- Click Position
  (X) 508208.04 (Y) 4920905.59 (Projected)
  44° 26.48008' N 068° 53.84105' W (NAD27LL)
  44° 26.48418' N 068° 53.81127' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025154233.jsf
- Course Made Good: 346.272 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

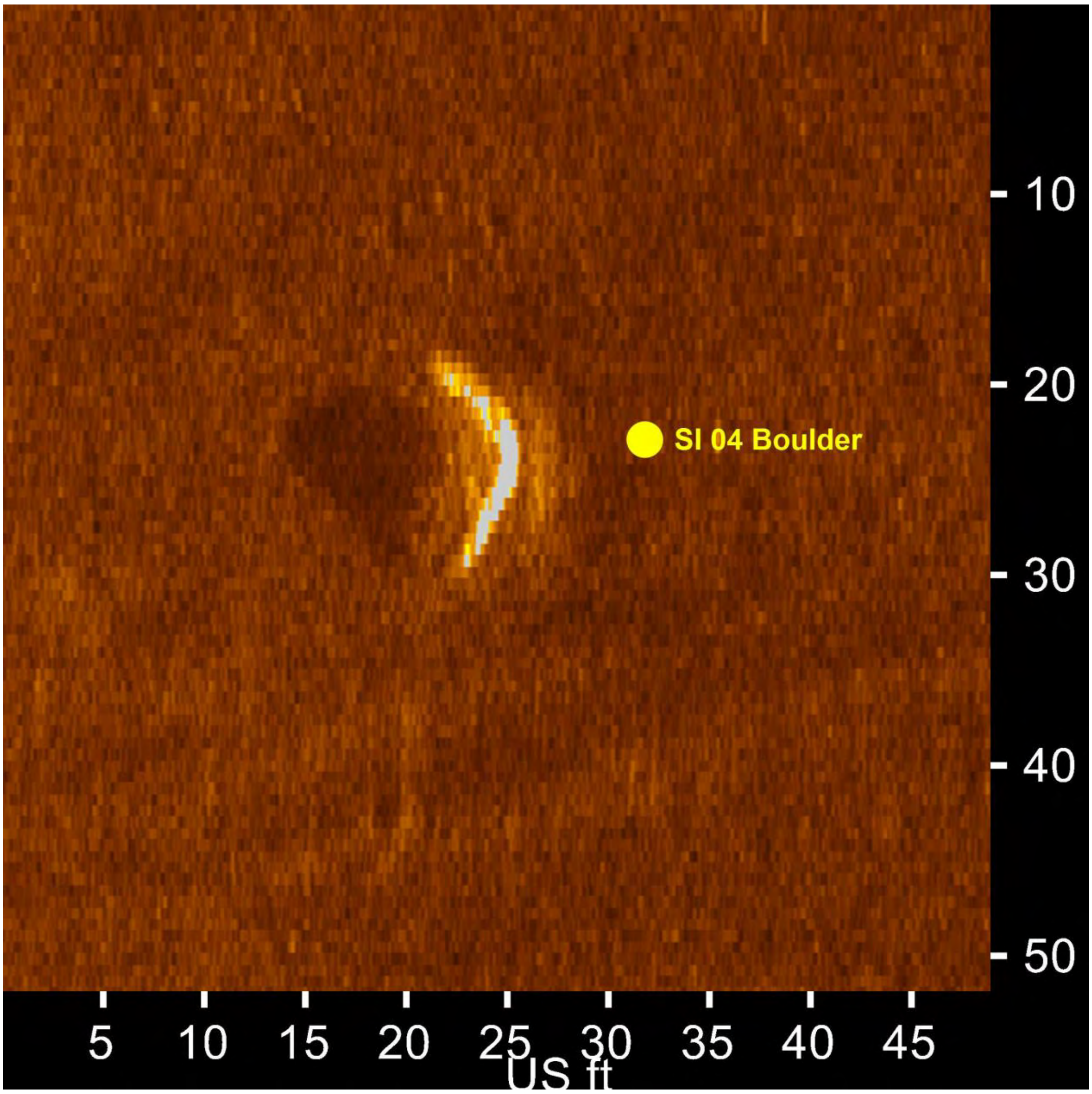


SI 03 Boulder

- Sonar Time at Target: 10/25/2023 4:00:35 PM
- Click Position
  (X) 508341.73 (Y) 4920644.75 (Projected)
  44° 26.33909' N 068° 53.74050' W (NAD27LL)
  44° 26.34319' N 068° 53.71072' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025155711.jsf
- Course Made Good: 167.271 Degrees

Dimensions and attributes

- Target Width: 3.63 US ft
- Target Height: 1.72 US ft
- Target Length: 4.94 US ft
- Target Shadow: 8.10 US ft

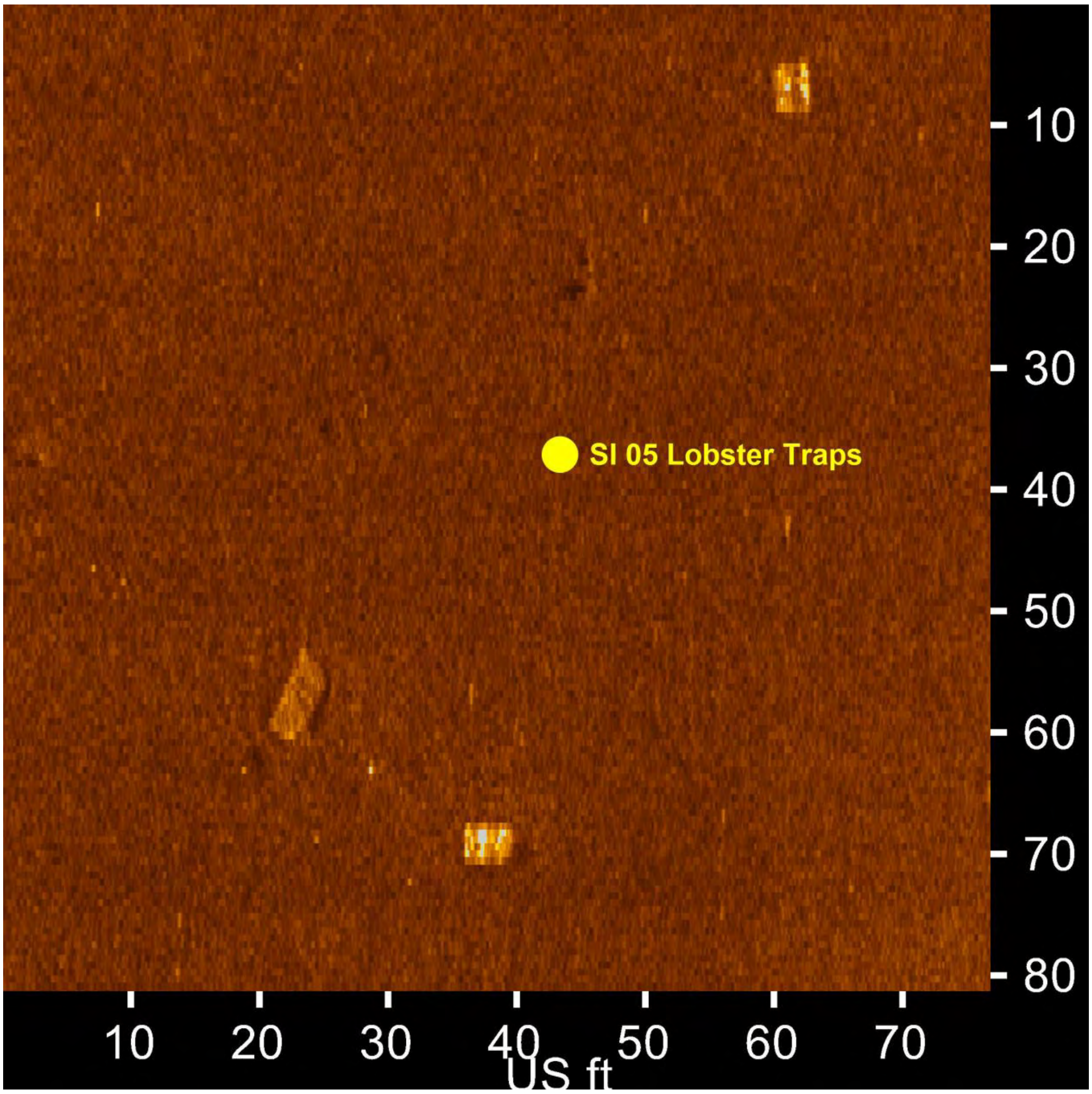


SI 04 Boulder

- Sonar Time at Target: 10/25/2023 4:00:17 PM
- Click Position
  (X) 508329.93 (Y) 4920690.33 (Projected)
  44° 26.36373' N 068° 53.74935' W (NAD27LL)
  44° 26.36783' N 068° 53.71958' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025155711.jsf
- Course Made Good: 167.119 Degrees

Dimensions and attributes

- Target Width: 1.41 US ft
- Target Height: 1.31 US ft
- Target Length: 3.44 US ft
- Target Shadow: 5.50 US ft

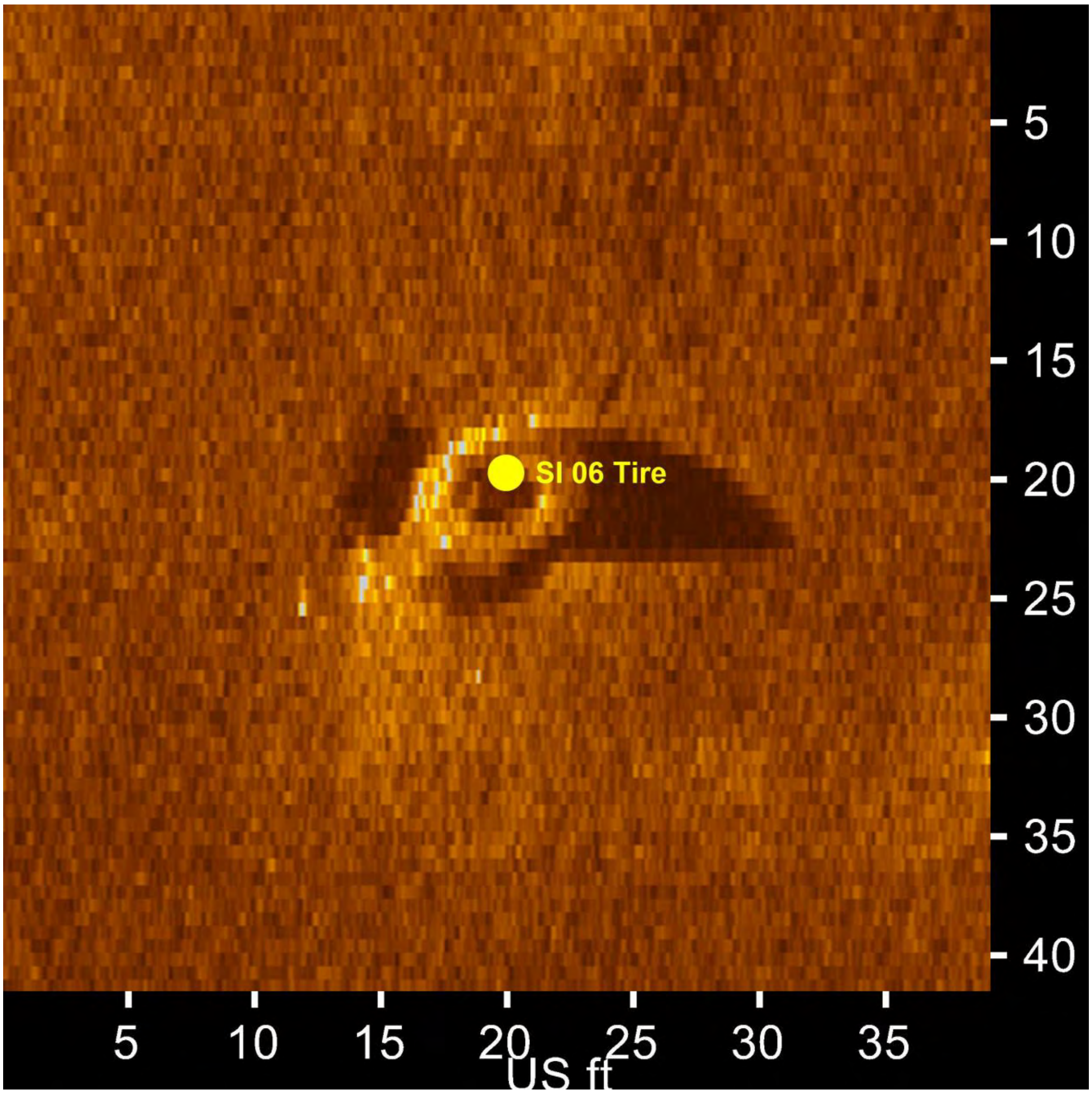


SI 05 Lobster Traps

- Sonar Time at Target: 10/25/2023 4:09:28 PM
- Click Position
  (X) 508213.90 (Y) 4921119.27 (Projected)
  44° 26.59551' N 068° 53.83643' W (NAD27LL)
  44° 26.59960' N 068° 53.80665' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025160826.jsf
- Course Made Good: 166.684 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

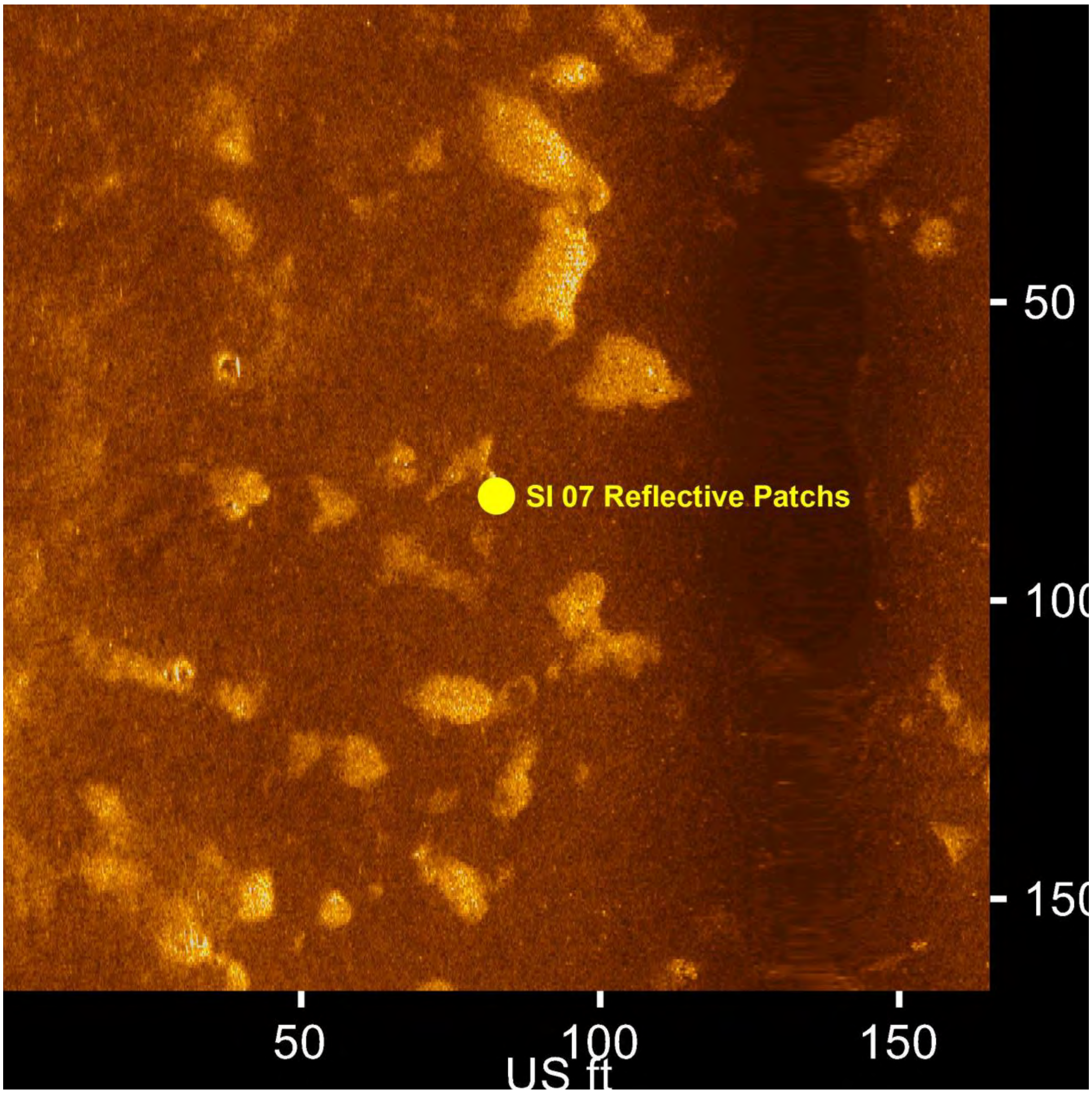


SI 06 Tire

- Sonar Time at Target: 10/25/2023 4:46:49 PM
- Click Position
  (X) 880950.75 (Y) 282552.42 (Projected)
  44° 26.46450' N 068° 53.76222' W (NAD27LL)
  44° 26.46860' N 068° 53.73244' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025164015.jsf
- Course Made Good: 166.760 Degrees

Dimensions and attributes

- Target Width: 1.83 US ft
- Target Height: 1.19 US ft
- Target Length: 1.78 US ft
- Target Shadow: 2.85 US ft

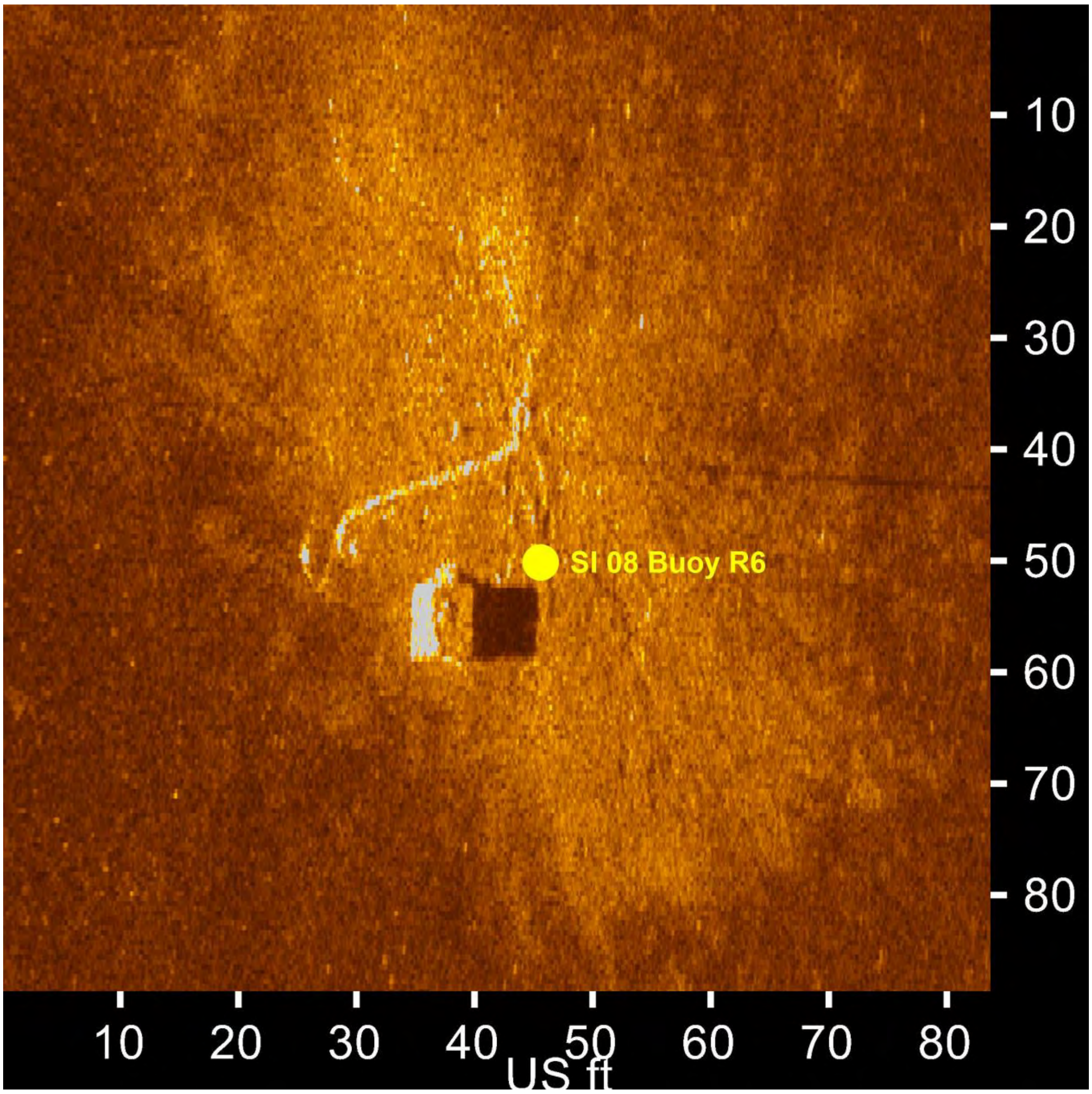


SI 07 Reflective Patchs

- Sonar Time at Target: 10/26/2023 11:19:28 AM
- Click Position
  (X) 508334.89 (Y) 4920945.02 (Projected)
  44° 26.50130' N 068° 53.74536' W (NAD27LL)
  44° 26.50539' N 068° 53.71559' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026111619.jsf
- Course Made Good: 347.223 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

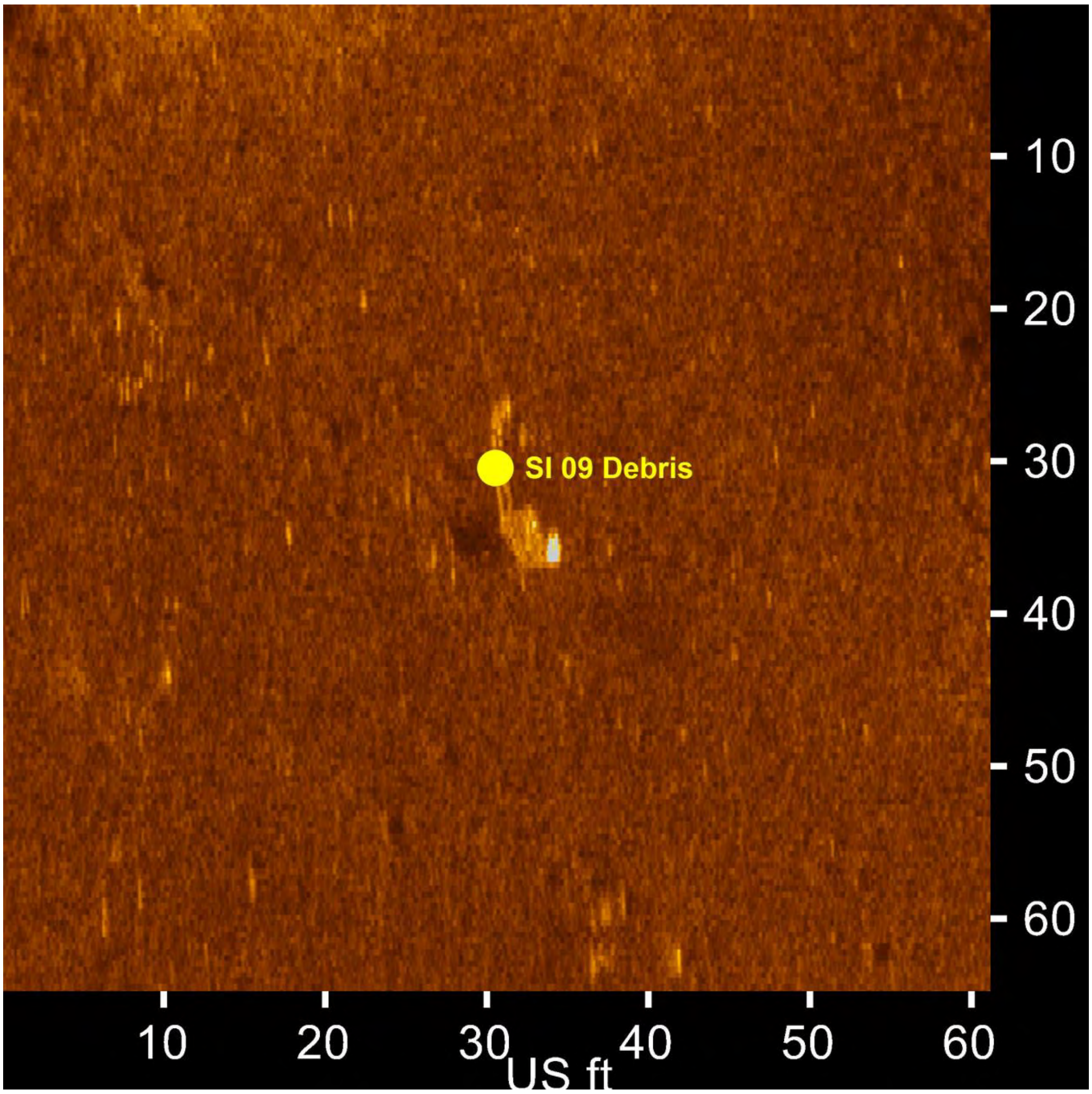


SI 08 Buoy R6

- Sonar Time at Target: 10/26/2023 11:51:17 AM
- Click Position
  (X) 508372.05 (Y) 4921320.19 (Projected)
  44° 26.70393' N 068° 53.71698' W (NAD27LL)
  44° 26.70803' N 068° 53.68720' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026114330.jsf
- Course Made Good: 28.613 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

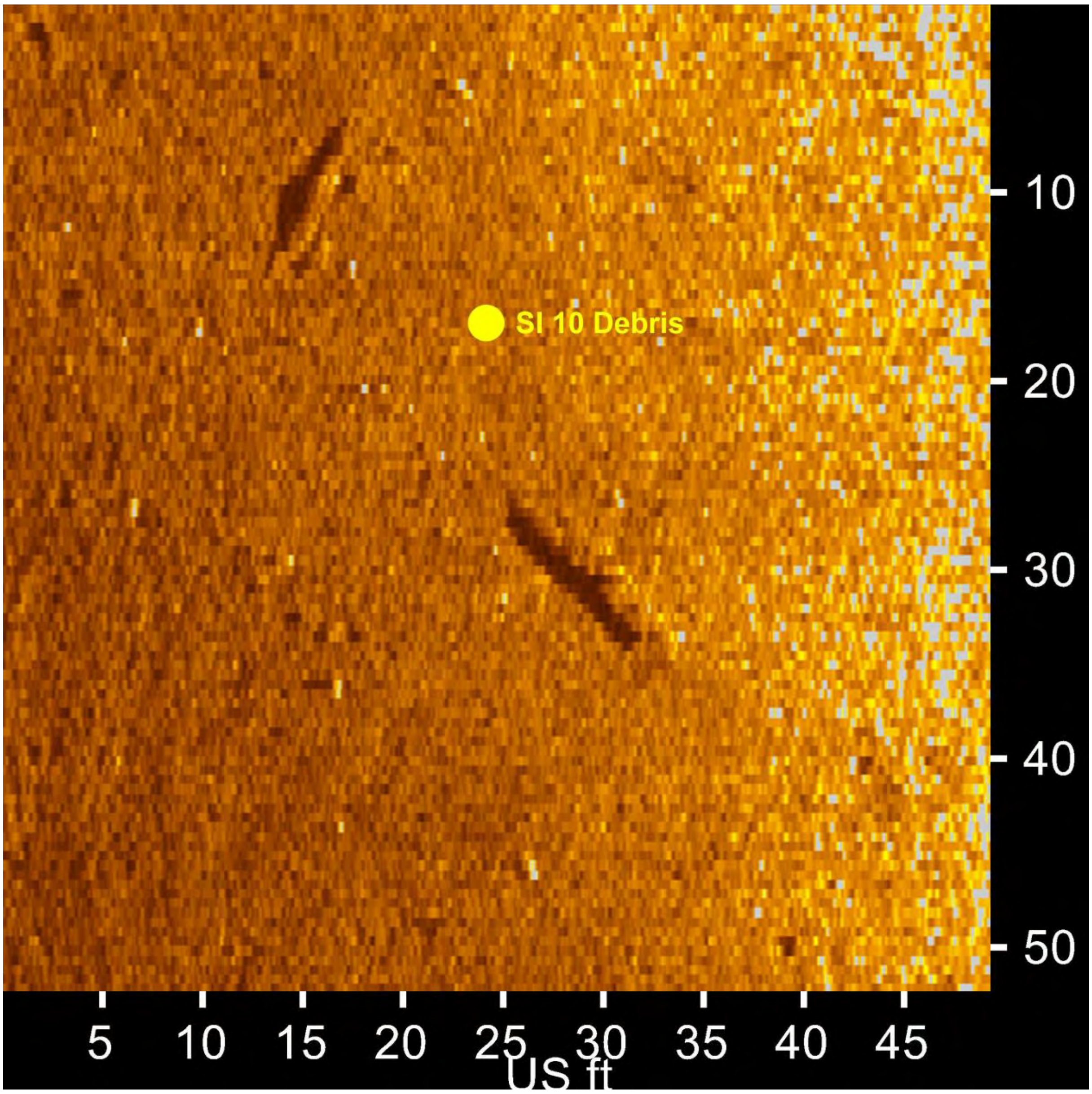


SI 09 Debris

- Sonar Time at Target: 10/26/2023 11:53:11 AM
- Click Position
  (X) 508410.23 (Y) 4921512.82 (Projected)
  44° 26.80795' N 068° 53.68801' W (NAD27LL)
  44° 26.81205' N 068° 53.65823' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026114330.jsf
- Course Made Good: 27.848 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.18 US ft
- Target Length: 3.21 US ft
- Target Shadow: 0.73 US ft

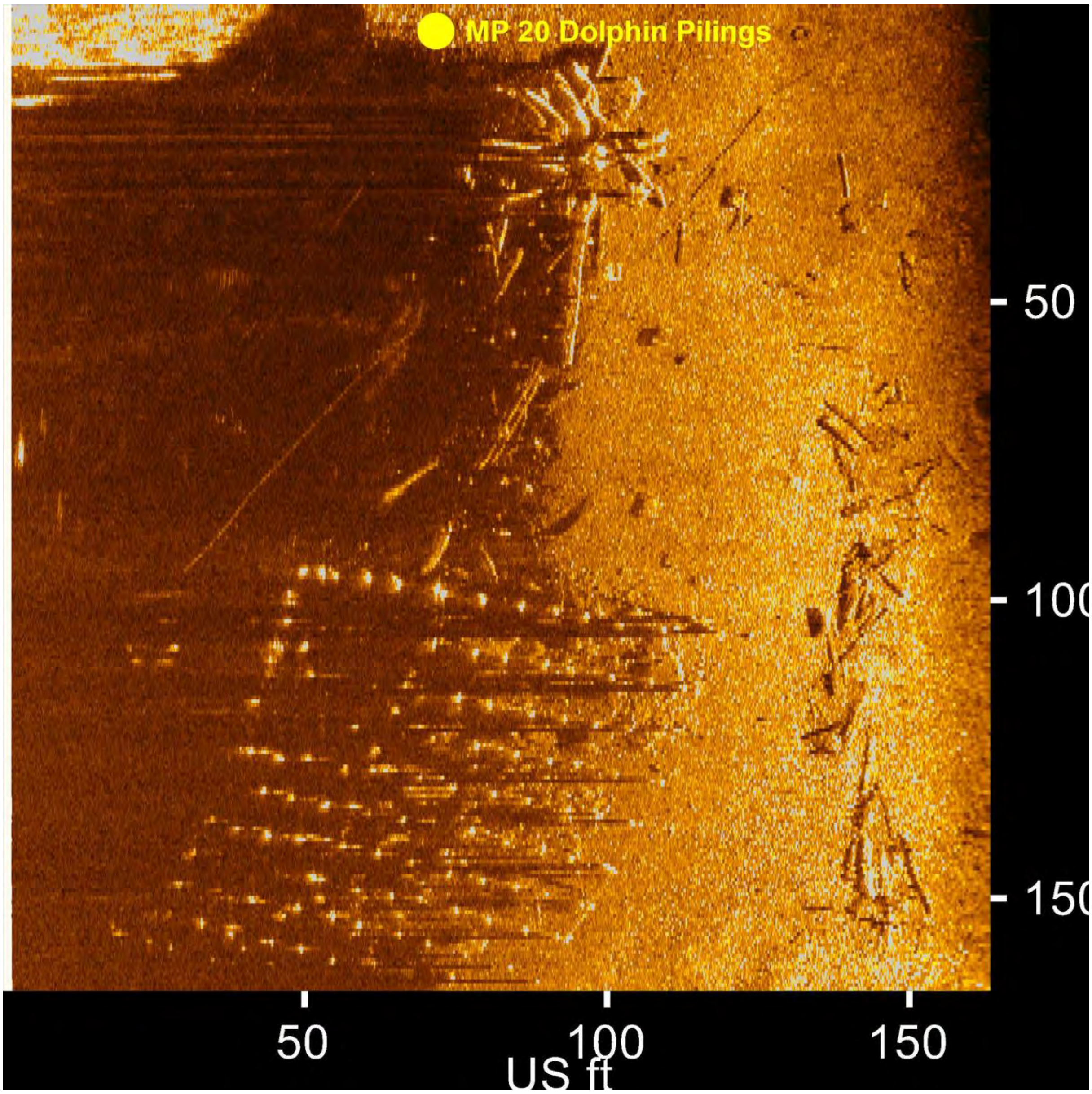


SI 10 Debris

- Sonar Time at Target: 10/26/2023 12:31:12 PM
- Click Position
  (X) 508502.21 (Y) 4921292.41 (Projected)
  44° 26.68883' N 068° 53.61887' W (NAD27LL)
  44° 26.69293' N 068° 53.58909' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231026122652.jsf
- Course Made Good: 206.130 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 3.14 US ft
- Target Shadow: 0.00 US ft

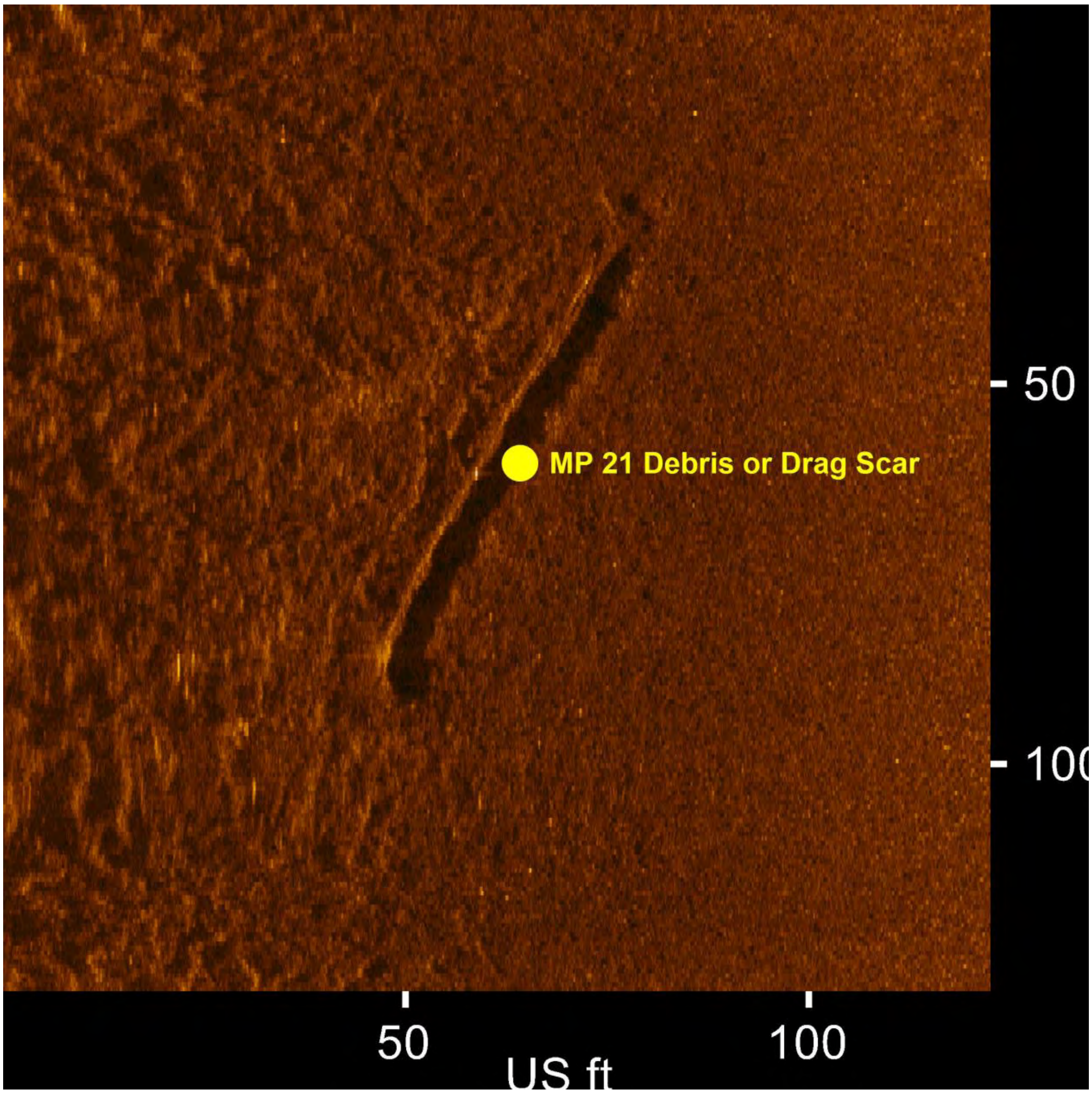


MP 20 Dolphin Pilings

- Sonar Time at Target: 10/25/2023 8:32:05 PM
- Click Position
  (X) 508105.15 (Y) 4921967.92 (Projected)
  44° 27.05400' N 068° 53.91764' W (NAD27LL)
  44° 27.05809' N 068° 53.88784' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025202645.jsf
- Course Made Good: 151.149 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft



MP 21 Debris or Drag Scar

- Sonar Time at Target: 10/25/2023 7:51:22 PM
- Click Position
  (X) 507849.21 (Y) 4921834.98 (Projected)
  44° 26.98236' N 068° 54.11077' W (NAD27LL)
  44° 26.98645' N 068° 54.08097' W (LocalLL)
- Map Projection: EPSG:32619
- Acoustic Source File: 20231025194845.jsf
- Course Made Good: 263.284 Degrees

Dimensions and attributes

- Target Width: 0.00 US ft
- Target Height: 0.00 US ft
- Target Length: 0.00 US ft
- Target Shadow: 0.00 US ft

Coastal Wetland Habitat Functions & Values Assessment Report

Maine Department of Transportation
Offshore Wind Port and Wind Turbine
Launch Site, Mack Point

May 2024

Prepared for:

Maine Department of Transportation
16 State House Station
24 Child Street
Augusta, ME 04333

Prepared by:

Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME 04086

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION AND PROJECT OVERVIEW

The Maine Department of Transportation is evaluating the existing Mack Point facility in Searsport, Maine, for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project). The Project is currently in the conceptual design phase. Figure 1 represents the preliminary design and proposed impacts, including approximate placement of fill, dredge, and pier structures in intertidal and subtidal areas (Project Area).

The total proposed direct impact to intertidal and subtidal coastal wetlands is based on the June 2023 Project conceptual design at Mack Point and requires the filling of approximately 30 acres of intertidal and subtidal habitat for a sheet pile in-fill pier, construction of a heavy lift wharf over approximately 5 acres of subtidal habitat and dredging of approximately 24 acres of subtidal habitat (Figure 1). These intertidal and subtidal wetlands are regulated under the Maine Natural Resources Protection Act (NRPA) administered by the Maine Department of Environmental Protection (MEDEP) and the federal Clean Water Act (CWA) administered by the US Army Corps of Engineers (USACE). As part of the NRPA/CWA permit process, an assessment is required to evaluate how the proposed alterations will affect the functions and values of existing coastal wetlands. Stantec Consulting Services Inc. (Stantec) conducted an assessment of the functions and values of the coastal wetland habitats to support permitting of the proposed Project. Since actual impact areas are still being determined, a 200-foot buffer around proposed impacts (Survey Area) was included as part of this assessment.

1.1 SITE DESCRIPTION

Searsport Harbor is a deep water port located west of the confluence of the Penobscot River and Penobscot Bay in Waldo County, Maine. The boundaries of Searsport Harbor are defined as beginning at the southernmost point of land on Kidder Point and running southerly along the western shore of Sears Island to the southernmost point of Sears Island, then running due west to the shore of Mack Point. The Mack Point Terminal is located on the northern end of the harbor. That terminal is used principally to receive petroleum products and salt and the export of lumber, paper, and much of Aroostook County's annual potato crop. The Mack Point terminal operates two piers, a 560-foot by 100-foot dry cargo pier and a liquid cargo pier with two berths, a 1,700-foot-long berth and a 2,500-foot-long berth.

Searsport Harbor is a sheltered anchorage, covering an area of roughly 2 by 3 miles, with a federally regulated navigation channel controlling depth of 35 feet at mean low water and an average tidal fluctuation of 10 feet. The Searsport Harbor Navigation Project was completed in 1964 and consists of a 35-foot-deep and 500-foot-wide access channel west of Sears Island and a 35-foot-deep turning basin extending from the end of the access channel to the piers at Mack Point. The turning basin has a maximum width of 1,500 feet.

Searsport Harbor is classified by MEDEP as "SC" (MEDEP 2023). SC waters shall be satisfactory for recreation in and on the water, fishing, aquaculture, propagation and restricted harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as a habitat for fish and other estuarine and marine life.

2.0 SURVEY METHODS

Stantec's assessment is based on coastal wetland descriptions and sampling and assessment protocols outlined in MEDEP's coastal wetland assessment guidelines (Ward 1999a,b), modified and adapted to include both intertidal and subtidal coastal wetlands where applicable. Substrate types were described and mapped per Ward (1999a) definitions but were also further described by dominate substrate types within each defined type. Stantec marine biologists conducted field surveys including visual observations of field conditions (e.g., habitat type and faunal assemblages), quantitative quadrat sampling in the intertidal, collection of underwater video footage, a side-scan sonar survey, sediment grabs, an eelgrass (*Zostera marina*) survey, and an American lobster (*Homarus americanus*) and green sea urchin (*Strongylocentrotus droebachiensis*) survey. Separate field memos have been prepared for the eelgrass survey (Stantec 2024a), the lobster and urchin survey (Stantec 2024b), and the side-scan sonar survey (SAMC 2023).

2.1 INTERTIDAL HABITATS

The flora and fauna inhabiting the shoreline zone (intertidal) were characterized through visual observations in the field on September 19, 2023. Initially, the intertidal habitat was mapped by sketching the locations of high, mid, and low intertidal and shallow subtidal areas; differing substrate types; and areas of varying energy levels. The boulder and cobble substrates were surveyed by searching for fauna under rocks, boulders, and other debris. A shovel was used to turn over silty and sandy substrates for fauna observations. Observations of species composition, abundance, and distribution were recorded. Surveys were conducted during low tide conditions so the maximum extent of the intertidal area could be observed. A handheld GPS was used to capture locations of exemplary, unique, or representative habitats or communities. Field characterization efforts also included a meander survey for presence of eelgrass within the intertidal zone.

Following initial observations during the qualitative survey, a quantitative quadrat survey was conducted in the Survey Area. The Survey Area and quadrats are depicted on Figure 2. The marine flora and fauna inhabiting the upper, middle, and lower tidal zones within the quantitative survey areas were characterized using a 0.25-square-meter quadrat placed at random points. Quadrats were randomly placed by tossing them into the target tidal zone (Ward 1999a). A total of 10 quadrats were characterized from the three tidal zones (30 quadrats total). Sediments within the quadrat were excavated to a depth of 10 centimeters. At each quadrat location, the substrate types (e.g., boulder, cobble, rip rap, vegetation) and representative flora and macrofauna were characterized. Macrofauna and flora observed within the quadrat were identified and categorized as to relative abundance (i.e., occasional, common, abundant) within the quadrat per the Ward (1999a) guidance.

Organisms that were not identifiable in the field were collected, preserved (in ethanol), and identified by Haley and Ward, a qualified Maine taxonomic laboratory. Organisms were identified to the lowest extent practicable; where possible, classification was taken to the species level. Data collected during the intertidal survey was assessed to allow characterization of the dominant flora and fauna species and the relative abundance within the tidal zones of the Survey Area.

2.2 SUBTIDAL BENTHIC HABITATS

Subtidal habitats were characterized based on methods adapted from Ward (1999a), which include documenting substrate types, taking representative photographs, and completing a flora and fauna species list. The subtidal survey area was evaluated qualitatively with the addition of sediment grabs for quantitative infaunal analysis. Divers surveyed subtidal areas and collected underwater video. A side-scan sonar survey of the Survey Area was also completed to map substrate types. The following habitat and species surveys were completed and contribute to this Coastal Functions and Values Report:

- On September 20, 2023, Stantec completed dive surveys to map eelgrass, substrate types, and associated benthic habitats at Mack Point. This survey was completed using SCUBA and included additional benthic observations and underwater video (Stantec 2024a).
- On October 25 and 26, 2023, Steele Associates Marine Consultants, LLC. (SAMC) completed a side-scan sonar survey of the subtidal Survey Area. Side-scan sonar transects were performed at 75-foot intervals oriented parallel to the shoreline (SAMC 2023).
- On November 20 and December 5, 2023, Stantec completed dive surveys to estimate the density of American lobsters and green sea urchins present in the Survey Area. This survey was completed using SCUBA and includes benthic observations and underwater video of the Survey Area (Stantec 2024b).
- An additional underwater video survey is scheduled in spring 2024 to be conducted by SAMC. SAMC will use a remotely operated vehicle to collect underwater video along transects within the substrate types identified on the side-scan survey (SAMC 2023). These videos will be used to further characterize the substrate in these areas and document flora and fauna. This report will be updated when this video survey data has been analyzed.

2.3 BENTHIC INFAUNA

Subtidal areas in the Survey Area were characterized by collection of shallow sediment samples for analysis of macroinvertebrate communities. Samples were collected using a Ponar® grab sampler. Subtidal benthic grab sample locations were determined in the field and are shown on Figure 2. Five benthic sediment samples were collected in the Survey Area. Upon retrieval, grab samples were visually inspected, photographed, and general observations of sediment texture, odor, and color were recorded. Sediments were sieved through a 500 µm mesh, sieved contents preserved in ethanol, and delivered to Haley and Ward for taxonomic analysis.

3.0 SURVEY RESULTS

The results of Stantec's functions and values field evaluation are provided below. In addition, the MEDEP Intertidal and Shallow Subtidal Field Survey Checklist required for NRPA permit applications is included as Appendix A. This checklist was developed by MEDEP for intertidal and shallow subtidal habitats; consequently, not all data fields are applicable to the subtidal areas within the Project Area.

3.1 INTERTIDAL HABITATS

The intertidal field survey was completed on September 19, 2023. An observed species list for each tidal zone within the Survey Area is presented in Appendix B. Representative photographs of intertidal and shallow subtidal areas area presented in Appendix C. Photographs of the quadrat survey locations for Mack Point are provided in Appendix D. The locations of approximate quadrat sampling locations are provided on Figure 2. Underwater videos are available upon request.

The intertidal Survey Area extends from the eastern pier of the Sprague Terminal west to the southwestern corner of Mack Point (Figure 2). The high intertidal is primarily characterized by rip rap consisting of boulder sized granite blocks in the central and eastern portion of the survey area (Appendix C: Photo 1). The area also contains some metal debris and other fill materials (Appendix C: Photo 2). A more natural high intertidal exists in the western portion of the survey area with invasive common reed (*Phragmites australis)* and native high salt marsh vegetation (Appendix C: Photo 3). Several small patches of high salt marsh vegetation are present in this western area and include saltmeadow cordgrass (*Spartina patens*), Baltic rush (*Juncus balticus*), and seaside plantain (*Plantago maritima*) (Appendix C: Photo 4). Lower portions of the high intertidal are dominated by mixed coarse and fines, (coarse sand, gravel, and cobble substrate with boulders) (Appendix C: Photo 5). Spiral rockweed (*Fucus spiralis*) is common in this lower portion of the high intertidal. Several outfalls discharge from the adjacent upland into the high intertidal (Appendix C: Photos 6 and 7). The high intertidal between the two piers at the Sprague Terminal is primarily rip rap and mixed coarse and fines (coarse sand and gravel with scattered cobble) (Appendix C: Photo 8; Figure 3).

The mid intertidal at Mack Point is primarily mixed coarse and fines (boulder and cobble substrate with scattered gravel, sand, and silt). Macroalgae is abundant in this substrate type and consists of knotted wrack (*Ascophyllum nodosum*) and rockweed (*Fucus vesiculosus*) (Appendix C: Photo 9). The remnants of a former pier consisting of boulder and cobble is present in the central portion of the Survey Area (Appendix C: Photo 10). This feature has created a depositional area to the west dominated by mixed coarse and fines (coarse sand and gravel grading to more cobble and boulder to the west) (Appendix C: Photo 11). Macroalgae is scattered to common in this substrate type without the larger cobble and boulders to attach to. The mid intertidal survey area between the two piers is primarily mixed coarse and fines (coarse sand and gravel) (Appendix C: Photo 12). Excavation of survey quadrats revealed marine clay approximately 4 inches below the sediment surface in some areas. The boulders and cobble in this tidal zone are mostly embedded in the gravel, sand, and silt below. Soft-shell clams (*Mya arenaria*) were documented as occasional within the mid intertidal during excavation of quadrats (Appendix C: Photo 13; Figure 3). At the western edge of the potential project footprint, a tide pool with approximately 3 to 5 inches of water was observed. The tide pool contained several mummichogs (*Fundulus heteroclitus)* and one clam worm (*Alitta succinea*) (Figure 2).

The low intertidal at Mack Point is dominated by mixed coarse and fines (boulder, and cobble substrate) with abundant macroalgae (knotted wrack and rockweed) (Appendix C: Photo 14). The exception to this larger grained substrate is the depositional area west of the former pier, which is dominated by gravel and coarse sand (Appendix C: Photo 10). Macroalgae is scattered in these finer grained substates. The low intertidal survey area between the two piers is primarily mixed coarse and fines (coarse sand and gravel)

(Appendix C: Photo 15). Excavation of survey quadrats revealed marine clay approximately 4 inches below the sediment surface in some areas. The boulders and cobble in this tidal zone are mostly embedded in the gravel, sand, and silt below. Soft-shell clams were documented as occasional within the low intertidal during excavation of quadrats (Appendix C: Photo 16; Figure 3).

3.2 SUBTITAL BENTHIC HABITATS

3.2.1 Diver Based Observations

The shallow subtidal substrates were surveyed using SCUBA during the eelgrass and lobster and urchin surveys (Stantec 2024a,b). The mixed coarse substrate consisting of boulder and cobble observed in the low intertidal extends into the subtidal to approximately -10 feet mean lower low water (MLLW) before grading to unconsolidated sediments consisting of sandy silt in deeper water. Green sea urchins are abundant in the subtidal zone on hard substrate and have grazed most macroalgae off the cobble and boulders (Appendix C: Photos 17 and 18; Stantec 2024b). Crustose coralline alga (*Corallinales*) is common on these hard surfaces (Appendix C: Photo 19). Green crabs (*Carcinus maenas*) were abundant in this boulder and cobble substrate type and American lobsters were occasional, during the September 2023 eelgrass survey (Appendix C: Photos 20 and 21). One lobster was observed in boulder and cobble habitat in the subtidal during the November 5, 2023, survey. Divers observed lobster burrows that were not visibly occupied during the survey (Stantec 2024b). The subtidal area surrounding the remnant pier was unconsolidated sediments, sandy silt substrate. The shallow subtidal here had abundant sand dollars (*Echinarachnius parma*) and occasional surf clams (*Spisula solidissima*) and ocean quahog (*Arctica islandica*) (Appendix C: Photos 22—24).

