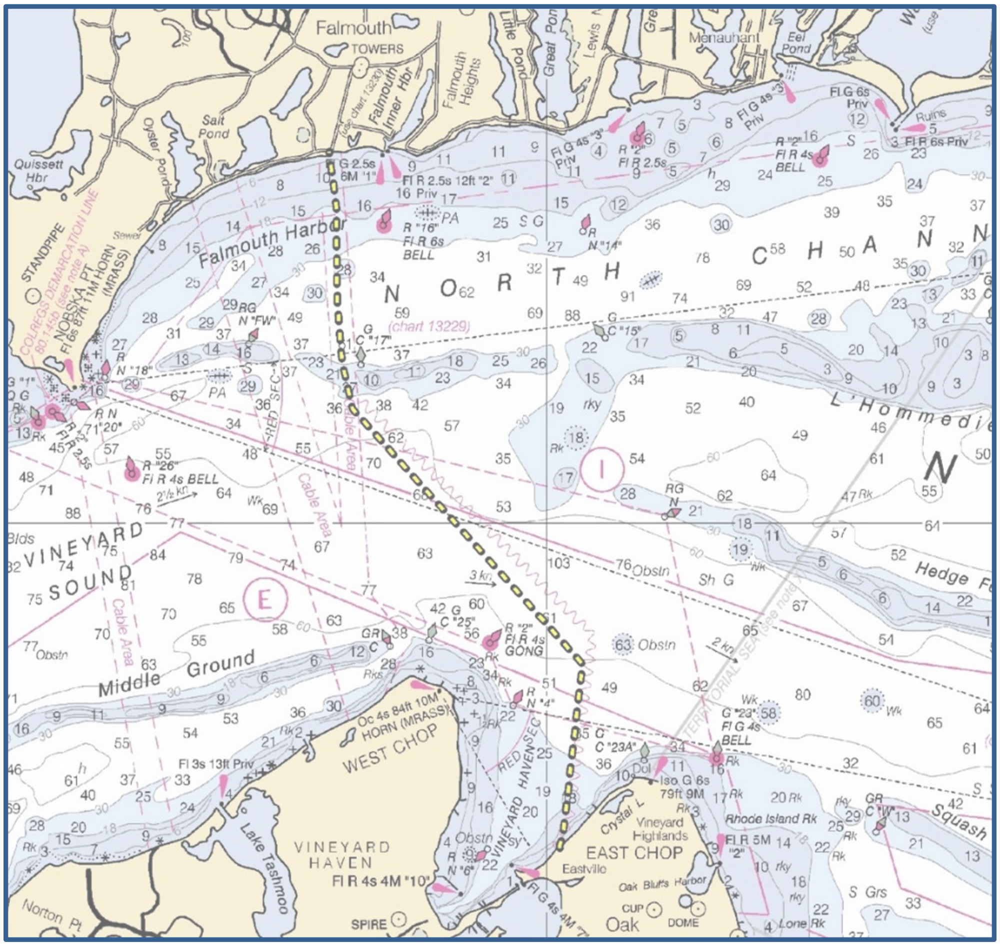
SINGLE ENVIRONMENTAL IMPACT REPORT
EEA NO. 16562

Martha's Vineyard Reliability Project
New Distribution Cable from Falmouth to Oak Bluffs



Submitted to:
Executive Office of Energy and Environmental Affairs |MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Submitted by:
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
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EVERSOURCE

Epsilon ASSOCIATES INC.

January 3, 2023

Projects:\6097\MEPA\SEIR

January 3, 2023

Secretary Bethany A. Card
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: **EEA No. 16562 | Martha's Vineyard Reliability Project, Falmouth to Oak Bluffs, MA**
Single Environmental Impact Report
NSTAR Electric Company d/b/a/ Eversource Energy | Proponent

Dear Secretary Card:

On behalf of NSTAR Electric Company, d/b/a Eversource Energy ("Eversource"), Epsilon Associates, Inc. ("Epsilon") is pleased to submit the enclosed Single Environmental Impact Report ("SEIR") for the proposed Martha's Vineyard Reliability Project (the "Project").

Presently Martha's Vineyard ("Vineyard" or "Island") is supplied by four submarine electric distribution cables. The year-round population on Martha's Vineyard is approximately 17,000 but increases to approximately 200,000 during the summer months. As such, electric consumption surges in the summer and the four existing submarine cables cannot reliably meet the Island's peak demand. When demand exceeds the capacity of the four existing submarine cables, Eversource relies on five diesel generators located in Oak Bluffs and Vineyard Haven, which combined provides approximately 12.5 megawatts of supplemental power to the Island. The proposed Martha's Vineyard Reliability Project involves laying a fifth submarine distribution cable from Falmouth to Oak Bluffs to: (1) meet current and future electrical demand, and (2) increase the reliability of the grid-based electrical service on the Island. In addition to meeting the project purpose and need, the following benefits will be realized:

- The electric distribution system on Martha's Vineyard can be reconfigured to allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard.

- The Project will allow Eversource to decommission the five existing (1940's and 1970's vintage) diesel generators, thus reducing: (1) fossil fuel use on the Island, (2) combustion emissions (NOx, PM, CO_2) on the Island, and (3) emissions of greenhouse gases on the Island.

- There are Environmental Justice ("EJ") populations on Martha's Vineyard within 5-miles of the existing diesel generators. Decommissioning these generators is expected to benefit those populations relative to air emissions and related environmental burden.

- Connecting at the Stephens Lane substation in Falmouth, the source of the electricity moving through the fifth cable, the Project can increase penetration of renewable energy on the Island as Eversource transitions its energy sources on the mainland to renewables.

The proposed Project includes the following components:

- An approximate 6.27-mile submarine cable across Vineyard Sound from a landfall site off Surf Drive in Falmouth to a landfall site on Eastville Avenue in Oak Bluffs.

- An approximate 2.7-mile onshore distribution cable from the existing Eversource substation #933, at the end of Stephens Lane in Falmouth to the submarine cable landfall off Surf Drive. This is comprised of 2.32 miles of cable installed in a new duct and manhole system in Falmouth, and 0.38 miles of cable installed in the existing electrical duct and manhole system in Surf Drive.

- An approximate 0.25-mile onshore distribution cable in a new duct bank and manhole system from the submarine cable landfall site on Eastville Road in Oak Bluffs to an existing Eversource parcel off Eastville Avenue near County Road.

- Installation of new equipment at the existing Eversource Substation #933 in Falmouth.

- Installation of a new driveway, manholes and equipment on the Eversource-owned parcel off Eastville Avenue in Oak Bluffs.

The attached SEIR along with the supporting documentation was prepared in accordance with the Certificate on the Expanded Environmental Notification Form and Proposed Environmental Impact Report as well as the MEPA Regulations, and presents:

- A complete description and analysis of the Project and its alternatives, and an assessment of its potential environmental and public health impacts and mitigation measures to allow participating agencies to make permitting decisions.

- Demonstrates that the Project will not materially exacerbate any existing unfair or inequitable environmental burden and related public health consequences impacting nearby EJ Populations, and that it will not result in a disproportionate adverse effect or increased climate change effects on nearby EJ Populations.

- Describes measures by the Proponent to provide meaningful opportunities for public involvement by EJ Populations before filing the dual EENF/Proposed EIR, and continuing through Project design, permitting and construction phases.

- Responses to comments received on the dual EENF/Proposed EIR.

We look forward to working with the MEPA staff on this important project. Please contact me at ddunk@epsionassociates.com, or Mr. Matthew Waldrip at matthew.waldrip@eversource.com, with any questions or comments on this project. Copies of the SEIR may be obtained from Ms. Corinne Snowdon at (978) 897-7100 or via email at csnowdon@epsilonassociates.com.

Sincerely,
EPSILON ASSOCIATES, INC.

Dwight R. Dunk, LPD, PWS, BCES
Principal

encl.

cc: M. Waldrip, Eversource
K. Cook, Eversource
SEIR Distributions List
Community Based Organizations

SINGLE ENVIRONMENTAL IMPACT REPORT

EEA# 16562

Martha's Vineyard Reliability Project: New Distribution Cable from Falmouth to Oak Bluffs

Submitted to:

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Submitted by:

NSTAR ELECTRIC COMPANY D/B/A EVERSOURCE ENERGY
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January 3, 2023

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Section 1.0

Introduction

1.0 INTRODUCTION

This Single Environmental Impact Report ("SEIR") is submitted on behalf of NSTAR Electric Company d/b/a Eversource Energy ("Eversource" or "Proponent") for the proposed Martha's Vineyard Reliability Project ("MVRP" or the "Project"). The Project purpose and need is to improve the reliability of grid-based electricity on Martha's Vineyard (or the "Island").

The dual Expanded Environmental Notification Form ("EENF")/Proposed Environmental Impact Report ("PEIR") was submitted in May 2022. The Secretary of the Executive Office of Energy and Environmental Affairs ("EEA") indicated in the Certificate dated July 15, 2022, that a Single EIR would be required as additional information and analyses were requested by state agencies and therefore a rollover EIR was not granted.

The Project is comprised of:

1. An approximate 2.7-mile underground duct and manhole system (2.32 miles of new duct and cabling within 0.38 miles of existing duct in Surf Drive) which will house the onshore 25 kilovolt ("kV") distribution cable from the substation to the landfall site off Surf Drive in Falmouth on Cape Cod ("Falmouth cable route").
2. An approximate 6.27-mile buried submarine cable across Vineyard Sound (in the Towns of Falmouth, Tisbury, and Oak Bluffs) from the landfall site off Surf Drive in Falmouth on Cape Cod to the landfall site off Eastville Avenue in Oak Bluffs on Martha's Vineyard ("submarine cable").
3. An approximate 0.25-mile underground duct and manhole system which will house the onshore distribution cable from the landfall site off Eastville Avenue in Oak Bluffs to an existing Eversource parcel off Eastville Avenue near the intersection of Eastville Avenue and County Road ("Oak Bluffs cable route").
4. Installation of new and/or upgraded equipment within the existing Eversource Substation #933 off Stephens Lane in Falmouth ("Stephens Lane substation").
5. Installation of a new driveway, manholes, and equipment within an undeveloped existing Eversource parcel off Eastville Avenue in Oak Bluffs ("Eastville Avenue equipment yard").

In addition to providing more reliable grid-based electrical power for Martha's Vineyard, other benefits from the Project include the decommissioning of five diesel generators located in Oak Bluffs and Vineyard Haven, and the ability to better integrate distributed renewable electrical power into the Martha's Vineyard system.

The preferred methods of cable installation include:

1. Horizontal Directional Drilling ("HDD") at each landfall site, in Falmouth and Oak Bluffs, to avoid potential impacts to coastal wetland resource areas, intertidal resources and eelgrass (*Zostera marina*) – which is a Special, Sensitive, or Unique ("SSU") resource identified in the Massachusetts Ocean Management Plan ("OMP");

2. Trenchless cable construction between the two HDD exit points across Vineyard Sound; and
3. Open trench and back fill construction techniques for the Falmouth and Oak Bluffs cable routes.

This SEIR has been submitted to the distribution list as provided in **Attachment A**. The Project corridor is depicted on **Figure 1 - USGS Locus Map** and **Figure 2 - Aerial Locus Map** found in **Attachment B – Figures.** A detailed project map set is provided in **Attachment C – Project Map Set** and the project plans are provided in **Attachment M – Project Plans.**

1.1 Purpose and Need

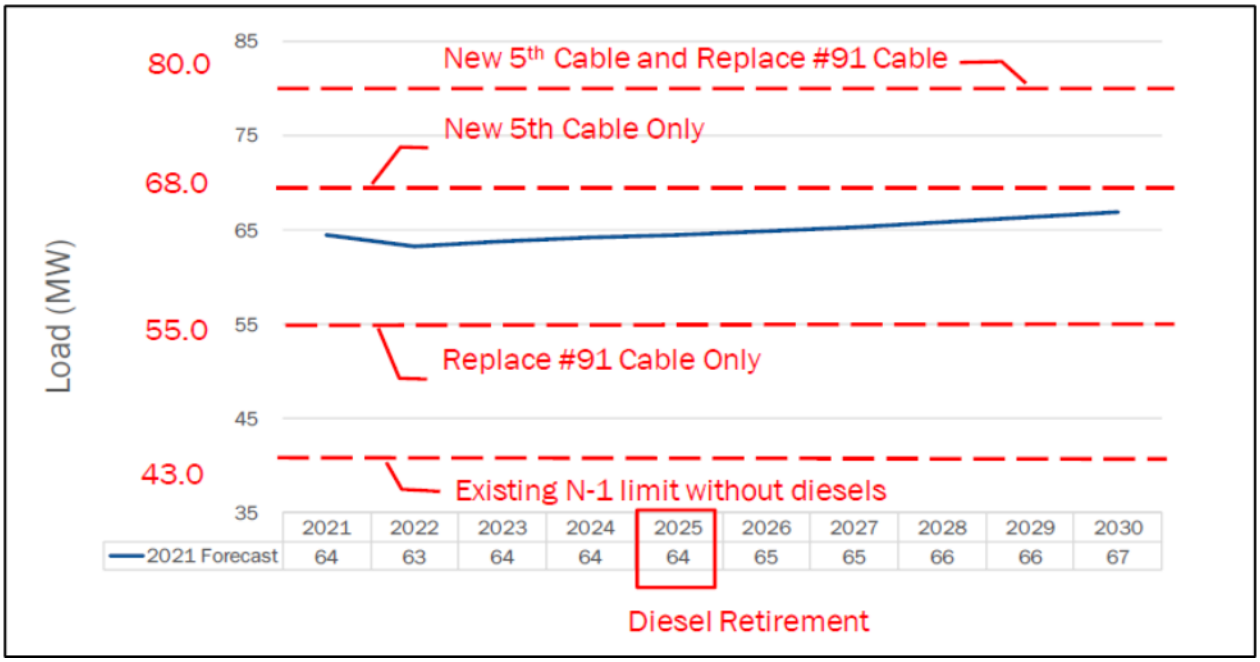
The Proponent has a fundamental responsibility to provide and maintain reliable electrical service throughout its service area, for the benefit of all customers. A reliable supply of electricity is essential for the health, safety, and welfare of the public, and the economy. Thus, providing a reliable electrical distribution system to the Island will benefit all residents of Martha's Vineyard. The Project purpose is to meet the electrical demands on the Island with reliable grid-based power, and the need is the current peak demands and future load growth to serve the Island as it transitions to a more electric centric energy supply.

The year-round population on Martha's Vineyard is around 17,000 but increases to approximately 200,000 during the summer months. As such, electric consumption surges on the Island in the summer and the four existing submarine cables cannot reliably supply the peak demand.

Combined the four existing cables can supply 43.1 mega volt amperes ("MVA"), this is the firm capacity limit, or maximum number of megawatts ("MW") of existing submarine cable supplying Martha's Vineyard. This capacity is often exceeded and Eversource has a reliability agreement with NRG/GenOn for five permanent diesel generators. Three of the five generators are 1970 vintage units, while the other two are 1940 vintage, which originally came from Provincetown Electric after it was merged into Cape & Vineyard Electric Company. These generators are located in the towns of Oak Bluffs and Vineyard Haven (see **Figure 3 - Existing Peak Demand Generators Locus Map)** and provide approximately 12.5 MW of supplemental power. The generators are used to meet the system demand above the 43.1 MVA firm cable capacity, up to 55.6 MVA. Recent, nonweather adjusted, peak loads for Martha's Vineyard exceed this capacity. For example, 58.7 MW in 2019, 57.9 MW in 2020, and 57.8 MW in 2021. If a cable failure occurs, and during summer peak conditions, Eversource needs to rent multiple portable 2 MW diesel units to augment the existing generation until the failed cable is repaired.

In February 2020, Eversource representatives met with the Martha's Vineyard Commission ("MVC"), which has an established Climate Action Task Force ("CATF") to evaluate and develop a roadmap to reduce and potentially eliminate fossil fuel use on the Island and increase the amount of electricity use from renewable energy sources. These goals will increase the existing (base) 10-year load forecast for Martha's Vineyard, with most of the change arising from a higher penetration of electric vehicle ("EV") adoption. The Martha's Vineyard load forecast was revised in June 2020 to produce a sub-area load forecast for Martha's Vineyard which is reflective of actual historical load growth rates on the Island. Eversource also analyzed Martha's Vineyard historic peaks as far back as possible – annually back to summer 1968. The revised analysis conducted for all historical peak data points from 1968 to 2019 revealed a Compound Annual Growth Rate over the 50 years. Revisions to the load forecasting methodology reveal a shift in load growth with a higher growth rate than was shown in prior forecasts. The most recent extreme weather (90/10) non-coincident ten-year forecast for Martha's Vineyard is 63 MW for 2022 increasing to 66 MW by 2031, and includes adjustments for energy efficiency, solar generation, and electric vehicle charging.

The revised load forecast to the Martha's Vineyard capacity analysis assumed removal of the existing five diesel units as per the expiration of the contract in 2025. Total firm capacity available to the island is only 43 MVA for an N-1 outage (i.e., the grid's required capacity even when experiencing an outage of a single system element, such as a distribution or transmission line, cable, transformer, or generator) without causing losses in electricity supply. If the existing highest-rated cable (the 75 Cable) is lost then the N-1 system can only provide 43 MVA, less than the 63- to 67-MW forecasted peak for the island. See Inset 1 below.



Inset 1. Martha's Vineyard 2021 Forecast and Supply Limits

The Project will meet this need by increasing grid-based power serving Martha's Vineyard, making it more robust and reliable. The addition of a new fifth 23-kV cable rated for at least 25 MVA, the Project, increases firm submarine cable capacity to 68 MVA. With the replacement of the existing Cable #91 (EEA #16589), the firm capacity limit for the Vineyard is increased to 80 MVA, which is not expected to be exceeded within the long-term planning horizon. The 5th Cable however, will enable the existing 23kV electric distribution system on Martha's Vineyard to be reconfigured so that the electrical loading and total customer counts on all five cables are optimized to improve both capacity and customer reliability. The addition of the new 5th Cable will also allow for an incremental increase in distributed energy resources ("DER") (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard. Additionally, the Project will allow Eversource to decommission the five existing diesel generators, thus moving toward the CATF's goal of eliminating fossil fuel use on the Island. Further, by connecting to the Stephens Lane substation in Falmouth on Cape Cod, the source of the electricity moving through the new 5th Cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

In summary, the Project purpose is to meet the electrical demands on the Island with reliable grid-based power, and the need is the current peak demands and future load growth to serve the Island as it transitions to a more electric centric energy supply.

1.2 Existing Submarine Cables

Currently, grid-based electricity is delivered to Martha's Vineyard by four submarine cables installed across Vineyard Sound from the Town of Falmouth on Cape Cod to Tisbury and Oak Bluffs on Martha's Vineyard. See **Figure 4 - Existing and Proposed Submarine Cable Routes**. Presently, grid-based electricity is delivered to Martha's Vineyard by four submarine cables each operating at 23kV, and installed across Vineyard Sound from Cape Cod to Martha's Vineyard. Those four cables depicted on Figure 4 are identified as the following:

- 75 Cable – buried cable from Falmouth to Tisbury installed c. 2014 (EEA No. 14755);
- 91 Cable – direct lay cable from Falmouth to Tisbury installed c. 1986;
- 99 Cable – direct lay cable from Falmouth to Oak Bluffs installed c. 1996; and
- 97 Cable – direct lay cable from Falmouth to Tisbury installed c. 1990.

1.3 Required Environmental Permits and Approvals

In addition to MEPA review, the Project will require permits and approvals from local, state, and federal agencies. The anticipated federal, state, and local permits, reviews, and approvals required for the Project are listed in **Table 1.1 – Anticipated permits, Reviews and Approvals.**

Portions of the MVRP located in Falmouth (Barnstable County) both landside and in-water are being reviewed by the Cape Cod Commission ("CCC") following the August 2022 submittal of the Development of Regional Impact ("DRI") application pursuant to the Cape Cod Commission Act. Portions of the MVRP located in the Towns of Tisbury and Oak Bluffs on Martha's Vineyard (Dukes County) is expected to be reviewed by the Martha's Vineyard Commission ("MVC") following a submittal of a DRI application pursuant to the Martha's Vineyard Commission Act.

Rigorous environmental reviews will be highly scrutinized by a host of other state and federal permitting and review agencies including the U.S. Army Corps of Engineers ("USACE"), U.S. Environmental Protection Agency ("EPA"), Massachusetts Department of Environmental Protection ("MassDEP"), Massachusetts Division of Marine Fisheries ("DMF"), Massachusetts Office of Coastal Zone Management ("CZM"), and Natural Heritage and Endangered Species Program ("NHESP").

Table 1.1 Anticipated Permits, Reviews, and Approvals

Agency	Permit/Approval	Status
Federal		
U.S. Army Corps of Engineers ("USACE")	Massachusetts General Permit (2018 to be reauthorized in 2023) authorized by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 Individual Permit	To be submitted
U.S. Fish and Wildlife Service ("USFWS") National Marine Fisheries Service ("NMFS")	Consultation pursuant to Section 7 of the Endangered Species Act ("ESA")	To be submitted
Massachusetts Historical Commission ("MHC") State Historical Preservation Office ("SHPO") Massachusetts Board of Underwater Archaeological Resources ("MBUAR") Tribal Historic Preservation Office ("THPO")	Consultation pursuant to Section 106 of the National Historic Preservation Act ("NHPA")	To be submitted
U.S. Coast Guard ("USCG")	Notice to Mariners	To be submitted
State		
Massachusetts Office of Coastal Zone Management ("CZM")	Federal Consistency Determination	To be submitted
Massachusetts Department of Environmental Protection ("MassDEP")	Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act	To be submitted
	Chapter 91 Waterways License and Dredge Permit pursuant to the Massachusetts Public Waterfront Act	To be submitted
Massachusetts Environmental Policy Act Office ("MEPA")	Certificate pursuant to the Massachusetts Environmental Policy Act	Pending
Natural Heritage and Endangered Species Program ("NHESP")	Take Determination or other authorization pursuant to Massachusetts Endangered Species Act ("MESA")	To be submitted
Massachusetts Department of Transportation ("MassDOT")	State Highway Access Permit Rail Division Use and Occupancy License	To be submitted
Massachusetts Division of Marine Fisheries ("DMF")	Letter of Authorization Scientific Permit	To be submitted
Local		
Falmouth Conservation Commission	Order of Conditions pursuant to the Massachusetts Wetlands Protection Act ("WPA") Local Wetlands Bylaw ("Bylaw")	Landside Project Approved
Tisbury Conservation Commission	WPA and Bylaw Order of Conditions	To be submitted
Oak Bluffs Conservation Commission	WPA and Bylaw Order of Conditions	To be submitted
Falmouth	Grant of Location and Street Opening Permit	To be submitted
Oak Bluffs	Grant of Location and Street Opening Permit	To be submitted
Regional		
Cape Cod Commission ("CCC")	Development of Regional Impact ("DRI") Determination pursuant to the Cape Cod Commission Act	Pending
Martha's Vineyard Commission ("MVC")	DRI Determination pursuant to the Martha's Vineyard Commission Act	To be submitted

1.3.1 Water-Dependency

The Project is an "Infrastructure Crossing Facility," defined in 310 CMR 9.02 which reads in part as

> *"…any infrastructure facility which is a bridge, tunnel, pipeline, aqueduct, conduit, cable, or wire, including associated piers, bulkheads, culverts, or other vertical support structures, which is located over or under the water and which connects existing or new infrastructure facilities located on the opposite banks of the waterway…"*

As an Infrastructure Crossing Facility that will cross the flowed tidelands of Vineyard Sound and that cannot be located away from those tidelands while achieving the Project purpose, the Project is classified as a "Water-Dependent Use" by the Waterways Regulations (310 CMR 9.12(2)(d)).

1.3.2 Public Benefit Determination

In November 2007, the Massachusetts House and Senate passed An Act Relative to the Licensing Requirements for Certain Tidelands (HB 4324), which was signed by Governor Patrick on November 15, 2007 (Chapter 168 of the Acts of 2007) and is known as the "Landlocked Tidelands Legislation." The legislation, among other things, names the Secretary of EEA as the "administrator of tidelands," and requires the Secretary to conduct a "public benefit review" for projects located on tidelands and to issue a written determination, the Public Benefit Determination ("PBD"). Pursuant to 301 CMR 13.02(1), the Secretary is required to conduct a public benefit determination for any project that

1. files an Environmental Notification Form ("ENF") after November 15, 2007,
2. is required to file an Environmental Impact Report ("EIR"), and
3. is completely or partially located in tidelands or landlocked tidelands.

Pursuant to 301 CMR 13.02(2), the Secretary may conduct a discretionary public benefit review for any project that

1. files an ENF after November 15, 2007,
2. is not required to file an EIR, and
3. is completely or partially located in tidelands or landlocked tidelands.

The approximately 6.27-mile submarine cable route crosses under jurisdictional flowed tidelands; no landlocked tidelands are located in the Project area. The changes to the Chapter 91 legislation outlined above require analysis of a Project's impacts on the public's rights to access, use, and enjoy tidelands that are protected by Chapter 91 as well as the identification of measures to avoid, minimize, and mitigate any adverse impacts on such rights.

The standards that guide the Secretary in making the Public Benefit Determination are related to the water dependency of the project under review. Water-dependent projects are presumed to meet the criteria in 301 CMR 13.04 (see below) and provide adequate public benefit. For nonwater-dependent projects, the Secretary is required to consider the following criteria:

1. The purpose and effect of the project;
2. The impact on abutters and the surrounding community;
3. Enhancement to the property;
4. Benefits to the public trust rights in tidelands or other associated rights, including but not limited to benefits provided through previously obtained municipal permits;
5. Community activities on the site;
6. Environmental protection and preservation; and
7. Public health and safety, and the general welfare.

As described above, the Project is an Infrastructure Crossing Facility as defined in the Chapter 91 regulations, which by definition is a Water-Dependent Project, and hence is presumed to meet the criteria related to public benefit review. Nonetheless, a brief description of how the Project is consistent with the criteria is provided below.

1. *The purpose and effect of the project:* The Project is proposed to provide a redundant electric distribution cable to Martha's Vineyard, to improve the reliability of grid-based electricity to the Island, to meet existing and projected load growth, and allow for better integration of distributed renewable power.
2. *The impact on abutters and the surrounding community:* The Project will have a positive effect on abutters and the surrounding community by: (1) providing more reliable electrical power, and (2) retirement of the five on-Island diesel peaking generators.
3. *Enhancement to the property:* Although the Project will not enhance conditions along the proposed route, the route selection and mitigation measures associated with construction will avoid adverse impacts to sensitive resources.
4. *Benefits to the public trust rights in tidelands or other associated rights including but not limited to, benefits provided through previously obtained municipal permits*: The proposed Project within Flowed Tidelands will provide a direct public benefit by enhancing the reliability of electrical power to Martha's Vineyard.
5. *Community activities on the site:* Aside from temporary construction activities, the Project will not restrict or constrain activities along the proposed cable route.
6. *Environmental protection and preservation*: The Project will comply with the OMP standards and performance standards of the Wetlands Protection Act. In addition to avoiding SSU resources to the extent practicable, the Proponent has surveyed the proposed route to ensure that marine archaeological resources are not adversely affected by the Project.
7. *Public health and safety, and the general welfare:* The Project will have no adverse impacts on public health, safety, or general welfare.

Section 2.0

Project Description and Schedule

2.0 PROJECT DESCRIPTION AND SCHEDULE

The proposed MVRP involves constructing a 5th Cable from Falmouth to Oak Bluffs to improve the reliability of grid-based electricity on Martha's Vineyard. This section provides details of cable installation, both onshore and offshore, Project schedule, cable monitoring, and construction contingencies.

The electric distribution cable will connect to the onshore electrical grid using a single cable rated at 25kV containing three power conductors, each 1250 kcmil Copper, two fiberoptic cable inserts, each with 48 fiber strands. The cable is jacketed in Ethylene Propylene Rubber ("EPR") insulation as a complete bundle approximately 5.5-inches in overall outside diameter with a weight of approximately 31.3 lbs/ft (46.6 kg/m).

The submarine cable is approximately 6.27 miles long, comprised of 5.66 miles of cable installed by hydroplow trenchless construction, 2,153 feet installed by HDD at the Falmouth landing site, and 1,100 feet installed by HDD at the Oak Bluffs landing site, as shown in **Table 2.1 – Length of Cable**. The submarine cable alignment is depicted on the project plans "Martha's Vineyard Submarine Line #70 Falmouth to Martha's Vineyard, MA" (23 sheets), see Attachment M. Cable lengths presented in this SEIR are based on those design drawings.

Table 2.1 Length of Cable (in miles)

Town	Submarine Cable	Onshore Cable Route	Subtotal
Falmouth	2.47	2.7	5.17
Tisbury	2.25	N/A	2.25
Oak Bluffs	1.55	0.25	1.8
Total	**6.27**	**2.95**	**9.22**

The Proponent selected submarine cable installation techniques that avoid and minimize potential adverse effects to the extent possible.

2.1 Horizontal Directional Drilling Cable Installation

At the landing sites, off Surf Drive in Falmouth and Eastville Avenue in Oak Bluffs, the Proponent proposes to transition from the landside cable to the offshore cable using the trenchless technique of HDD. The HDD installation is proposed to avoid altering the eelgrass meadow, a Special, Sensitive, or Unique ("SSU") resource, located off the Falmouth shoreline (see **Figure 5 – Hard Complex Bottom and Eelgrass Areas**). Off Martha's Vineyard the HDD is proposed to avoid intertidal resources. The HDD is 2,153 l.f. from the entry hole to the exit hole in waters approximately 20 feet deep off of Falmouth and 1,100 l.f. from the entry hold to the exit hole in waters approximately 20 feet deep off of Oak Bluffs. Using HDD at each end of the proposed submarine cable route will eliminate the need to open-excavate Coastal Beach and Coastal Dune resource areas proximate to the landing sites.

Both proposed landing sites have sufficient space available for staging HDD cable installation equipment. The Proponent plans to conduct the HDD in the off-season and will maintain beach access throughout the operation. See **Figure 6 – HDD Schematic** for a schematic design of the HDD setup. Photographs of the existing Surf Drive Beach parking lot and Eastville Avenue landing site can be found in **Figures 7** and **8**, respectively.

HDDs will be performed and reamed to a diameter sufficient allow pullback of a 14-inch inner diameter bore high density polyethylene ("HDPE") casing conduit in which the cable will be installed. This minimum inner diameter for the bore casing has been designated by the cable manufacturer.

2.1.1 Construction Sequencing

Prior to any installation work, the Proponent will contact Dig-Safe and also mark the existing NSTAR cables and any existing utilities to avoid potential impacts. Throughout HDD operations, the Proponent will ensure shore-side site security and traffic control. The construction sequence for each portion of installation via HDD will consist of the following methods:

1. Approach Pit: Land-based HDD rigs are typically staged behind an approach pit, which for this Project will measure approximately 10 by 20 feet for the drill path entry point. The approach pit will provide the contractor with access to the proper trajectory for drilling and will also serve as a reservoir for drilling fluids (i.e., a slurry consisting predominantly of water and bentonite, a naturally occurring, inert and non-toxic clay) used to extract material from the drill head.

2. Pilot Hole: A small diameter pilot hole will be drilled from the approach pit to the pre-determined location offshore where typical offshore cable installation will terminate. The pilot hole will typically be drilled at an angle of 8- to 18-degrees so that it arcs down beneath the nearshore coastal resources and extends to a depth of approximately 25 to 35 feet beneath the surface of the seafloor. The path of the pilot hole will then arc back up towards the desired point on the seafloor, 2,153 feet from the entry pit in Falmouth and 1,100 feet from the entry pit in Oak Bluffs, which will be the transition point between offshore cable installation and the seaward end of the HDD. Drilling fluid (a bentonite slurry) will cool and lubricate the drill bit, stem, and other equipment, and will also serve to seal the sides of the bore. A comprehensive contingency plan for potential frac-out is outlined in **Attachment F – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling**.

3. Surfacing of HDD Pilot Hole: To avoid potential release of drilling mud as the drill head cutting the pilot hole reaches the targeted HDD exit hole location, when the pilot hole approaches the exit hole location, the contractor will flush the drilling fluids and cuttings from the bore hole with water, and will use water in place of drilling fluid in the final stage of drilling. Given the sandy characteristics of the sediment expected at the HDD exit hole location and the small diameter of the pilot hole, a very minor and short-lived increase in turbidity is expected as the drill head reaches the seafloor surface.

Although not anticipated, a small amount of bentonite clay could be released at the exit point of the HDD operation. Where the pilot hole exits the seafloor, it is expected that the contractor will lower a gravity cell (typically a 20-foot by 20-foot steel box, similar to a trench box) at the exit hole to retain any incidental bentonite drilling fluid released when the pilot drill "punches out." Prior to HDD punch-out, a field survey will be conducted to confirm the absence of eelgrass in the proposed punch-out locations.

The drilling fluid (typically bentonite and water based with selected polymers/additives to improve and modify fluid and drilling properties to address site-specific ground characteristics) is pumped through nozzles in the drill head to support the hole and to hydraulically transport drill cuttings from the drill bit back to the entry pit. Environmentally acceptable polymers and additives may be used on this project. Bentonite clay is an inert, naturally occurring substance and is appropriate for use in sensitive environments because it poses minimal environmental risks; for this reason, bentonite is commonly used for the HDD process. Nevertheless, the contractor will minimize the amount of bentonite near the exit hole and will have controls near the exit hole to minimize and contain any bentonite. Any bentonite retained by the gravity cell will be removed before the gravity cell is removed.

4. Reaming and HDPE Conduit Insertion: After the pilot hole is established, the cutter head will be replaced with a larger diameter cutter head, or reamer. Upsizing of the bore hole is achieved by reaming the hole with successively larger cutter heads. The current plan is that the reaming passes will not punch out of the exit hole with each pass to minimize the volume of cutting fluids released during the reaming operation. Only for the final pass will the reamer punch out.

   A 14-inch inner diameter HDPE conduit will be used to maintain the hole and insert the cable through the conduit. The HDPE pipe lengths will be thermally fused and staged either onshore or offshore depending on the pulling direction for the pull-in. Lastly, the drill string is pulled back through the bore hole with the new interconnection HDPE conduit attached. The pullback will be one continuous until the lead end of the conduit reaches the entry pit.

5. Cable Insertion and Transition: Upon conclusion of the reaming and conduit pullback, the end of the conduit will remain exposed on the seafloor. Divers will insert the submarine cable into the installed conduit, and it will be pulled through the conduit to the land connection. Divers will hand-jet a small area of the seafloor beneath the seaward end of the conduit to maneuver the cable into a position where it can be attached to a jet sled and subsequently plowed into the seafloor for the middle portion of the proposed cable route. Hand-jetting uses a narrow, high-pressure stream of water (or water-lifting i.e., a water eductor that would vacuum sediment from beneath the end of the conduit) is used to excavate localized sediment. Given that sediment at the transition area from HDD to hydroplow will likely be sandy, any turbidity caused by jetting should be minimal and of short duration. If water-lifting is performed, the entrained sediment will be discharged back onto the seafloor beneath a temporary layer of filter fabric to minimize turbidity. Due to the coarse sand nature of the sediments in the exit area, it is anticipated that these sediments would settle quickly to the bottom.

6. <u>Disposal of drill cuttings and drill fluids:</u> The HDD installation method will produce a slurry of two co-mingled byproducts: drill cuttings and excess drill fluids (water and bentonite clay). During drilling, this slurry will be collected from the reservoir pit and will be processed through a filter/recycling system where drill cuttings (solids) will be separated from reusable drill fluids. Non-reusable material consisting of drill cuttings and excess drill fluids will be trucked to an appropriate disposal site in accordance with local and state disposal requirements.

7. <u>Landward Manholes and Infrastructure:</u> The submarine cable will be pulled back through the conduit installed via HDD, from which it will enter the transition vault or manhole, where it will transition to onshore cabling.

8. <u>Site Restoration:</u> The contractor will restore the approach pit work area to match existing conditions. Any paved areas that disturbed for the HDD will be properly repaved, per the Company's agreement with the Towns of Falmouth and Oak Bluffs.

2.1.2 Monitoring and Mitigation Measures

The HDD installation processes are being designed to reduce the potential risk of an inadvertent release during construction (see Attachment F – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling). During HDD activities, the HDD Contractor will employ means and methods to reduce the potential for drill fluid loss. These methods include, but are not limited to:

- Maintain clean and unobstructed drilling fluid handling equipment.
- Maintain clean and unobstructed borehole.
- Continuous monitoring of pressure to ensure that the minimum necessary pressure is used for HDD operations.
- Minimizing the speed of drill string advancement and retraction.
- Monitor and adjust drilling fluid viscosity as necessary to maintain minimum required annular pressure, but still allowing circulation back to the HDD entry point.

2.1.3 Inadvertent Release Contingency Plan

Normally, the drilling mixture of water and bentonite clay remains within the bore hole, including the surface entry and exit points, as it circulates during drilling. However, the drilling fluid can sometimes surface elsewhere through natural cracks or voids in subsurface soils. This is an unintended release of drilling fluid referred to as an inadvertent release or return. The drilling fluid itself is not considered toxic but if released to the surface or other sensitive environmental resource areas, the clay-based fluid can impact plants and less mobile benthic organisms, particularly in a marine environment like Vineyard Sound. To address this issue, Eversource has prepared a Preliminary Inadvertent Release Contingency Plan ("IR Plan") in the event this situation is encountered during construction (see Attachment F). The general information within that document covers BMPs and a contingency and response plan for inadvertent releases for use during the installation of the HDD pipe. The Preliminary IR Plan is provided for informational purposes only and will be updated with a project- and site-specific IR Plan prepared by the selected HDD contractor.

2.2 Hydroplow Submarine Cable Installation

For this cable installation technique, the hydroplow is placed on the ocean floor and is either self-propelled (i.e., a ROV is used); or the hydroplow (or jet plow) is towed along the seafloor, i.e., it is pulled along the bottom, by a system of anchors and winches. In the latter case, tugboats are used to move the anchors. Although an ROV may be feasible for this Project, the impact assessment conservatively assumes that a system of anchors and winches will be used.