Stantec completed eelgrass surveys on September 20, 2023. No eelgrass was observed in the Survey Area. Appropriate depths and substrate types for eelgrass are present in portions of the survey area. No eelgrass leaves or shoots were observed in the wrack line in the intertidal at Mack Point mixed with algae (Stantec 2024a).

Table 1 summarizes the subtidal species observed during these field surveys and their associated abundance, per Ward (1999a).

Table 1. Subtidal Species List, Mack, 2023.

Common Name	Scientific Name	Site Abundance
Acadian hermit crab	*Pagurus acadianus*	A
American lobster	*Homarus americanus*	O
Amphipod	*Gammarus species*	O
Atlantic herring	*Clupea harengus*	O
Blue mussel	*Mytilus edulis*	O
Brown filamentous algae	*Ectocarpus* spp.	O
Burrowing anemone	Order: Spirularia	O
Common periwinkle	*Littorina littorea*	A

Common Name	Scientific Name	Site Abundance
Common slipper shell	*Crepidula fornicata*	C
Crustose coralline algae	*Corallinales*	A
Cunner	*Tautogolabrus adspersus*	O
Encrusting bryozoan	*Membranipora membranacea*	C
False Irish moss	*Mastocarpus stellatus*	O
Finger sponge	*Haliclona oculate*	O
Fourspine stickleback	*Apeltes quadracus*	O
Green crab	*Carcinus maenas*	O
Green sea urchin	*Strongylocentrotus droebachiensis*	A
Gutweed	*Ulva intestinalis*	O
Long-wristed hermit crab	*Pagurus longicarpus*	C
Mummichog	*Fundulus heteroclitus*	C
Mysid shrimp	*Heteromysis formosa*	O
Northern rock barnacle	*Semibalanus balanoides*	C
Pipefish	*Syngnathus fuscus*	O
Rock crab	*Cancer irroratus*	O
Rock gunnel	*Pholis gunnellus*	O
Sand shrimp	*Crangon septemspinosa*	C
Sand dollar	*Echinarachnius parma*	A
Sculpin	*Myoxocephalus spp.*	C
Sea scallop	*Placopecten magellanicus*	O
Sea star	*Asterias rubens*	C
Sea vase	*Ciona intestinalis*	O
Spirobus worm	*Spiroribis spp.*	O
Surf clam	*Spisula solidissima*	O
Tortoiseshell limpet	*Testudinalis testudinalis*	C
Unidentified brown filamentous algae		O
Unidentified encrusting black tunicate		O
Unidentified globular sponges		O
Winter Flounder	*Pseudopleuronectes americanus*	O
Yellow Periwinkle	*Littorina obtusata*	A

Notes: A = Abundant; C = Common; O = Occasional

3.2.2 Steele Associates Marine Consultants, LLC., Side-Scan Sonar Survey Results

Figure 4 presents subtidal substrate mapping based on a side-scan sonar survey completed by SAMC (2023). The substrate in the shallow subtidal is primarily boulder and cobble interspersed with silty sands. This substrate extends into the subtidal to around -10 feet MLLW before grading to sandy silt in deeper water. Beyond -10 feet MLLW, the benthic substrates in the central portion of the Mack Point Survey Area are mud, while the eastern and western portions of the Survey Area are silty sands (Figure 4). The substrate designations within these areas identified with side-scan will be further refined after the spring 2024 underwater video survey.

3.2.3 Benthic Infauna

On September 19, 2023, Stantec collected five grab samples from subtidal areas with unconsolidated sediments (Figure 2). The sediments in the five grab samples consisted of silt and fine sand (Appendix C: Photos 25—29). Macroinvertebrate samples from the sediment grabs were sent for sorting, enumeration, and speciation to Haley and Ward. Identified species, total number of individuals, individuals per meter squared, species richness (number of species), species evenness (a description of the relative abundance across species in a sample), Shannon-Weiner Index, and functional groups present for each sample per the methods in Ward (1999a) are presented in Appendix E.

3.3 FUNCTIONS AND VALUES

The Project will impact approximately 30 acres of intertidal and subtidal habitat for a sheet pile in-fill pier and approximately 5 acres of subtidal habitat for construction of heavy lift wharf, and approximately 24 acres of subtidal habitat will be dredged (Figure 1). The onshore portion of the site consists of approximately of a 140-acre marine terminal owned by Sprague Energy, with approximately 2,060 linear feet of undeveloped water frontage. The terminal contains two piers, a 560-foot by 100-foot dry cargo pier and a 2,500-foot-long liquid cargo Pier (Appendix C: Photo 30). Water depths within the Project Area range from the intertidal to approximately -51 feet MLLW.

The surveyed intertidal substrates are mixed coarse and fines consisting of primarily boulders and cobbles interspersed with sandier substrates (Figure 3). Small patches of salt marsh vegetation are present in the high tidal in the western portion of the Survey Area. A dense macroalgae community dominated by knotted wrack and rockweed is present in the mid and low intertidal zones on the boulder and cobble substrate. The remnants of a former pier consisting of boulder and cobble is present in the central portion of the Survey Area. This feature has created a depositional area to the west dominated by coarse sand and gravel grading to more cobble and boulder further to the west. Shallow subtidal substrates are dominated by mixed coarse and fines with boulders and cobbles with abundant green urchins that have grazed algae off the rocks. In the deeper portions of the subtidal, the benthic substrate is unconsolidated sediments, primarily sandy silt and mud (Figure 4).

The Project Area is part of the larger Searsport Harbor and Penobscot Bay, which supports a range of fish, shellfish, and wildlife habitat, as well as commercial and industrial uses. The multiple substrate types in the intertidal and subtidal within the Survey Area support a range of functions and values for invertebrates, fish, and wildlife. The dense cover of algae in the mid and low intertidal and the boulders and cobble in the subtidal provides structured complex habitat for a variety of marine species. The sandy silt subtidal flats support marine worms, shellfish, and crustaceans and provide potential food sources for multiple functional groups. The assessment narratives and the responses contained in Table 2 below address the primary MEDEP coastal wetland functions and values identified in the Ward (1999a) guidelines.

Table 2. Responses to MEDEP Qualifiers to Functions and Values.

Questions	Responses
Function/Value: Wildlife	
Subheading: Diversity and Productivity	
What is the marine diversity and abundance of the site? Does the site have a high or low density of vegetation? Does the intertidal or subtidal area have a high or low number of species?	The mix of substrate types in the intertidal and subtidal supports a diversity of marine species. Species such as the green sea urchin and crustose coralline algae on subtidal boulder and cobble habitat and knotted wrack, and northern rock barnacle in the intertidal are abundant (Table 1 and Appendix C). Invasive green crabs were also abundant at some intertidal sampling locations. Subtidal core locations for infauna indicated a species assemblage typical to soft-bottom substrates (Appendix E). The substrate types in the Survey Area are found throughout Searsport Harbor and the larger Penobscot Bay and the marine diversity and abundance within the Survey Area is typical of these habitats in mid-coast Maine. No eelgrass beds were documented during the field surveys within the Survey Area. The mid and low intertidal contain dense knotted wrack on boulder and larger cobble substrates. Green urchin browsing in the subtidal has limited growth of most algae besides crustose coralline.
Does the habitat at the site have the potential to contain a high population of benthic and epibenthic invertebrates?	Invertebrates were relatively common on intertidal and subtidal hard substrates as documented in Table 1 and Appendix C. The high rate of embeddedness of cobble and boulders into the sandy silt substrate limits habitat below this rocky substate for species such as lobsters and crabs. In the deeper subtidal portions of the Survey Area, finer grained substrate types and presence of green crab likely limits some benthic and epibenthic invertebrates.
Does the coastal area support prey for higher trophic levels?	The Survey Area contains annelid worms, mollusks, crustaceans, and forage fish, which are potential prey for fish or wildlife at higher trophic levels.

Questions	Responses
Does the site have a high abundance of predators (fish, mammals, birds) or the potential to contain a high population of predators?	Several observations of predators were made during site visits, including bald eagles (*Haliaeetus leucocephalus*), great blue herons (*Ardea herodias*), common loons (*Gavia immer),* double crested cormorants (*Phalacrocorax auritus*), and eider ducks (*Somateria mollissima*). No seals or harbor porpoises were observed during the site visits, but harbor seals (*Phoca vitulina*), gray seals (*Halichoerus grypus*), and harbor porpoise (*Phocoena phocoena*) are likely occasionally present in the Survey Area. Predatory fish species observed during the site dive surveys included cunner (*Tautogolabrus adsperus*) and winter flounder (*Pseudopleronectes americanus*). Though not observed during dive surveys, other predatory fish species such as striped bass (*Morone saxatilis*), pollack (*Pollachius pollachius*), and Atlantic mackerel (*Scomber scombrus*) are likely seasonally present. The habitats present within the Survey Area are not anticipated to have higher abundance of predators than other similar habitats in Penobscot Bay.
Are deposits of unnatural sediments present (e.g., sawdust, wood chips)? How does this affect the wildlife functions and values?	No unnatural sediments were observed. The intertidal sediments were primarily mixed coarse fines (coarse sand, gravel, and cobble substrate with boulders). Shallow subtidal sediments were a continuation of the mixed coarse and fines present in the intertidal. Deeper subtidal sediments were primarily composed of sandy silt.
Sub-heading: Sensitivity	
Are there sensitive species (e.g., brittle stars, sea spiders, nudibranchs) present?	No sensitive species were observed during field surveys.
Sub-heading: Seasonality	
What species temporally utilize the habitat or adjacent waters for feeding or resting at different times of the year (i.e., winter habitat for lobsters, resting areas for sturgeon)?	During the warmer months of summer and fall, fish species such as juvenile Atlantic herring (*Clupea harengus*), Atlantic mackerel and striped bass are likely present in the Survey Area. American lobster is also expected to be present at higher abundance during the summer and fall. Occasional lobster buoys/gear were observed within the subtidal Survey Area during the September 2023 surveys. With seasonal movements/migrations and lack of refuge in winter months, these species are not likely to be present in the colder months.
Is it a spawning area for fish or a breeding area for birds or other wildlife?	The Survey Area is not a documented spawning area for fish, breeding birds, or wildlife (seals). Potential spawning habitat is present for commercially important species including, winter flounder and windowpane flounder (*Scophthalmus aquosus*), but this habitat is also present throughout Penobscot Bay.

Questions	Responses
Is it a nursery area for invertebrates (especially lobsters, urchins, clams), fish or birds?	The Survey Area contains habitats and substrate types suitable for larval and juvenile invertebrate and fish species, but this habitat is also present throughout Penobscot Bay. Eelgrass beds are absent and structured algae cover is limited to the intertidal and shallow subtidal zones, limiting these habitat types as nursery areas. • The cobble and boulder habitat in the low intertidal and shallow subtidal is suitable substrate type for American lobster settlement and juvenile life stages. The high rate of embeddedness of cobble and boulders in the finer substrates below does limit this function. • The cobble and boulder habitat in the subtidal is suitable habitat for green urchin settlement and juvenile growth as indicated by the high abundance of green urchins within this habitat type. • The finer sediments in the intertidal interspersed with the cobble and boulders are suitable settlement substrates for larval soft-shell clams and juvenile growth. • The silty sand and mud substrates in the subtidal are suitable substrates for winter flounder spawning/eggs and juvenile winter and windowpane flounder.
Sub-heading: Wildlife Use	
Is it a travel corridor for fish, birds, or mammals?	The Survey Area is located in the upper reach of Penobscot Bay and is not anticipated to be primary travel corridor for fish, birds, or mammals. Several diadromous fish species and American eel (*Anguilla rostrata*) may be present in the vicinity of the Survey Area during spawning migrations, but the Survey Area is located outside the main channel of the Penobscot River estuary where most species movement is occurring. Foraging migratory shorebirds are likely present in the intertidal during the spring and fall, but there are more suitable foraging habitats associated with mud and sand flats elsewhere in Penobscot Bay.
Are there signs of use by birds or mammals (tracks, prints, scat, and direct observations)? If birds or mammals are present, could the potential development deter wildlife from continuing to use the area or adjacent regions?	Observations of several bird species were made during site visits, including bald eagles, great blue herons, common loons, double crested cormorants, and eider ducks and these species likely forage in the Survey Area. Following the construction of an Offshore Wind Port and Wind Turbine Launch Site this use would be lost for areas of intertidal and subtidal fill and diminished in the area of wharf development. The structure of the wharf and attached epifauna will provide some foraging opportunities for species such as eider ducks and double crested cormorants.

Questions	Responses
Is it a known feeding ground, roosting site, resting area, critical migratory pathway, or wintering ground for migratory or resident birds, fish, or mammals? If so, could the potential development interfere with one or more of these functions?	The Maine Department of Inland Fisheries and Wildlife has identified and rated Tidal Waterfowl and Wading Bird Habitat in certain areas along the coast as high or moderate value to waterfowl and wading birds. Areas east and west of the Project Area were mapped Tidal Waterfowl and Wading Bird Habitat.[1] Some foraging by resident and migratory fish, birds, and seals likely occurs within the Survey Area currently, but the habitats present are common throughout this portion of Penobscot Bay. Following the construction of an Offshore Wind Port and Wind Turbine Launch Site this function would be lost for areas of intertidal and subtidal fill and diminished in the area of wharf development.
Does the habitat contain critical habitat for endangered or threatened species?	No critical habitat for federally threatened or endangered species has been designated within the Survey Area.
Function/Value: Recreational, Commercial, and Educational Values	
Sub-heading: Recreational and Commercial	
Is it an open clamming, fishing (recreational and/or commercial), algae harvesting, or hunting area? If so, is the town managing the flats?	The Survey Area is closed to shellfish harvest. Because of pollution, it is unlawful to dig, take or possess any clams, quahogs, oysters, mussels or whole or roe-on scallops from this area.[2] While soft-shell clams were observed to be common in the mid-intertidal, the rocky substrates make future commercial harvest unlikely due to the difficulty in digging. Maine Department of Marine Resources (MDMR) does map shellfish beds (soft-shell clam) within the Survey Area.[3] The Survey Area is potentially open to algae harvest with abundant macroalgae in the intertidal, but there was no indication of this harvest during the field surveys. The Survey Area is currently open to hunting during regulated hunting seasons, but the Survey Area lacks waterfowl concentration areas that would make the site attractive to hunters.
Does the coastal wetland have any seeded clam flats or does it contain shellfish (e.g., oysters, mussels, clams) or finfish aquaculture sites?	There are no seeded clam flats or shellfish/finfish aquaculture sites in the Survey Area.
Is there public access and/or boat access?	The Survey Area is accessible by boat and has no access from the shore, as access to Mack Point is restricted by the Sprague Terminal. Following construction, there would be further restricts on access by boat due to the industrial nature of the Offshore Wind Port and Wind Turbine Launch Site.
Is it located near highly populated areas?	The Survey Area is located in mid-coast Maine and is not in a highly populated area.
Sub-heading: Educational	
Do school groups use the area for educational purposes?	Uknown. The restricted access to the Survey Area makes it unlikely that it supports educational purposes.
Are there research sites or monitoring sites present?	No known research or monitoring sites are present within the Survey Area.

[1] https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/
[2] https://www.maine.gov/dmr/fisheries/shellfish/shellfish-closures-and-aquaculture-leases-map

[3] https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/

The construction of the proposed Offshore Wind Port and Wind Turbine Launch Site will result in a permanent loss of the coastal wetlands, associated benthic community, and associated coastal functions and values within areas of intertidal and subtidal fill. Coastal wetland functions and values will be diminished in the wharf development area. The dredging required for the construction of the Offshore Wind Port and Wind Turbine Launch Site will have a temporary impact on the coastal wetlands and associated benthic community within the Project Area. During dredging, the functions and values of the shallow subtidal wetland in the Project Area will be limited. Based on previous studies of dredge projects, benthic community and associated functions and values are anticipated to return within 1 to 3 years.

The coastal wetlands present in the Project Area are not unique to this site; similar substrate and habitat types exist throughout Penobscot Bay. The intertidal and subtidal habitats discussed in this report are regulated under the Maine NRPA administered by the MEDEP and the federal CWA administered by the USACE. As part of the NRPA/CWA permit process, mitigation for the loss of the functions and values of existing coastal wetlands will need to be addressed through consultation with MDMR, National Oceanic and Atmospheric Administration Fisheries, MEDEP, and USACE.

4.0 REFERENCES

Maine Department of Environmental Protection. 2023. MRS Title 38, §469. Classifications of Estuarine and Marine Waters. November 2023.

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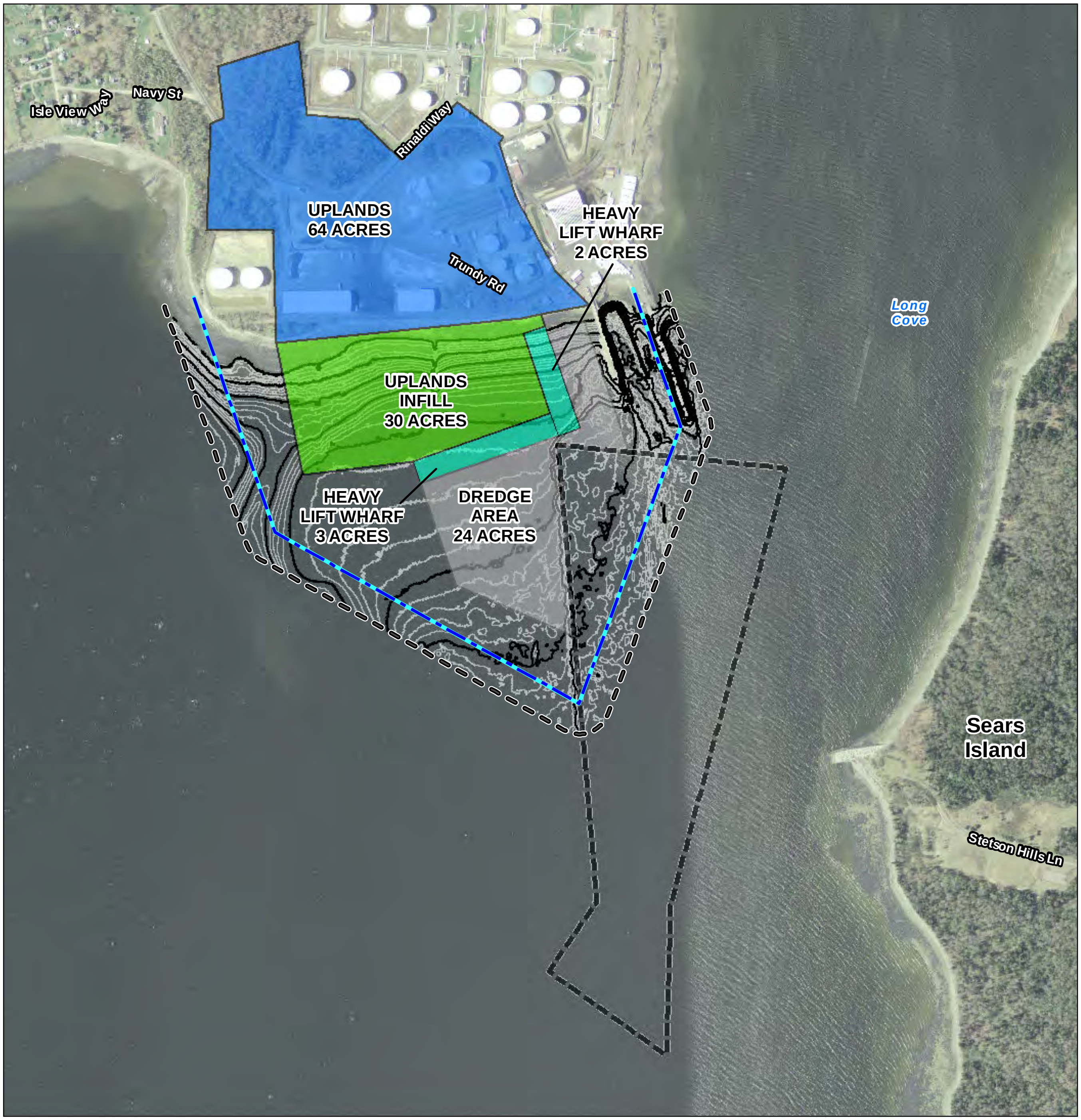
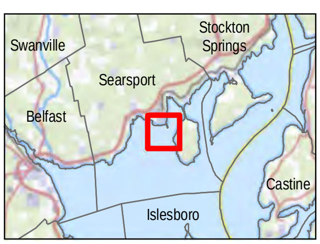
Steele Associates Marine Consultants, LLC. (SAMC). 2023. Hydrographic and Marine Geophysical Site Characterization Surveys, Mack Point and Sears Island.

Ward, A.E. 1999a. Maine's coastal wetlands: recommended functional assessment guidelines, Volume II. Maine Department of Environmental Protection, Bureau of Land & Water Quality, Division of Environmental Assessment. Augusta, Maine.

Ward, A.E. 1999b. Maine's coastal wetlands: types, distribution, rankings, functions and values, Volume I. Maine Department of Environmental Protection, Bureau of Land & Water Quality, Division of Environmental Assessment. Augusta, Maine.

FIGURES





Legend
- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (64 acres)
- Uplands Infill (30 acres)
- Heavy Lift Warf (5 acres)
- Dredge Area (24
- Channel

0 1,000
Feet
(At original document size of 8.5x11)
1" = 1000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

Client/Project
195602718
Maine Department of Transportation

Figure No.
1

Title
Mack Point Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: Conceptual Design from Moffit and Nichol, June 2023.
4. Background: Maine Orthoimagery Regional, 2015

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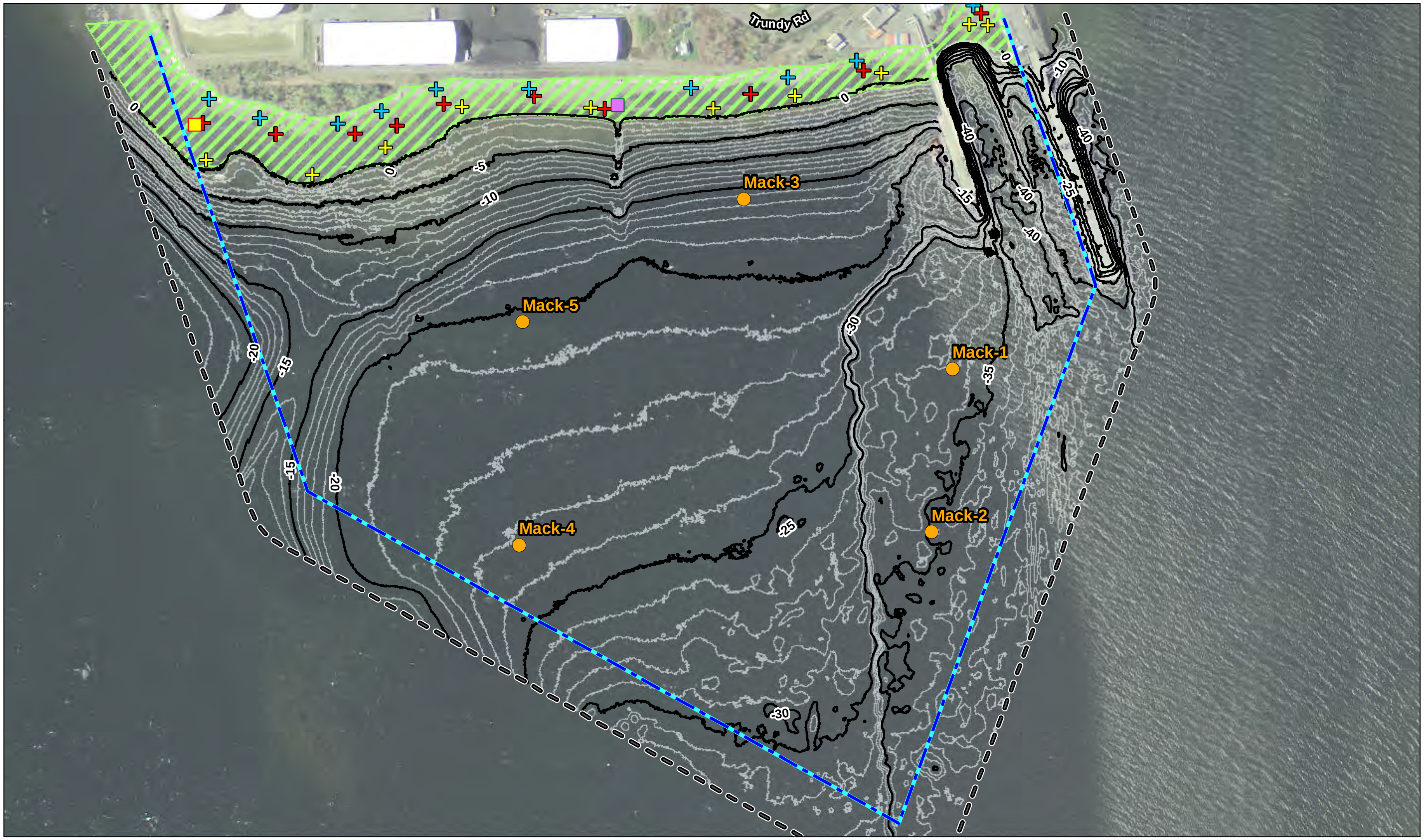

Legend

- Benthic Infauna Location
- Remnant Pier
- Tide Pool
- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Approximate Intertidal Area (521,800 SQ. FT. / 12 acres)

Intertidal Quadrat Location

- Low
- Mid
- High

N

0 500 Feet
(At original document size of 8.5x11)
1" = 500'

Notes

1. Coordinate System: NAD 1983 2011 StatePlane Maine East FIPS 1801 Ft US
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: MEDOT, Moffit and Nichol, Stantec
4. Background: Maine Orthoimagery Regional, 2015

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-03
TR Review by KWH on 2024-04-03
IR Review by PS on 2024-04-03

Client/Project
Maine Department of Transportation
195602718

Figure No.
2

Title
Mack Point Intertidal Quadrats and Benthic Grab Locations

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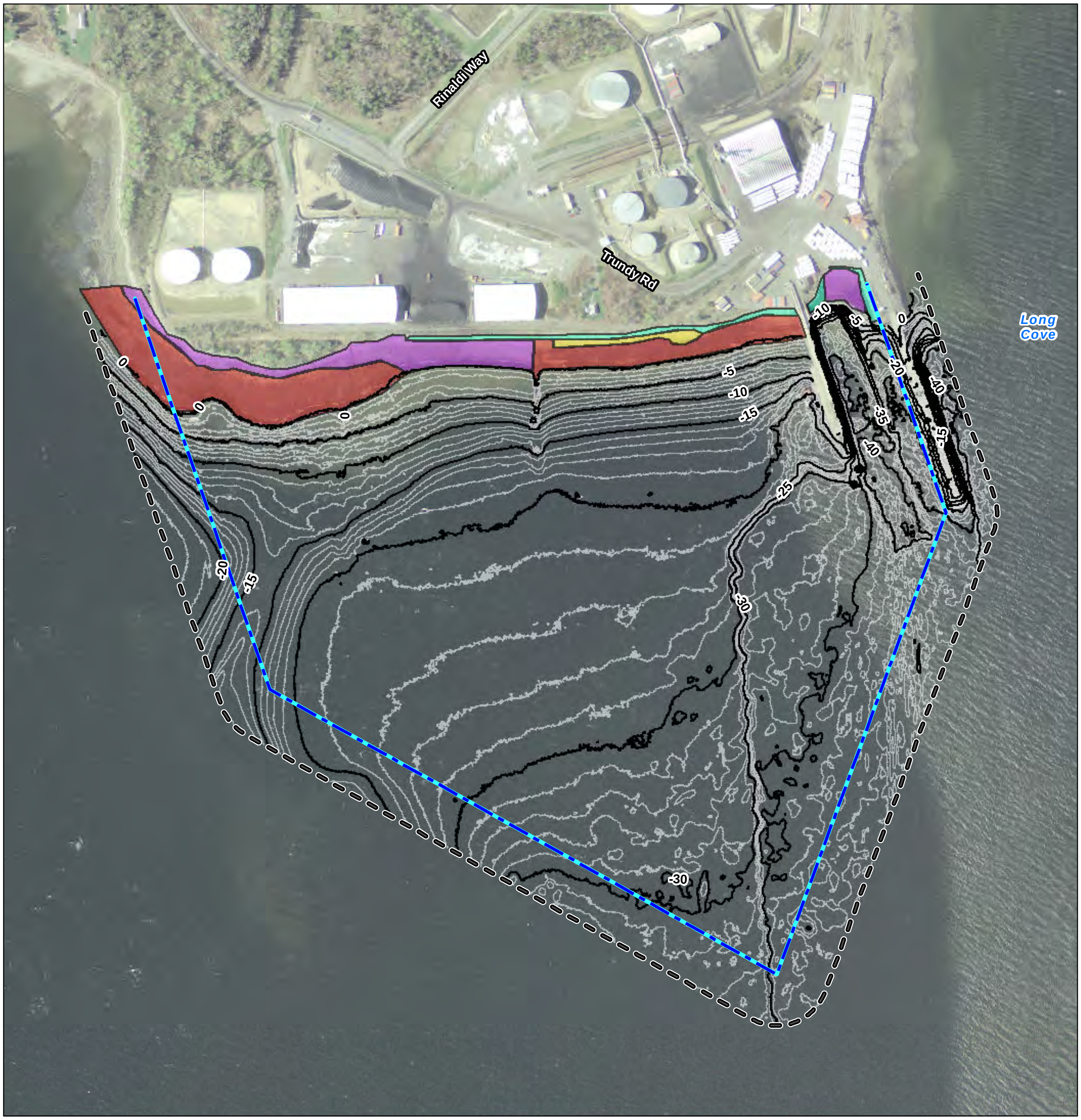

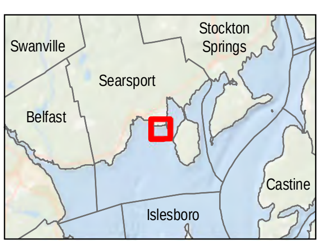

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: MEDOT, Moffit and Nichol, Stantec
4. Background: Maine Orthoimagery Regional, 2015

Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint

Substrate Composition

- Mixed Coarse and Fine (Boulder and cobble dominated with gravel, sand and silt)
- Mixed Coarse and Fine (Coarse sand and gravel with scattered cobble and boulders)
- Mixed Coarse and Fine (Cobble and gravel dominated with sand/silt and scattered boulders)
- Rip rap

0 600 Feet

(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2023-11-08
TR Review by KWH on 2023-11-08
IR Review by PS on 2023-11-08

Client/Project
195602718
Maine Department of Transportation

Figure No.
3

Title
Mack Point Intertidal Substrates

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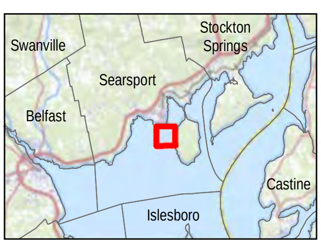

Notes

1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet

2. Data Sources: Steele Associates Marine Consultants, LLC, Hydrographic and Marine Geophysical Site Characterization Surveys Mack Point and Sears Island Searsport, ME Report.

Not to Scale

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-02
TR Review by KWH on 2024-04-02
IR Review by PS on 2024-04-02

Client/Project
195602718
Maine Department of Transportation

Figure No.
4

Title
Side-Scan Backscatter Mosaic and Bottom Types

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Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

APPENDICES

Appendix A MEDEP SUBTIDAL FIELD SURVEY CHECKLIST

APPENDIX A: MDEP COASTAL WETLAND CHARACTERIZATION: INTERTIDAL & SHALLOW SUBTIDAL FIELD SURVEY CHECKLIST

NAME OF APPLICANT:_Maine Department of Transportation _____ PHONE: 207-557-5089______
APPLICATION TYPE:__NRPA Tier 3/Indiviudal ______________________________
ACTIVITY LOCATION: TOWN:Searsport ______________ COUNTY: Cumberland_______

ACTIVITY DESCRIPTION: ☐ pier ☐ lobster pound ☐ shoreline stabilization
☒ Fill ☒ dredge ☐ other: ____

DATE OF SURVEY:19-September-2023___ OBSERVER: Paul Sokoloff, Stantec Consulting

TIME OF SURVEY: 0630 - 1130 TIDE AT SURVEY: Low/Mid________________

SIZE OF DIRECT IMPACT OR FOOTPRINT (square feet):
Intertidal area: __178,596________________Subtidal area:__2,570,040______________________

SIZE OF INDIRECT IMPACT, if known (square feet):_ ______________________________________
Intertidal area: ________________________Subtidal area: _____________________________

HABITAT TYPES PRESENT (check all that apply):
☐ sand beach ☐ boulder/cobble beach ☐ sand flat ☒mixed coarse & fines ☐salt marsh
☐ ledge ☒ rocky shore ☐ mudflat (sediment depth, if known:____)

ENERGY: ☐ protected ☒ semi-protected ☐ partially exposed ☐ exposed

DRAINAGE: ☒ drains completely ☒ standing water ☐ pools ☐stream or channel

SLOPE: ☐ >20% ☐ 10-20% ☒ 5-10% ☐ 0-5% ☐ variable

SHORELINE CHARACTER:
☐ bluff/bank (height from spring high tide:____) ☐ beach ☒rocky ☒ vegetated

FRESHWATER SOURCES: ☐ stream ☒ river ☒ wetland ☒ stormwater

MARINE ORGANISMS PRESENT:

	absent	occasional	common	abundant
mussels	☐	☒	☐	☐
clams	☐	☒	☐	☐
marine worms	☐	☐	☐	☒
rockweed	☐	☐	☐	☒
eelgrass	☒	☐	☐	☐
lobsters	☐	☒	☐	☐
other	☐	☐	☐	☐

SIGNS OF SHORELINE OR INTERTIDAL EROSION? ☒ yes ☒ no

PREVIOUS ALTERATIONS? ☒ yes ☐ no

CURRENT USE OF SITE AND ADJACENT UPLAND:
☒ undeveloped ☐ residential ☒commercial ☒ degraded ☐ recreational

PLEASE SUBMIT THE FOLLOWING:
☒ Photographs ☒ Overhead drawing (pink)

Appendix B 2023 INTERTIDAL SURVEY RESULTS

2023 Intertidal Survey Results - Mack Point Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

Survey Area	Quadrat	Intertidal	Sample Date	Weather	Substrate	Sea lettuce (*Ulva lactuca*)	Gutweed (*Ulva intestinalis*)	Spiral rockweed (*Fucus spiralis*)	Rockweed (*Fucus distichus*)	Rockweed (*Fucus vesiculosus*)	Knotted wrack (*Ascophyllum nodosum*)	False Irish moss (*Mastocarpus stellatus*)	Soft-shell clam (*Mya arenaria*)	Scale worm (*Polynoidae*)	Tortoise shell limpet (*Testudinalia testudinalis*)	Common periwinkle (*Littorina littorea*)	Epiphytic red algae (*Polysiphonia lanosa*)	Tufty-buff bryozoan (*Tricellaria inopinata*)	Blue mussel (*Mytilus edulis*)	Polychaete worm (*Polychaeta* sp.)	Northern rock barnacle (*Semibalanus balanoides*)	Small white/red worm (*Enchytraeidae*)	Green crab (*Carcinus maenas*)	Beach flea (*Orchestia platensis*)	Springtail (*Hypogastrura nivicola*)	Amphipods (*Gammarus sp.*)	Notes
Mack Point	1	Low	9/19/2023	Overcast, 50's	Coarse Sand, Cobble, Gravel	A	O																				
Mack Point	2	Low	9/19/2023	Overcast, 50's	Gravel, Coarse Sand																						
Mack Point	3	Low	9/19/2023	Overcast, 50's	Cobble, Gravel, Coarse Sand					A											C					C	Iron Stained Sand, refusal at 6"
Mack Point	4	Low	9/19/2023	Overcast, 50's	Boulder, Cobble, Gravel, Coarse Sand						A						O	C			A		S				
Mack Point	5	Low	9/19/2023	Overcast, 50's	Boulder					C	A				O			C	O		A					O	
Mack Point	6	Low	9/19/2023	Overcast, 50's	Cobble, Gravel, Coarse Sand					O																O	
Mack Point	7	Low	9/19/2023	Overcast, 50's	Cooble, Gravel, Coarse San					A			C			C					A		O			O	
Mack Point	8	Low	9/19/2023	Overcast, 50's	Boulder, Cobble					A	A						A	A			A						
Mack Point	9	Low	9/19/2023	Overcast, 50's	Boulder, Cobble, Gravel, underlain with coarse sand						C	O		O		O	O		O		C		O			C	Refusal a 2"
Mack Point	10	Low	9/19/2023	Overcast, 50's	Boulders, Cobbles, Gravel, underlain with Coarse Sand						A					O	A	O	O		A						Refusal a 6"
Mack Point	11	MId	9/19/2023	Overcast, light rain	Boulder, Cobble, Gravel, Coarse Sand						A										A					O	Refusal at 2"
Mack Point	12	MId	9/19/2023	Overcast, light rain	Boulder, Cobble, Gravel, Coarse Sand						O								O		C						Marine clay at 4"
Mack Point	13	MId	9/19/2023	Overcast, light rain	Cobble, Gravel				A		A		O			O					C						Marine clay at 6"
Mack Point	14	MId	9/19/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand				A		A		O			C					C		O				Marine clay at 4"
Mack Point	15	MId	9/19/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand				A		A										C		O			O	Marine clay at 4"
Mack Point	16	MId	9/19/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand				C							O					O						Iron in the sand
Mack Point	17	MId	9/19/2023	Overcast, light rain	Gravel, Coarse Sand																						Iron in the sand, refusal at 8", cable in plot
Mack Point	18	MId	9/19/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand				A		A					O			O		C						Refusal at 4"
Mack Point	19	MId	9/18/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand				A		A								O		A		O				
Mack Point	20	MId	9/18/2023	Overcast, light rain	Cobble, Gravel, Coarse Sand																						
Mack Point	21	High	09/19/02023	Partly sunny	Coarse Sand															O							
Mack Point	22	High	09/19/02023	Partly sunny	Embedded Boulder			O													O			O			
Mack Point	23	High	09/19/02023	Partly sunny	Cobble, Gravel, underlain by Coarse Sand																	C					
Mack Point	24	High	09/19/02023	Partly sunny	Cobble, Gravel																	O					
Mack Point	25	High	09/19/02023	Partly sunny	Cobble, Gravel, Coarse Sand																						

2023 Intertidal Survey Results - Mack Point Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

Survey Area	Quadrat	Intertidal	Sample Date	Weather	Substrate	Sea lettuce (*Ulva lactuca*)	Gutweed (*Ulva intestinalis*)	Spiral rockweed (*Fucus spiralis*)	Rockweed (*Fucus distichus*)	Rockweed (*Fucus vesiculosus*)	Knotted wrack (*Ascophyllum nodosum*)	False Irish moss (*Mastocarpus stellatus*)	Soft-shell clam (*Mya arenaria*)	Scale worm (*Polynoidae*)	Tortoise shell limpet (*Testudinalia testudinalis*)	Common periwinkle (*Littorina littorea*)	Epiphytic red algae (*Polysiphonia lanosa*)	Tufty-buff bryozoan (*Tricellaria inopinata*)	Blue mussel (*Mytilus edulis*)	Polychaete worm (*Polychaeta* sp.)	Northern rock barnacle (*Semibalanus balanoides*)	Small white/red worm (*Enchytraeidae*)	Green crab (*Carcinus maenas*)	Beach flea (*Orchestia platensis*)	Springtail (*Hypogastrura nivicola*)	Amphipods (*Gammarus sp.*)	Notes
Mack Point	26	High	09/19/02023	Partly sunny	Gravel																			O			
Mack Point	27	High	09/19/02023	Partly sunny	Cobble, Gravel, Coarse Sand																		O				
Mack Point	28	High	09/19/02023	Partly sunny	Cobble, Gravel, Coarse Sand															O			C	O			
Mack Point	28	High	09/19/02023	Partly sunny	Boulder, Cobble, Gravel, Coarse Sand																	O			O		
Mack Point	30	High	09/19/02023	Partly sunny	Boulder, Gravel, Cobble																	O					

Abbreviations: A = Abundant; O = Occasional; C = Common

Appendix C REPRESENTATIVE PHOTOS

Photo 1. High intertidal characterized by rip rap consisting of boulder sized granite and coarse sand and gravel with scattered cobble and boulders. Mack Point. September 2023.

Photo 2. Fill material including metal debris in the high intertidal. Mack Point. September 2023.

Photo 3. Invasive common reed and high salt marsh vegetation in the western portion of the high intertidal. Mack Point. September 2023.

Photo 4. High salt marsh in the western portion of the high intertidal includes patches of saltmeadow cordgrass, Baltic rush, and seaside plantain. Mack Point. September 2023.

Photo 5. Coarse sand, gravel, and cobble substrate with boulders in the mid and high intertidal. Mack Point. September 2023.

Photo 6. Outfall in the high intertidal. Mack Point. September 2023.

Photo 7. Outfall in the high intertidal. Mack Point. September 2023.

Photo 8. High intertidal between the piers at the Sprague Terminal characterized by rip rap, coarse sand, and gravel with scattered cobble. Mack Point. September 2023.

Photo 9. Mid intertidal with abundant macroalgae, knotted wrack and rockweed, on the boulder and cobble substrate. Mack Point. September 2023.

Photo 10. Remnants of an old pier. Mack Point. September 2023.

Photo 11. Depositional area in the mid and low intertidal to the west of remnant pier, dominated by coarse sand and gravel, grading to cobbles and boulders to the west. Mack Point. September 2023.

Photo 12. Mid intertidal between the piers at the Sprague Terminal with a substrate of primarily coarse sand and gravel. Mack Point. September 2023.

Photo 13. Soft-shell clams in the mid intertidal. Mack Point. September 2023.

Photo 14. Low and mid intertidal at dominated by boulder and cobble substrate with abundant macroalgae (knotted wrack and rockweed). Mack Point. September 2023.

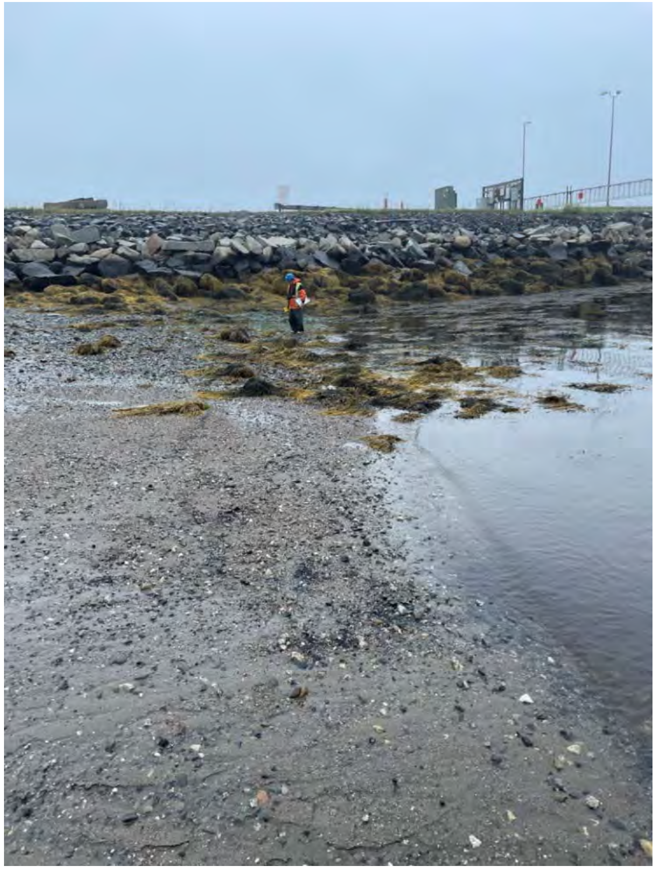


Photo 15. Coarse sand and gravel in the low intertidal between the two piers at the Sprague Terminal. Mack Point. September 2023.

Photo 16. Soft shell clams in the low intertidal. Mack Point. September 2023.

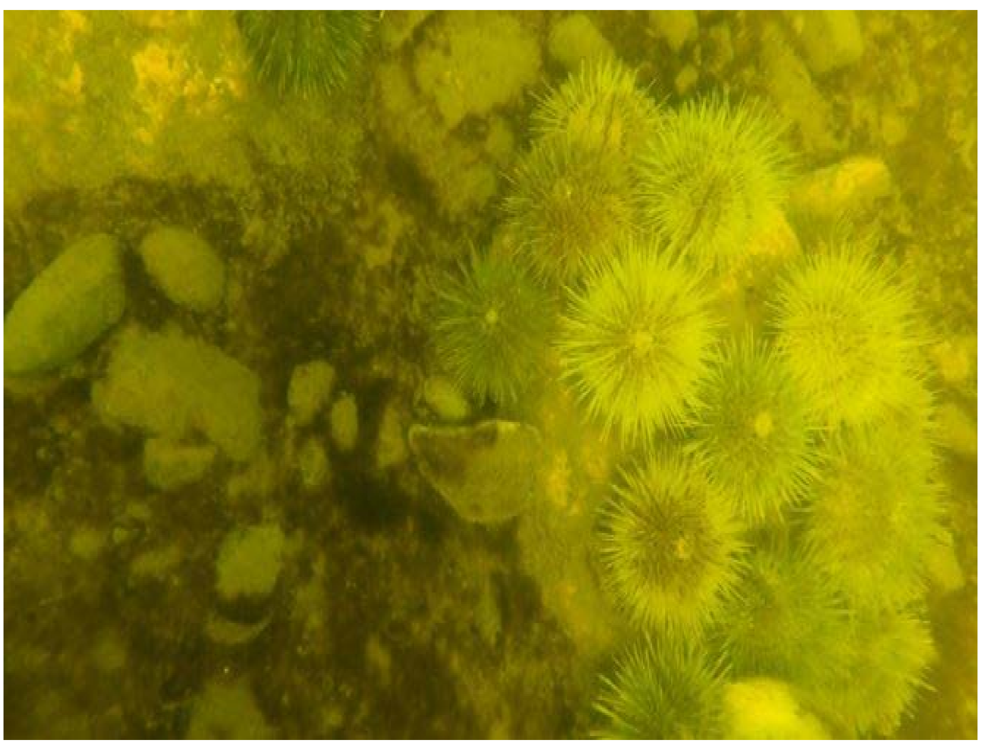


Photo 17. Abundant green sea urchins are in the shallow subtidal zone. Mack Point. September2023.

Photo 18. Green sea urchins in the shallow subtidal zone. Mack Point. September 2023.

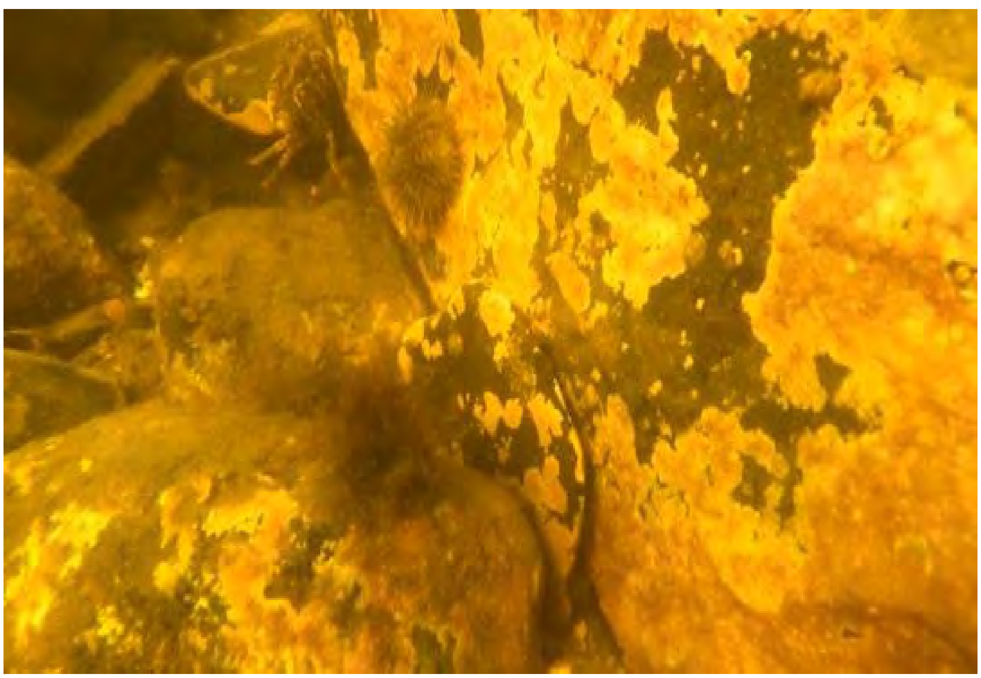


Photo 19. Crustose coralline algae on the boulders and cobbles in the shallow subtidal. Mack Point. September 2023.

Photo 20. Green crab in the shallow subtidal. Mack Point. September 2023.

Photo 21. American lobster in the shallow subtidal. Mack Point. September 2023.

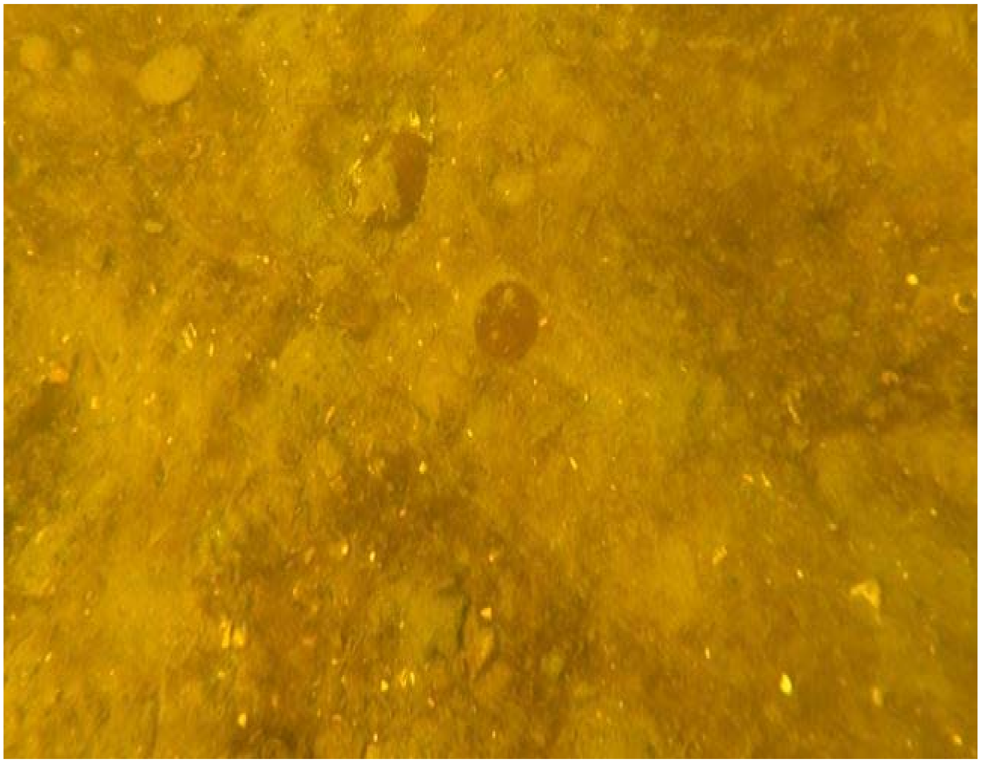


Photo 22. Sandy silt substrate in the vicinity of the remnant pier extending into the shallow subtidal with sand dollars. Mack Point. September 2023.

Photo 23. Surf clam in the shallow subtidal. Mack Point. September 2023.

Photo 24. Ocean quahog in the shallow subtidal. Mack Point. September 2023.

Photo 25. Mack Point Benthic Sample 1. September 2023.

Photo 26. Mack Point Benthic Sample 2. September 2023.

Photo 27. Mack Point Benthic Sample 3. September 2023.

Photo 28. Mack Point Benthic Sample 4. September 2023.

Photo 29. Mack Point Benthic Sample 5. September 2023.

Photo 30. Liquid cargo pier, Sprague Terminal. Mack Point. September 2023.

Appendix D INTERTIDAL FVA SURVEY QUADRAT PHOTOS

Stantec

Photographic Log

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 1 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 1	
Photograph ID: 2 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 2	

Photographic Log

Client:	Maine Dapartment of Transportation	Project:	Intertidal FVA Survey
Site Name:	Mack Point, Searsport, Maine	Site Location:	Intertidal Quadrats

Photograph ID: 3 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 3	
Photograph ID: 4 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 4	

Stantec **Photographic Log**

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 5

Photo Location: Low Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 4

Photograph ID: 6

Photo Location: Low Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 5

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 7

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 5

Photograph ID: 8

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 6

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	Mack Point, Searsport, Maine	Site Location:	Intertidal Quadrats

Photograph ID: 9

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 7

Photograph ID: 10

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 7

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 11 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 8	
Photograph ID: 12 **Photo Location:** Low Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 8	

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 13

Photo Location: Low Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 9

Photograph ID: 14

Photo Location: Low Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 9

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 15 **Photo Location:** Mid Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 11	
Photograph ID: 16 **Photo Location:** Mid Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 11	

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 17

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 12

Photograph ID: 18

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 12

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 19

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 13

Photograph ID: 20

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 13

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 21

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 13

Photograph ID: 22

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 14

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 23

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 14

Photograph ID: 24

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/19/2023

Comments: Quadrat 15

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 25

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 16

Photograph ID: 26

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 17

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 27

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 18

Photograph ID: 28

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 18

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 29

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 19

Photograph ID: 30

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 19

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 31

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 20

Photograph ID: 32

Photo Location:
High Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 21

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 33

Photo Location:
High Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 22

Photograph ID: 34

Photo Location:
High Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 23

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	Mack Point, Searsport, Maine	Site Location:	Intertidal Quadrats

Photograph ID: 35 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 24	
Photograph ID: 36 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 25	

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	Mack Point, Searsport, Maine	Site Location:	Intertidal Quadrats

Photograph ID: 37

Photo Location:
High Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 26

Photograph ID: 38

Photo Location:
High Intertidal

Direction:

Survey Date:
9/19/2023

Comments:
Quadrat 27

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	Mack Point, Searsport, Maine	Site Location:	Intertidal Quadrats

Photograph ID: 39 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 28	
Photograph ID: 40 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/19/2023 **Comments:** Quadrat 29	

Stantec

Photographic Log

Client:	**Maine Dapartment of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Mack Point, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 41	
Photo Location: High Intertidal	
Direction:	
Survey Date: 9/19/2023	
Comments: Quadrat 30	

Appendix E SUBTIDAL BENTHIC INFAUNAL DATA

2023 Benthic Infauna Survey Results - Mack Point

Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

				Mack Point				
Group	**Taxa**		**Functional Group**	**BEN-7**	**BEN-8**	**BEN-9**	**BEN-10**	**BEN-11**
	Nucula proxima	Atlantic nutclam	Deposit Feeder	22	71			1
	Tellina sp.	Tellin	Filter Feeder	5	17			2
Nemertea	*Cerebratulus lacteus*	Milky ribbon worms	Predator	*1*			*1*	
	Lineus sp.	Nermetine worms	Predator	*1*				
	Aricidea suecica	*Polychaete worm*	Deposit Feeder					*5*
	Capitella sp.	Annelid worm	Deposit Feeder			6	3	
	Cossura longocirrata	Polychaete worm	Deposit Feeder	*30*	*20*	*18*	*41*	*43*
	Eteone sp.	Bristle worm	Deposit Feeder	2	2		17	8
	Nephtys incisa	*Catworm*	Deposit Feeder	*62*	*33*	*39*	*16*	*38*
	Ninoe nigripes	Polychaete worm	Deposit Feeder	*6*	*4*		*9*	*3*
	Prionospio steenstrupi	Polychaete worm	Suspension Feeder		*12*	*15*	*29*	*8*
	Terebellides stroemii	Polychaete worm	Deposit Feeder		3		14	
	Tharyx acutus	Polychaete worm	Deposit Feeder	*4*			*4*	*10*
Crustacea	*Casco bigelowi*	Bigelow's amphipod	Deposit Feeder					1
	Ostrocoda	Seed shrimp	Deposit Feeder		*9*			
Echinodermata	*Molpadia borealis*	echinoderm	Predator		2			
Shannon Index				**1.49**	**1.76**	**1.2**	**1.85**	**1.58**
Evenness				**0.68**	**0.76**	**0.87**	**0.84**	**0.76**
Richness (# of species)				**9**	**10**	**4**	**9**	**8**
Total # of Individuals				**133**	**173**	**78**	**134**	**116**
Individuals per m^2				**5,783**	**7,522**	**3,391**	**5,826**	**5,043**
Total Number of Functional Groups				**3**	**4**	**2**	**3**	**3**
Average Population Size				**14.8**	**17.3**	**19.5**	**14.9**	**14.5**

Wetland Delineation Report

Mack Point Study Area

Searsport, Maine

PREPARED FOR

16 State House Station
Augusta, Maine 04333-0016

PREPARED BY

500 Southborough Drive, Suite 105B
South Portland, ME 04106

January 2024

Table of Contents

List of Appendices

Wetland Delineation Report

Introduction

On behalf of the Maine Department of Transportation (MaineDOT), Vanasse Hangen Brustlin, Inc. (VHB) conducted wetland and waterbody site reconnaissance, wetland delineation and surveys for potential vernal pools within a study area located on Mack Point in Searsport, Maine (Study Area or Site). The purpose of this report is to describe delineated wetlands and water resources within the Study Area that may fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Clean Water Act (CWA) and under the jurisdiction of the Maine Natural Resources Protection Act (NRPA).

VHB conducted wetland and waterbody field investigations during multiple site visits in August and September of 2023. In addition to describing identified wetland resource areas, this report describes existing conditions within the Study Area and the methodologies employed for identification of wetlands and water resources at the Site. Please see Appendix 1 – USGS Site Location Map and Appendix 2 – Natural Resource Mapping for an overview of the Study Area and the wetlands and natural resources identified at the Site.

Existing Site Conditions

The Study Area is approximately 233 acres in size and located on the Mack Point peninsula within Searsport Harbor in Searsport, Maine. The Study Area consists of a largely developed industrial area that currently operates as a liquid and dry bulk cargo terminal and includes the Sprague Terminal facility. The Irving Oil facility on Mack Point was excluded from the Study Area. The terminal site contains many buildings, liquid and fuel storage tanks, paved areas and associated industrial waterfront infrastructure. There is a large approximately 700 foot length dock facility at the southeast corner of the Site. The Study Area also includes undeveloped forested areas surrounding the terminal, a salt storage facility to the west, a rail corridor operated by Canadian Pacific Railway to the north and borders Route 1 and commercial/residential properties to the northwest.

The approximate center of the Study Area is 44.457363° north latitude and 68.903905° west longitude. Topography is largely even across the Site, with minor fluctuations resulting in variations in drainage patterns. Elevations across the Study Area range from sea level to approximately 50 FT above sea level at the highest point. There are no named waterbodies within the Study Area. USGS topographic mapping identifies no perennial or intermittent streams within the Site.

Those portions of the Study Area located within the port terminal and adjacent facilities are almost entirely developed and/or previously disturbed. The drainage patterns within the developed portion of the Site consist primarily of constructed stormwater ditches and associated stormwater features that collect water and convey it through and out of the facility. It should be noted that although these constructed features (i.e., ditches, artificial ponds, swales) may show evidence of hydrology and wetland characteristics, they are constructed for, or created by, stormwater conveyance and have not been identified as jurisdictional wetland resources. Please see Appendix 3 – Site Photographs for representative photos of the Study Area.

Soils Within the Study Area

Soil survey mapping by the Natural Resources Conservation Service (NRCS) indicates that the Study Area contains four (4) separate soil designates (See Appendix 4 – NRCS Soils Map). According to the published USDA-NRCS soil survey data, 57 percent of the soils across the Study Area consist of Udorthents, 33 percent consist of Swanville silt loam, 14 percent consist of Peru fine sandy loam, and 1 percent of consist of Boothbay silt loam. Please see Appendix 4 – NRCS Soils Map for additional information.

FEMA Flood Zone Designations

According to the Flood Insurance Rate Map (FIRM) Number 23027C0459E, published by FEMA and made effective on July 5, 2015, portions of the Study Area fall within Zone VE, AE, and X. The boundary of these three zones generally follow the shoreline, with the VE zone outward of the shoreline and the AE zone inland of the shoreline.

The three zones are defined as follows:

VE Zone (Site Base Flood Elevation – EL. 15 FT NAVD88): A coastal hazard area subject to high velocity water including waves; this area is defined by the 1% annual chance (base) flood limits (also known as the 100-year flood) and wave effects 3 FT or greater. The hazard zone is mapped with base flood elevations (BFEs) that reflect the combined influence of still-water flood elevations, primary frontal dunes, and wave effects 3 Ft or greater.

AE Zone (Site Base Flood Elevations – EL. 13 FT NAVD88): A hazard zone area within the 100-year flood limits defined with BFEs that reflect the combined influence of still-water flood elevations and wave effects less than 3 FT.

X Zone (Site Average Flood Elevation) – N/A): An area determined to be outside the 0.2% annual chance floodplain.

Methodology

Wetlands

Environmental Scientists from VHB conducted wetland delineations in August and September of 2023. VHB delineated the boundary of wetlands in accordance with the *Army Corps of Engineers 1987 Wetland Delineation Manual* (1987 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (Regional Supplement). All wetland delineations were conducted using Routine Determination Methods, which require that a wetland must contain a dominance of hydrophytic vegetation, hydric soils, and evidence of hydrology to be considered a wetland. Wetland boundaries were demarcated with flagging and flag locations were recorded using a Trimble® GPS unit capable of sub-meter accuracy, post-processed and incorporated onto the Study Area Natural Resource mapping.

Field notes were taken to record the classification of wetlands in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin Classification), for the purposes of U.S. Army Corps of Engineers Wetland Determination Data Forms, and to note general site characteristics and any unique site features observed during the delineation.

Waterbodies and Waterways

VHB also evaluated the site for the presence or absence of waterbodies and waterways. Streams were evaluated in accordance with NRPA criteria and definitions. A river, stream or brook is defined by NRPA in Title 38 M.R.S.A. § 480- A as a channel between defined banks. The channel is created by surface water and has two or more of the following five characteristics:

- The channel is depicted as a solid or broken line on the most recent addition of the U.S. Geological Survey 7.5-minute series topographic map, or 15-minute series topographic map if the 7.5 minute series is unavailable;
- The channel contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years;
- The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water;
- The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, the stream bed;
- The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

The Army Corps General Permit does not include a definition of river, stream or brook. However, the ordinary highwater mark (OHW) of watercourses was identified following USACE's Regulatory Guidance Letter No. 05-05 Ordinary High water Mark Identification (2005).

Vernal Pools

During the course of the wetland delineation field work, VHB scientists also evaluated the property for the presence of potential vernal pool features that may be regulated by Maine DEP and the USACE. Please see below for more information on vernal pool regulations in the State of Maine.

The Maine DEP defines "vernal pools, also referred to as seasonal forested pools, as natural temporary to semi-permanent bodies of water that occur in shallow depressions that typically fill with water during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and have no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus sp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition."

DEP further differentiates vernal pools as 'significant' (regulated under NRPA) and 'non-significant' (not regulated under NRPA). Significant vernal pool habitat consists of vernal pools depression and that portion of the critical terrestrial habitat within 250 feet of the spring or fall high water mark of the depression. Whether a vernal pool is a significant vernal pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, the presence of fairy shrimp, or use by certain rare, threatened or endangered species that commonly requires a vernal pool to complete a critical portion of its life-history as specified in NRPA A Chapter 335 Significant Wildlife Habitat Rules Section 9(B). Table 1 identifies the Chapter 335 abundance criteria required for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), fairy shrimp (*Eubranchipus sp.*) and certain state-listed species to define an area as a significant vernal pool.

Table 1: NRPA Chapter 335 Significant Wildlife Habitat Rules Abundance Criteria for Significant Vernal Pools

Species	Abundance Criteria
Fairy shrimp	Presence in any life stage.
Blue spotted salamanders	Presence of 10 or more egg masses.
Spotted salamanders	Presence of 20 or more egg masses.
Wood frogs	Presence of 40 or more egg masses.
Certain rare, threatened, or endangered species[1]	Presence

[1] Per NRPA Chapter 335 Section 9(B), examples of vernal pool dependent state-listed endangered or threatened species include, but are not limited to, Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), and ringed boghaunter dragonflies (*Williamsonia lintneri*). The rare species that must be considered are limited to: wood turtle (*Glyptemys insculpta*), ribbon snake (*Thamnophis sauritus*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*).

The USACE Maine General Permit (GP) applies a different definition of 'vernal pool' and states "the State of Maine, Department of Environmental Protection has specific protections for VPs. For the purposes of these GPs, VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In most years, VPs support one or more of the following obligate indicator species: wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.). However, they should preclude sustainable populations of predatory fish."

General Condition 20. Vernal Pools of the Department of the Army General Permits for the State of Maine states the following:

- A Preconstruction Notification (PCN) is required if a discharge of dredged or fill material is proposed within a vernal pool depression located within waters of the U.S.

- GC 20(a) above does not apply to projects that are within a municipality that meets the provisions of a Corps-approved vernal pool Special Area Management Plan (SAMP) and are otherwise eligible for SV, and the applicant meets the requirements to utilize the vernal pool SAMP.

At its discretion, the Corps may determine during permit review that a waterbody should or should not be regulated as a vernal pool based on available evidence. The USACE does not differentiate vernal pools as 'significant' or 'non-significant' based on the abundance of biological indicators. As stated in the USACE definition, the presence of any of the specified indicator species in any abundance qualifies a feature as a regulated vernal pool. An additional important distinction between the USACE and the Maine DEP definition of vernal pools is that under the Maine DEP rules, a vernal pool must be 'natural' in origin, where under the USACE rules a vernal pool may be natural or manmade.

Study Results

Using the methodologies and criteria described above, VHB conducted wetland resource area evaluations and delineations within the Study Area. The following subsections provide a description of identified wetland areas and types.

Wetlands

VHB identified several areas of vegetated freshwater wetlands within the Study Area. Delineated vegetated wetlands within the Study Area fall into three main categories: palustrine forested (PFO), palustrine scrub-shrub (PSS), and palustrine emergent (PEM) wetlands. The large majority of vegetated wetlands were located within the undeveloped forested areas surrounding and outside of the fenced Sprague Terminal facility and within the few forested areas that exist within the confines of the facility.

Palustrine Forested Wetlands

The palustrine forested wetlands consist of a mixture of broad-leaved deciduous species along needle-leaved evergreen species, 6 meters or taller. Woody species commonly observed include red maple (*Acer rubra*), balsam fir (*Abies balsamea*), green ash (*Fraxinus pennsylvanica*), speckled alder (*Alnus incana*) and winterberry (*Ilex verticillata*). The forest floor and low-lying vegetation consisted largely of creeping dogwood (*Cornus canadensis*), starflower (*Trientalis borealis*), Canada mayflower (*Maianthemum canadense*) and fern species including sensitive fern (*Onoclea sensibilis*) and cinnamon fern (*Osmunda cinnamomea*).

Palustrine Scrub-Shrub Wetlands

The palustrine scrub-shrub wetlands are dominated by broad-leaved deciduous species with some needle-leaved evergreen species, less than 6 meters tall. Woody species commonly observed include speckled alder and winterberry, as well as balsam fir, red maple and green ash saplings.

Palustrine Emergent Wetlands

Emergent wetlands are characterized by erect, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). Portions of wetlands that VHB delineated within the Study Area were emergent wetlands. Common species include cattail (*Typha* sp.), common reed (*Phragmites australis*) and reed canary grass (*Phalaris arundinacea*). Delineated PEMs commonly have organic-matter rich soil and some may qualify as a Histosol.

Wetlands Of Special Significance

Wetlands of Special Significance (WOSS) are defined in NRPA Chapter 310: Wetlands and Waterbodies Protection Section 4. According to Chapter 310, WOSS include all coastal wetlands and great ponds, and freshwater wetlands that exhibit one or more of the following characteristics:

"(1) Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.
(2) Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B (10).
(3) Location near coastal wetland. The freshwater wetland area is located within 250 feet of a coastal wetland.
(4) Location near GPA great pond. The freshwater wetland area is located within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.
(5) Aquatic vegetation, emergent marsh vegetation or open water. The freshwater wetland contains under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless the 20,000 or more square foot area is the result of an artificial ponds or impoundment.

(6) Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information.
(7) Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a wetland of special significance.
(8) River, stream or brook. The freshwater wetland area is located within 25 feet of a river, stream or brook."

WOSS identified within the Study Area are shown in the Natural Resources Maps in Appendix 2. Wetlands that met the NRPA WOSS criteria included wetlands located within 250 feet of a coastal wetland (Criteria 3) and wetlands within 25 feet of a river, stream or brook (Criteria 8).

Freshwater Waterbodies

VHB delineated four intermittent stream features within the Study Area that met the NRPA stream definition criteria as described above. All the stream sections are within the forested areas outside of the developed port terminal limits. These streams were GPS-centerlined and are shown on the Natural Resources Maps in Appendix 2.

Vernal Pools

VHB delineated one potential vernal pool (PVP) during the field effort. It is also within the undeveloped, forested area west and outside of the port terminal facility limits and is shown on the Natural Resources Maps in Appendix 2 (see Sheet 2 of 3). This PVP was observed in September and past the state-recommended period for vernal pool surveys. As such it was not possible for a determination to be made regarding if this pool should be classified as a significant vernal pool under NRPA. A determination on the PVP's status as significant or not-significant under state regulations would require a site visit during the spring and during the state-recommended period for vernal pool surveys within central Maine (April 25 – May 25).

Coastal Wetlands

The southern limits of the Study Area border the shoreline of Mack Point and therefore include or are proximate to areas of marine/coastal wetlands. Under NRPA, coastal wetlands include the following:

> *"Coastal Wetlands" means all tidal and subtidal lands; all areas with vegetation present that is tolerant of salt water and occurs primarily in salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous lowland that is subject to tidal action during the highest tide level for each year in which an activity is proposed in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes.*

These coastal wetland areas were not field delineated as part of the wetland delineation effort but are noted herein and may be subject to NRPA and Section 10 of the Rivers and Harbors Act of 1899 which governs work impacting navigable waters. The coastal wetlands within or adjacent to the Mack Point Study Area appear to include beach, tidal flat and subtidal areas. See the Natural Resources Maps in Appendix 2 for additional information.

Wetland Functions and Values

The functions and values of a wetland are determined based on a descriptive, best professional judgment approach, with reference to the methodology recommended by the U.S. Army Corps of Engineers New England District - *The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach*. Thirteen wetland functions and values are recognized under the USACE methodology:

- Groundwater Recharge/Discharge;
- Floodflow Alteration (Storage & Desynchronization);
- Fish and Shellfish Habitat;
- Sediment/Toxicant Pathogen Retention;
- Nutrient Removal/Retention/Transformation;
- Production Export (Nutrient);
- Sediment/Shoreline Stabilization;
- Wildlife Habitat;
- Recreation (Consumptive & Non-Consumptive);
- Educational/Scientific Value;
- Uniqueness/Heritage;
- Visual Quality/Aesthetics; and,
- Threatened or Endangered Species Habitat.

The USACE Highway Methodology provides a list of considerations and qualifiers that are used to assess the occurrence of each function or value, followed by a subjective determination of Principal Functions and Values.

The principal wetland functions and values associated with the wetlands identified in this Study Area are: Groundwater recharge and discharge; floodflow alteration, sediment/toxicant retention, nutrient removal/retention/transformation; production export (nutrient); sediment/shoreline stabilization; and wildlife habitat.

Summary

The information contained in this report was collected to provide an overview of wetland, waterbody, and potential vernal pool resources falling under the jurisdiction of the USACE and the Maine DEP within the specific Study Area at Mack Point surveyed by VHB. These features may be regulated by the USACE under the Clean Water Act and by the Maine DEP under the Natural Resources Protection Act.

References

Bureau of Land and Water Quality and Maine Department of Environmental Protection. 2009. *Natural Resource Protection Act*. 38 M.R.S.A. §§ 480-A to 480-BB.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe.1979. *Classification of Wetlands and Deepwater Habitat in the United States*. U.S. Fish and Wildlife Service. FWS/OBD-79/31 103pp.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Tiner, R.W. 1999. Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping. CRC Press.

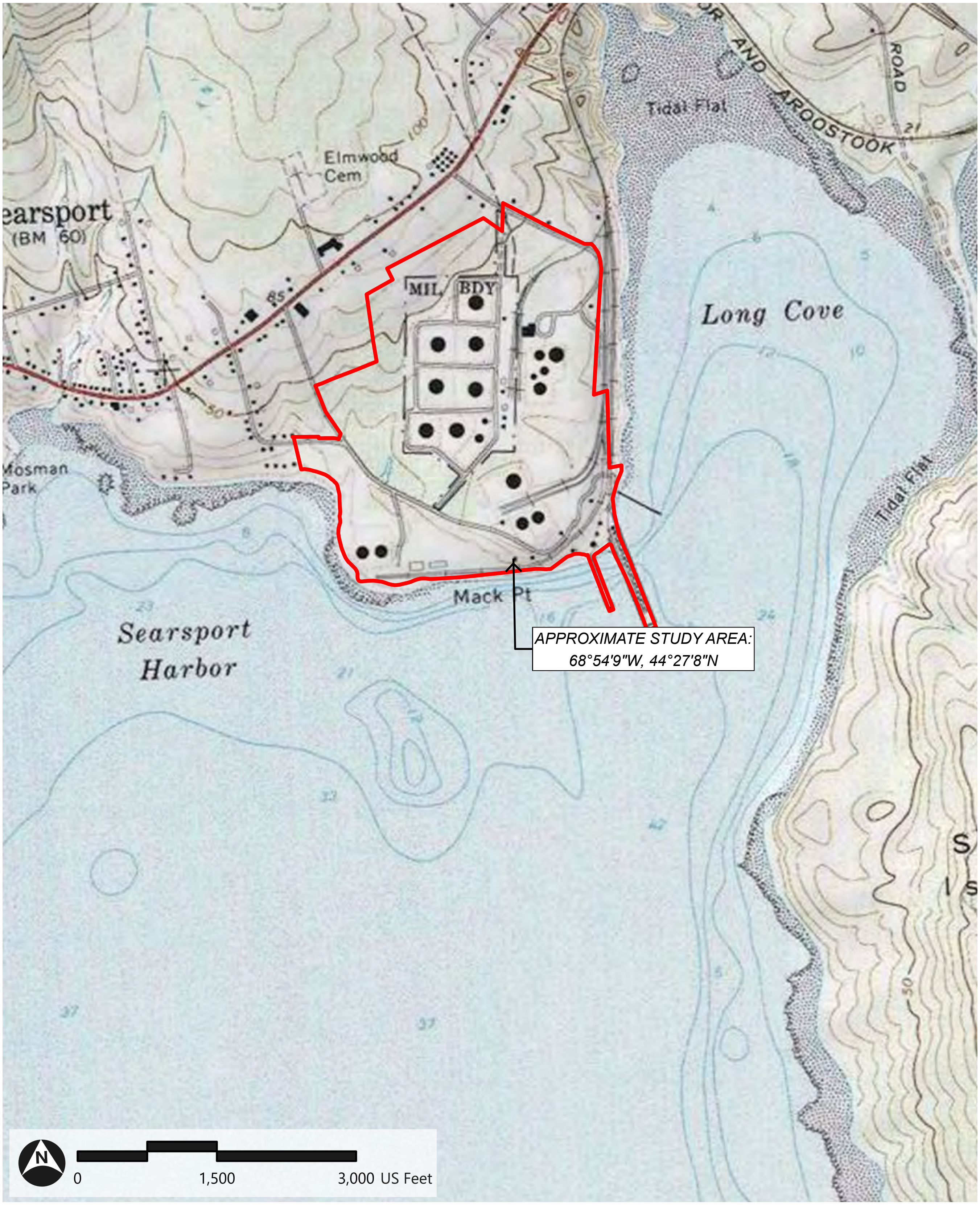
U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. ERDC/EL TR-12-01. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 1999. U.S. Army Corps of Engineers – New England District. 1999. The Highway Methodology Workbook: Supplement: Wetland Functions and Values – A Descriptive Approach. NAEEP-360-1-30a.

Appendix 1 – USGS Site Location Map

Figure 1: USGS Location Map

MaineDOT Mack Point Offshore Wind Port Study Area | Searsport, ME



Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (mheffernan, 10/9/2023)

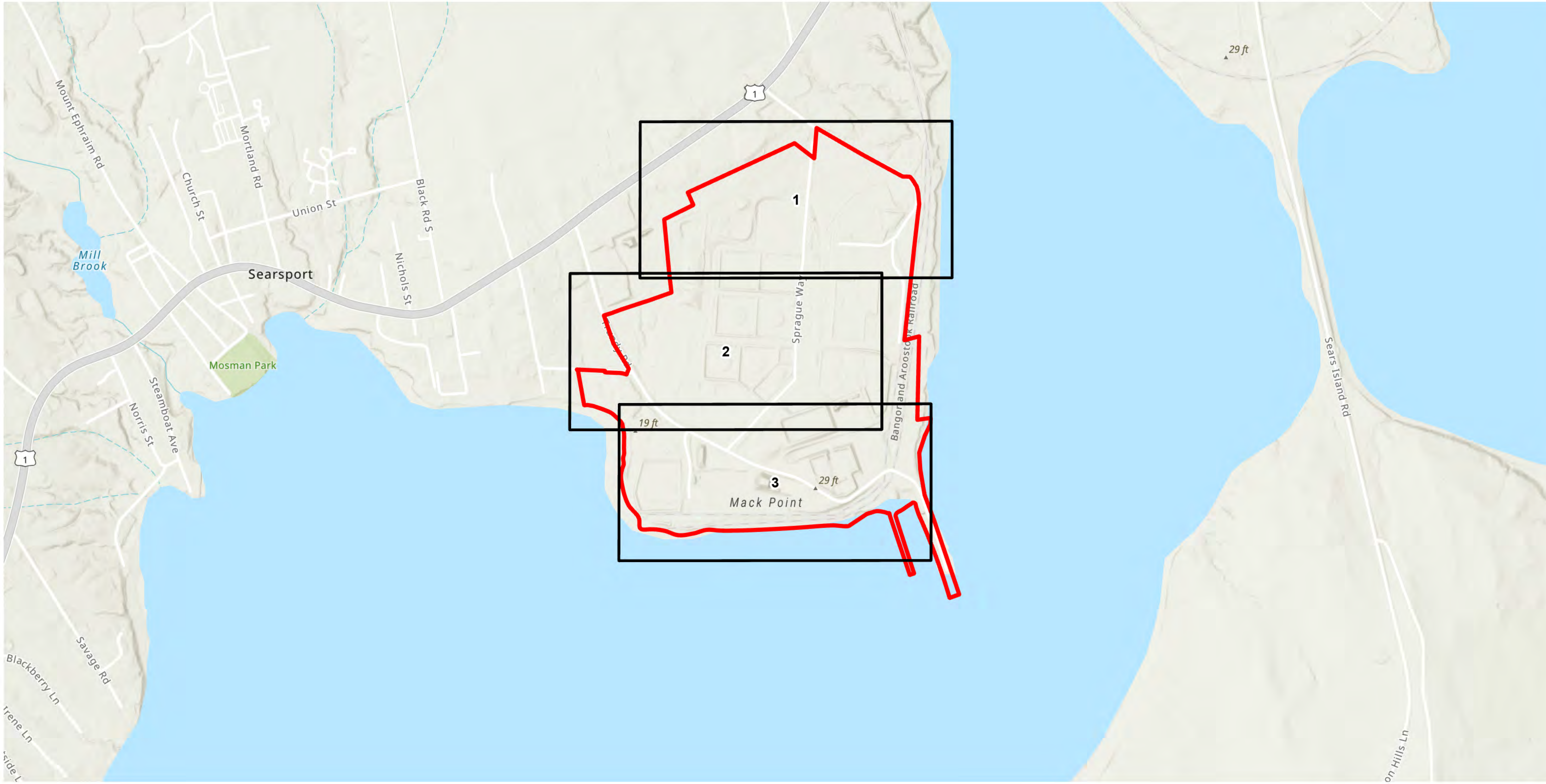
Study Area

Source: USGS, VHB

Appendix 2 – Natural Resources Map

Figure 1: Study Area Overview

Mack Point Study Area | Searsport, ME



Project Area

Map Index

N

0 500 1,000 1,500 Feet

Source: MEGIS, VHB, ESRI

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Figure 2: Natural Resources Map

Mack Point Study Area | Searsport, ME

- Culvert
- Constructed Ditch
- Mack Point Project Area
- Irving Facility - Area not Surveyed for Wetland Resources
- NWI - Mapped Estuarine and Marine Wetland
- MNAP - Mapped Sand Dunes
- Delineated Stream Centerline
- Delineated Wetland Edge
- Potential Vernal Pool
- Freshwater Vegetated Wetland
- Wetlands of Special Significance (WOSS)
- Stormwater Feature
- Wetland Restoration Area
- Wetlands Forming in Previously Disturbed Areas

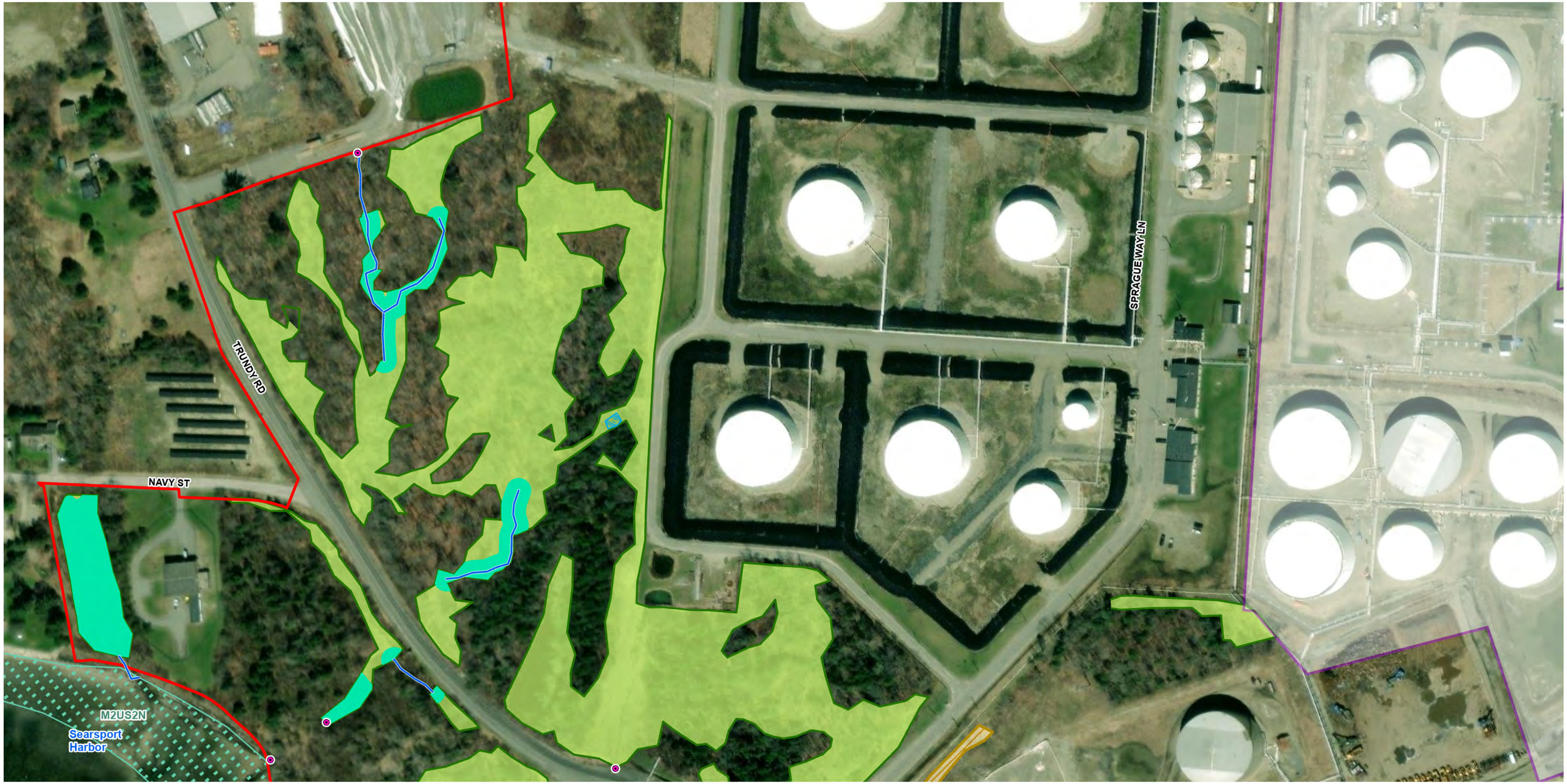
Wetland Resources Delineated by VHB in August/September 2023

0 100 200 300 Feet

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Mack Point Study Area | Searsport, ME



- Culvert
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Wetland Resources Delineated by VHB in August/September 2023

0 100 200 300 Feet

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Mack Point Study Area | Searsport, ME

Culvert
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Potential Vernal Pool
Freshwater Vegetated Wetland
Wetlands of Special Significance (WOSS)
Stormwater Feature
Wetland Restoration Area
Wetlands Forming in Previously Disturbed Areas

Wetland Resources Delineated by VHB in August/September 2023

N

0 100 200 300 Feet

Source: MEGIS, VHB, ESRI

Appendix 3 – Site Photographs

Engineers | Scientists | Planners | Designers

Mack Point Study Area

Wetland Delineation

Photographs: August & September, 2023

Mack Point
Searsport, Maine 04974

Maine Department of Transportation
16 State House Station
Augusta, ME 04333

Photo No: 1	
Photo Date: 9-9-23	
Description: SW shore Representative photo of southwestern shore within Study Area. This photo incldudes coastal wetland area below MHHW.	

Photo No: 2	
Photo Date: 9-9-23	
Description: Rail Corridor Photo of historic rail corridor where it bisects southern portion of Study Area.	

Photo No: 3	
Photo Date: 9-9-23	
Description: SE Shore/Pier Representative photo of southeastern shore of Study Area and pier area within port terminal facility.	

Photo No: 4	
Photo Date: 9-9-23	
Description: SW Ditch View of stormwater ditch along entry area to Sprague port terminal.	

Photo No: 5	
Photo Date: 8-31-23	
Description: NW port terminal Representative photo of large upland region in northwestern portion of Sprague port facility. Shows oil and natural gas tanks to the southeast.	
Photo No: 6	
Photo Date: 9-15-23	
Description: Small wetland Photo of small wetland in northwest corner of Study Area outside of terminal facility, adjacent to external salt facility.	

Photo No: 7	
Photo Date: 9-9-23	
Description: outlet View of apparently constructed outlet in between berm sections, where stormwater feature in southwestern portion of Study Area drains to coastal area to the south.	
Photo No: 8	
Photo Date: 9-15-23	
Description: SW Feature Representative view of stormwater feature in southwestern portion of property. This area consists of a thick stand of *Phragmites* and the drainage is dictated largely by a significantly sized berm along the southern edge.	

Photo No: 9

Photo Date: 9-9-23

Description: Forested wetland

Representative photo of forested wetland in northern extent of Study Area outside of the port terminal facility.

Photo No: 10

Photo Date: 9-2-23

Description: Wetland Area

Representative photo of emergent wetland on eastern edge of Spraque port terminal facility.

Photo No: 11

Photo Date: 8-2-23

Description: Emergent wetland

Representative photo of emergent wetland outside port facility limits on the southwestern portion of the Study Area.

Photo No: 12

Photo Date: 8-24-23

Description: Wetland

Representative photo of wetland just below the salt facility on the northwestern portion of the Study Area which drains into the forested area along the western edge of the Study Area.

Appendix 4 – NRCS Soils Map

Soil Map—Waldo County, Maine
(Revised Project Area)

Map Scale: 1:8,980 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 400, 800, 1600, 2400

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Waldo County, Maine
Survey Area Data: Version 22, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 11, 2021—Oct 29, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoB	Boothbay silt loam, 3 to 8 percent slopes	1.1	0.5%
PaB	Peru fine sandy loam, 3 to 8 percent slopes	1.7	0.7%
PaC	Peru fine sandy loam, 8 to 15 percent slopes	12.6	5.4%
Sw	Swanville silt loam, 0 to 3 percent slopes	77.0	33.0%
Ud	Udorthents-Urbanland complex	133.6	57.3%
W	Water bodies	7.3	3.1%
Totals for Area of Interest		**233.3**	**100.0%**

Appendix 5 – FEMA FIRM Sheets

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA)**. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on the Flood Insurance Rate Map (FIRM) was derived from the Maine Office of GIS (MEGIS) produced at a scale of 1:2,000, from aerial photography dated 2005 or later.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

State of Maine Floodway Note: Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 38 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

Only coastal structures that are certified to provide protection from the 1-percent-annual chance flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S_Gen_Struct.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

~~ 513 ~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23) - - - - - (23)	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
$^{46}89^{000m}$ N	1000-meter Universal Transverse Mercator grid values, zone 19
DA5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
July 6, 2015

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0459E

FIRM

FLOOD INSURANCE RATE MAP

WALDO COUNTY, MAINE
(ALL JURISDICTIONS)

PANEL 459 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEARSPORT, TOWN OF	230185	0459	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23027C0459E

EFFECTIVE DATE
JULY 6, 2015

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA)**. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on the Flood Insurance Rate Map (FIRM) was derived from the Maine Office of GIS (MEGIS) produced at a scale of 1:2,000, from aerial photography dated 2005 or later.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

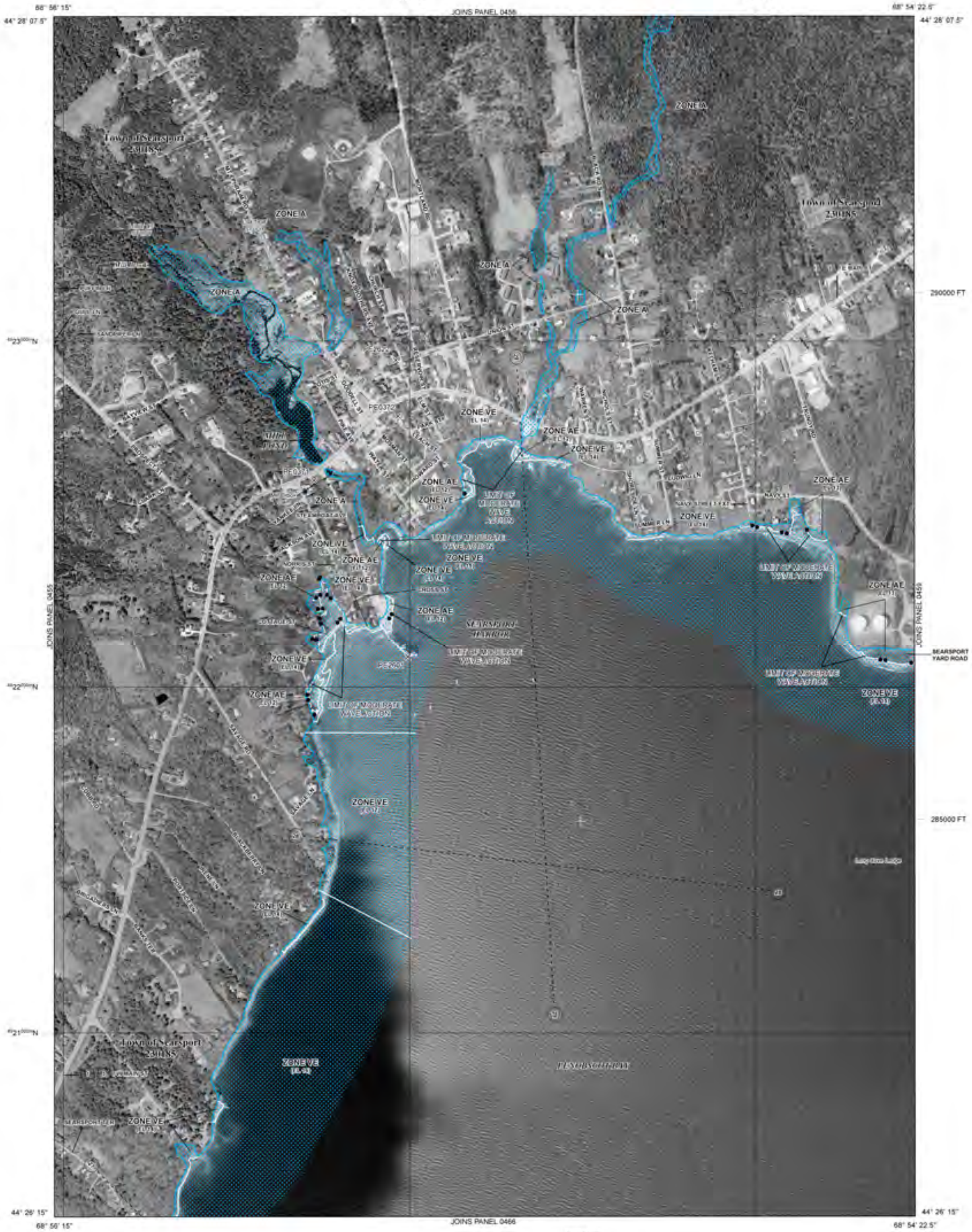
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

State of Maine Floodway Note: Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 38 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

Only coastal structures that are certified to provide protection from the 1-percent-annual chance flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S_Gen_Struct.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23) - - - - - (23)	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
$^{45}89^{000}$ N	1000-meter Universal Transverse Mercator grid values, zone 19
DA5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
July 6, 2015

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0458E

FIRM

FLOOD INSURANCE RATE MAP

WALDO COUNTY, MAINE
(ALL JURISDICTIONS)

PANEL 458 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEARSPORT, TOWN OF	230185	0458	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23027C0458E

EFFECTIVE DATE
JULY 6, 2015

Federal Emergency Management Agency

Appendix 6 – USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/13/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W3-7 Up

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.46015495 Long: -68.90099225 Datum: WGS84

Soil Map Unit Name: Ud - Udorthents - Urbanland complex NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes X No ___	If yes, optional Wetland Site ID:	
Wetland Hydrology Present?	Yes ___ No X		

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W3-7 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	40	Yes	FACU
2. *Pinus strobus*	30	Yes	FACU
3. *Betula papyrifera*	20	Yes	FACU
4. *Picea rubens*	10	No	FACU
5.			
6.			
7.			
	100	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	20	Yes	FACU
2. *Picea rubens*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Maianthemum canadense*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	150	x 4 =	600
UPL species	0	x 5 =	0
Column Totals:	150 (A)		600 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-7 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Sandy	Fine Sandy Loam
4-18	2.5Y 5/4	100					Sandy	Fine Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/13/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W3-7 Wet

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.46019207 Long: -68.90075282 Datum: WGS84

Soil Map Unit Name: Sw - Swanville silt loam, 0 to 3 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

If yes, optional Wetland Site ID: Wetland 3

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W3-7 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	Yes	FAC
2. *Betula populifolia*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fraxinus pennsylvanica*	10	Yes	FACW
2. *Quercus rubra*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Onoclea sensibilis*	50	Yes	FACW
2. *Maianthemum canadense*	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	100	x 3 =	300
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	180 (A)		500 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Sandy	Sandy Loam
2-12	10YR 5/1	80	10YR 5/8	20	C	M	Sandy	Sandy Loam
12-18	2.5Y 6/1	70	10YR 5/8	30	C	M	Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/13/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W3-112 Up

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.46144716 Long: -68.89849129 Datum: WGS84

Soil Map Unit Name: Sw - Swanville silt loam, 0 to 3 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?	X	
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W3-112 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Festuca arundinacea*	70	Yes	FACU
2. *Solidago canadensis*	10	No	FACU
3. *Solidago rugosa*	5	No	FAC
4. *Daucus carota*	5	No	UPL
5. *Filipendula ulmaria*	5	No	FAC
6. *Symphyotrichum novae-angliae*	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	10	x 3 =	30
FACU species	80	x 4 =	320
UPL species	5	x 5 =	25
Column Totals:	100 (A)		385 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-112 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Sandy	Sandy Loam
10-18	2.5Y 5/4	100					Sandy	Sandy Loam
18+	2.5Y 6/2	100					Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/13/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W3-112 Wet

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.4613665 Long: -68.89848126 Datum: WGS84

Soil Map Unit Name: Sw - Swanville silt loam, 0 to 3 percent slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___	
Hydric Soil Present? Yes X No ___	If yes, optional Wetland Site ID: Wetland 3	
Wetland Hydrology Present? Yes X No ___		

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	
X Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W3-112 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Solidago rugosa*	60	Yes	FAC
2. *Doellingeria umbellata*	10	No	FACW
3. *Filipendula ulmaria*	10	No	FAC
4. *Festuca arundinacea*	10	No	FACU
5. *Viburnum dentatum*	10	No	FAC
6. *Euthamia graminifolia*	5	No	FAC
7. *Fragaria vesca*	5	No	UPL
8.			
9.			
10.			
11.			
12.			
	110	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	85	x 3 =	255
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	110 (A)		340 (B)

Prevalence Index = B/A = 3.09

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-112 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					Sandy	Sandy Loam
4-18	2.5Y 6/2	93	7.5YR 5/6	7	C	M	Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
_X_ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes _X_ **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/15/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: U-500

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 13

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44275924 Long: -68.88353409 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators of hydrology.

VEGETATION – Use scientific names of plants. Sampling Point: U-500

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	Yes	FAC
2. *Betula papyrifera*	25	Yes	FACU
3. *Picea rubens*	20	Yes	FACU
4.			
5.			
6.			
7.			
	85	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Abies balsamea*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Pteridium aquilinum*	15	Yes	FACU
2. *Aralia nudicaulis*	10	Yes	FACU
3. *Maianthemum canadense*	3	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	28	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	73	x 4 =	292
UPL species	0	x 5 =	0
Column Totals:	123 (A)		442 (B)

Prevalence Index = B/A = 3.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Aralia nudiocaulis showed evidence of stress.

SOIL

Sampling Point: U-500

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 2/1	100					Loamy/Clayey	silty clay
2-7	10YR 5/1	70	10YR 3/6	30			Loamy/Clayey	silty clay
7-15+	10YR 5/6	100					Loamy/Clayey	silty clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
_?_ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
_?_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** _X_

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Mack Point City/County: Seasport, Waldo County Sampling Date: 9/15/23

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W-500

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): none Slope (%): <1%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.456063 Long: -68.907172 Datum: WGS84

Soil Map Unit Name: Sw - Swanville silt loam, 0 to 3% slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 4

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-500

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2. *Quercus rubra*	5	No	FACU
3. *Populus grandidentata*	5	No	FACU
4.			
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex verticillata*	35	Yes	FACW
2. *Quercus rubra*	20	Yes	FACU
3. *Acer rubrum*	10	No	FAC
4.			
5.			
6.			
7.			
	65	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmunda claytoniana*	60	Yes	FAC
2. *Dryopteris carthusiana*	10	No	FACW
3. *Filipendula ulmaria*	3	No	FAC
4. *Ilex verticillata*	3	No	FACW
5. *Maianthemum canadense*	3	No	FACU
6. *Quercus rubra*	3	No	FACU
7. *Aralia nudicaulis*	3	No	FACU
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	48	x 2 =	96	
FAC species	123	x 3 =	369	
FACU species	39	x 4 =	156	
UPL species	0	x 5 =	0	
Column Totals:	210	(A)	621	(B)

Prevalence Index = B/A = 2.96

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Aralia nudicaulis showed ample evidence of stress.