The cable will be buried to a depth of 6- to 10-feet beneath the seabed. The contractor will use a cable-laying vessel with "DP-2" dynamic positioning capability to ensure that the specified route is followed. The offshore cable will be installed within an approximate 12-foot wide corridor – from skid to skid, inclusive of the 3- to 5-foot wide plow through[1]. An approximately 1,000-foot-wide survey corridor was surveyed to evaluate conditions along the route and to select an alignment to avoid and minimize impacts to SSUs. The survey corridor is shown in Attachment C – Project Map Set.

The main run of cable extending between the two HDD exit points will be laid along a surveyed track in one continuous length from an installation barge equipped for hydroplow or ROV ("remotely-operated vehicle"). The plow will bury the cable to 6- to 10-feet. Because Vineyard Sound has active sand waves on the submarine banks, in the fall 2021, CR Environmental surveyed the route corridor (500 feet to either side of the centerline alignment). Adjustments in the route can be made within this corridor to avoid such active sand waves. If avoidance is not feasible, a plow with a deeper burial capability would be sought to conduct the installation of the cable to protect it from damage or fouling by anchors, fishing gear, and other marine operations. Each end of the cable will be pulled onshore to shore-side manholes through the two HDPE conduits installed via HDD. Divers will hand jet, or water-lift, the cable into the seabed between the plowed section and the HDPE conduits to ensure uniform burial and protection of submerged cable.

Typical construction sequencing for the main run of submarine cable will consist of the following:

1. Mobilization of installation barge and plow burial system;

2. At the end of the first HDPE conduit, once the cable end is onshore and secure, installation will follow a pre-determined route and the plow will install and bury the cable as describe above. The plow stinger, with the cable leading down its back edge, will be pulled across the seabed by a barge kedging forward on anchors and winches. Water nozzles will liquefy a narrow zone of sediment approximately 6- to 8-inches wide directly in front of the plow stinger, allowing the

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[1] Post-construction monitoring for the 75 Cable documented an approximately 10-foot-wide corridor created by the hydroplow.

stinger to proceed through the liquefied sediment while laying down the proposed cable as the water nozzles and plow stinger continue forward. The narrow zone of liquefied sediment will close over the installed cable, protecting it under 6- to 10-feet of sediment. The hydroplow will typically ride on skids that act much like snow skis, guiding the hydroplow over the bottom surface. The total width of temporary disturbance due to the combined fluidized trench and sleds will be approximately 10- to 12-feet wide. Since the total length of the hydroplow installation is approximately 29,860 feet, the total temporary disturbance associated with the hydroplow is anticipated to be 8.2 acres.

For purposes of wetland (Land Under the Ocean) impact assessment, we are assuming a 12-foot wide trough (skid to skid). This disturbance will be temporary and minor given the use of best available measures to conduct the installation. The bottom sediments are coarse-grained, due to the dynamic marine environment in Vineyard Sound, and therefore they will settle to the bottom quickly after disturbed. Marine organisms in the area are adapted to the dynamic nature of this high current/coarse sediment substrate, thus impacts to them are anticipated to be temporary in nature with no longer-term adverse impacts. Cable installation speed will vary depending on bottom conditions, but it is anticipated to be at least 300 feet per hour for the plowed portion of the route;

3. Anchors may be necessary to advance the surface barge and to keep it on track especially with the strong currents present in this area of Vineyard Sound. The anchor spread impact area has been conservatively estimated to extend a maximum of 300 feet either side of the centerline of the cable route. Anchor impact includes the footprint of the anchors on the bottom and wire or chain sweep over the bottom. We have conservatively estimated a chain or wire length of 100 feet sweeping at angle of approximately 30 degrees across the bottom which would conservatively produce a total contact area of 2,500 feet per anchor set. We estimate that anchor sets would be approximately every 2,000 feet of the approximately 29,860 feet of hydroplow route for a total of 15 anchor sets. With a total of 15 anchor sets, this would yield approximately 37,500 s.f. (0.86 acres) of temporary anchor contact.

4. Upon arrival at the second HDPE conduit, the cable end will be pulled inshore to the proposed manhole;

5. The cable between plowed section and HDPE conduit created previously via HDD will be buried via the hand-jet method; and

6. A video inspection will be conducted after the installation to document the post-lay condition of the cable route.

2.3 Onshore Upland Installation

The proposed underground distribution line will consist of the multiple sets triplexed (twisted three phase single) power cables in a concrete duct and manhole system. Generally, there are four principal stages of construction for an underground cable project: (1) manhole installation; (2) trench excavation and duct installation; (3) cable pulling, splicing, and testing; and (4) final surface restoration. Each of these stages is further detailed below. Several different stages of construction may be ongoing simultaneously in different sections of the route.

To minimize the potential for erosion and sediment migration during construction, temporary erosion and sediment control measures will be installed prior to the initiation of soil disturbing activities, as necessary.

2.3.1 Manhole Installation

Pre-cast or cast-in-place concrete manholes will be installed prior to or in parallel with trenching and installation of the duct. Manholes facilitate cable installation and provide access for future maintenance. In general, each manhole is approximately 8-feet wide by 14-feet long by 8-feet deep (some deviations are shown on the Project Plans based on site conditions). Manholes are located underground with only the manhole covers and frame visible at ground level. The manholes are typically spaced approximately 400 to 700 feet apart, but could be located closer together, depending upon the physical conditions along the route and location of the duct. Existing utilities will be avoided, or may need to be relocated if unavoidable to create space for the new manholes, this will be determined during detailed design. Eversource will work with the local municipal officials and utility owners regarding these relocations on a case-by-case basis.

If contaminated soils, contaminated groundwater, or other regulated materials are encountered during manhole excavation, the contaminated soils/groundwater/materials will be managed pursuant to the Utility-Related Abatement Measure (“URAM”) provisions of the Massachusetts Contingency Plan (“MCP”). Eversource will also contract with a Licensed Site Professional (“LSP”) as necessitated by conditions, consistent with the requirements of the MCP at 310 C.M.R. 40.0460 *et seq*.

2.3.2 Trench Excavation and Duct Installation

The primary method for underground duct construction in roadways is open cut and backfill construction, this will also be the case for the paved bikeway. The trench will be approximately 4 feet wide and generally 4- to 6-feet deep, though on occasion it may need to be wider and/or deeper to avoid utilities or other obstacles. For installation of the duct within roadways, the width of the trench will be marked on the pavement, Dig-Safe will be contacted, the location of existing utilities marked, and the pavement saw cut. Saw cutting provides a clean break in the pavement and defines the parameters of the trench for asphalt removal and trench excavation.

Following saw cutting, the pavement will be removed with a backhoe/excavator and loaded into a dump truck and removed from the site. Pavement material will be handled separately from excavated soil and will be recycled at an asphalt batching plant. Subsequently, a backhoe/excavator will excavate the trench to the required depth. In some areas, excavation may be done by hand or vacuum excavation to avoid disturbing existing utility lines and/or service connections. Soil removal will likely be a “clean trench” or “live loading” method in which soil would be loaded directly into a dump truck and transported to an off-site facility for recycling, reuse, or disposal. Soil will not typically be stockpiled along the edge of the roadway or bikeway, thus reducing the size of the required work area and the potential for sedimentation or the creation of nuisance dust. Any rock encountered during excavation will be removed by mechanical means and brought to an off-site facility for recycling, reuse, or disposal.

If contaminated soils, contaminated groundwater, or other regulated materials are encountered during trenching for the duct banks, the contaminated soils/groundwater/materials will be managed pursuant to the URAM provisions of the MCP as described above under manhole excavation.

Once a section of the trench is prepared, each of the conduit sections will be assembled inside the trench or pre-assembled at the ground surface and then lowered into the trench. The area around the conduit sections will be filled and protected with high-strength thermal concrete (3,000 pounds per square inch ("psi") at 28 days cured) to create a duct bank around the conduits. The trench will then be backfilled with fluidized thermal backfill and the pavement will be temporarily patched.

The pace of trench construction may be slower in areas of higher existing utility density or where unanticipated obstructions exist (such as ledge or rock), where an increase in the trench depth is needed, or where a roadway experiences higher traffic volume. During trench excavation, any rock encountered in the trench will be removed and any ledge encountered will be cut and removed. Voids in the bottom of trench from rock or ledge removal will be backfilled with common fill and compacted to specification to meet the trench design depth. Following this work, if needed, the duct and manhole construction will proceed as described above.

2.3.3 Cable Pulling, Splicing, and Testing

Prior to cable installation, each conduit will be tested and cleaned by pulling a mandrel (a close-fitting cylinder designed to confirm a conduit's shape and size) and swab through each of the ducts. When the swab and mandrel have been pulled successfully, the conduit is ready for cable installation.

To install each cable section, a cable reel will be set up at the "pull-in" manhole and a cable puller will be set up at the "pull-out" manhole. Following the initial pulling of the mandrel and pulling line through each duct, a hydraulic cable pulling winch and tensioner will be used to individually pull cable from the pull-in to the pull-out manhole. This process will be repeated until cables have been installed at all manholes.

Once adjacent cable sections are installed, they will be spliced together inside the manholes. The splicing operation requires a splicing van and a generator. The splicing van contains all of the equipment and material needed to make a complete splice. At times, an air conditioning unit may be used to control the moisture content in the manhole. A portable generator will provide the electrical power for the splicing van and air conditioning unit. The generator will be muffled to minimize noise. Typically, the splicing van will be located at one manhole access cover. The air conditioner will be located near the second manhole access cover and the generator will be located in a convenient area that does not restrict traffic movement around the work zone.

Once the complete cable system is installed, it will be field-tested from the substations. At the completion of successful testing, the line will be energized.

2.3.4 Final Surface Restoration

Following installation of the duct bank and manholes in public roadways, roadway surfaces will be restored to a condition as good as or better than the pre-construction condition, to meet the standards of Falmouth's Department of Public Works.

2.4 Stephens Lane Substation in Falmouth

All work at the existing Stephens Lane Substation in Falmouth will be performed within the existing facility fence line. The point of interconnection for the new cable will be the location of the current point of interconnection for the existing 91 and 97 Cables that serve Martha's Vineyard. The point of interconnection for the existing 91 and 97 Cables will be relocated within the Stephens Lane substation. The duct for the new cable will enter the substation site in the southeastern portion of substation site.

2.5 Eastville Avenue Equipment Yard in Oak Bluffs

Work on the Eversource-owned Eastville Avenue parcel in Oak Bluffs will consist of clearing approximately 22,000 s.f. of the parcel. A gravel driveway will follow the southern site boundary. A duct and manhole system will be installed to connect the cable to eight pad-mounted transformers that will convert and distribute power from the new cable to the existing Martha's Vineyard electrical network. Clearing of approximately 22,000 s.f. of wooded area is required for the yard including construction of an access road from Eastville Avenue which is a gravel driveway will follow the southern site boundary. The yard has been sited well back into the parcel to reduce visual impacts from the street and adjacent properties and allows for the remainder of the parcel to be remain undisturbed.

2.6 Project Schedule

The Proponent proposes to initiate landside cable construction in Falmouth in the Q1 of 2023, followed submarine cable construction starting in fall 2023. The two HDD conduits would be installed first, followed by hydroplow cable construction. The project will be constructed over a 2- to 3-year period with substantial completion by December 2024. The Eversource contract for the diesel generators on Martha's Vineyard expires in May 2025.

2.6.1 Duct and Manhole Construction

Construction in Falmouth is planned to start in winter 2022/2023 and will take 6- to 9-months depending on the number of crews working at any given time. Duct and manhole construction on Eastville Avenue in Oak Bluffs is a short segment, approximately ¼-mile and is expected to take approximately 15 working days. Landside underground duct and manhole construction is scheduled to avoid the busy summer traffic period, with no work planned between Memorial Day and Labor Day. Landside restriction times will be finalized in conjunction with the municipalities and local and state agencies during the permitting process. Pavement restoration in Falmouth and Oak Bluffs is being coordinated with the municipal DPWs for local roads, and MassDOT for state-controlled roads and the Shining Sea Bikeway. The proponent will re-pave work areas as agreed with the DPWs and MassDOT.

2.6.2 Submarine Cable Construction

Horizontal direction drilling at both the Falmouth and Oak Bluffs landfall sites is expected to take approximately 90-days at each location, exclusive of staging and breakdown. Work at the landfalls will be sequenced and timed to meet Time of Year ("TOY") requirements as may be developed by NHESP for shorebirds. HDD operations are presently scheduled to begin in fall 2023. Construction will be sequenced and timed to meet TOY requirements developed by NHESP for shorebirds and to avoid the busy summer traffic period. These restriction times will be developed in conjunction with the municipalities and local and state agencies during the permitting process.

The cable to be used for the Project is manufactured on a project-specific basis based on design specifications. Due to submarine cable specifications and the world-wide demand for submarine cable, the cable for the MVRP is being procured and final installation schedule will be determined based on delivery date. Submarine cable construction is expected to require 20- to 30-days of active cable construction, depending on weather and sea state. Cable installation is a continuous activity, and once construction starts it is expected to be completed in approximately 15-days with no weather delays. A pre-pass contingency of 10-days is also included in the 30-day window. The pre-pass is expected to be quicker as no cable is being laid during the pre-pass. Total construction windows for hydroplow is a 3- to 4-month timeframe which includes mobilization, hydroplow cable installation, hand jetting for HDD-to-hydroplow transition and demobilization. This construction window is presently scheduled for September to December 2023.

Construction will be sequenced and timed to meet TOY requirements developed by NHESP for shorebirds, DMF for Squid (April 15 – June 15), and to avoid the busy summer traffic period. These restriction times will be developed in conjunction with the municipalities and state agencies during the permitting process.

2.6.3 Stephens Lane Substation and Eastville Avenue Equipment Yard

Work at the Stephens Lane Substation and Eastville Avenue Equipment Yard will be performed concurrently after the cable has been installed, and will take approximately 12- to 18-months at Stephens Lane Substation and 6- to 9-months at the Eastville Avenue Equipment Yard.

2.7 Cable Monitoring

Failure or damage (e.g., from a ship, vessel, or environmental conditions) is not anticipated. Following construction, the cable will be monitored by Supervisory Control and Data Acquisition ("SCADA") telemetry monitoring to monitor the following:

- In Falmouth - Total MW, Total MVAR, Amps/phase, neutral current, and breaker status
- In Oak Bluffs - Volts/phase, kW/phase, kVAR/phase, Amps/phase and neutral Amps (through a D/A recloser)

Eversource is planning to conduct non-intrusive surveys, such as a multi-beam survey, of the cable corridor every five years to confirm the cable has remained buried.

2.8 Construction Contingency – Cable Protection

Eversource's priority will be to achieve sufficient burial depth of the submarine cables and to reduce or avoid the need for cable protection wherever possible. However, there remains a risk that sufficient burial may be unsuccessful in areas where the seafloor is composed of consolidated materials or submerged boulders that would hamper cable burial, making cable protection (e.g., a layer of rock or concrete "mattresses") necessary. A plow pre-pass is planned to investigate if there are any locations where the hydroplow will be unable to penetrate to the design depth. Then a determination will be made if the route can be adjusted to avoid an impenetrable area, or if the area is unavoidable and cable protection will be necessary, with the goal of minimizing alteration of the seafloor. If needed, the methods for cable protection are:

- Rock placement;
- Gabion rock bags;
- Concrete mattresses (alternately, for smaller-scale applications the mattresses may be filled with grout and/or sand, referred to as grout/sand bags);
- Half-shell pipes or similar products made from composite materials (e.g., Subsea Uraduct from Trelleborg Offshore) or cast iron with suitable corrosion protection.

The ability to adjust the alignment within the surveyed cable corridor will aid in minimizing the need for cable protection measures. Areas requiring cable protection, if any, will be the only locations where post-installation conditions at the seafloor will permanently differ from existing conditions.

2.8.1 Assessment of Cable Protection Measures

The Proponent's priority will be to achieve adequate burial depth of the cable and to avoid the need for any cable protection. However, it is possible that achieving adequate burial depth may be unsuccessful as summarize above, and cable protection will only be used where necessary, to minimize potential bottom alteration.

In terms of the habitat value of various cable protections methods, Eversource provides the following information. Once placed, cable protection essentially functions as artificial reef, providing additional hard-bottom habitat. Useful information is available in broader literature and reports related to cable protection and artificial reef effects on the benthic environment. Artificial reefs provide spaces for food, spawning, and shelter on otherwise soft-bottom substrates that can increase fish abundance, biodiversity and augment species distributions. Cable protection can be modified and designed to support a range of habitats and increase abundance of target species. While the use of natural rocks and boulders has been suggested as preferable to man-made materials, there is no empirical data yet available to suggest one specific material type is preferable from an ecological perspective.[2] Rather, characteristics of a design should be based on ecological principles to enhance the value of the artificial reef effect of cable protection. Lengkeek *et al*. (2017) identified design principles could be incorporated into cable protection to minimize habitat value loss and to enhance the ecological value:

- Adding larger structures to create large holes that provide shelter for larger mobile species such as Atlantic cod
- Adding small-scale structures to create smaller holes (inch/centimeter-scale) to provide attachment and settlement substrate and more habitat complexity, which can improve habitat for early life stages of some species like Atlantic cod, scallop, or squid
- Mimicking biogenic chemical substrate properties by using chalk-rich substrates or shell material that may facilitate settlement of some target species that respond to chemical cues (e.g., shellfish larvae)

In addition, rough surface texture of artificial reef materials has been shown to enhance benthic settlement, high relief supports fish recruitment, and the vertical orientation of surfaces is important for some colonizers like bivalves, hydroids, and barnacles.[3]

Hard-bottom habitat is present across Vineyard Sound as depicted on Figure 5 and described in the 2021 Marine Survey Report (**Attachment G**). Coarser substrates and complex substrates, like pebble-cobble and boulders, are important habitat for the juveniles of some fish species, such as Atlantic cod.[4] Using cable protection that adds structure to the environment can also benefit other species like sea bass, lobster, and crab.[5]

Based on the ecological principles of providing a variety of sizes of substrate, holes, and surface orientations/complexity for settlement, rock protection is a form of cable protection that can exhibit high ecological value. Using placement of gravel, cobbles, and boulders is a straightforward way to mimic the

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2 Lengkeek, W., K. Didderen, M. Teunis, F. Driessen, J.W.P. Coolen, O.G. Bos, S.A. Vergouwen, T.C. Raaijmakers, M.B. de Vries, and M. van Koningsveld. 2017. Eco-friendly design of scour protection: potential enhancement of ecological functioning in offshore wind farms. Towards an implementation guide and experimental set-up. Report 17-001. 22 February 2017. Bureau Waardenburg Ecology & Landscape. (98 pp).

3 Glarou, M., M. Zrust, and J.C. Svendsen. 2020. Using Artificial-Reef Knowledge to Enhance the Ecological Function of Offsore Wind Turbine Foundations: Implications for Fish Abundance and Diversity. J. Mar. Sci. Eng., 8, 32 (25 pp).

4 Evans, N.T., K.H. Ford, B.C. Chase, and J.J.. Shepard. 2011. Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts. DMF. Tech. report TR-47. (69 pp).

5 Dannheim, J., L. Bergström, S.N.R. Birchenough, R. Brzana, A.R. Boon, J.W.P. Coolen, J. W. P., J.-C. Dauvin, I. De Mesel, J. Derweduwen, A.B. Gill, Z.L. Hutchinson, A.C. Jackson, U. Janas, G. Martin, A. Raoux, J. Reubens, L. Rostin, J. Vanaverbeke, T.A. Wilding, D. Wilhelmsson, and S. Degraer. 2020. Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research. ICES J Mar Sci, 77:1092–1108.

material, hole sizes, and surface orientation of surrounding hard-bottom habitats. Including a variety of material sizes and types (such as shells) may further enhance the artificial reef benefits of the cable protection (Lengkeek, et al., 2017)

Gabion rock bags can also provide good ecological value by providing smaller-scale structures and some habitat complexity. Where hard bottom is dominated by gravel rather than boulders, this cover type may likely sufficiently mimic surrounding bottom habitats, particularly if shells are incorporated, since shell aggregate habitat is present in the area.

Concrete mattresses are widely used for cable protection and they provide hard surfaces for epifaunal attachment. However, they do not provide vertical relief or structure, holes of any particular size (such as for adult cod use), or a variety of surface orientations which provides useful habitat to many demersal fish and invertebrate species. They also may have lower habitat durability, as shallower crevices may trap sand over time and no longer provide shelter benefits. (Lengkeek, et al., 2017) An advantage of concrete mattresses is they can be deployed with a relatively narrow width to accomplish the intended cable protection. Assuming concrete mattresses are used cable protection of approximately 10 feet wide will be sufficient to protect the cable. While rock placement cable protection would require up to approximately 30 feet to account for sideslopes.

Half-shell pipes may not contribute much ecological value due to a lack of holes/crevices, smoother surface texture, and low relief. Half- shell pipes, however, are not used for remedial cable protection but could be used at cable crossings.

While one study comparing colonization of natural reefs, oil rigs, and an offshore wind farm showed a lack of significant difference in colonizer community composition on materials as different as steel and rock[6] the authors concluded that the structure of an artificial reef should resemble a natural reef as closely as possible if the intention is for the communities to be similar. In general, the artificial structure should be similar to the surrounding benthic habitat.

2.8.2 Potential Bottom Impacts

Cable protection, of approximately 10 feet wide (based on the 75 Cable protection system) should be sufficient to protect the cable should cable protection be needed. However, for the purpose of providing conservative estimates of areas potentially needing cable protection a 30-foot-wide cable protection system is assumed. Based on the 2021 Marine Survey, assuming cable protection is needed in all bolder and cobble areas (i.e., the worse-case scenario) that could require up to approximately 3.81 ac. of cable protection in hard bottom seafloor. See **Table 3.3 - Maximum SSU Potentially Altered Along the Western and Preferred Cable Alignments** below. Areas requiring cable protection, if any, will be the only locations where post-installation seafloor conditions may permanently differ from pre-construction conditions;

6 Coolen, Joop W.P., B. van der Weide, J. Cuperus, M. Blomberg, G.W.N.M. Van Moorsel, M. Faasse, O. Bos, S. Degraer, and H. Lindeboom. 2020. Benhic biodiversity on old platforms, young wind farms, and rocky reefs. ICES J Mar Sci 77(3). (15 pp).

however, such cable protection would only be expected within hard bottom areas, and the cable protection itself would function as hard bottom. Typical cable protection options include:

Rock placement: This method involves rocks laid on top of the cable to provide protection. Rock will be installed in a controlled and accurate manner on the seafloor using a dynamic positioning fall-type vessel. Rocks used for cable protection will be sized for site-specific conditions; where feasible, this protection will consist of rocks / cobbles of 2.5 inches in diameter or larger.

Gabion rock bags: This method involves rocks encased in a net material (e.g., a polyester net) that can be accurately deployed on top of the cable and subsequently recovered, if necessary, for temporary or permanent cable protection. Each bag is equipped with a single lifting point to enable its accurate and efficient deployment and recovery. These rock bags have been deployed in other high-energy marine environments such as the North Sea, and the net material used for the rock bags is designed to have an approximately 50-year lifespan.

Concrete mattresses: These "mattresses" are prefabricated flexible concrete coverings consisting of high-strength concrete profiled blocks cast around a mesh material (e.g., ultra-violet stabilized polypropylene rope) that holds the blocks together. This mattress construction provides flexibility, enabling the mattress to settle over the contours of the cable and seafloor. The mesh in this application would be designed to have a decades long lifespan.

Half-shell pipes: These products are made from composite materials and/or cast iron with suitable corrosion protection and are fixed around the cable to provide mechanical protection. Half-shell pipes or similar solutions are not used for remedial cable protection but could be used at cable crossings. The half-shell pipes do not ensure protection from damage due to fishing trawls or anchor drags (although they will offer some protection, they will not prevent damage).

The Proponent prefers a cable protection system that provides the easiest removal method in the event the cable faults beneath the protection system, that would be concrete mattresses or gabion rock bags. That said, however, the Proponent will work with resource agencies, DMF, CZM, DEP and the USACE during the permitting process and comply with the agencies' conditions regarding protection systems. The hydroplpw pre-pass will identify the actual location(s) and seafloor type(s) where depth of cable burial cannot be achieved, if any are encountered. Presently the seafloor type where burial may not be achieved is hard bottom – cobble and rock seafloor. Initial discussions with CZM suggest the preferred system will be one that most closely matches the adjacent seafloor type. Therefore, it is expected the permits will condition use of more natural materials that would provide habitat / structure similar to the adjacent seafloor through which cable protection is needed.

Section 3.0

Alternatives Analysis

3.0 ALTERNATIVES ANALYSIS

Eversource performed an alternatives analysis of the various components of the MVRP to determine the approach that meets the project purpose and need, and concurrently best balance's system reliability, cost, and environmental impact. The various alternatives considered in the analysis, the criteria under which they were evaluated, and alternative construction methods are discussed herein.

3.1 No Build

The no-build alternative means that Martha's Vineyard would continue to rely on the existing four cables supplying the Island with grid-based electricity. Reliance on only four cables does not meet the Project purpose and need, i.e., to improve reliability of the Island's electrical system, meet future load growth, and be able to accommodate decentralized renewable power. Inset 1 above, Section 1.1 Purpose and Need, shows that the existing four cable distribution system has a total firm capacity of only 43 MVA for an N-1 outage which is less than the 63- to 67-MW forecasted peak for the Island. Because the no-build alternative does not meet the Project purpose and need, it was not retained for further consideration.

Furthermore, for the no-build alternative, Eversource would need to maintain peak demand generators for existing peak demand periods. Eversource evaluated amending the existing diesel generator contracts beyond the current term ending in 2025. As part of the review of that contract, which was recently sold to a new owner, Eversource found that there was an expectation that the operations cost would be significantly higher; that the diesel age will require significant investment in the future; and, that the motivation of the new generator owners was unclear going forward. It was also determined that spot generators are a viable, cost-effective alternative for emergency situations on the Island if necessary. Additionally, the no-build alternative does not provide an opportunity to integrate decentralized renewable energy. Therefore, Eversource determined it is in the best interest of customers to not extend the diesel generator contract beyond 2025 and instead seek an alternative method to meet energy needs on Martha's Vineyard.

3.2 On-Island Energy Generation

The MVC adopted The Island Plan – Charting the Future of the Vineyard in 2009 ("the Plan") which is a blueprint for the Island to move forward on issues such as development, open space and energy. According to the Plan "*The generation of electricity on-Island from small wind turbines and various solar systems does not yet produce a meaningful percentage of our energy needs.*" The MVC is looking into various options to be more self-sufficient relative to energy including using efficiency measures to reduce overall energy consumption and generating energy from alternative sources such as wind farms. The MVRP supports the existing needs of the Island while the various options are being looked at which may take some time to design, permit, and build, and will need substantial financial commitments.

3.2.1 Battery Storage Facility

In 2017 Eversource began pursuing a project to place a 4.9MW /20MWh Battery Energy Storage system ("BES") on the Eversource-owned parcel located on Eastville Avenue in Oak Bluffs. The primary purpose of the Martha's Vineyard BES project was to significantly reduce reliance on the five diesel-fired peaking generators used to supply power during high load conditions. The initial cost estimate for the BES project was $15M. During the project permitting process between 2017 and 2020, the cost of the project increased drastically. The Town of Oak Bluffs decided that due to perceived visual impacts, they would require Eversource to construct a building to house the storage system, rather than using the containerized solution proposed in the conceptual design. The cost of the building, foundations, required civil work and wall construction, plus the cost of obtaining the permits for the revised plan added $5M to the approved budget, and a ventilation system for additional fire safety protection added an additional $1M to the approved budget. Finally, construction bids in 2020 were received at three times higher than the expected amount. In total, the project was estimated at $8.5M higher than the originally approved $15M budget.

In February 2020, Eversource representatives met with the Martha's Vineyard Commission CATF and learned that that the load forecast of 70 MW by year 2029 as an upper band to load growth covers the expected load increase that may arise from their goals. Therefore, the BES system would not be sufficient to meet the Island's projected energy needs. Additionally, the BES alternative does not provide an opportunity to use decentralized renwable energy. Those factors coupled with the total BES project forecast increase to $23.4 million caused Eversource to discontinue the Martha's Vineyard BES project.[7]

The Martha's Vineyard BES, therefore, was not considered a long-term viable option to meet the Project purpose and need and therefore it was not carried forward for further consideration.

3.2.2 Diesel Generators

There are currently five diesel generators utilized by Eversource on Martha's Vineyard. One alternative to the Project would be to continue using these five generators, to increase the number of generators to accommodate increased demand, or replace the on-Island generators with newer, more efficient, and/or larger capacity generators. However, these options require ongoing operations and maintenance costs, create air emissions, and utilize diesel, preventing Martha's Vineyard for meeting their goal to reduce or eliminate the use of fossil fuels on the Island. Therefore, this alternative was excluded from further consideration.

3.3 Four Cable Option

Replacing the existing 25 kV distribution cable (91 Cable) with higher capacity transmission cable (e.g., 69 kV or 115 kV) would meet the purpose and need of the MVRP and the 91 Cable Replacement Project (EEA No. 16589), a separate project proposed by Eversource currently in review by the MEPA Office. The 91

[7] A full description of the BES Project cancellation (DPU 21-30) is presented in correspondence to the EFSB dated May 17, 2021

Cable Replacement Project seeks to replace an existing direct lay cable that was installed in 1986, which has faulted eight times, and has reached its useful lifespan, with a new buried cable. When considered in tandem with the 91 Cable Replacement Project this option (a single higher capacity cable) at first glance appears to yield reduced environmental impacts, reduced or equal costs and provide the needed reliability.

Presently the on-Island electrical system is supplied by 25 kV distributions cables and the on-Island facilities are designed to be supplied by 25 kV distribution service. Extending a transmission cable rated at 69 kV or 115 kV to Martha's Vineyard:

1. Would require a new transmission to distribution substation on the Island to step the transmission power of 69 kV or 115 kV down to 25 kV to be integrated in the on-Island system. This would require siting, acquiring and constructing a new substation on the Island. A transmission to distribution substation would occupy approximately 2- to 3-acres of land for the substation plus buffer, which is greater than the proposed Eastville Avenue equipment yard. Due to the increased land disturbance this option would yield greater impacts than the proposed Project.

2. To ensure the new transmission cable is reliable, the Proponent would need to install two transmission cables across Vineyard Sound to provide redundancy and reliability for Martha's Vineyard's electrical system. Redundancy (a back-up cable) is needed in the event the primary cable faulted or is damaged, i.e., the N-1 condition where the higher rated cable is now the most critical element in the system.

Based on these facts, this option results in higher costs to site and construct a new transmission to distribution substation, requires greater environment impacts associated with constructing a new substation, and does not reduce seafloor impacts because it would still require two new cables across Vineyard Sound (i.e., same impacts as the 5th Cable plus the 91 Cable replacement). Because this option does not balance cost, reliability and environmental impacts, and in fact increases cost and environmental impact when compared to the MVRP plus 91 Cable Replacement Project combined, it was not retained for further consideration.

3.4 Cable Alignments Across Vineyard Sound

This alternatives analysis focuses on four potential submarine cable routes across Vineyard Sound to connect the landing site at the Surf Drive Beach parking lot in Falmouth to Eastville Avenue in Oak Bluffs. This analysis is prepared to identify the least environmentally damaging practicable alternative ("LEDPA") in accordance with OMP regulations at 301 CMR 28.04(2). The LEDPA is selected using a comprehensive assessment of practicable options that meet the project purpose and need plus their potential effects on the natural environment, the built environment, other maritime uses, plus cost considerations. Four potentially feasible routes were identified, all which meet the project purpose and need, and were assessed to identify the LEDPA from that suite of options. Those four preliminary alignments are shown on **Figure 9 – Alternate Submarine Cable Routes**. These routes are labeled:

- Eastern Alternative 1;

- Eastern Alternative 2;
- Preferred Cable Alignment; and
- Western Alternative.

This alternatives assessment is based on preliminary routing across Vineyard Sound. The preliminary route was chosen in the summer of 2021 using GIS to identify the preferred alignment that avoided and minimized alteration of mapped SSUs. This route was then used to define the 1,000-foot wide study corridor for the fall 2021 Marine Survey. Thus, this alternatives assessment uses GIS data to compare and evaluate the four alternatives, and augments GIS mapping with additional seafloor data to make final route comparisons, as needed.

Subsequent to the preliminary alignments compared herein, engineering analysis and design were advanced resulting in adjustments to the route. These are presented in the Project Plans (Attachment M). However, the final routing does not change the alignment through hard bottom seafloor or complex seafloor, therefore the conclusion of this assessment remains unchanged relative to the OMP standard to avoid and minimize impacts to SSU.

3.4.1 Parameters of Assessment

Regulatory parameters assess compliance with applicable state requirements which include the:

- Ocean Management Plan and its associated regulations (301 CMR 28.00),
- Massachusetts Wetlands Protection Act and its associated regulations (310 CMR 10.00), and
- Department of Public Utilities regulations 220 CMR 126.00.

Each is identified below.

3.4.1.1 Ocean Management Plan

The routes were compared based on the Massachusetts Ocean Management Plan Regulations at 301 CMR 28.04(2), which reads:

> *(2) Management Standards for Special, Sensitive or Unique Resources. The following standards apply only to those Activities that are required to file an Environmental Impact Report pursuant to MEPA:*
>
> *(a) Activities proposed in the Ocean Management Planning Area are presumptively excluded from the Special, Sensitive or Unique Resource areas delineated on maps contained in the Ocean Management Plan and maintained in the Massachusetts Ocean Resources Information System.*
>
> *(b) This presumption may be overcome by demonstrating to the Secretary that:*
>
> *1. <u>The maps delineating the Special, Sensitive or Unique Resources do not accurately characterize</u> the resource based on substantial site-specific information collected in accordance with data standards and processes contained in 301 CMR 28.08; or*

2. *No less environmentally damaging practicable alternative exists. For the purposes of this standard, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics with respect to the purpose of the Activity; and*
3. *The Proponent has taken all practicable measures to avoid damage to Special, Sensitive or Unique Resources, and the Activity will cause no significant alteration Special, Sensitive, or Unique Resources. Demonstrating compliance with this standard may include the incorporation of measures to avoid resources and impacts through time of year controls such that the construction, operation, or removal of the Activity will not occur when the Special, Sensitive or Unique Resource is present or may be adversely effected; and*
4. *The public benefits associated with the proposed Activity outweigh the public detriments to the Special, Sensitive or Unique Resource.*

Section 3.4.2 below addresses these four criteria relative to the four alternative routes presented herein.

Table 3.1 – Comparison of Alternative Routes by Length below compares the alternative routes by length. Length allows for a direct comparison of alternatives. As requested by CZM, **Table 3.2 – Comparison of Alternative Routes by Area** compares the alternatives by area. The quantities in both Tables 3.1 and 3.2 are derived using GIS data (OMP mapped polygons and GIS route layouts) for the alignments presented in Figure 9**.**

3.4.1.2 Massachusetts Wetlands Protection Act

Cable laying by hydroplow will occur in and temporarily alter Land Under the Ocean ("LUO") and Land Containing Shellfish. Because the entire Sound is mapped as suitable shellfish habitat, these two resource areas overlap, and construction-period impacts are presented in Tables 3.1 and 3.2 below as joint resource areas to avoid double counting.

3.4.1.3 Massachusetts Department of Public Utilities

Massachusetts Department of Public Utilities ("DPU") regulations (220 CMR 126.00: Underground Electric Supply and Communication Lines 50,000 Volts and Below) indicate that direct burial cables should be installed in as straight and direct line as practical. Section 126.35(2)(a)2. Direct Buried Cable reads in part:

> "*2. Cables should be installed in as straight and direct a line as practical. Where bends are required, the minimum radius shall be sufficiently large to prevent damage to the cable being installed.*"

Table 3.1 below presents whether each cable route complies with DPU standards, and cable bends are further discussed in Section 3.4.2.2 regarding logistics.

3.4.2 OMP Review Criteria

Following is a review of the OMP Management Standards for SSUs to overcome the presumption that the project is excluded from SSUs as delineated on maps in the OMP. Those criteria are:

- Project benefits;
- Practicable measures to avoid damage to SSUs;
- No less environmentally damaging practicable alternative exists; and
- OMP mapping does not accurately delineate SSU resources.

3.4.2.1 Project Benefits

301 CMR 28.04(2)(b)(4) reads in part: "*The public benefits associated with the proposed Activity outweigh the public detriments to the Special, Sensitive or Unique Resource.*" Benefits of the Project as a whole include the following and apply to all alternate routes assessed herein.

The Proponent has a fundamental and overarching responsibility to provide and maintain reliable electrical service throughout its service area, for the benefit of all customers. A reliable supply of electricity is essential for the health, safety, and welfare of the public, and the economy. Thus, providing a reliable electrical distribution system to the Island will benefit all residents of Martha's Vineyard. In addition to this fundamental Project benefit, the following public benefits will result from this Project.

- The 5th Cable and on-Island electrical system improvements will assist the Martha's Vineyard Commission CATF to achieve their goals which include: reducing fossil fuel use on the Island, increasing renewable energy use on the Island, and encouraging increase penetration of electrical vehicle use on the Island. The 5th Cable can provide the increased electrical demand needed to achieve these goals.

- After the 5th Cable is in service, Eversource will cease its contract as of May 2025 to use the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions and greenhouse gas ("GHG") emissions (i.e. CO_2) from those decommissioned generators, which estimated to be approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO_2, based on 2020/2021 operating hours and EPA AP-42 emission factors.

- The 1- and 5-mile radii from these generator sites are depicted in **Figure 10 – Environmental Justice Populations – Diesel Generators (Martha's Vineyard)** and show that this Project element will benefit air quality for EJ populations within the 5-mile radii of the two generator sites. Further detail on the reduction of air emissions estimated by decommissioning of the generators is presented in Section 6.7.3 – Project and Environmental Benefits.

- The Shining Sea Bikeway will be widened by 3-feet from Jones Road to Mill Road (approximately 0.9 miles), with some 8-foot-wide pull-off areas where manholes will be located. This will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This Project element has already begun and is ongoing.

- The Proponent will install electric vehicle charging stations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

Additionally, if the project is not completed on schedule, Eversource would either have to work out a short-term contract with the owners of the diesel peaking generators, or bring a dozen of temporary generators to the Island which would increase noise and air emissions throughout the Island, and delay the air emissions and GHG emission reductions to be realized by the Project.