SOIL

Sampling Point: W-500

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Loamy/Clayey	Silty clay
5-10	10YR 4/1	100					Loamy/Clayey	Silty clay
10-16+	10YR 5/1	70	10YR 6/8	100	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
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___ Red Parent Material (F21)
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___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ____________
Depth (inches): ____________

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Updated Freshwater Resource Mapping for Mack Point

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Mack Point Study Area | Searsport, ME

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: kinfanti, Date: 5/9/2024)

- Culvert
- Constructed Ditch
- Mack Point Project Area
- Irving Facility - Area not Surveyed for Wetland Resources
- NWI - Mapped Estuarine and Marine Wetland
- MNAP - Mapped Sand Dunes
- Delineated Stream Centerline
- Delineated Wetland Edge
- Potential Non-Significant Vernal Pool
- Freshwater Vegetated Wetland
- Wetlands of Special Significance (WOSS)
- Stormwater Feature
- Wetland Restoration Area
- Wetlands Forming in Previously Disturbed Areas

Wetland Resources Delineated by VHB in August/September 2023. Vernal pools surveyed in April and May 2024. DRAFT

N

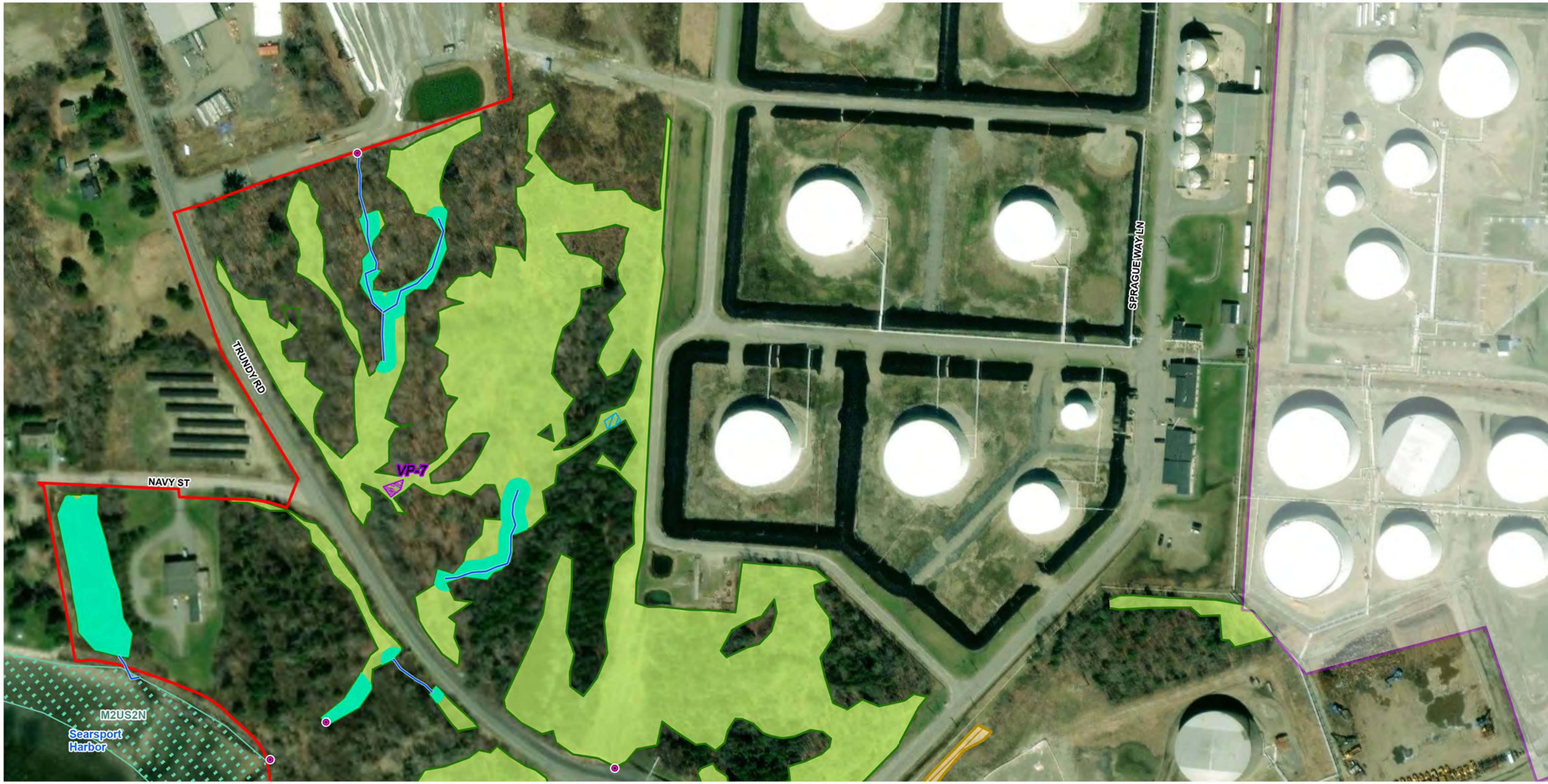
0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Mack Point Study Area | Searsport, ME



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Wetland Resources Delineated by VHB in August/September 2023. Vernal pools surveyed in April and May 2024. DRAFT

0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: kinfanti, Date: 5/9/2024)

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Mack Point Study Area | Searsport, ME

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Wetland Resources Delineated by VHB in August/September 2023. Vernal pools surveyed in April and May 2024. DRAFT

0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

Stantec

Memo

To:	Eric Ham and Kristen Chamberlain	From:	Paul Sokoloff
	Maine Department of Transportation		Topsham, ME Office
File:	Mack Point Eelgrass Survey	Date:	April 12, 2024

Reference: Eelgrass and Shallow Subtidal Substrate Characterization Survey for the Proposed Mack Point Offshore Wind Terminal – September 2023 Survey Results

The purpose of this Eelgrass Survey memo is to present resource data collected to support a National Environmental Policy Act Environmental Impact Statement and state and federal permitting for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project). The Project is being developed by the Maine Department of Transportation and they are evaluating the existing Mack Point facility to serve as a potential Project site. Based on the June 2023 conceptual design, the Mack Point site may require approximately 59 acres of dredging and filling of intertidal and subtidal habitat (Figure 1). On September 20, 2023, Stantec completed a dive survey to map eelgrass (*Zostera marina*) present at the Mack Point Project Area (Figure 1). This memo describes the results of the 2023 survey in the Project Area, including eelgrass survey observations, substrate characterization, and list of species observed. No eelgrass has been historically mapped at Mack Point as part of Maine Department of Environmental Protection or Maine Department of Marine Resource Surveys.[1]

Methodology

Stantec conducted the eelgrass survey based on the Joint Federal Agency Submerged Aquatic Vegetation Survey Guidance for the New England Region Tier 1 methodology[2] within the survey limits provided by the Maine Department of Transportation (Figure 2). This methodology delineates the extent of the continuous eelgrass meadow using SCUBA. Where eelgrass has a patchy distribution the edge of the continuous eelgrass meadow is defined as 0.5 meters (m) beyond the last shoot. The last shoot is defined as a shoot that is within 1 m of an area in the interior of the bed where there are ≥ 3 shoots/0.25m^2 within 1 m of adjacent shoots (Washington Department of Natural Resources 2014[3]). When observed, eelgrass meadow boundaries are delineated by Stantec divers who communicated their position to surface support staff using buoys. Eelgrass boundaries are recorded by surface support staff using a Global Positioning System Trimble GeoExplorer Series Receiver with sub-meter accuracy. In addition to the eelgrass survey, Stantec records the following information for observations within eelgrass meadows and survey limits:

1. General sediment type (e.g., silt, mud, sand, and shell)
2. Qualitative estimate of the percent cover of eelgrass within the project vicinity (e.g., barren, sparse [1–10% cover], low [11–25%], moderate [26–50%], and high [>50%]). This was done for each survey area as a whole and within individual eelgrass beds where percent cover is highly variable
3. Epiphyte coverage (i.e., absent, light, or heavy)

[1] https://maine.hub.arcgis.com/maps/25d11cbf476944bc8dc985d2454d01d6/about
[2] https://www.nae.usace.army.mil/portals/74/docs/regulatory/JurisdictionalLimits/Submerged_Aquatic_Vegetation_Survey_Guidance(11-Aug-2016).pdf
[3] Washington State Department of Natural Resources. 2014. Technical Memorandum: Operational Definition of an Eelgrass (*Zostera marina*) Bed.

Reference: Eelgrass and Shallow Subtidal Substrate Characterization Survey for the Proposed Mack Point Offshore Wind Terminal – September 2023 Survey Results

Descriptions of the substrate in the Mack Point Project Area described in this memo are based on diver observations and side-scan sonar data collected by Steele Associates Marine Consultants, LLC. (Steele).[4] In 2023, Stantec divers surveyed transects the length of the 2023 Mack Point Project site. Each diver surveyed within a defined depth range (0–5 feet [ft], 5–10 ft, 10–15 ft, and 15–20 ft). The centerline of these transects are shown on Figure 2 along the -3, -7, -13 and -18 ft mean lower low contours. Divers did not survey beyond the -20 ft mean lower low contour based on the depth limits of eelgrass anticipated in the survey area.

SURVEY RESULTS

EELGRASS

The eelgrass survey was completed on September 20, 2023. No eelgrass was observed in the Mack Point Project Area (Figure 2). Appropriate depths and substrate types for eelgrass are present in portions of the surveys area. No eelgrass leaves or shoots were observed in the wrack line in the intertidal at Mack Point mixed with algae.

SUBSTRATE

In the shallow subtidal, the substrate was primarily cobble with gravel and sand with scattered boulders (Photos 1 and 2). The substrate graded from the shallow subtidal to fine sandy silt and with scattered gravel, cobble, and boulders (Photo 3). The remnants of an old pier present in the intertidal extended into the subtidal and the rubble of the pier was observed by divers during the survey. Mapping of substrate types within the survey area based on the side-scan imagery is detailed in the Steele survey report.

SPECIES LIST

The following marine species were observed during the 2023 dive surveys at Mack Point:

- Acadian hermit crab (*Pagurus acadianus*)
- American lobsters (*Homarus americanus*) (Photo 4, photo taken during November 2023 lobster and urchin survey)
- Blue mussel (*Mytilus edulis*)
- Burrowing anemone (*Ceriantheopsis austroafricanus*) (Photo 5, photo taken during November 2023 lobster and urchin survey)
- Common slipper shell (*Crepidula fornicata*)
- Crustose coralline algae (*Corallinales*) (Photos 6 and 7)
- Encrusting bryozoan (*Membranipora membranacea*)
- Finger sponge (*Haliclona oculate*)
- Green crab (*Carcinus maenas*) (Photo 8)
- Green sea urchin (*Strongylocentrotus droebachiensis*) – common on rocks (Photo 9)
- Long-wristed hermit crab (*Pagurus longicarpus*)

[4] Steele Associates Marine Consultants, LLC. 2023. Hydrographic and Marine Geophysical Site Characterization Surveys. Mack Point and Sears Island. December 2023.

Reference: Eelgrass and Shallow Subtidal Substrate Characterization Survey for the Proposed Mack Point Offshore Wind Terminal – September 2023 Survey Results

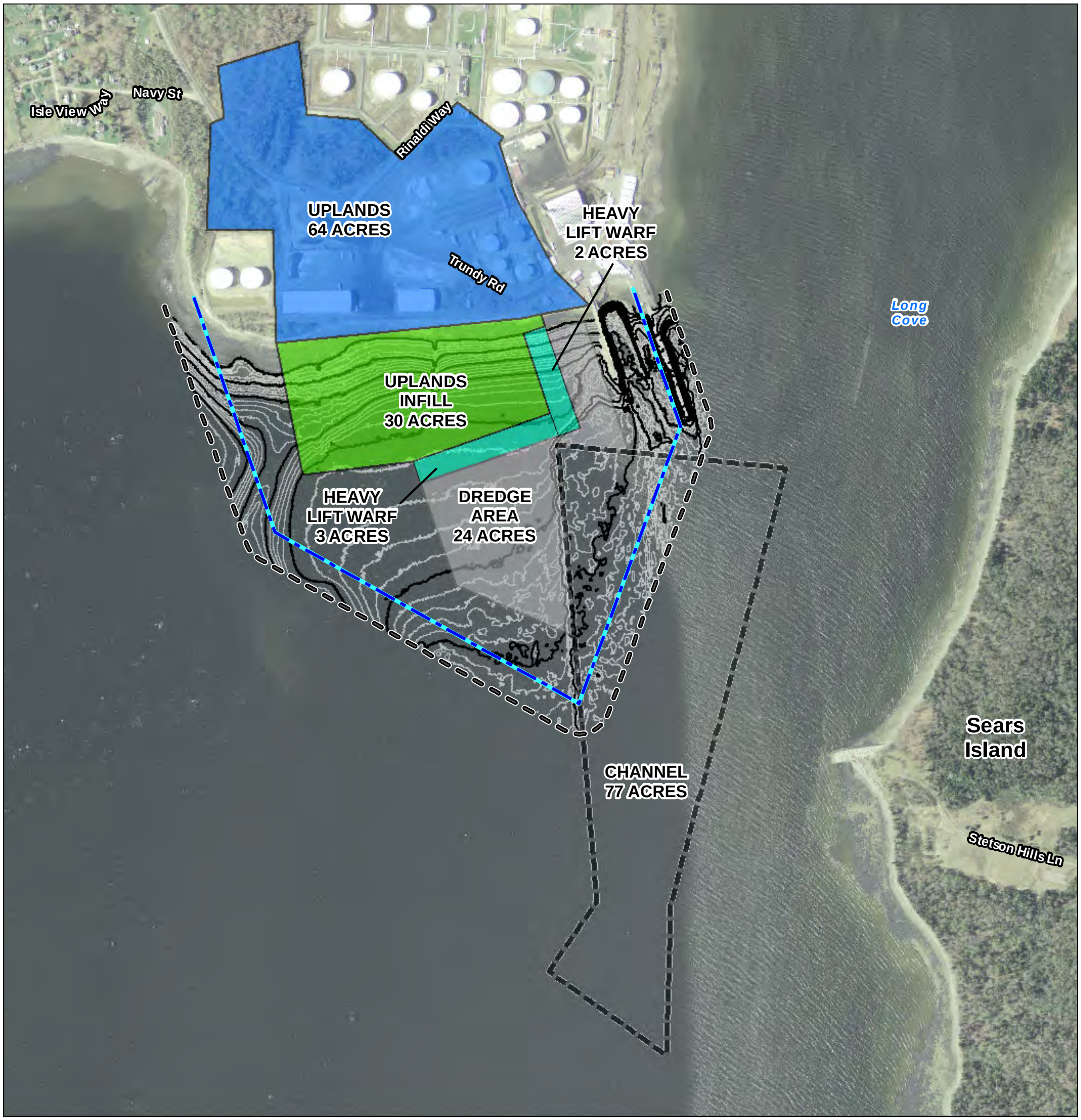
- Ocean quahog (*Arctica islandica*) (Photo 10)
- Rock barnacle (*Semibalanus balanoides*)
- Rock crab (*Cancer irroratus*)
- Sand dollar (*Echinarachnius parma*) (Photo 3)
- Sea star (*Asterias rubens*) (Photo 11)
- Sea vase (*Ciona intestinalis*)
- Surf clams (*Spisula solidissima*) (Photo 12)
- Sculpin (*Myoxocephalus* spp.)
- Tortoiseshell limpet (*Tectura testudinalis*)
- Unidentified brown filamentous algae
- Unidentified encrusting black tunicate
- Unidentified globular sponges
- Winter flounder (*Pseudopleuronectes americanus*)

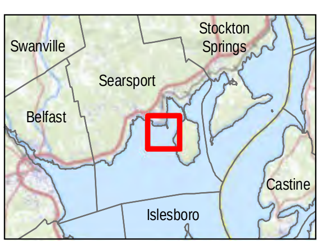
Stantec Consulting Services Inc.

Paul Sokoloff

Paul Sokoloff
Project Manager
Phone: 207 406 5475
Paul.Sokoloff@stantec.com

Attachment: Figure 1. Maine Floating Offshore Wind Port Mack Point Alternative, June 2023 Conceptual Design
Figure 2. 2023 Mack Point Eelgrass Survey Transects
Representative Photographs





Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (64 acres)
- Uplands Infill (30 acres)
- Heavy Lift Warf (5 acres)
- Dredge Area (24 acres)
- Channel (77 acres)

0 1,000
Feet

(At original document size of 8.5x11)
1" = 1000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

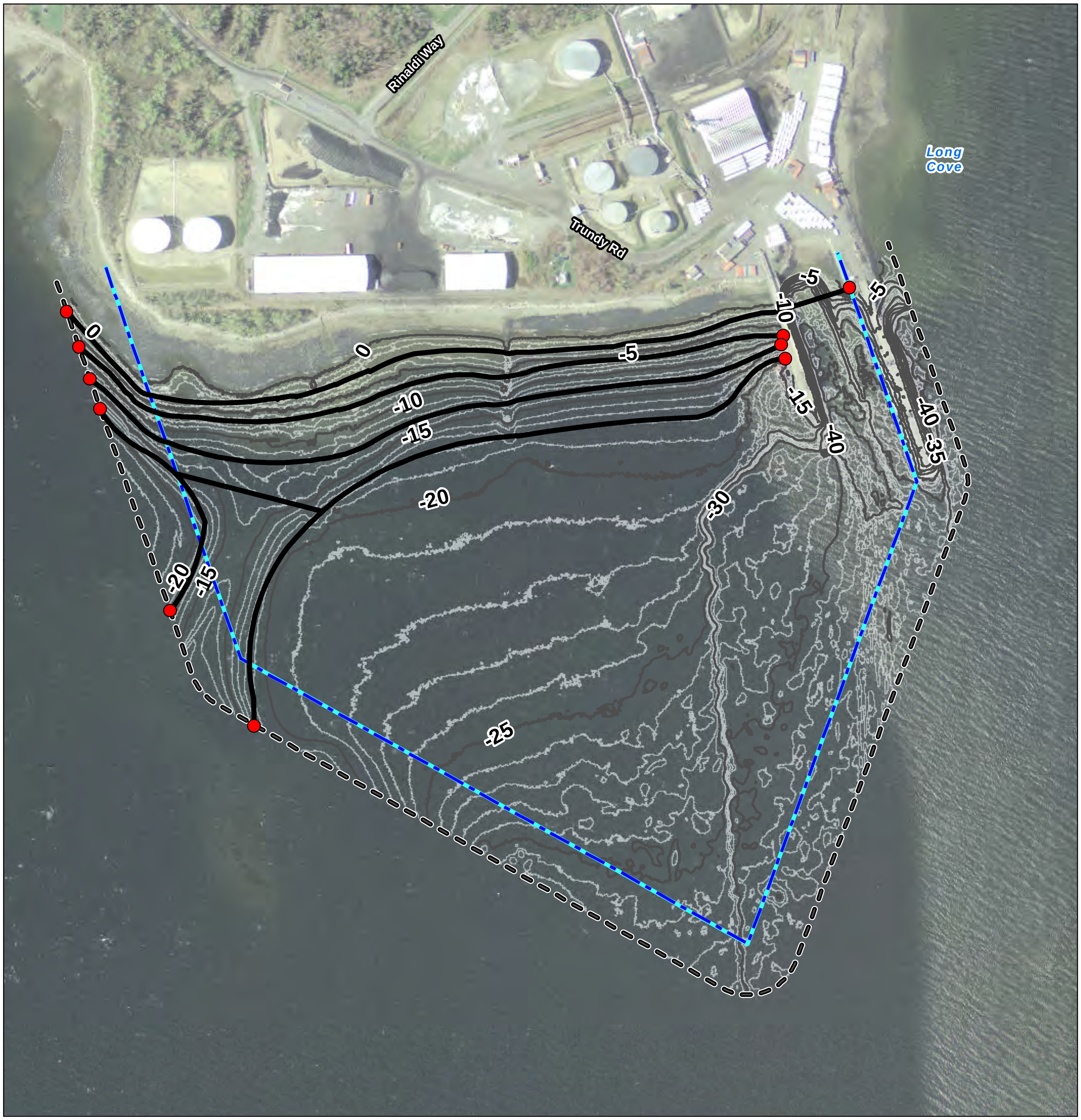
Client/Project
195602718
Maine Department of Transportation

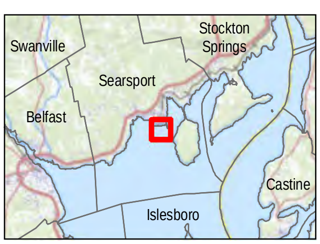
Figure No.
1

Title
Mack Point Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: Conceptual Design from Moffit and Nichol, June 2023.
4. Background: Maine Orthoimagery Regional, 2015

U:\195602718\03_data\gis_cad\gis\MXDs\02718_01_Mack_Concept_design.mxd Revised: 2024-04-11 By: pbarbera





Legend
- Start/End of Eelgrass Transects
- 200 ft Buffer
- Potential Project Footprint

0 600 Feet
(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2023-11-08
TR Review by KWH on 2023-11-08
IR Review by PS on 2023-11-08

Client/Project
195602718
Maine Department of Transportation

Figure No.
2

Title
2023 Mack Point Eelgrass Survey Transects

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: MEDOT, Moffit and Nichol, Stantec
4. Background: Maine Orthoimagery Regional, 2015

\\us0241-ppfss01\shared_projects\195602718\03_data\gis_cad\gis\MXDs\FVA Surveys\02718_05_Mack_Pt_Eel_Grass.mxd Revised: 2024-04-03 By: pbarbera

Reference: Eelgrass and Shallow Subtidal Substrate Characterization Survey for the Proposed Mack Point Offshore Wind Terminal – September 2023 Survey Results

Photo 1. Cobble with gravel and sand with scattered boulders in the shallow subtidal with a green sea urchin at Mack Point. September 2023.

Photo 2. Cobble with gravel and sand with scattered boulders at Mack Point. September 2023.

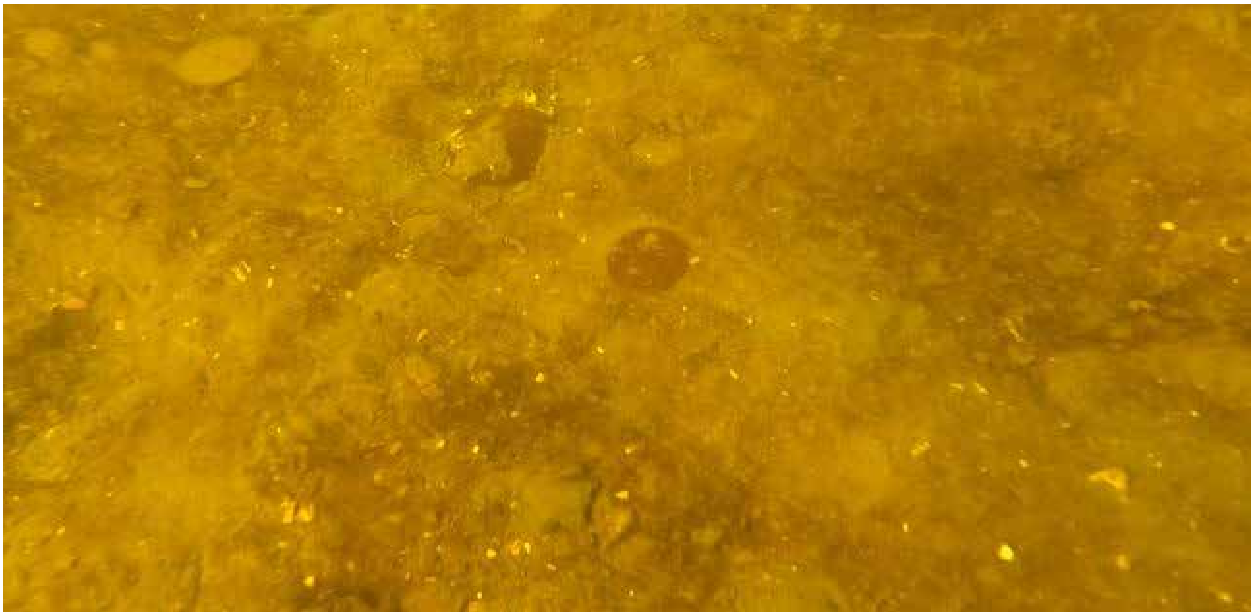


Photo 3. Sandy silt substrate in the shallow subtidal with sand dollars at Mack Point. September 2023.

Photo 4. American lobsters in the shallow subtidal at Mack Point. November 2023.

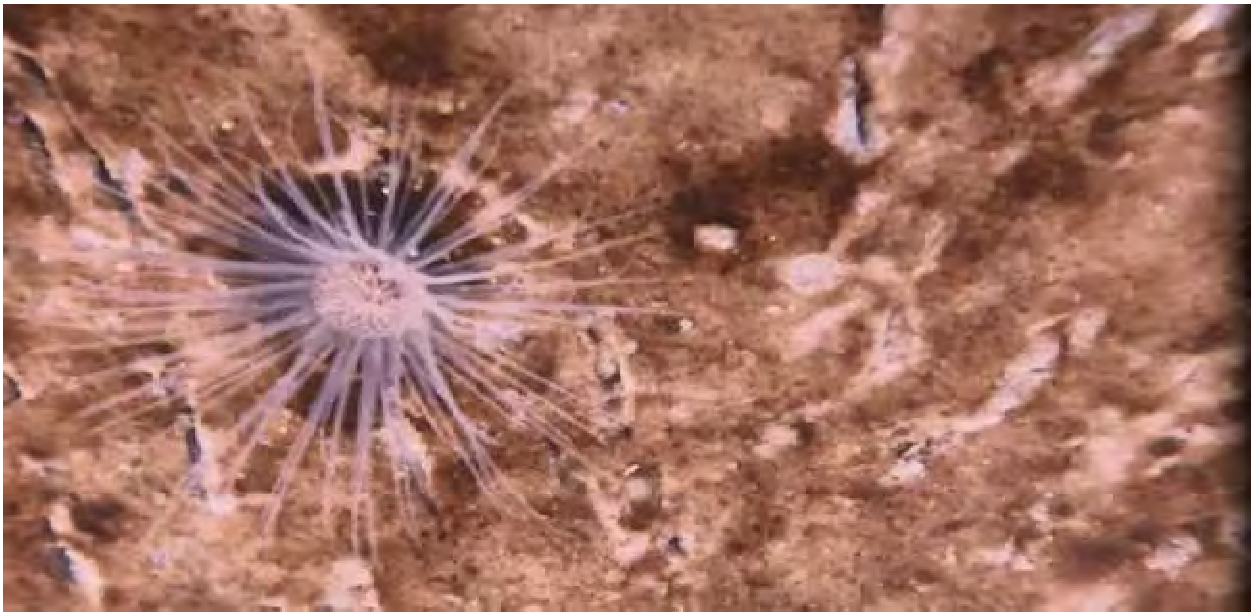


Photo 5. Burrowing anemone in the shallow subtidal at Mack Point. November 2023.

Photo 6. Boulders and cobble with crustose coralline algae due to urchin grazing at Mack Point. September 2023.

Photo 7. Boulders and cobble with crustose coralline algae due to urchin grazing at Mack Point. September 2023.

Photo 8. Green crab in the shallow subtidal at Mack Point. September 2023.

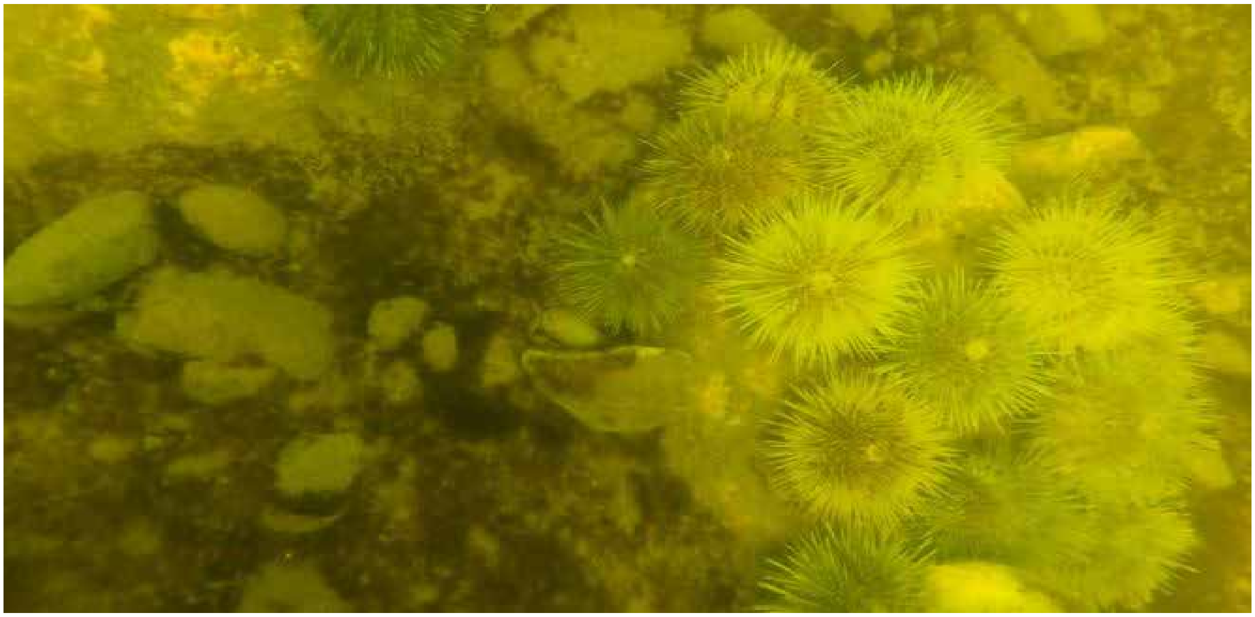


Photo 9. Abundant green sea urchins are in the shallow subtidal zone at Mack Point. September 2023.

Photo 10. Ocean quahog in the shallow subtidal at Mack Point. September 2023.

Photo 11. Sea star in the shallow subtidal at Mack Point. September 2023.

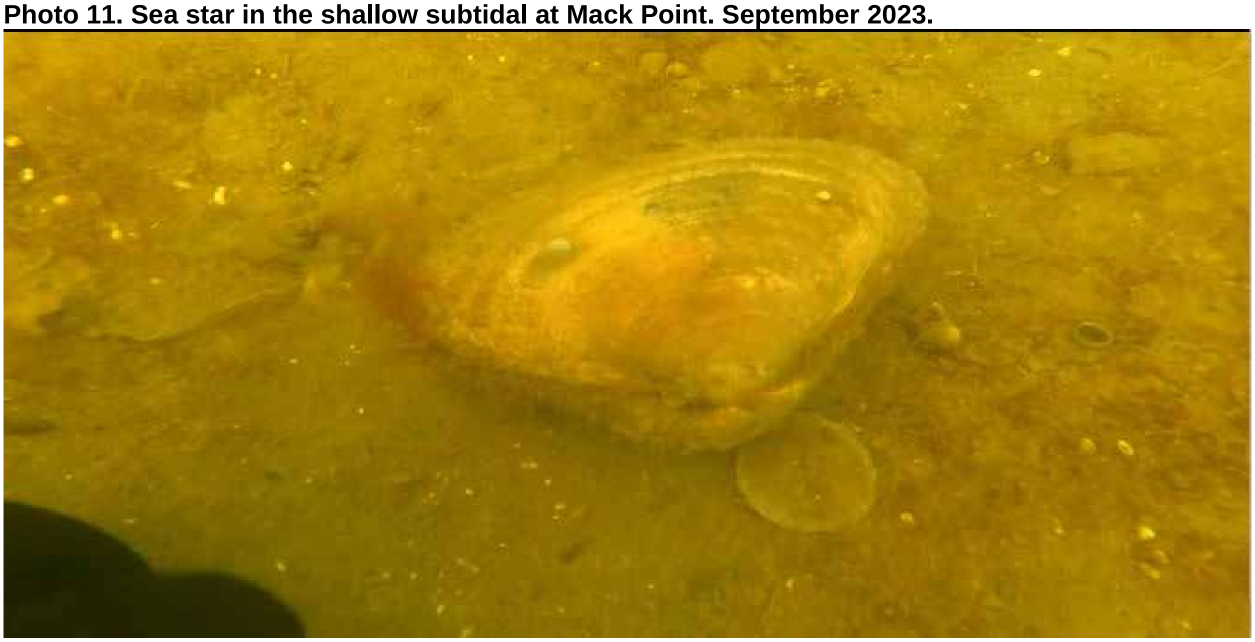


Photo 12. Surf clam in the shallow subtidal at Mack Point. September 2023.

Stantec

Memo

To:	Eric Ham and Kristen Chamberlain Maine Department of Transportation	From:	Paul Sokoloff Topsham, ME Office
File:	Mack Point Diver-based Lobster and Urchin Density Survey	Date:	April 9, 2024

Reference: Lobster and Urchin Dive Survey for the Proposed Mack Point Offshore Wind Terminal A– November and December 2023 Survey Results

The purpose of this Diver-based Lobster and Urchin Dive Survey memo is to present resource data for commercially important species collected to support a National Environmental Policy Act Environmental Impact Statement and state and federal permitting for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project). The Project is being developed by the Maine Department of Transportation and they are evaluating the existing Mack Point facility to serve as a potential Project site. Based on the June 2023 conceptual design, the Mack Point site may require approximately 59 acres of dredging and filling of intertidal and subtidal habitat (Figure 1). On November 20 and December 5, 2023, Stantec completed dive surveys to estimate the density of American lobsters (*Homarus americanus*) and green sea urchins (*Strongylocentrotus droebachiensis*) present at the Mack Point Project Area (Figure 1). The lobster and urchin survey data will be used in consultations with the Maine Department of Marine Resources to determine potential mitigation requirements and if a relocation effort should be completed to relocate lobsters and urchins in and/or adjacent to the Project Area prior to any in-water work. On past Maine projects, the Maine Department of Marine Resources relocation lobster density threshold has been 0.1 lobster per square meter to determine if a lobster relocation effort is required. Stantec is not aware of a past project impacting green sea urchin habitat where a relocation effort was required. In addition to the lobster survey results provided herein, Stantec has included a summary of lobster life history specific to water temperature expected during the time of year work window for tidal waters (November 8 to April 9).[1]

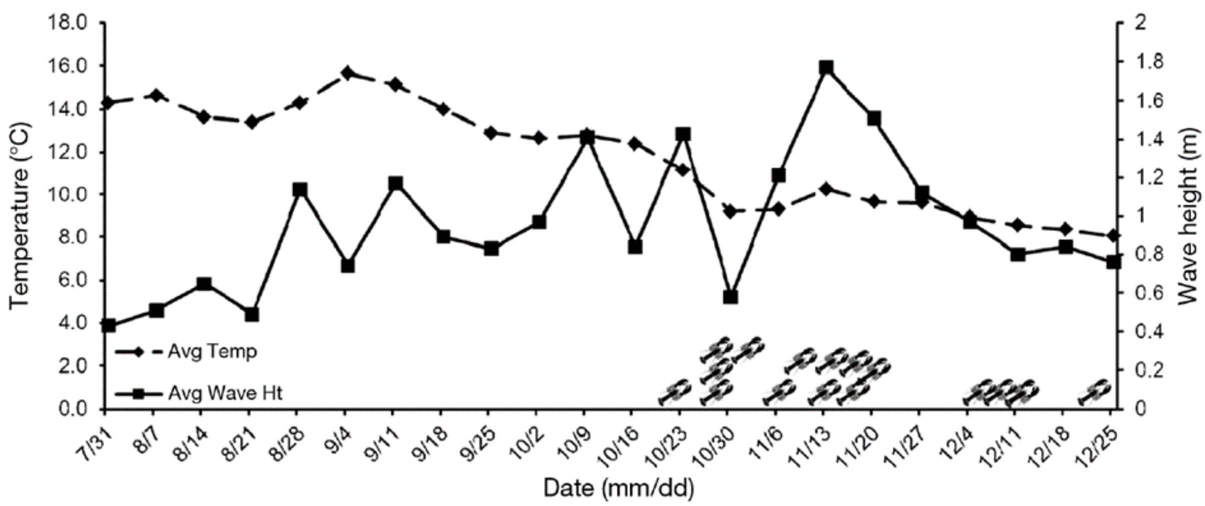
LOBSTER LIFE HISTORY AND TEMPERATURE LITERATURE REVIEW

Daily activity level and seasonal movements of the American lobster are influenced by seasonal shifts in water column temperature (McLeese and Wilder 1958, Factor 1995, Crossin et al. 1998, Jury 1999, Goldstein and Watson 2015, Wang et al. 2016). Studies have shown that the lobster prefers water temperature of approximately 16°C to 17°C (Crossin et al. 1998, Watson et al. 1999) and that their movement is directly related to water temperature. Seasonal movement occurs when water temperature drops below 10°C, and when water temperature is below 5°C there is decreased to no movement of lobsters (Factor 1995, Jury 1999). The walking rate of lobsters increases linearly between 2°C and 10°C, with activity being water temperature-dependent below 10°C and independent of water temperature between 10°C and 20°C (Factor 1995, Jury 1999). The probability of catching lobsters is dependent on individuals encountering traps; therefore, decreases in water temperature can be correlated to reduced catchability (Campbell and Stasko 1986, Factor 1995, Jury 1999, Jury and Watson 2013, Wang et al. 2016). Two studies have investigated the link between water temperature and catchability. One found that the highest catch per unit effort in the Great Bay Estuary of New Hampshire was in areas with water temperature between 12°C and 18°C (Jury and Watson 2013). A second study conducted in the St. Croix River estuary (between Maine and New Brunswick) found a significant decrease in catchability below 8°C (McLeese and Wilder 1958).

[1] Department of the Army General Permit for the State of Maine. https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/ME/2020-2025-MaineGeneralPermits.pdf

Falling water temperature and storm events create a challenging and stressful environment for lobsters located in inshore areas (Ennis 1984, Goldstein and Watson 2015). Seasonal offshore lobster movement due to decreases in water temperature or increases in storm activity have been documented in the northern part of their range (Cooper and Uzmann 1971, Ennis 1984, Campbell and Stasko 1986, Factor 1995, Goldstein and Watson 2015). Water temperature ranging below 8°C to10°C appears to trigger the offshore migration of adult lobsters (Cooper and Uzmann 1971, Factor 1995, Goldstein and Watson 2015). The migration of lobsters to deeper water has been documented to be age dependent, with adult lobsters moving greater distances and juvenile and adolescent lobsters sometimes remaining in shallower coastal waters even as water temperature decreases (Factor 1995). Migration timing may be affected by sex in addition to age, with adult female lobsters beginning an offshore seasonal migration earlier than male lobsters due to the need for a consistent water temperature above 3.4°C for egg development (Campbell and Stasko 1986).

Goldstein and Watson (2015) observed the offshore movement of lobsters in the Piscataqua River starting in mid-October when significant decreases in water temperature were observed (Figure 2). The water temperature remained relatively constant prior to the observation of offshore movement; however, in mid-October, a decrease in water temperature was observed, with water temperature dropping from 14.1°C to 10.3 ±0.5°C. Of the 16 tagged lobsters that were observed migrating offshore, the majority (75%) left the estuary between October 22 and November 21, with a mean departure date of November 1 (Goldstein and Watson 2015).



Weekly water temperature and wave height in the fall of 2006 for the period before and during the offshore movements of tagged lobsters. Lobster symbols indicate when individual lobsters initiated offshore movements. Most (75%, n = 16) of the lobsters left the area between October 22 and November 21, with a mean date of departure of November 1 (range = 295−315 days) (Goldstein and Watson 2015).

Figure 2. Water temperature and wave height associated with offshore movements of lobsters in the Piscataqua River (Goldstein and Watson 2015).

Publicly available water temperature estimates for Searsport Harbor are based on the daily sea surface temperature satellite readings from NOAA.[2] Historic temperature summary charts are also available based on these satellite readings, including monthly sea temperatures from 2013 to 2023 (Figure 3). As indicated in Figure 3, mean sea temperature drops below 10°C in November and below 5°C in January, and mean sea temperatures again increase above 5°C in April/May. Based on the research cited above and the local sea temperature data, seasonal movement of lobster would be expected to occur out of Searsport Harbor in late October and November. By January and into April, any remaining lobsters in Searsport Harbor would exhibit limited mobility and thus reduced catchability. This period of low lobster abundance and catchability corresponds with the potential in-water work window for the Project.

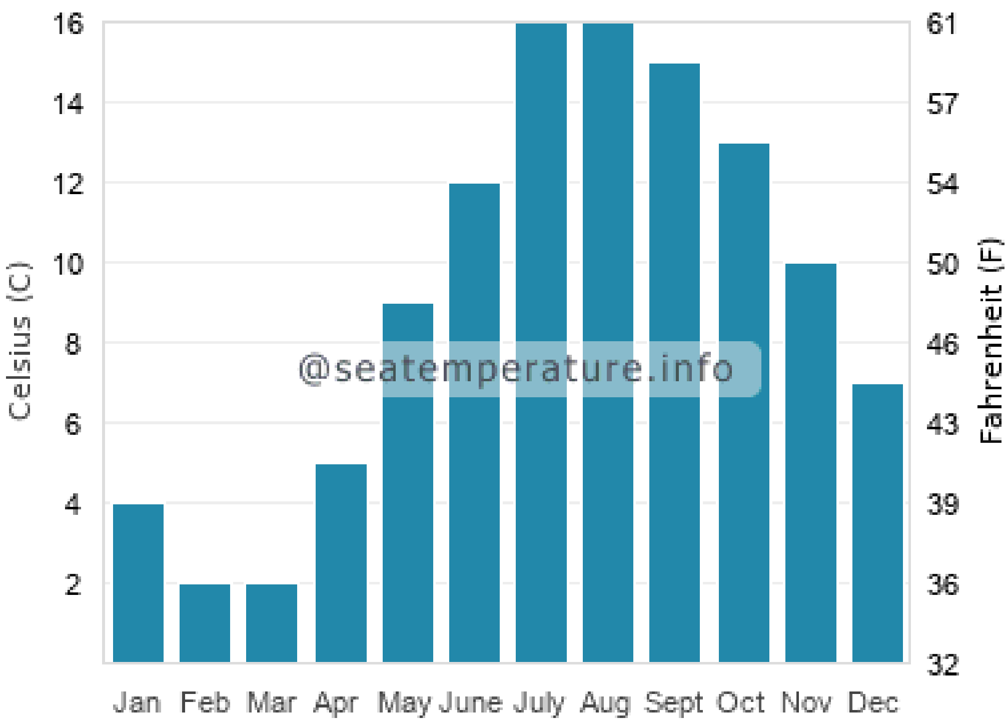


Figure 3: Mean Sea Temperature for Searsport Harbor (2013–2023)

[2] seatemperature.net accessed March 2024

LOBSTER AND URCHIN SURVEY METHODOLOGY

Diver-based lobster and urchin surveys were conducted in late November and early December, to estimate the density of lobsters and urchins during the allowable in-water work window. Four transects were surveyed by divers at Mack Point (Figure 4). The transect length and spacing was chosen to characterize representative habitats across the Project Area; however, since actual impact areas are still being determined, a 200-foot buffer around proposed impacts was included (Survey Area). Video data documenting lobster and urchin density and benthic conditions in the Survey Area were collected with a GoPro® camera.[3]

Divers recorded the number of observed lobsters, lobster burrows, and urchins within one meter of either side of the transect. The density of observed lobsters, lobster burrows, and urchins was calculated for each transect based on the square meters surveyed (e.g., number urchins/ (length of the transect in meters x 2)). In addition, the following information was noted by divers:

1. General sediment type (i.e., silt, mud, sand, and shell)
2. Notable biological observations (i.e., shellfish or algal beds, crabs, and fish fauna)

LOBSTER AND URCHIN SURVEY RESULTS

The lobster and urchin surveys were completed in the Mack Point Survey Area on November 20 and December 5, 2023. Figure 4 depicts the lobster and urchin transects and the survey boundaries. Table 1 contains the survey results by transect. One lobster was observed in boulder and cobble habitat on Transect 1 during the November 5, 2023, survey (Photo 1). The calculated density of lobsters along this transect was 0.0005 per square meter, below the threshold of 0.1 lobster per square meter where a relocation effort may be required. Divers observed lobster burrows that were not visibly occupied on the four transects during the survey.

A total of 3,996 urchins were observed in the Mack Point Survey Area. Urchins were only observed on Transect 1 in boulder and cobble habitat (Table 1; Photos 2 and 3). The remaining transects lacked hard bottom urchin habitat. The urchin density (2.1 urchins per square meter) on cobble and boulder substrate in the Survey Area has resulted in heavy browsing pressure on algae in the subtidal, with algae in these areas being primarily limited to crustose coralline algae (Photos 4 and 5).

Figure 5 presents subtidal substrate mapping based on a side-scan sonar survey completed by Steele Associates Marine Consultants, LLC (SAMC 2023). The substrate in the shallow subtidal along Transect 1 is primarily boulder and cobble interspersed with silty sands. This substrate extended into the subtidal to around -10 feet mean lower low water before grading to sandy silt in deeper water. Beyond -10 feet mean lower low water, the benthic substrates in the central portion of the Mack Point Survey Area were mud, while the eastern and western portions of the Survey Area were silty sands (Figure 5).

[3] Lobster and urchin survey video is available upon request.

Reference: Lobster and Urchin Dive Survey for the Proposed Mack Point Offshore Wind Terminal A– November and December 2023 Survey Results

Table 1. November 20 and December 5, 2023, Lobster and Urchin Densities, Mack Point.

	Urchins	Unoccupied Burrows	Lobsters	Notes
Transect 1				
Total	3996	24	1	
Per m²	2.1	0.01	0.0005	
Transect 2				
Total	0	58	0	6 ghost traps
Per m²	0	0.03	0	
Transect 3				
Total	0	18	0	
Per m²	0	0.01	0	
Transect 4				
Total	0	21	0	4 ghost traps
Per m²	0	0.02	0	

The following other marine species were observed during the 2023 Mack Point dive surveys:

- Acadian hermit crab (*Pagurus acadianus*)
- Blue mussel (*Mytilus edulis*)
- Burrowing anemone (*Ceriantheopsis austroafricanus*) (Photo 6)
- Common slipper shell (*Crepidula fornicata*)
- Crustose coralline algae (*Corallinales*) (Photos 4 and 5)
- Encrusting bryozoan (*Membranipora membranacea*)
- Finger sponge (*Haliclona oculate*)
- Green crab (*Carcinus maenas*) (Photo 7)
- Long-wristed hermit crab (*Pagurus longicarpus*)
- Northern rock barnacle (*Semibalanus balanoides*)
- Ocean quahog (*Arctica islandica)* (Photo 8, photo taken during September 2023 eelgrass survey)
- Rock crab (*Cancer irroratus*)
- Sand dollar (*Echinarachnius parma*) (Photo 9)
- Sea star (*Asterias rubens*) (Photo 10, photo taken during September 2023 eelgrass survey)
- Sea vase (*Ciona intestinalis*) (Photo 11)
- Surf clams (*Spisula solidissima*) (Photo 12, photo taken during September 2023 eelgrass survey)
- Sculpin (*Myoxocephalus* spp.)
- Tortoiseshell limpet (*Tectura testudinalis*)
- Unidentified brown filamentous algae
- Unidentified encrusting black tunicate
- Unidentified globular sponges (Photo 13)
- Winter flounder (*Pseudopleuronectes americanus*)

SUMMARY

The following summarizes the lobster literature review and lobster and urchin survey effort at the Mack Point Survey Area:

- Lobster movement and activity are temperature dependent. The allowable in-water work window for tidal waters in Maine (November 8 to April 9) occurs during a period when many lobsters are expected to have moved out of the Mack Point Project Area into deeper offshore waters. Remaining lobsters likely seek refuge in the deeper water associated with the navigation channel. Lobsters that remain in Searsport Harbor exhibit reduced activity and catchability from January to March, when water temperatures are below 5°C. This period of reduced abundance and activity corresponds with in-water work window.
- One lobster was observed during the dive surveys in boulder and cobble habitat in the shallow subtidal. The limited presence of lobsters in the Survey Area during late November and December is supported by the reviewed literature. Higher lobster densities are expected in this area during the summer and fall.
- The cobble and boulder habitat in the shallow subtidal of the Survey Area supports a high density of green sea urchin.

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Stantec Consulting Services Inc.

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Project Manager
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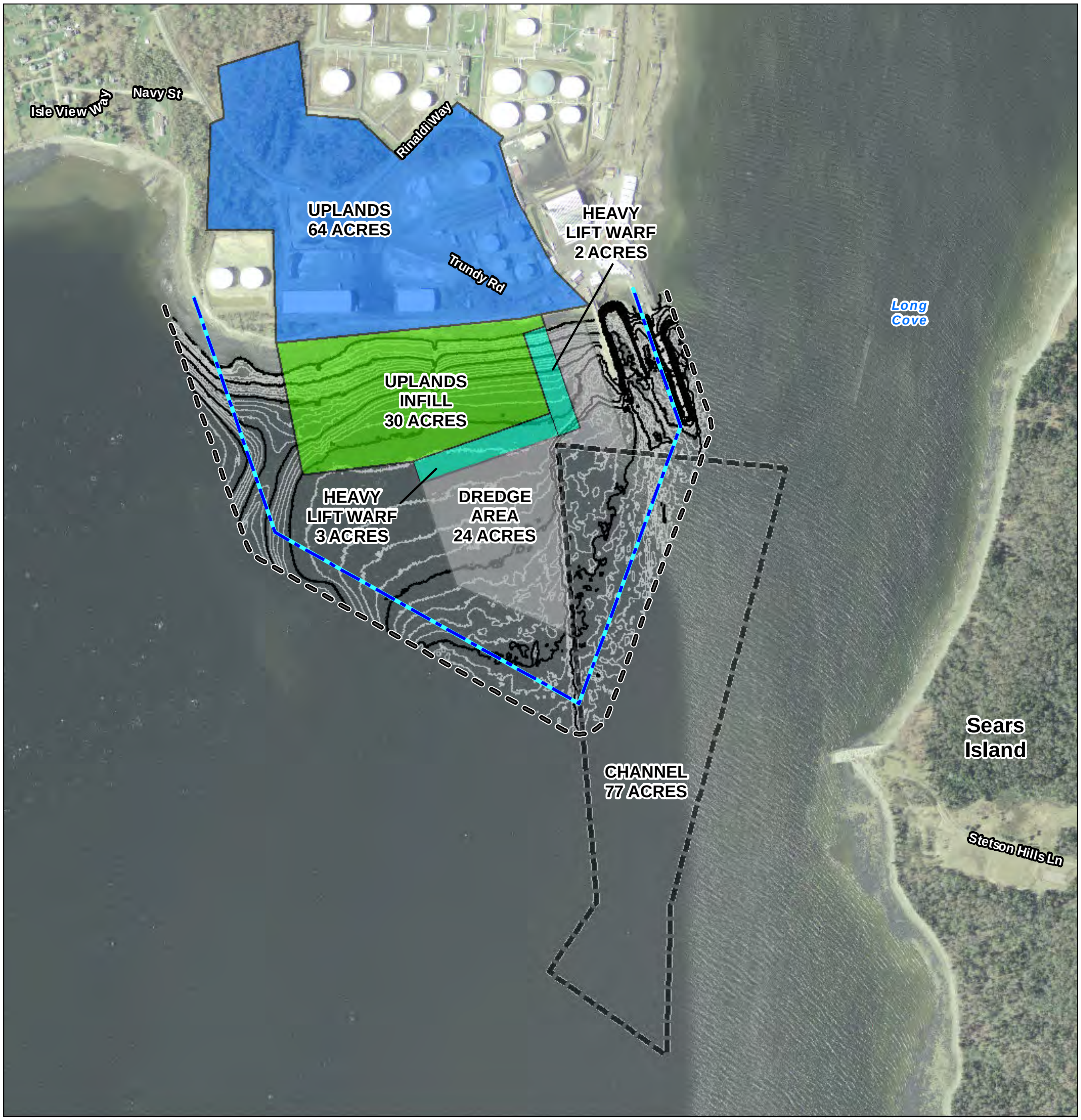
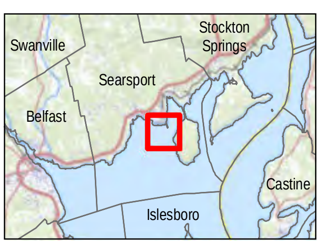
Attachment: Figure 1. Maine Floating Offshore Wind Port Mack Point Alternative, June 2023 Conceptual Design
Figure 4. 2023 Mack Point Lobster and Urchin Survey Transects
Figure 5. 2023 Subtidal Substrates Mack Point
Representative Photographs





Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (64 acres)
- Uplands Infill (30 acres)
- Heavy Lift Warf (5 acres)
- Dredge Area (24 acres)
- Channel (77 acres)

0 1,000 Feet

(At original document size of 8.5x11)
1" = 1000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

Client/Project
195602718
Maine Department of Transportation

Figure No.
1

Title
Mack Point Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: Conceptual Design from Moffit and Nichol, June 2023.
4. Background: Maine Orthoimagery Regional, 2015

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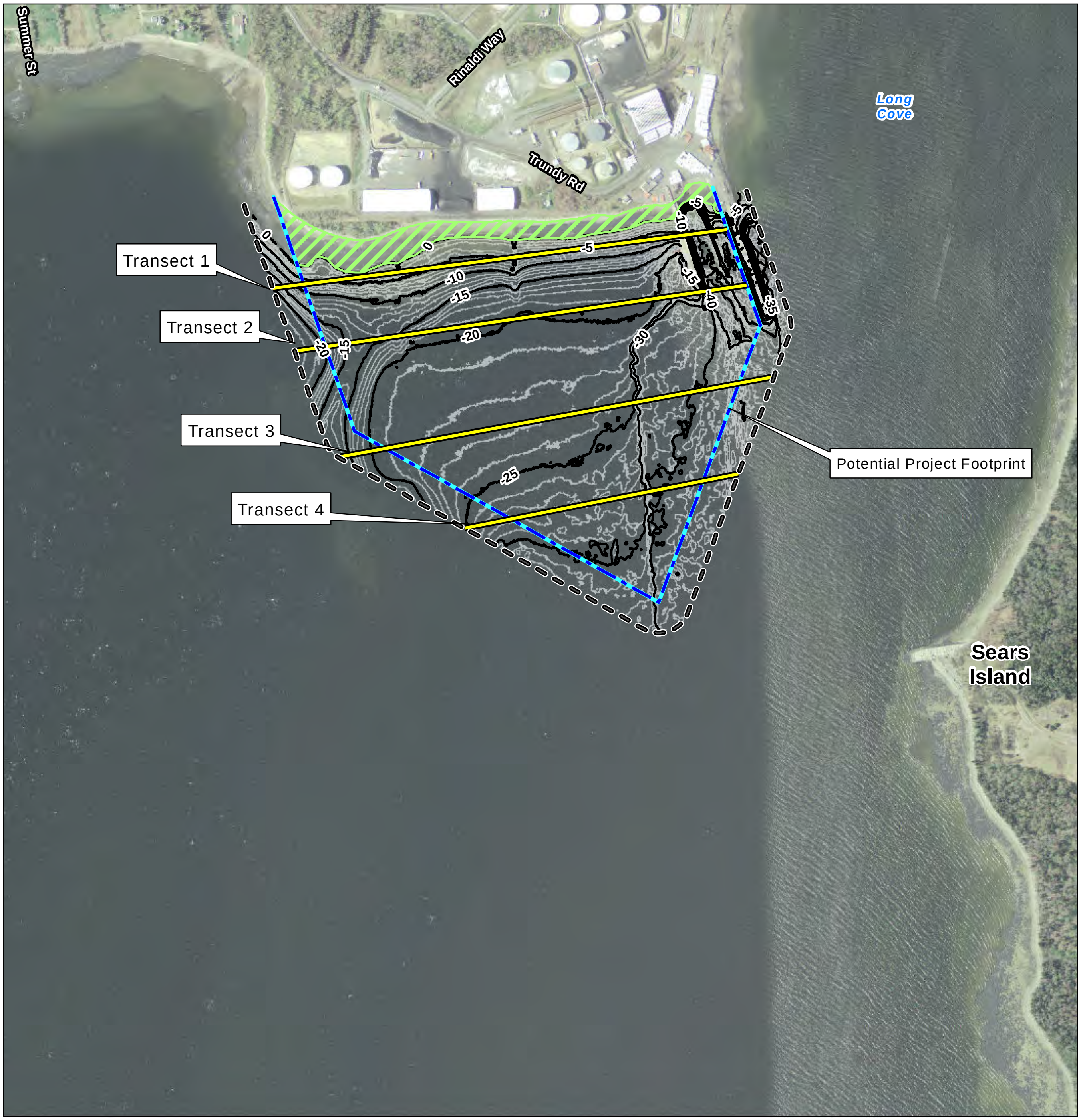

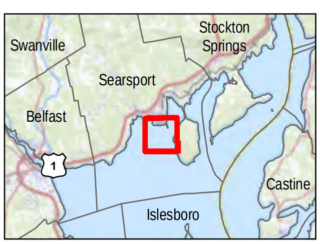

Legend

- Bathymetry Contour 1ft
- Bathymetry Contour 5ft
- 200 ft Buffer
- Lobster and Urchin Dive Transects
- Approximate Intertidal Area (311,700 SQ. FT. / 7.2 acres)
- Potential Project Footprint

0 1,000 Feet

(At original document size of 8.5x11)
1" = 1,000'

N

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: MEDOT, Moffit and Nichol, Stantec
4. Background: Maine Orthoimagery Regional, 2015

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2023-08-21
TR Review by KWH on 2023-08-21
IR Review by PS on 2023-08-21

Client/Project
Maine Department of Transportation
195602718

Figure No.
4

Title
2023 Mack Point Lobster and Urchin Survey Transects

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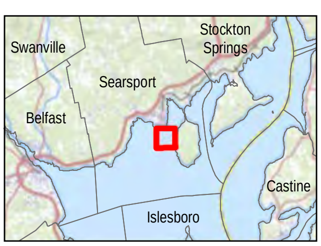

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Data Sources: Steele Associates Marine Consultants, LLC, Hydrographic and Marine Geophysical Site Characterization Surveys Mack Point and Sears Island Searsport, ME Report.