The fundamental Project purpose and need (i.e., improving the reliability of grid-based electricity) plus the additional long-term environmental and public benefits on the Island and in Falmouth outweigh the temporary impacts to SSUs, and potential permanent cable protection in hard bottom seafloor, if needed.

3.4.2.2 Practicable Measures to Avoid Damaging Mapped SSUs

301 CMR 28.04(2)(b)(3) reads: *The Proponent has taken all practicable measures to avoid damage to Special, Sensitive or Unique Resources, and the Activity will cause no significant alteration Special, Sensitive, or Unique Resources. Demonstrating compliance with this standard may include the incorporation of measures to avoid resources and impacts through time of year controls such that the construction, operation, or removal of the Activity will not occur when the Special, Sensitive or Unique Resource is present or may be adversely effected* ..."

The following practicable measures are incorporated into the Project siting, design and construction to avoid and minimize damage to mapped SSUs. The primary means to avoid and minimize damage to SSUs are construction techniques and routing.

<u>Construction Techniques</u>

- There is an eelgrass meadow (one of the SSUs mapped in the Project area) located off the Falmouth shoreline. (See Figure 9**.**) The Proponent has specified the use of HDD construction to drill under the eelgrass meadow to install the cable beneath the eelgrass with no damage to this SSU. This also avoids intertidal and beach resource areas. HDD is also proposed for the Oak Bluffs landfall to avoid altering dune, beach and intertidal resources off Oak Bluffs.

- The submarine cable across Vineyard Sound will be installed using hydroplow (or jet plow) construction to bury the cable below the seabed. This is a less disruptive construction technique than traditional trench and backfill construction. Use of hydroplow will result in temporary seafloor disturbance, but no long-term damage to the seafloor.

- The Proponent plans to have the submarine cable contractor perform a hydroplow pre-pass along the cable route to identify any reaches that may prevent cable burial to a minimum depth of 6-feet below the seafloor. This will allow the contractor and engineers to pinpoint any areas that may need cable protection for shallow depth of burial.

- Before proceeding to cable protection, the contractor will be tasked with attempting to achieve burial depth with hand jetting, or other similar temporary disturbance means.

In summary, these measures are proposed to avoid long-term damage to the seafloor (hard bottom and complex seafloor types as well as non-SSU seafloor types). By way of case study, a post-construction survey for the 75 Cable, constructed in 2014 and west of this corridor through similar seafloor types, was conducted approximately 6-weeks after cable installation, and after that short period showed the corridor was on a trajectory towards pre-construction conditions.

Routing

The four alternative submarine cable routes presented in Figure 9 were identified and evaluated herein. SSU mapping shows SSU units of hard bottom and complex seafloor extending in east-to-west orientation across Vineyard Sound across where the cable needs to be installed in a north-to-south orientation. This makes avoiding the mapped SSU nearly impossible. The four routes were evaluated to select the route with the least damage to OMP mapped SSUs.

- Eastern Alternative 1 was identified to avoid areas of hard bottom and complex seafloor based on 2021 OMP mapping. This is the longest and most costly route. See Table 3.1 below.

- Eastern Alternative 2 follows primarily the same path as Eastern Alternative 1, but passes through a small area of hard bottom or complex seafloor off of East Chop to avoid tight bends in the cable. This is the second longest cable route. See Table 3.1.

- Western Alternative follows a similar path to the proposed Preferred Cable Alignment, but snakes through a narrow passage of unmapped SSU bottom type. This has a similar total length as the Preferred Cable Alignment.

- The Preferred Cable Alignment was identified in the summer of 2021, and based on the then publicly available SSU data (2015 OMP mapping) avoided all OMP mapped SSU units except for a single unit, see Figure 5. Subsequently the 2021 OMP mapping was released in January 2022, and after results from the fall 2021 Marine Survey were available. Both data sources document the presence of hard bottom and complex seafloor across the Sound. The 2021 Marine Survey generally confirms the 2021 OMP mapping, with some deviations noted.

All four routes meet the Project’s purpose and need, and would provide the public benefits described above. Neither of the two Easterly Alternatives were selected as the preferred alternative for reasons described below, based on the practicability criterion. (See Section 3.4.2.4 below.)

The Western Alternative and Preferred Alternative are similar in length and cost, but when examined in accordance with re-evaluated seafloor characteristics the Western Alternative results in greater potential permanent damage (cable protection measures) to hard bottom seafloor than the Preferred Alternative. (See Section 3.4.2.3 below.)

3.4.2.3 SSUs Do Not Accurately Characterize the Resource

301 CMR 28.04(2)(b)(1) reads: "*The maps delineating the Special, Sensitive or Unique Resources do not accurately characterize the resource based on substantial site-specific information collected in accordance with data standards and processes contained in 301 CMR 28.08; …"*. Seafloor data used to prepare the OMP maps was reviewed , resulting in the suggestion that the OMP mapped boundaries do not accurately depict SSU boundaries along portions of the Western Alternative. Likewise, data collected and analyzed from the fall 2021 Marine Surveys shows differences from the OMP mapped SSU boundaries along the Preferred Cable Alignment as described below.

The Western Alternative is depicted in Figure 9 and is approximately the same length from Falmouth to Oak Bluffs as the Preferred Cable Alignment and has similar overall seafloor disturbance based on the 12-foot wide hydroplow corridor. See Tables 3.1 and 3.2, This option seemingly has less alteration to mapped hard/complex seafloor, however approximately 3,000 l.f. of the route threads a narrow passage of unmapped SSU seafloor between areas of mapped hard bottom seafloor. Without a site-specific survey, it is questionable whether hard bottom seafloor can be avoided by siting the cable along this narrow passage. Because the results of the fall 2021 Marine Survey showed larger areas of hard/complex seafloor than the OMP mapped SSUs, this narrow passage was further analyzed to determine if it may in fact be hard bottom or complex seafloor. The databases used to conduct this assessment included backscatter intensity[8], sediment classification[9], bathymetry[10], seafloor rugosity[11], and terrain ruggedness[12]. Bathymetric relief data and seafloor rugosity data from 2014 were found to contain data in this location, while the other data were sparse and did not overlap with this route alignment segment. Therefore, the focus of further assessment was based on bathymetry and terrain ruggedness. Those data are displayed as Inset 2 below.

The bathymetric signature in the unmapped SSU path, especially at the western "mouth" and the easterly portion, is similar to that in the mapped SSU. This suggests the non-SSU mapped path has relief similar to the adjacent mapped hard bottom seafloor. Likewise portions of the non-SSU mapped path has seafloor rugosity values ranging from 1.0015 to 1.0112, which is consistent with the ranges found in portions of the OMP mapped SSU polygon. Thus, it is reasonable to conclude that hard bottom extends across all, or most of, the non-SSU path through which the Western Alternative crosses. This conclusion is also

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[8] 2016 data from https://pubs.usgs.gov/of/2016/1119/

[9] usSEABED (1895 to 2002) https://www.usgs.gov/programs/cmhrp/science/accessing-usseabed
East Coast Sediment Analysis points (2000, revised 2014) https://woodshole.er.usgs.gov/openfile/of2005-1001/ , and Sediment Texture polygons (2016) https://pubs.usgs.gov/of/2016/1119/

[10] 2014 data from https://pubs.usgs.gov/of/2012/1006/title_page.html and https://pubs.usgs.gov/of/2013/1020/

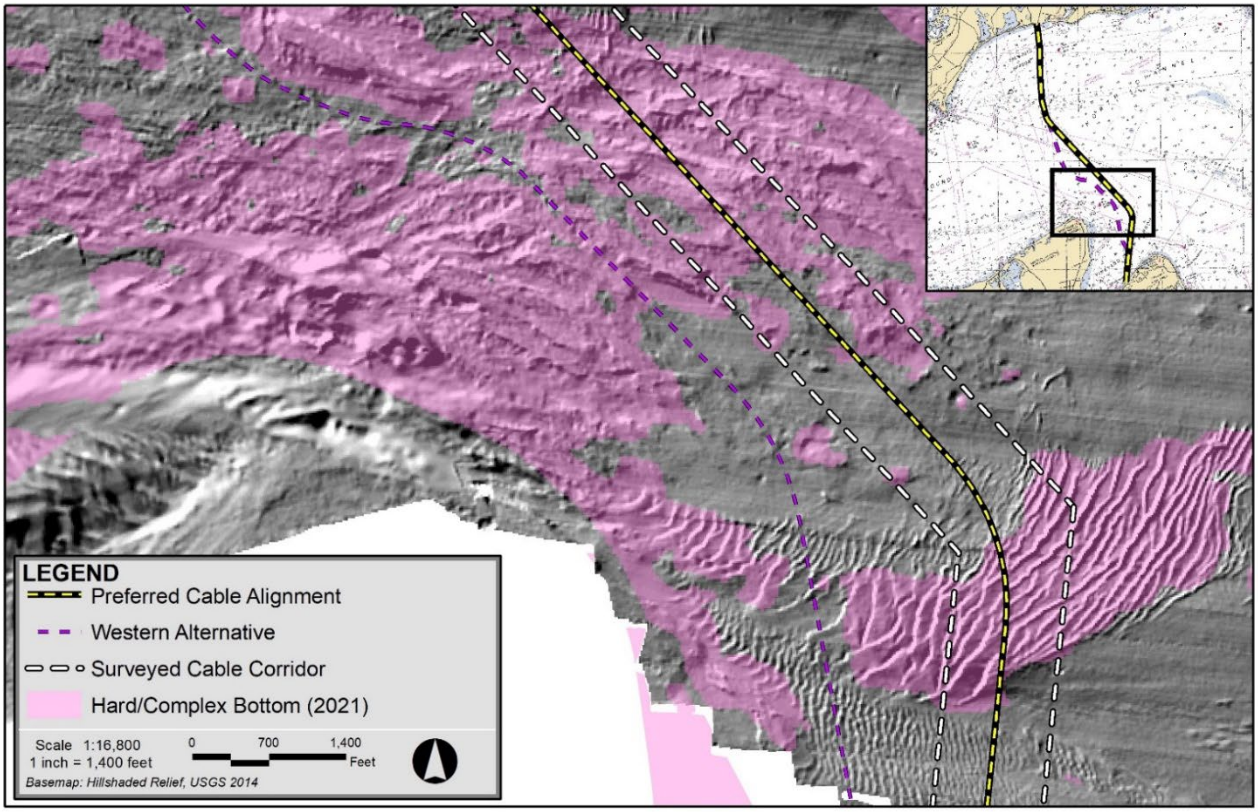
[11] Derived from bathymetry using https://coast.noaa.gov/digitalcoast/tools/btm.html

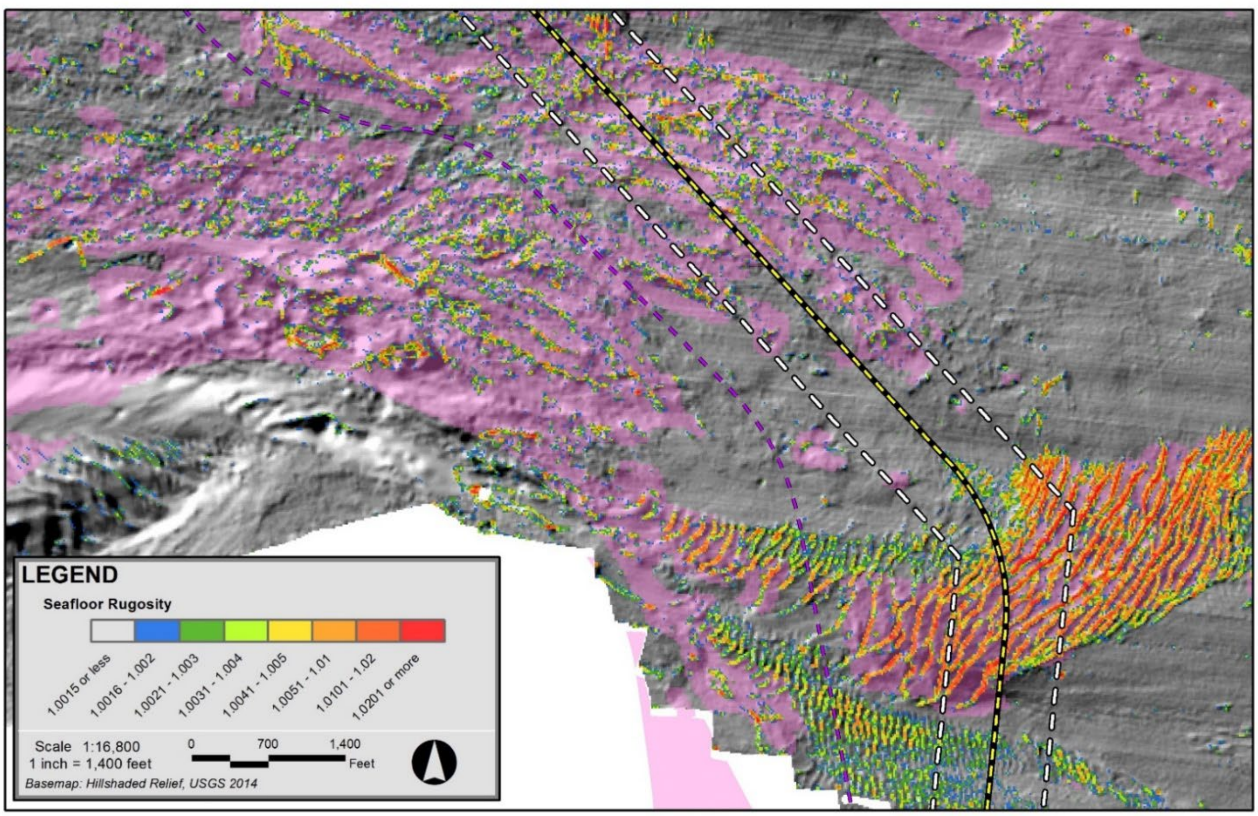
[12] Derived from bathymetry using https://coast.noaa.gov/digitalcoast/tools/btm.html

supported by results of the fall 2021 Marine Survey, see **Figure 11 – Dominant CMECS Substrate Classifications**, which documented hard bottom (Gravel Pavement-Boulder) extending beyond the limits of the mapped SSU boundary in the vicinity of this non-SSU pathway.

Additionally, the bathymetric signature in the unmapped SSU path in the southern portion of Inset 2 below shows a highly textured area adjacent to mapped SSU that is consistent with complex bottom. The area to the east within the 1,000-ft survey corridor that has a similar signature was confirmed to be sand waves by the fall 2021 Marine Survey. This would result in the Western Alternative crossing an additional 1,360 l.f. of complex bottom, in addition to the CZM mapped complex bottom of 2,045 l.f. for a total of 3,405 l.f. Comparing Tables 3.2 and 3.3 shows that Complex Seafloor temporary alteration increases along the Western Alternative from 2021 OMP mapping of 0.56 ac to 0.94 ac., while the change along the Preferred Cable Alignment decreases from 1.04 ac. (OMP Mapping) to 0.99 ac (2021 Marine Survey mapping).

Based on this re-assessment of publicly available data and the 2021 Marine Survey data we assert the OMP mapping does not accurately depict the actual limits of hard bottom and complex seafloor along the Western Alternative and the Preferred Cable Alignment. Based on the re-assessment described above, the Western Alternative could have up to 3,470 feet of additional non-SSU mapped hard bottom crossing. When added to the CZM mapped hard bottom of 3,170 l.f., the Western Alternative would cross up to **6,640 feet** of hard bottom (correlating to 199,200 s.f. or **4.57** ac of cable protection, assuming this entire length required cable protection) which is greater than the impacts determined using only the OMP mapped GIS SSU boundary. Likewise, for the Preferred Cable Alignment the estimated maximum cable protection through hard bottom seafloor, based on the 2021 Marine Survey, is expected to alter 3.81 ac. This re-assessed mapping confirms the Preferred Cable Alignment yields less potential hard bottom alteration than the Western Alternative. See Tables 3.2 and 3.3 below.





Inset 2. Comparison of bathymetry above and rugosity below to the mapped SSU boundaries.

Table 3.1 Comparison of Alternative Routes by Length (linear feet) Based on 2021 OMP Layout

	Eastern Alternative 1	Eastern Alternative 2	Western Alternative	Preferred Cable Alignment
Total Length (l.f.)	43,930	34,810	32,700	32,800
Mapped Hard/Complex Seafloor (l.f.)	0	1,360	5,215	8,220
Mapped Hard Bottom Seafloor[1]	*0*	*0*	*3,170*	*4,465*
Mapped Complex Bottom Seafloor[1]	*0*	*1,360*	*2,045*	*3,760*
Non-SSU Mapped Seafloor (l.f.)	43,930	33,450	27,485	24,575
Land Under the Ocean and Land Containing Shellfish (l.f.)	43,930	34,810	32,700	32,800
Planning Cost Estimate	$51,486,800	$40,984,850	$37,655,100	$37,770,250
Complies with DPU Standard: Straightest Path Possible	No	No	Partial	Yes
Complies with Eversource Standard: Avoid Cable Crossings	No (2 crossings)	No (2 Crossings)	Yes	Yes
Shipwreck within 50-meters of route	No	No	Yes	No

Notes:

1. CZM mapped areas were designated as either hard or complex based on the fall 2021 Marine Survey, as shown on Figure 9.

Table 3.2 Comparison of Alternative Routes by Area (Acres) Based on 2021 OMP Boundaries

	Eastern Alternative 1	Eastern Alternative 2	Western Alternative	Preferred Cable Alignment
Total Cable Corridor Area[1]	12.10	9.59	9.01	9.04
Complex Bottom[1]	0	0.37	0.56	1.04
Non-SSU Mapped Bottom[1]	12.10	9.21	7.57	6.77
Hard Bottom - Cable Protection (Shallow Cable)[2]	0	0	2.18	3.07
Cable Protection at Cable Crossings[3]	0.275	0.275	0	0
Land Under the Ocean and Land Containing Shellfish[1]	12.10	9.59	9.01	9.04

Notes:

1. Based on total length times the 12-foot wide hydroplow corridor. This represents **temporary** impacts and assumes no cable protection is needed.
2. Hard bottom areas are assumed to need cable protection for the entire length, and a 30-ft width is assumed. This represents **permanent** impacts.
3. Cable crossing assumes two crossings, each requiring a 30-foot x 200-foot concrete mattress. This represents **permanent** impacts.

Table 3.3 Maximum SSU Potentially Altered Along the Western and Preferred Cable Alignments (Based on Additional Seafloor Data)

	Western Alternative (length in feet) [1]	Preferred Cable Alignment (length in feet) [1]	Western Alternative (area in acres) [2]	Preferred Cable Alignment (area in acres) [2]
Hard Bottom for Cable Protection (Permanent)	6,640	5,535	4.57	3.81
Complex Bottom for Hydroplow (Temporary)	3,405	3,610	0.94	0.99
Non-SSU Bottom (Temporsary)	22,655	23,655	6.24	6.52
Total	32,700	32,800	11.75	11.32

Notes:

1. Lengths for the Western Alternative are based on OMP mapped SSU plus additional hard and complex bottom based on bathymetric data in Inset 2 and the fall 2021 Marine Survey.
2. Hard bottom areas are assumed to need cable protection for the entire length, and a 30-ft width is assumed. This represents the worst-case **permanent** alteration. Complex and Non-SSU areas are based on total length times the 12-foot wide hydroplow corridor. This represents **temporary** impacts and assumes no cable protection is needed.

3.4.2.4 No Less Environmentally Damaging Practicable Alternative

301 CMR 28.04(2)(b)(2) reads: "*<u>No less environmentally damaging practicable alternative exists</u>. For the purposes of this standard, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics with respect to the purpose of the Activity; …"*. These three considerations, existing technology, logistics, and costs are analyzed below.

Existing Technology

The same types of technology (I.e., HDD and hydroplow) are proposed to install the submarine cable for all four alternative routes. These two construction techniques are themselves measures to mitigate alterations to SSUs, as well as intertidal and subtidal resources. The use of HDD at both landfalls avoids altering beach, intertidal resources and eelgrass along the Falmouth shoreline, while in Oak Bluffs it avoids intertidal resources, beach, and dune. The use of hydroplow construction to bury the cable below the seabed is a less disruptive construction technique than traditional trench and backfill construction. Hydroplow construction results in only temporary disturbance of the seafloor. Hydroplow construction does not remove sediment, and as described in Section 2.2, dislodged sediment will settle back into the hydroplow trough resulting in no long-term loss or change of the hard or complex bottom types.

Logistics and Cable Crossings

The two main logistical aspects that differ for the four alternatives are: (1) bends in the cable route; and (2) cable crossings. The Preferred Cable Alignment has as few bends as possible within the limitations presented by the location of the 99 Cable and the existing cable corridors (Figure 9). The angles at which the cable can bend to follow a route have physical limitations due to the stiffness of the cable and conduit. Furthermore, the hydroplow does not have the capability to bend the cable in sharp angles. While the exact degrees of these angle limitations had not been determined for this analysis, it is assumed that the existing buried 75 Cable, also installed using hydroplow, provides an example of what angles hydroplow installation is capable. Eastern Alternative 1 has several tight turns that would not be able to be accomplished by the hydroplow, especially in the southeastern portion of the route. Eastern Alternative 2 was designed to eliminate the tight angles along the southeastern portion of Eastern Alternative 1, but still has multiple turns that would be difficult for the hydroplow to achieve to avoid GIS mapped SSU areas (Figure 9).

The 99 Cable extends from the intersection of Surf Drive and Shore Road, across Vineyard Sound, and makes landfall at Eastville Avenue in Oak Bluffs (Figure 4). Given the size constraints of the paved area east of the 99 Cable landing site in Falmouth, there is not enough room to install another cable using HDD east of the 99 Cable (see Attachment M, Sheets 6 of 23 and 20 of 23). The beach parking lot immediately west of the 99 Cable offers adequate space to set up and install the 5th Cable using HDD technology. Additionally, the 99 Cable makes landfall in Oak Bluffs in the eastern edge of the Eastville Avenue public ROW, which is constrained on either side by private property. To limit HDD construction activities to the public ROW, as was agreed between the Proponent and the Town of Oak Bluffs, the new cable must make landfall west of the existing 99 Cable (see Attachment M, Sheets 18 of 23 and 21 of 23). Therefore, the Preferred Cable Alignment for the new cable makes landfall west of the existing 99 Cable in Falmouth, remains to the west of the 99 Cable across the Sound and makes landfall west of the existing 99 Cable in Oak Bluffs, and avoids crossing the existing direct lay 99 Cable.

Eastern Alternatives 1 and 2 require crossing the 99 Cable twice. Each crossing would require cable protection above the existing cable (equal to the width of the new cable protection system) and about 6-feet in height. The new cable is encased in a protective conduit, draped over the protected existing cable and then a cable protection system is placed over the new cable from the point at which the new, hydroplow installed cable is less than 6-feet deep, across the existing cable and then back to the hydroplow installed depth to 6-feet below the seafloor. A typical detail of this type of cable protection is presented in **Figure 22 – Typical Cable Crossing Protection System**. This is an approximately 200-foot long by 30-foot wide section of cable protection with a maximum height of approximately 6-feet high above the seafloor at the crossing. This system yields approximately 6,000 square feet (200-feet by 30-feet) of cable protection at each crossing.

It is the Proponent's standard to avoid crossing submarine cables whenever possible for the following reasons.

<u>OMP, Wetland Resource Areas and Marine Use Considerations:</u>

- The height of protection at the crossing makes the cable crossing, at approximately 6 feet, an impediment to commercial fishing operations, with the possibility of snagging fishing gear.
- The two cable crossings closest to shore, at Points A and F on Figure 9**,** are in approximately 20 feet of water. Thus, a 6-foot high cable protection system reduces the effective water depth at these two locations, possibly causing a hazard to navigation.
- These mounded protection systems increase the potential for cable damage by fishing gear or anchor strikes.
- Each crossing results in approximately 6,000 square feet of avoidable LUO alteration.

In addition to the above considerations, the Proponent seeks to avoid cable crossings for the following technical reasons:

- Reliability - Damage to the existing serviceable cable being crossed during construction. In this case the existing 99 Cable is one of four serviceable distribution cables supplying grid-based electricity to Martha's Vineyard. The 99 Cable is an approximately 30-year-old direct lay cable and is considered to be near the end of its service life, and more prone to damage due to years of sand abrasion and shifting over 30-years of laying on the seafloor. Damage to the 99 Cable would cause significant outages across the Island.

- Project purpose and need - Mutual interference of cables at the crossing causes a derating of both cables, i.e., it reduces the load carried by both cables and therefore will not yield the total planned distribution capacity to Martha's Vineyard. This reduces the total capacity of grid-based electricity distributed to the Island and prevents full attainment of the Project purpose and need.

- Reliability - Although a low probability event, cable crossings pose potential single points of failure, that is a single ship anchor drag or damage by fishing gear could damage both cables and cause a significant outage across the Island.

- Logistics and Cost - Hydroplow installation at a cable crossing would require the cable to be unspooled from the hydroplow, direct laid on the seafloor, hand jetted slightly below the seafloor (1- to 2- feet) then re-spooled onto the hydroplow. This operation would require additional vessels and laborers and require at least 3-days for each crossing. At a planning level cost $150,000/day for the extra vessels, equipment and labor that yields at least a $450,000 cost for each crossing.

- Logistics and cost - Constructing the cable crossing system in water depth greater than 60-feet of water, such as at Point E on Figure 9, would require a dive chamber for the divers and increase time and cost above the planning level estimated noted above.

- Reliability - Post-construction, any future faulting (i.e., damage) of one of the cables within approximately 100- to 200-feet of the crossing (length depending on water depth) would require disturbing both cables to repair the faulted cable, especially if the lower cable had faulted. This is because the faulted cable section needs to be raised and brought on board the repair barge where it is cut and re-spliced, then lowered back the seafloor.

For these reasons Eversource seeks to avoid cable crossings to maintain optimal system reliability. Following is a review of the three potential cable crossing points.

<u>Crossing Point A:</u> The existing 99 Cable was installed in 1996 as a direct lay cable buried to a depth of approximately 10-feet below the seafloor and transitioning to a direct lay cable off the Falmouth shoreline. One option is to install the new cable by HDD to the west of the 99 Cable then cross it with the 5th Cable as a surface crossing. This is not preferred because of de-rating and the other technical reasons noted above.

An alternative to avoid the surface crossing is to install the HDD section from the parking lot under the 99 Cable and have it exit the seafloor east of the 99 Cable. The existing cable would need to be surveyed to drill underneath it at point A on Figure 9 for Eastern Alternatives 1 and 2. This crossing exit point is near the horizontal limit of HDD length, therefore this option may not be technically feasible and would have to be carefully assessed by the engineer to determine if the crossing could be achieved with a reasonable factor of safety (i.e., horizontal separation) from the 99 Cable in the event a geologic formation or obstruction were to deflect the drill cutting head causing it to deviate from the planned exit point.

Crossing Point E: For the second crossing at point E required for Eastern Alternative 2, the 99 Cable would have to be located on the seafloor during hydroplow construction. Hydroplow activities would need to be stopped at least 100 feet from the 99 Cable to avoid damaging it. The new cable would have to begin to make its way to the surface at this point, be de-spooled from the hydroplow, direct laid and hand jetted into the surface to a depth of 1- to 2-feet below the seafloor. The cable segment less than 6-feet below the seafloor requires cable protection. The 5th Cable would cross the 99 Cable and then be re-spooled, and direct laid with hand jetting to a point where hydroplow operations could resume. As discussed above, the crossing would require approximately 200-feet of protection resulting in approximately 6,000 square feet of cable protection. The crossing depicted at point E on Figure 9 is located in 70-feet of water, which is greater than the 60-feet that can be accomplished by divers without a dive chamber. Therefore, further assessment of the technical feasibility of this crossing would be required.

Crossing Point E is located at the edge of an area mapped by the 2021 Marine Survey. Based on both the substrate classifications and bathymetry presented in Figure 11, this area is likely sand waves, which is part of the complex bottom SSU. Placing cable protection in a sand wave area would result in the permanent loss of complex bottom, and convert it to hard bottom. Once the exact location of the cable crossing was determined, an assessment would be required to determine the area of complex seafloor that would be permanently altered by the 6,000 square foot cable protection system.

Crossing Point F: Similar to Crossing Point A, this could involve a surface crossing from and HDD exit point west of the 99 Cable. Crossing Point F is also in about 20 feet of water; therefore it faces the same challenges listed above for Crossing Point A, which makes this an unpreferred option due to its hazard to fishing and navigation.

Likewise, the option of using HDD to cross under the 99 Cable and exit to the east of the 99 Cable was explored. The Oak Bluff landing is in a more or less northwest- southeast orientation. See the Project Plans (Sheet 21 of 23). The HDD setup needs to align with the direction of the drill, and at the Oak Bluffs landing site this is aligned with the Eastville Avenue ROW. Staying within the ROW is required by agreement with the Town of Oak Bluffs. Re-orienting the HDD from a northerly direction to instead exit east of the 99 Cable would require re-designing the HDD operations and placing the equipment and operations onto private property outside of the ROW. Therefore, this option is not preferred.

Considering logistical issues, the two Eastern Alternatives have the greatest logistical constraints with both requiring two cable crossings. Therefore, the two Eastern Alternatives are rated low for this criterion. The Preferred Cable Alignment and Western Alternative do not require crossing existing in-service electric distribution cables. Therefore, this logistical criterion is not a factor for the Western Alternative and the Preferred Cable Alignment.

Cost

Costs are directly related to cable length and number of cable crossings, if required, therefore the shortest alignment correlates to the lowest cost alternate and vice versa. A unit cost of $164 per foot of cable material was provided by the cable manufacturer. Because the Project is still in the design development stage, actual construction costs for installation are not yet available for comparison purposes. However, an estimated installation cost per foot of $988 (escalated to 2023 dollars from 2014 dollars) was calculated using construction cost data from the 75 Cable installed in 2014 using both HDD and hydroplow construction techniques. These two cost elements yield a total unit cost of $1,152 per foot (sum of material plus construction costs). This was used to compare the costs for the four alternatives route. Cable crossings such as in Eastern Alternatives 1 and 2 present an increased cost for the logistical issues discussed above (i.e., de-spooling cable, direct lay plus hand jetting, cable protection and re-spooling the cable) which is estimated to take 3-days at a cost of $150,000 per day yielding an estimate cable crossing cost of $450,000 per crossing. This amount is added to the unit cost per presented in Table 3.1 for Eastern Alternatives 1 and 2. Note, the water depth (approximately 70 feet) at point E may make this method of cable crossing nearly infeasible since it is typically done in 60 feet of water or less. Divers working in water greater than 60-feet will require the use of diving chamber thus increasing time and cost for any cable crossing in water greater than 60 feet. Due to diver safety considerations needed for crossing a Point E, if it were required, significantly more developed construction means and methods would be required, which is beyond the scope of this assessment.

The planning level cost estimates for each alternative are presented in Table 3.1**.** Review of that table reveals that the two Eastern Alternatives are the highest cost options, with the Eastern Alternative 1 the highest cost at 136% the cost of Preferred Cable Alignment; and Eastern Alternative 2 is the second highest cost at 108.5% the cost of the Preferred Alternative. The Western Alternative and Preferred Cable Alignment costa are comparable with the Western Alternative cost being 99.7% the cost of the Preferred Cable Alignment.

In conclusion, the two Eastern Alternative are significantly higher costs than the Preferred Cable Alignment and Western Alternative.

Avoid and Minimize Impacts to SSUs

All four cable routes can use the same construction technologies (HDD and hydroplow) to install the cables in a manner to avoid and minimize impacts to SSUs. Therefore, that criterion is not a discriminator.

Based on the above evaluation, the criteria of logistics and cost show that Eastern Alternatives 1 and 2 are comparable, with both alternatives rated low for logistical and cost considerations. Based on those two criteria Eastern Alternatives 1 and 2 are not carried forward for further evaluation.

The Western Alternative and Preferred Cable Alignment are comparable relative to logistical challenges of cable crossings and have comparable costs. Based on those criteria, these two route options are evaluated further to identify the option with the least potential permanent alteration to SSUs along each route. As described in Section 3.4.2.2, the seafloor characteristics along each alignment were assessed to evaluate the efficacy of the OMP mapped GIS polygons. Based on the assessment presented above in Section 3.4.2.3 it was determined the actual extent of hard bottom and complex seafloor was greater along portions of each route as compared to the OMP mapping. As presented Table 3.3 the actual impacts for the Preferred Cable Alignment are less than the Western Alternative as summarized below:

Alternative	Potential Permanent Alteration	Temporary Alteration	Total
Western	4.57 ac. (Hard Bottom)	0.95 ac. (Complex Seafloor)	5.52 ac.
Preferred	3.81 ac. (Hard Bottom)	0.99 ac. (Complex Seafloor)	4.8 ac.

Whereas the Preferred Cable Alignment results in the least impact to SSUs, has least logistical constraints and is comparable in cost to the lowest cost option, it was selected as the LEDPA.

3.4.3 Summary of Route Options

All four routes provide the suite of public benefits described above in Section 3.4.2.1 and will use practicable construction-period means and measures to minimize and avoid damage to SSUs along the routes. The primary discriminators for the routes are based on the practicability of the routes (costs and logistics), differences between mapped and actual SSU boundaries along the routes, and the potential maximum alteration of hard bottom caused by cable protection. The alternate submarine cable route options are compared to the Preferred Cable Alignment below.

3.4.3.1 Eastern Alternative 1

Eastern Alternative 1, depicted on Figure 9**,** is the longest and most indirect route from Falmouth to Oak Bluffs. It is approximately 11,135 feet longer than the Preferred Cable Alignment and has 3.06 ac. more seafloor impact based on the 12-foot wide hydroplow corridor. This alternate also crosses the 99 Cable twice, yielding a known cable protection need of approximately 0.275 ac. This option seemingly avoids mapped hard/complex seafloor, however cable protection due to insufficient burial cannot be ruled out.

Being the longest route, it yields the greatest alteration of LUO and Land Containing Shellfish. The greatest length also correlates to the most expensive route. This route also includes an area where the cable would need to make a tight bend, which may not be achieved with the hydroplow. Lastly this option does not meet the DPU regulation for the straightest most direct route possible.

This option was not selected as the LEPDA because it does not meet the practicability criteria of cost and logistics:

1. Being the longest option means it is the greatest cost option, at approximately $51,486,800 (136% of the Preferred Cable Alignment cost) based on a constant unit cost per foot plus $450,000 per cable crossing. This fails to meet the consideration of cost included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4 above.

2. It requires crossing the existing in-service direct lay 99 Cable twice, significantly increasing the construction logistics and associated costs as compared to alternatives that avoid cable crossings, as discussed above in Section 3.4.2.4. These significant logistical challenges cause it to fail to meet the consideration of logistics and cost included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4 above.

3. The two cable crossings will require protection systems each extending approximately 6-feet above the seafloor in water depths of approximately 20 feet. These two crossings will result in hazards to fishing operations and possibly to navigation in fairly shallow water. This prevents this option from meeting the logistics criterion included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4.

4. Although it potentially has the least impact to hard/complex seafloor (0 ac.) based on OMP mapping, actual crossing of hard/complex seafloor is unknown since the pathway of this alternate route was not part of the fall 2021 Marine Survey.

Other considerations which prevent the Eastern Alternative 1 from being selected as the LEDPA include the following:

1. Cable crossings cause a de-rating of both cables thereby reducing the total capacity of both cables. This will decrease the actual capacity of grid-based electricity delivered to Martha's Vineyard. Therefore, it potentially will not meet the Project purpose and need.

2. It has the greatest alteration to WPA resource areas of LUO and Land Containing Shellfish.

3. It does not meet the DPU standard as being installed in as straight a line as practical.

4. It is outside of existing cable corridors across Vineyard Sound

Because this option does not balance environmental impacts, reliability, cost and regulatory compliance; and because this route does not meet the practicable criterion [301 CMR 28.054(2)(b)2.] it is not identified as the LEDPA.

3.4.3.2 Eastern Alternative 2

The Eastern Alternative 2 is depicted in Figure 9 and is the second longest and second least direct route from Falmouth to Oak Bluffs. It is approximately 2,011 feet longer than the Preferred Cable Alignment and has 0.55 ac. more seafloor impact based on the 12-foot wide hydroplow corridor. This alternate also crosses the 99 Cable twice, yielding a known cable protection need of approximately 0.275 ac. This option seemingly avoids mapped hard/complex seafloor, however cable protection due to insufficient burial cannot be ruled out.

Being the second longest route, it yields the second greatest alteration of LUO and Land Containing Shellfish. Additionally, this option does not meet the DPU regulation for the straightest most direct route possible.

This option was not selected as the LEPDA because:

1. Being the second longest option means it is the second highest cost option, estimated at $40,984,850 (108.5% of the Preferred Cable Alignment) based on a constant unit cost per foot plus $450,000 per cable crossing. This fails to meet the cost consideration included in the practicability criterion described in 301 CMR 28.04(2)(b)(2) as stated in Section 3.4.2.4.

2. It requires crossing the existing in-service, direct lay 99 Cable twice, significantly increasing the construction logistics and associated costs as compared to alternatives that avoid cable crossings, as discussed above in Section 3.4.2.4. These significant logistical challenges cause it to fail to meet the consideration of logistics and cost included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4.

3. The northerly cable crossings will require a protection system each extending approximately 6-feet above the seafloor in water depth of approximately 20 feet. This crossing will result in hazards to fishing operations and possibly to navigation in fairly shallow water. This prevents this option from meeting the logistics criterion included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4.

4. The southerly cable crossings will require construction of a protection system in water depths greater than 60 feet. This increases construction logistics related to diver safety, the need for a dive chamber and associated increased costs. This prevents this option from meeting the logistics criterion included in the practicability criterion described in 301 CMR 28.04(2)(b)(2). See Section 3.4.2.4.

Other considerations which prevent the Eastern Alternative 1 from being selected as the LEDPA include the following:

1. Cable crossings cause a de-rating of both cables thereby reducing the total capacity of both cables. This will decrease the actual capacity of grid-based electricity delivered to Martha's Vineyard. Therefore, it potentially will not meet the Project purpose and need.

2. It has the second greatest alteration to WPA resource areas of LUO and Land Containing Shellfish.

3. It does not meet the DPU standard of a straight as possible path.

4. It is outside of existing cable corridors across Vineyard Sound

Because this option does not balance environmental impacts, reliability, cost and regulatory compliance; and because this route does not meet the practicable criterion [301 CMR 28.054(2)(b)2.] it is not the LEDPA.

3.4.3.3 Western Alternative

The Western Alternative depicted on Figure 9 was selected to follow a narrow pathway of unmapped SSU seafloor through a formation of mapped hard bottom seafloor to reduce damage to mapped SSUs. This route is comparable to the Preferred Cable Alignment in practicability criteria such as cost and logistical complexity, as well as overall length and area of seafloor disturbance (0.03 ac., or approximately 1,310 s.f. – see Table 3.2) based on the 12-foot wide hydroplow corridor.

Based on 2021 Marine Survey results and a re-assessment of publicly available data the Western Alternative however would have up to 3,470 feet of additional damage to unmapped hard bottom, as described above. Thus, when added to the OMP mapped hard bottom of 3,170 feet, the Western Alternative would cross up to **6,640 feet** of hard bottom (correlating to 199,200 s.f. or **4.57** ac of cable protection) assuming this entire length of hard bottom requires cable protection. This is greater than the alteration determined using only the OMP mapped SSU boundaries. See Table 3.3.

Based on the discussion above, the Western Alternative was not selected as the LEPDA because:

1. The reassessment of the publicly available data suggests the actual impact to hard bottom seafloor would be greater than that for the Preferred Cable Alignment, i.e., with up to 4.57 ac. of cable protection vs. the Preferred Alternative with up 3.81 ac. of cable protection**.** Therefore, this alternative fails to meet 301 CMR 28.04(2)(b)(3) as discussed above because it does not minimize damage to SSUs, as discussed above in Section 3.4.2.3.

Other considerations which prevent the Eastern Alternative 1 from being selected as the LEDPA include the following:

1. This option partially meets the DPU standard as the straightest and most direct route.

2. This option does not avoid the 50-meter exclusion zone for a previously unidentified shipwreck within the study corridor.

Because this option does not minimize the potential maximum alteration to hard bottom, from cable protection, nor balance environmental impacts, reliability, cost and regulatory compliance; it is not selected as the LEDPA.

3.4.3.4 Preferred Cable Alignment

The Preferred Cable Alignment is the preliminary alignment within the 1,000-foot-wide survey corridor and west of the 99 Cable. The potential alteration to seafloor can be better defined based on the 2021 Marine Survey. Seafloor impacts to OMP mapped hard/complex seafloor are presented in Tables 3.1 and 3.2 so that the same level of accuracy is used for all four alternatives, because fall 2021 Marine Survey removes some uncertainty assigned to the other alternatives.

As seen in Tables 3.1 and 3.2 Western Alternative has the potential to have less permanent impact to hard bottom seafloor than the Preferred Alternative. Closer inspection of the datasets used to determine the OMP SSU polygons however, reveals greater extent of hard bottom seafloor resulting in greater impacts along the Western Alternative alignment than is suggested by the OMP mapping alone. Likewise, the fall 2021 Marine Survey provides project specific data to assess potential permanent impacts to hard bottom seafloor, and that data shows an additional 1,070 feet of non-mapped SSUs that are confirmed to be hard bottom (see Figure 11). When that additional length is added to the CZM mapped hard bottom of 4,465 feet, the Preferred Cable Alignment could cross up to **5,535 feet** of hard bottom (correlating to 166,050 s.f. or up to **3.81 ac.** of cable protection, assuming the entire length needs cable protection). This alteration is less than the 4.57 ac. of hard bottom impacts estimated for the Western Alternative, as shown in Table 3.3.

This option was selected as the LEPDA because:

1. The alteration of hard/complex seafloor based on the 2021 Marine Survey, has greater certainty than the OMP mapped SSU boundaries, as described above.

2. Cable protection across hard seafloor is estimated to be up to **3.81 ac**. vs the Western Alternative determined to be up to **4.57 ac.**).

3. Temporary alteration of complex seafloor is comparable for both the Western Alternative and Preferred Cable Alignment.

Other factors which support this alignment as the LEPDA include:

1. This alignment is comparable to the least cost alternative (i.e., the Western Alternative);

2. This option meets the DPU standard as the straightest and most direct route;

3. This option remains outside of the 50-meter exclusion zone of a shipwreck.

4. This alignment locates the new cable within and adjacent to existing cable crossings as shown on the navigational chart and does not extend the cable corridors further eastward across Vineyard Sound.

Because this option has the least maximum potential permanent alteration to hard bottom and comparable temporary disturbance to complex seafloor, and because it balances environmental impacts, reliability, cost and regulatory compliance it was selected as the LEDPA.

3.4.4 Conclusion

The comprehensive alternatives assessment presented herein was prepared to determine the LEDPA in compliance with 301 CMR 28.04(2)(b.)2 and demonstrates that the proposed Preferred Cable Alignment is the less environmentally damaging practicable alternative when taking into account factors pertaining to practicability (cost, technology and logistics), plus potential permanent alteration of hard bottom seafloor and other non-OMP factors.

The Preferred Alternative was identified as the LEDPA based on the following.

Cost: As presented in Table 3.1 it comparable to the lowest cost alternative.

Technology: HDD is being used to avoid eelgrass. Trenchless cable installation, (i.e., hydroplow construction technique) is being used which is less impactful to the seafloor than trenching and backfilling.

Logistics: The alignments that avoid cable crossing are the most efficient construction operations in terms of logistics because the cable crossing would require complex and time-consuming operations at sea as described above.

The two easterly alternatives, although they may have less direct impacts to hard bottom/complex seafloor, were not selected as the LEDPA because they: are the greatest cost options; are the most logistically challenging options due to cable crossings; the cable crossing would require extensive protection systems (horizontally and vertically) which would alter bottom habit and create impediments to fishing activities and navigation, and the cable crossings will de-rate both cables.

The Western Alternative and Preferred Alignment are similar: in length and cost; both use the same technology to reduce impacts (i.e., HDD and hydroplow construction); avoid cable crossings; and have similar logistical challenges. Therefore, they were further evaluated to assess permanent alteration of hard bottom seafloor and other criteria. As a result of the assessment presented herein, the Preferred Alignment was selected as the LEDPA because:

1. It has the least potential permanent alteration of hard bottom seafloor, 3.81 ac. vs 4.57 ac.;
2. The cost difference is minimal, $37,770,250 vs. $37,655,100
3. Avoids work in the 50-meter offset from an identified ship wreck;
4. Has comparable impact to LUO and Land Containing Shellfish with the Western Alternative, which is consistent with the WPA goals to avoid and minimize work in wetland resource areas; and
5. Is the more direct route and thus is more consistent with DPU Regulation 220 CMR 126.35(2)(a)2. than the Western Alternative.

The compliance assessment for other components of the OMP associated with the Preferred Alignment are addressed in Section 7.0 Regulatory Compliance.

3.5 Landside Cable Routes (Falmouth)

Four routes were examined for the new 5th Cable from the Stephens Lane Substation to the Shore Street/Surf Drive landing site. Routes from the substation to the landing site are described below and depicted in **Figure 12 – Environmental Constraints in Falmouth** along with the environmental constraints in the area. Land use between these locations includes densely populated areas, including Falmouth Center. Each of the Falmouth landside route alternatives are within 1-mile of the same Environmental Justice communities, which are identified for income. See Section 6.0 Environmental Justice for more information regarding the nearby EJ populations. See Section 9.2 for more information on how the project was designed to promote climate resiliency.

3.5.1 Option 1 (Jones Road, Nursery Road, Katharine Lee Bates Road, Walker Street)

The total length of this route is approximately 2.2 miles. The route would require 11,550 feet of a new duct and manhole system to be constructed from the substation within the ROW of Stephens Lane, Jones Road, Nursery Road, Lakeview Avenue, Howes Lane, Katharine Lee Bates Road, Library Lane, Main Street, and Walker Street. The existing duct and manhole system in Surf Drive would be utilized. The route is through primarily residential land use, but includes an approximately 370 foot section in Main Street (Route 28) that is a dense commercial area with high traffic volume. This route also borders the edge of Shivericks Pond and passes through multiple areas on the National Register of Historic Places and the Local Historic District, see **Figure 13 – Historic Resources in Falmouth**.

3.5.2 Option 2 (Palmer Avenue, Main Street, and Walker Street)

The total length of this route is approximately 2.2 miles. This route would require 11,550 feet of a new conduit system to be constructed from the substation that would go down Stephens Lane, Jones Road, Palmer Avenue, Main Street, and Walker Street, and the existing conduit along Surf Drive would be utilized. About half of the land use along this route is residential, and a 1-mile section along Palmer Avenue and Main Street (Route 28) is a dense commercial area with high traffic volumes. This route passes through multiple areas on the National Register of Historic Places and the Local Historic District, see Figure 13**.**

3.5.3 Option 3 (Shining Sea Bikeway and Mill Road)

The total length of this route is approximately 2.5 miles. This route requires 12,030 feet of a new duct and manhole system from the substation in the ROW of Stephens Lane, Jones Road, the Shining Sea Bikeway, and Mill Road. From the intersection of Mill Road and Surf Drive, the existing duct and manhole system within Surf Drive will be utilized. Land use along this route is primarily residential, with some commercial and industrial uses along the Shining Sea Bikeway. The 100-foot buffer zone from wetlands extends from Salt Pond extends onto Mill Road, however, this route avoids the Barrier Beach mapped on Surf Drive.

3.5.4 Option 4 (Shining Sea Bikeway and Elm Road)

The total length of this route is approximately 3.3 miles, therefore making this the longest route and most expensive alternative. This route would require 13,610 feet of a new duct and manhole system to be constructed from the substation within the ROW of Stephens Lane, Jones Road, the Shining Sea Bikeway, Elm Road, and the western portion of Surf Drive. The existing duct and manhole system in the eastern portion of Surf Drive would be utilized. Land use along this route is primarily residential, with commercial and industrial uses along the Shining Sea Bikeway. In this route, the southern portion of the Shining Sea Bikeway and the western section of Surf Drive is located in buffer zone to wetlands and Barrier Beach.

3.5.5 Conclusion

Option 3, located primarily along the Shining Sea Bikeway and Mill Road, was selected as the preferred landside cable route for the 5th Cable, because this route option:

- avoids wetlands and Barrier Beach;
- avoids cultural resource districts;
- minimizes work in public roads; and
- avoids the high traffic areas along Main Street (Route 28) and through downtown Falmouth.

Section 4.0

Existing Conditions

4.0 EXISTING CONDITIONS

The Project area encompasses portions of the town of Falmouth on Cape Cod, a corridor across Vineyard Sound in the Towns of Falmouth, Tisbury and Oak Bluffs, and portions of the town of Oak Bluffs on Martha's Vineyard. Overall, the Project corridor for the underground cable routes in Falmouth and Oak Bluffs generally consist of developed areas that include residential, and business uses with pockets of undeveloped, industrial, and institutional uses.

4.1 Coastal and Marine Resources

The following studies were conducted to assess the presence of resources in the project area.

4.1.1 Marine Surveys

To understand the substrate conditions along the proposed submarine cable route, the Proponent performed bathymetric and geophysical surveys, a towed underwater video survey, and sediment sampling in a 1,000-foot-wide survey corridor the autumn of 2021. Surveys along the survey corridor were performed by CR Environmental, Inc. Sediment sampling was conducted in accordance with the procedures outlined in the Project-specific Survey and Sampling Plan ("SAP") that was approved by MassDEP on August 19, 2021 (See **Attachment E – Agency Communications**). The survey plan was developed in close coordination with MBUAR through application for, and issuance of, a Special Use Permit ("SUP") (refer to Attachment E – Agency Communications).

They survey corridor was developed to characterize the Project area extending 500 feet on either side of the proposed submarine cable route (i.e., a 1,000-foot survey corridor). Survey components included: towed underwater video; multibeam bathymetry and backscatter; side scan sonar; sub-bottom sonar; magnetometry; and sediment sampling. Hydrographic and geophysical operations were conducted first to support selection of sampling locations.

The survey and sampling efforts were executed between August 19 and November 22, 2021. Remote sensing data acquisition was completed on September 14, 2021. The underwater video survey was conducted between September 29 and October 1, 2021. Sediment sampling was conducted between November 17 and 22, 2021. Towed underwater video transects and sediment sampling locations were cleared by marine archaeologists at Gray & Pape, Inc. prior to work commenced.

The survey corridor was sited using the 2015 CZM Hard Bottom/Complex Seafloor data to avoid, to the extent practicable, the areas mapped as hard bottom or complex seafloor (refer to Figure 5). In January 2022, after completing survey activities, an updated version of this data layer was published by CZM and the Massachusetts Ocean Management Plan ("OMP") (refer to Figure 5). Therefore, based on this revised map set, and described below, the hard bottom/complex seafloor areas are unavoidable.

The following sections summarize the results of the bathymetric, geophysical, and underwater video surveys. Detailed information on the methodologies and results are provided in **Attachment G - Marine Survey Report.**

Bathymetry Results

Results of the bathymetric survey are depicted on Attachment G – Marine Survey Report, Figures 2 through 8. Seafloor elevations in the survey corridor ranged from -2.2- to -31.0-meters. Bathymetric relief indicated the presence of sand ripples, sand waves, sandy gravel waves, boulder fields, and portions of utility crossings (refer to Attachment G, Figure 3). The bathymetric surface of much of the survey area was relatively flat, with an average slope (i.e., degree departure from horizontal) of less than 2.5 degrees. Data show sand waves and large angular boulders were responsible for the highest slope values (refer to Attachment G, Figure 5).

Backscatter Results

Multibeam backscatter data allowed for mapping of surficial seabed features and textures without the positional uncertainties associated with towed sonar systems. The backscatter mosaic (refer to Attachment G, Figure 8) suggests the presence of eelgrass in the northernmost portion of the corridor extends approximately 400 m (1,312 ft) from the shoreline. The northern sand wave field which was visible in the bathymetric data exhibited the lowest backscatter suggesting the substrates in this area are likely composed of sand without epibiota. The highest backscatter was mapped in the southern sand wave field, suggesting a coarse sand, gravel and coble matrix without acoustic scattering associated with epibiota. Other portions of the survey corridor, including those dominated by large cobbles and boulders, possessed intermediate backscatter values suggesting the stable seabed may be covered with epibiota which scatters and absorbs acoustic signals, masking the reflectance of the geologic substrate.

Towed Side Scan Sonar Results

Towed side scan sonar data allowed a more refined inspection of surficial bottom features than MBES backscatter layers albeit with a minor degradation of positional accuracy associated with the towed and 2-dimensional nature of the data. High resolution images and descriptions of digitized seabed features (contacts) are presented in Attachment G – Marine Survey Report, Appendix A and the locations of the contacts are depicted on the sonar mosaic provided as Attachment G, Figure 9. Seventy-four digitized contacts were described in Attachment G, Table 2. Data was provided to Gray & Pape to aid their archaeological review of data.

Sub-Bottom Profiling Results

Each of the sub-bottom files was carefully inspected and the acoustic basement was interpreted and digitized. Examples of sub-bottom profiles over different substrate types from north to south along the proposed cable route have been annotated and depicted on Attachment G, Figure 10 and Figures 11A-C. These files were combined to create map of depth to acoustic basement (minimum sediment thickness) as provided as Attachment G, Figure 12. While sonar penetration was highly variable due to scattering by surface materials and sub-surface strata, the map conservatively depicts the interpreted sediment thickness. Sediment thickness estimates ranged from 0.6- to 5.6-m (2- to 18-feet) with a mean thickness of 1.8 m (6 ft). Sonar penetration was generally greatest in seabed dominated by sand, gravelly sand and pebble/granule substrates. Penetration was lower in coarser sediments (cobble/boulder) and in many areas of high topographic relief. Sonar penetration did not appear to be depth dependent and reached its minima in shallow waters dominated by *Crepidula* reef.

Magnetometer Results

Magnetometer results were provided to Gray & Pape to support their marine archaeological review. Refer to Section 4.1.4 below for a summary of the archaeological analysis completed by Gray & Pape. These results are being provided to MHC and MBUAR concurrent with this EENF/PEIR submission.

The quality of the magnetometer data was adversely affected by the presence of electric utilities. Although some of these interferences caused magnetic interferences with magnitudes beyond the sensor's ability to record, CR's processing approach allowed accurate mapping and description of magnetic anomalies associated with ferrous materials and magnetic fields surrounding utilities.

CR digitized 174 magnetic anomalies (refer to Attachment G, Figure 13, Appendix B, and Table 3). An electric cable was mapped in the northern 3,300 m (10,827 ft) of the survey corridor, and data suggest an electric cable extending approximately 1,900 m (6,234 ft) from the southern limit of the survey corridor. In addition, a series of linearly arranged anomalies were observed over 850 m (2,789 ft) of the central boulder fields and may indicate a cable. Many of the large mapped individual anomalies are likely associated with electric cables.

Table 4 in Attachment G lists approximately co-located magnetic anomalies and corresponding side scan Contacts. Six of the anomalies were associated with the wreck in the southernmost portion of the survey corridor in Vineyard Haven Harbor. Eleven of the anomalies were co-located with fishing gear (e.g., conch traps). Two of the anomalies were co-located with boulders and one anomaly was co-located with unidentifiable debris.

Underwater Video Survey Results

The Coastal and Marine Ecological Classification Standard ("CMECS"), a hierarchical arrangement of biogeographic and aquatic setting units and components (water column, geoform, substrate and biotic), was used to describe ecosystem features along the cable corridor in Vineyard Sound (FGDC, 2012). Also provided are observation of any Massachusetts CZM SSUs such as, eelgrass beds, hard/complex seafloor, or commercially important species. In total forty-one (41) underwater video transects were conducted.

Table 6 in Attachment G provides the bottom substrate (depicted in Attachment G, Figure 14 in for the dominant CMECS substrate classifications) and biotic components (depicted in Attachment G, Figure 16 for the dominant CMECS biotic classifications) observed at each video transect. A list of flora and fauna observed by transects along with summary statistics of species observations by transect and frequency of observation across all transects and the subset with gravel pavement are provided in Attachment G, Table 7. Attachment G Appendix C provides representative screen captures of bottom substrate and biota along each transect.

CMECS Classification from Video Footage

Visually estimated surficial substrates were primarily of geologic origin and consisted of coarse unconsolidated mineral substrate Grable Pavement dominated by Boulder, Cobble or Pebble/Granule bottom at 19 of the 41 transects, and fine unconsolidated substrates of Sand Waves, Sand Ripples, Gravelly Sand, or Sandy Gravel at 12 transects. Biogenic substrate of *Crepidula* Reef was observed at seven transects in Vineyard Haven Harbor and three transects in outer Falmouth Harbor. At the shallower inshore northern ends of the transects in outer Falmouth Harbor, the substrate transitioned to Gravelly Sand and Sandy Gravel (refer to Attachment G, Figure 14).

Biotic Groups and Sub-classes associated with the corridor are shown on Attachment G, Figure 16, and listed in Section 3.6.1 of Attachment G. Representative screen captures and classification of these aggregated CMECS units are provided in Attachment G, Appendix D. The screen capture water depths are relative to MLLW, and coordinates are provided in Attachment G, Table 8 and their location plotted on Attachment G, Figure 16. **Table 4.1 - CMECS Biotic Classification and Special, Sensitive or Unique Areas** below provides additional information on the co-occurring elements and associated taxa for these CMECS units.

Special Sensitive and Unique Species and Habitats:

"Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 Ocean Plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs, biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area" (EEA, 2021).

As mentioned previously, the 2021 survey activities were planned using the 2015 Ocean Management Plan Layer for hard/complex seafloor. Subsequent to the survey activities, the 2021 update was published which increased the areas identified as mapped hard bottom/complex seafloor. Figure 5 depicts the survey corridor and mapped hard bottom/complex seafloor at the time of the survey design, and the 2021 mapped hard/complex seafloor with the CMEC substate classifications developed by CR Environmental. As such, the hard bottom/complex seafloor is unavoidable.

Hard/Complex Seafloor:

Nine of the twelve transects classified as Diverse Colonizers on Gravel Pavement of cobbles or boulders were in the vicinity of areas mapped by OMP as hard/complex seafloor. Four had boulder dominated substrate and the remaining cobble. The three additional cobble dominated areas with Diverse Colonizers at transects VS-4, VS-13 and VS-14 are potential SSUs.

Areas of coverage by Pebble/Granule Gravel Pavement were present at seven transects in the northern half of the cable corridor. These areas are not mapped as hard/complex seafloor by the OMP. Unlike Gravel Pavement of cobbles or boulders, these pebble-granule dominated areas had little relief, and low rugosity, slope, and slope of slope values indicating a lack of complexity (Attachment G, Figures 4, 5, and 7).

Biogenic *Crepidula* Reef was present at the northern and southern nearshore ends of the cable corridor in water depths from 15- to 23-ft below MLLW. Although a form of biogenic reef, these areas were not mapped by OMP as hard/complex seafloor, refer to Figure 11 – Dominant CMECS Substrate Classification and Attachment G, Figure 18. The *Crepidula* Reef seafloor has low relief as shown on the bathymetric figures for rugosity, slope, ruggedness, and slope of slope (Attachment G, Figures 4, 5, 6, and 7). *Crepidula* Reef to the south at the entrance of Vineyard Haven Harbor (transects CS-4 to CS-7) was covered by the co-occurring invasive *Codium fragile*. The northern *Crepidula* Reef had moderate bushy bryozoan and sparce benthic macroalga. Due to the presence of invasive algal cover, low relief and low density, these areas should not be mapped as SSUs.

The cable corridor crosses L'Hommedieu Shoal off outer Falmouth Harbor and a small sand shoal outside the mouth of Vineyard Haven Harbor. The sand waves and ripples are mapped as complex seafloor by the OMP. These shoals are coincident with areas mapped during the 2021 bathymetric survey of the 5th Cable corridor (Figure 2 in Attachment G) and assessments of the bathymetric rugosity, slope, and slope on slope (Figures 4, 5 and 7, respectively in Attachment G). Review of the NOAA DEM with CR's 2021 bathymetric data for L'Hommedieu Shoal indicated that the sand wave/ridge peaks are essentially permanent features, however the northern and southern tails of the waves/ridges may be more mobile.

Anthropogenic Cable geoforms were observed on nine underwater video transects, and the positions plotted to see if they aligned with any of the geophysical data. Video captures of extant cable(s) closely matched the positions of cable signatures observed in bathymetric data, and generally agreed with cable signatures in the side scan sonar records. Plates of screen captures are provided in Attachment G, Appendix C.

Sediment Sampling Results

Based on review of the geophysical data, sediment sampling was conducted at thirty-one locations. Stations were located mid-corridor and spaced approximately 1,000 ft (305 m) apart along the length of the corridor roughly coincident with the planned underwater video transects. Vibracore and grab sampling was conducted over a 4-day period, November 17 through 22, 2021.

A plot of the 12 vibracore and 19 grab sampling stations along the 5th Cable corridor is provided in Attachment G, Figure 15. Sampling coordinates for grabs and cores, water depth, and core penetration and recovery are provided in Attachment G, Table 5. At six grab sampling stations (15, and 17 through 21) only a few cobbles, sponges and tunicates were collected, and no sediment was available for grain size analysis. Vibracore recoveries ranged from 0.7 to 6 feet.

Grain size analysis was conducted on each recovered sample, and the results are provided as **Table 4.2 - Sediment Grain Size Analysis Results** below. The grain size indicates that the vast majority of the stations contained primarily sand and gravel, with a low percent fines. In accordance with 314 CMR 9.07(2)(a) no chemical testing was required where the sediment contains less 10% fines. However, three stations (Stations 29, 30, and 31) were identified as having greater than 10% fines. Therefore, chemical testing was required for those three samples for the parameters identified in 314 CMR 9.07(2)(b)(6). Sediment was analyzed by R.I. Analytical Laboratories and those results are summarized in Table 4.2, **Table 4.3 - Sediment Chemical Analysis Results,** and **4.4 - Sediment VOC Analysis Results** below. Included in the sediment chemical analysis are the S-1/GW-1 concentration thresholds (except for copper, for which the RCS-1 threshold concentration was used). Based on review of these results, no threshold concentrations were exceeded, with the majority of results below the detectable limit.

Due to the short hold time for Volatile Organic Carbons ("VOC") testing was conducted on all collected samples. The results for Stations 29, 30, and 31 are summarized below in Table 4.4. Based on review of the results, the only VOC identified as being greater than the detectable limit was methylene chloride for stations 29 and 30. However, in review of the remaining VOC results, two additional samples also exceeded the detectable limit for methylene chloride (Stations 4 and 6).

Based on the results of the project-specific SAP and sediment analyses, MassDEP provided written concurrence indicating that no further chemical testing was required (refer to Attachment E – Agency Communications).

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	10.2	33	Pebble/Granule in matrix Sandy Gravel	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse[3] *Arbacia punctulata*	**Sparse -** Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-2	9.9	32	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Trace** - Tunicates (*Didemnum*), (*Amaroucium*); **Moderate** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods **Trace** (*Limulus*) Fish - **Trace** (*Prionotus*)
VS-3	14.9	49	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*); and **Trace** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Trace** (Juvenile *Centropritis*)
VS-4	18.5	61	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Tunicates (*Amaroucium*); **Trace** - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (Adult *Centropritis*)
VS-5	10.1	33	Sand (Waves)	Faunal Bed	Soft Sediment Fauna				Fish - **Trace** (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	9.1	30	Sand (Waves) Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna / Attached Fauna (in troughs)		Attached Sparse (*Didemnum*), Trace (*Amaroucium*) in troughs	**Trace** - Mollusks (*Mytilus*) in troughs; Hydroid (*Hydrozoa*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-7	11.1	36	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-8	13.1	43	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Sparse -** Tunicates (*Amaroucium/Didendum*), Sponges (*Cliona*), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-9	19.2	63	Gravel Pavement (**Cobble**; Pebble/Granule)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Mollusks (*Mytilis*); **Sparse**- Tunicates (*Amaroucium/Didemnum*) and Echinoderms (*Arbacia*)**; Trace** - Coral (*Astrangia*)	Fish - **Trace** (Adult *Centropritis*)
VS-10	19.8	65	Gravel Pavement **(Pebble/Granule;** Cobble)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse** - Mollusks (Mytilis) (*Anachis*) **Trace -** Coral (*Astrangia*)	Fish - **Trace** (Juvenile *Centropritis*)

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas (Continued)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-11	21.4	70	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Moderate** - Tunicates (*Didemnum*); **Sparse** - Mollusks (*Mytilis*), and **Trace** - Bryozoan (*Schizoporella*)	Mobile Arthopods - **Trace** (Pagurus) Fish - **Sparse** (Juvenile Centropritis)
VS-12	19.6	64	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Sparse** - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and **Trace** Coral (*Astrangia*); Sponge (Cliona),	Fish - **Trace** (Juvenile *Centropritis*)
VS-13	19.6	64	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Echinoderms (Arbacia); **Sparse** - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); **Trace** - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - **Trace** (Pagurus); Fish - **Sparse** (Juvenile *Centropritis*) **Trace** (Spaeroides)
VS-14	20.6	68	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); **Sparse** - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (*Arbacia*); **Trace** - Coral (*Astrangia*)	Mobile Arthopods - **Trace** (*Pagurus*) (Pycnogonida) Fish - **Moderate** (Juvenile *Centropritis*) **Trace** (*Spaeroides*) (*Stenotomus)*
VS-15	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*), (*Cliona*), and (*Halichondria*); **Sparse** - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*) **Trace** (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	26.1	86	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Cliona*); **Sparse -** Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); **Trace** - Echinoderms (*Arbacia*)	Mobile Arthopods - **Trace** (Pagurus) (Pycnogonida); Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga) (Tautogolabrus*)
VS-17	23.2	76	Gravel Pavement (Boulder)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates *(Amaroucium*), Sponge (*Cliona*), and Coral (*Astrangia*) ; **Sparse** - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga);* Mobile Arthropods - *(Pycnogonida)*
VS-18	21.1	69	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and Sponge (*Cliona*); **Sparse-** Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis)* and Coral (*Astrangia*); **Trace** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*); **Trace** (Adult *Centropritis*), (*Spaeroides), (Tautogolabrus*); Mobile Arthropods - **Trace** (Pycnogonida)

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas (Continued)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-19	19.3	63	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (Anachis) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	20.9	69	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthopods **Trace** (Limulus) (Pycnogonida); Fish - **Sparse** (Juvenile *Centropritis*), **Trace** (*Tautoga*)
VS-21	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -**Tunicates (*Amaroucium/Didendum*); **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Halichondria*) and Mollusks (*Anachis*); **Trace** - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Moderate** (Juvenile *Centropritis*)
VS-22	15.2	50	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Trace-** Hydroid (*Hydrozoa*); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - **Trace** (Juvenile *Centropritis)* (Adult *Centropritis*); Mobile Arthopods - (*Pagurus*) (*Ovalipes*)
VS-23	11.5	38	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Sparse** Attached (*Crepidula*); **Trace** - Hydroid (*Hydrozoa*); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish **- Sparse** (*Prionotus*), **Trace** (Juvenile *Centropritis*); Mobile Arthopods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	13.6	45	Sand (Ripples); Shell Rubble in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna in troughs			**Sparse** -Attached Tunicate (*Amoroucium*); Mollusks (Anachis); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - **Trace** (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (Pagurus)
VS-25	10.5	34	Sand (Ripples)	Faunal Bed	Inferred Fauna			**Sparse** fecal casts**, Trace** Polychaete (*Chaetopterus*)	Fish - **Trace** (Juvenile *Centropritis*) (*Prionotus)*; Mobile Arthopods (*Limulus*) (*Pagarus*)
VS-26	7.1	23	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderat**e - Bryozoan (*Bugula*); **Trace** - Leathery leafy algal bed (*Codium*)(*Sargassum*) (*Porphyra*)	Fish - **Sparse** (Juvenile *Centropritis*), **Trace** *Spaeroides*); Mobile Arthopods - **Trace** (*Limulus*)
VS-27	5.9	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderat**e - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - **Trace** (Limulus); Fish - **Trace** (Juvenile *Centropritis*)

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas (Continued)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-28	5.7	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*) (*Spaeroides*)
CS-1	5.6	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** - Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-2	6.0	20	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-3	5.5	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-4	5.0	16	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-5	4.5	15	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-6	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Mobile Arthopods - **Trace** (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
EG-1	3.9	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae)	Mobile Arthopods - **Trace** (*Limulus*); Fish - (*Tautoga*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Trace - Echinoderms (Arbacia); Sparse** Benthic Macroalgae (*Porphyra) (Codium) and* Branching Red Algae	
EG-2C	4.0	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Sparse** (Zostera marina) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (Branching Red Algae) and **Trace** (*Sargassum*)	Fish - **Sparse** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Benthic Macroalgae (*Porphyra) and (*Branching Red Algae*); **Trace** (Ulva)*	

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas (Continued)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
EG-3	4.4	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) and Bryozoan (Bugula), Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae) **Trace** (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*), and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	4.2	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) with Gastropd (Bittium) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (Porphyra) and (Branching Red Algae)	
EG-5	4.1	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); **Trace** (*Chaetopterus*); **Sparse** Benthic Macroalgae (*Porphyra*), (*Ulva*) and (Branching Red Algae)	
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra)* and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
EG-6	3.9	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and **Trace** *(Sargassum)*	Fish - **Trace** (*Tautoga*)

Table 4.2 Sediment Grain Size Analysis Results

Station ID	Gravel %	Sand %	Silt %	Percent by weight passing sieve No. 4	No. 10	No. 20	No. 40	No. 60	No. 140	No. 200	Requires Chemical Testing (greater than 10% Fines)
1	29.4	69.27	1.33	70.6	51.34	37.48	21.90	8.83	7.42	1.33	No
2	15.02	83.04	1.94	84.98	73.13	57.03	35.20	15.60	9.76	1.94	No
3	18.2	80.81	0.99	81.80	69.59	62.03	53.23	33.27	5.62	0.99	No
4	30.5	68.89	0.61	69.50	59.00	52.64	41.01	13.95	11.08	0.61	No
5	48.63	50.66	0.71	51.37	45.47	39.28	29.83	7.03	6.95	0.71	No
6	63.13	36.28	0.59	36.87	33.05	28.64	18.96	3.30	3.19	0.59	No
7	0.03	99.91	0.06	99.97	99.04	93.67	11.42	0.35	0.33	0.06	No
8	24.69	75.17	0.14	75.30	71.25	68.70	51.25	5.43	5.20	0.14	No
9	55.39	43.98	0.63	44.61	33.05	25.74	11.15	3.13	3.07	0.63	No
10	58.25	40.83	0.92	41.75	32.54	23.49	9.59	3.17	3.12	0.92	No
11	60.98	38.16	0.86	39.02	29.53	19.8	8.23	3.30	3.22	0.86	No
12	57.69	41.37	0.94	42.31	34.81	25.59	9.79	2.92	2.88	0.94	No
13	48.83	50.59	0.58	51.17	45.51	26.49	5.17	1.48	1.45	0.58	No
14	67.94	31.12	0.94	32.05	25.43	15.46	6.68	2.46	2.40	0.94	No
15	-	-	-	-	-	-	-	-	-	-	-
16	86.45	12.07	0.48	13.55	6.61	4.17	2.01	1.10	1.08	0.48	No
17	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-

Table 4.2 Sediment Grain Size Analysis Results (Continued)

Station ID	Gravel %	Sand %	Silt %	Percent by weight passing sieve No. 4	No. 10	No. 20	No. 40	No. 60	No. 140	No. 200	Requires Chemical Testing (greater than 10% Fines)
21	-	-	-	-	-	-	-	-	-	-	-
22	44.52	54.85	0.63	55.48	50.28	40.32	22.42	6.34	5.87	0.63	No
23	47.51	51.9	0.5	52.49	48.73	41.53	27.61	6.62	6.45	0.50	No
24	0.04	99.9	0.06	99.96	98.92	50.77	2.40	0.23	0.22	0.06	No
25	-	-	-	-	-	-	-	-	-	-	-
26	1.44	98.45	0.11	98.56	94.39	76.09	20.68	4.36	0.35	0.11	No
27	1.29	97.47	1.24	98.71	92.82	81.21	69.15	19.20	2.25	1.24	No
28	0.35	97	2.65	99.65	98.27	91.34	78.06	48.07	5.830	2.65	No
29	20.97	60.43	**18.6**	79.03	63.14	53.54	49.18	46.18	30.45	18.60	**Yes***
30	7.11	72.21	**20.68**	92.89	77.04	62.25	55.28	51.07	37.71	20.68	**Yes***
31	10.34	66.52	**23.14**	89.66	75.72	64.26	58.79	55.41	49.72	23.14	**Yes***

"-"denotes a station where sample collection was attempted at a minimum of three attempts with no sediment recovery
"*" denotes the samples containing greater than 10% fines and therefore chemical testing was required

Table 4.3 Sediment Chemical Analysis Results

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
Percent Moisture	SM2540G 18-21ed		%	-	37.2	77.5	45.4
Percent Solid	SM2540G 18-21ed		%	-	62.8	62.5	54.6
Total Organic Carbon			mg/Kg	-	2,920	4,540	3,520
Metals, Total	**SW-846 6010C**						
Arsenic		20	mg/Kg	4.0	<4.0	4.3	5.0
Cadmium		70	mg/Kg	0.4	0.5	0.7	0.7
Chromium		100	mg/Kg	2.4	14.0	17.0	18.0
Copper		1000***	mg/Kg	4.0	4.6	7.1	7.8
Lead		200	mg/Kg	3.2	<3.2	9.5	12.0
Mercury		20	mg/Kg	0.2	<0.16	<0.16	<0.16
Nickel		600	mg/Kg	1.6	6.6	8.1	8.7
Zinc		1000	mg/Kg	3.2	19.0	35.0	39.0
Metals, TCLP*	**SW-846 6010C**						
Arsenic		100	mg/l	1	<1	<1	<1
Cadmium		20	mg/l	0.05	<0.05	<0.05	<0.05
Chromium		100	mg/l	0.5	<0.5	<0.5	<0.5
Lead		100	mg/l	0.5	<0.5	<0.5	<0.5
Mercury		4	mg/l	0.0005	<0.0005	<0.0005	<0.0005

Table 4.3 Sediment Chemical Analysis Results (Continued)

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
PAH	**SW-846 8270D**			**			**
Acenaphthene		4	mg/Kg	0.11	<0.11	<0.11	<0.12
Acenaphthylene		1	mg/Kg	0.11	<0.11	<0.11	<0.12
Anthracene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Benz(a)anthracene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(a)pyrene		2	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(b)fluoranthene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(ghi)perylene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(k)fluoranthene		70	mg/Kg	0.11	<0.11	<0.11	<0.12
Chrysene		70	mg/Kg	0.11	<0.11	<0.11	<0.12
Dibenz(a,h)anthracene		0.7	mg/Kg	0.11	<0.11	<0.11	<0.12
Fluoranthene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Fluorene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Indeno(1,2,3-cd)pyrene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
2-Methylnaphthalene		0.7	mg/Kg	0.11	<0.11	<0.11	<0.12
Naphthalene		4	mg/Kg	0.11	<0.11	<0.11	<0.12
Phenanthrene		10	mg/Kg	0.11	<0.11	<0.11	<0.12
Pyrene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12

Table 4.3 Sediment Chemical Analysis Results (Continued)

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
PCBs	**SW-846 8082A**						
Aroclor-1016			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1221			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1232			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1242			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1248			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1254			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1260			mg/Kg	0.1	<0.1	<0.1	<0.1

*Per 314 CMR 9.07(6) - TCLP testing is only required to be performed when sediment is to be managed in an upland environment. No sediments will be removed from Vineyard Sound.

** The Reporting Limit for Sample VC-29B is 0.12 mg/kg. R.I. Analytical PAH Reporting Limit is a volume-based extraction which includes the % solids in the analysis. Both values contribute to the final reporting limit; resulting in the different reporting limits.