Not to Scale

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-02
TR Review by KWH on 2024-04-02
IR Review by PS on 2024-04-02

Client/Project
195602718
Maine Department of Transportation

Figure No.
3

Title
Side-Scan Backscatter Mosaic and Bottom Types

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Reference: Lobster and Urchin Dive Survey for the Proposed Mack Point Offshore Wind Terminal A– November and December 2023 Survey Results

Photo 1. American lobster in the shallow subtidal at Mack Point. November 2023.

Photo 2. Abundant green sea urchins are in the shallow subtidal zone at Mack Point. November 2023.

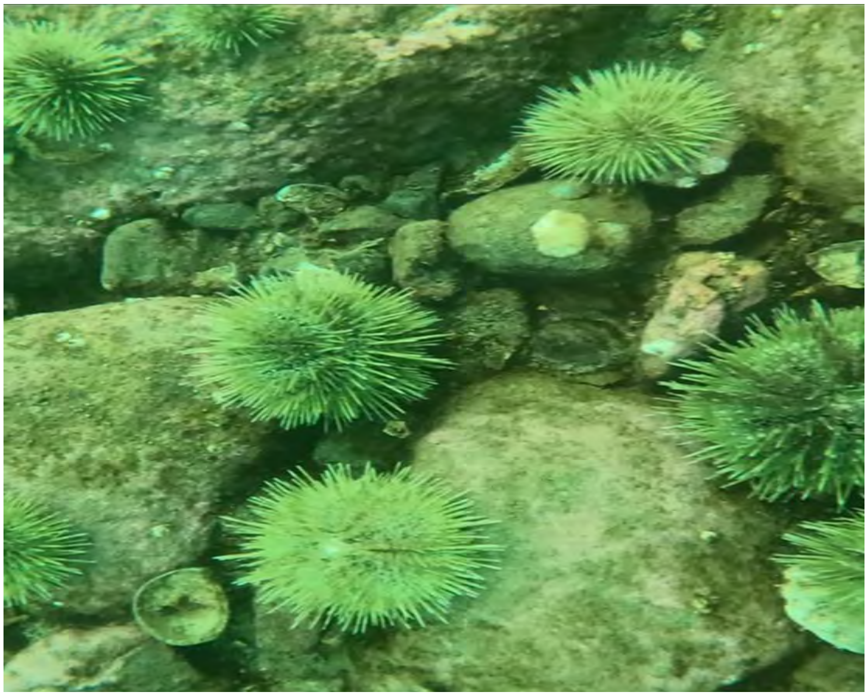

Photo 3. Abundant green sea urchins are in the shallow subtidal zone at Mack Point. November 2023.

Photo 4. Boulders with crustose coralline algae due to urchin grazing. Mack Point. December 2023.

Photo 5. Boulders and cobble with crustose coralline algae due to urchin grazing. December 2023.

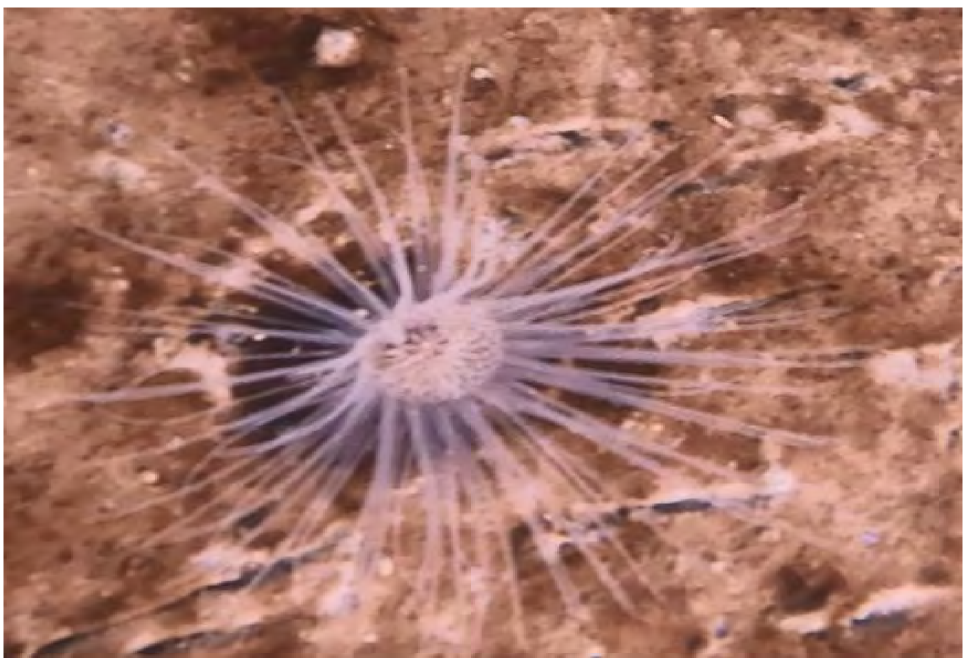

Photo 6. Burrowing anemone in the shallow subtidal at Mack Point. November 2023.

Photo 7. Green crab in the shallow subtidal at Mack Point. December 2023.

Photo 8. Ocean quahog in the shallow subtidal at Mack Point. Photo taken during September 2023 eelgrass survey 2023.

Photo 9. Sandy silt substrate in the shallow subtidal with sand dollars at Mack Point. November 2023

Photo 10. Sea star in the shallow subtidal at Mack Point. Photo taken during September 2023 eelgrass survey.

Photo 11. Sea vase in the subtidal at Mack Point on lost lobster trap. December 2023

Photo 12. Surf clam in the shallow subtidal at Mack Point. Photo taken during September 2023 eelgrass survey.

Photo 13. Unidentified globular sponge at Mack Point. December 2023.

Coastal Wetland Habitat Functions & Values Assessment Report

Maine Department of Transportation
Offshore Wind Port and Wind Turbine
Launch Site, Sears Island

April 2024

Prepared for:

Maine Department of Transportation
16 State House Station
24 Child Street
Augusta, ME 04333

Prepared by:

Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME 04086

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION AND PROJECT OVERVIEW

The Maine Department of Transportation (MaineDOT) is evaluating a location on the western shoreline of Sears Island in Searsport, Maine for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project) (Figure 1). The Project is currently in the conceptual design phase. Figure 1 represents the preliminary design and potential impacts, including approximate placement of fill, and pier structures in intertidal and subtidal areas (Project Area). Since actual impact areas are still being determined, a 200-foot buffer around proposed impacts (Survey Area) were included as part of this assessment. This report by Stantec Consulting Services Inc. (Stantec) contains an assessment of the functions and values of the coastal wetland habitats to support permitting of the proposed the Project within Searsport Harbor in Searsport, Maine.

The total direct impact to intertidal and subtidal coastal wetlands based on the June 2023 Project conceptual design at Sears Island requires approximately 25 acres of filling of intertidal and subtidal habitat for a sheet pile in-fill pier and construction of a heavy lift wharf over approximately 5 acres of subtidal habitat (Figure 1). These intertidal and subtidal wetlands are regulated under the Maine Natural Resources Protection Act (NRPA) administered by the Maine Department of Environmental Protection (MEDEP) and the federal Clean Water Act (CWA) administered by the US Army Corps of Engineers (USACE). As part of the NRPA/CWA permit process, an assessment is required to evaluate how the proposed alterations will affect the functions and values of existing coastal wetlands.

Stantec's assessment is based on coastal wetland descriptions and sampling and assessment protocols outlined in MEDEP's coastal wetland assessment guidelines (Ward 1999 a,b), modified and adapted to include both intertidal and subtidal coastal wetlands.

1.1 SITE DESCRIPTION

Searsport Harbor is a deep water port located west of the confluence of the Penobscot River and Penobscot Bay in Waldo County, Maine. The boundaries of Searsport Harbor are defined as beginning at the southernmost point of land on Kidder Point and running southerly along the western shore of Sears Island to the southernmost point of Sears Island, then running due west to the shore of Mack Point. The Mack Point Terminal is located on the northern end of the harbor, approximately a half mile northwest of the Project Area. That terminal is used principally for the receipt of petroleum products and salt, and the export of lumber, paper, and much of Aroostook County's annual potato crop.

Searsport harbor is a sheltered anchorage, covering an area of roughly 2 by 3 miles, with a federally regulated navigation channel controlling depth of 35 feet at mean low water and an average tidal fluctuation of 10 feet. The Searsport Harbor Navigation Project completed in 1964, consists of an access channel, 35 feet deep and 500 feet wide, west of Sears Island; and a 35-foot-deep turning basin extending from the end of the access channel to the piers at Mack Point. The turning basin has a maximum width of 1,500 feet.

Searsport Harbor is classified by MEDEP as "SC". SC waters shall be satisfactory for recreation in and on the water, fishing, aquaculture, propagation and restricted harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as a habitat for fish and other estuarine and marine life.

2.0 SURVEY METHODS

The assessment described in this report is based on the sampling and assessment protocols outlined in MDEP's coastal wetland assessment guidelines (Ward 1999a), modified and adapted for intertidal and subtidal wetlands where applicable. Substrate types were described and mapped per Ward (1999a) definitions but were also further described by dominate substrate types within each defined type. Stantec marine biologists conducted field surveys including visual observations of field conditions (e.g., habitat type and faunal assemblages), quantitative quadrat sampling in the intertidal, collection of underwater video footage, a side-scan sonar survey, sediment grabs, eelgrass (*Zostera marina*) survey, and an American lobster (*Homarus americanus*) and green sea urchin (*Strongylocentrotus droebachiensis*) survey. Separate field memos have been prepared for the eelgrass survey (Stantec 2024a), the lobster and urchin survey (Stantec 2024b), and the side-scan sonar survey (SAMC 2023).

Stantec also completed a survey of potential sand dune habitat in a depositional area south of the jetty on site. Coastal sand dune geology data available from the Maine Geological Survey (MGS) identified a portion of the site adjacent to an existing jetty as coastal sand dune, containing both frontal and back dune areas. On December 22, 2023, Stantec conducted a field survey to characterize the existing conditions of the MGS-mapped dune area (Stantec 2024c).

2.1 INTERTIDAL HABITATS

The flora and fauna inhabiting the shoreline zone (intertidal) were characterized through visual observations in the field on September 18, 2023. Initially, the intertidal habitat was mapped by sketching the locations of high, mid, and low intertidal and shallow subtidal areas; differing substrate types; and areas of varying energy levels. The boulder and cobble substrates were surveyed by searching for fauna under rocks, boulders, and other debris. A shovel was used to turn over silty and sandy substrates for fauna observations. Observations of species composition, abundance, and distribution were recorded. Surveys were conducted during low tide conditions so the maximum extent of the intertidal area could be observed. A handheld GPS was used to capture locations of exemplary, unique, or representative habitats or communities. Field characterization efforts also included a meander survey for presence of eelgrass within the intertidal zone.

Following initial observations during the qualitative survey, a quantitative quadrat survey was conducted in the Survey Area. The Survey Area and quadrats are depicted on Figure 2. The marine flora and fauna inhabiting the upper, middle, and lower tidal zones within the quantitative survey areas were characterized using a 0.25-meter^2 quadrat placed at random points. Quadrats were randomly placed by tossing them into the target tidal zone (Ward 1999a). A total of 10 quadrats were characterized from the three tidal zones (30 quadrats total). Sediments within the quadrat were excavated to a depth of 10 centimeters. At each quadrat location, the substrate types (e.g., boulder, cobble, rip rap, vegetation) and representative flora and macrofauna were characterized. Macrofauna and flora observed within the quadrat were identified and categorized as to relative abundance (i.e., occasional, common, abundant) within the quadrat per the Ward (1999a) guidance.

Organisms that were not identifiable in the field were collected, preserved (in ethanol), and identified at by Haley and Ward, a qualified Maine taxonomic laboratory. Organisms were identified to the lowest extent practicable; where possible, classification was taken to the species level. Data collected during the intertidal survey was assessed to allow characterization of the dominant flora and fauna species and the relative abundance within the tidal zones of the Survey Area.

2.2 SUBTIDAL BENTHIC HABITATS

Subtidal habitats were characterized based on methods adapted from Ward (1999a), which include documenting substrate types, taking representative photographs, and completing a flora and fauna species list. The subtidal survey area was evaluated qualitatively with the addition of sediment grabs for quantitative infaunal analysis. Divers surveyed subtidal areas and collected underwater video. A side-scan sonar survey of the Survey Area was also completed to map substrate types. The following habitat and species surveys were completed and contribute to this Coastal Functions and Values Report:

- On August 23 and 24, 2022, Stantec completed dive surveys to map eelgrass, substrate types, and associated benthic habitats. This survey was completed using SCUBA and include additional benthic observations and underwater video of the Sears Island Survey Area as of August 2022 (Stantec 2024a).
- On September 20, 2023, Stantec completed dive surveys to map eelgrass, substrate types, and associated benthic habitats in an expanded survey area at Sears Island. This survey was completed using SCUBA and include additional benthic observations and underwater video at the alternative Mack Point Project Area (Stantec 2024a).
- On October 25 and 26, 2023, Steele Associates Marine Consultants, LLC. (SAMC) completed a side-scan sonar survey of the subtidal Sears Island Survey Area. Side-scan sonar transects were performed at 75-foot intervals oriented parallel to the shoreline (SAMC 2023).
- On December 6 and 7, 2023, Stantec completed dive surveys to estimate the density of American lobsters and green sea urchins present in the Sears Island Survey Area. This survey was completed using SCUBA and includes benthic observations and underwater video of the Sears Island Survey Area (Stantec 2024b).
- An additional underwater video survey is scheduled in spring 2024 to be conducted by SAMC. SAMC will use a remotely operated vehicle to collect underwater video along transects within the substrate types identified on the side-scan survey (SAMC 2023). These videos will be used to further characterize the substrate in these areas and document flora and fauna. This report will be updated when this video survey data has been analyzed.

2.3 BENTHIC INFAUNA

Subtidal areas in the Survey Area were characterized by collection of shallow sediment samples for analysis of macroinvertebrate communities. Samples were collected using a Ponar® grab sampler.

Subtidal benthic grab sample locations were determined in the field and are shown on Figure 2. Five benthic sediment samples were collected in the Survey Area. Upon retrieval, grab samples were visually inspected, photographed, and general observations of sediment texture, odor, and color were recorded. Sediments were sieved through a 500 µm mesh, sieved contents preserved in ethanol, and delivered to Haley and Ward for taxonomic analysis.

3.0 SURVEY RESULTS

The results of Stantec's functions and values field evaluation are provided below. In addition, the MEDEP Intertidal and Shallow Subtidal Field Survey Checklist required for NRPA permit applications is included as Appendix A. This checklist was developed by MEDEP for intertidal and shallow subtidal habitats; consequently, not all data fields are applicable to the subtidal areas within the Project Area.

3.1 COASTAL SAND DUNE

The Project Area includes a small coastal sand dune system on the south side of an existing jetty (Stantec 2023c). The site includes a sloping sand and gravel beach beginning at the approximate mean low water elevation and extending landward to the approximate high tide limit, which was identified by field characteristics including a prominent wrack line. Landward of the high tide limit, a narrow dune berm (approximately 20 to 25 feet wide) consisting predominantly of medium- to fine-grained slopes gently upward to a low frontal dune ridge. The dune berm is subject to occasional tidal inundation during extreme high tide and storm events as evidence by a scattering of wrack material (primarily seaweed) along the berm. The frontal dune consists of a very narrow (approximately 15 feet wide) and sparsely vegetated coarse sand and gravel ridge. The top of the ridge has large accumulations of coarse woody debris and wrack that has accumulated during extreme high tide and storm events. Based on the field observations, the sand dune system observed at the Sears Island site meets the NRPA definition of a coastal sand dune. This sand dune system has been created by placement of the jetty at the site and accumulation of sand south of the jetty.

3.2 INTERTIDAL HABITATS

The intertidal field surveys were completed on September 18, 2023. A complete species list for each tidal zone at the Sears Island Survey Area is presented in Appendix B. Representative photographs of intertidal and shallow subtidal areas area presented in Appendix C. Photographs of the quadrat survey locations for Sears Island are provided in Appendix D. The locations of approximate quadrat sampling locations are provided on Figure 2. Underwater videos are available upon request.

The Sears Island intertidal survey area extends approximately 2,000 feet north and south of the granite jetty onsite (Figure 2). The jetty has created a depositional area with a sand flat consisting of coarse sand and gravel to the south along a shoreline otherwise dominated by mixed coarse and fines habitat type (Appendix D: Photo 1 and 2). The adjacent upland is a mix of forested upland and wetland habitat, and several seeps drain into the high intertidal from these adjacent wetlands (Appendix D: Photos 3 and 4). The adjacent upland bank is steep and eroding in some locations (Appendix D: Photo 5). South of the jetty the high intertidal below the mean high water (MHW) line is characterized by mixed coarse and fines (cobble and gravel with scattered coarse sand and boulders) (Appendix D: Photo 6). Spiral rockweed (*Fucus spiralis*) is common in this area. Between the MHW line and the upland bank the substrate is primarily mixed coarse and fines (coarse sand and gravel with scattered cobble and boulders) (Appendix D: Photo 7). North of the jetty the high intertidal is primarily mixed coarse and fines (cobble, gravel, and coarse sand with scattered boulders) (Appendix D: Photo 8; Figure 3).

The mid intertidal substrate at Sears Island is primarily mixed coarse and fines (cobble and gravel dominated with areas of sand/silt and scattered boulders in the upper mid intertidal). Mixed coarse and fines, boulder and cobble with scattered gravel, sand, and silt dominate the lower portions of the mid intertidal (Appendix D: Photos 9). Macroalgae is abundant in these substrate types and consists of knotted wrack (*Ascophyllum nodosum*) and rockweed (*Fucus vesiculosus*). Just south of the jetty, the substrate in the mid intertidal is primarily mixed coarse and fines (coarse sand and gravel) (Appendix D: Photo 10). Macroalgae is scattered in this finer grained substrate (Appendix D: Photo 11). Several areas of finer sediments are present within the dominant coarser grained areas, mostly associated with areas of freshwater discharge from the adjacent upland. Soft-shell clams (*Mya arenaria*) were common within this finer grained substrate (Appendix D: Photo 12). Excavation of survey quadrats revealed marine clay approximately 4 inches below the sediment surface in some areas. The boulders and cobble in this tidal zone are mostly embedded in the gravel, sand, and silt (Appendix D: Photo 13) (Figure 3).

The low intertidal at Sears Island is dominated by mixed coarse and fines, boulder, and cobble and abundant macroalgae (knotted wrack and rockweed) (Appendix D: Photo 14). Excavation of survey quadrats revealed marine clay approximately 4 inches below the sediment surface in some areas. The boulders and cobble in this tidal zone are mostly embedded in the gravel, sand, and silt (Figure 3).

3.3 SUBTIDAL BENTHIC HABITATS

3.3.1 Diver Based Observations

Subtidal habitats were surveyed using SCUBA during the eelgrass and lobster and urchin surveys (Stantec 2024a,b). The mixed coarse substrate consisting of boulder and cobble observed in the low intertidal extends into the subtidal to around -10 feet mean lower low water (MLLW) before grading to unconsolidated sediments consisting of sandy silt in deeper water. Green sea urchins are abundant in the subtidal zone on hard substrate and have grazed most macroalgae off the cobble and boulders (Appendix C: Photos 15 and 16; Stantec 2024b). Crustose coralline algae (*Corallinales*) is common on these hard surfaces (Appendix C: Photo 17). Green crabs (*Carcinus maenas*) were common in this substrate type and American lobsters were occasional during September 2023 dive surveys (Appendix C: Photos 18 and 19). No lobsters were observed in the subtidal during the December 7, 2023, survey. Divers observed lobster burrows that were not visibly occupied during the survey (Stantec 2024b).

Stantec completed eelgrass surveys on August 22 and 23, 2022, and September 20, 2023. No eelgrass was observed in the Survey Area, including in areas previously mapped with eelgrass in 2010 by the Maine Department of Marine Resources (MDMR) (Stantec 2024a).

Table 1 below summarizes the subtidal species observed during these field surveys and their associated abundance, per Ward (1999a).

Table 1. Subtidal Species List, Sears Island, 2023.

Common Name	Scientific Name	Site Abundance
Acadian hermit crab	*Pagurus acadianus*	C
American lobster	*Homarus americanus*	O
Amphipod	*Gammarus species*	O
Atlantic herring	*Clupea harengus*	O
Blue mussel	*Mytilus edulis*	O
Brown filamentous algae	*Ectocarpus* spp.	O
Burrowing anemone	*Ceriantheopsis austroafricanus*	O
Common periwinkle	*Littorina littorea*	A
Crustose coralline algae	*Corallinales*	A
Cunner	*Tautogolabrus adspersus*	O
Encrusting bryozoan	*Membranipora membranacea*	C
False Irish moss	*Mastocarpus stellatus*	O
Finger sponge	*Haliclona oculate*	O
Fourspine stickleback	*Apeltes quadracus*	C
Green crab	*Carcinus maenas*	C
Green sea urchin	*Strongylocentrotus droebachiensis*	A
Gutweed	*Ulva intestinalis*	O
Mummichog	*Fundulus heteroclitus*	O
Mysid shrimp	*Americamysis bahia*	O
Northern rock barnacle	*Semibalanus balanoides*	A
Pipefish	*Syngnathus fuscus*	O
Rock crab	*Cancer irroratus*	O
Rock gunnel	*Pholis gunnellus*	O
Sand shrimp	*Crangon septemspinosa*	O
Sand dollar	*Echinarachnius parma*	C
Sea scallop	*Placopecten magellanicus*	O
Sea star	*Asterias rubens*	C
Sea vase	*Ciona intestinalis*	O
Spirobus worm	*Spiroribis borealis*	O
Unidentified brown filamentous algae		C
Unidentified encrusting black tunicate		O
Unidentified globular sponges		O
Winter Flounder	*Pseudopleuronectes americanus*	O

Notes: A- Abundant; C- Common; O- Occasional

3.3.2 Steele Associates Marine Consultants, LLC. Side-Scan Sonar Survey Results

Figure 4 presents subtidal substrate mapping based on a side-scan sonar survey completed by SAMC (SAMC 2023). The substrate in the shallow subtidal is primarily mixed coarse and fines consisting of boulder and cobble interspersed with silty sands. This rocky substrate extends into the subtidal to approximately -10 feet MLLW before grading to unconsolidated sediments consisting of silty sands in deeper water. Beyond -10 feet MLLW, the benthic substrates in the Survey Area were unconsolidated sediments consisting of mud and silty sands. An area in the central portion of the Survey Area was identified has being primarily sand, gravel or shell hash based high backscatter received during the side-scan sonar survey (Figure 4). The substrate designations within these areas identified with side-scan will be further refined after the spring 2024 underwater video survey.

3.3.3 Benthic Infauna

On September 18, 2023, Stantec collected five grab samples from subtidal areas with unconsolidated sediments (Figure 2). The sediments in the five grab samples consisted of olive silt and fine sand (Appendix D: Photos 20–24). Macroinvertebrate samples from the sediment grabs were sent for sorting, enumeration, and speciation to Haley Ward, which is a qualified Maine taxonomic laboratory. Identified species, total number of individuals, individuals per meter squared, species richness (number of species), species evenness (a description of the relative abundance across species in a sample), Shannon-Weiner Index, and functional groups present for each sample per the methods in Ward (1999a) are presented in Appendix E.

3.4 FUNCTIONS AND VALUES

The Sears Island Project Area is part of the larger Searsport Harbor and Penobscot Bay, which supports a range of fish, shellfish, and wildlife habitat, as well as commercial and industrial uses. The Sears Island site consists of approximately of 242 acres of undeveloped upland owned by MaineDOT, with approximately 9,000 linear feet of undeveloped water frontage. Water depths at Sears Island range from the intertidal to approximately -56 feet MLLW. The Project will impact approximately 25 acres of intertidal and subtidal habitat for a sheet pile in-fill pier and construction of a heavy lift wharf over approximately 5 acres of subtidal habitat (Figure 1).

The surveyed intertidal areas are primarily mixed coarse and fine substrates with scattered boulders and cobbles (Figure 3). Dense macroalgae community dominated by knotted wrack and rockweed is present in the mid and low intertidal zones on hard substrate. In addition to the mixed coarse and fines substrate type, just to the south of the onsite granite jetty at Sears Island depositional area has been created with coarse sand and gravel. A small area of coastal sand dune is present in this area as a result of this deposition. Shallow subtidal substrates are dominated by mixed coarse and fines with boulders and cobbles, similar to the substrates observed in the low intertidal. In the deeper portions of the subtidal habitat the benthic substrate is unconsolidated sediments, primarily sandy silt and mud (Figure 4).

The multiple substrate types in the intertidal and subtidal within the Survey Area support a range of functions and values for invertebrates, fish, and wildlife. The dense cover of algae in the mid and low intertidal on boulders and larger cobble and the boulders and cobble in the subtidal provides structured habitat for a variety of marine species. The sandy silt subtidal flats support marine worms, shellfish, and crustaceans and provide potential food sources for multiple functional groups. These habitat types are common in Penobscot Bay and along the Maine coast. The assessment narratives and the responses contained in Table 2 below address the primary MEDEP coastal wetland functions and values identified in the Ward (1999a) guidelines.

Table 2. Responses to MEDEP Qualifiers to Functions and Values.

Questions	Responses
Function/Value: Wildlife	
Subheading: Diversity and Productivity	
What is the marine diversity and abundance of the site? Does the site have a high or low density of vegetation? Does the intertidal or subtidal area have a high or low number of species?	The mix of substrate types in the intertidal and subtidal supports a diversity of marine species. Species such as the green sea urchin and crustose coralline algae on subtidal boulder and cobble habitat and knotted wrack, and northern rock barnacle in the intertidal are abundant (Table 1 and Appendix C). Invasive green crabs were also abundant at some intertidal sampling locations. Subtidal core locations for infauna indicated a species assemblage typical to soft-bottom substrates (Appendix E). The substrate types in the Survey Area are found throughout Searsport Harbor and the larger Penobscot Bay and the marine diversity and abundance within the Survey Area is typical of these habitats in mid-coast Maine. No eelgrass beds were documented during the field surveys within the Survey Area. The mid and low intertidal contain dense knotted wrack on boulder and larger cobble substrates. Green urchin browsing in the subtidal has limited grown of most algae besides crustose coralline.
Does the habitat at the site have the potential to contain a high population of benthic and epibenthic invertebrates?	Invertebrates were relatively common on intertidal and subtidal hard substrates as documented in Table 1 and Appendix C. The high rate of embeddedness of cobble and boulders into the sandy silt substrate limits habitat below this rocky substate for species such as lobsters and crabs. In the deeper subtidal portions of the Survey Area finer grained substrate types and presence of green crab likely limits some benthic and epibenthic invertebrates.
Does the coastal area support prey for higher trophic levels?	The Survey Area contains annelid worms, mollusks, crustaceans, and forage fish, all of which are potential prey for fish or wildlife at higher trophic levels.

<table>
<tr><th>Questions</th><th>Responses</th></tr>
<tr><td>Does the site have a high abundance of predators (fish, mammals, birds) or the potential to contain a high population of predators?</td><td>Several observations of predators were made during site visits, including bald eagles (Haliaeetus leucocephalus), great blue herons (Ardea herodias), common loons (Gavia immer), double crested cormorants (Phalacrocorax auritus), and eider ducks (Somateria mollissima). No seals or harbor porpoises were observed during the site visits, but harbor seals (Phoca vitulina), gray seals (Halichoerus grypus), and harbor porpoise (Phocoena phocoena) are likely occasionally present in the Survey Area. Predatory fish species observed during the site dive surveys included cunner (Tautogolabrus adsperus) and winter flounder (Pseudopleronectes americanus). Though not observed during dive surveys, other predatory fish species such as striped bass (Morone saxatilis), pollack (Pollachius pollachius), and Atlantic mackerel (Scomber scombrus) are likely seasonally present. The habitats present within the Survey Area are not anticipated to have higher abundance of predators than other similar habitats in Penobscot Bay.</td></tr>
<tr><td>Are deposits of unnatural sediments present (e.g., sawdust, wood chips)? How does this affect the wildlife functions and values?</td><td>No unnatural sediments were observed. The intertidal sediments were primarily mixed coarse fines (coarse sand, gravel, and cobble substrate with boulders). Shallow subtidal sediments were a continuation of the mixed coarse and fines present in the intertidal. Deeper subtidal sediments were primarily composed of sandy silt.</td></tr>
<tr><td colspan="2" align="center"><u>Sub-heading: Sensitivity</u></td></tr>
<tr><td>Are there sensitive species (e.g., brittle stars, sea spiders, nudibranchs) present?</td><td>No sensitive species were observed during field surveys.</td></tr>
<tr><td colspan="2" align="center"><u>Sub-heading: Seasonality</u></td></tr>
<tr><td>What species temporally utilize the habitat or adjacent waters for feeding or resting at different times of the year (i.e., winter habitat for lobsters, resting areas for sturgeon)?</td><td>During the warmer months of summer and fall, fish species such as juvenile Atlantic herring (Clupea harengus), Atlantic mackerel and striped bass are likely present in the Survey Area. American lobster is also expected to be present at higher abundance during the summer and fall. Occasional lobster buoys/gear were observed within the subtidal Survey Area during the September 2023 surveys. With seasonal movements/migrations and lack of refuge in winter months, these species are not likely to be present in the colder months.</td></tr>
<tr><td>Is it a spawning area for fish or a breeding area for birds or other wildlife?</td><td>The Survey Area is not a documented spawning area for fish, breeding birds, or wildlife (seals). Potential spawning habitat is present for commercially important species including, winter flounder and windowpane flounder (Scophthalmus aquosus), but this habitat is also present throughout Penobscot Bay.</td></tr>
</table>

Questions	Responses
Is it a nursery area for invertebrates (especially lobsters, urchins, clams), fish or birds?	The Survey Area contains habitats and substrate types suitable for larval and juvenile invertebrate and fish species, but this habitat is also present throughout Penobscot Bay. Eelgrass beds are absent and structured algae cover is limited to the intertidal and shallow subtidal zones, limiting these habitat types as nursery areas. • The cobble and boulder habitat in the low intertidal and shallow subtidal is suitable substrate type for American lobster settlement and juvenile life stages. The high rate of embeddedness of cobble and boulders in the finer substrates below does limit this function. • The cobble and boulder habitat in the subtidal is suitable habitat for green urchin settlement and juvenile growth as indicated by the high abundance of green urchins within this habitat type. • The finer sediments in the intertidal interspersed with the cobble and boulders are suitable settlement substrates for larval soft-shell clams and juvenile growth. MDMR also maps Atlantic surf clam (*Spisula solidissima*) habitat in the subtidal within the Survey Area[1]. • The silty sand and mud substrates in the subtidal are suitable substrates for winter flounder spawning/eggs and juvenile winter and windowpane flounder. • The very small dune habitat created by the jetty is not anticipated to support nesting shorebird species such as the piping plover (*Charadrius melodus*).
Sub-heading: Wildlife Use	
Is it a travel corridor for fish, birds, or mammals?	The Survey Area is located in the upper reach of Penobscot Bay and is not anticipated to be primary travel corridor for fish, birds, or mammals. Several diadromous fish species and American eel (*Anguilla rostrata*) may be present in the vicinity of the Survey Area during spawning migrations, but the Survey Area is located outside the main channel of the Penobscot River estuary where most species movement is occurring. Foraging migratory shorebirds are likely present in the intertidal during the spring and fall, but there are more suitable foraging habitats associated with mud and sand flats elsewhere in Penobscot Bay.

[1] https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/

Questions	Responses
Are there signs of use by birds or mammals (tracks, prints, scat, and direct observations)? If birds or mammals are present, could the potential development deter wildlife from continuing to use the area or adjacent regions?	Observations of several bird species were made during site visits, including bald eagles, great blue herons, common loons, double crested cormorants, and eider ducks and these species likely forage in the Survey Area. Following the construction of an Offshore Wind Port and Wind Turbine Launch Site this use would be lost for areas of intertidal and subtidal fill and diminished in the area of wharf development. The structure of the wharf and attached epifauna will provide some foraging opportunities for species such as eider ducks and double crested cormorants.
Is it a known feeding ground, roosting site, resting area, critical migratory pathway, or wintering ground for migratory or resident birds, fish, or mammals? If so, could the potential development interfere with one or more of these functions?	The Maine Department of Inland Fisheries and Wildlife (MDIFW) has identified and rated Tidal Waterfowl and Wading Bird Habitat (TWWH) in certain areas along the coast as high or moderate value to waterfowl and wading birds. The area south of the jetty in and adjacent to the Project Area was mapped TWWH based on the historically mapped eelgrass in this area.[1] As documented in the eelgrass survey memo (Stantec 2023), eelgrass in no longer present in this area. Some foraging by resident and migratory fish, birds, and seals likely occurs within the Survey Area currently, but the habitats present are common throughout this portion of Penobscot Bay. Following the construction of an Offshore Wind Port and Wind Turbine Launch Site this function would be lost for areas of intertidal and subtidal fill and diminished in the area of wharf development.
Does the habitat contain critical habitat for endangered or threatened species?	No critical habitat for federally threatened or endangered species has been designated within the Survey Area.
Function/Value: Recreational, Commercial, and Educational Values	
<u>Sub-heading: Recreational and Commercial</u>	
Is it an open clamming, fishing (recreational and/or commercial), algae harvesting, or hunting area? If so, is the town managing the flats?	The Survey Area is closed to shellfish harvest. Because of pollution, it is unlawful to dig, take or possess any clams, quahogs, oysters, mussels or whole or roe-on scallops from this area.[2] While soft-shell clams were observed to be common in the mid-intertidal, the rocky substrates make future commercial harvest unlikely due to the difficulty in digging. MDMR does map shellfish beds (soft-shell clam and Atlantic surf clam within the Survey Area.[3] The Survey Area is potentially open to algae harvest with abundant macroalgae in the intertidal, but there was no indication of this harvest during the field surveys. The Survey Area and Sears Island is currently open to hunting during regulated hunting seasons, but the Survey Area lacks waterfowl concentration areas that would make the site attractive to duck hunters.
Does the coastal wetland have any seeded clam flats or does it contain shellfish (e.g., oysters, mussels, clams) or finfish aquaculture sites?	There are no seeded clam flats or shellfish/finfish aquaculture sites in the Survey Area.

Questions	Responses
Is there public access and/or boat access?	The Survey Area is accessible by boat and has limited access from the shore, as access to Sears Island is limited to pedestrians and bikes. Following construction, the portion of Sear Island proposed for development would be restricted due to the industrial nature of the Offshore Wind Port and Wind Turbine Launch Site. The remaining approximately 600 acres of Sears Island would remain public land open to recreational activities.
Is it located near highly populated areas?	The Survey Area is located in mid-coast Maine and is not in a highly populated area.
Sub-heading: Educational	
Do school groups use the area for educational purposes?	Uknown. The limited accessibility of the Survey Area does not make it easily accessible for educational purposes.
Are there research sites or monitoring sites present?	No known research or monitoring sites are present within the Survey Area.

[1] https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/

[2] https://www.maine.gov/dmr/fisheries/shellfish/shellfish-closures-and-aquaculture-leases-map

[3] https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/

The construction of the proposed Offshore Wind Port and Wind Turbine Launch Site will result in a permanent loss of the coastal wetlands, associated benthic community, and associated coastal functions and values within areas of intertidal and subtidal fill. Coastal wetland functions and values will be diminished in the area of wharf development. The coastal wetlands present in the Project Area are not unique to this site; similar substrate and habitat types exist throughout Penobscot Bay. The intertidal and subtidal habitats discussed in this report are regulated under the Maine NRPA administered by the MEDEP and the federal CWA administered by the USACE. As part of the NRPA/CWA permit process, mitigation for the loss of the functions and values of existing coastal wetlands will need to be addressed through consultation MDMR, NOAA Fisheries, MEDEP and USACE.

4.0 REFERENCES

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Stantec. 2024b. Lobster and Urchin Dive Survey for the Proposed Mack Point Offshore Wind Terminal – November and December 2023 Survey Results. April 2024.

Stantec. 2024c. Proposed Sears Island Offshore Wind Terminal Sand Dune Characterization Memo. April 2024.

Steele Associates Marine Consultants, LLC. (SAMC). 2023. Hydrographic and Marine Geophysical Site Characterization Surveys, Mack Point and Sears Island.

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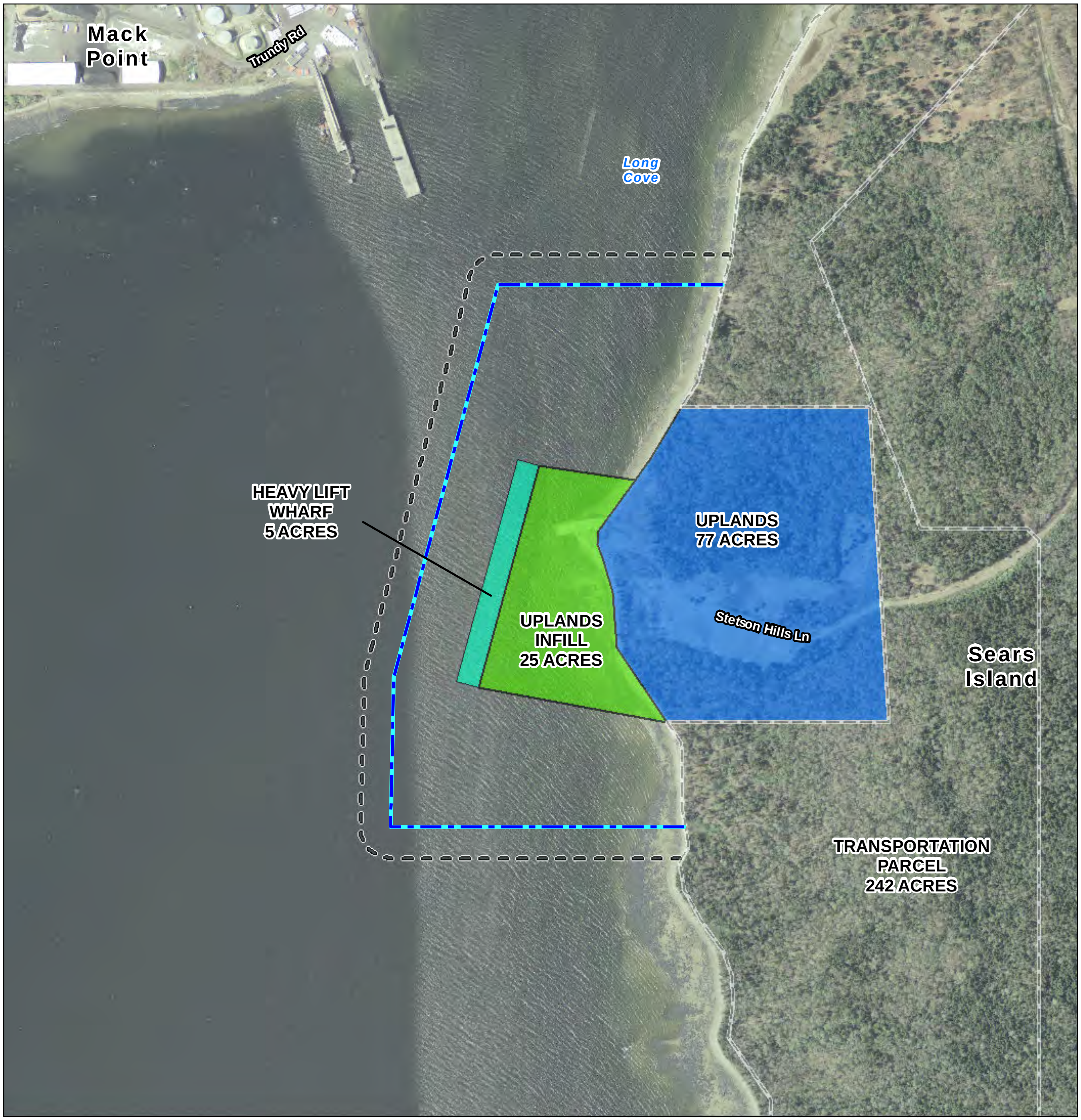
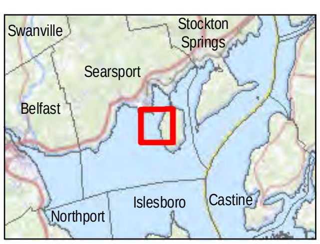
Ward, A.E. 1999b. Maine's coastal wetlands: types, distribution, rankings, functions and values, Volume I. Maine Department of Environmental Protection, Bureau of Land & Water Quality, Division of Environmental Assessment. Augusta, Maine.

FIGURES





Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (77 acres)
- Uplands Infill (25 acres)
- Heavy Lift Wharf (5acres)
- Transportation Parcel (242 acres)

0 1,000 Feet

(At original document size of 8.5x11) 1" = 1,000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

Client/Project
Maine Department of Transportation

195602718

Figure No.
1

Title
Sears Island Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources: Conceptual Design from Moffit and Nichol, June 2023.
4. Background: Maine Orthoimagery Regional, 2015

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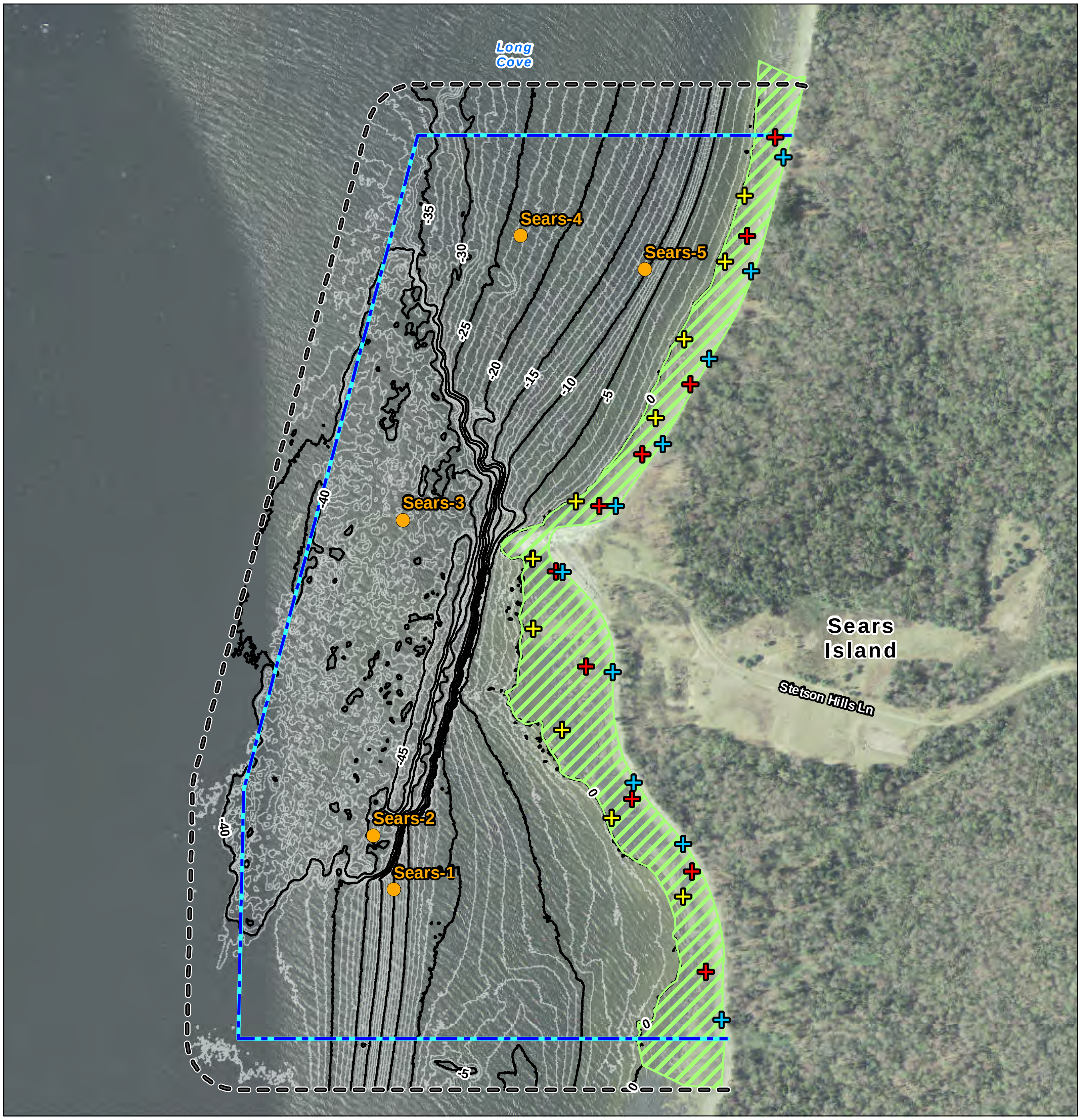

Legend
- Benthic Infauna Location
- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Approximate Intertidal Area (834,100 SQ. FT. /19.1 Acres)

Intertidal Quadrat Location
- Low
- Mid
- High

0 600 Feet

(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2023-11-08
TR Review by KWH on 2023-11-08
IR Review by PS on 2023-11-08

Client/Project
Maine Department of Transportation

195602718

Figure No.
2

Title
Sears Island Intertidal Quadrats and Benthic Grab Locations

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

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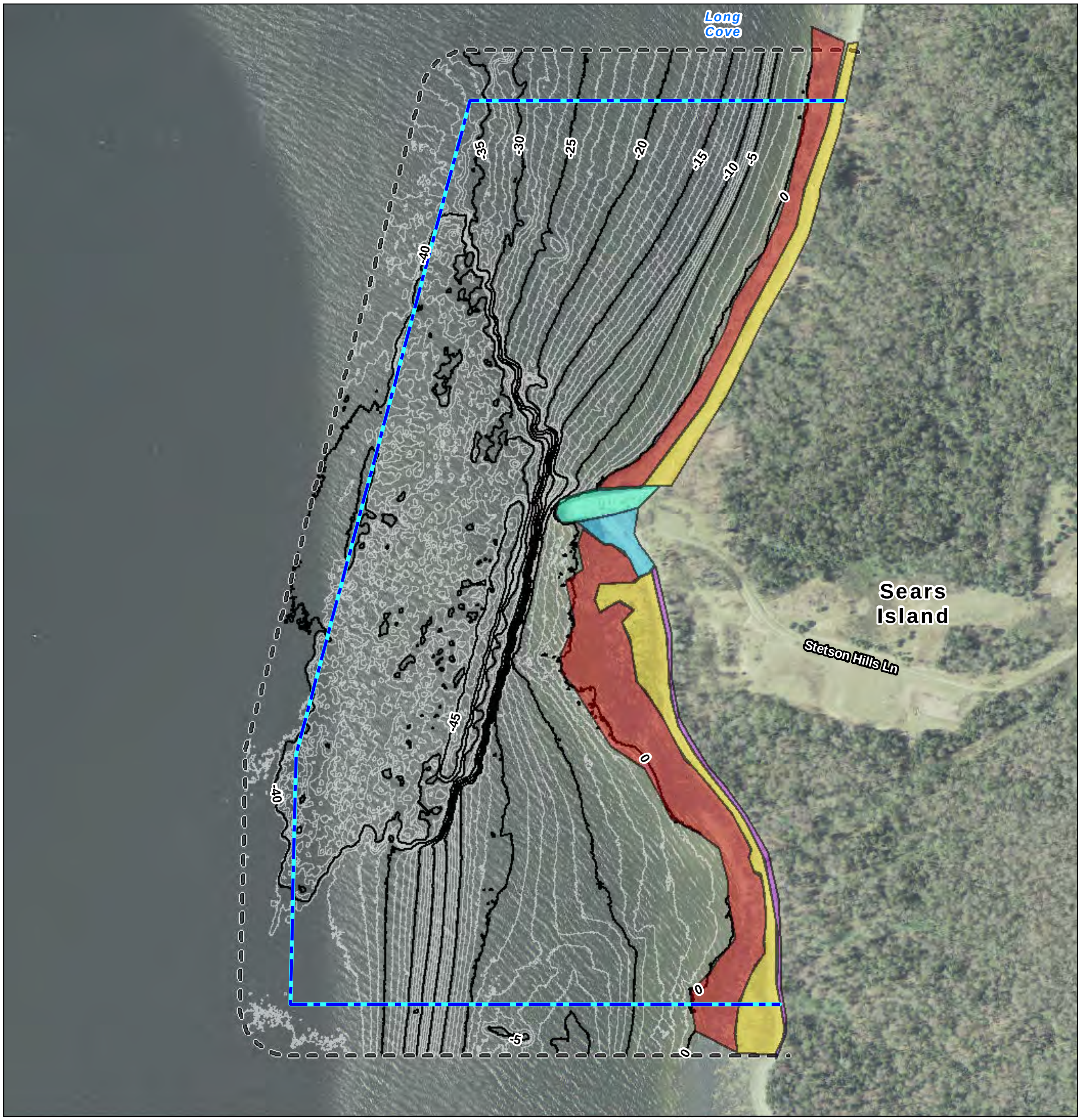

Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint

Substrate Composition

- Mixed Coarse and Fine (Boulder and cobble dominated with gravel, sand and silt)
- Sand Flat (Coarse sand and gravel)
- Mixed Coarse and Fine (Coarse sand and gravel with scattered cobble and boulders)
- Mixed Coarse and Fine (Cobble and gravel dominated with sand/ silt and scattered boulders)
- Rip rap

0 600 Feet

(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2023-11-08
TR Review by KWH on 2023-11-08
IR Review by PS on 2023-11-08

Client/Project
Maine Department of Transportation

195602718

Figure No.
3

Title
Sears Island Intertidal Substrates

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

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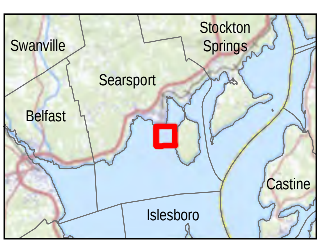

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Data Sources: Steele Associates Marine Consultants, LLC, Hydrographic and Marine Geophysical Site Characterization Surveys Mack Point and Sears Island Searsport, ME Report.