*** No S-1/GW-1 threshold concentration was provided. We have input the RCS-1 value in place.

Table 4.4 Sediment VOC Analysis Results

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
Benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromochloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromodichloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromoform		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromomethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
n-Butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Sec-butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
tert-Butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Carbon Tetrachloride		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloroform		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
2-Chlorotoluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
4-Chlorotoluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dibromochloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dibromoethane(EDB)		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dibromoethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35

Table 4.4 Sediment VOC Analysis Results (Continued)

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
1,3-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,4-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dichlorodifluoromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1-Dichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,1-Dichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
cis-1 ,2-Dichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
trans-1 ,2-Dichloroethylene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,3-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
2,2-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1-Dichloropropene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Ethyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Hexachlorobutadiene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Isopropyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
p-Isopropyl toluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Methylene Chloride		mg/kg	0.77	<0.77	0.64	**11**	0.88	**12**
n-Propyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Naphthalene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Styrene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35

Table 4.4 Sediment VOC Analysis Results (Continued)

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
1, I, 1,2-Tetrachloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1,2,2-Tetrachloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Tetrachloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Toluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,3-Trichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,4-Trichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
I, 1, I-Trichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1,2-Trichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Trichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Trichlorofluoromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,3-Trichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
I ,2,4-Trimethylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,3 ,5-Trimethylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Vinyl Chloride		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
a-Xylene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
m,p-Xylene		mg/kg	0.61	<.61	0.51	<0.51	0.71	<0.71
MTBE		mg/kg	0.31	<.31	0.28	<0.28	0.35	<0.35
2-Butanone(MEK)		mg/kg	3.1	<3.1	1.4	<1.4	3.5	3.5

1. * Both sample VC-30A and VC-29B were above the sample specific detectable limit for methylene chloride

4.1.2 Essential Fish Habitat

An Essential Fish Habitat ("EFH") Assessment was performed by RPS Group Inc. ("RPS"), presented in the report dated April 2022, found in **Attachment H – Essential Fish Habitat Report.** The report reviewed the habitat type, identified the EFH designated species, and evaluated potential effects to EFH. A more detailed summary of the EFH report and its findings is presented in Section 8.0 - Marine Fisheries below.

Habitat identification was largely based on the fall 2021 Marine Survey summarized above in Section 4.1.1. The sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Sand ripples, sand waves, sandy gravel waves, boulder fields, portions of surveyed area comprised of coarse sand and gravel, and cobble and boulder areas covered with epibionts were all found within the cable corridor. Sparse to moderate eelgrass was observed growing in gravelly sand and sandy gravel, in water depths less than 17 feet and extending just over 1,300 feet from the Falmouth shoreline.

Shellfish Habitat Suitability:

The proposed cable route crosses through habitat that is suitable for bay scallop (*Argopecten irradians*) near the landfall area in Falmouth, MA. It crosses through habitat that is suitable for both bay scallop and quahog (*Mercenaria mercenaria*) near the southern landing area on Martha's Vineyard. Shellfish Suitability and Designated Growing Areas are depicted on **Figure 18 – Shellfish Suitability and Designated Growing Areas**. It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area.

Fin Fish Habitat Suitability:

Twenty-eight fish species were identified as having EFH designated in the project area. These were further designated by life cycle stage. Habitat Area of Particular Concern ("HAPC") was identified for two species; Atlantic Cod and Summer Flounder. The mapped HAPC for Atlantic Cod overlaps the majority of the northern and southern portions of the cable route. HAPC for Summer Flounder is not mapped, but consists of areas of all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, for adult and juvenile summer flounder. In addition to fish and invertebrate species with designated EFH, seventeen NOAA-trust resources (anadromous fish, shellfish, crustaceans, or their habitats) overlap the Project Area.

4.1.3 State Listed Species

The majority of the submarine cable route is mapped Priority Habitat ("PH") 2158 and Estimated Habitat ("EH") 1366. Based on initial consultation with the Natural Heritage and Endangered Species Program ("NHESP") this area is designated as habitat for the state-listed species: Common Tern, Roseate Tern, and Least Tern (see Attachment E – Agency Communications - NHESP Tracking No.: 21-40597). Following MEPA review, Eversource will engage NHESP by filing a Streamlined Wetlands Protection Act ("WPA") – Massachusetts Endangered Species Act ("MESA") Notice of Intent for review under the MESA. It is our understanding that the water surface provides feeding habitat for these two shore bird species. Consistent with the previous NSTAR cable project the Proponent intends to schedule landside work proximate to the beaches around time of year restrictions for the nesting season of these birds (April 1 – August 31) to avoid the need for a Conservation and Management Permit.

4.1.4 Marine Archaeology

A marine archeological resources assessment was conducted for the Marta's Vineyard Reliability Project, Vineyard Sound, Massachusetts. See **Attachment I – Marine Archaeology Report**. The Project area is within the study corridor across Vineyard Sound, with landfall locations in Falmouth, Massachusetts on Cape Cod and on Martha's Vineyard, in Oak Bluffs, Massachusetts. This proposed cable study corridor to evaluate marine archaeological resources is approximately 10.1 kilometers (33,145 feet) by 182 meters (600 ft) in width.

The purpose of the marine archaeological resources assessment was to identify archaeological resources in the study corridor and to assess the archaeological sensitivity of the study corridor to assist Eversource with the final siting of this new submarine cable. A literature review identified one previously recorded Pre-Contact, Native American archaeological site within 1.0 kilometers (0.62 miles) of the study corridor in both Falmouth and Oak Bluffs onshore. That literature review also identified ten onshore previously recorded Post-Contact, historical-period archaeological sites within 1.0 kilometer of both landfall locations. A review of extant shipwrecks and obstructions database revealed that one charted shipwreck is known within 1.0 kilometer of the study corridor within Vineyard Sound.

Additional review of high-resolution geophysical data collected by CR Environmental, Inc. within the study corridor revealed one previously unidentified shipwreck (SW-1) within 724 meters (2,375 ft) of landfall at Oak Bluffs on Martha's Vineyard, as well as multiple locations where shallowly buried, submerged landforms remain preserved offshore. All buried, submerged landforms were mapped, as well as the location of the newly detected shipwreck.

Overall, the substantial portions of the Eversource 5th Submarine Cable Project Area were found to be somewhat eroded, however the area is considered sensitive for Pre-Contact Native American period sites. Gray & Pape recommends that no bottom-disturbing activity should occur within 50 meters (165 ft) of the shipwreck near landfall at Oak Bluffs. All direct and indirect impacts should remain outside of this recommended avoidance zone. If avoidance of this shipwreck is not feasible, Gray & Pape recommends additional archaeological investigation to determine the source of the target. Additional investigations may include redefined HRG survey, diver/remotely-operated vehicle verification, and additional archival research. The purpose of those additional investigations would be to assess the integrity, significance, and eligibility of the resource for listing in the NRHP. All additional work would be conducted in consultation with appropriate consulting parties. At this time, the Project Proponent anticipates that both possible shipwreck sites will be avoided.

No direct evidence of Pre-Contract human habitation was identified. While seismic reflectors indicating a marine transgression ravinement surface can be seen, albeit discontinuously, across the Project area, geophysical data do indicate the presence of potentially preserved submerged, ancient landforms that are of a potentially archaeological sensitive nature to be present. SBP data indicated sub-seafloor features, including likely channels, lakes, and marshy environments that are of potential cultural significance. All of those features have could have encompassed diverse ecological resource attractive to past human populations, including freshwater access and access to both terrestrial and aquatic species capable of supporting subsistence activities. These features are also consistent with known archaeological trans onshore and therefore represent an extension of the known terrestrial archaeological record onto the continental shelf.

4.1.5 Coastal Wetland Resource Areas

Coastal wetland resource areas were assessed at each of the cable landing sites, including the paved Surf Drive Beach parking lot in Falmouth and the unpaved portion of Eastville Avenue in Oak Bluffs.

4.1.5.1 Falmouth

The jurisdictional wetland resource areas identified on or adjacent to the landfall site and underground cable route in the town of Falmouth include:

- Coastal Beach;
- Coastal Dune;
- Land Subject to Tidal Action; and
- Land Subject to Coastal Storm Flowage.

The proposed landfall site in Falmouth is located within an existing parking lot associated with a public beach at the intersection of Surf Drive and Shore Street. The landing site is proximate to Coastal Beach and Coastal Dune. Once onshore, the cable route will be installed in the ROW of Surf Drive, Mill Road, the Shining Sea Bikeway, Jones Road and Stephens Lane, ending at the electric substation #933 at the end of Stephens Lane. See **Figure 7 – Falmouth Landing Site Photographs** for photographs of the Falmouth landing site.

Coastal Beach: The Coastal Beach located south of the cable landing site is moderately sloped and is comprised predominately of sand of varying sizes and mixed cobble. The beach is bound seaward by the waters of Vineyard Sound, regulated as Land Under the Ocean. The landward edge of the beach is bound by a concrete seawall on the eastern portion of the parking area, and in the center of the parking area by a Coastal Dune seaward of a wooden fence adjacent to the paved parking area.

The Coastal Beach along Surf Drive is moderately sloped and is comprised predominantly of sand of varying sizes and mixed cobble. The beach is bound seaward by the waters of Vineyard Sound, regulated as Land Under the Ocean. The landward edge of the beach is bound by the Coastal Dune.

Coastal Dune: A relatively narrow strip of Coastal Dune is present south of the parking lot. The seaward face and crest of the dune is comprised of sand. The dune hosts a steep sloping backslope which is bordered by a wooden fence acting as a seawall adjacent to the paved parking lot. Vegetation observed on the dune included American beach grass (*Ammophila brevilgulata).*

The Coastal Dune along the southern edge of Surf Drive has a moderate to steep slope on the seaward face and is comprised predominantly of sand of varying sizes. The backslope of the dune is more moderate, and ends several feet from the edge of the paved travel way of Surf Drive. Vegetation observed on the dune included rugosa rose (*Rosa rugosa*), American beach grass, eastern red cedar (*Juniperus viriginia*), northern bayberry (*Myrica pensylvanica*), creeping juniper (*Juniperus horizontalis*), and soft rush (*Juncus effusus*).

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in **Figure 20 – FEMA Q3 Flood Zones (Falmouth)**. This includes the entirety of the Surf Drive Beach parking lot, which is paved with impervious asphalt. A stormwater system is present in the parking lot, as stormwater drains were observed in the area. Land use surrounding the parking lot is primarily residential, but also includes multiple hotels.

4.1.5.2 Oak Bluffs

The proposed landing site for the 5th Cable on Martha's Vineyard is located at the small unpaved parking lot / unpaved roadway extension of Eastville Avenue, proximate to the intersection of Eastville Avenue and Beach Road. The following resource areas are present in the vicinity of the landing site: Coastal Beach, Coastal Dune and LSCSF. An area of wooded upland, as well as the unpaved parking lot / roadway extends to the intersection of Eastville Avenue and Beach Street. Once onshore, the cable route will continue along Eastville Avenue to the Eversource owned parcel. Along Eastville Avenue there are several residential properties, Martha's Vineyard Hospital parking lots, and undeveloped wooded areas.

The jurisdictional wetland resource areas identified adjacent to the landing site and cable route to the substation includes:

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Land Subject to Tidal Action, and
- Land Subject to Coastal Storm Flowage.

Epsilon did not identify any Bordering Vegetated Wetlands ("BVWs") nor any other wetland resource areas within the Study Area. See **Figure 21 – Oak Bluffs Landing Site Photographs** for photographs of the Oak Bluffs landing site.

Coastal Beach: The Coastal Beach located along the northern portion of the landing site is moderately sloped and is comprised predominately of mixed cobble at varying sizes, sand, and pebble. The beach is bound seaward by the waters of Vineyard Haven Harbor, regulated as Land Under the Ocean. The landward edge of the beach is bound by the Coastal Dune and the unpaved parking area. Work will occur in the paved parking area that is within the 100-ft buffer for coastal beach.

Coastal Dune: The Coastal Dune located near the landing site is a relatively narrow strip of dune. The seaward face and crest of the dune is comprised of mixed cobble at varying sizes and transitions to a sand dune landward of the dune crest. The dune hosts a shallow sloping backslope which transitions into a vegetated upland area. Vegetation observed on the dune included rugosa rose, American beach grass, and eastern red cedar. Work will occur in the paved parking area that is within the 100-ft buffer for coastal dune.

Inland from the Coastal Dune, the vegetation supported woody shrubs such as groundsel bush (*Baccharis halimifolia*) and vines such as poison ivy (*Toxicodendron radicans*).

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in Figure 21 – FEMA Q3 Flood Zones (Oak Bluffs). This includes the entirety of the unpaved portion of Eastville Avenue at the cable landing site. Land use surrounding the unpaved portion of Eastville Avenue is primarily residential, but also includes the Martha's Vineyard Hospital on the southern side of Eastville Avenue.

4.2 Terrestrial Cable Routes and Landfall Sites

Inland wetland resource areas were assessed along each of the terrestrial cable routes. In Falmouth this constitutes from the outer edge of the Surf Drive Beach parking lot in Falmouth down Surf Drive, Mill Road, the Shining Sea Bikeway, Jones Road, and Stephen's Lane, including the Eversource Substation #933 at the end of Stephen's Lane. In Oak Bluffs, this constitutes the paved portion of Eastville Avenue and the new equipment site parcel on Eastville Avenue.

4.2.1 Wetland Resource Areas

4.2.1.1 Falmouth

Jurisdictional inland wetland resource areas identified on or adjacent to the underground cable route in Falmouth includes:

- Bordering Vegetated Wetlands, and
- Land Subject to Coastal Storm Flowage.

Bordering Vegetated Wetland: A Bordering Vegetated Wetland is located north of an existing unpaved parking area at the intersection of Shore Drive and Mill Road. The BVW is present up to the edge of Salt Pond, and continues along the eastern margin of Salt Pond, west of Mill Road. The BVW is relatively narrow and is presumably constricted by the presents of Mill Road. A residential area is present east of Mill Road. Work will occur in the paved parking area that is within the 100-ft buffer for BVW.

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in Attachment B, Figure 19. This includes the entirety of Surf Drive and Mill Road. These areas are paved with impervious asphalt. Storm drains were not observed in Surf Drive or Mill Road. A man-made culvert was observed on Surf Drive that cut through the Coastal Dune to allow water flow from the north side of Surf Drive to the coastal beach area. A man-made drainage ditch was observed on the north and west sides of the parking area at the intersection of Surf Drive and Mill Road. This ditch connected to Salt Pond. Land use surrounding Surf Drive and Mill Road is primarily residential, but also includes multiple hotels and a conservation area north of Salt Pond.

4.2.1.2 Oak Bluffs

Jurisdictional inland wetland resource areas identified on or adjacent to the underground cable route in Oak Bluffs includes:

- Land Subject to Coastal Storm Flowage.

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in Figure 21. The paved portion of Eastville Avenue connected to the landing site, a portion of the undeveloped Eastville Avenue equipment parcel, and the paved portion of Eastville Avenue that borders it. While the FEMA maps show LSCSF covering the majority of the equipment site parcel, a site-specific survey was conducted to further refine the location of LSCSF, which is defined as the edge of el. 10. The mapped location of el. 10 as determined from this survey is shown on Attachment M – Project Plans and covers only the southeastern half of the parcel**.** Storm drains were not observed in Eastville Avenue. Land use surrounding Eastville Avenue is primarily residential, but also includes the Martha's Vineyard Hospital on the southern side of Eastville Avenue.

4.2.2 State Listed Species

There are no mapped Estimated Habitat or Priority Habitat overlapping or adjacent to the landside cable rote in Falmouth and Oak Bluffs.

4.2.3 Historic and Archaeological Resources

Portions of the upland route are located within areas included in the Inventory of Historic and Archaeological Assets of the Commonwealth or are listed in the State and/or National Registers of Historic Places (Figure 13). Work is proposed in previously disturbed areas such as, the existing substation, public roads, parking lot, and the Shining Sea Bikeway (a former railroad spur to Woods Hole).

4.2.4 Eversource Substation #933 in Falmouth

There will be no significant work required for the Project at the Stephens Lane substation. All work will be performed within the existing facility fence line. There are no wetland resource areas or areas mapped as Priority and/or Estimated Habitat for state-listed species on or proximate to the substation.

4.2.5 New Equipment Site in Oak Bluffs

The Eversource owned parcel on Eastville Avenue is currently a forested undeveloped parcel. While FEMA maps show the majority of this parcel is in the flood plain (defined as el. 10 feet NAVD 88), a site-specific survey showed that only the southeastern half of the site is below el. 10 feet NAVD 88, i.e., within the floodplain. No other wetland resources areas are present on the parcel.

Section 5.0

Environmental Impacts and Mitigation Measures

5.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section addresses environmental considerations and potential impacts associated with the Project.

Installing the terrestrial duct and manhole systems and submarine cable require work in or proximate to the following wetland resource areas subject to protection under the Massachusetts Wetland Protection Act ("WPA"):

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Land Containing Shellfish; and
- Land Subject to Coastal Storm Flowage.

Work is also proposed within mapped Estimated and Priority Habitats. Though not a WPA resource area, the estimated and priority habitats are reviewed as part of the WPA review process as most resource areas are considered important to the interest of wildlife habitat.

Coastal wetland resource areas and potential impacts are summarized on the ENF Form and are shown on the Project Route Map Set in Attachment C. Pursuant to the WPA, the Proponent will file Notices of Intent with the Falmouth, Tisbury, and Oak Bluffs Conservation Commissions. Those filings will more thoroughly address the Project's potential wetland impacts in terms of the protected interests of storm damage prevention, flood control, prevention of pollution, protection of land containing shellfish, protection of fisheries and protection of wildlife habitat. Because the Project consists of installing buried submarine and underground terrestrial duct and manhole system, it will not have any permanent or significant impacts to these protected interests, nor will it have any temporary impacts to storm damage prevention or flood control. Project construction will have limited and unavoidable impacts to resource areas, but these will be temporary and minimized with appropriate mitigation measures.

The summary of wetland resource area impacts is presented in **Table 5.1 – Anticipated Impacts to Land Under the Ocean and LSCSF** below.

No work is proposed on Coastal Beach or Coastal Dune, however the HDD entry pits and associated work areas are located within the 100-foot buffer zone to beach and dune in Falmouth and Oak Bluffs. Additionally, Land Containing Shellfish ("LCS") coincides with Land Under the Ocean, thus the impacts to LCS are not quantified separately to avoid double counting.

Table 5.1 Anticipated Impacts to Land Under the Ocean and LSCSF

<table>
<tr><th colspan="2">Activity</th><th>LUO Temporary Impacts[1]</th><th>LUO Permanent Impacts</th><th>LSCSF Temporary Impacts</th><th>LSCSF Permanent Impacts</th></tr>
<tr><td colspan="6">Falmouth</td></tr>
<tr><td colspan="2">Duct & manhole system</td><td>0</td><td>0</td><td>14,500 s.f.</td><td>0</td></tr>
<tr><td colspan="2">HDD entry pit & work area</td><td>0</td><td>0</td><td>21,460 s.f.</td><td>0</td></tr>
<tr><td colspan="2">Submarine Cable[2]</td><td>143,025 s.f.</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="6">Oak Bluffs</td></tr>
<tr><td colspan="2">Duct & manhole system</td><td>0</td><td>0</td><td>2,900 s.f.</td><td>0</td></tr>
<tr><td colspan="2">HDD entry pit & work area</td><td>0</td><td>0</td><td>7,560 s.f.</td><td>0</td></tr>
<tr><td colspan="2">Submarine Cable[2]</td><td>97,545 s.f.</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td rowspan="3">Equipment Yard</td><td>Land Clearing</td><td>0</td><td>0</td><td>0</td><td>22,000 s.f.</td></tr>
<tr><td>Impervious cover[43]</td><td>0</td><td>0</td><td>0</td><td>200 s.f.</td></tr>
<tr><td>Gravel driveway[3]</td><td>0</td><td>0</td><td>0</td><td>2,775 s.f.</td></tr>
<tr><td colspan="6">Tisbury</td></tr>
<tr><td colspan="2">Submarine Cable</td><td>155,250 s.f.</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="6">Totals</td></tr>
<tr><td colspan="2">Subtotal (s.f.)</td><td>395,820 s.f.</td><td>0 s.f.</td><td>46,418 s.f.</td><td>22,000 s.f.</td></tr>
<tr><td colspan="2">Subtotal (Acre)</td><td>9.09 Ac.</td><td>0 Ac.</td><td>1.07 Ac.</td><td>0.51 Ac.</td></tr>
<tr><td colspan="6">Total Wetland Impact Temporary and Permanent = 10.67 ac.</td></tr>
</table>

1. Based on a 12-foot wide hydroplow corridor and assumes no cable protection required. Potential for cable protection is addressed in Section 3.4 – Submarine Cable Alternatives Analysis with the maximum potential bottom alteration (permanent plus temporary) estimated to be 12.09 acres.
2. Includes hand jetting at the HDD to plow transition, plus anchor contact. Anchor contact divided evenly across towns for planning purposes.
3. Concrete equipment pads
4. Impervious cover and gravel driveway areas are within the area of cleared land

Following is a discussion of construction elements and anticipated impacts, followed by measures proposed to avoid impacts and measures to minimize unavoidable impacts.

5.1 Submarine Cable

The submarine cable construction proposed for the Project involves two distinct construction techniques:

- Horizontal Direction Drilling – described above in Section 2.1, and
- Hydroplow (or jet plow) – described above in Section 2.2.

Potential impacts associated with those methods are discussed below.

5.1.1 Horizontal Direction Drilling

Landside Construction:

In Falmouth, the HDD entry pit and associated construction laydown and workspace (near the intersection of Surf Drive and Shore Street) is located in the Surf Drive Beach Parking Lot. Siting the HDD entry pit and workspace in the parking lot avoids work in Coastal Beach and Coastal Dune. The entry pit, workspace, transition manhole, and duct involves work in the 100-buffer to Coastal Beach and within LSCSF. The work area will be restored to pre-construction grades and stabilized (re-paved) to match pre-construction conditions resulting in no alteration of buffer zone or LSCSF, as compared to existing conditions. See Project Plans (Sheet 20 of 23, Martha's Vineyard Submarine Line #70 - Falmouth to Martha's Vineyard, Ma - Falmouth Equipment Layout) for the expected HDD layout.

In Oak Bluffs, the HDD entry pit and associated construction laydown and workspace is proposed in the ROW for Eastville Avenue north of Beach Road. This section of Eastville Avenue is unpaved. Siting the HDD entry pit and workspace in the ROW avoids work in Coastal Beach and Coastal Dune. The entry pit, workspace, and transition manhole and duct involves work in the 100-buffer to Coastal Beach and within LSCSF. The work area will be restored to pre-construction grades and stabilized will gravel to match pre-construction conditions resulting in no alteration to buffer zone or LSCSF, as compared to existing conditions. See Project Plans (Sheet 21 of 23, Martha's Vineyard Submarine Line #70 - Falmouth to Martha's Vineyard, Ma – Oak Bluffs Equipment Layout) for the expected HDD layout. Although a pump is noted on the beach, that placement does not require alteration (excavation, grading or filling) of Coastal Beach for its placement and operation.

In-Water Work:

HDD operations are described above in Section 2.1. Two HDD exit points (also referred to as punch out locations) from the two landside entry points are proposed approximately 2,153 feet offshore from the Surf Drive Beach in Falmouth waters and 1,100 feet offshore from the end of Eastville Avenue in Oak Bluffs waters. When the HDD exits the seafloor it will physically disturb the bottom. Further disturbance at both exit holes will occur when the cable is buried by diver assisted hand jetting for the HDD to hydroplow transition. This area of impact is accounted for (quantified) in the hydroplow impacts summarized in Table 5.1 above.

During HDD operations, planned releases of drilling fluid may occur. Planned releases involve the amount of fluid that is released during HDD punch-out. The amount of planned release can be calculated pre-punch out, and methods employed to contain and remove the fluids. The main concern with releases of drilling fluids (bentonite clay) is smothering nearby sessile organisms. Unplanned releases of drill fluids during construction also may occur. Unplanned releases involve drilling fluids escaping through geologic fractures in the bore hole. A contingency plan, i.e., an Inadvertent Release Plan is developed to address unplanned releases. The area affected by planned and unplanned releases cannot be quantified, however measures are presented to mitigate such releases.

5.1.2 Hydroplow Cable Laying

Burying the submarine cable below the seafloor by hydroplow (or jet plow) will be the source of the largest benthic habitat disturbance caused by this Project. As described above in Section 2.2 above, the hydroplow is towed on the seafloor and consists of two skids that allow it to slide across the bottom and the articulated blade (i.e., the stinger) injects water into the sediment, greatly reducing the force needed to pull the plow forward. The water jetting also fluidizes the sediment as the plow is towed forward, cable unspools from the barge, down through the stinger, and the cable's weight allows it to sink through the fluidized sediment and is buried as the sediment returns to its pre-jetted condition. For this project, a pre-pass survey of the hydroplow will be performed to detect any sub-surface obstructions throughout the corridor as patches of hard bottom or boulders could limit burial depth in some areas.

The only points of bottom contact during hydroplow installation are the skids and articulated blade. The most direct effect to the seafloor is caused by the hydraulic action of the stinger. Water jetting repositions a portion of surface and subsurface sediment, epifaunal and infaunal organisms, and flora immediately in front of the plow into the water column. The greatest indirect disturbances come from the effects of suspended sediments, which can affect water and sediment quality, and mobile and sessile organisms as suspended sediments settle over nearby undisturbed habitat types. The skids can also cause furrows in the sediment as they slide along the bottom. Given the coarse characteristics of the sediment along the cable corridor impacts are expected to be confined to a narrow path composed of 3- to 5-foot-wide trough caused by the stinger with furrows along the outer path margins. The total path is anticipated to be 12 feet wide along the cable alignment.[13] Area of temporary alteration of LOU from hydroplow construction is anticipated to be approximately 358,320 s.f. (8.2 acres) and that is a component of the total LUO included in Table 5.1 above.

Hydroplow construction may contribute to temporary water quality impacts during construction activities through increase suspended sediments. The sediment across the Sound in this corridor is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Modeling of sediment for installation of

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13 Post-construction surveys for the 75 Cable, installed from Falmouth to Tisbury in 2014, documented a 10-foot wide hydroplow path across the Sound with similar bottom substrate. (Epsilon Associates, Inc. and CR Environmental, Inc. 2015. Martha's Vineyard hybrid submarine cable post construction marine survey report.)

cables during hydroplow activities in the waters of Horseshoe Shoal, near Barnstable Harbor, MA showed that deposition occurs close to the cable installation route at concentrations of 100 mg/L for 2- to 3-hour duration. Approximately 30% of the fluidized sediment, commensurate with previous studies, was assumed to be vertically distributed into the water column, with the remainder staying in the limits of the plowed through. Sediment types observed in Horseshoe Shoal are similar to those in the Project area, indicating that suspended solids will likely be short-lived and localized during installation of the 5th submarine cable. Total suspended sediment ("TSS") levels will be below the threshold for adverse effects on fish (1,000 mg/l for most fish, and 200 mg/l for sensitive fish/invertebrate life stages) and benthic communities (390 mg/l). In conclusion, TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away, with slow moving or sessile invertebrates not expected to be harmed because of the short duration and limited concentration of suspended sediment. See Section 8.0 and Attachment H – Essential Fish Habitat Report for more details.

Anchors may be necessary to advance the surface barge and to keep it on track especially with the strong currents present in this area of Vineyard Sound. The anchor spread contact includes the area of the anchor and incidental chain (or cable) contact during placement and removal. Because the chain (or cable) is in tension no contact is expected during cable installation operations. We estimate that anchor sets (4 anchors per set) would be approximately 2,500 square feet per set, and with the cable corridor approximately 229,860 feet long a total of 15 anchor sets are anticipated. With a total of 15 anchor sets, this would yield approximately 37,500 sf (0.86 ac.) of temporary anchor contact –approximately 12,500 s.f. in each town. That is a component of the total temporary LOU alteration presented in Table 5.1 above.

In addition to the seafloor disturbance from cable installation, other impacts associated with the submarine cable include increased vessel traffic and noise during cable installation, and electromagnetic fields ("EMFs") from the cable once in service. Mobile benthic fish and invertebrates may be displaced temporarily by noise, vessel traffic, and installation activities but will likely be able to escape harm by avoiding the Project Area during construction. There will only be a slight increase in risk from the few vessels added to baseline activity of the numerous existing vessels and ferries in the Project area. Any associated increase in risk of injury or mortality due to noise related to vessels will be too small to be detected or measured, and species in the Project area are acclimated to these levels, therefore effects to fishes are insignificant. Cable EMFs are likely less intense than the geomagnetic field of Earth and it is generally assumed that marine animals will not be able to detect these EMFs unless directly over the center of a cable. The installed cable will be encased in a protective sheathing and buried approximately 6- to 10 feet below the sediment and is expected to have low EMF detection levels. With no known studies to date of negative effects of EMF on marine organisms and the protection of the cable with sheathing and sediment, no EMF impacts are expected from this project.

5.2 Duct and Manhole System

The duct and manhole system is the underground conduit used to convey the cable from the Substation #933 at the end of Stephen's Lane to the Falmouth landfall site on Cape Cod; the conduit system along Eastville Avenue in Oak Bluffs on Martha's Vineyard. The construction of this system is described above in Section 2.3.

In Falmouth a new duct and manhole system will be installed in Stephen's Lane, Jones Road, the Shining Sea Bikeway and Mill Rod to the intersection with Surf Drive to accommodate the new 5th Cable. This totals approximately 2.32 miles. The section of this system installed in Mill Road is located LSCSF. See Figure 20. A 100-foot buffer zone extending from BVW and Inland associated with Salt Pond extends on to portions of Mill Road. An Order of Conditions (DEP File No. 25-4790; dated October 27, 2022) was issued by the Falmouth Conservation Commission for the landside duct and manhole system in Falmouth. That authorized work in LSCS and buffer zone.

There is an existing duct on Surf Drive in which the 5th Cable will be installed. This avoids excavation, and duct and manhole construction in Surf Drive, all of which is regulated as LSCSF and portions are Barrier Beach.

In Oak Bluffs the new duct and manhole system is approximately ¼-mile long and will be installed in the ROW of Eastville Avenue. This new conduit is located in LSCSF (see Figure 21) and the 100-foot buffer zone to Coastal Beach and Coastal Dune.

The new duct and manhole systems in Falmouth and Oak Bluffs as described in Section 2.3 will involve, excavation, soil handling, and site restoration in LSCSSF and 100-foot buffer zones. The LSCSF impacts area is quantified in Table 5.1 above.

5.3 Eversource Substation #933 and Eastville Ave Equipment Yard

All work at the existing Eversource Substation #933 off Stephens Lane in Falmouth will be performed within the existing facility fence line, with no impacts to regulated areas. The point of interconnection for the new cable will be the location of the current point of interconnection for the existing 91 and 97 Cables that serve Martha's Vineyard. The point of interconnection for the existing 91 and 97 Cables will be relocated within the Stephens Lane substation. The duct for the new cable will enter the substation site in the southeastern portion of substation site.

Work on the Eversource-owned Eastville Avenue parcel in Oak Bluffs will consist of clearing approximately 22,000 sq ft of the parcel. A gravel driveway will follow the southern site boundary. A duct and manhole system will be installed to connect the cable to six pad-mounted transformers that will convert and distribute power from the new cable to the existing Martha's Vineyard electrical network. This work will require tree removal plus clearing and grubbing, excavation to install new underground duct, establishing approximately 200 sf of impervious cover for the six concrete equipment pads, grading a gravel driveway. LSCSF alteration to construct this new equipment yard is presented in Table 5.1 above.

5.4 Dredging

Dredging is defined in 314 CMR 9.02 as,

> *"The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands."*

The Project does not include traditional dredging activities, i.e., excavation and removal of sediment from below mean high tide. Repositioning of sediment will result during hydroplow construction to achieve sufficient cable burial depth, thus dredging as defined in 314 CMR 9.02 is required. The stinger will reposition sediment in a trough 3- to 5-feet wide and bury the cable 6- to 10-feet below the seabed for approximately 29,860 feet across Vineyard Sound. Given these parameters hydroplow installation will reposition between 19,907 cy to 55,296 cy of sediment. The two hydroplow skids are expected to reposition sediment along two furrows each approximately 1-foot wide and up to 1-foot deep along the 29,860 foot long hydroplow path yielding up 2,212 cy of sediment to be positioned by the skips. In total hydroplow construction is expected to reposition between 22,119 cy to 57,508 cy of sediment depending on final burial depth and trough width.

As described above in Section 4.1.1 sediment in the study corridor is very coarse-grained material and free of anthropogenic contamination, therefore no adverse water quality impacts are anticipated except for short-term and localized turbidity along the hydroplow alignment.

5.5 Cable Protection

The cable will be buried with naturally occurring sediments refilling the plowed corridor, therefore no cable protection is proposed or anticipated. A contingency plan for cable burial is provided in Section 2.8, in the event cable protection is required. A pre-pass is proposed along the designed cable alignment to confirm the hydroplow can install the cable to the design depths. Should the pre-pass identify any areas where the cable depth cannot be achieved and cable protection is required, that will be communicated with the appropriate regulatory agencies, e.g., Conservation Commissions, MassDEP and USACE for proper permit modifications, if required.

5.6 Shoreline Change

The Project is not expected to affect shoreline change. However, to evaluate potential vulnerability of the underground ducts and manholes at the landing sites to shoreline change –at the planning level of review– the Proponent evaluated the Massachusetts CZM Shoreline Change Project maps to understand the short- and long-term shoreline trends. The shoreline mapping is presented in Attachment B, **Figures 21A – Shoreline Change (Short-Term) Falmouth Landing Site** and **21B – Shoreline Change (Long-Term) Falmouth Landing Site** for Falmouth and Attachment B, **Figures 22A – Shoreline Change (Short-Term) Oak Bluffs Landing Site** and **22B – Shoreline Change (Long-Term) Oak Bluffs Landing Site** for Oak Bluffs. Review of those figures shows that immediately fronting the landfall sites in both Falmouth and Oak Bluffs the shoreline has been relatively stable over the period evaluated for the CZM Shoreline Change Project, with the rate of change being reported as -0.1 to 0.1 meters per year ("m/yr"). The shorelines adjacent to the landfalls, within approximately 250 either side of the landfall, similar stability is observed:

- Falmouth Short-term rates -0.1 to 0.1 m/yr
- Falmouth Long-term rates -0.1 to 0.1 m/yr
- Oak Bluffs Short-term rates -0.1 to 0.1 m/yr
- Oak Bluffs Long-term rates -0.1 to 0.1 m/yr and -0.3 to -0.1 m/yr

The proponent acknowledges the historic shoreline change may not be representative of future conditions, especially given accelerated sea level rise. Thus, as requested by CZM the Proponent has engaged RPS to conduct a 2-D model to evaluate future shoreline erosion at the Falmouth landing site. See Section 9.2.3 below for the scope of that modeling effort. The results of shoreline erosion modeling will be presented to the agencies in permit applications for the submarine cable.

5.7 Special, Sensitive, or Unique Estuarine and Marine Life Habitats

Special, sensitive and unique areas are defined in the Massachusetts Ocean Management Plan. OMP mapped SSUs, within the proposed cable corridor include:

- hard/complex seafloor, and
- eelgrass.

Video data collected within the 1,000-foot-wide study corridor during the 2021 Marine Survey were used to identify substrate and biotic components consistent with the Coastal and Marine Ecological Classification System ("CMECS") within the cable study corridor, and to aid in the interpretation of geophysical survey data. Mapped habitat roughness and complexity derived from geophysical data helped inform the CMECS classifications and identification of SSUs limits and habitats pursuant to the OMP.

As described previously, the survey corridor was selected using the 2015 OMP mapping to site and avoid, to the extent practicable, the areas mapped as hard bottom/complex seafloor. Subsequently, an updated version of that data layer was published in January 2022 which increased the extent of mapped hard bottom/complex seafloor. Therefore, the cable will be required to pass through areas mapped as hard bottom/complex seafloor as these areas are unavoidable within Vineyard Sound. See Section 3.4 above for the alternatives analysis to select and site the Preferred Cable Alignment consistent with OMP regulations.

5.7.1 Hard Bottom and Complex Bottom

"Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 ocean plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area" (EEA, 2021). Figure 5 (and Attachment G, Figure 17) depicts the mapped Massachusetts Ocean Management Layer for hard/complex seafloor in the vicinity of the cable corridor.

Overlay of the OMP mapped hard/complex seafloor with the CMEC substrate classifications shows that areas classified as Gravel Pavement dominated by boulders are mapped as well as some cobble dominated areas, and the northern and southern areas of Sand Waves (refer to Attachment G, Figure 18 and Figure 17).

Terrain ruggedness (Attachment G, Figure 6) indicates general concurrence with the areas of hard bottom mapped by OMP, however the southerly limits of hard bottom extends south beyond the OMP mapped boundary. Refer to Section 4.1.1 for discussion of the hard/complex seafloor results of the marine survey, as well as Attachment G –Marine Survey Report. Likewise the northern boundary of southern most complex seafloor unit across the study corridor extends further north than the OMP mapped boundary.

Plots of rugosity, slope, and slope of slope (provided as Attachment G, Figures 4, 5 and 7, respectively) show the morphologically complex seafloor includes the northern and southern areas of sand waves/ridges. Refer to Section 4.1.1 for a discussion of the hard/complex seafloor results of the marine survey, as well as Attachment G –Marine Survey Report.

Because these features extend across Vineyard Sound in an east to west orientation and the cable corridor is generally in a north to south orientation, these features cannot be avoided. Temporary alteration of these bottom types will occur during hydrolpw construction. Hydroplow construction does not remove sediment and as described previously, dislodged sediment will settle back into the hydroplow trough resulting in no long-term loss or change of the hard or complex bottom types.

For the alternative analysis, Section 3.4, the worst-case scenario (i.e., the full length of cable through hard bottom will require cable protection) was used to select the least environmentally damaging route as the Preferred Cable Alignment. Based on the worse-case scenario potential alteration of hard and complex bottom for the Preferred Cable Alignment is up to 3.81 ac. of hard bottom for cable protection (permanent) and up to 0.99 ac. of complex seafloor (temporary for hydroplow) resulting in up to 4.8 ac. of SSU disturbance.

5.7.2 Eelgrass

Eelgrass SSUs are defined as "… *areas that support communities of rooted eelgrass* (*Zostera marina*)." (EEA, 2021). Sparse to moderate eelgrass was observed in a Seagrass Bed growing in Gravelly Sand to Sandy Gravel at the northern inshore end of transects EG-1 through EG-6, seaward of the Falmouth landing site (refer to Attachment G, Figure 16). Eelgrass cover disappeared in water depths greater than 17 feet below MLLW where the seafloor transitioned to *Crepidula* Reef.

No impacts to eelgrass beds are anticipated because the HDD construction is being used to avoid eel grass and the HDD punchout is located 160-feet or more from the eel grass meadow margin. A survey will be conducted before HDD punchout operations to confirm that there is no eelgrass in the punchout area.

5.8 Water Quality

The presence and operation of the underground terrestrial and buried marine cable will have no effect on water quality.

During hydroplow construction and the HDD punchout, temporary and localized increased turbidity is expected. Sediment analysis suggests there is no anthropogenic sediment contamination, thus any transport of sediment from the work zone will only result in transport of clean sediment and no transport of chemical contamination.

Additionally, during marine construction vessels and equipment will be operating on the water and have the potential for releases of fuel or other materials.

During landside construction: excavation to install the underground terrestrial duct and manhole system will expose erodible soils, and there is the potential need to re-water trenches; and during HDD operations drilling fluids have the potential to be released. Additionally, during landside construction –cable installation and HDD operations– vehicles and equipment working on land have the potential to release fuel and other materials.

Best Management Practices and other controls, described below in Section 5.13, will be employed to avoid these potential water quality impacts.

5.9 Historic and Archaeological Resources

Both the terrestrial routes and submarine cable corridor were evaluated for the presence of historic and archaeological resources.

5.9.1 Marine Archaeological Resources

No previously identified historic or archaeological assets are located within the submarine cable corridor. A marine archaeological survey was conducted pursuant to the Special Use Permit issued by the Massachusetts Board of Underwater Archaeology Resources ("MBUAR") to evaluate the 1,000-foot-wide study corridor for previously unidentified resources. Gray and Pape completed that assessment, and a copy is being provided to the Massachusetts Historical Commission ("MHC") and MBUAR concurrent with this EENF/PEIR submission to the MEPA Office. The submarine cable alignment was sited to avoid marine archaeological resources. A summary of the results of the marine archaeological survey is included in Section 4.1.4.

5.9.2 Terrestrial Historic and Archaeological Resources

Portions of the upland route are located within areas included in the Inventory of Historic and Archaeological Assets of the Commonwealth or are listed in the State and/or National Registers of Historic Places (Figure 13). There will be little change to the existing conditions of the areas resulting in no significant impacts to historic resources.

The Project is subject to review under Section 106 of the National Historic Preservation Act (36 CFR 800) and State Register Review (950 CMR 71). Coordination with the USACE, as the lead federal agency, will be undertaken and both reviews will be undertaken concurrently. It is anticipated that potential effects, if any, to historic and archaeological resources will be addressed through those review processes.

5.10 State-Listed Species

As depicted on **Figure 19 – Natural Heritage and Endangered Species Program Mapping** the submarine cable corridor crosses Priority Habitats for State-Protected Rare Species (PH 2158) and Estimated Habitats for Rare Wildlife (EH 1366). Correspondence with the NHESP reported these polygons identify habitat for the following state-listed species:

Scientific name	Common Name	Taxonomic Group	State Status
Sterna hirundo	Common Tern	Bird	Special Concern
Sterna dougallii	Roseate Tern	Bird	Endangered
Sternula antillarum	Least Tern	Bird	Special Concern

Based on consultation for other projects in this area we understand that the water surface provides foraging habitat and that the cable laying construction is unlikely to adversely affect the habitat or birds. Similarly work along the has the potential to effect nesting, if these birds' nest in the nearby beaches. Thus, conducting the HDD operations near the beaches at both the Falmouth and Oak Bluffs landfalls outside of the nesting TOY would avoid potential effects to these species.

The projects schedule avoids nesting time of year and therefore n adverse effects to state-listed species are anticipated. Consultation with NHESP will be formally initiated via submission of a Joint WPA-MESA Notice of Intent.

5.11 Navigation and Traffic

Any potential Project-related impacts to navigation will be temporary in nature, limited to the construction period, and will only occur in the area of active cable installation. The construction schedule, discussed in Section 2.6, avoids the busiest periods of recreation and boating activities, which will help to minimize potential temporary restrictions to navigation in the vicinity of Project construction activities.

The Proponent's contractor will coordinate with the U.S. Coast Guard via the Local Notice to Mariners, and the Steamship Authority prior to initiating cable installation. This coordination will communicate in-water construction information –e.g., type of work, location of work (latitude & longitude), dates and time of construction, vessels / equipment at the construction location, radio hailing frequency, and vessel passing arrangements– to ferry operators, fishermen, commercial vessel operators, and recreational boaters.

Once installed, the proposed submarine cable will be located beneath the seafloor and will pose no hazard to navigation.

Landside work will involve work in ROWs to public roads, which can cause temporary interruptions to traffic during construction. Once installed the underground cable will have no traffic impacts.

5.12 Noise

On land and above water equipment, vehicle and vessels will generate noise during construction consistent with utility construction activities. Underwater noise will be generated by vessels and hydroplow activities. These too will be short-term, limited to the construction period, and similar to the vessel traffic and fishing activities in the Sound. Therefore, hydroplow underwater noise impacts are not expected to be more than existing background vessel noise from existing vessels and ferries in the area, and marine species in the Project area are acclimated to those levels.

5.13 Mitigation Measures

The most important mitigation measure for this Project is the careful siting of preferred cable route and selection of the least obtrusive construction techniques. As described in Section 3.0, the Proponent considered a number of alternative routes and construction alternatives, and determined that the Project meets the identified purpose and need while balancing system reliability, Project cost, and environmental impact.

Following are the measures to avoid and mitigate impacts identified in the preceding sections are summarized below:

5.13.1 Avoidance Measures

Horizontal Direction Drill: HDD is proposed at each of the landfall sites, in Falmouth and Oak Bluffs. Use of HDD avoids alteration of the following resources:

- Coastal Beach (Falmouth & Oak Bluffs),
- Coastal Dune (Falmouth and Oak Bluffs),
- Intertidal resources, and
- Eelgrass (Falmouth) an OMP SSU

Landside Cable Route Selection: The landside cable route was selected to pass through previously developed areas such as roads, parking lot, and the rail trail to avoid the following natural resources, cultural resources and built environment:

- Article 97 Lands,
- Known historic and archaeological resources, and
- Falmouth Center

Marine Archaeological Resources: The marine surveys and marine archaeological surveys completed for the Project were used to avoid marine archaeological resources.

State-Listed Species: Species identified to date are limited to shore birds. HDD operations will be performed to avoid shorebird nesting season in the event birds' nest on the nearby beaches.

SSU's: The cable survey corridor was selected in 2021 using the 2015 CZM Hard Bottom/Complex Seafloor data to site and avoid, to the extent practicable, the areas mapped as hard bottom/complex seafloor. That corridor avoided all but one area mapped as hard/complex bottom. Subsequently, an updated version of that data layer was published in January 2022 increased the extent of mapped hard bottom/complex seafloor. Therefore, based on that mapping, as confirmed by the geophysical data collected in the corridor, the cable cannot avoid hard bottom/complex seafloor as these areas are unavoidable within Vineyard Sound.

Traffic: Landside cable construction will not be constructed during the summer tourist season, Memorial Day to Labor, to avoid disrupting traffic during the summer season.

Navigation: In-water cable construction will be timed to avoid the summer recreational boating season to minimize impacts on navigation.

Air Quality: Long-term emissions will be avoided by de-commissioning use of the five on-Island peaking generators. These will no longer be needed after 5th Cable is installed and in service.

5.13.2 Mitigation Measures

Hydroplow Cable Laying Method: Hydroplow construction technique will be used to bury the cable by making a temporary narrow trench or liquefied sediment zone into which the cable will be installed. The alternative would be a cut and cover technique, i.e., dredging a trench, sidecast sediment then backfill the trench. Hydroplow construction minimizes seafloor disturbance and construction duration.

SSUs: Use of hydroplow construction technique will temporarily affect complex and hard bottom area in Vineyard Sound. However, because sediment liquified in place, and the sediments in the cable corridor are coarse sands to cobbles and boulders, the dislodged sediment is expected to settle back into the trough resulting in no loss or conversion of complex or hard bottom cover types.

Inadvertent Release Plan: During HDD planned and unplanned release of drilling fluids may occur. The planned release of drilling fluids is minimized by only punching out the drill head for the initial plot hole drilling. Reaming runs will not punch out until the final reaming run. A gravity cell, or similar measure, will be used to contain the drilling fluids released at the exit hole. Unplanned release will be managed to minimize and clean-up releases. See the preliminary IR Plan in Attachment F – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling.

Navigation: The marine contractor will coordinate with the U.S. Coast Guard via the Local Notice to Mariners, and the Steamship Authority prior to initiating cable installation. This coordination will communicate in-water construction information –e.g., type of work, location of work (latitude & longitude), dates and time of construction, vessels / equipment at the construction location, radio hailing frequency, and vessel passing arrangements– to ferry operators, fishermen, commercial vessel operators, and recreational boaters.

Essential Fish Habitat: Various fishes are preset in Vineyard Sound. The hard and complex bottom cover types may provide habitat to EFH species and/or NOAA Trust Species. Use of hydroplow construction will not result in the loss of conversion of these bottom types. Therefore, no long-term loss or impact is expected.

Traffic: A traffic management plan was prepared and submitted to the MassDOT and DPW, and will be implemented to minimize traffic disruptions during landside construction. A key measure to minimize traffic disruptions, landside cable construction in Falmouth and oak Bluffs will not occur between Memorial Day and Labor to avoid the high summer season traffic period on Cape Cod and the Island.

Stormwater: Construction-period BMPs to manage stormwater will include measures such as: the use of silt fence and/or hay bales around the construction and temporary work areas including the HDD work zone, catch basin inlet protection for all catch basins that collect runoff from the works zones, and limiting the time exposed soils are exposed. The detailed sediment and erosion control plan will be developed pursuant to the Massachusetts Stormwater Management Standards, and the preparation of Storm Water Pollution Prevention Plan in accordance with US EPA Construction General Permit. BMPs will be maintained throughout construction until any disturbed surfaces have been stabilized. The Project will not result in any permanent changes in drainage patterns, runoff volume or rate.

Air Quality (Construction-Period): Construction equipment will comply with requirements for using ultra-low sulfur diesel ("ULSD") in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

Compliance with the five-minute idle law and turning off construction equipment when not in use to minimize vehicle idling to the extent practicable.

Noise: The construction equipment used with underground cable construction is like that used during typical public works projects (e.g., storm drain, sewer and water line installation). The timing and sequencing of the work will be coordinated to minimize potential noise impacts consistent with applicable local regulations and ordinances.

State-Listed Species: Species identified to date are limited to shore birds. HDD operations will be performed to avoid shorebird nesting season in the event birds nest on the nearby beaches. The Proponent will consult with NHESP during the permitting process to develop a schedule to avoid a Take of state-listed species.

Built Environment: The following measures were agreed upon in a Memorandum of Understanding between the Proponent and the Town of Falmouth in order to mitigate impacts of the Project to the built environment. Eversource will provide compensation for the Town of Falmouth to undergo the following activities:

- The restoration of Surf Drive
- Changes in connection with the disruption caused by Project activities in the Shining Sea Bikeway
- Restoration and pavement of the Depot Avenue parking lot
- Additional construction impacts such as traffic congestion, detours, and other economic impacts

Additionally, Eversource agrees to relocate 15 utility poles on Palmer Avenue to improve sidewalk clearances and install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.

The Proponent is concurrently working on a MOU with the town of Oak Bluffs.

Section 6.0

Environmental Justice

6.0 ENVIRONMENTAL JUSTICE

This section describes the Project's past and planned efforts to reach out to potentially affected Environmental Justice ("EJ") communities. It then provides an enhanced analysis of impacts to demonstrate that the Project and its impacts, together with historical or existing sources of environmental pollution, will not have a disproportionate impact on EJ populations.

6.1 Scope of Environmental Justice Consideration

Pursuant to the Massachusetts Executive Office of Energy and Environmental Affairs ("EEA"), EJ is based on the principle that all people have a right to be protected from environmental pollution, and to live in and enjoy a clean and healthful environment. The EEA established an EJ Policy (updated January 2022) to "help address the disproportionate share of environmental burdens experienced by lower-income people and communities of color" and "ensure their protection from environmental pollution as well as promote community involvement in planning and environmental decision-making."

This EJ enhanced analysis follows the recent EJ Analysis Protocol. The EJ Analysis Protocol applies "for any project that is likely to cause damage to the environment and is located within a distance of 1 mile of an Environmental Justice (EJ) population." The Project does not meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) and will not add 150 or more new average daily trips ("adt") of diesel vehicle traffic over a duration of 1 year or more. Therefore, the Project is not subject to a 5-mile radius.

Under the EJ Analysis Protocol, the analysis must include:

- An assessment of existing unfair or inequitable environmental burdens on the EJ population;
- An assessment of the Project's impacts to determine disproportionate adverse effect (if existing unfair or inequitable environmental burdens exist) on the EJ population;
- An analysis of the Project to determine Climate Change Effects (if existing unfair or inequitable environmental burdens exist); and
- Mitigation and Section 61 Findings (if the Project impacts causes a disproportionate adverse effect or Climate Change Effects on the EJ population).

Designated Geographic Area

MEPA has classified areas of Massachusetts as Environmental Justice Populations by using the U.S. Census data to determine whether a block group meets one or more of the following criteria:

1. The annual median household income is not more than 65% of the statewide annual median household income;
2. Minority groups comprise 40% or more of the population;
3. 25% or more of households lack English language proficiency;

4. Minority groups comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income; and

5. The Secretary has determined that a particular neighborhood should be designated as an Environmental Justice population.

The Project site is located within 1 mile of six block groups that meet the criteria as EJ populations, see **Figures 14 – Environmental Justice Populations (Falmouth) and 15 – Environmental Justice Populations (Oak Bluffs)**. These six block groups are located within four census tracts. The EJ block groups located within the Designated Geographic Area ("DGA") are summarized in **Table 6.1 – 202 EJ Block Groups within the DGA**. If an EJ community is located even partially within the 1-mile radius, the entire community is part of the DGA that will be used as the basis for analyzing potential Project impacts and for public outreach purposes. The remainder of this analysis will focus on all identified EJ populations located in whole or in part within the DGA for the project.

Table 6.1 2020 EJ Block Groups within the DGA

Municipality	Census Tract	Block Group	EJ Designation
Falmouth	101480 (148)	8001 (1)	Income
Falmouth	101480 (148)	8003 (3)	Income
Falmouth	101490 (149)	9003 (3)	Income
Tisbury	72001 (2001)	1001 (1)	Income
Oak Bluffs	72002 (2002)	2002 (2)	Minority
Oak Bluffs	72002 (2002)	2004 (4)	Income
Municipality	**Census Tract**	**English Isolation**	
Tisbury	72001 (2001)	Portuguese or Portuguese Creole: 8.4%	

Figure 10 depicts the location of the generators in Oak Buffs and West Tisbury, and the EJ Populations with 1- and 5-Mile radii of each location. Decommissioning these generators will reduce emissions on the Island.

In accordance with the EJ Analysis Protocol, a four-step process has been developed for assessing whether EJ Populations have experienced existing unfair or inequitable environmental burdens within the DGA. As part of this approach a series of mapping tools have been developed that focus on:

1. rates of four vulnerable health criteria as it relates to statewide averages (Section 6.2),
2. existing past and current polluting activities in the MA DPH EJ Tool (Section 6.3),
3. review of the RMAT Climate Resilience Output Tool (Section 6.4), and
4. use of the EPA's Environmental Justice Screening Tool (Section 6.5).

Each of these steps are described in detail below along with an assessment of the specific results for the environmental justice populations within the designated geographic area.

6.2 Vulnerable Health Criteria

The vulnerable health EJ criteria are four environmentally related health indicators to identify populations with evidence of higher-than-average rates of environmentally related health outcomes. Multiple terms are used to describe the vulnerable health EJ criteria as it relates to the EJ populations. These terms are defined and described below.

- The vulnerable health EJ criteria are reported for a population in a specific area. The area can be a state, town, or *census tract*. Census tracts are small, relatively permanent areas of land with a population typically between 1,200 – 8,000 people.

- Health criteria are reported as *rates,* or the number of people with the identified condition divided by the population in consideration. The Department of Public Health ("DPH") EJ tool compares the *community rate*, or the town or census tract of interest, to the *statewide rate,* or the rate for the population of Massachusetts. Two rate types are used: *crude rate* and *age-adjusted* rate. The crude rate is the rate calculated as number of individuals with a condition divided by the entire population. The age-adjusted rate is statistically modified to consider how different age groups have different rates of prevalence, as in the case of heart attack rate. Rates are also classified as *stable* or *unstable.* Unstable rates occur when there are too few cases in a community for a rate to be considered reliable such that the addition or deletion of small number of cases would lead to a large change in the rate. Stable rates are the opposite; there are enough cases in a population so that the rate will not fluctuate dramatically.

- A *confidence interval* refers to the minimum and maximum value such that the actual rate has a 95% chance of occurring between the calculated range. In other words, the specified rate has a high likelihood to be included in the range of values. The confidence interval is helpful to determine if a rate for a community is much higher than the statewide rate and not due to chance.

- A *case count* refers to the number of surveyed individuals that had the condition of interest. For example, if out of 40 children screened for blood lead levels, 1 child had elevated levels, the *case count* would be equal to 1.

As described above the first step of understanding whether existing EJ populations within the designated geographic area have experienced higher rates of four different vulnerable health criteria when compared to the statewide rate. Specifically, the guidance states the following:

> *"First, Proponents should consult the Massachusetts Department of Public Health (MA DPH) EJ Tool to identify whether any municipality or census tract that includes any of the identified EJ populations exhibits any of four "vulnerable health EJ criteria." Such criteria are environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average. Any EJ population that exists within those municipalities or census tracts*

could then be viewed as exhibiting "vulnerable health EJ criteria," and therefore potentially bearing an "unfair or inequitable" environmental burden and related public health consequences. The Proponent is encouraged to conduct its own research into localized sources of data that may show additional public health vulnerabilities of the identified EJ population."

The MA DPH EJ tool provides information on four different vulnerable health criteria:

- heart attack hospitalizations;
- childhood blood lead exposure;
- low birth weight; and
- childhood asthma for the most recent 5-year period of available data.

It should be noted that each of these datasets are available at different geographies, heart attack hospitalizations and childhood asthma are only available at the community level, while low birth weight and childhood blood lead exposure are sometimes available at the census tract level. In some cases, data from the DPH Tool output indicates Not Shown ("NS") due to data suppression. In some instances, DPH does not report values to protect the identity and privacy of individuals and to avoid the risk of identification of individuals in small population groups. For most datasets, the suppression rule is to not release numbers or rates when the number of events (e.g., number of blood lead cases in a particular census tract) is less than 6 and the population (e.g., number of individuals in that census tract) is less than 1,200. The suppression rule applies only to confidential health data and not data otherwise available to the public, such as air pollution data. Each of the vulnerable health criteria are described below, along with the results of the analysis for the DGA.

6.2.1 Heart Attack Hospitalizations

As described on the DPH website, Heart Attack Hospitalization is a criterion used to identify vulnerable health EJ populations. Exposure to air pollution can increase the risk for heart attack and other forms of heart disease, and it is indicative of a serious chronic illness that can lead to disability, decreased quality of life and premature death. People living in EJ areas may have higher than average heart attack hospitalization rates when compared to other communities.

Heart attack hospitalization data is based on data collected from all hospitals in Massachusetts and reflects individuals greater than 35 years old who have been admitted to the hospital for a heart attack. The vulnerable health criterion for Heart Attack Hospitalizations is the most recent 5-year average age-adjusted rate of hospitalization for myocardial infarction that is equal to or greater than 100% of the state rate. This indicator is available on a community basis.

Heart attack data at the community level was available for Falmouth, Tisbury, and Oak Bluffs. It was found that the heart attack rate for Falmouth is 34.4 per 10,000 individuals. This is greater than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Falmouth **does** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Falmouth is considered stable and statistically significantly higher than the statewide level.

The heart attack rate for Tisbury is 46.1 per 10,000 individuals. This is greater than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Tisbury **does** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Tisbury is considered stable and statistically significantly higher than the statewide level.

The heart attack rate for Oak Bluffs is 17.8 per 10,000 individuals. This is less than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Oak Bluffs **does not** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Oak Bluffs is considered stable and statistically significantly lower than the statewide level.

Community heart attack data are summarized in Section 4.2.5 below, along with the statewide prevalence data for comparison.

6.2.2 Childhood Blood Lead Levels

As described on the MA DPH website, childhood lead exposure is a criterion used to identify vulnerable health EJ populations because lead exposure disproportionately impacts lower income communities and communities of color, and childhood exposure to relatively low lead levels can cause severe and irreversible health effects, including damage to a child's mental and physical development.

Childhood Blood Lead Level data is based on data collected as part of the Massachusetts Lead Poisoning Prevention and Control Act which is a state law that requires all children to be screened each year for lead poisoning through age three and children in high-risk communities must be screened through age four. The vulnerable health criterion for Childhood Blood Lead Level is the five-year average prevalence of elevated (≥5 ug/dL estimated confirmed) childhood blood lead levels (ages 9-47 months) that is equal to or greater than 110% the state prevalence.

The childhood blood lead level indicator was available at the community level for Falmouth, Tisbury, and Oak Bluffs. Childhood blood lead levels at three census tract levels in Falmouth, Tisbury, and Oak Bluffs were presented, however data was designated as "NS" or "not shown", as described in Section 6.2.

At the community level, Falmouth's childhood blood lead level rate is 4.2 cases per 1,000. This is less than 110% of the statewide rate of 16.5 cases per 1,000, therefore Falmouth at the community level **does not** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Falmouth is considered stable and statistically significantly lower than the statewide level.

At the community level, Tisbury's childhood blood lead level rate is 27.1 cases per 1,000. This is greater than 110% of the statewide rate of 16.5 cases per 1,000, therefore Tisbury at the community level **does** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Tisbury is considered stable and not statistically different than the statewide level.

At the community level, Oak Bluffs' childhood blood lead level rate is 28.8 cases per 1,000. This is greater than 110% of the statewide rate of 16.5 cases per 1,000, therefore Oak Bluffs at the community level **does** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Oak Bluffs is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically different than the statewide level.

This indicator was further examined for the census tracts within the designated geographic area. However, for census tracts 101490 (Falmouth), 72001 (Tisbury), and 72002 (Oak Bluffs) data was not shown.

Community and census tract level childhood blood lead level data are summarized in Section 6.2.5 below along with the statewide prevalence data for comparison.

6.2.3 Low Birth Weight

As described on the MA DPH website, low birth weight is a criterion used to identify vulnerable health EJ populations because exposure to environmental contaminants can increase the risk of delivering a low birth weight baby and low birth weight is a significant predictor of maternal and infant health. Women of color and women of low income have a higher risk of delivering a low birth weight baby. Low birth weight can increase the risk of infant mortality and morbidity, health problems throughout childhood, developing cognitive disorders, developmental delay and chronic diseases as an adult such as cardiovascular diseases and type 2 diabetes.

Low birth weight data are collected by the Registry of Vital Records and Statistics. Medical data, such as birth weight and gestational age, are based on information supplied by hospitals and birthing facilities. The vulnerable health criterion for low birth weight is the five-year average low birth weight rate among full-term births that is equal to or greater than 110% of the statewide rate. This indicator is available at both the community and census tract level.

The low birth weight indicator was available on a community level for Falmouth and Tisbury, and at the census tract level for one census tract in Tisbury. Low birth weight at the community level in Oak Bluffs and two census tract levels in Falmouth and Oak Bluffs were presented, however data was designated as "NS" or "not shown", as described in Section 6.2.

At the community level, Falmouth's low birth weight rate is 14.9 cases per 1,000. This is less than 110% of the statewide rate of 23.9 cases per 1,000, therefore Falmouth at the community level **does not** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for Falmouth is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically significantly different than the statewide level.

At the community level, Tisbury's low birth weight rate is 38.0 cases per 1,000. This is less than 110% of the statewide rate of 23.9 cases per 1,000, therefore Tisbury at the community level **does** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for Tisbury is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically significantly different than the statewide level.

This indicator was further examined for the census tracts within the designated geographic area. For census tracts 101490, and 72002 data was not shown. Census tract 72001 in Tisbury contains one EJ block group that reported 41.1 cases per 1,000. This is greater than 110% of the statewide rate of 23.9 cases per 1,000, therefore Tisbury census tract 72001 **does** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for this census tract is considered unstable, meaning it did not have enough cases to be considered reliable, and statistically significantly lower than the statewide level.

Community and census tract level low birth weight data are summarized in Section 6.2.5 below along with the statewide prevalence data for comparison.

6.2.4 Childhood Asthma

As described on the DPH website, childhood asthma is a criterion used to identify vulnerable health EJ populations because people of color and low-income individuals are at greater risk for asthma exacerbations due to increased exposure to asthma triggers. Uncontrolled asthma can impact an individual's overall health and wellbeing. For example, uncontrolled asthma can reduce activity levels, negatively impact cardiovascular fitness, and increase school absenteeism.

Childhood asthma data are based on data collected from all hospitals in Massachusetts and reflects children between the ages of 5 and 14 years of age that have visited an emergency room for treatment for asthma. The vulnerable health criterion for childhood asthma is the five-year average rate of emergency department visits for childhood (5-14 years) asthma that is equal to or greater than 110% of the state rate. This indicator is available at the community level.

Childhood asthma data at the community level was available for Falmouth and Tisbury. Childhood asthma data at the community level in Oak Bluffs was presented, however data was designated as "NS" or "not shown", as described in Section 6.2.

The childhood asthma rate for Falmouth is 70.2 per 10,000 individuals. This is less than 110% of the statewide childhood asthma rate of 91.4 per 10,000, therefore Falmouth **does not** meet the Vulnerable Health Criteria for childhood asthma. The childhood asthma rate data for Falmouth is considered stable and not statistically significantly different than the statewide level.

The childhood asthma rate for Tisbury is 168.3 per 10,000 individuals. This is greater than 110% of the statewide childhood asthma rate of 91.4 per 10,000, therefore Tisbury **does** meet the Vulnerable Health Criteria for childhood asthma. The childhood asthma rate data for Tisbury is considered unstable, meaning it did not have enough cases to be considered reliable, and statistically significantly higher than the statewide level.

Community childhood asthma data are summarized in Section 6.2.5 below, along with the statewide prevalence data for comparison.

6.2.5 Vulnerable Health Criteria Summary

Based on the information described above, Falmouth meets the vulnerable health criteria for heart attack, Tisbury meets the vulnerable health criteria for heart attack, childhood blood lead, low birth weight, and childhood asthma, and Oak Bluffs meets the vulnerable health criteria for childhood blood lead. Census tract 72001 in Tisbury meets the vulnerable health criteria for low birth weight. Therefore, these EJ communities in the designated geographic area are considered vulnerable and are subject to existing environmental burdens.

Table 6.2 Summary of Vulnerable Health Data

Vu4nerable Health Criteria	Geography	Communit y Rate	Statistical Significance *	Stability	110% of Statewide Rate	>110% of Statewide Rate?
Heart Attack	**Falmouth**	34.4	SSH	Stable	26.4	**Yes**
Heart Attack	**Tisbury**	46.1	SSH	Stable	26.4	**Yes**
Heart Attack	Oak Bluffs	17.8	SSL	Stable	26.4	No
Childhood Blood Lead	Falmouth	4.2	SSL	Stable	16.5	No
Childhood Blood Lead	**Tisbury**	27.1	NSD	Stable	16.5	**Yes**
Childhood Blood Lead	**Oak Bluffs**	28.8	NDS	Unstable	16.5	**Yes**
Low Birth Weight	Falmouth	14.9	NSSD	Unstable	23.9	No
Low Birth Weight	**Tisbury**	38.0	NSSD	Unstable	23.9	**Yes**
Low Birth Weight	**Tisbury Tract 72001**	41.1	NSSD	Unstable	23.9	**Yes**
Childhood Asthma	Falmouth	70.2	NSSD	Stable	91.4	No
Childhood Asthma	**Tisbury**	168.3	SSH	Unstable	91.4	**Yes**

* SSH: Statistically significantly higher, SSL: Statistically significantly lower, NSSD: Not statistically significantly different, NSD: Not statistically different

6.3 MassDEP Regulated Facilities

As described in the MEPA Interim Protocol for Analysis of Projects Impacts on Environmental Justice Populations, the next step of the existing environmental burden analysis focuses on other potential sources of pollution within the boundaries of the EJ population. Specifically, the MEPA Protocol provides the following description of the requirements for this analysis:

"Second, the Proponent should consult additional data layers in the MA DPH EJ Tool to survey other potential sources of pollution within the boundaries of the EJ population. While comparisons to statewide averages are not presently available in the DPH EJ Tool, the Proponent should provide a narrative description of the estimated number and type of mapped facilities/infrastructure in the area, and survey enforcement histories of any facilities permitted by Massachusetts Department of Environmental Protection (MassDEP).

Available mapping layers in the MA DPH EJ Tool include the following:

- MassDEP major air and waste facilities
- M.G.L. c. 21E sites
- "Tier II" toxics use reporting facilities
- MassDEP sites with AULs
- MassDEP groundwater discharge permits
- Wastewater treatment plants
- MassDEP public water suppliers
- Underground storage tanks
- EPA facilities
- Road infrastructure
- MBTA bus and rapid transit
- Other transportation infrastructure
- Regional transit agencies
- Energy generation and supply"

Layers from the DPH EJ Tool were downloaded into ArcGIS and a one-mile buffer drawn around the project site boundary. Each of the resulting layers were used to develop a narrative of the number of types of facilities and infrastructure for the EJ populations in the DGA as well as used to survey the enforcement history. When available, enforcement histories and facility histories were searched in the EEA Data Portal, MassDEP Underground Storage Tank ("UST") Facility Search, and EPA Resource Conservation and Recovery Act ("RCRA") Search. Below is a narrative discussion of the information gleaned using the mapping layers listed above in the DPH EJ Tool.

6.3.1 MassDEP Major Air and Waste Facilities Small and Large Quantity Toxics Users

MassDEP major air and waste facilities are facilities that have air operating permits, treat, store, generate or recycle large quantities of hazardous waste, or utilize large quantities of toxics. There are three MassDEP major air and waste facilities within the DGA.

- Falmouth Marine and Yachting Center at 278 Scranton Ave in Falmouth is a DEP regulated facility with a water use permit from the wetlands and waterways program. The facility has received four Notices of Noncompliance ("NON") – 2005, 2016, 2019, and 2021. While no data is available for the 2005 and 2016 NONs, the most recent two NONs show that there is a UST that is not in compliance. The 2019 NON was issued for failure to submit a compliance certification for a UST. The 2021 AUL was issued for failure to submit an inspection report for the same tank.

- Rite Aid #10187 at 520 Main Street in Falmouth is listed as a Very Small Quantity Generator of hazardous waste. This means this facility generates less than 220 lbs of hazardous waste or waste oil per month and no acutely hazardous waste. No history of regulatory enforcement was found.

- Auto Zone #5035 at 64 Davis St is a Large Quantity Generator of hazardous waste under Massachusetts Generator guidelines. It does not have a RCRA Generator Status. No history of regulatory enforcement was found.

6.3.2 MGL c. 21E Sites

21E sites are sites that have experienced a release of a hazardous material above a certain threshold. Once a release is reported to MassDEP it must be cleaned up within a year, or it is classified as Tier I, Tier ID, or Tier II. A Tier I site poses an immediate hazard, a Tier 1D site has not posed a permanent solution or final classification of the site, and a Tier II site does not meet the criteria for an immediate hazard. Five 21E sites were identified within the DGA.

- In 2018, a commercial property located at 30 Kennebec Avenue in Oak Bluffs was found to be contaminated with PCE, TCE, and DCE from prior commercial land uses including a laundromat and dry-cleaning service. Observation wells showed elevated levels of these compounds in the soil and water. In 2020, the site underwent a series of chemical oxidation treatment injections that lowered the levels of contaminants. The site is continuing to be monitored and remediated as needed and is listed as an Open Site under compliance in the EEA online database. The most recent available update for this site is the fourth Release Abatement Measure Status Report.

- There was a release of diesel fuel oil in 2013 to Falmouth Harbor at Tides Bulkhead on Clinton Avenue while a boat was refueling. An unknown quantity of fuel was released to the harbor when the fuel tank was overfilled by a fueling truck. Response Actions included the use of absorbents and a dispersant. The sheen of oil on the surface was apparently not extensive and only observed among a few boats. The site came under compliance in 2014 and is shown as an Open Site on the EEA online database.

- A residence at 28 Vineyard Avenue in Oak Bluffs has a Tier ID Status from a 2012 spill of fifty gallons of No. 2 fuel oil from an aboveground storage tank ("AST"). The residence came into compliance in 2013 and is an Open Site on the EEA online database.

- A residence at 81 Pennacook, Oak Bluffs had a release of 40 gallons of #2 fuel oil from a fuel tan/piping in 1994. The spill site currently has a Tier 1D status and came into Compliance in 2008. The site is listed as Open in the online database.

- The Getty Gas Station at 40 Davis Straits Road in Falmouth excavated 4 USTs in 2017 and measured high PID readings in the grave of the UST. There was groundwater at 10 feet below grade and no sheen observed in the groundwater. Approximately 150 tons of impacted soil and 4,900 gallons of groundwater were disposed of during 2017 remediation activities. The site is undergoing groundwater monitoring and will submit another report in 2022 with a Permanent Solution or Phase III Remedial Action Plan.

6.3.3 Tier II Facilities

A facility is required to submit a Tier II report to emergency response agencies if it uses over a certain threshold of hazardous chemicals during a calendar year. The purpose of Tier II reports is to help facilitate emergency response in the event the fire department would need to respond to an emergency at the facility. Three Tier II Facilities were identified within the DGA.

- Falmouth Marine & Yachting Center (described above) is also a Tier II reporter.

- NSTAR Station 996 at 1 Denny Path, Tisbury is a Tier II reporter.

- The North Marine IQ Lot is a Tier II reporter at 38 Falmouth Heights Road in Falmouth. According to the EEA database, this address is approximate, and it is suspected that this address is 53 Falmouth Heights Rd and belongs to North Marine Falmouth LLC. This facility has received one NON in 2017 for failure to submit a compliance certification for a UST.

6.3.4 MassDEP Activity Use Limitation Sites

An Activity Use Limitation ("AUL") provides notice of the presence of oil and/or hazardous material contamination remaining at the location after a cleanup has been conducted pursuant to Chapter 21E and the MCP. The AUL is a legal document that identifies activities and uses of the property that may and may not occur, as well as the property owner's obligation and maintenance conditions that must be followed to ensure the safe use of the property. Five AUL sites were identified within the DGA.

- **RTN 4-0011660**
  https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?RTN=4-0011660

  Three releases of oil/hazardous material ("OHM") likely being diesel fuel/gasoline were reported at several residences on Lake Avenue in Oak Bluffs in 1990 and was reported to the MassDEP. A risk assessment completed by Capaccio Environmental Engineering in 2009 determined that there was No Significant Risk, as there was no impact to air or drinking water and no complete exposure pathway to humans. MassDEP issued one NON in June 2015 to the responsible Party Marmik

Limited Liability Corporation and an Administrative Consent Order ("ACO") in September, 2017. The site came under compliance in 2018 and has an AUL to limit direct contact with OHM impacted soil, groundwater, and soil gas barriers in place at the site.

- **RTN 4-0000922**
  https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?RTN=4-0000922

During the removal of a UST in 1990, a release of diesel fuel/gasoline fuel was identified at the property of 12 Circuit Avenue Extension in Oak Bluffs and reported to MassDEP. The property is 0.59 acres and currently operates at Dockside Marketplace and Marina. The site was issued an AUL to ensure that construction of future buildings would include a vapor barrier and sub-slab depressurization system, with emergency underground utility repair and normal pavement maintenance allowed. During a site audit, all AUL conditions were seen as being fulfilled. The site owner received one Notice of Noncompliance in November 2018 associated with an administrative issue of the misfiling of the AUL in the property deed. Since the conditions of the AUL are being met, there is no risk to human health at this site.

- **RTN 4-1075** https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0001075

The site at the current Cape Cod Bus Lines was a gas station at the time of release. The site had a Potential Release/Threat of Release notification in 1991 and had a Response Action Outcome issued in 2001. There is no information about the chemical released or the quantity reported in the EEA online database. During an announced inspection by DEP Staff, there was "no sign of subsurface excavation" and the "pavement was observed to be well maintained with no signs of cracks" and confirmed that the "the obligations and conditions of the AUL are being met." There are currently several businesses occupying this area of land.

- **RTN 4-0021458** https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0021458

This RTN associated with 502 Main Street in Falmouth is from a suspected release of oil from an oil/water separator on the property. Tetrachloroethylene and other petroleum-related compounds were detected in the groundwater on the property. The oil/water separator was excavated, impact soils identified, and subsurface piping was found and followed to a leaching pit. The leaching pit and impacted souls was removed. The site currently has an AUL restricting residential uses of the site as well as limiting utility replacement and repairs. This site does not present a risk at the present time and came into compliance in 2009.

- **RTN 4-12785**
  https://eeaonline.eea.state.ma.us/EEA/fileviewer/Default.aspx?formdataid=0&documentid=648002

  This RTN is associated with a release of 60 gallons of No. 2 fuel oil from an AST at 10 & 11 Forest Circle in Oak Bluffs in 1997. The site was issued an AUL in 1997 after this release. During construction assessments in 2020/2021, soil borings and soil samples were taken, and it was determined that EPH/VPH levels were below surface and groundwater standards. The AUL was terminated early 2022, therefore this site does not present a risk.

6.3.5 MassDEP Groundwater Discharge Permits

This dataset contains the locations of permitted discharges of groundwater. This includes discharges from: Sanitary sewage in excess of 10,000 gallons per day ("gpd"), coin operated laundromats, car washes, industrial facilities, and reclaimed water (used in cooling towers and other closed-loop systems, no actual discharge). Two groundwater discharge permits were identified within the DGA.