Not to Scale

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-02
TR Review by KWH on 2024-04-02
IR Review by PS on 2024-04-02

Client/Project
195602718
Maine Department of Transportation

Figure No.
3

Title
Side-Scan Backscatter Mosaic and Bottom Types

U:\195602718\03_data\gis_cad\gis\MXDs\02718_09_Mack_Side_scan.mxd Revised: 2024-04-03 By: pbarbera

APPENDICES

Appendix A MEDEP SUBTIDAL FIELD SURVEY CHECKLIST

APPENDIX A: MDEP COASTAL WETLAND CHARACTERIZATION: INTERTIDAL & SHALLOW SUBTIDAL FIELD SURVEY CHECKLIST

NAME OF APPLICANT:_Maine Department of Transportation _____ PHONE: 207-557-5089______
APPLICATION TYPE:__NRPA Tier 3/Indiviudal ______________________________
ACTIVITY LOCATION: TOWN:Searsport ______________ COUNTY: Cumberland_______

ACTIVITY DESCRIPTION: ☐ pier ☐ lobster pound ☐ shoreline stabilization
☒Fill dredge ☐ other: ____

DATE OF SURVEY:18-September-2023__ OBSERVER: Paul Sokoloff, Stantec Consulting

TIME OF SURVEY: 0630 - 1130 TIDE AT SURVEY: Low/Mid________________

SIZE OF DIRECT IMPACT OR FOOTPRINT (square feet):
Intertidal area: __378,640________________Subtidal area:__4,836,244______________________

SIZE OF INDIRECT IMPACT, if known (square feet):_ ______________________________________
Intertidal area: _______________________Subtidal area: _____________________________

HABITAT TYPES PRESENT (check all that apply):
☒sand beach ☐boulder/cobble beach ☐ sand flat ☒mixed coarse & fines ☐salt marsh
☐ ledge ☒ rocky shore ☐ mudflat (sediment depth, if known:____)

ENERGY: ☐ protected ☒ semi-protected ☐ partially exposed ☐ exposed

DRAINAGE: ☐ drains completely ☒ standing water ☐ pools ☐stream or channel

SLOPE: ☐ >20% ☐ 10-20% ☒ 5-10% ☐ 0-5% ☐ variable

SHORELINE CHARACTER:
☐ bluff/bank (height from spring high tide:____) ☐ beach ☒rocky ☒ vegetated

FRESHWATER SOURCES: ☐ stream ☒ river ☒ wetland ☒ stormwater

MARINE ORGANISMS PRESENT:

	absent	occasional	common	abundant
mussels	☐	☒	☐	☐
clams	☐	☒	☐	☐
marine worms	☐	☐	☐	☒
rockweed	☐	☐	☐	☒
eelgrass	☒	☐	☐	☐
lobsters	☐	☒	☐	☐
other	☐	☐	☐	☐

SIGNS OF SHORELINE OR INTERTIDAL EROSION? ☒ yes no

PREVIOUS ALTERATIONS? ☒ yes no

CURRENT USE OF SITE AND ADJACENT UPLAND:
☒ undeveloped ☐ residential commercial degraded ☒ recreational

PLEASE SUBMIT THE FOLLOWING:
☒ Photographs ☒ Overhead drawing (pink)

Appendix B 2023 INTERTIDAL SURVEY RESULTS

2023 Intertidal Survey Results - Sears Island Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

Survey Area	Quadrat	Intertidal	Sample Date	Weather	Substrate	Spiral rockweed (*Fucus spiralis*)	Rockweed (*Fucus distichus*)	Rockweed (*Fucus vesiculosus*)	Knotted wrack (*Ascophyllum nodosum*)	Irish moss (*Chondrus crispus*)	Soft-shell clam (*Mya arenaria*)	Scale worm (*Polynoidae*)	Yellow periwinkle (*Littorina obtusata*)	Common periwinkle (*Littorina littorea*)	Blue mussel (*Mytilus edulis*)	Northern rock barnacle (*Semibalanus balanoides*)	Green crab (*Carcinus maenas*)	Beach flea (*Orchestia platensis*)	Crusting bryozoan (*Membranipora membranacea*)	Amphipods (*Gammarus sp.*)	Clam worm (*Nereis virens*)	Ninespine stickleback (*Pungitius pungitius*)	Rock gunnel (*Pholis gunnellus*)	Notes
Sears Island	1	Low	9/18/2023	Overcast	Cobble, Gravel, underlain by Sandy Gravel					O				O		C	O							
Sears Island	2	Low	9/18/2023	Overcast	Boulder, Cobble, Underlain by Gravelly Sandy Silt				A		O		C		C	A	A			O			O	Refusal at 4"
Sears Island	3	Low	9/18/2023	Overcast	Gravelly Sand									O		C								Boulders and cobble on edge
Sears Island	4	Low	9/18/2023	Overcast	Boulder, Cobble, Gravel				A					C		C	O							Underlain by sandy cobbly gravel refusal at 8"
Sears Island	5	Low	9/18/2023	Overcast	Boulder, Cobble, Gravel				A	O		O		C		C	O				O			
Sears Island	6	Low	9/18/2023	Overcast	Coarse Anoxic Sand																			H_2S odor while digging
Sears Island	7	Low	9/18/2023	Overcast	Sandy Gravelly Cobble					O				C		C								Underlain by marine clay at 4"
Sears Island	8	Low	9/18/2023	Overcast	Boulder and Gravelly Sand				C						O	A	C		C	O		O		Underlain by marine clay at 4"
Sears Island	9	Low	9/18/2023	Overcast	Boulder, Underlain by Gravelly Sandy Cobble				C					O	O	A	O		C	C				
Sears Island	10	Low	9/18/2023	Overcast	Coarse Sand surrounded by Cobble/Boulder			C								A								Refusal at 4"
Sears Island	11	Mid	9/18/2023	Overcast	Gravelly Sand																			
Sears Island	12	Mid	9/18/2023	Overcast	Gravelly Sand		C											O						Marine Clay at 3"
Sears Island	13	Mid	9/18/2023	Overcast	Gravelly Sand and Silt						O									O				Marine Clay at 6"
Sears Island	14	Mid	9/18/2023	Overcast	Cobble, Gravelly Silt and Sand				C					O			O			O	O			Marine Clay at 4 - 6"
Sears Island	15	Mid	9/18/2023	Overcast	Gravelly Sand												O							
Sears Island	16	Mid	9/18/2023	Overcast	Cobble and Sand											C	O							Marine Clay at 6"
Sears Island	17	Mid	9/18/2023	Overcast	Cobble and Gravelly Sand		C		C		C			O		C	O	A			O			
Sears Island	18	Mid	9/18/2023	Overcast	Cobble and Sand		O		O					O		O								
Sears Island	19	Mid	9/18/2023	Overcast	Cobble, Gravel, and Sand		O									C		O						
Sears Island	20	Mid	9/18/2023	Overcast	Cobble, Gravel, and Sand	O			O		O			O		C		C						Marine Clay at 8"
Sears Island	21	High	9/18/2023	Overcast	Gravel, Cobble, Sand													O						
Sears Island	22	High	9/18/2023	Overcast	Gravel, Cobble, Sand													C						

2023 Intertidal Survey Results - Sears Island Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

Survey Area	Quadrat	Intertidal	Sample Date	Weather	Substrate	Spiral rockweed (*Fucus spiralis*)	Rockweed (*Fucus distichus*)	Rockweed (*Fucus vesiculosus*)	Knotted wrack (*Ascophyllum nodosum*)	Irish moss (*Chondrus crispus*)	Soft-shell clam (*Mya arenaria*)	Scale worm (*Polynoidae*)	Yellow periwinkle (*Littorina obtusata*)	Common periwinkle (*Littorina littorea*)	Blue mussel (*Mytilus edulis*)	Northern rock barnacle (*Semibalanus balanoides*)	Green crab (*Carcinus maenas*)	Beach flea (*Orchestia platensis*)	Crusting bryozoan (*Membranipora membranacea*)	Amphipods (*Gammarus sp.*)	Clam worm (*Nereis virens*)	Ninespine stickleback (*Pungitius pungitius*)	Rock gunnel (*Pholis gunnellus*)	Notes
Sears Island	23	High	9/18/2023	Overcast	Gravel, Cobble, Sand													C						
Sears Island	24	High	9/18/2023	Overcast	Gravel, Cobble, Sand		O											C						
Sears Island	25	High	9/18/2023	Overcast	Gravel, Cobble, Sand												O	A						
Sears Island	26	High	9/18/2023	Overcast	Gravel and Sand																			
Sears Island	27	High	9/18/2023	Overcast	Cobble and Gravel													A						
Sears Island	28	High	9/18/2023	Overcast	Cobble and Gravel												C	A						
Sears Island	29	High	9/18/2023	Overcast	Cobble and Gravel													A						
Sears Island	30	High	9/18/2023	Overcast	Boulder, Cobble, Gravel, Sand												O	A						

Abbreviations: A- Abundant; O- Occasional; C- Common

Appendix C REPRESENTATIVE PHOTOS

Photo 1. Depositional area to the south of the riprap jetty at Sears Island. September 2023.

Photo 2. Depositional area to the south of the riprap jetty at Sears Island with boulder and cobble substrate in background. September 2023.

Photo 3. Freshwater seep from the forested wetland habitat at Sears Island draining into high intertidal. September 2023.

Photo 4. Freshwater seep from the forested wetland habitat at Sears Island draining into high intertidal. September 2023.

Photo 5. Steep eroding upland bank at Sears Island. September 2023.

Photo 6. High intertidal characterized by cobble and gravel with sand/silt and scattered boulders at Sears Island south of jetty. September 2023.

Photo 7. Coarse sand and gravel with scattered cobble in the high intertidal at Sears Island north of jetty. September 2023.

Photo 8. Mid intertidal substrate dominated by cobble, gravel and coarse sand with scattered boulders at Sears Island south of jetty. September 2023.

Photo 9. Boulder and cobble with scattered gravel, sand, and silt in the mid intertidal at Sears Island north of jetty. September 2023.

Photo 10. Coarse sand and gravel south of the jetty in the mid intertidal at Sears Island. September 2023.

Photo 11. Scattered macroalgae on boulders in the finer grained substrate present in the mid intertidal at Sears Island south of jetty. September 2023.

Photo 12. Soft-shell clams were common within this finer grained substrate in the mid intertidal at Sears Island. September 2023.

Photo 13. Boulders and cobble in the mid intertidal embedded in the gravel, sand, and silt at Sears Island south of jetty. September 2023.

Photo 14. Low intertidal dominated by boulder and cobble and abundant macroalgae (knotted wrack and rockweed) at Sears Island north of jetty. September 2023.

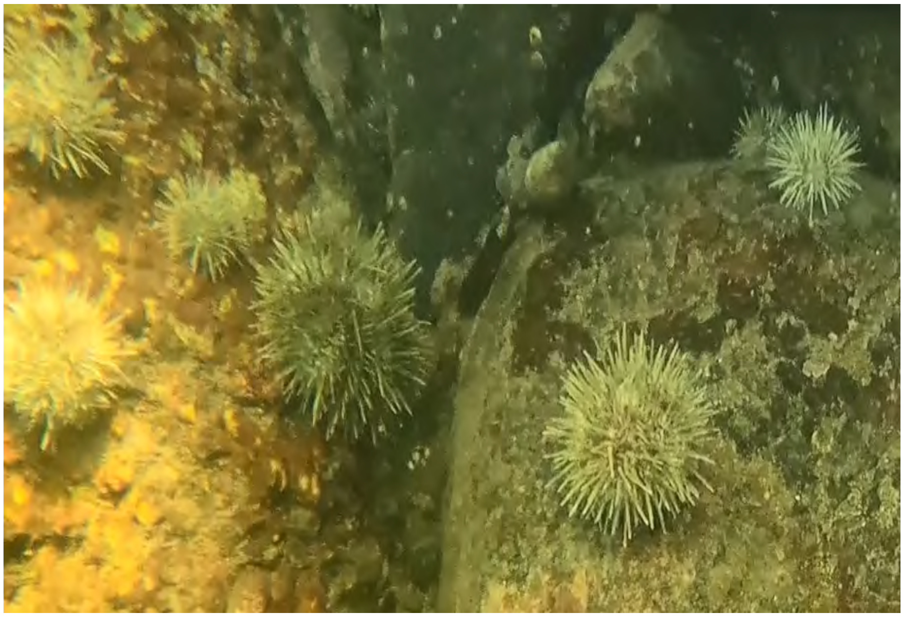

Photo 15. Green sea urchins at Sears Island in boulder and cobble habitat. December 2023.

Photo 16. Green sea urchins and crustose coralline algae at Sears Island. December 2023.

Photo 17. Green sea urchins and crustose coralline algae at Sears Island. December 2023.

Photo 18. Green grab in shallow subtidal at Sears Island. August 2022.

Photo 19. Lobster at Sears Island. August 2022.

Photo 20. Sears Island Benthic Sample 1. September 2023.

Photo 21. Sears Island Benthic Sample 2. September 2023.

Photo 22. Sears Island Benthic Sample 3. September 2023.

Photo 23. Sears Island Benthic Sample 5. September 2023.

Photo 24. Sears Island Benthic Sample 6. September 2023.

Appendix D INTERTIDAL FVA SURVEY QUADRAT PHOTOS

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 1

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 1

Photograph ID: 2

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 2

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 3

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 2

Photograph ID: 4

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 3

Stantec

Photographic Log

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 5

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 4

Photograph ID: 6

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 5

Photographic Log

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 7

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 6

Photograph ID: 8

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 7

Stantec **Photographic Log**

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 9

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 8

Photograph ID: 10

Photo Location: Low Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 8

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 11

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 9

Photograph ID: 12

Photo Location:
Low Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 10

Stantec

Photographic Log

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 13

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 11

Photograph ID: 14

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 11

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 15 **Photo Location:** Mid Intertidal **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 12	
Photograph ID: 16 **Photo Location:** **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 13	

Stantec

Photographic Log

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 17

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 13

Photograph ID: 18

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 14

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 19

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 14

Photograph ID: 20

Photo Location:
Mid Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 15

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 21

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 16

Photograph ID: 22

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 17

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 23

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 17

Photograph ID: 24

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 18

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 25

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 19

Photograph ID: 26

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 20

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 27

Photo Location: Mid Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 20

Photograph ID: 28

Photo Location: High Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 21

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 29

Photo Location:
High Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 22

Photograph ID: 30

Photo Location:
High Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 23

Stantec **Photographic Log**

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 31 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 24	
Photograph ID: 32 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 25	

Client:	Maine Department of Transportation	Project:	Intertidal FVA Survey
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 33 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 26	
Photograph ID: 34 **Photo Location:** High Intertidal **Direction:** **Survey Date:** 9/18/2023 **Comments:** Quadrat 27	

Stantec **Photographic Log**

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 35

Photo Location: High Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 28

Photograph ID: 36

Photo Location: High Intertidal

Direction:

Survey Date: 9/18/2023

Comments: Quadrat 29

Stantec

Photographic Log

Client:	**Maine Department of Transportation**	**Project:**	**Intertidal FVA Survey**
Site Name:	**Sears Island, Searsport, Maine**	**Site Location:**	**Intertidal Quadrats**

Photograph ID: 37

Photo Location:
High Intertidal

Direction:

Survey Date:
9/18/2023

Comments:
Quadrat 30

Appendix E SUBTIDAL BENTHIC INFAUNAL DATA

2023 Benthic Infauna Survey Results -Sears Island

Maine Department of Transportation Offshore Wind Port and Wind Turbine Launch Site

				Sears Island				
Group	**Taxa**		**Functional Group**	**BEN-1**	**BEN-2**	**BEN-4**	**BEN-5**	**BEN-6**
Mollusca	*Mytilus edulis*	Blue Mussel	Filter Feeder		1			
	Nucula proxima	Atlantic nutclam	*Deposit Feeder*	6	66	19	11	8
	Tellina sp.	Tellin	Filter Feeder		4	2	1	2
Nematoda		Round worm	*Deposit Feeder*	1				
	Ampharetidae (damaged)	Bristle worm	Deposit Feeder	1				
	Aricidea suecica	Polychaete worm	*Deposit Feeder*	12	22	4		1
	Capitella sp.	Annelid worm	*Deposit Feeder*	2		4		2
	Cossura longocirrata	Polychaete worm	*Deposit Feeder*	79	42	31	18	12
	Eteone sp.	Bristle worm	*Deposit Feeder*	4		4		
	Nephtys incisa	Catworm	*Deposit Feeder*	88	91	19	26	51
	Ninoe nigripes	Polychaete worm	*Deposit Feeder*	6	1	6	2	5
	Pectinaria gouldii	Trumpet worm	*Deposit Feeder*	1				
	Prionospio steenstrupi	Segemented worm	*Suspension Feeder*	31	5	22	7	14
	Terebellides stroemii	Polychaete worm	*Deposit Feeder*		29			
	Tharyx acutus	Polychaete worm	*Deposit Feeder*	16			2	
Crustacea	*Casco bigelowi*	Bigelow's amphipod	*Deposit Feeder*	2	4			
	Ostrocoda	Seed shrimp	Deposit Feeder	3	31	14		
Shannon Index				**1.75**	**1.86**	**2.01**	**1.53**	**1.45**
Evenness				**0.66**	**0.77**	**0.87**	**0.78**	**0.7**
Richness (# of species)				**18**	**11**	**10**	**7**	**8**
Total # of Individuals				**252**	**296**	**125**	**67**	**94**
Individuals per m^2				**10,957**	**12,870**	**5,435**	**2,913**	**4,087**
Total Number of Functional Groups				**2**	**3**	**3**	**3**	**3**
Average Population Size				**18**	**26.9**	**12.5**	**9.57**	**11.9**

Wetland Delineation Report

Sears Island Study Area

Searsport, Maine

PREPARED FOR

16 State House Station
Augusta, Maine 04333-0016

PREPARED BY

500 Southborough Drive, Suite 105B
South Portland, ME 04106

January 2024

Table of Contents

List of Appendices

Wetland Delineation Report

Introduction

On behalf of the Maine Department of Transportation (MaineDOT), Vanasse Hangen Brustlin, Inc. (VHB) conducted wetland and waterbody site reconnaissance, wetland delineation and surveys for potential vernal pools within a study area located on Sears Island in Searsport, Maine (Study Area or Site). The purpose of this report is to describe delineated wetland and water resources within the Study Area that may fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Clean Water Act (CWA) and under the jurisdiction of the Maine Natural Resources Protection Act (NRPA).

VHB conducted wetland and waterbody field investigations during multiple site visits in March of 2022 and August and September of 2023. In addition to describing identified wetland resource areas, this report describes existing conditions within the Study Area and the methodologies employed for identification of wetlands and water resources at the Site. Please see Appendix 1 – USGS Site Location Map and Appendix 2 – Natural Resource Mapping for an overview of the Study Area and the wetlands and natural resources identified at the Site.

Existing Site Conditions

The Study Area is approximately 230 acres in size and located within Sears Island, an island within Searsport Harbor, connected via a constructed causeway to the mainland of Searsport, Maine. The Study Area consists of a portion of an existing MaineDOT owned parcel, currently zoned as Transportation/Marine Development (Town of Searsport Parcel: Map 8/Lots 1 and 1-A).

The Study Area consists largely of undeveloped and forested land. The approximate center of the Study Area is 44.443236° north latitude and 68.887058° west longitude. Topography generally slopes to the west across the Study Area, with the highest elevations present in the center of the island. Elevations across the Study Area range from sea level to approximately 200 FT above sea level at the highest point. The only named waterbody proximate to the Study Area is Searsport Harbor along the western shoreline. USGS topographic mapping shows two USGS-designated intermittent streams mapped within the northern extent of the Study Area. The hydrologic characteristics of the Site are largely driven by drainages which form gullies and low areas where wetlands or intermittent streams drain west/northwest downslope to the water's edge.

The Study Area includes Sears Island Road (also named Stetson Hills Lane) which is a paved and gravel surface road that provides access to the island from the mainland. The road enters the island from the north and then bends in a westerly direction until it ends at the west shoreline of the mid-island. The area at the west extent of the road includes cleared fields and evidence of previous development activities including remnant stormwater features. There is also a large constructed wetland restoration area present in this portion of the Site. The remainder and large majority of the Study Area is forested and shows evidence of previous human disturbance interspersed throughout its extent. Please see Appendix 3 – Site Photographs for representative photos of the Study Area.

Soils Within the Study Area

Soil survey mapping by the Natural Resources Conservation Service (NRCS) indicates that the Study Area contains seven (7) soil designations (See Appendix 4 – NRCS Soils Map). According to the published USDA-NRCS soil survey data, 54 percent of the soils consist of Peru fine sandy loam, 23 percent consist of Marlow fine sandy loam, 13 percent consist of Boothbay silt loam, 3 percent consist of Brayton fine sandy loam or Swanville silt loam, and then less than 1 percent consist of Masardis variant fine sandy loam (very rocky). Please see Appendix 4 – NRCS Soil Mapping for additional information.

FEMA Flood Zone Designations

According to the Flood Insurance Rate Map (FIRM) Number 23027C0459E, published by FEMA and made effective on July 5, 2015, portions of the Study Area fall within Zones VE, AE, and X. The boundary of these three zones generally follow the shoreline, with the VE zone outward of the shoreline and the AE zone inland of the shoreline. The large majority of the site is located in Zone X and is outside of the coastal flood zone. The FEMA FIRM is included in Appendix 5. The three zones are defined as follows:

VE Zone (Site Base Flood Elevation – EL. 15 FT NAVD88): A coastal hazard area subject to high velocity water including waves; this area is defined by the 1% annual chance (base) flood limits (also known as the 100-year flood) and wave effects 3 FT or greater. The hazard zone is mapped with base flood elevations (BFEs) that reflect the combined influence of still-water flood elevations, primary frontal dunes, and wave effects 3 Ft or greater.

AE Zone (Site Base Flood Elevations – EL. 13 FT NAVD88): A hazard zone area within the 100-year flood limits defined with BFEs that reflect the combined influence of still-water flood elevations and wave effects less than 3 FT.

X Zone (Site Average Flood Elevation) – N/A): An area determined to be outside the 0.2% annual chance floodplain.

Methodology

Wetlands

Environmental Scientists from VHB conducted wetland delineations in March of 2022 and August and September of 2023. VHB delineated the boundary of wetlands in accordance with the *Army Corps of Engineers 1987 Wetland Delineation Manual* (1987 Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (Regional Supplement). All wetland delineations were conducted using Routine Determination Methods, which require that a wetland must contain a dominance of hydrophytic vegetation, hydric soils and evidence of hydrology to be considered a wetland. Wetland boundaries were demarcated with flagging and flag locations were recorded using a Trimble® GPS unit capable of sub-meter accuracy, post-processed and incorporated onto the Study Area Natural Resource mapping.

Field notes were taken to record the classification of wetlands in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin Classification), for the purposes of U.S. Army Corps of Engineers Wetland Determination Data Forms, and to note general site characteristics and any unique site features observed during the delineation.

Waterbodies and Waterways

VHB also evaluated the site for the presence or absence of waterbodies and waterways. Streams were evaluated in accordance with NRPA criteria and definitions. A river, stream or brook is defined by NRPA in Title 38 M.R.S.A. § 480- A as a channel between defined banks. The channel is created by surface water and has two or more of the following five characteristics:

- The channel is depicted as a solid or broken line on the most recent addition of the U.S. Geological Survey 7.5-minute series topographic map, or 15-minute series topographic map if the 7.5 minute series is unavailable;
- The channel contains or is known to contain flowing water continuously for a period of at least 6 months of the year in most years;
- The channel bed is primarily composed of mineral material such as sand and gravel, parent material or bedrock that has been deposited or scoured by water;
- The channel contains aquatic animals such as fish, aquatic insects or mollusks in the water or, if no surface water is present, the stream bed;
- The channel contains aquatic vegetation and is essentially devoid of upland vegetation.

The Army Corps General Permit does not include a definition of river, stream or brook. However, the ordinary highwater mark (OHW) of watercourses was identified following USACE's Regulatory Guidance Letter No. 05-05 Ordinary High water Mark Identification (2005).

Vernal Pools

During the course of the wetland delineation field work, VHB scientists also evaluated the property for the presence of potential vernal pool features that may be regulated by Maine DEP and the USACE. Please see below for more information on vernal pool regulations in the State of Maine.

The Maine DEP defines "vernal pools, also referred to as seasonal forested pools, as natural temporary to semi-permanent bodies of water that occur in shallow depressions that typically fill with water during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and have no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus sp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition."

DEP further differentiates vernal pools as 'significant' (regulated under NRPA) and 'non-significant' (not regulated under NRPA). Significant vernal pool habitat consists of vernal pools depression and that portion of the critical terrestrial habitat within 250 feet of the spring or fall high water mark of the depression. Whether a vernal pool is a significant vernal pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, the presence of fairy shrimp, or use by certain rare, threatened or endangered species that commonly requires a vernal pool to complete a critical portion of its life-history as specified in NRPA A Chapter 335 Significant Wildlife Habitat Rules Section 9(B). Table 1 identifies the Chapter 335 abundance criteria required for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), fairy shrimp (*Eubranchipus sp.*) and certain state-listed species to define an area as a significant vernal pool.

Table 1: NRPA Chapter 335 Significant Wildlife Habitat Rules Abundance Criteria for Significant Vernal Pools

Species	Abundance Criteria
Fairy shrimp	Presence in any life stage.
Blue spotted salamanders	Presence of 10 or more egg masses.
Spotted salamanders	Presence of 20 or more egg masses.
Wood frogs	Presence of 40 or more egg masses.
Certain rare, threatened, or endangered species[1]	Presence

[1] Per NRPA Chapter 335 Section 9(B), examples of vernal pool dependent state-listed endangered or threatened species include, but are not limited to, Blanding's turtle (*Emydoidea blandingii*), spotted turtle (*Clemmys guttata*), and ringed boghaunter dragonflies (*Williamsonia lintneri*). The rare species that must be considered are limited to: wood turtle (*Glyptemys insculpta*), ribbon snake (*Thamnophis sauritus*), swamp darner dragonflies (*Epiaeschna heros*), and comet darner dragonflies (*Anax longipes*).

The USACE Maine General Permit (GP) applies a different definition of 'vernal pool' and states "the State of Maine, Department of Environmental Protection has specific protections for VPs. For the purposes of these GPs, VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In most years, VPs support one or more of the following obligate indicator species: wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.). However, they should preclude sustainable populations of predatory fish."

General Condition 20. Vernal Pools of the Department of the Army General Permits for the State of Maine states the following:

- A Preconstruction Notification (PCN) is required if a discharge of dredged or fill material is proposed within a vernal pool depression located within waters of the U.S.

- GC 20(a) above does not apply to projects that are within a municipality that meets the provisions of a Corps-approved vernal pool Special Area Management Plan (SAMP) and are otherwise eligible for SV, and the applicant meets the requirements to utilize the vernal pool SAMP.

At its discretion, the Corps may determine during permit review that a waterbody should or should not be regulated as a vernal pool based on available evidence. The USACE does not differentiate vernal pools as 'significant' or 'non-significant' based on the abundance of biological indicators. As stated in the USACE definition, the presence of any of the specified indicator species in any abundance qualifies a feature as a regulated vernal pool. An additional important distinction between the USACE and the Maine DEP definition of vernal pools is that under the Maine DEP rules, a vernal pool must be 'natural' in origin, where under the USACE rules a vernal pool may be natural or manmade.

Study Results

Using the methodologies and criteria described above, VHB conducted wetland resource area evaluations and delineations within the Study Area. The following subsections provide a description of identified wetland areas and types.

Freshwater Wetlands

VHB identified a network of vegetated freshwater wetlands within the Study Area. Delineated freshwater wetlands within the Study Area fall into three main categories: palustrine forested (PFO), palustrine scrub-shrub (PSS) and palustrine emergent (PEM) wetlands. Several wetlands were associated with or contained intermittent streams.

Palustrine Forested Wetlands

The palustrine forested wetlands consist of a mixture of broad-leaved deciduous species along needle-leaved evergreen species, 6 meters or taller. Woody species commonly observed include red maple (*Acer rubra*), balsam fir (*Abies balsamea*), speckled alder (*Alnus incana*) and yellow birch (*Betula alleghaniensis*). The forest floor and low-lying vegetation included skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*) and New York fern (*Parathelypteris noveboracensis*).

Palustrine Scrub-Shrub Wetlands

The palustrine scrub-shrub wetlands are dominated by broad-leaved deciduous species with some needle-leaved evergreen species also present, less than 6 meters tall. Woody species commonly observed include speckled alder, winter berry (*Ilex verticillata*), witch hazel (*Hamamelis virginiana*) along the fringes of wetland areas, as well as balsam fir and red maple saplings.

Palustrine Emergent Wetlands

Emergent wetlands are characterized by erect, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et al. 1979). Portions of wetlands that VHB delineated within the Study Area may be categorized as emergent wetlands. Common species include cattail (*Typha sp.*), common reed (*Phragmites australis*) and reed canary grass (*Phalaris arundinacea*). The PEMs identified within the Study Area were all associated with the on-site constructed wetland restoration area in the central portion of the Study Area.

Wetlands Of Special Significance

Wetlands of Special Significance (WOSS) are defined in NRPA Chapter 310: Wetlands and Waterbodies Protection Section 4. According to Chapter 310, WOSS include all coastal wetlands and great ponds, and freshwater wetlands that exhibit one or more of the following characteristics:

> "(1) Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.
> (2) Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B (10).
> (3) Location near coastal wetland. The freshwater wetland area is located within 250 feet of a coastal wetland.
> (4) Location near GPA great pond. The freshwater wetland area is located within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.
> (5) Aquatic vegetation, emergent marsh vegetation or open water. The freshwater wetland contains under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation or open water, unless the 20,000 or more square foot area is the result of an artificial ponds or impoundment.

(6) Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Management Agency or other site-specific information.
(7) Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a wetland of special significance.
(8) River, stream or brook. The freshwater wetland area is located within 25 feet of a river, stream or brook."

WOSS identified within the Study Area are shown in the Natural Resources Maps in Appendix 2. Wetlands that met the NRPA WOSS criteria included wetlands located within 250 feet of a coastal wetland (Criteria 3) and wetlands within 25 feet of a river, stream or brook (Criteria 8).

Freshwater Waterbodies

VHB identified five separate intermittent streams within the Study Area during the delineation effort that met the NRPA stream definition criteria as described above. These streams are shown on the Natural Resources Maps in Appendix 2.

Vernal Pools

VHB did not identify any potential vernal pools within the Study Area.

Coastal Wetlands

The western and northern portions of the Study Area border the shoreline of Sears Island and therefore include or are proximate to areas of marine/coastal wetlands. Under NRPA, coastal wetlands include the following:

> *"Coastal Wetlands" means all tidal and subtidal lands; all areas with vegetation present that is tolerant of salt water and occurs primarily in salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous lowland that is subject to tidal action during the highest tide level for each year in which an activity is proposed in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes.*

These coastal wetland areas were not field delineated as part of the wetland delineation effort but may be subject to NRPA and Section 10 of the Rivers and Harbors Act of 1899 which governs work impacting navigable waters. The coastal wetlands within or proximate to the Sears Island Study Area include marsh, beach, tidal flats and subtidal areas. Additionally, according to Maine Natural Areas Program (MNAP), the northwestern shore of the Study Area includes a section of mapped Dune Grassland, which is an MNAP Exemplary Natural Community (State Rank: S2), as well as mapped Sand Dune area according to the Maine Sand Dune Boundaries GIS layer. See the Natural Resources Maps in Appendix 2 for additional information.

Wetland Functions and Values

The functions and values of a wetland are determined based on a descriptive, best professional judgment approach, with reference to the methodology recommended by the U.S. Army Corps of Engineers New England District - *The Highway Methodology Workbook Supplement: Wetland Functions and Values - A Descriptive Approach*. Thirteen wetland functions and values are recognized under the USACE methodology:

- Groundwater Recharge/Discharge;
- Floodflow Alteration (Storage & Desynchronization);
- Fish and Shellfish Habitat;
- Sediment/Toxicant Pathogen Retention;
- Nutrient Removal/Retention/Transformation;
- Production Export (Nutrient);
- Sediment/Shoreline Stabilization;
- Wildlife Habitat;
- Recreation (Consumptive & Non-Consumptive);
- Educational/Scientific Value;
- Uniqueness/Heritage;
- Visual Quality/Aesthetics; and,
- Threatened or Endangered Species Habitat.

The USACE Highway Methodology provides a list of considerations and qualifiers that are used to assess the occurrence of each function or value, followed by a subjective determination of Principal Functions and Values.

The principal wetland functions and values associated with the wetlands identified in this Study Area are: Groundwater recharge and discharge; fish & shellfish habitat, nutrient removal/retention/transformation; production export (nutrient); sediment/shoreline stabilization; wildlife habitat; recreation; educational/scientific value; and visual quality/aesthetics.

Summary

The information contained in this report was collected to provide an overview of wetland, waterbody, and potential vernal pool resources falling under the jurisdiction of the USACE and the Maine DEP within the specific Sears Island Study Area surveyed by VHB. These features may be regulated by the USACE under the Clean Water Act, and by the Maine DEP under the Natural Resources Protection Act.

References

Bureau of Land and Water Quality and Maine Department of Environmental Protection. 2009. *Natural Resource Protection Act*. 38 M.R.S.A. §§ 480-A to 480-BB.

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Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Tiner, R.W. 1999. Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping. CRC Press.

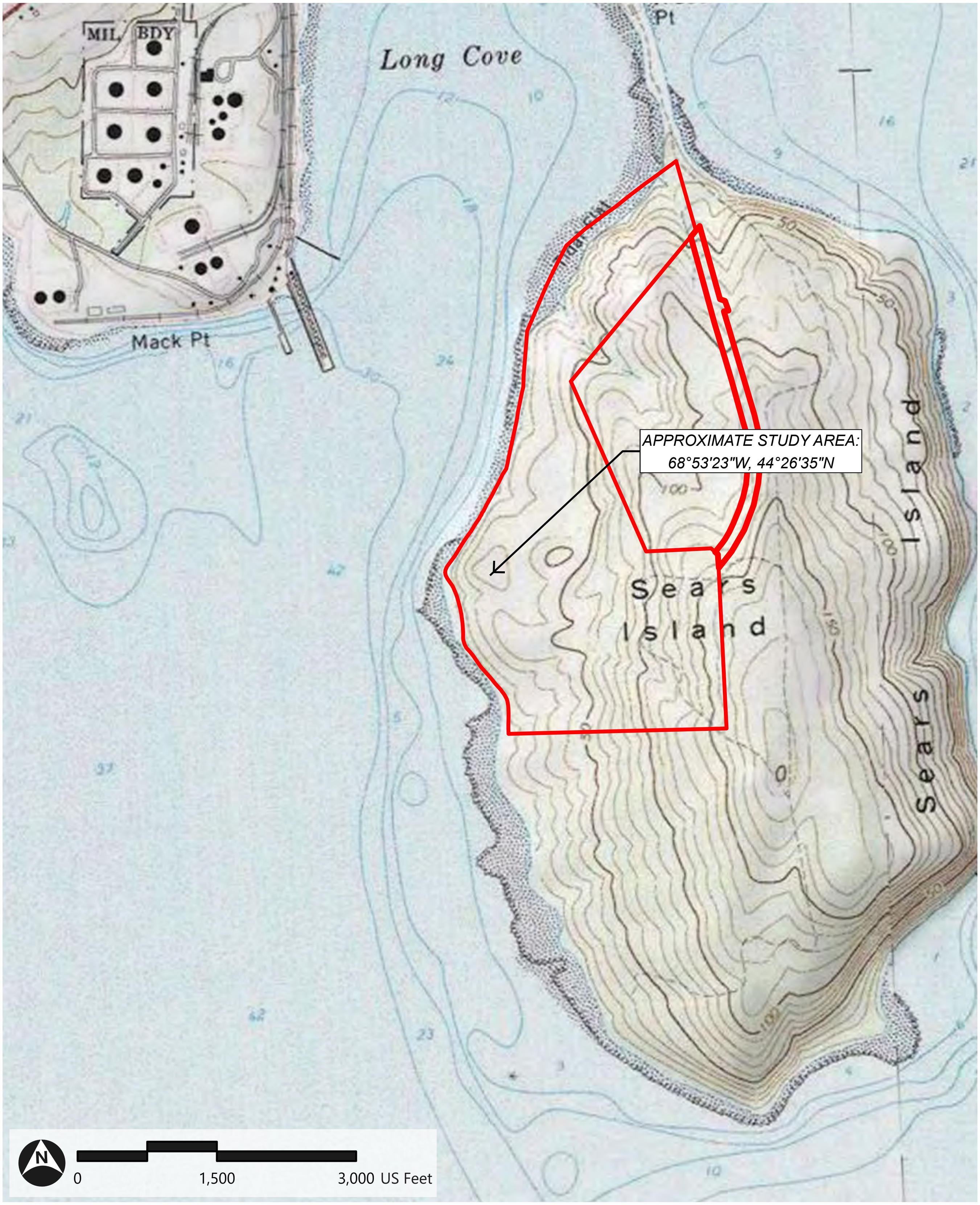
U.S. Army Corps of Engineers (USACE). 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*. ERDC/EL TR-12-01. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 1999. U.S. Army Corps of Engineers – New England District. 1999. The Highway Methodology Workbook: Supplement: Wetland Functions and Values – A Descriptive Approach. NAEEP-360-1-30a.

Appendix 1 – USGS Site Locations Map

Figure 1: USGS Location Map

MaineDOT Sears Island Offshore Wind Port Study Area | Searsport, ME



Study Area

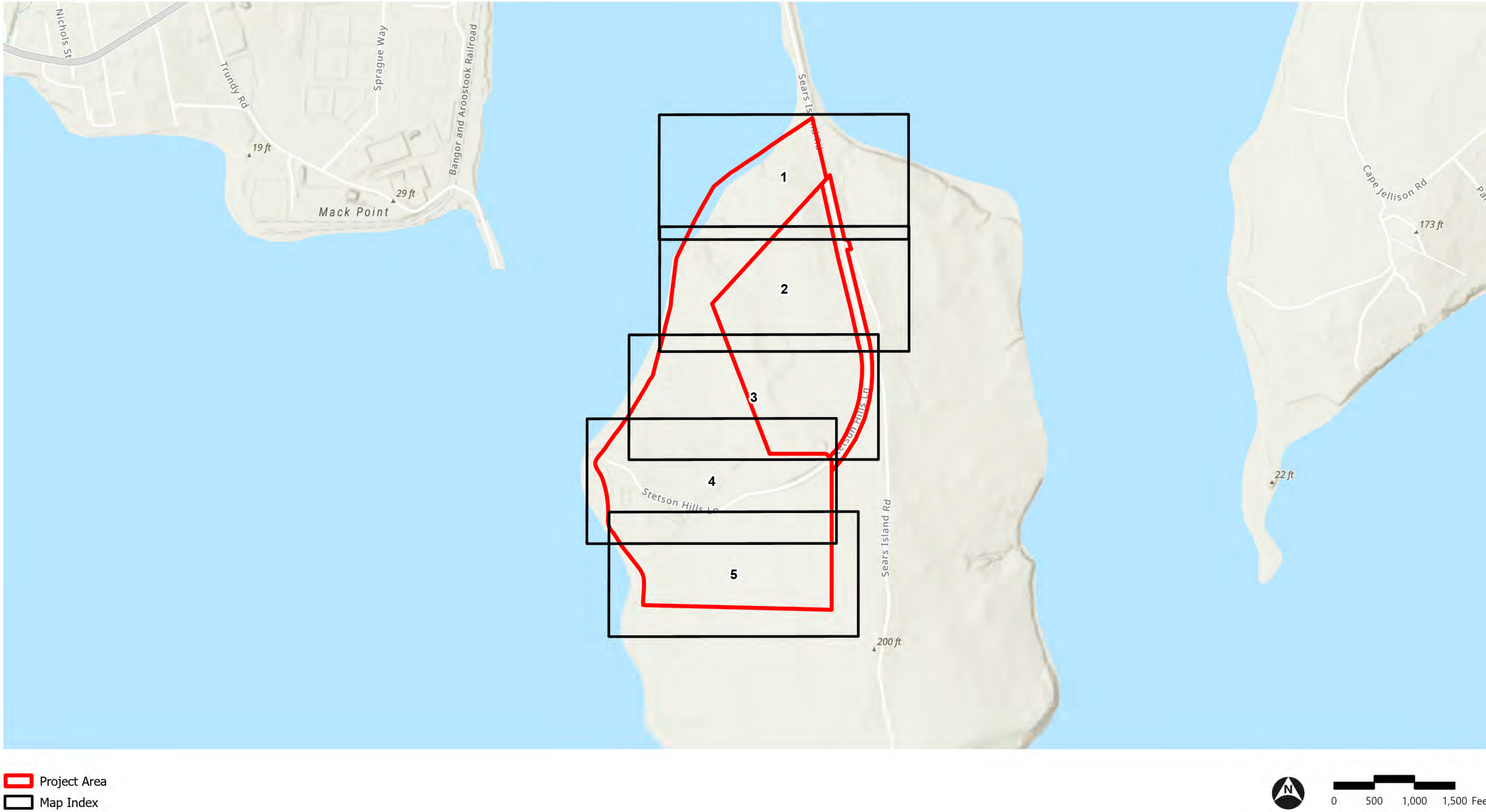
Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (mheffernan, 10/9/2023)

Source: USGS, VHB

Appendix 2 – Natural Resources Maps

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME



Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Pt Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME

Culvert
Constructed Ditch
Study Area

NWI - Mapped Estuarine and Marine Wetland
MNAP - Mapped Sand Dunes

Delineated Stream Centerline
Delineated Wetland Edge
Potential Vernal Pool

Freshwater Vegetated Wetland
Wetlands of Special Significance (WOSS)
Stormwater Feature
Wetland Restoration Area
Wetlands Forming in Previously Disturbed Areas

Wetland Resources Delineated by VHB in August/September 2023

N

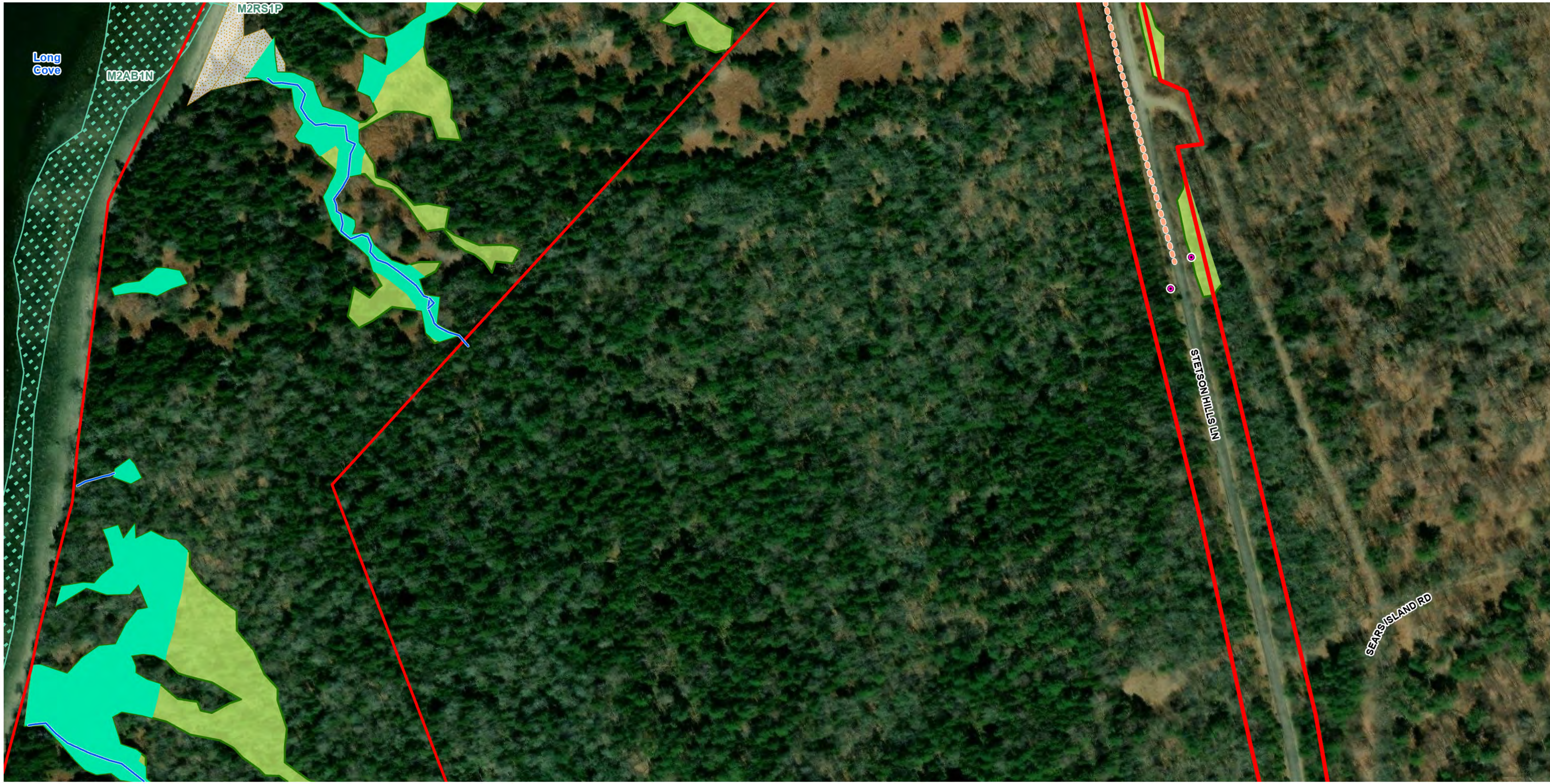
0 100 200 300 Feet

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME



- Culvert
- Constructed Ditch
- Study Area
- NWI - Mapped Estuarine and Marine Wetland
- MNAP - Mapped Sand Dunes
- Delineated Stream Centerline
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- Potential Vernal Pool
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Wetland Resources Delineated by VHB in August/September 2023

N

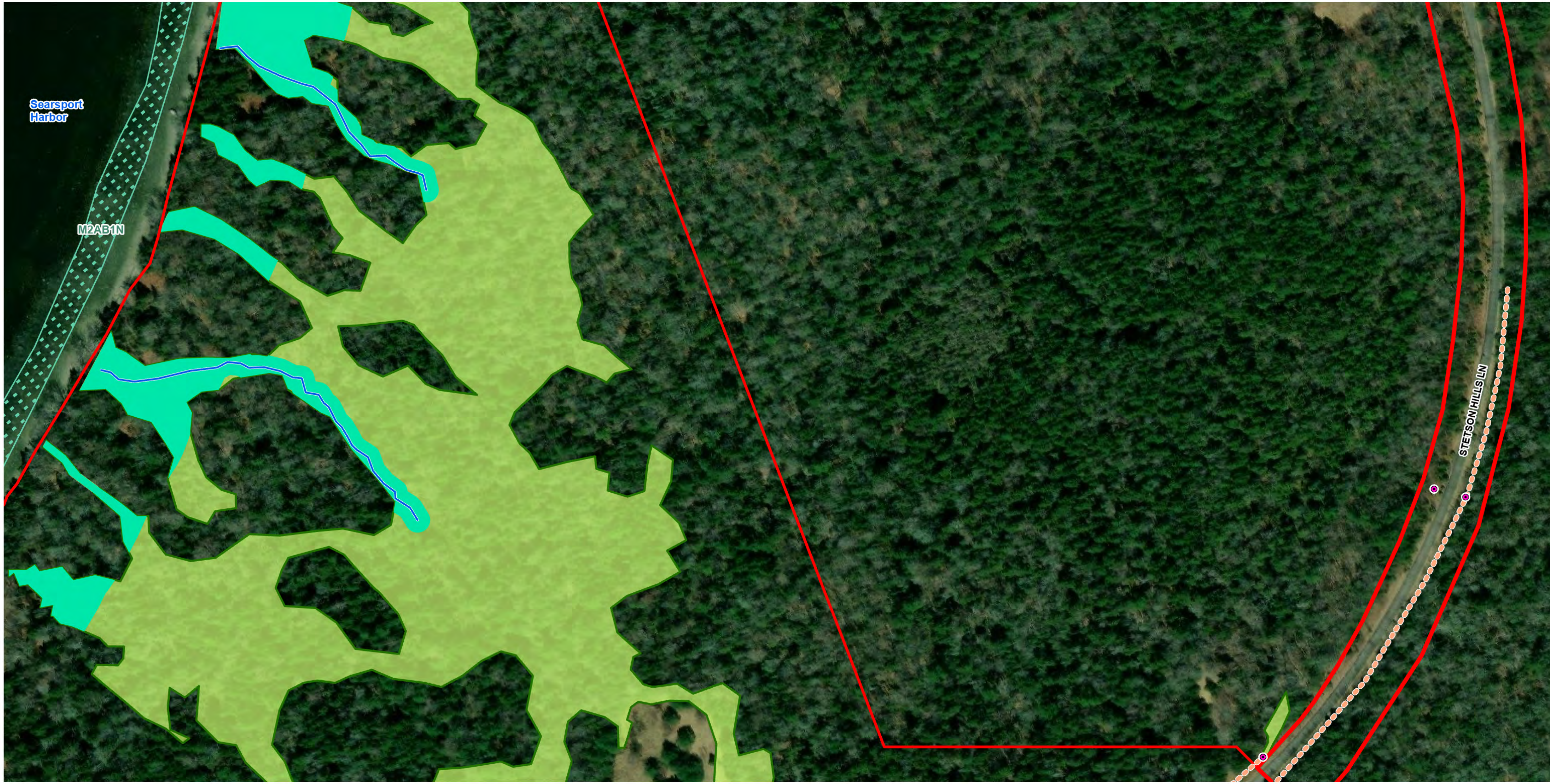
0 100 200 300 Feet

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME



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Wetland Resources Delineated by VHB in August/September 2023

N

0 100 200 300 Feet

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME

- Culvert
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Wetland Resources Delineated by VHB in August/September 2023

N

0 100 200 300 Feet

Source: MEGIS, VHB, ESRI

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME

Culvert
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Study Area
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Wetland Resources Delineated by VHB in August/September 2023

N

0 100 200 300 Feet

Source: MEGIS, VHB, ESRI

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Pt Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 2/2/2024)

Appendix 3 – Site Photographs

Engineers | Scientists | Planners | Designers

Sears Island Study Area

Wetland Delineation

Photographs: August & September, 2023

Sears Island
Searsport, Maine 04974

Maine Department of Transportation
16 State House Station
Augusta, ME 04333

Engineers | Scientists | Planners | Designers

Photo No: 1 **Photo Date:** 8-16-23 **Description:** Perennial stream Perennial stream in northern portion of site where it enters the Study Area along its eastern boundary.	
Photo No: 2 **Photo Date:** 8-23-23 **Description:** Intermittent stream Representative photo of intermittent stream in north-central portion of the study area where it flows west and exits the Study Area.	