- Atria Woodbriar Park Retirement Community at 339 Gifford Street in Falmouth is listed for a sanitary discharge of 39,750 gpd according to the Groundwater Permits database.
- Ocean Park, property of the town of Oak Bluffs at 17 Pennsylvania Avenue is listed for a sanitary discharge of 370,000 gpd according to the Groundwater Permits database.

6.3.6 Wastewater Treatment Plants

The DPH tool provide information on facilities that have received a National Pollutant Discharge Elimination System ("NPDES") permit. NPDES is a permit for facilities that treat wastewater. There are no facilities located in EJ areas within the DGA that hold a draft or final NPDES permit.

6.3.7 MassDEP Public Water Suppliers

This dataset contains locations of public community surface and groundwater supply sources based on data available in the MassDEP's Water Quality Testing System database for tracking water supply data. A community water system refers to the public water system which services at least 25 year-round residents. There are no public water supplier facilities located in EJ areas within the DGA.

6.3.8 Underground Storage Tanks

The MassDEP regulates the registration, installation, operation, maintenance, inspection, and closure of petroleum fuel and hazardous substance of UST systems. Seven locations were identified that have USTs located within the DGA.

- Falmouth Pier 31 Inc at 64 Scranton Avenue in Falmouth is located 0.9 miles from the Project. There are two 6,000-gallon gasoline USTs at this location that were installed in 1990. This facility's most recent MassDEP submittal was December 2021 and there is no history of enforcement.

- Falmouth Marine at 278 Scranton Avenue in Falmouth is located 0.6 miles from the Project. There is one 3,000-gallon diesel and one 3,000-gallon gasoline USTs at this location that were installed in 1986. This facility's most recent MassDEP submittal was March 2021. Enforcement actions include a Compliance Certification that was issued in August 2019 and resolved in September 2019, and a Third-Party Inspection Report that was issued in February 2021 and resolved in March 2021.

- Inter-gas Main St. at 607 Main Street in Falmouth is located 0.8 miles from the Project. There are three 10,000-gallon gasoline and one 10,000-gallon diesel USTs at this location that were installed in 1989. This facility's most recent MassDEP submittal was February 2022. Enforcement actions include a Compliance Certification that was issued and resolved in August 2017.

- Cumberland Farms #2180 at 797 Main Street in Falmouth is located 1.1 miles from the Project. All USTs have been removed from this location. No history of enforcement was reported.

- Colonial Filling Station at 502 Main Street in Falmouth is located 0.8 miles from the Project. There are two 6,000-gallon and one 4,000-gallon diesel USTs at this location that were installed in 1987. This facility's most recent MassDEP submittal was January 2022 and there is no history of enforcement.

- Getty #30524 at 40 Davis Straits Road in Falmouth is located 1.3 miles from the Project. All USTs have been removed from this location. No history of enforcement was reported.

- Jim's Vineyard Market's Inc at 27 Lake Avenue in Oak Bluffs is located 1.0 mile from the Project. There are four 3,000-gallon gasoline USTs that were installed in 1999 and one 1,000-gallon diesel UST that was installed in 2000 at this location. This facility's most recent MassDEP submittal was September 2021. Enforcement actions include a Compliance Certification that was issued and resolved in September 2020.

6.3.9 EPA Facilities

EPA facilities include Toxic Release Inventory ("TRI") facilities, which use and/or release over a certain threshold of toxic chemicals to the environment. There are 777 individual chemicals and 33 chemical categories covered by the TRI program.[14] The Resource Conservation and Recovery Act creates the framework for the proper management of hazardous and non-hazardous solid waste. Very Small Quantity Generators ("VSQGs") generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste. Small Quantity Generators ("SQGs") generate more than 100 kilograms, but less than 1,000 kilograms of hazardous waste per month. Large Quantity Generators

[14] https://enviro.epa.gov/facts/tri/ef-facilities/#/Facility/01082KNZKS20COM

("LQGs") generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste. Three facilities within the DGA were identified as RCRA hazardous waste generators.

- Falmouth Marine at 278 Scranton Avenue in Falmouth was identified as a SQG of Hazardous Waste. There was no history of regulatory enforcement.

- Rite Aid #10187 at 520 Main Street in Falmouth was identified as a VSQG of Hazardous Waste. There was no history of regulatory enforcement.

- Auto Zone #5035 at 64 Davis Straits Road in Falmouth was identified as a generator of hazardous waste. A RCRA Generator Status was not listed, however it is a Large Quantity Generator of hazardous waste under Massachusetts Generator guidelines. There was no history of regulatory enforcement.

6.3.10 Road Infrastructure

Road infrastructure includes Massachusetts Department of Transportation ("MassDOT") roads and bike lanes or shared use pathways. There is one major route that pass through the EJ block groups within the DGA in Falmouth, State Route 28.

Two bike lanes were identified in the DGA in Falmouth. The Shining Sea Bikeway is an approximately 11-mile path that runs from Falmouth to Woods Hole and then to North Falmouth, built on a former railroad ROW. It includes an approximately 5,300 ft segment that is within the Project area, the southern portion of which is adjacent to an EJ community in Falmouth. The Project involves constructing a duct and manhole system within the bikeway. Eversource plans to perform construction in the fall and winter offseason to avoid conflicts with bike path users, and will repave the area once construction is completed. The second identified bike lane is the Downtown Falmouth Bike Path, an approximately 800 ft segment behind Mullen-Hall high school.

Three bike lanes were identified in the DPA in Martha's Vineyard. The Eastville Avenue Path runs along Hospital Way adjacent to the site and then overlaps the site within Eastville Avenue for about 300 ft in front of the Eversource owned parcel and planned future equipment site. The Project involves the installation of a duct and manhole system within this portion of Eastville Avenue. Eversource plans to perform construction in the fall and winter offseason to avoid conflicts with bike path users and traffic on Eastville Avenue, and will repave the area once construction is completed. The Beach Road Shared Use Path is an approximately half mile path that connects East Chop and West Chop at Vineyard Haven that is within 1 mile of the Project site, and located between EJ communities on Tisbury and Oak Bluffs. The Country Road Path connects to the Eastville Avenue Path at the intersection of Country Road and Eastville Avenue, and runs along the edge of an EJ community in Oak Bluffs.

6.3.11 MBTA Bus and Rapid Transit

MBTA Bus and Rapid Transit includes MBTA Bus routes, rapid transit, commuter rail lines, ferries, and their associated stations and parking areas. No MBTA Bus and Rapid Transit is found in the DGA. A MBTA commuter rail runs approximately 10 miles north of the DGA.

6.3.12 Other Transportation Infrastructure

Other transportation infrastructure includes airports, freight yards, water taxis, railroad tracks, and ferry routes. Nine ferry routes intersect with mapped EJ communities. These include:

- Falmouth-Edgartown Ferry, Falmouth – Edgartown
- New England Fast Ferry, New Bedford – Vineyard Haven
- Steamship Authority, Woods Hole – Vineyard Haven
- Vineyard Fast Ferry, Quonset Point – Oak Bluffs
- New England Fast Ferry, New Bedford – Oak Bluffs
- Steamship Authority, Woods Hole – Oak Bluffs
- Island Queen, Falmouth – Oak Bluffs
- Hy Line, Hyannis – Oak Bluffs
- Hy Line Inter-Island, Nantucket – Oak Bluffs

Additionally, a private railway is depicted along the eastern edge of East Chop on Martha's Vineyard.

6.3.13 Regional Transit Agencies

Regional Transit Agency layers include the bus routes for the Regional Transit Authorities of Massachusetts and their associated bus stops. The Cape Cod Regional Transit Authority operates one bus route that is within the DGA, known as the "Sealine" route between Woods Hole and Hyannis. There are nine bus stops on the route described above that are located in the EJ block groups within the DGA. The Martha's Vineyard Transit Authority operates four bus routes that are within the DGA:

- Edgartown - Oak Bluffs - Vineyard Haven via Beach Roads,
- Oak Bluffs - Hospital - Airport via Barnes Road / Country Road,
- Oak Bluffs - Airport via Country Road / Barnes Road, and
- West Chop Loop.

There are twenty-one bus stops on the routes described above that are located in the EJ block groups within the DGA.

6.3.14 Energy Generation and Supply

The Energy Generation and Supply layer includes nuclear power plants, other power plants, and transmission lines.

One power plant is mapped approximately 0.8 miles west of the Project in Falmouth at Woods Hole Research Center. This is a 100 kW capacity wind farm that has been in operation since October 2009.

6.3.15 Location of MassDEP-Regulated Facilities Relative to EJ Block Groups

To assess the existing conditions of the EJ areas and non-EJ areas in the DGA with regards to MassDEP-regulated facilities, a comparison was drawn between the EJ block groups in the DGA and the community of Falmouth, Tisbury, and Oak Bluffs for three facility types.

There are three Tier I and II sites in Falmouth, including two in the EJ neighborhoods in the DGA, and one in non-EJ areas. There are three AUL sites in Falmouth, including one in the EJ neighborhoods in the DGA, and two in non-EJ areas. There are 31 UST sites in Falmouth, including six in the EJ neighborhoods in the DGA, and 19 in non-EJ areas. As a percentage breakdown, 19.4% of the UST sites in Falmouth are found in the EJ block groups within the DGA for the proposed project. Falmouth contains EJ block groups outside those intersecting the DGA. With these neighborhoods added, two of the three Tier I and II sites, one of the three AUL sites, and 12 of the 31 (38.7%) UST sites are in EJ neighborhoods.

There are four Tier I and II sites, two AUL sites, and three UST sites in Tisbury, all of which are in non-EJ areas. There is one EJ block group in Tisbury outside the one intersecting the DGA.

There are three Tier I and II sites and two AUL sites in Oak Bluffs, all of which are in the EJ neighborhoods within the DGA. There are four UST sites in Oak Bluffs, one of which is in the EJ neighborhoods in the DGA, and three that are in non-EJ areas. There are no EJ block groups in Oak Bluffs outside those intersecting the DGA.

Table 6.3 - Comparison of EJ vs Non-EJ MassDEP Regulated Facilities in the Project Area presents the results of normalized totals of each MassDEP regulated facility. Per square mile, the DGA contains more Tier I and II sites, AUL sites, and UST sites than the non-EJ areas in Falmouth and Oak Bluffs. The DGA in Tisbury does not contain any Tier I and II sites, AUL sites, or UST sites.

Table 6.3 Comparison of EJ vs Non-EJ MassDEP Regulated Facilities in the Project Area

MassDEP Regulated Facility	EJ Areas in the DGA	All EJ Areas	Non-EJ Areas
Falmouth			
Tier I and II sites (per sq. mi.)	1.29	0.16	0.03
AUL sites (per sq. mi.)	0.64	0.08	0.06
UST sites (per sq. mi.)	3.58	0.98	0.57
Tisbury			
Tier I and II sites (per sq. mi.)	0	0	2.29
AUL sites (per sq. mi.)	0	0	1.14
UST sites (per sq. mi.)	0	0	1.72
Oak Bluffs			
Tier I and II sites (per sq. mi.)	2.42	2.42	0
AUL sites (per sq. mi.)	2.75	1.62	0
UST sites (per sq. mi.)	0.81	0.81	0.49

6.4 Climate Adaptation (RMAT)

As described below, the RMAT Tool provides the proposed Project with information about sea level rise/storm surge, heat, and extreme precipitation impacts.

> *"Third, Proponents should consult the standard output report generated from the RMAT Climate Resilience Design Standards Tool (the "RMAT Tool"),9 which is required as an attachment to the ENF/EENF.10 Proponents should identify in the EIR whether the RMAT Tool indicates a "High" risk rating for sea level rise/storm surge or extreme precipitation (urban or riverine flooding) as applied to the project location. A "High" risk rating for these parameters could be an indicator of elevated climate risks for EJ populations that immediately surround the project site (meaning all EJ populations located in whole or in part within the project boundaries). The risk rating for the "extreme heat" parameter should not be used as a definitive indicator of elevated climate risks."*

The RMAT tool denotes the proposed Project would be considered "High" for Sea Level Rise/Storm Surge and Extreme Heat. There is "Moderate" risk for Extreme Precipitation – Urban Flooding and Extreme Precipitation – Riverine Flooding.

6.5 US EPA EJ Screen

As described in the MEPA Interim Protocol for Analysis of Projects Impacts on EJ Populations the next step of the existing environmental burden analysis focuses on using the U.S. EPA Environmental Justice Screening Tool ("EJ Screen"). The MEPA protocol offers the following guidance when using the EJ Screen tool:

"Fourth, Proponents, at their option, may consult U.S. EPA's "EJ Screen," which provides a percentile ranking by census block group, compared against statewide averages, for 11 environmental indicators. When using the tool, Proponents should select the "compare to state" function and turn off the "EJ index" data layer—while the EJ index is calculated from the 11 environmental indicators after considering demographic information and population density, this calculation may be inconsistent with the definition of "EJ population" codified in Massachusetts law. The environmental indicators/percentiles could be relevant for assessing potential environmental exposures in the relevant census block as compared to statewide averages, and, therefore, could serve as a potential (though not definitive) indicator of "unfair or inequitable" environmental burden impacting the EJ population."

At the time of the publication of the MEPA protocol, there were 11 environmental indicators provided in the EJ Screen tool. Since then, a 12th indicator has been added, and is included in the analysis below. The environmental indicators available through EPA EJ Screen are as follows:

1. NATA Air Toxics Cancer Risk (risk based on lifetime exposure in air)
2. NATA Respiratory Hazard Index Ratio (risk based on exposure in air)
3. NATA Diesel Particulate Matter (potential exposure in air)
4. Particulate Matter 2.5 (annual average, potential exposure in air)
5. Ozone (summer seasonal average, daily 8-hr max, potential exposure in air)
6. Lead Paint (% of housing built before 1960, potential exposure in dust/paint)
7. Traffic Proximity and Volume Count of Vehicles (annual average, quantity effecting air)
8. Proximity to Risk Management Plan Sites (quantity potentially effecting waste, water, and air)
9. Proximity to Hazardous waste Treatment, Storage, and Disposal Facilities (quantity potentially effecting waste, water, and air)
10. Proximity to National Priority List/Superfund sites (quantity potentially effecting waste, water, and air)
11. Wastewater Discharge toxic concentrations in streams (quantity potentially effecting water)
12. Underground Storage Tanks and Leaking Underground Storage Tanks (quantity potentially affecting waste, water, and air)

The EPA EJ Screen tool was run with the "compare to state" option turned on, and the "EJ Index" data layer turned off, for the census tracts immediately within one-mile of the DGA. **Figures 14 and 15** show the EJ communities within one-mile of the DGA. Each of the MEPA identified environmental indicators and their results in the DGA are summarized below.

6.5.1 NATA Air Toxics Cancer Risk

The NATA Air Toxics Cancer Risk indicator in EJ Screen, maps data from the National-Scale Air Toxics Assessment ("NATA") this to assess health risks from air toxics on a nation-wide basis. NATA was last updated using data from 2014, this dataset indicator uses both emissions information as well as air dispersion modeling to determine cancer risk. from air toxics. This indictors units are in N per million people.[15] This indicator is available at the census tract level. The NATA Air Toxics Cancer Risk indicator can be used to understand the life-time cancer risk from inhaling air toxics in EJ areas within the DGA compared to the state-wide rate.

The results of the NATA Air Toxics Risk indicator are 20 in one million cancer risk in all EJ areas within the DGA compared to an average statewide risk of 24 in one million cancer risk. As the Air Toxics cancer risk due to air toxics is lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to Air Toxics Cancer Risk for EJ areas within the DGA. Results from this analysis are presented in **Table 6.4 - USEPA EJ Screen Environmental Indicators**.

6.5.2 NATA Respiratory Hazard Index Ratio

The NATA Respiratory Hazard Index Ratio[16] indicator in EJ Screen maps data from the NATA to assess health risks from air toxics on a nation-wide basis. NATA was last updated using data from 2014. This indicator uses both emissions information as well as air dispersion modeling to determine the risk of respiratory related (i.e., non-cancer health effects) from air toxics. This indicator is available at the census tract level and its units are dimensionless. The NATA Respiratory Hazard Index Ratio indicator can be used to understand the risk of respiratory (non-cancer related) health outcomes from inhaling air toxics in EJ areas within the DGA compared to the state-wide rate.

The result of the NATA Respiratory Hazard Index Ratio indicator is 0.2 in all EJ areas within the DGA compared to an average statewide risk of 0.3. As the Respiratory Hazard Index ratio due to air toxics is lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to respiratory hazards from air toxics in EJ areas within the DGA. Results from this analysis are presented in Table 6.4**.**

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15 A risk level of "N"-in-1 million implies that up to "N" people out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the specific concentration over 70 years (an assumed lifetime). This would be in addition to cancer cases that would normally occur in one million unexposed people.

16 The sum of the ratio of the potential exposure to an air toxic and the level at which no adverse effects are expected (i.e., summing each hazard quotient) for toxics that affect the same target organ or organ system. Because different air toxics can cause similar adverse health effects, combining hazard quotients from different toxics is often appropriate. A hazard index (HI) of 1 or lower means air toxics are unlikely to cause adverse noncancer health effects over a lifetime of exposure. However, an HI greater than 1 doesn't necessarily mean adverse effects are likely.

6.5.3 NATA Diesel Particulate Matter

The NATA Diesel PM indicator in EJ Screen maps data from the NATA to assess health risks from diesel particulate on a nation-wide basis. NATA was last updated using data from 2014, this indicator uses both emissions information as well as air dispersion modeling to determine the level of diesel particulates in the air. The Integrated Risk Information System ("IRIS") program by the EPA has a Diesel engine exhaust Reference concentration ("Rfc") of 5 micrograms (millionths of a gram) per cubic meter ($\mu g/m^3$).[17] This indicator is available at the census tract level. The NATA Respiratory Hazard Index Ratio indicator can be used to understand the risk of respiratory (non-cancer related) health outcomes from inhaling diesel PM in EJ areas within the DGA compared to the state-wide rate.

The result of the NATA Diesel PM indicator is between 0.992 – 0.131 $\mu g/m^3$ in EJ areas within the DGA compared to an average statewide value of 0.295 $\mu g/m^3$. As the NATA Diesel PM index is lower in EJ areas within the DGA when compared to the state and to the IRIS Rfc, there is no indication of unfair or inequitable environmental burden due to respiratory hazards from air toxics in EJ areas within the DGA. Results from this analysis are presented in Table 6.4.

6.5.4 Particulate Matter ($PM_{2.5}$, annual average)

The Particulate Matter ("PM") indicator in EJ Screen maps data from EPA Office of Air and Radiation ("OAR") and indicates increased health risks due to exposure to PM. OAR uses data from 2017. The PM data is a combination of data collected from monitoring sites around the country and data modeled using an air dispersion modeling program. This indicator is available at the census tract level. The PM indicator can be used to understand the concentrations of PM in EJ areas within the DGA compared to the state-wide concentrations. This indicator is available at the census tract level and reports the annual average of ambient levels of $PM_{2.5}$ $\mu g/m^3$.

The results of the PM indicator for all block groups inside the DGA is between 5.9 – 6.07 $\mu g/m^3$ compared to the state average of 6.78 $\mu g/m^3$. As particulate matter concentrations for these EJ block groups are lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to particulate matter in EJ areas within the DGA. Results from this analysis are presented in Table 6.4.

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17 The sum of the ratio of the potential exposure to an air toxic and the level at which no adverse effects are expected (i.e., summing each hazard quotient) for toxics that affect the same target organ or organ system. Because different air toxics can cause similar adverse health effects, combining hazard quotients from different toxics is often appropriate. A hazard index (HI) of 1 or lower means air toxics are unlikely to cause adverse noncancer health effects over a lifetime of exposure. However, an HI greater than 1 doesn't necessarily mean adverse effects are likely.

6.5.5 Ozone

The Ozone indicator in EJ Screen maps data from EPA OAR and indicates increased health risks due to exposure to ozone. OAR uses data from 2017. Ozone data is a combination of data collected from monitoring sites around the country and data modeled using an air dispersion modeling program called CMAQ. Ozone data is reported as the summer, seasonal average of the daily maximum 8-hr concentration. This translates to the 8-hr period of the day when the average ozone concentration is the highest. This indicator is available at the census tract level. The Ozone indicator can be used to understand the risk of health outcomes, such as decreased lung function and increased hospital admissions, from inhaling ozone in EJ areas within the DGA compared to the state-wide rate.

The results of the Ozone indicator for all block groups inside the DGA range is 39.8-40 ppb compared to the state average of 39.5 ppb. These values are comparable to the statewide average and rank in the 64-66 percentile when compared to the statewide rates. The National Ambient Air Quality Standards ("NAAQS") for ozone are the 2015 standards of 70 ppb for the fourth-highest daily maximum 8-hour concentration averaged across three consecutive years.[18] The ozone concentration for the EJ areas inside the DGA is well below 70 ppb, but ozone is comparable to statewide rates. Results from this analysis are presented in Table 6.4.

6.5.6 Lead Paint

The Lead Paint indicator in EJ Screen maps data from the U.S. Census Bureau and the American Community Survey to assess lead exposure potential from houses built prior to 1960. Data is reported from the 2020 US census and 2014-2018 ACS. The lead paint indicator is reported as percent of housing units built pre-1960 and is available on the block group level. According to Jacobs et al. homes built prior to between 1940-1959 can have a 32-51% of having significant lead-based paints (2002).[19] Older houses have an even higher risk. This indicator can be used to understand the risk of exposure to lead, especially to young children who may consume lead paint chips and have high blood lead levels.

The results of the Lead Paint indicator vary greatly between block group and census tract. Three of the block groups reported higher than the state average of 49% of households built prior to 1960. Block group 8001 reported 64% of households, block group 9003 reported 70% of households, and block group 2002 reported 72% of households. The other three block groups reported lower than the state average; block group 8003 reported 24% of households, block group 1001 reported 28% of households; and block group 2004 reported 25% of households. Results from this analysis are presented in Table 6.4.

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18 National Ambient Air Quality Standards for Ozone

19 EJ Screen Technical Document, pg. 49

6.5.7 Traffic Proximity and Volume Count of Vehicles

The Traffic Proximity and Volume Count of Vehicles indicator in EJ screen uses 2017 data from the U.S. Department of Transportation to calculate a traffic proximity value that's an indicator of multiple health impacts including asthma onset, mortality rates, cardiovascular disease, and stress. The traffic indicator the count of daily vehicles at major roads within 500 meters of the given location, divided by the distance in meters from the location. This data is available on a block group level and is reported as average annual daily traffic per meter. This indicator can be used to understand the health risk that various populations face due to proximity to highly trafficked roads.[20]

The results of the Traffic Proximity and Volume Count of Vehicles indicator for all block groups inside the DGA are between 33 – 760, well below the statewide average of 2,100 AADT per meter. EJ Block groups 8001, 8003, and 9003 are the populations near highly trafficked roads in Falmouth. These EJ block groups are intersected by one of the busiest roads in Falmouth, Route 28. In addition, there are several bus routes that pass through the EJ block groups within the DGA. Results from this analysis are presented in Table 6.4.

6.5.8 Proximity to Risk Management Plan Sites

The Proximity to Risk Management Plan ("RMP") sites indicator in EJ screen uses 2020 data from EPA's RMP database to calculate the proximity to a facility that uses hazardous chemicals and have a plan to manage spills. The RMP rule is part of the Clean Air Act Amendments at 40 CFR 68. Facilities that store over a certain threshold of a quantity of regulated substance (that could cause an offsite hazard if released) are required to submit a RMP plan. This indicator is calculated as the sum of RMP facilities within 5 km of a location (or the nearest one beyond 5 km), divided by the distance in kilometers between the RMP facilities and the location of interest. This data is available on a block group level and is reported as sum of total RMP facilities per kilometer.[21]

The block groups in the EJ populations within the DGA have RMP Proximity indicator values between 0.033 – 0.049 facilities per km. As RMP Proximity is lower in EJ areas within the DGA when compared to the state (0.70 facilities per km), there is no indication of unfair or inequitable environmental burden due to RMP Proximity in EJ areas within the DGA. Results from this analysis are presented in Table 6.4**.**

6.5.9 Proximity to Hazardous Waste Facilities

The Proximity to Hazardous Waste Facilities indicator in EJ screen uses 2020 data from the RCRA Info database to calculate the proximity to facilities that handle hazardous waste that is potentially dangerous to human and environmental health. This indicator includes facilities that treat, store, dispose, or generate large quantities of hazardous waste and is calculated as the sum of total facilities divided by their distance in kilometers. This data is available on a block group level and is reported as facilities per kilometer

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[20] EJ Screen Technical Document, pg. 51

[21] Risk Management Plan Overview

distance. This indicator can be used to better understand how hazardous waste facilities are distributed between EJ and non-EJ areas. For example, an indicator value of ½ indicates that there is 1 facility 2 km away from a specific location.

The results of the Proximity to Hazardous Waste Facilities indicator for the EJ block groups inside the DGA range between 0.084 – 2 facilities per km. As Proximity to Hazardous Waste Facilities is lower in EJ areas within the DGA when compared to the state (5.2 facilities per km), there is no indication of unfair or inequitable environmental burden due to Hazardous Waste Facility Proximity in EJ areas within the DGA. Results from this analysis are presented in Table 6.4.

6.5.10 Proximity to National Priority List/Superfund sites

The Proximity to National Priority List ("NPL") sites indicator in EJ screen uses 2020 data from the EPA CERCLIS database to calculate the proximity to contaminated Superfund. CERCLIS is the search database for the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), otherwise known as "Superfund." Superfund sites are contaminated with hazardous waste and include manufacturing facilities, processing plants, landfills, and mining sites. The Superfund Act, or CERCLA, allows the EPA to force responsible parties to clean up the contaminated site or reimburse the government for EPA-led cleanup work. This indicator is calculated as the count of proposed and listed NPL/Superfund sites within 5 km (or the nearest one beyond 5 km) divided by the distance in kilometers. Data is available on a regional level. This indicator can be used to better understand how hazardous waste facilities are distributed between EJ and non-EJ areas.

The results of the Proximity to NLP sites indicator for the EJ block groups inside the DGA ranges between 0.045 – 0.08 facilities/km in comparison to the statewide average of 0.17 facilities per km. As the Proximity to NPL indicator results for the EJ areas inside the DGA are well below 0.17, the statewide average, there is no indication of unfair or inequitable environmental burden due to proximity to facilities that handle hazardous waste close to EJ populations within the DGA. Results from this analysis are presented in Table 6.4**.**

6.5.11 Wastewater Discharge Toxicity

The Wastewater Discharge Toxicity indicator in EJ Screen pulls data from the EPA's Risk-Screening Environmental Indicators ("RSEI") to calculate toxics concentrations in streams. The RSEI model uses 2020 information about Toxics Release Inventory sites, chemical release volumes, toxicity, chemicals' fate and transport through the environment, and human exposure to calculate an overall RSEI score. The RSEI score includes a toxicity-weighted concentration that excludes population information, making it easier to use for low-density rural areas. The modeled toxicity-weighted concentrations in stream sections within 500 m of the location are divided by the distance from the location in kilometers to get an overall Wastewater Discharge Toxicity score.[22] This indicator is available at the block group level and is reported in mg/L per km distance. This indicator can be used to understand the risk from exposure to toxics in surface water.

Wastewater Discharge Toxicity data was not available in the DGA and surrounding area. Therefore, there is no indication of unfair or inequitable environmental burden due to proximity to high wastewater discharge toxicity.

6.5.12 Underground Storage Tanks

The Underground Storage Tank indicator pulls data from the EPA UST Finder to map the location UST and LUST sites. UST Finder contains a comprehensive, state-sourced national map of UST and LUST data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states as of 2018-2019 and from Tribal lands and US territories as of 2020-2021. For the calculation of the UST indicator in EJ Screen, LUSTs are multiplied by a factor of 7.7, and USTs are counted within a 1,500-foot buffered block group. The data is available on a block group level. The UST indicator can be used to understand how USTs are distributed between EJ and non-EJ areas within the DGA compared to the state-wide rate.

The results of the UST indicator vary greatly between block group and census tract. Four block groups have Proximity to UST indicators that are elevated above the statewide average risk of 3.1. In Falmouth, block group 8001 has a calculated risk of 8.6, which is in the 90th percentile in the state, and block group 8003 has a calculated risk of 7.4, which is in the 88th percentile in the state. Falmouth block group 9003 is in the 49th percentile. In Oak Bluffs, block group 2002 is in the 48th percentile, and block group 2004 is in the 59th percentile. Block group 1001 in Tisbury has zero USTs. As EJ block groups 8001 and 8003 in Falmouth are above the 80th percentile for the UST indicator when compared to statewide averages, proximity to USTs may contribute to the risk of pollution burden that these communities face, as discussed in Section 6.5.13 below. Results from this analysis are presented in Table 6.4.

6.5.13 Summary of EJ Screen Results and Determination of Burdens

Based on the results of the EJ Screen for block groups within the DGA, exposure to USTs is the only environmental indicator that ranks in the 80th percentile or above for one or more EJ block groups and may indicate a burden of pollution.

Table 6.4 below summarizes the EJ block groups within the DGA and their environmental indicator values.

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[22] Toxicity-weighted concentrations are calculated from multiplying the concentration by the toxicity weight for a given chemical. Toxicity weights are relative, measure chronic human health effects only (include cancer and noncancer effects), and are for comparison purposes to ensure that more toxic chemicals get more attention. For example, the RSEI model uses a range of 0.02 for sulfuric acid to 1.4 billion for dioxin for toxicity weights. If there is more than one chemical present, then the toxicity-weighted concentrations can be added together to get the overall toxicity-weighted concentration of a batch of chemicals.

Table 6.4 USEPA EJ Screen Environmental Indicators

Census Tract		101480				101490		72001		72002			
Block Group		8001		8003		9003		1001		2002		2004	
Environmental Indicator	State Avg.	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State
NATA air toxics cancer risk	**24**	20	56	20	56	20	56	20	56	20	56	20	56
NATA respiratory hazard index	**0.3**	0.2	21	0.2	21	0.2	21	0.2	21	0.2	21	0.2	21
NATA diesel PM (µg/m^3)	**0.295**	0.0994	4	0.0994	4	0.131	13	0.119	9	0.0992	4	0.0992	4
Particulate matter (µg/m^3)	**6.78**	6.07	14	6.07	14	6.07	15	5.94	9	5.9	8	5.9	8
Ozone (ppb)	**39.5**	39.9	66	39.9	66	40	67	39.9	65	39.8	64	39.8	64
Lead paint indicator (%)	**49**	64	65	24	22	70	72	28	26	72	74	25	23
Traffic proximity and volume	**2100**	760	52	690	50	610	46	33	5	220	24	52	7
Proximity to Risk Management Plan (RMP) sites	**0.70**	0.047	2	0.049	2	0.046	2	0.034	1	0.033	1	0.033	1
Proximity to Hazardous Waste Facilities	**5.2**	1	27	2	43	0.81	23	0.12	3	0.084	1	0.087	1
Proximity to National Priorities List (NPL) sites	**0.17**	0.074	40	0.08	45	0.072	38	0.046	11	0.045	10	0.045	10
Underground Storage Tanks	**3.1**	8.6	90	7.4	88	1.5	49	0	15	1.4	48	2.4	59

6.6 EJ Outreach Plan

The Project team consulted with the MEPA Office on March 3, 2022 regarding EJ enhanced outreach and enhanced analysis. Key steps for public outreach included the issuance and distribution of a Project Factsheet, scheduling of public tabling events, and additional outreach steps.

Significant efforts were made to reach out to the EJ communities within a mile of the project, and to the broader community. Those efforts included:

Identification of Community Based Organizations (CBOs): Eversource identified the CBOs contacted as part of the initial ENF outreach. The team consulted with the MEPA office and EEA, who confirmed that the list was appropriate.

Public meetings and direct outreach: A list of completed and planned formal and informal meetings, consultations, and information sessions, described below.

6.6.1 EJ Screening Form

In compliance with MEPA EJ regulations, an Environmental Justice Screening Form was submitted to CBOs via email on April 1, 2022. The form and corresponding cover letter were provided in both English and Portuguese. See **Attachment K – Public Outreach Materials** for a copy of the EJ form.

6.6.2 Fact Sheet

Attachment K – Public Outreach Materials includes the fact sheet prepared by Eversource used for distribution and dissemination of project information. The fact sheet includes visuals, explains the need for the Project, provide a summary of the Project, gives an estimated timetable for the project, and provides contact information. In the fact sheet aims to use terms that are easily understood, avoiding jargon and explaining concepts. The fact sheet was translated into Portuguese for dissemination in both English and Portuguese.

6.6.3 Public Events

Outreach events were planned and executed by Eversource's Public Services team. **Table 6.5 - List of Completed and Future Public Outreach Events** below lists competed events through November 30, 2022 and tentatively planned future outreach events. It also notes which event locations were within EJ communities. Eversource has placed a focus on responding to the feedback received at these meetings, and performing the analyses required to respond to questions and concerns raised.

Outreach will continue with affected communities and community leadership throughout the lifespan of the Project, garnering feedback and implementing where practical. With the Project area having a significant tourist population in the late spring and summer seasons, Eversource will follow the guidance of community leaders by having more targeted outreach during peak tourist season to make sure the correct audience is being engaged. As peak tourist season ends, the Project Team return to broader outreach efforts within the entire community to prepare for Project construction.

Table 6.5 List of Completed and Future Public Outreach Events

Venue	Address	Town	Date	In EJ Block Unit
Completed Outreach Events				
Falmouth Public Library	300 Main Street	Falmouth	March 16, 2022 11 am-1 pm	Y
Gus Canty Community Center (Falmouth Dept. of Recreation)	790 Main Street	Falmouth	March 17, 2022 12:30-3 pm	Y
Falmouth Public Library	300 Main Street	Falmouth	March 19, 2022 11 am-1 pm	Y
Mahoney's Garden Center	958 E. Falmouth Highway	Falmouth	March 20, 2022 1 pm-3 pm	Y
Oak Bluffs Public Library	56R School Street	Vineyard Haven	March 22, 2022 1:30-3:30 pm	Y
Gus Canty Community Center	790 Main Street	Falmouth	March 24, 2022 4:30 pm-7 pm	Y
Chicken Alley Thrift Store (MV Community Services)	38 Lagoon Pond Road	Vineyard Haven	April 2, 2022 11 am-1:30 pm	N
Cronig's Market	357 State Road	Vineyard Haven	April 6, 2022 11:30 am-2 pm	Y
Mahoney Gardening Center	958 E. Falmouth Highway	Falmouth	April 23, 2022 10 am-2 pm	Y
Falmouth Open House – Gus Canty Community Center	790 Main Street	Falmouth	April 27, 2022 4 pm-7 pm	Y
Oak Bluffs Open House – Chef Deon's Kitchen	14 Towanticut Street	Oak Bluffs	May 2, 2022 5 pm-7 pm	Y
Owen Park	Owen Park Way	Vineyard Haven	October 7, 2022	N
MV Regional High School	100 Edgartown Vineyard Haven Road	Oak Bluffs	October 15, 2022	N
MV Agricultural Society	35 Panhandle Road	West Tisbury	October 22, 2022	N
Gus Canty Community Center (Falmouth Dept. of Recreation)	790 Main Street	Falmouth	September 14, 2022	Y
Owen Park	Owen Park Way	Vineyard Haven	October 7, 2022	N
Martha's Vineyard Regional High School	100 Edgartown Vineyard Haven Road	Oak Bluffs	October 15, 2022	N
Martha's Vineyard Agricultural Society	35 Panhandle Road	West Tisbury	October 22, 2022	N
Locations Where Project Materials were Left for Public Consumption				
Island Wide Youth Collaborative	111 Edgartown Road	Vineyard Haven	March-May 2022	N
Cape Cod Conservatory	60 Highfield Drive	Falmouth	March-May 2022	Y
Falmouth Fitness Center	33 Highfield Drive	Falmouth	March-May 2022	Y
Garrett's Gas Station	435 Palmer Avenue	Falmouth	March-May 2022	N
7 Eleven	59 Locust Street	Falmouth	March-May 2022	Y
Martha's Vineyard Savings Bank	397 Palmer Avenue	Falmouth	March-May 2022	N
Cape Cod Bagel	419 Palmer Avenue	Falmouth	March-May 2022	N
Seafood Sam's	356 Palmer Avenue	Falmouth	March-May 2022	N
Coffee Obsession	110 Palmer Avenue	Falmouth	March-May 2022	Y

6.7 Assessment of Project Impacts to Determine Disproportionate Adverse Effect

6.7.1 Nature and Severity

In Section 3.0 of the EJ Analysis Protocol, the Project proponent is asked to describe the nature and severity of all short-term and long-term Project impacts, both in magnitude and duration. The text below presents the section of the Protocol with the detailed information.

> *"The Proponent should analyze whether the nature and severity of project impacts will materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ population. In assessing severity of an impact, the Proponent should consider both magnitude and duration.*
>
> *For example, a project that would have permanent traffic impacts affecting EJ populations with elevated public health conditions could be viewed as having a disproportionate adverse effect on such population. This is especially so, if any identified environmental or public health indicators related to air quality (such as PM 2.5/ozone exposure or asthma rates) are elevated in the EJ population, and the magnitude of the increase is at least 2,000 unadjusted adt (the ENF-level MEPA review threshold at 301 CMR 11.03(6)(b)13.) and is in close proximity to the EJ population. The Proponent should conduct analysis or modeling sufficient to demonstrate the magnitude of any relevant project impacts, for instance, by conducting air quality analysis of permanent increases in traffic consistent with the MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources (1991). Mitigation measures that would specifically reduce the magnitude of the identified impact can be considered. It is important to note that, where the level of existing burden is high, even a small addition of project impacts may create disproportionate adverse effects. For instance, if any of the DPH vulnerable health EJ criteria or other public health or environmental indicators are well above statewide rates (e.g., an environmental indicator above the 80th percentile of statewide average in EPA's EJ Screen), even a small addition of impacts (e.g., below 2,000 unadjusted adt of permanent new traffic) could be viewed as creating a disproportionate adverse effect.*
>
> *In addition, while MEPA review thresholds at 301 CMR 11.03 provide a guide for a discussion of impacts, the Proponent shall not limit the discussion to impacts that meet or exceed MEPA review thresholds, and, instead, shall address all short-term and long-term impacts associated with the project, including construction period activities. For instance, an estimate of construction vehicle traffic and routes of travel may be warranted if construction activities will be occurring in close proximity to already-burdened EJ populations."*

6.7.1.1 USTs and Other Long-Term Risks to EJ Populations

Based on the results of the EJ Screen for block groups within the DGA, exposure to USTs is the only environmental indicator that ranks in the 80th percentile or above for one or more EJ block groups and may indicate a burden of pollution.