Photo No: 3 **Photo Date:** 8-16-23 **Description:** Wetland boundary Representative photo of wetland boundary line within southern portion of Study Area.	
Photo No: 4 **Photo Date:** 8-1-23 **Description:** Western beach Representative photo of beach along western shore of Study Area looking south.	

Photo No: 5	
Photo Date: 8-31-23	
Description: Forested wetland Representative photo of forested wetland within south-central portion of Study Area.	

Photo No: 6	
Photo Date: 8-11-23	
Description: Perennial stream Representative photo of perennial stream which runs through the central portion of the Study Area.	

Photo No: 7 **Photo Date:** 8-11-23 **Description:** Upland Representative photo of upland in the north-central portion of Study Area.	
Photo No: 8 **Photo Date:** 8-3-23 **Description:** Forested wetland Representative photo of forested wetland in southern portion of Study Area.	

Photo No: 9 **Photo Date:** 8-16-23 **Description:** Perennial stream Representative photo of perennial stream in the northern portion of the Study Area.	
Photo No: 10 **Photo Date:** 8-17-23 **Description:** Forested Representative photo of forested wetland in northwest portion of Study Area.	

Photo No: 11	
Photo Date: 8-3-23	
Description: Forested wetland Representative photo of forested wetland in southeastern portion of the Study Area.	
Photo No: 12	
Photo Date: 8-17-23	
Description: Forested wetland Representative photo of forested/scrub-shrub wetland in northern portion of the Study Area where perennial stream drains to beach.	

Appendix 4 – NRCS Soils Map

Soil Map—Waldo County, Maine
(Study Area)

Map Scale: 1:10,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Waldo County, Maine
Survey Area Data: Version 22, Aug 30, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 11, 2021—Oct 29, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Be	Beaches	2.1	1.0%
BoB	Boothbay silt loam, 3 to 8 percent slopes	27.8	13.0%
BvB	Brayton fine sandy loam, 0 to 8 percent slopes, very stony	7.3	3.4%
ElB	Eldridge fine sandy loam, 3 to 8 percent slopes	1.7	0.8%
MbC	Marlow fine sandy loam, 8 to 15 percent slopes	3.3	1.5%
MeC	Marlow fine sandy loam, 8 to 15 percent slopes, very stony	46.6	21.7%
MrB	Masardis variant fine sandy loam, very rocky, 3 to 8 percent slopes	0.3	0.1%
PbB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	63.0	29.3%
PbC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	53.9	25.1%
Sw	Swanville silt loam, 0 to 3 percent slopes	5.9	2.7%
W	Water bodies	3.0	1.4%
Totals for Area of Interest		**214.8**	**100.0%**

Appendix 5 – FEMA FIRM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LiMWA)**. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LiMWA (or between the shoreline and the LiMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on the Flood Insurance Rate Map (FIRM) was derived from the Maine Office of GIS (MEGIS) produced at a scale of 1:2,000, from aerial photography dated 2005 or later.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

State of Maine Floodway Note: Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 38 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

Only coastal structures that are certified to provide protection from the 1-percent-annual chance flood are shown on this panel. However, all structures taken into consideration for the purpose of coastal flood hazard analysis and mapping are present in the DFIRM database in S_Gen_Struct.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary

0.2% Annual Chance Floodplain Boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

~~~ 513 ~~~ — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)———(A) — Cross section line

(23) - - - - (23) — Transect line

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

^{48}89^{000m} N — 1000-meter Universal Transverse Mercator grid values, zone 19

DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
July 6, 2015

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0459E

FIRM
FLOOD INSURANCE RATE MAP
WALDO COUNTY, MAINE
(ALL JURISDICTIONS)

PANEL 459 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEARSPORT, TOWN OF	230185	0459	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
23027C0459E

EFFECTIVE DATE
JULY 6, 2015

Federal Emergency Management Agency
~~~

Appendix 6 - USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W1-313 Up

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): convex Slope (%): 17

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44275958 Long: -68.88343617 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W1-313 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	70	Yes	FACU
2. *Abies balsamea*	10	No	FAC
3. *Acer rubrum*	10	No	FAC
4. *Betula papyrifera*	10	No	FACU
5.			
6.			
7.			
	100	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thelypteris noveboracensis*	5	Yes	FAC
2. *Dennstaedtia punctilobula*	5	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	100	x 4 =	400
UPL species	5	x 5 =	25
Column Totals:	130 (A)		500 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-313 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Sandy	Fine Sandy Loam
2-6	10YR 5/3	100					Sandy	Fine Sandy Loam
6-15	10YR 5/6	95	7.5YR 5/6	5	C	M	Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W1-313 Wet

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 13

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44275924 Long: -68.88353409 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ___	**within a Wetland?** **Yes** X **No** ___
Wetland Hydrology Present?	Yes X	No ___	If yes, optional Wetland Site ID: Wetland 1

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	X Water-Stained Leaves (B9)	
X High Water Table (A2)	___ Aquatic Fauna (B13)	
X Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W1-313 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	Yes	FAC
2. *Abies balsamea*	20	Yes	FAC
3. *Picea rubens*	10	No	FACU
4.			
5.			
6.			
7.			
	100	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thelypteris noveboracensis*	95	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	215	x 3 =	645
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	225 (A)		685 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-313 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 2/1	100					Muck	
2-12	10YR 5/1	100					Sandy	Sandy Loam
12-18	10YR 6/1	70	7.5YR 6/6	30	C	M	Loamy/Clayey	Loamy Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W1-389 Up

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): convex Slope (%): 17

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44133847 Long: -68.88871821 Datum: WGS84

Soil Map Unit Name: BoB - Boothbay silt loam, 3 to 8 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W1-389 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula alleghaniensis*	20	Yes	FAC
2. *Populus tremuloides*	20	Yes	FACU
3. *Betula papyrifera*	15	Yes	FACU
4. *Picea rubens*	15	Yes	FACU
5. *Fraxinus pennsylvanica*	10	No	FACW
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Picea rubens*	30	Yes	FACU
2. *Acer pensylvanicum*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Dennstaedtia punctilobula*	80	Yes	UPL
2. *Thelypteris noveboracensis*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	40	x 3 =	120
FACU species	110	x 4 =	440
UPL species	80	x 5 =	400
Column Totals:	240 (A)		980 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-389 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Sandy	Fine Sandy Loam
2-4	10YR 4/3	100					Sandy	Fine Sandy Loam
4-16	10YR 3/3	100					Sandy	Fine Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W1-389 Wet

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 17

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44126985 Long: -68.88867285 Datum: WGS84

Soil Map Unit Name: BoB - Boothbay silt loam, 3 to 8 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No
Hydric Soil Present?	Yes X	No
Wetland Hydrology Present?	Yes X	No

Is the Sampled Area within a Wetland? **Yes** X **No** ___

If yes, optional Wetland Site ID: Wetland 1

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	X Water-Stained Leaves (B9)
X High Water Table (A2)	___ Aquatic Fauna (B13)
X Saturation (A3)	___ Marl Deposits (B15)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)
___ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		2
Saturation Present? (includes capillary fringe)	X		0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W1-389 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2. *Betula alleghaniensis*	20	Yes	FAC
3. *Picea rubens*	20	Yes	FACU
4. *Acer rubrum*	10	No	FAC
5. *Abies balsamea*	10	No	FAC
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Alnus incana*	40	Yes	FACW
2. *Picea rubens*	10	No	FACU
3. *Hamamelis virginiana*	10	No	FACU
4. *Abies balsamea*	5	No	FAC
5.			
6.			
7.			
	65	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Parathelypteris noveboracensis*	20	Yes	FAC
2. *Carex crinita*	20	Yes	OBL
3. *Symplocarpus foetidus*	15	Yes	OBL
4. *Impatiens capensis*	15	Yes	FACW
5. *Osmundastrum cinnamomeum*	10	No	FACW
6. *Onoclea sensibilis*	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	90	x 2 =	180
FAC species	65	x 3 =	195
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	230 (A)		570 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-389 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	2.5Y 2.5/1	100					Muck	
2-5	5Y 6/1	95	7.5YR 5/6	5	C	M	Sandy	Sandy Loam
5-16	5Y 5/1	70	7.5YR 5/6	30	C	M	Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W2-5 Up

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): convex Slope (%): 13

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.43935766 Long: -68.88312919 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W2-5 Up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	40	Yes	FACU
2. *Abies balsamea*	30	Yes	FAC
3. *Fraxinus pennsylvanica*	10	No	FACW
4. *Acer rubrum*	10	No	FAC
5.			
6.			
7.			
	90	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pteridium aquilinum*	30	Yes	FACU
2. *Dennstaedtia punctilobula*	30	Yes	UPL
3. *Thelypteris noveboracensis*	20	Yes	FAC
4. *Lysimachia borealis*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	70	x 3 =	210
FACU species	90	x 4 =	360
UPL species	30	x 5 =	150
Column Totals:	200 (A)		740 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-5 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Sandy	Fine Sandy Loam
2-14	7.5YR 5/4	95	7.5YR 5/8	5	R	C	Sandy	Fine Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock Refusal

Depth (inches): 14+

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W2-5 Wet

Investigator(s): Jim Bolduc Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 16

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.43933801 Long: -68.88305144 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___
Hydric Soil Present?	Yes X	No ___
Wetland Hydrology Present?	Yes X	No ___

Is the Sampled Area within a Wetland? **Yes** X **No** ___

If yes, optional Wetland Site ID: Wetland 2

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	X Water-Stained Leaves (B9)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	
X Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W2-5 Wet

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Abies balsamea*	40	Yes	FAC
2. *Acer rubrum*	15	Yes	FAC
3. *Betula alleghaniensis*	15	Yes	FAC
4. *Picea rubens*	10	No	FACU
5. *Fraxinus pennsylvanica*	10	No	FACW
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Abies balsamea*	20	Yes	FAC
2. *Picea rubens*	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Thelypteris noveboracensis*	80	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	170	x 3 =	510
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	200 (A)		610 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-5 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Muck	
10-12	10YR 5/1	98	7.5YR 5/6	2	C	M	Loamy/Clayey	Loamy Sand
12-18	2.5Y 6/2	90	7.5YR 5/6	10	R	M	Sandy	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- X Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: U-100

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): Convex Slope (%): <1%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44489 Long: -68.88654 Datum: WGS84

Soil Map Unit Name: Marlow Fine Sandy Loam, 8 to 15% slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____ No X	If yes, optional Wetland Site ID:	____
Wetland Hydrology Present?	Yes ____ No X		

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____	
Water Table Present?	Yes ____	No ____	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____	**Wetland Hydrology Present? Yes ____ No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators of hydrology.

VEGETATION – Use scientific names of plants. Sampling Point: U-100

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	40	Yes	FACU
2. *Acer rubrum*	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Picea rubens*	25	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	25	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Acer rubrum*	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	=Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	120 (A)		425 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: U-100

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Muck	Organics
2-8	10YR 4/4	100					Loamy/Clayey	Silt loam
8-16+	10YR 7/2	100					Loamy/Clayey	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W-100

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): concave Slope (%): 1%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44488 Long: -68.88646 Datum: WGS84

Soil Map Unit Name: Marlow Fine Sandy Loam, 8 to 15 % slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID:	___
Wetland Hydrology Present?	Yes X	No ___		

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Water-Stained Leaves (B9)	
X High Water Table (A2)	___ Aquatic Fauna (B13)	
X Saturation (A3)	___ Marl Deposits (B15)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	
___ Sparsely Vegetated Concave Surface (B8)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ___	Depth (inches): ___
Water Table Present?	Yes ___	No ___	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W-100

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Picea rubens*	25	Yes	FACU
3. *Juniperus virginiana*	25	Yes	FACU
4. *Betula alleghaniensis*	20	Yes	FAC
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Picea rubens*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	50	Yes	OBL
2. *Osmundastrum cinnamomeum*	15	No	FACW
3. *Parathelypteris noveboracensis*	15	No	FAC
4. *Acer rubrum*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	15	x 2 =	30
FAC species	75	x 3 =	225
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	200 (A)		545 (B)

Prevalence Index = B/A = 2.73

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-100

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 2/2	100					Muck	Muck
2-7	10YR 2/2	100					Loamy/Clayey	Clay loam
7-13	2.5YR 5/1	100					Loamy/Clayey	Clay
13-18+	10YR 6/1	70	10YR 5/6	30	C	M	Loamy/Clayey	Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)

___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ________
Depth (inches): ________

Hydric Soil Present? Yes X **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Islans City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: U-200

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44555 Long: -68.88966 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?			
Water Table Present?			
Saturation Present? (includes capillary fringe)			

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No hydrologic indicators

VEGETATION – Use scientific names of plants.

Sampling Point: U-200

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Betula papyrifera*	20	Yes	FACU
3. *Fraxinus americana*	20	Yes	FACU
4. *Acer pensylvanicum*	10	No	FACU
5. *Abies balsamea*	5	No	FAC
6. *Picea rubens*	5	No	FACU
7.			
	90	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer pensylvanicum*	50	Yes	FACU
2. *Picea rubens*	20	Yes	FACU
3. *Abies balsamea*	15	No	FAC
4.			
5.			
6.			
7.			
	85	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Dennstaedtia punctilobula*	75	Yes	UPL
2. *Picea rubens*	20	Yes	FACU
3. *Abies balsamea*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	145	x 4 =	580
UPL species	75	x 5 =	375
Column Totals:	275 (A)		1120 (B)

Prevalence Index = B/A = 4.07

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: U-200

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					Muck	Organics
1-16+	10YR 5/6	100					Loamy/Clayey	Silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 8/17/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W-200

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): concave Slope (%): 0%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.44546 Long: -68.88954 Datum: WGS84

Soil Map Unit Name: PbB - Peru fine sandy loam, 0 to 8 percent slopes, very stony NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ___	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 2"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-200

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	30	Yes	FACU
2. *Abies balsamea*	20	Yes	FAC
3. *Betula alleghaniensis*	20	Yes	FAC
4. *Acer rubrum*	5	No	FAC
5.			
6.			
7.			
	75	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea rubens*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	

Herb Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Parathelypteris noveboracensis*	40	Yes	FAC
2. *Symplocarpus foetidus*	20	Yes	OBL
3. *Trientalis borealis*	10	No	FAC
4. *Abies balsamea*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	105	x 3 =	315
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	165 (A)		495 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-200

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Sandy	Organics
2-9	10YR 4/1	100					Loamy/Clayey	Silt Loam
9-14+	10YR 4/2	95	10YR 5/6	5	C	M	Sandy	Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
_X_ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 9/15/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: U-400

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): None Slope (%): 1%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.453721 Long: -68.881659 Datum: WGS84

Soil Map Unit Name: EIB - Eldridge fine sandy loam, 3 to 8% slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ___ No X
Hydric Soil Present? Yes ___ No X
Wetland Hydrology Present? Yes ___ No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X
If yes, optional Wetland Site ID: ___

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ Microtopographic Relief (D4)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___
Water Table Present? Yes ___ No ___ Depth (inches): ___
Saturation Present? Yes ___ No ___ Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No indicators of hydrology.

VEGETATION – Use scientific names of plants.

Sampling Point: U-400

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	35	Yes	FACU
2. *Acer pensylvanicum*	35	Yes	FACU
3. *Prunus serotina*	15	No	FACU
4.			
5.			
6.			
7.			
	85	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Corylus americana*	45	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Dryopteris carthusiana*	40	Yes	FACW
2. *Osmunda claytoniana*	10	No	FAC
3. *Quercus rubra*	3	No	FACU
4. *Trientalis borealis*	3	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	56	=Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	13	x 3 =	39
FACU species	133	x 4 =	532
UPL species	0	x 5 =	0
Column Totals:	186 (A)		651 (B)

Prevalence Index = B/A = 3.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: U-400

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Sandy	Sandy loam
2-6	10YR 3/6	100					Sandy	Sandy loam
6-10	10YR 4/3	100					Sandy	Sandy loam
10-14	10YR 3/6	100					Sandy	Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sears Island City/County: Seasport, Waldo County Sampling Date: 9/15/2023

Applicant/Owner: Maine Department of Transportation State: ME Sampling Point: W-400

Investigator(s): Sean Hale Section, Township, Range: N/A

Landform (hillside, terrace, etc.): Relatively flat Local relief (concave, convex, none): Concave Slope (%): <1%

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 44.4537685 Long: -68.8815187 Datum: WGS84

Soil Map Unit Name: EIB - Eldridge fine sandy loam, 3 to 8% slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
Based on the Antecedent Precipitation Tool, the site was experiencing wetter than normal conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)	____ Water-Stained Leaves (B9)
____ High Water Table (A2)	____ Aquatic Fauna (B13)
X Saturation (A3)	____ Marl Deposits (B15)
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)
____ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W-400

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula alleghaniensis*	60	Yes	FAC
2. *Acer rubrum*	30	Yes	FAC
3. *Quercus rubra*	10	No	FACU
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex verticillata*	25	Yes	FACW
2. *Quercus rubra*	12	Yes	FACU
3. *Corylus americana*	5	No	FACU
4.			
5.			
6.			
7.			
	42	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Dryopteris carthusiana*	75	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	90	x 3 =	270
FACU species	27	x 4 =	108
UPL species	0	x 5 =	0
Column Totals:	217 (A)		578 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W-400

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Sandy	Sandy loam
2-8	10YR 4/2	100					Sandy	Sandy loam
8-16+	10YR 5/2	90	10YR 5/8	10	C	M	Sandy	Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
_X_ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

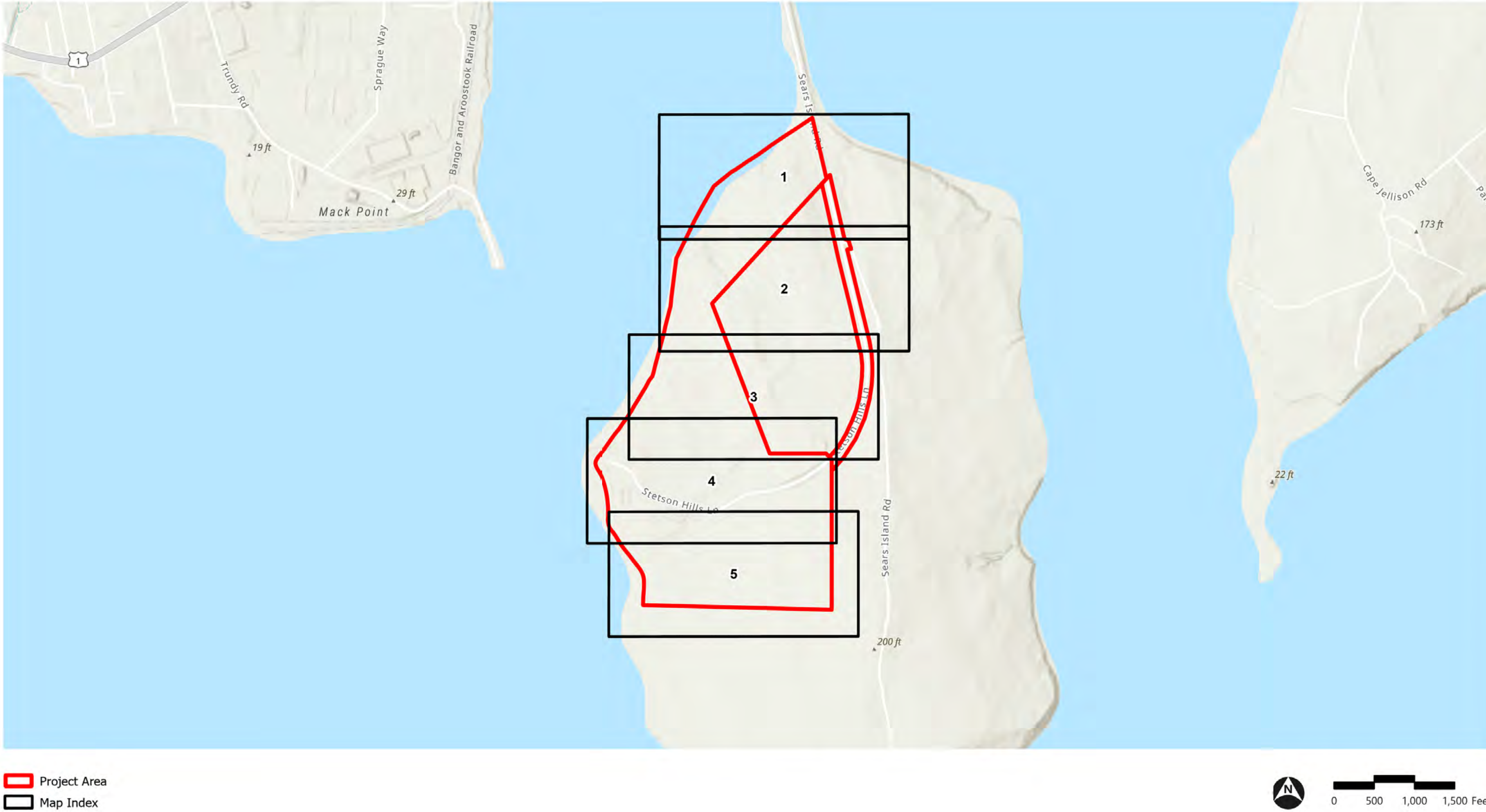
Hydric Soil Present? **Yes** _X_ **No** ___

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Updated Freshwater Resource Mapping for Sears Island

Figure 2: Natural Resources Map

Sears Island Study Area | Searsport, ME



Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 8/9/2024)

Source: MEGIS, VHB, ESRI

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Sears Island Study Area | Searsport, ME

vhb

Culvert
Constructed Ditch
Study Area

MNAP - Mapped Sand Dunes

Delineated Stream Centerline
Delineated Wetland Edge
Indicator Breeding Area
Potential Non-Significant Vernal Pool
Potential Significant Vernal Pool

Freshwater Vegetated Wetland
Wetlands of Special Significance (WOSS)
Stormwater Feature
Wetland Restoration Area
Wetlands Forming in Previously Disturbed Areas
Significant Vernal Pool Habitat

Wetland Resources Delineated by VHB in August/September 2023 and April 2024.
Vernal pools surveyed in April and May 2024. DRAFT

N

0 100 200 300 Feet

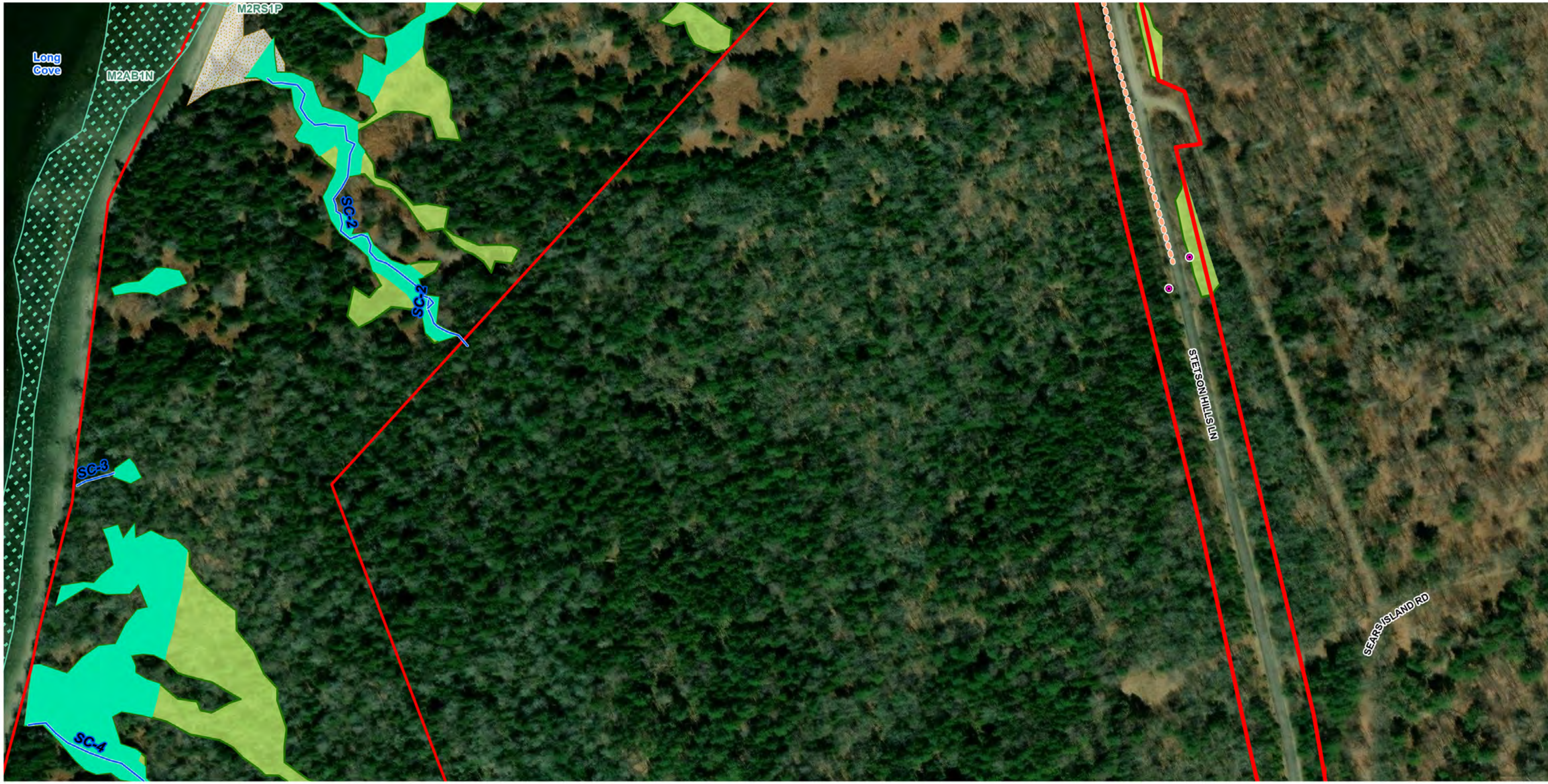
DRAFT

Source: MEGIS, VHB, ESRI

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 8/9/2024)

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Sears Island Study Area | Searsport, ME



Culvert
Constructed Ditch
Study Area

MNAP - Mapped Sand Dunes

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Delineated Wetland Edge
Indicator Breeding Area
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N

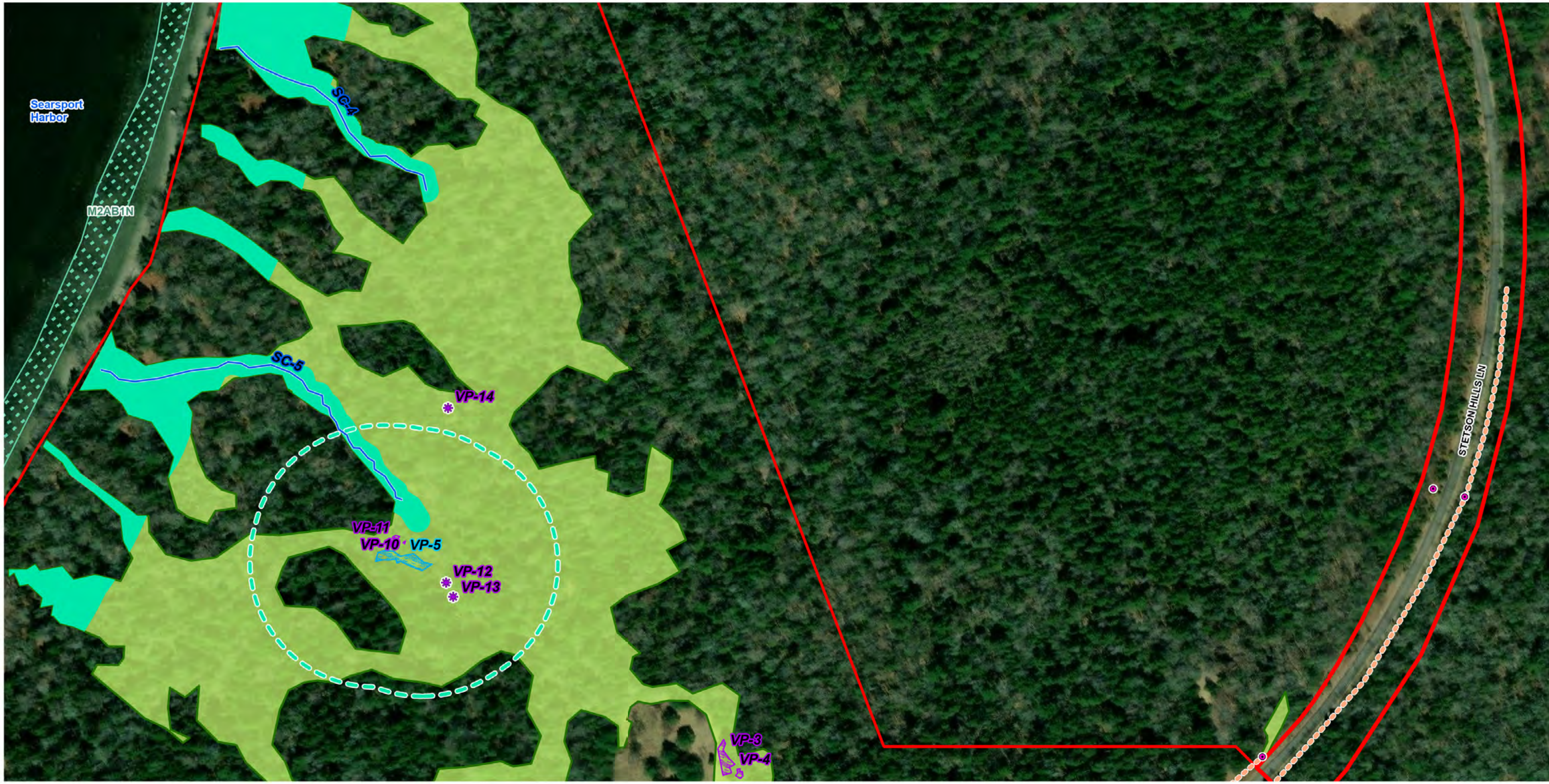
0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Sears Island Study Area | Searsport, ME



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N

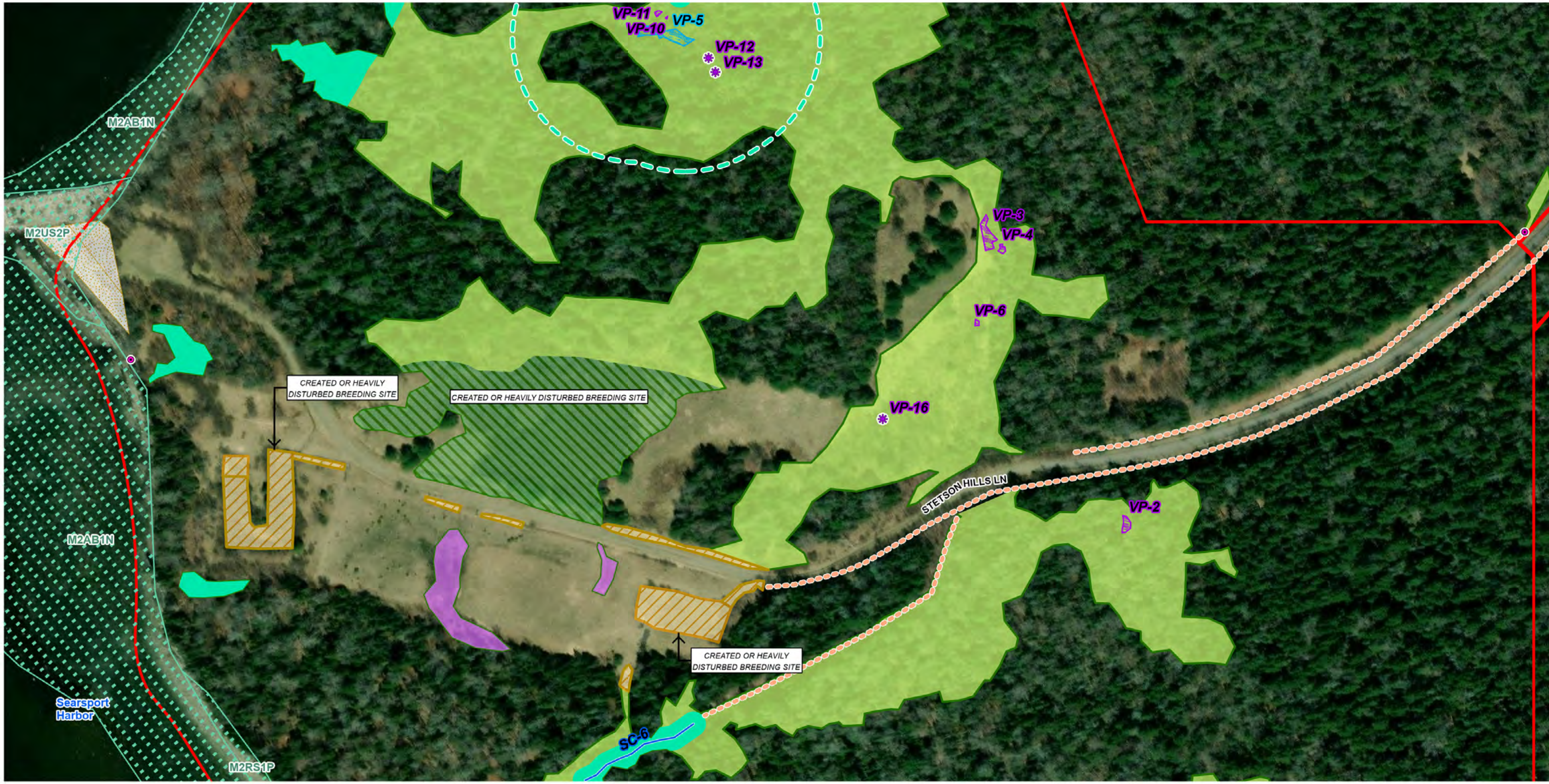
0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Sears Island Study Area | Searsport, ME



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Vernal pools surveyed in April and May 2024. DRAFT

0 100 200 300 Feet

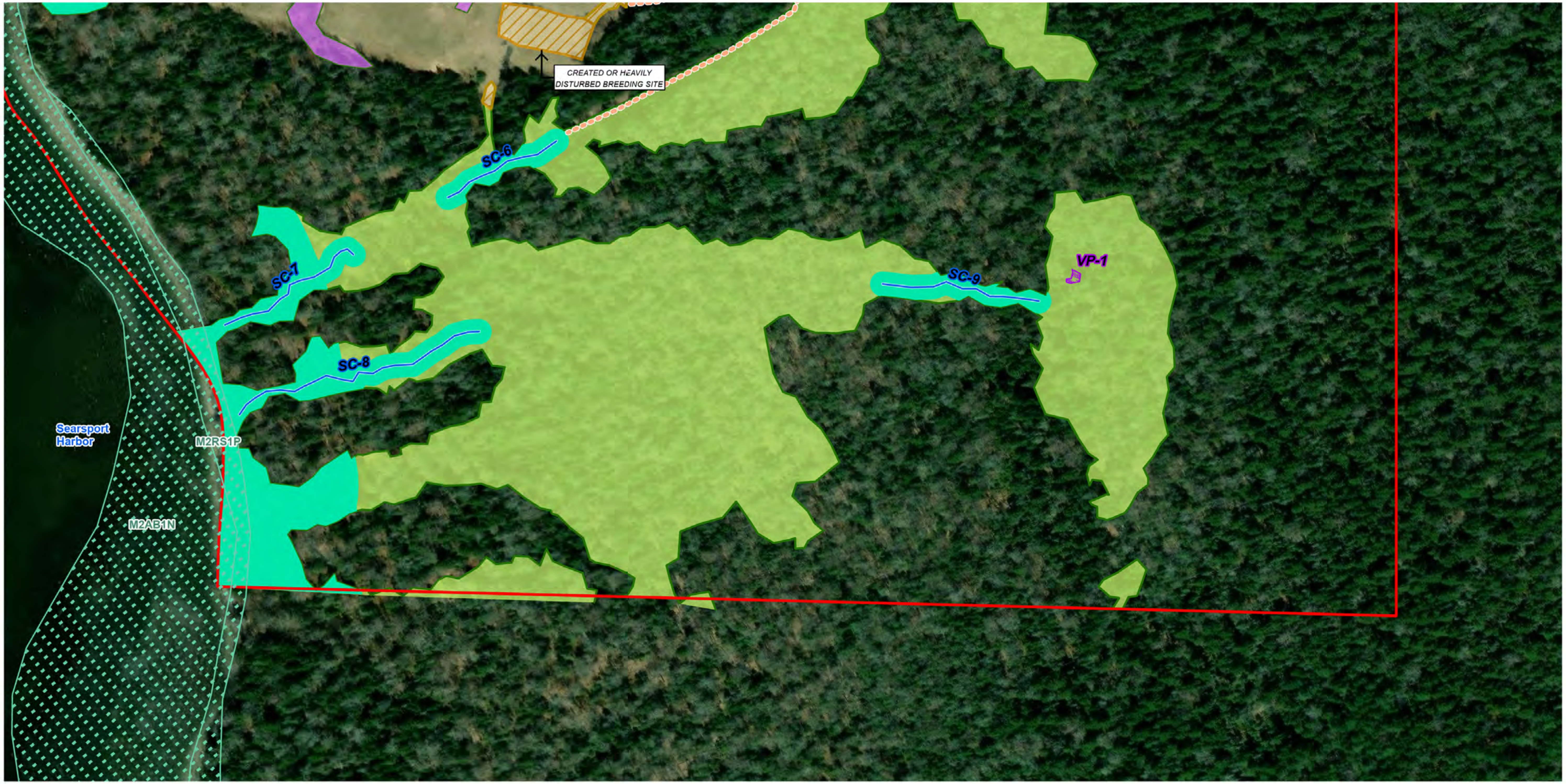
DRAFT

Source: MEGIS, VHB, ESRI

Path: \\vhb.com\gis\proj\SPortland\55684.01 Mack Point_Sears Island\Project\MaineDOT Mack Pt Sears Island Project.aprx (User: lburbank, Date: 8/9/2024)

VHB 2024 Vernal Pool Surveys DRAFT MAPPING & Preliminary Data

Sears Island Study Area | Searsport, ME



- Culvert
- Constructed Ditch
- Study Area
- MNAP - Mapped Sand Dunes
- Delineated Stream Centerline
- Delineated Wetland Edge
- Indicator Breeding Area
- Potential Non-Significant Vernal Pool
- Potential Significant Vernal Pool
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Wetland Resources Delineated by VHB in August/September 2023 and April 2024.
Vernal pools surveyed in April and May 2024. DRAFT

N

0 100 200 300 Feet

DRAFT

Source: MEGIS, VHB, ESRI

Stantec

Memo

To:	Eric Ham and Kristen Chamberlain Maine Department of Transportation	From:	Paul Sokoloff Topsham, ME Office
File:	Sears Island Eelgrass Survey	Date:	April 12, 2024

Reference: Eelgrass Survey for the Proposed Sears Island Offshore Wind Terminal – August 2022 and September 2023 Survey Results

The purpose of this Eelgrass Survey memo is to present resource data collected to support a National Environmental Policy Act Environmental Impact Statement and state and federal permitting for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project). The Project is being developed by the Maine Department of Transportation and they are evaluating a location on the western shoreline of Sears Island to serve as a potential Project site. Based on the June 2023 conceptual Project design, the Sears Island site may require approximately 30 acres of intertidal and subtidal fill (Figure 1). On September 20, 2023, Stantec completed a dive survey to map eelgrass (*Zostera marina*) present at the Sears Island Project Area (Figure 1). Additionally, Stantec completed an eelgrass survey of the previous version of the Project site on August 23 and 24, 2022, including areas previously mapped with eelgrass in 2010 by the Maine Department of Marine Resources (Figure 2).

This memo describes the results of the 2022 and 2023 surveys in the Project Area, including eelgrass survey observations, substrate characterization, and list of species observed.

METHODOLOGY

Stantec conducted the eelgrass survey based on the Joint Federal Agency Submerged Aquatic Vegetation Survey Guidance for the New England Region Tier 1 methodology[1] within the survey limits provided by MaineDOT identified on Figure 2. This methodology delineates the extent of the continuous eelgrass meadow using SCUBA. Where eelgrass has a patchy distribution the edge of the continuous eelgrass meadow is defined as 0.5 meters (m) beyond the last shoot. The last shoot is defined as a shoot that is within 1 m of an area in the interior of the bed where there are ≥ 3 shoots/0.25m^2 within 1 m of adjacent shoots (Washington Department of Natural Resources 2014[2]). When observed, eelgrass meadow boundaries are delineated by Stantec divers who communicated their position to surface support staff using buoys. Eelgrass boundaries are recorded by surface support staff using a Global Positioning System Trimble GeoExplorer Series Receiver with sub-meter accuracy. In addition to the eelgrass survey, Stantec records the following information for observations within eelgrass meadows and survey limits:

1. General sediment type (e.g., silt, mud, sand, and shell)
2. Qualitative estimate of the percent cover of eelgrass within the project vicinity (e.g., barren, sparse [1–10% cover], low [11–25%], moderate [26–50%], and high [>50%]). This was done for each survey area as a whole and within individual eelgrass beds where percent cover is highly variable
3. Epiphyte coverage (i.e., absent, light, or heavy)

[1] https://www.nae.usace.army.mil/portals/74/docs/regulatory/JurisdictionalLimits/Submerged_Aquatic_Vegetation_Survey_Guidance(11-Aug-2016).pdf
[2] Washington State Department of Natural Resources. 2014. Technical Memorandum: Operational Definition of an Eelgrass (*Zostera marina*) Bed.

Descriptions of the substrate in the Sears Island Project Area described in this memo are based on diver observations and side-scan sonar data collected by Steele Associates Marine Consultants, LLC. (Steele).[3] In 2022, Stantec divers surveyed transects the length of the 2022 Sears Island Project site. Each diver surveyed within a defined depth range (0–5 feet [ft], 5–10 ft, 10–15 ft, and 15–20 ft). These the centerline of these transects are shown on Figure 2 along the -3, -7, -13 and -18 ft mean lower low (MLLW) contours. Divers did not survey beyond the -20 ft MLLW contour based on the depth limits of eelgrass anticipated in the survey area. During the 2023 survey, Stantec divers surveyed transects the length of the 2023 Sears Island Project Area that had not been surveyed in 2022 along the -2.5 ft MLLW (Figure 2). T

SURVEY RESULTS

EELGRASS

The eelgrass surveys were completed on August 22 and 23, 2022, and September 20, 2023. No eelgrass was observed in the Sears Island Project Area (Figure 2). Appropriate depths and substrate types for eelgrass are present in portions of the surveys area. No eelgrass leaves or shoots were observed in the wrack line in the intertidal at Sears Island mixed with algae. The 2023 survey was conducted outside of the recommended survey window in the Joint Federal Agency Submerged Aquatic Vegetation Survey Guidance for the New England Region Tier 1 methodology[4], however if eelgrass was growing the Survey Area along the -2.5 ft MLLW transect it would have been observed but at a reduced percent cover and density.

SUBSTRATE

The substrate in the eelgrass survey area at Sears Island was generally silty sands with scattered, gravel, cobble, and boulders (Photo 1). The survey area south of the jetty was dominated boulders and cobble. The boulders and cobble present were mostly covered in crustose coralline algae due to urchin grazing (Photos 2 and 3). Mapping of substrate types within the survey area based on the side-scan imagery is detailed in the Steele survey report.

SPECIES LIST

The following marine species were observed during the 2022 and 2023 dive surveys at Sears Island:

- Acadian hermit crab (*Pagurus acadianus*)
- American lobsters (*Homarus americanus*) (Photo 4)
- Blue mussel (*Mytilus edulis*)
- Brown filamentous algae (*Ectocarpus* spp.)
- Burrowing Anemone (*Ceriantheopsis austroafricanus*)
- Common periwinkle (*Littorina littorea*) (Photo 5)
- Common slipper shell (*Crepidula fornicata*)
- Crustose coralline algae (*Corallinales*)

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[3] Steele Associates Marine Consultants, LLC, (2023) Hydrographic and Marine Geophysical Site Characterization Surveys. Mack Point and Sears Island. December 2023.
[4] https://www.nae.usace.army.mil/portals/74/docs/regulatory/JurisdictionalLimits/Submerged_Aquatic_Vegetation_Survey_Guidance(11-Aug-2016).pdf

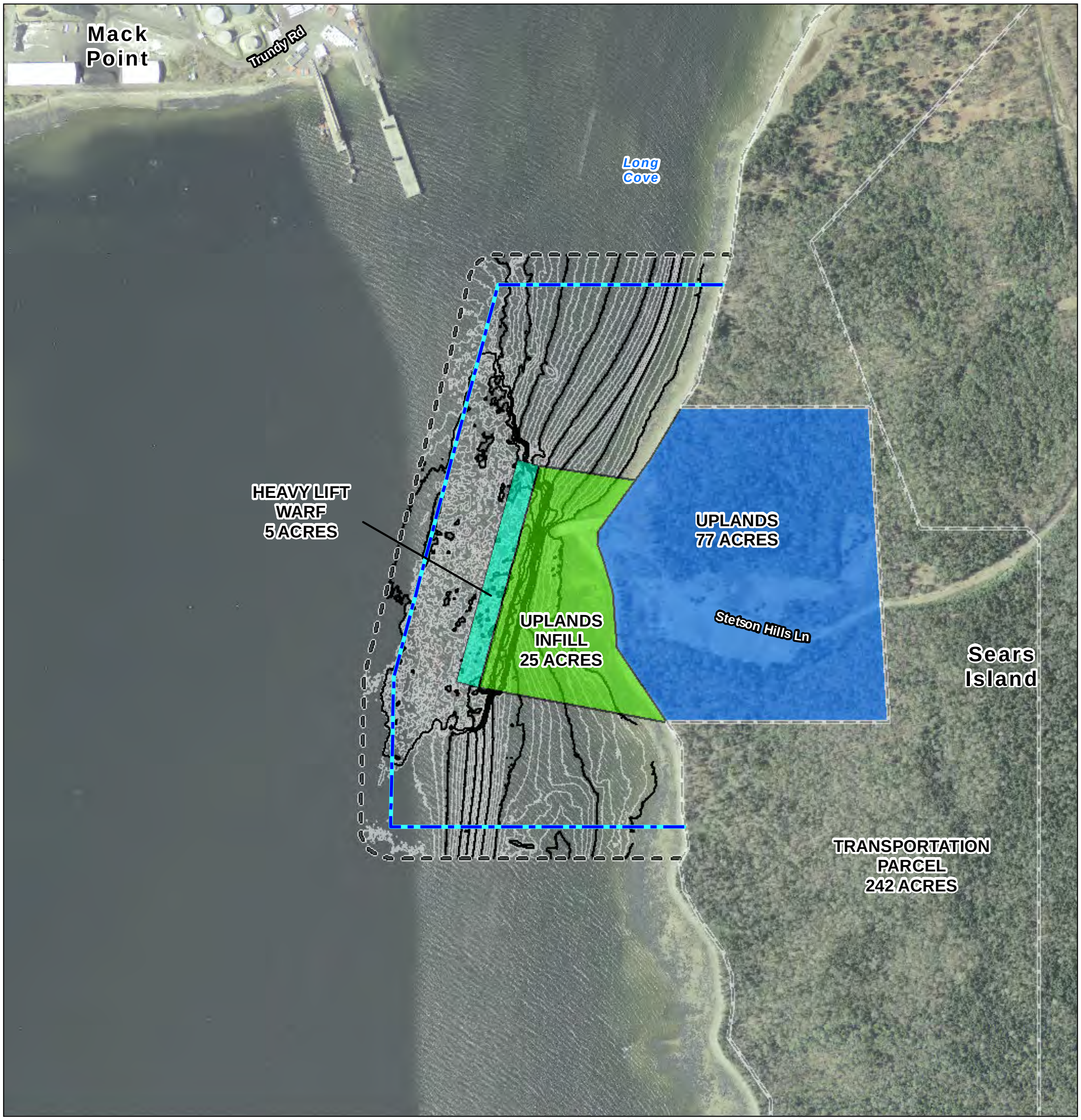
- Cunner (*Tautogolabrus adspersus*)
- Encrusting bryozoan (*Membranipora membranacea*)
- False Irish moss (*Mastocarpus stellatus*)
- Finger sponge (*Haliclona oculate*)
- Green crab (*Carcinus maenas*)
- Green sea urchin (*Strongylocentrotus droebachiensis*) (Photos 5 and 6)
- Northern rock barnacle (*Semibalanus balanoides*) (Photo 5)
- Pipefish (*Syngnathus fuscus*) (Photo 7)
- Rock Crab (*Cancer irroratus*)
- Razor clams (*Ensis directus*) (shells)
- Sand shrimp (*Crangon septemspinosa*)
- Sand dollar (*Echinarachnius parma*) (Photo8)
- Sea Star (*Asterias rubens*) (Photo 9)
- Sea vase (*Ciona intestinalis*) (Photo 6)
- Surf clams (*Spisula solidissima*)
- Unidentified brown filamentous algae
- Unidentified encrusting black tunicate (Photo 10)
- Unidentified globular sponges
- Winter flounder (*Pseudopleuronectes americanus*)

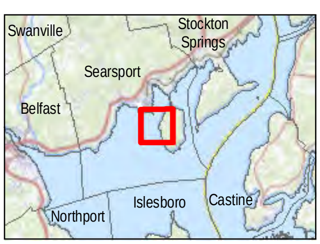
Stantec Consulting Services Inc.

Paul Sokoloff

Paul Sokoloff
Project Manager
Phone: 207 406 5475
Paul.Sokoloff@stantec.com

Attachment: Figure 1. Maine Floating Offshore Wind Port Sears Island Alternative, June 2023 Conceptual Design
Figure 2. 2022 and 2023 Sears Island Eelgrass Transects and Survey Area
Representative Photographs





Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (77 acres)
- Uplands Infill (25 acres)
- Heavy Lift Warf (5acres)
- Transportation Parcel (242 acres)

0 1,000 Feet

(At original document size of 8.5x11)
1" = 1,000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

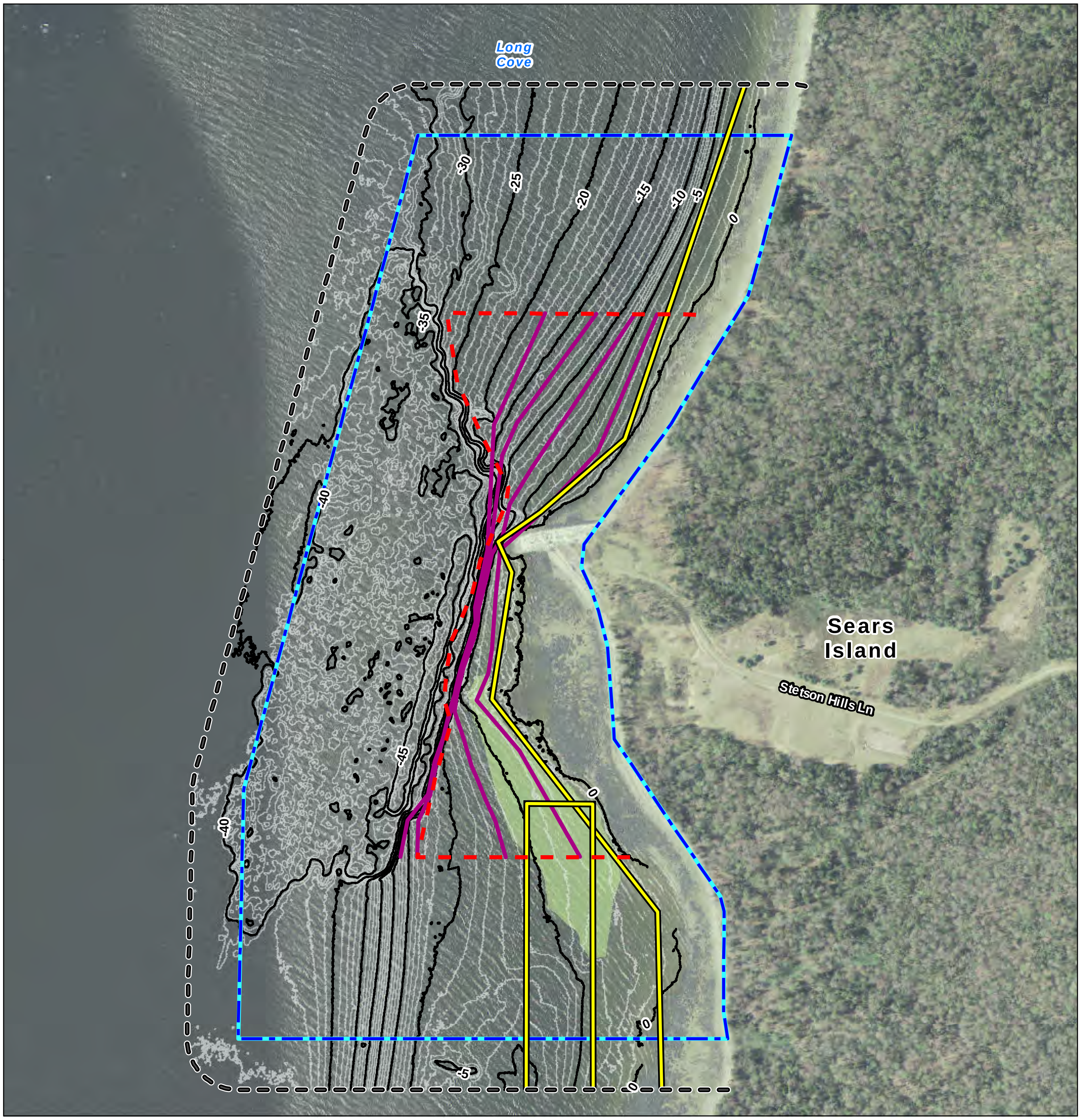
Client/Project
Maine Department of Transportation
195602718

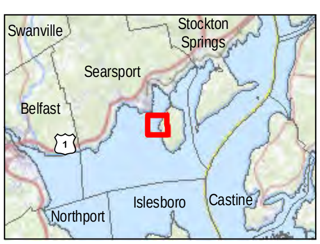
Figure No.
1

Title
Sears Island Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

U:\195602718\03_data\gis_cad\gis\MXDs\02718_01_Sears_Concept_Design.mxd Revised: 2024-04-11 By: pbarbera





Legend

- Bathymetry Contour 1ft
- Bathymetry Contour 5ft
- 200 ft Buffer
- 2022 Eelgrass Survey Area
- 2022 Eelgrass Transects
- 2023 Eelgrass Transects
- Potential Project Footprint
- Maine DMR Aerial Interpreted Eelgrass 2010

0 600 Feet

(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-01
TR Review by KWH on 2024-04-01
IR Review by PS on 2024-04-01

Client/Project
Maine Department of Transportation
195602718

Figure No.
2

Title
2022 and 2023 Sears Island Eelgrass Survey Transects

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

\\us0241-ppfss01\shared_projects\195602718\03_data\gis_cad\gis\MXDs\02718_04_Sears_Island_Eelgrass.mxd Revised: 2024-04-03 By: pbarbera

Photo 1. Silty sands with scattered, gravel, cobble, and boulders at Sears Island. September 2023.

Photo 2. Boulders and cobble with crustose coralline algae due to urchin grazing at Sears Island. September 2023.

Photo 3. Boulders and cobble with crustose coralline algae due to urchin grazing at Sears Island. September 2023.

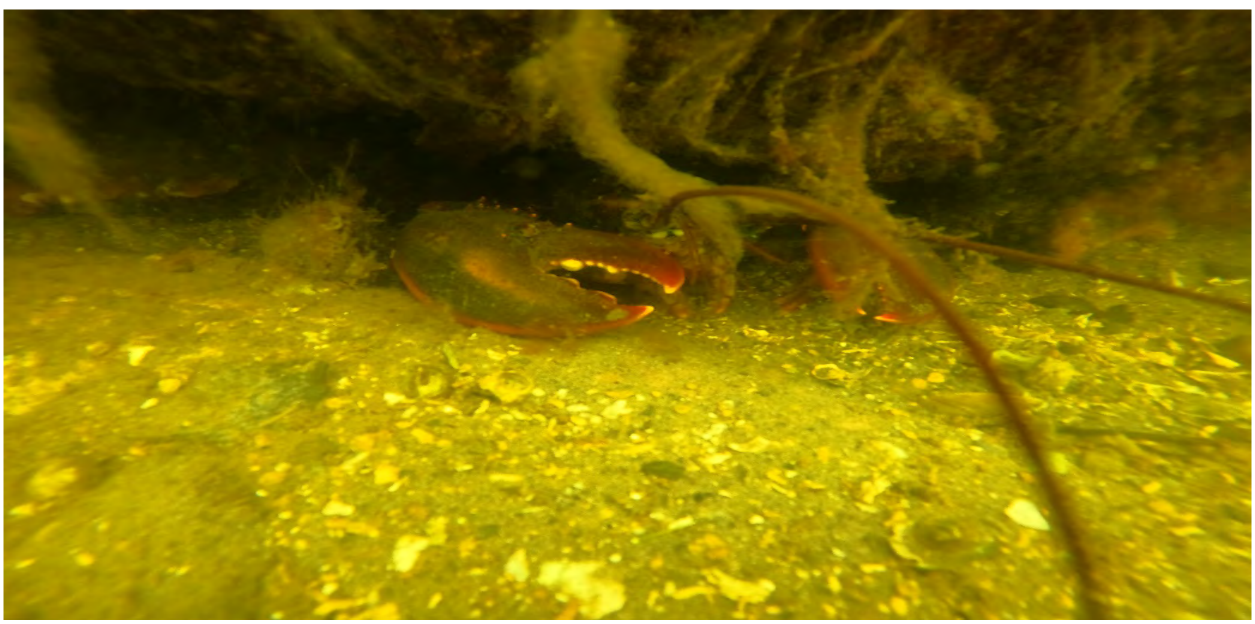


Photo 4. Lobster at Sears Island. August 2022.

Photo 5. Green sea urchins, common periwinkles, and northern rock barnacles on a boulder in the shallow subtidal at Sear Island. September 2023.

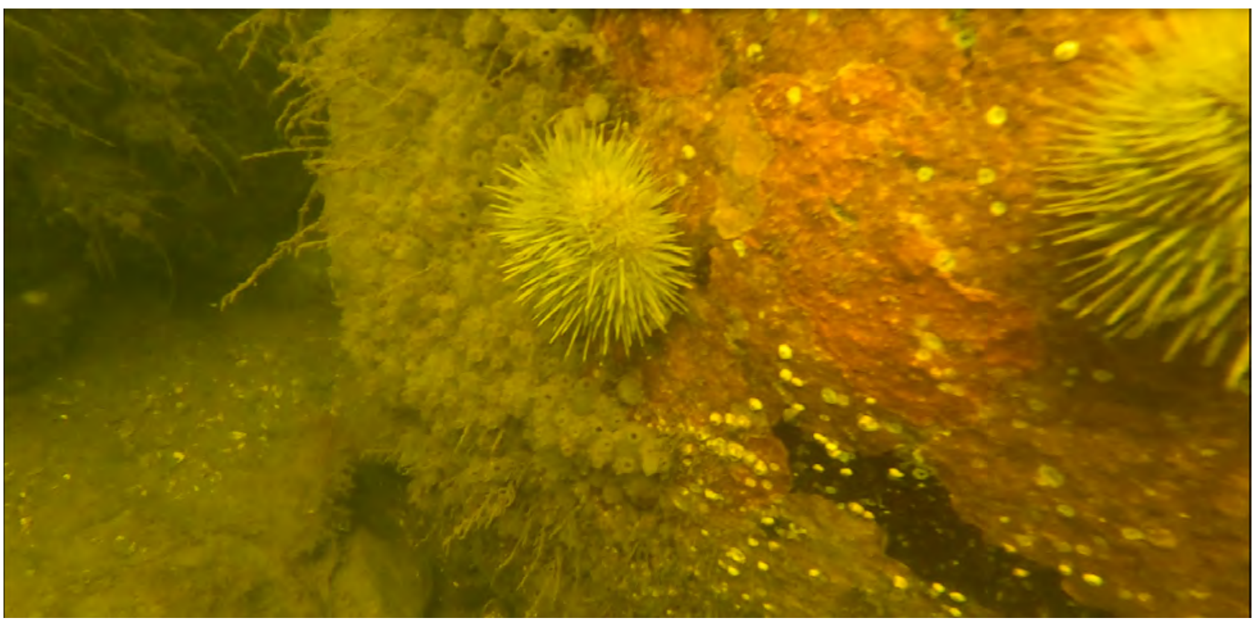


Photo 6. Green sea urchin and sea vase in the shallow subtidal at Sears Island. September 2023.

Photo 7. Pipefish at Sears Island. August 2022.

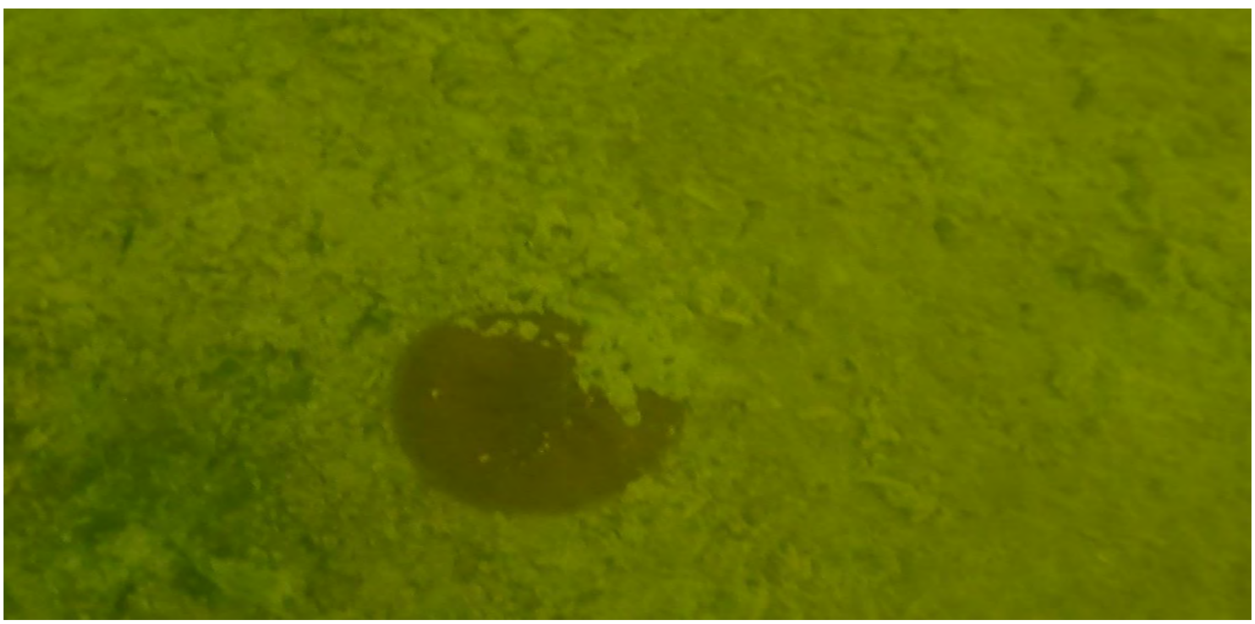


Photo 8. Sand dollar at Sears Island. August 2022.

Photo 9. Sea star in the shallow subtidal at Sears Island. September 2023.

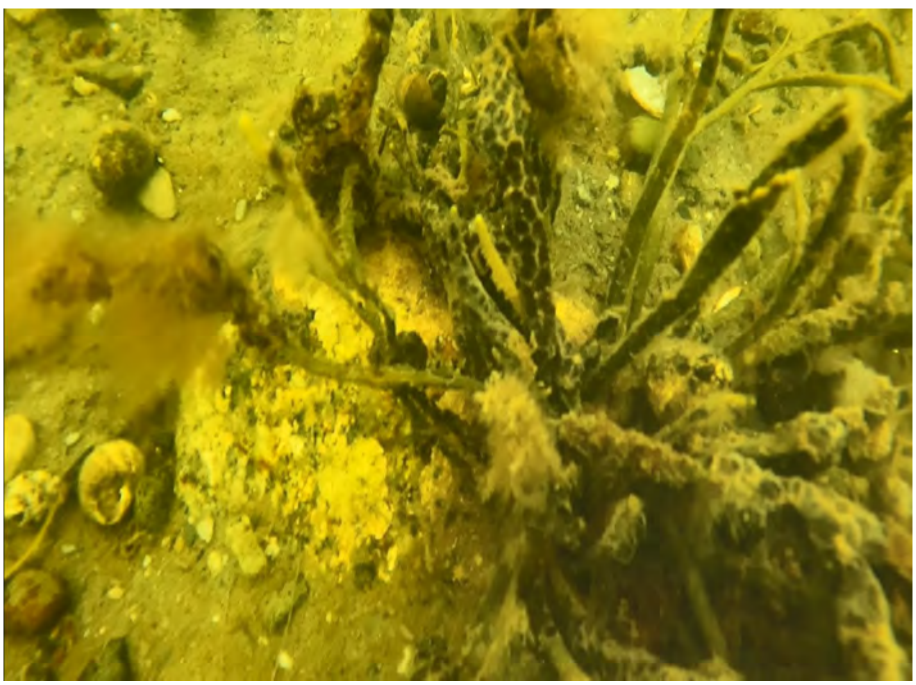


Photo 10. Encrusting black tunicate at Sears Island. August 2022.

Stantec

Memo

To:	Eric Ham and Kristen Chamberlain	From:	Paul Sokoloff
	Maine Department of Transportation		Topsham, ME Office
File:	Sears Island Diver-based Lobster and Urchin Density Survey	Date:	April 9, 2024

Reference: Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results

The purpose of this Diver-based Lobster and Urchin Density Survey memo is to present resource data for commercially important species collected to support a National Environmental Policy Act Environmental Impact Statement and state and federal permitting for a proposed Offshore Wind Port and Wind Turbine Launch Site (Project). The Project is being developed by the Maine Department of Transportation and they are evaluating the western shoreline of Sears Island to serve as a potential Project site. Based on the June 2023 conceptual Project design, the Sears Island site may require approximately 30 acres of intertidal and subtidal fill (Figure 1). On December 6 and 7, 2023, Stantec completed dive surveys to estimate the density of American lobsters (*Homarus americanus*) and green sea urchins (*Strongylocentrotus droebachiensis*) present at the Sears Island Project Area (Figure 1). The lobster and urchin survey data will be used in consultations with the Maine Department of Marine Resources to determine potential mitigation requirements and if a relocation effort should be completed for lobsters and urchins in and/or adjacent to the Project Area prior to any in-water work. On past Maine projects, the Maine Department of Marine Resources relocation lobster density threshold has been 0.1 lobster per meter^2 to determine if a lobster relocation effort is required. Stantec is not aware of a past project impacting green sea urchin habitat where a relocation effort was required. In addition to the lobster survey results provided herein, Stantec has included a summary of lobster life history specific to water temperature expected during the time of year work window for tidal waters (November 8 to April 9).[1]

LOBSTER LIFE HISTORY AND TEMPERATURE LITERATURE REVIEW

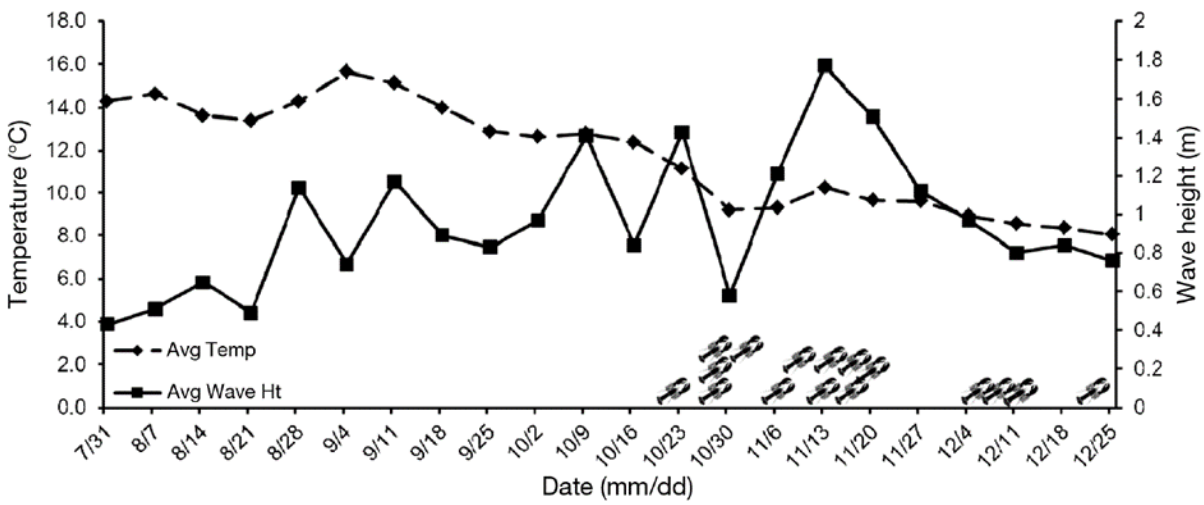
Daily activity level and seasonal movements of the American lobster are influenced by seasonal shifts in water column temperature (McLeese and Wilder 1958, Factor 1995, Crossin et al. 1998, Jury 1999, Goldstein and Watson 2015, Wang et al. 2016). Studies have shown that the lobster prefers water temperature of approximately 16°C to 17°C (Crossin et al. 1998, Watson et al. 1999) and that their movement is directly related to water temperature. Seasonal movement occurs when water temperature drops below 10°C, and when water temperature is below 5°C, there is decreased to no movement of lobsters (Factor 1995, Jury 1999). The walking rate of lobsters increases linearly between 2°C and 10°C, with activity being water temperature-dependent below 10°C and independent of water temperature between 10°C and 20°C (Factor 1995, Jury 1999). The probability of catching lobsters is dependent on individuals encountering traps; therefore, decreases in water temperature can be correlated to reduced catchability (Campbell and Stasko 1986, Factor 1995, Jury 1999, Jury and Watson 2013, Wang et al. 2016). Two studies have investigated the link between water temperature and catchability. One found that the highest catch per unit effort in the Great Bay Estuary of New Hampshire was in areas with water temperature between 12°C and 18°C (Jury and Watson 2013). A second study conducted in the St. Croix River estuary (between Maine and New Brunswick) found a significant decrease in catchability below 8°C (McLeese and Wilder 1958).

[1] Department of the Army General Permit for the State of Maine. https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/ME/2020-2025-MaineGeneralPermits.pdf

Reference: Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results

Falling water temperature and storm events create a challenging and stressful environment for lobsters located in inshore areas (Ennis 1984, Goldstein and Watson 2015). Seasonal offshore lobster movement due to decreases in water temperature or increases in storm activity have been documented in the northern part of their range (Cooper and Uzmann 1971, Ennis 1984, Campbell and Stasko 1986, Factor 1995, Goldstein and Watson 2015). Water temperature ranging below 8°C to10°C appears to trigger the offshore migration of adult lobsters (Cooper and Uzmann 1971, Factor 1995, Goldstein and Watson 2015). The migration of lobsters to deeper water has been documented to be age dependent, with adult lobsters moving greater distances and juvenile and adolescent lobsters sometimes remaining in shallower coastal waters even as water temperature decreases (Factor 1995). Migration timing may be affected by sex in addition to age, with adult female lobsters beginning an offshore seasonal migration earlier than male lobsters due to the need for a consistent water temperature above 3.4°C for egg development (Campbell and Stasko 1986).

Goldstein and Watson (2015) observed the offshore movement of lobsters in the Piscataqua River starting in mid-October when significant decreases in water temperature were observed (Figure 2). The water temperature remained relatively constant prior to the observation of offshore movement; however, in mid-October, a decrease in water temperature was observed, with water temperature dropping from 14.1°C to 10.3 ±0.5°C. Of the 16 tagged lobsters that were observed migrating offshore, the majority (75%) left the estuary between October 22 and November 21, with a mean departure date of November 1 (Goldstein and Watson 2015).



Weekly water temperature and wave height in the fall of 2006 for the period before and during the offshore movements of tagged lobsters. Lobster symbols indicate when individual lobsters initiated offshore movements. Most (75%, n = 16) of the lobsters left the area between October 22 and November 21, with a mean date of departure of November 1 (range = 295−315 days) (Goldstein and Watson 2015).

Figure 2. Water temperature and wave height associated with offshore movements of lobsters in the Piscataqua River (Goldstein and Watson 2015).

Publicly available water temperature estimates for Searsport Harbor are based on the daily sea surface temperature satellite readings from NOAA.[2] Historic temperature summary charts are also available based on these satellite readings, including monthly sea temperatures from 2013 to 2023 (Figure 3). As indicated in Figure 3, mean sea temperature drops below 10°C in November and below 5°C in January, and mean sea temperatures again increase above 5°C in April/May. Based on the research cited above and the local sea temperature data, seasonal movement of lobster would be expected to occur out of Searsport Harbor in late October and November. By January and into April, any remaining lobsters in Searsport Harbor would exhibit limited mobility and thus reduced catchability. This period of low lobster abundance and catchability corresponds with the potential in-water work window for the Project.

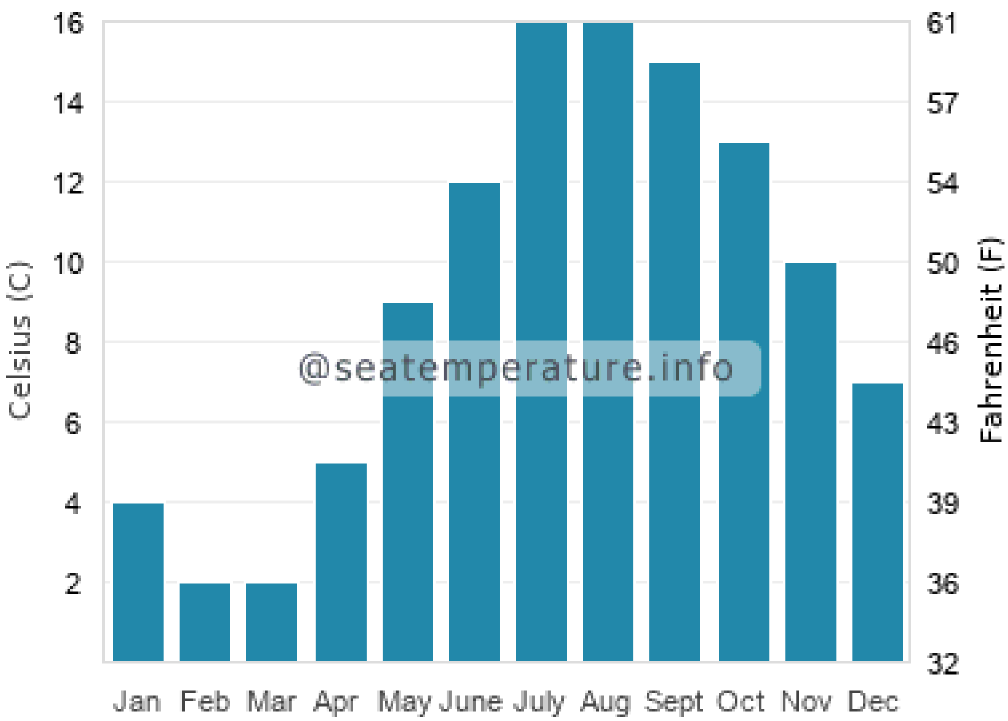


Figure 3: Mean Sea Temperature for Searsport Harbor (2013–2023)

LOBSTER AND URCHIN SURVEY METHODOLOGY

Diver-based lobster and urchin surveys were conducted in early December, to estimate the density of lobsters and urchins during the allowable in-water work window. Based on the homogeneity of substrate types and the lack of boulder and cobble habitat beyond the shallow subtidal, three transects were surveyed by divers at Sears Island (Figures 4 and 5). The transect length and spacing was chosen to characterize representative habitats across the Project Area; however, since actual impact areas are still being determined a 200-foot

[2] seatemperature.net accessed March 2024

buffer around proposed impacts was included (Survey Area). Video data documenting lobster and urchin density and benthic conditions in the Survey Area were collected with a GoPro® camera.[3]

Divers recorded the number of observed lobsters, lobster burrows, and urchins within one meter of either side of the transect. The density of observed lobsters, lobster burrows, and urchins was calculated for each transect based on the square meters surveyed (e.g. number urchins/ (length of the transect in meters x 2)). In addition, the following information was noted by divers:

1. General sediment type (i.e., silt, mud, sand, and shell).
2. Notable biological observations (i.e., shellfish or algal beds, crabs, and fish fauna).

LOBSTER AND URCHIN SURVEY RESULTS

The lobster and urchin surveys were completed in the Sears Island Survey Area on December 6 and 7, 2023. Figure 4 depicts the lobster and urchin transects and the survey boundaries. Table 1 contains the survey results. No lobsters were observed in the Sears Island Survey Area. Divers observed lobster burrows that were not visibly occupied on the three transects during the survey.

A total of 1,442 urchins were observed in the Sears Island Survey Area. Urchins were only observed on Transect 1 in boulder and cobble habitat, (Table 1; Photo 1). The remaining transects lacked hard bottom urchin habitat. The urchin density (0.53 urchins per square meter) on cobble and boulder substrate in the Survey Area has resulted in heavy browsing pressure on algae in the subtidal, with algae in these areas being primarily limited to crustose coralline algae on cobble and boulders (Photos 2–4).

Figure 5 presents subtidal substrate mapping based on a side-scan sonar survey completed by Steele Associates Marine Consultants, LLC (SAMC 2023). The substrate in the shallow subtidal along Transect 1 is primarily boulder and cobble interspersed with silty sands. This is where the greatest densities of green sea urchin were observed. This rocky substrate extended into the subtidal to around -10 feet mean lower low water before grading to sandy silt in deeper water. Beyond -10 feet mean lower low water the benthic substrates in Sears Island Survey Area were mud, with an area of silty sands located in the northwestern portion of the Survey Area (Figure 5). An area immediately west of transect 2 was identified has having a substrate consisting of primarily sand, gravel, or shell hash based high backscatter received during the side-scan sonar survey. This area was not surveyed for lobsters and urchins based the lack of suitable cobble and boulder habitat.

[3] Lobster and urchin survey video is available upon request.

Reference: Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results

Table 1. December 6 and 7, 2023, Lobster and Urchin Densities, Sears Island.

	Urchins	Unoccupied Burrows	Lobsters	Notes
Transect 1				
Total	1442	3	0	
Per m²	0.53	0.001	0	
Transect 2				
Total	0	3	0	
Per m²	0	0.001	0	
Transect 3				
Total	0	39	0	20 scallops, 9 ghost traps
Per m²	0	0.02	0	

The following other marine species were observed during the 2023 Sears Island dive surveys:

- Acadian hermit crab (*Pagurus acadianus*)
- Blue mussel (*Mytilus edulis*)
- Brown filamentous algae (*Ectocarpus* spp.)
- Burrowing anemone (*Ceriantheopsis austroafricanus*)
- Common periwinkle (*Littorina littorea*) (Photo 5)
- Common slipper shell (*Crepidula fornicata*)
- Crustose coralline algae (*Corallinales*)
- Encrusting bryozoan (*Membranipora membranacea)*
- False Irish moss (*Mastocarpus stellatus*)
- Finger sponge (*Haliclona oculate)*
- Green crab (*Carcinus maenas*)
- Mysid shrimp (*Mysis* sp.)
- Northern rock barnacle (*Semibalanus balanoides*) (Photo 5)
- Rock crab (*Cancer irroratus*)
- Sand shrimp (*Crangon septemspinosa*)
- Sand dollar (*Echinarachnius parma*) (Photo 6)
- Sea scallop (*Placopecten magellanicus*) (Photo 7)
- Sea star (*Asterias rubens*) (Photo 8, photo taken during September 2023 eelgrass survey)
- Sea vase (*Ciona intestinalis*)
- Surf clams (*Spisula solidissima)*
- Unidentified brown filamentous algae
- Unidentified encrusting black tunicate
- Unidentified globular sponges

SUMMARY

The following summarizes the lobster literature review and lobster and urchin survey effort at the Sears Island Survey Area:

- Lobster movement and activity are temperature dependent. The allowable in-water work window for tidal waters in Maine (November 8 to April 9) occurs during a period when many lobsters are expected to have moved out of the Sears Island Project Area into deeper offshore waters. Remaining lobsters likely seek refuge in the deeper water associated with the navigation channel. Lobsters that remain in Searsport Harbor exhibit reduced activity and catchability from January to March, when water temperatures are below 5°C. This period of reduced abundance and activity corresponds with the in-water work window.

- No lobsters were observed during the dive surveys at Sears island. The lack of lobsters in the Survey Area during early December is supported by the reviewed literature. Higher lobster densities are expected in this area during the summer and fall.

- The cobble and boulder habitat in the shallow subtidal of the Survey Area supports a high density of green sea urchin.

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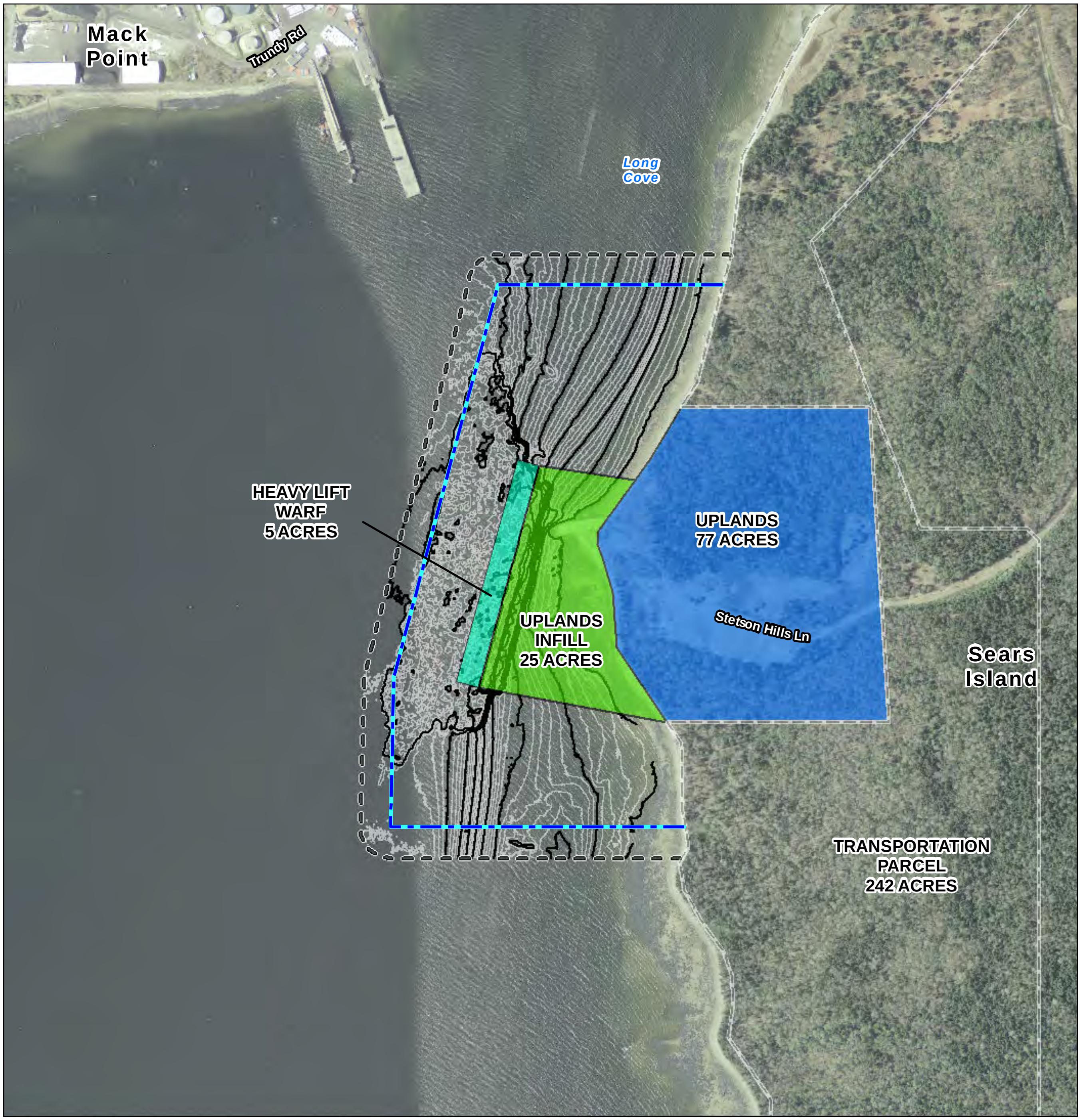
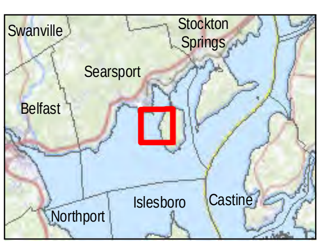
Stantec Consulting Services Inc.

Paul Sokoloff

Paul Sokoloff
Project Manager
Phone: 207 406 5475
Paul.Sokoloff@stantec.com

Attachment: Figure 1. Maine Floating Offshore Wind Port Sears Island Alternative, June 2023 Conceptual Design
Figure 4. 2023 Sears Island Lobster and Urchin Survey Transects
Figure 5. 2023 Subtidal Substrates Sears Island
Representative Photographs





Legend

- 200 ft Buffer
- Potential Intertidal and Subtidal Project Footprint
- Uplands (77 acres)
- Uplands Infill (25 acres)
- Heavy Lift Warf (5acres)
- Transportation Parcel (242 acres)

0 1,000 Feet

(At original document size of 8.5x11)
1" = 1,000'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-11
TR Review by KWH on 2024-04-11
IR Review by PS on 2024-04-11

Client/Project
Maine Department of Transportation

195602718

Figure No.
1

DRAFT

Title
Sears Island Conceptual Design

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

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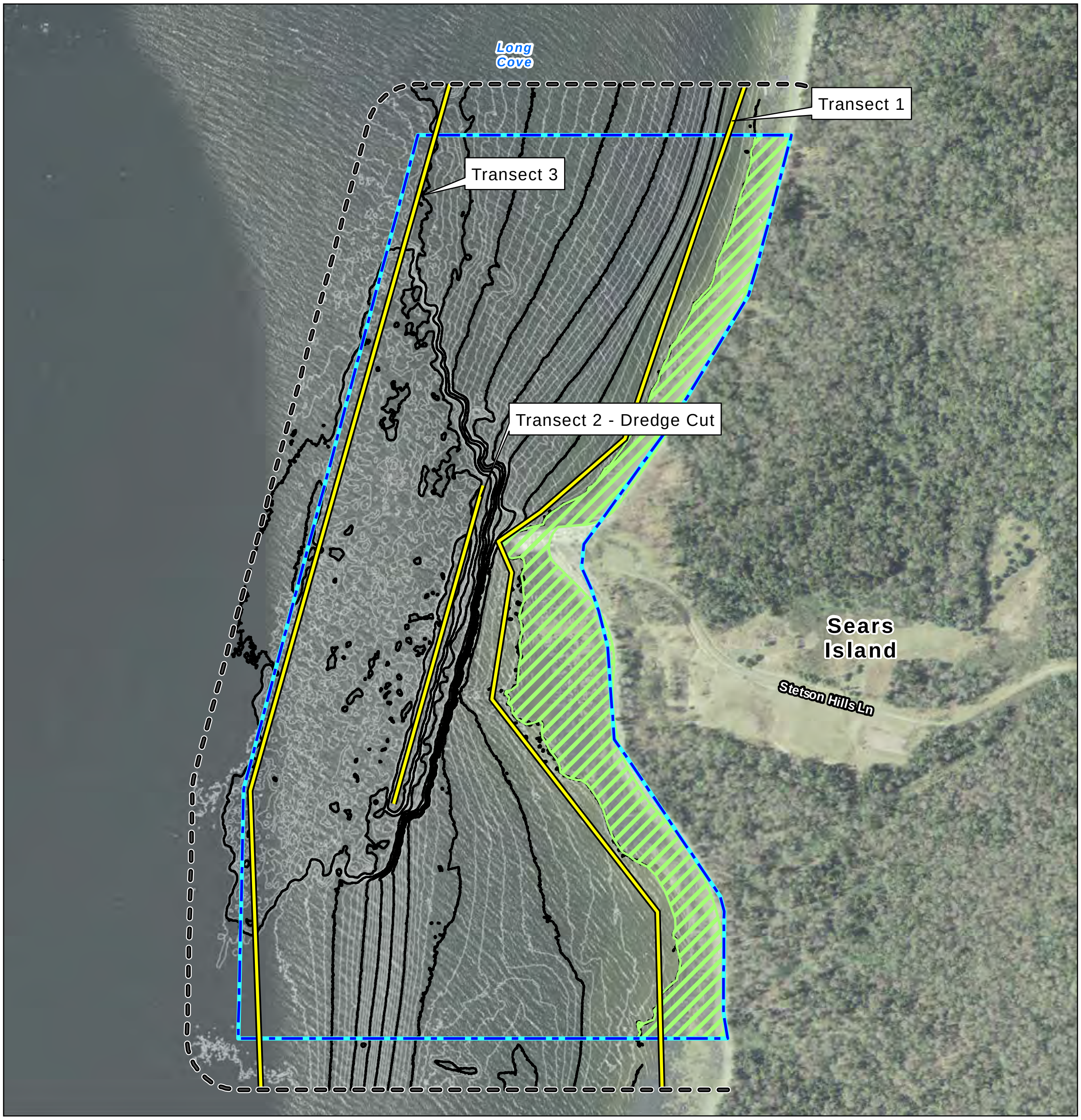

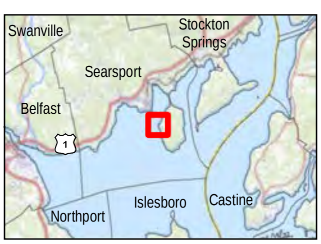

Legend

- Bathymetry Contour 1ft
- Bathymetry Contour 5ft
- 200 ft Buffer
- Lobster and Urchin Dive Transects
- Potential Project Footprint
- Approximate Intertidal Area (583,000 SQ. FT. /13.4 Acres)

0 600 Feet

(At original document size of 8.5x11)
1" = 600'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-02
TR Review by KWH on 2024-04-02
IR Review by PS on 2024-04-02

Client/Project
Maine Department of Transportation
195602718

Figure No.
6

Title
2023 Sears Island Lobster and Urchin Survey Transects

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Vertical Datum: Mean Lower Low Water (MLLW).
3. Data Sources:MEDOT, Stantec
4. Background: Maine Orthoimagery Regional, 2015

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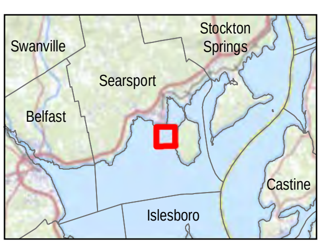

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Data Sources: Steele Associates Marine Consultants, LLC, Hydrographic and Marine Geophysical Site Characterization Surveys Mack Point and Sears Island Searsport, ME Report.

Not to Scale

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-04-02
TR Review by KWH on 2024-04-02
IR Review by PS on 2024-04-02

Client/Project
195602718
Maine Department of Transportation

Figure No.
3

Title
Side-Scan Backscatter Mosaic and Bottom Types

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Reference: Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results

Photo 1. Sandy silt with cobble and gravel substrate at Sears Island. December 2023.

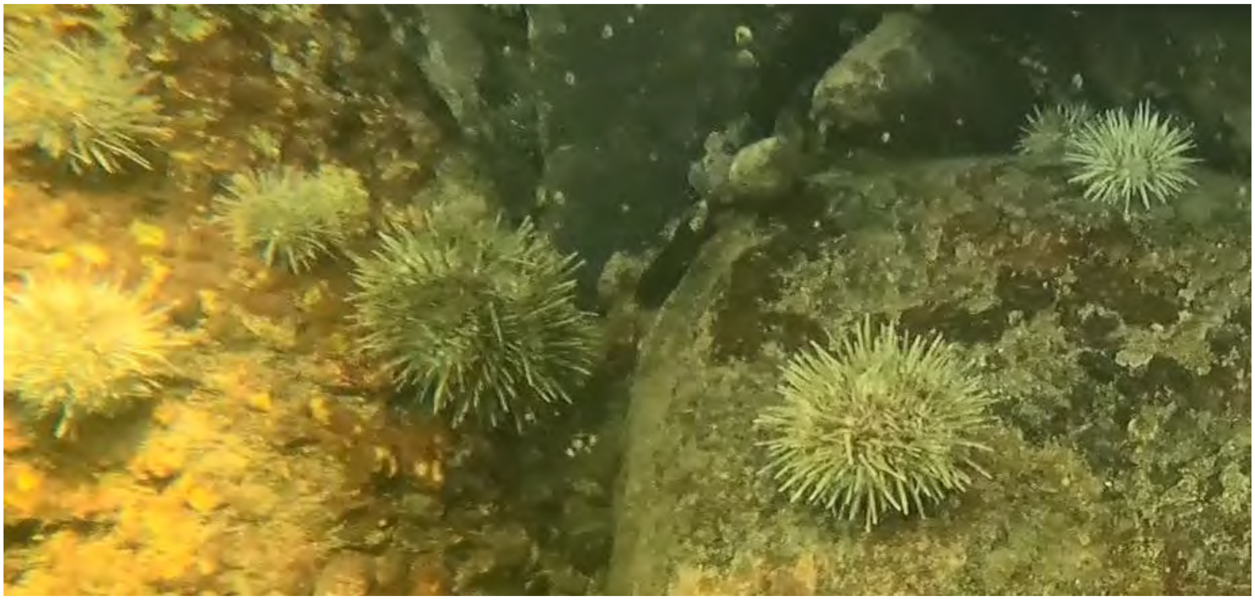

Photo 2. Green sea urchins at Sears Island in boulder and cobble habitat. December 2023.

Photo 3. Green sea urchins and crustose coralline algae at Sears Island. December 2023.

Photo 4. Green sea urchins and crustose coralline algae at Sears Island. December 2023.

Reference: Lobster and Urchin Dive Survey for the Proposed Sears Island Offshore Wind Terminal – December 2023 Survey Results

Photo 5. Green sea urchins, common periwinkles, and northern rock barnacles on a boulder in the shallow subtidal at Sears Island. December 2023.

Photo 6. Sand dollars in the sandy silty substrate in the shallow subtidal at Sear Island. December 2023.

Photo 7. Sea scallop in the subtidal at Sears Island. December 2023.

Photo 8. Sea star in the shallow subtidal at Sears Island. Photo taken during September 2023 eelgrass survey.

Memo

To:	Eric Ham and Kristen Chamberlain Maine Department of Transportation	From:	Matt Arsenault Topsham, Maine Office
File:	195602718	Date:	April 3, 2024

Reference: Proposed Sears Island Offshore Wind Terminal Sand Dune Characterization Memo

The Maine Department of Transportation is evaluating a project site (site) on the western shoreline of Sears Island to construct an offshore wind terminal that would support offshore wind development in Maine. This Project is proposed to serve as an Offshore Wind Port and Wind Turbine Launch Site. Coastal sand dune geology data available from the Maine Geological Survey (MGS) identified a portion of the site adjacent to an existing jetty as coastal sand dune, containing both frontal and back dune areas (Figure 1). On December 22, 2023, Stantec Consulting Services Inc. (Stantec) conducted a field survey to characterize the existing conditions of the MGS-mapped dune area. This memo summarizes these efforts.

METHODOLOGY

Coastal sand dunes are regulated under the Maine Natural Resources Protection Act (NRPA; 38 M.R.S.A. §§ 480-A – 480-JJ) and are further defined by Maine Department of Environmental Protection rules adopted under the NRPA (06-096 CMR 355). Stantec's December 2023 field survey reviewed the physical features of the MGS-mapped dune areas and compared their characteristics to the definitions under the NRPA and Chapter 355. A GPS receiver capable of achieving sub-meter level of horizontal accuracy was used to delineate the observed sand dune components (frontal dune, berm, back dune, etc.). Data were collected on general topography, characteristic vegetation, evidence of dynamic wave action, and surficial material. Representative photographs were taken to document the conditions.

RESULTS

The site includes a small coastal sand dune system on the south side of an existing jetty. The site includes a sloping sand and gravel beach beginning at the approximate mean low water elevation and extending landward to the approximate high tide limit, which was identified by field characteristics including a prominent wrack line (Photos 1 and 2). Landward of the high tide limit, a narrow dune berm (approximately 20 to 25 feet wide) consisting predominantly of medium- to fine-grained sand (based on ocular estimation) slopes gently upward to a low frontal dune ridge (Photos 3 and 4). The dune berm is subject to occasional tidal inundation during extreme high tide and storm events as evidence by a scattering of wrack material (primarily seaweed) along the berm (Photo 4). The frontal dune consists of a very narrow (approximately 15 feet wide) and sparsely vegetated coarse sand and gravel ridge (Photo 4). The top of the ridge has large accumulations of coarse woody debris and wrack that has accumulated during extreme high tide and storm events. The dominant vegetation on the frontal dune ridge includes common wormwood (*Artemisia vulgaris*) with scattered beach rose (*Rosa rugosa*) shrubs on its landward side (Photos 5 and 6). Differentiation of the dune berm and frontal dune transition was subtle due to the consistency of the slope and surficial material. In general, a slight slope inflection and subtle shift in sand grain size was observed at the transition between the berm and the frontal dune ridge determined during the survey (Figure 2).

An approximately 0.25-acre shrub-dominated back dune trough is present behind the frontal dune ridge. This basin-like feature is dominated by beach rose and is periodically inundated during extreme high tide/storm events based on field observations of scattered coarse debris and driftwood material (Photo 5). The soil consists of compacted fine- to medium-grained sand based on ocular estimation. When flooded, the basin drains through a swale along the northern edge of the sand dune system along the base of the existing jetty.

Reference: Proposed Sears Island Offshore Wind Terminal Sand Dune Characterization Memo

Sand accumulations in this area appears to be driven primarily by deposition from floodwaters during extreme high tide/storm events.

Based on the field observations, the sand dune system observed at the Sears Island site meets the NRPA definition of a coastal sand dune. This sand dune system has been created by placement of the jetty at the site and accumulation of sand south of the jetty.

A site visit was conducted on April 2, 2024, to verify winter storms had not modified the dune. The survey found little had changed since the December 2023 survey, with the exception of some additional debris accumulation (Photos 7 and 8).

Stantec Consulting Services Inc.

Matt Arsenault PWS, Ecologist, NHCWS
Botanist / Ecologist

Phone: 207-798-2135
matt.arsenault@stantec.com

Attachment: Figure 1. Coastal Sand Dune Geology Map
Figure 2. Coastal Sand Dune Map
Representative Photos

ATTACHMENT 1. COASTAL SAND DUNE GEOLOGY MAP

Coastal Sand Dune Geology Map

12/22/2023, 2:41:11 PM

Sand Dune Erosion Hazard Areas

Sand Dune Boundaries

D1

D2

Coastal Sand Dune Geology Maps Extents

N

1:2,257

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.08 km

Maxar, Microsoft, USDA FSA, Esri, HERE, Garmin, iPC

Maine Geological Survey

USDA FSA | Maxar, Microsoft | Maine Geological Survey | The Maine Geological Survey developed this data in support of and as requested by the Maine Department of Environmental Protection.

Coastal Sand Dune Features

- Back Dune Trough
- Dune Ridge
- Frontal Dune Berm
- Beach

0 200 Feet

(At original document size of 8.5x11)
1" = 200'

N

Stantec

Project Location
Searsport, Maine

Prepared by PWB on 2024-03-06
TR Review by KWH on 2024-03-06
IR Review by MA on 2024-03-06

Client/Project
Maine Department of Transportation

195602718

Figure No.
2

Title
Coastal Sand Dune Map

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Data Sources:MEDOT, Stantec
3. Background: Maine Orthoimagery Regional, 2015

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ATTACHMENT 2. REPRESENTATIVE PHOTOGRAPHS

Photo 1. Coastal sand dune system, including beach and berm, view to the south from jetty. Stantec. December 22, 2023.

Photo 2. Low beach area, view to the north. Stantec. December 22, 2023.

Photo 3. Dune berm and frontal dune ridge, view to the north. Stantec. December 22, 2023.

Photo 4. Frontal dune ridge with accumulation of wrack debris, view to the southeast. Stantec. December 22, 2023.

Photo 5. Back dune trough area dominated by beach rose, view to the north. Stantec. December 22, 2023.

Photo 6. Back dune trough area dominated by beach rose, view to the west. Stantec. December 22, 2023.

Photo 7. Additional debris present on sand dune due to winter storms. Stantec. April 2, 2024.

Photo 8. Additional debris present on sand dune due to winter storms. Stantec. April 2, 2024.