The primary risk associated with USTs is the contents of the tank leaking into groundwater. However, nearly all of the properties within the three EJ communities in the Falmouth DGA are connected to the public water supply system. According to the Falmouth Water Department, 80% of the town's water supply comes from the Long Pond treatment plant, which is located north of the DGA. Additional water sources are located even farther northeast of the DGA. The aquifer that supplies the town's water system designated by MassDEP as the Zone II area of contribution is located outside of the EJ communities in the DGA, which have a high concentration of USTs. Therefore, these high UST areas are unlikely to have an effect on drinking water in the town of Falmouth. Project impacts therefore, are not expected to materially exacerbate any existing unfair or inequitable environmental or public health burden relative to USTs on the EJ populations in the DGA.

In the built condition, the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise or increase traffic; and therefore is not expected to materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the DGA.

6.7.1.2 Construction Period

In an effort to avoid unfair or inequitable environmental and health burdens on EJ populations, the preferred route was selected to avoid and minimize work in EJ blocks units. The Falmouth landfall site is located at the intersection of Surf Drive and Shore Street within Census Tract 148, Block Group 1 – a constant for all four route options. As depicted on **Figure 16 – Environmental Justice Populations (Falmouth Alternative Routes)**, the landside cable alignments for Options 1 and 2 cross through EJ block units and thus do not avoid work in EJ block units. Option 4 while it avoids work in EJ block units is a longer route and was not selected as the preferred route as described in Section 3.0 – Alternatives Analysis, above[23]. The majority (approximately 65%) of the Preferred Route (Option 3) avoids EJ block units while the balance (approximately 35% of the route) passes along the margin of Census Tract 149, Block Group 3 in Mill Road. This alignment was selected because it: meets the project purpose and need; balances reliability, cost and environmental impacts; and does not impose and unfair or inequitable environmental burden on EJ populations. In Oak Bluffs the landfall, cable alignment and equipment yard are located outside of EJ block units and therefore does not impose and unfair or inequitable environmental burden on EJ populations.

Potential construction-period effects on EJ and non-EJ populations are related to air emissions, dust, noise and traffic related the HDD operations at the landfall sites and construction of the duct and manhole systems.

[23] The Preferred Project was selected to meet the Project purpose and need, while concomitantly balancing reliability, cost, and environmental impact.

Air Emissions: Air quality impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 am to 6:00 pm, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated air quality impacts include the creation of fugitive dust and emission of diesel exhaust.

HDD Operations: The duration of the work is approximately 90 days in Falmouth and 90 days in Oak Bluffs. Anticipated HDD construction equipment to be used during landside construction are listed below.

- Drill Rig
- Drill Fluid Pump
- 300 kW Generator
- Godwin Pump
- 24-inch hammer and accessories
- 3" Electric Pump (for IR Contingency)
- 3-6" Dry-prime pump
- 1 – Semi-Truck
- 2- Pickup Trucks
- 1-rubber tire excavator
- 1-Office Container
- 25 kW Generator
- 6-Site Light Towers

Duct and Manhole Construction: Anticipated duct and manhole construction equipment to be used during landside construction are listed below. The duration of the work is approximately 30 days in Falmouth and 5 days in Oak Bluffs.

- 1-Excavator
- 2-Triaxel Trucks
- 2- pickup trucks
- 300 kW Generator
- 1-roller/compactor
- 1-Office Container
- 25 kW Generator
- 3-Site Light Towers

<u>Hydroplow Operations</u>: While hydroplow operations will occur offshore and are not expected to impact EJ communities, the following is provided for informational purposes. The duration of the work is approximately 20 days.

- tug
- support boats
- diesel pumps (550 HP) for the plow
- Mooring winch (180 HP)
- 14 kv generator to support on-barge equipment, lights etc.

There are extensive mitigation measures in place to control dust and diesel emissions and ensure that construction activities create minimal impact to the surrounding communities, EJ and non-EJ communities. See Section 10.0 for proposed mitigation measures.

As the EJ block groups are not burdened with high levels of existing diesel particulate matter based on the EJ Screen analyses, the short-term diesel emissions from the Project are unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction impacts will not disproportionately impact the EJ populations. Construction mitigation measures are discussed in further detail in Section 10.0.

Dust

Dust impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 am to 6:00 pm, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated fugitive dust emission are associated with landside duct and manhole construction.

As the EJ block groups are not burdened with high levels of particulate matter based on the EJ Screen analyses, the short-term fugitive dust emissions from the Project are unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction impacts will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in Section 10.0.

Noise

Noise impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 am to 6:00 pm, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated noise are associated with construction equipment and vehicles for the HDD operations and landside duct and manhole construction.

Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction noise will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in Section 10.0.

Traffic

The Project will minimize traffic-related construction impacts to the extent possible. Construction traffic includes the daily trips of workers and construction vehicles transporting materials and equipment. Construction traffic will follow highly traveled state, county and municipal roads to access the duct and manhole routes and HDD landfall sites. Along these roads, construction-related traffic minimizes traffic through EJ block groups and therefore impacts will be minimized. Mitigation measures to address traffic activity are discussed further in Section 10.0. The construction period is timed to avoid peak traffic on Cape Cod and Martha's Vineyard.

As the EJ block groups are not burdened with high traffic volumes based on EJ Screen analyses, the short-term traffic from the Project is unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction traffic impacts will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in Section 10.0.

6.7.2 Comparative Impact on EJ vs non-EJ Populations

Next, the MEPA protocol specifies that a comparison between EJ and Non-EJ Populations should be drawn to assess adverse and disproportionate impacts.

"In reviewing adverse impacts on the EJ population, the Proponent should also analyze whether the impacts on the EJ population are greater or less than those on non-EJ populations. The purpose of this analysis is to assess whether the project is adding impacts to an already burdened area in a "targeted" way that is disproportionate when compared to non-EJ populations. While the Proponent should generally compare EJ and non-EJ populations within the project site, a comparable area outside the project site could be chosen—for instance, if the EJ population itself is located outside the boundaries of the project site (but within the project's designated geographic area) or if the project is located entirely within an EJ population such that a comparison with non-EJ populations within the project site is not possible. In some cases, it may be appropriate to compare similar prior projects undertaken by the Proponent in non-EJ populations to explain why the area containing the EJ population was chosen for the project at hand and whether alternative locations outside the EJ population were considered. If a comparable area is selected outside the project site, the Proponent should provide a clear justification for why the area is viewed to be "comparable" or "similarly situated" such that a comparison with the applicable EJ population is reasonable. The Proponent should conclude that the project will have a disproportionate adverse effect on the EJ population, if the adverse impacts of the project are materially greater on EJ populations than on non-EJ populations in the comparison area. If so, the Proponent must provide

an explanation of whether the project has considered practical alternatives to reduce or mitigate the impacts on EJ populations, and if so, what, if any, of such alternatives or mitigation were incorporated into the project."

Once built the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise or increase traffic; and therefore it will not materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the DGA.

6.7.3 Project and Environmental Benefits

Project proponents also must consider the benefits that the proposed Project would bring to the EJ population, as described below.

"In addition to analyzing adverse impacts, Proponent should analyze any project benefits that improve environmental conditions or the public health of the EJ population, or otherwise reduce the potential for unfair or inequitable effects on the EJ population. Emphasis should be given to project benefits that are intended to reduce any existing environmental burdens or public health consequences identified under Part II, or intended to mitigate project impacts that specifically affect the identified EJ populations. The Proponent should also analyze whether the project will provide "Environmental Benefits" for the identified EJ population, so as to result in a more equitable distribution of energy and environmental benefits and environmental burdens in accordance with "Environmental Justice Principles" as defined in 301 CMR 11.02."

Benefits from this Project are primarily found on Martha's Vineyard, include:

1. The 5th Cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island, benefiting EJ and non-EJ populations alike.
2. After the 5th Cable is in service Eversource will cease its contract to use the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators. The 1- and 5-mile radii from these generator sites are depicted in Figure 10 which suggest that this project element will benefit air quality for EJ populations within the 5-mile radii of the 2 generator sites. The future of the generators will be determined by the generator's independent owners, not Eversource.
3. The Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors, including the EJ community in Falmouth that partially borders this route.
4. The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.

5. The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

6.8 Analysis of Project Impacts to Determine Climate Change Effects

The EJ Analysis Protocol specifies the following analysis should take place in relation to whether the project will exacerbate the effects of climate change on the EJ populations. The text from the Protocol is included below.

"Unless the assessment in Part II shows the absence of any "unfair or inequitable" environmental burden or related public health consequence borne by the identified EJ population as compared to the general population, the Proponent must further analyze, in addition to the analysis in Part III if applicable, whether the proposed project will increase or reduce the effects of climate change on the EJ population. In conducting this assessment, the Proponent should consider the following:

Whether the project is likely to exacerbate the climate risks shown in the RMAT tool in a manner that affects the identified EJ population.; and

Whether the greenhouse gas (GHG) emissions associated with the project are likely to affect EJ populations that use or occupy the project"

6.8.1 Climate Adaptation

The RMAT Tool was consulted to find risks associated with climate change, as specified by the Protocol below.

"The Proponent should review the output report generated from the RMAT Tool to assess whether the climate parameters for sea level rise/storm surge and extreme precipitation (urban or riverine flooding) are ranked "High" and would affect the applicable EJ population(s). For instance, a residential dwelling that may not be sufficiently elevated to accommodate future sea level rise conditions may affect EJ populations, if it is located within an EJ population or specifically intended for use by EJ populations. Also, if a project proposes to cut a substantial number of trees in a manner that potentially adds to heat conditions in the area, or proposes to add impervious cover in a manner that worsens flooding conditions in the surrounding neighborhood, such impacts could have effects on EJ populations located in and around the project site. Any aspects of the project that could reduce climate risks, such as improvements to stormwater management systems and the use of pervious pavement and surfaces should also be reviewed. The Proponent should conduct analysis or modeling to quantify any anticipated climate change effects as appropriate, and should apply best available data on future climate conditions where available. The recommended design standards in the RMAT tool may provide a resource in performing such quantitative analyses."

The RMAT tool denotes the proposed Project would be considered "High" for Sea Level Rise / Storm Surge and Extreme Heat. There is "Moderate" risk for Extreme Precipitation – Urban Flooding and Extreme Precipitation – Riverine Flooding.

Underground distribution line design and installation is inherently adaptive and resilient to the potential effects of climate change. For example, most of the adverse weather conditions that traditional overhead distribution line infrastructures are exposed to above-ground can be avoided (e.g., wind and precipitation). In addition, the underground distribution line facilities are not affected by flooding and will not cause flooding or exacerbate existing flooding situations. The Project does not involve any fill or permanent aboveground structures in the 100-year floodplain, and the use of HDD technology to install the distribution line beneath the Falmouth and Oak Bluffs shoreline (including the mapped 100-year floodplain limits) avoids changes to surface grades where flood storage is presently provided. Thus, the Project will not affect flooding risk and accommodate seal level rise / storm surge and resulting in no unfair or inequitable consequence on EJ populations.

The Project has no effect on extreme heat risk and thus will not impact heat risk of EJ populations, resulting in no unfair or inequitable consequence on EJ populations.

6.8.2 GHG Emissions (if over 2,000 tons per year of GHG CO2e)

The Protocol continues on to quantify GHG emissions for projects that generate over 2,000 tons per year of CO2 equivalent greenhouse gas emissions.

> *"The Proponent should conduct a GHG emissions analysis if a project is expected to generate 2,000 or more tpy of GHG (CO2) emissions from conditioned spaces that are likely to be used or occupied by EJ populations. As a general matter, this analysis will be required only for residential dwellings or commercial buildings intended for human use or occupation and located in whole or in part within a census block designated as an EJ population. The estimate of GHG emissions can be generated by inserting building types and square footage into an Emissions Footprint Estimation Tool, available here. The analysis should generally follow the methodology set forth in the 2010 MEPA Greenhouse Gas Emissions Policy and Protocol (the "2010 GHG Policy"), and should provide energy efficiency modeling to support GHG estimates for the Base Case and Design Case. To the extent a project is already required to conduct a GHG analysis under the 2010 GHG Policy, that analysis will satisfy the requirements of this Part IV.B."*

The Project does not generate GHG emissions thus a GHG emissions analysis was not prepared. The Project however is expected to yield benefits relative to lowering GHG emissions. Those include:

1. The 5^{th} Cable and the Island's electrical system improvements will better accommodate integration of distributed renewable power generated on the Island.
2. After the 5^{th} Cable is in service Eversource will cease using the five on-Island diesel peaking generators which will reduce fossil fuel use, avoid air emissions from those decommissioned generators, and reduced GHG emissions associated with those generators.
3. The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth to support use of EVs.

6.8.3 Ecological Restoration (Wetlands)

Wetland restoration projects proposed pursuant to 310 CMR 10.00 the Wetlands Protection Act are permitted to provide information in an abbreviated checklist format.

Not applicable. The proposed Project is not an Ecological Restoration Project.

6.9 Mitigation and Section 61 Findings

The Project is required to address any disproportionate adverse effects that fall onto the EJ populations, as described by the text from the EJ Analysis Protocol below.

> *"To the extent any disproportionate adverse effects or increased climate change risks are identified for the EJ population under Parts II-V, the Proponent must describe measures to address such effects on EJ populations. These measures should be considered in addition to those that the project proposes to take to avoid, minimize and mitigate its environmental impacts more generally. For instance, measures proposed to reduce traffic congestion in the area (such as roadway improvements or traffic signals) may be sufficient to address potential deterioration in traffic conditions, but may not sufficiently address the disproportionate adverse effects that may result from the addition of air pollutants to an already burdened EJ population. In this instance, additional mitigation to further reduce project impacts (such as a more robust traffic demand management (TDM) program or re-routing project related traffic away from EJ populations) or to ameliorate the existing burden borne by the EJ population (such as contributions to public health services or air quality monitoring) may be warranted. Measures to address climate change risks are particularly important, in light of the vulnerabilities faced by the EJ populations that hinder access to affordable energy resources and the ability to adapt to extreme climate events, such as extreme and more frequent storms and associated flooding. In accordance with 301 CMR 11.07(6)(n), any EIR prepared under Section 58 of the Act must include proposed Section 61 findings identifying any and all actions to be taken to address any identified disproportionate adverse effects, or any increase in the effects of climate change, on EJ populations. Any Agency required to issue Section 61 Findings must then specify, as applicable, "any and all actions to be taken to reduce the potential for unfair or inequitable effects upon Environmental Justice Populations." 301 CMR 11.01(4)(c)2."*

Based on the results of this analysis, it was determined that the proposed Project does not contribute to any disproportionate adverse effects or increased climate change risks to the EJ populations within the DGA. The mitigation measures and draft Section 61 Findings are found in Section 10.0 below.

Section 7.0

Regulatory Compliance

7.0 REGULATORY COMPLIANCE

The following section presents a compliance review of the Project relative to the following state regulations:

- Ocean Management Plan (301 CMR 28.00);
- Wetlands Protection Regulations (310 CMR 10.00);
- Waterway Program (310 CMR 9.00);
- CZM Policies; and
- Water Quality Certification Regulations (314 CMR 9.00).

For the following review sections, the regulation requirements or performance standards are presented in italics typeface with the response presented in normal typeface.

7.1 Ocean Management Plan

7.1.1 Review of Ocean Management Plan Management Area Standards

The Massachusetts OMP Regulations identify Management Areas and Standards in 301 CMR 28.04. Further, Chapter 2 – Management as presented in the 2021 Massachusetts Ocean Management Plan Volume 1 – Management and Administration, provide guidance on standards for work within the OMP. The following section addresses these standards.

28.04: Management Areas and Standards

(1) Management Areas. Within the Ocean Management Planning Area, the following management areas are defined in the Ocean Management Plan:

(a) Prohibited Areas. Areas where Activities are expressly prohibited by either the Ocean Sanctuaries Act or Ocean Management Plan.

(b) Wind Energy Areas. Areas suitable and presumptively allowed for community-scale wind energy facilities and other renewable energy Activities subject to standards and conditions contained in the Ocean Management Plan and 301 CMR 28.00.

(c) Multi-use Areas. Areas, including portions of state waters not identified as Ocean Sanctuaries pursuant to the M.G.L. c. 132A § 13(a), where Activities allowed under the Ocean Sanctuaries Act and 301 CMR 27.00: Ocean Sanctuaries are subject to the standards and conditions contained in the Ocean Management Plan and 301 CMR 28.00.

Review of Figure 2. Management areas designated in the ocean plan, in the 2021 Massachusetts OMP Volume 1 depict the project area as being in a Multi-use Area. See attached copy presented in Attachment B as **Figure 17**.

(2) Management Standards for Special, Sensitive or Unique Resources. The following standards apply only to those Activities that are required to file an Environmental Impact Report pursuant to MEPA:

(a) Activities proposed in the Ocean Management Planning Area are presumptively excluded from the Special, Sensitive or Unique Resource areas delineated on maps contained in the Ocean Management Plan and maintained in the Massachusetts Ocean Resources Information System.

(b) This presumption may be overcome by demonstrating to the Secretary that:

1. *The maps delineating the Special, Sensitive or Unique Resources do not accurately characterize the resource based on substantial site-specific information collected in accordance with data standards and processes contained in 301 CMR 28.08; or*

Project specific mapping presented in this SEIR generally support the OMP mapped SSU Resource areas. See Figure 11 – Dominant CMECS Substrate Classification. The substrate types in the fall 2021 Marine Survey that are expected to be temporally disturbed by hydroplow activities are quantified in **Table 7.1 - Surveyed Substrate Type Affected by Hydroplow** below. Changes to the OMP mapped SSU boundaries are discussed above in Section 3.4. Those changes document the somewhat extended boundaries of hard bottom and complex seafloor within and adjacent to the 1,000-foot study corridor, and along the Western Alternative routes evaluated in Section 3.4.

Table 7.1 Surveyed Substrate Type Affected by Hydroplow

CZM Substrate Type	Total Length (ft)	Maximum Estimated Disturbance (s.f.)
Flat Sand	2,360	28,326
Sand Waves	3,607	43,286
Gravel Pavement	7,432	89,188
Cobble Pavement	7,670	230,094
Boulder Field	4,048	121,449
Crepidula Reef	2,812	33,748
Hydroplow Segment	27,930	546,090
Full Offshore Cable	32,876	

2. *No less environmentally damaging practicable alternative exists. For the purposes of this standard, an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics with respect to the purpose of the Activity; and*

Please see Section 3.0 Alternatives Analysis which demonstrates there is no less environmentally damaging practicable alternative to the proposed 5th Cable to Martha's Vineyard which meets the stated project purpose and need. Further, Section 3.4 addresses the submarine cable routes relative to the OMP criteria including cost, technology and logistics.

Cost: Installing the cable in the most direct path across Vineyard Sound is the lowest cost option, as compared to a cable that meanders across Vineyard Sound. Although a direct lay cable has lower installation costs, direct lay cables: do not meet DPU standards to bury cables, does not meet the Proponents standard to use buried cables to ensure protection against damage (e.g., anchor strikes, fishing gear, etc.), and is not as reliable because direct lay cables are more vulnerable to damage (e.g., environmental factors, fishing activity, anchor strikes, etc.) resulting in outages. Therefore, in an effort to balance cost and project purpose –improved reliability of grid-based electrical service on Martha's Vineyard– a buried cable was selected as the option that balances reliability, cost and environmental impact.

Existing Technology: The Proponent proposes to use horizontal directional drilling at both the Falmouth and Oak Bluffs landfalls to avoid eelgrass along the Falmouth shoreline; and intertidal resources, and beach in both Falmouth and Oak Bluffs.

The use of hydroplow (or jet plow) is the least disturbing method to lay buried submarine cable, as compared with the traditional cut and cover method, which involves dredging a trench, laying the cable in the trench and backfilling the trench.

Logistics: Given logistical reasons, the proposed cable corridor cannot avoid the mapped hard/complex SSU units as noted below.

1. Figure 5 – Hard/Complex Bottom and Eelgrass Areas depicts the 2015 and 2021 hard/complex seafloor mapping. The 2021 mapping was publicly available January 2022. The 2015 mapped units were considered when planning the submarine cable route in summer 2021 and the proposed cable corridor was selected to avoid all but one of the 2015 mapped units.
2. The 2021 mapping is more extensive including continuous east-west oriented mapped units. The cable extends in a north-south orientation from Falmouth to Martha's Vineyard, thus crossing these units is unavoidable.
3. The existing 99 Cable landfalls at Surf Drive is located at the far easterly edge of the beach parking lot, essentially in line with Shore Street, see Chapter 91 License Plans (License No. 6007) in **Attachment D – Chapter 91 Licenses.** This location leaves no alternative but to site the new 5th Cable landfall west of the existing 99 Cable landfall. With the starting point west of the 99 Cable –an existing in-service, energized, and direct lay cable, i.e., it rests on the seafloor– means that the buried cable alignment needs to avoid crossing the 99 Cable to avoid damaging it. Therefore, the 5th Cable must be located west of the exiting 99 Cable across Vineyard Sound. Please Section 3.4.1.4 above for additional discussion about cables crossing and the logistical challenges associated with crossing the direct lay 99 Cable.

In conclusion, it is the Proponent's opinion the proposed Project is the practicable alternative. A detailed alternatives analysis, focusing on OMP criteria is presented in Section 3.4 above, demonstrates the Preferred Cable Alignment is the least environmentally damaging alternative relative to SSUs.

3. *The Proponent has taken all practicable measures to avoid damage to Special, Sensitive or Unique Resources, and the Activity will cause no significant alteration Special, Sensitive, or Unique Resources. Demonstrating compliance with this standard may include the incorporation of measures to avoid resources and impacts through time of year controls such that the construction, operation, or removal of the Activity will not occur when the Special, Sensitive or Unique Resource is present or may be adversely effected; and*

See Section 3.4 for the description of measures to avoid and minimize altering SSU Resources. In summary:

Avoidance: HDD at the two landfalls is proposed to avoid eelgrass off the Falmouth coastline, plus intertidal resources and beach along the Falmouth and Oak Bluffs coastlines. Additionally, jet plow construction is proposed to bury the cable to minimize altering the seabed as compared to excavating a trench, installing the cable, and backfilling the trench.

The use of jet plow cable laying construction was selected because it does not require the removal or replacement of bottom sediments. The major components of the jet plow are the stinger and the skids.

The plow stinger, with the cable leading down its back edge, is pulled across the seabed by a barge edging forward on anchors and winches. Water nozzles on the stinger liquefy a narrow zone of sediment approximately six to eight inches wide directly in front of the plow stinger, allowing the stinger to proceed through the liquefied sediment while laying down the proposed cable as the water nozzles and plow stinger continue forward. The narrow zone of liquefied sediment closes over the installed cable, protecting it under the native sediment as it settles back in the trench. The hydroplow typically rides on skids that act much like snow skis, guiding the hydroplow over the bottom surface. The total width of temporary disturbance due to the combined fluidized trench and skids is approximately 10- to 12-feet wide.

The sediment across Vineyard Sound within the cable corridor is generally coarse-grained sand with pockets of cobble and boulders. Because it is coarse grained sediment, the vast majority of sediment is expected to settle back within the jet plow furrow.

No Significant Alteration to SSU Resources: Use of jet plow construction was selected to avoid permanent changes of the sea floor, especially complex and hard bottom seafloor, and minimize area of temporary alteration. The jet plow furrow is a narrow strip across the Vineyard Sound seabed with unaffected seafloor on either side. For this Project the maximum potential (i.e., worst case scenario) complex/hard bottom seafloor alteration would occur if the entire length of cable through hard bottom required cable protection yielding approximately 4.8 acres of alteration (3.81 hard bottom cable protection and 0.99 acres temporary jet plow through complex seafloor), which is a very small proportion of the Vineyard Sound seafloor.

In terms of seafloor recovery time, construction of the nearby NSATR/Comcast Cable, referred to now as the Eversource 75 Cable (EEA No. 14755) which was completed in late-April 2014 provides a case study through Vineyard sound. The post-construction survey was conducted in late-May / early-June approximately six weeks after construction was completed. <u>After only six weeks</u> the surveys documented <u>only minor disturbance</u> resulting from cable installation, described as a narrow furrow of 2- to 10-feet wide and 1- to 2-foot deep with a sandier substrate than adjacent areas. No visible disturbance was observed in the areas used for anchoring associated with the HDD activities. The conclusion of the post-construction survey reads:

> *"The post-construction marine surveys consisted of the collection of bathymetry, side scan, underwater video of the cable installation cable route, the anchor positions off Tisbury and the 10-12 foot exposed cable area. These surveys provided data on bottom sediment characteristics, biota, areas of disturbance, and other substrate features of importance such as the presence of eelgrass.*
>
> *These data allowed for a determination that the only disturbance to the bottom created by the cable installation was a narrow sandy furrow due to hydroplowing and diver burial, and there was no evidence that hard/complex seafloor, eelgrass Special, Sensitive, or Unique (SSU) species or habitats were damaged.*
>
> *Underwater video surveys of the anchor positions off Tisbury found no evidence of disturbance.*
>
> *Underwater video surveys of the 10- to 12-foot exposed cable found that pebble bottom was the dominant sediment characteristic of that area with little evidence of biota. Permits will be filed to seek approval to cover the exposed cable to protect it.*
>
> *Since the cable installation avoided damage to hard/complex bottom and eelgrass (SSU species and habitats for cable routing), mitigation should not be necessary."*

In summary, after six weeks the corridor was on a trajectory towards recovery.

Cable Protection: As described above in Section 2.8, a contingency for cable protection is identified should the design burial depth not be achieved. The Proponent will evaluate and coordinate with state agencies to select the preferred protection design. Although the selected protection scheme is not decided presently, again the previous NSTAR-Comcast Cable Project provides a case study for planning purposes.

First, for that project there was only one single location where the cable was found to be exposed during the post-construction surveys. That was an approximately 10- to 12-foot section.

Second, this short, exposed section appears to have been caused by a boulder, but the location was <u>not</u> within the continuous mapped hard bottom SSU associated with "Middle Ground," but rather it appears to be associated with a discrete small patch mapped as complex/hard bottom (2021 mapping).

That example is not identified as the primary cable protection design for the 5th Cable, should protection be required. Rather it provides the overall horizontal dimension of likely protection. It is planned that cable protection would need to approximately 10-feet wide centered over the exposed cable (comprised of +/-2 feet of protection above cable, with the protective material forming an approximately 1-foot wide "table top" over the cable, with 2:1 slope slopes [horizontal to vertical] extending to the adjacent seafloor. Protection of this design remains within the footprint of 12-foot wide trough used to calculate the overall alteration of Land Under the Ocean (i.e., "other wetland").

The longest crossing of hard bottom seafloor is associated with Middle Ground and is approximately 3,000 feet long (total hard bottom crossing is 4,465 feet, see Table 3.1 above). As described above in Section 2.2 a pre-pass jet plow is planned to identify any areas where design burial depth cannot be achieved, if any. After the pre-pass is completed the actual length of cable protection, if needed, will be determined. For contingency planning purposes, it is assumed that cable protection will be required through the full length of hard bottom seafloor (i.e., the worst-case scenario). That correlates to cable protection across approximately 3.81 acres of hard bottom seafloor. Note, the 75 Cable (or the NSTAR-Comcast cable) installed in 2014 achieved full burial depth across this same hard bottom "formation"). Thus, actual cable protection is expected to be less than the worst-case scenario.

Time of Year ("TOY") Restrictions: The in-water work, HDD and jet plow operations, are planned for fall 2023, extending into winter 2023-2024. This avoids TOY restrictions periods as per pre-filing conversations with DMF. The Proponent will work with the agencies (DMF and NHESP) to meet TOY restrictions, if any are determined necessary.

4. *The public benefits associated with the proposed Activity outweigh the public detriments to the Special, Sensitive or Unique Resource.*

First and foremost the Project purpose, improving the electrical system reliability on the Island, is a public benefit. The Proponent has a fundamental responsibility to provide and maintain reliable electrical service throughout its service area, for the benefit of all customers. A reliable supply of electricity is essential for the health, safety, and welfare of the public and the economy. The Project benefits are described in Section 3.4.2 of the alternatives analysis and 6.7.3 Project and Environmental Benefits which identifies the benefits resulting from the proposed Project:

- The 5th Cable and on-Island electrical system improvements will assist the Martha's Vineyard Commission Climate Action Task Force ("CATF") achieve their goals which include: reducing fossil fuel use on the Island, increasing renewable energy use on the Island, and encouraging increase penetration of electrical vehicle use on the Island. The 5th Cable can provide the increased electrical demand needed to achieve these goals.

- After the 5th Cable is in service Eversource will cease using the five on-Island diesel peaking generators. These are large utility scale generators as follows:

    - West Tisbury – 2 generators (WT1 and WT2) each at 2.5 MW (29.315 MMBtu/hr) for a total of 5 MW capacity

- Oak Bluffs – 3 generators (OB1, OB2, OB3) each at 2.5 MW (29.315 MMBtu/hr) for a total of 7.5 MW capacity

  Use of these generators for the past two complete years (2020 and 2021) are presented below in **Table 7.2 - Peak Generator Use Summary**. The total hours for all five generators correlate to a single 2.5 MW generator operating 24-hours per day for 28 days (27.9 days) in 2020, and 51 days (51.3 days) in 2021.

  Decommissioning these generators will reduce fossil fuel use, and avoid greenhouse gas and air emissions on the Island. Reduce air emissions from those decommissioned generators is estimated to be approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO2, based on 2020/2021 operating hours and EPA AP-42 emission factors. The 1- and 5-mile radii from these generator sites are depicted in Figure 10 which suggests that this project element will benefit air quality for EJ populations within the 5-mile radii of the two generator sites.

- The Shining Sea Bikeway will be widened which will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage.

- The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.

Table 7.2 Peak Generator Use Summary

2020 Generator Run Time by Month (Hours)													
Generator	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
WT1	0	0	0	0	0.5	0	15.3	46.2	0	0.3	0	0.5	**62.8**
WT2	0	0	0	0	3.1	2.5	92.6	172.4	9	0.3	0	0.3	**280.2**
OB1	0	0	0	0	3.1	0	68.2	162.2	8.9	0.6	0	0	**243**
OB2	0	0	0	0	0	0	7	61.8	0	0.3	0	0	**69.1**
OB3	0	0	0	0	0	0	0	13.2	0	0.4	0	0	**13.6**
Total													**668.7**

Table 7.3 Peak Generator Use Summary (Continued)

2021 Generator Run Time by Month (Hours)													
Generator	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
WT1	0	0	0	0	5.5	15.4	164.7	240.4	2.8	0	1.3	0	**430.1**
WT2	0	0	0.2	1.6	5.1	3.6	0	0	0	0	0	0	**10.5**
OB1	0	0	1.2	3.5	5.6	23.8	176.8	223.1	0	1.3	2.7	0	**438**
OB2	0	0	0	4.7	1	7	86.6	143	0	0	0	0	**242.3**
OB3	0	0	0	4.6	0	0.3	45.4	59.7	0	0	0	0	**110**
Total													**1230.9**

7.1.2 Additional Standards

(3) Management Standards for Concentrations of Water-dependent Uses. The following standard applies only to those Activities which are required to develop an Environmental Impact Report pursuant to MEPA. To the maximum extent practicable, Proponents of Activities must avoid, minimize, and mitigate impacts to areas of Concentrations of Water-dependent Uses delineated on maps developed in the Ocean Management Plan and maintained in the Massachusetts Ocean Resources Information System.

As presented in Table 2-10 of the 2021 OMP Volume 1 the only water-dependent use ("WDU") to be addressed for cable projects is "fixed fishing facilities". As depicted on OMP Figure 29. Special, sensitive, or unique resources and concentrations of water-dependent uses to be addressed for cable projects, there are no fixed fishing gear facilities in the Project area.

(4) Additional Management Standards for Renewable Energy Activities. The following standards apply to Renewable Energy Activities: …

Not applicable, this is not a renewable energy project.

(5) Additional Management Standards for Sand and Gravel Extraction Activities. The following standards apply to Sand and Gravel Extraction Activities: …

Not applicable this is not a sand or gravel extraction project

(6) Additional Management Standards for Cable Activities. The following standards apply to Cable Activities:

(a) Cable Activities proposed in the preliminary areas for offshore wind transmission cables as shown in the Ocean Management Plan are in presumptive compliance with the siting standards in the Ocean Management Plan and in 301 CMR 28.04(2), provided that:

The Cable is not located in an offshore wind area, nor does it serve an offshore wind energy project. The MVRP is identified as an electrical cable in the OMP Planning Area as depicted on OMP Figure 28. Electrical and telecommunication cables and natural gas pipelines in the planning area, in the 2021 Massachusetts OMP Volume 1.

1. *Investigations and survey confirm the predominance of soft-bottom seafloor (i.e., the general absence of hard-bottom substrate) within the preliminary areas for offshore wind transmission cables such that sufficient burial depths for cables can be reasonably expected. The presence of relatively small areas of hard-bottom substrate, such that the cable route cannot be practicably located without going through these areas of hard-bottom substrate, within acceptable limits, is permissible, based on review and determination by the Secretary in consultation with EEA agencies.*

As described in Attachment G – Marine Survey Report the majority of the cable route is soft bottom seafloor. The MassGIS mapped SSUs (Figure 5) combines the hard bottom and complex seafloor types as a single map unit. The more detailed seafloor mapping presented in Attachment G (Figures 14 and 18) provides greater detail about the seafloor types. Review of Attachment G Figure 14 shows that approximately 4,050 l.f. (12%) of corridor is mapped as Gravel Pavement (Boulder) seafloor while another 7,670 l.f. (23%) is mapped as Gravel Pavement (Cobble) seafloor. The remainder is mapped as other seafloor types.

Figure 5 depicts the cable corridor plus the 2015 and 2021 mapped SSUs (the 2021 SSUs became publicly available in January 2022). The corridor was laid out in the summer / fall of 2021 to start corridor-specific surveys: marine geophysical, bathymetric, biotic surveys; sediment characterization; and marine archaeological assessment. The corridor was laid out to avoid all but one of the SSUs as per the 2015 mapping. The newer (2021) mapping shows more extensive hard/complex seafloor across the Sound, making avoidance impossible. The alignment however, minimizes crossing hared/complex to the extent practicable.

All other SSUs in the cable corridor –eelgrass and intertidal resources– are being avoided with the use of HDD.

2. *Time of year controls are in place such that operations and dredging will avoid damage and cause no significant alteration to the following Special, Sensitive or Unique Resources: North Atlantic right whale core habitat, Humpback whale core habitat, and Fin whale core habitat.*

Based on the 2021 OMP Volume 1 no work is proposed in the SSU core habitat for North Atlantic right whale, Humpback whale, or Fin whale. See 2021 OMP Volume Figures 4, 5, and 6.

(b) Project proponents must develop and implement a biological and physical monitoring plan for the sand source area and beach nourishment site, in consultation with EEA agencies and subject to the Secretary's approval.

The proponent will conduct post construction geophysical, biotic and video surveys to document conditions along the cable alignment within 6-months of completing the cable installation. That monitoring plan is summarized in Section 7.2.1.5 below.

Shellfish Habitat Suitability: The proposed cable route crosses through habitat that is suitable for bay scallop (*Argopecten irradians*) near the landfall area in Falmouth. It crosses through habitat that is suitable for both bay scallop and quahog (*Mercenaria mercenaria*) near the southern landing area on Martha's Vineyard. Shellfish Suitability and Designated Growing Areas are depicted on Figure 18 – Shellfish Suitability and Designated Growing Areas. It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area. The submarine cable will be installed using hydroplow construction, and as described in the EFH Assessment no long-term effects on fish habitat is anticipated.

7.1.3 Ocean Development Mitigation Fee

Following is a review of the parameters for evaluating the project relative to assessing the fee and the proposed fee based on the fee structure presented in the 2021 OMP Appendix 3.

301 CMR 28.06: Ocean Development Mitigation Fee

(1) Any Activity subject to the jurisdiction of the Ocean Management Plan and these regulations and requiring a permit or license issued by a department, division, commission, or unit of the Executive Office of Energy and Environmental Affairs and other affected agencies or departments of the commonwealth shall be subject to an Ocean Development Mitigation Fee as established by the Secretary. The purpose of the fee is to compensate the Commonwealth for unavoidable impacts of ocean development Activities on the broad public interests and rights in the lands, waters, and resources of the Ocean Planning Area and to support the planning, management, restoration, or enhancement of marine habitat, resources, and uses pursuant to the Massachusetts Oceans Act. No portion of the fee assessed by the Secretary shall be based on the Activity requiring a commercial or recreational fishing permit or license.

(2) All fees assessed by the Secretary shall be deposited in the Ocean Resources and Waterways Trust pursuant to M.G.L. c. 10, § 35HH and shall be administered in accordance with the purposes of the Fund and guidelines established by the Secretary.

(3) The fee structure for ocean development Activities subject to the Ocean Management Plan and 301 CMR 28.00 shall be contained and promulgated in the Ocean Management Plan.

(4) The Ocean Development Mitigation Fee as determined by 301 CMR 28.06(3) will be listed in the final MEPA certificate.

(5) Nothing in 301 CMR 28.06 shall modify or otherwise affect an Agency's independent authority to require the Proponent to provide mitigation or compensation in lieu of mitigation as a condition of a permit or license issued by the Agency for the Activity.

As per subsection (3) above we review the fee structure as contained and promulgated in the 2021 OMP. See below. The parameters for evaluating the Ocean Development Mitigation Fee are presented in the 2021 OMP Volume 1 -Chapter 3 – Administration which reads as follows (in italics typeface):

> *The Oceans Act requires that any project subject to the ocean plan shall be assessed an Ocean Development Mitigation Fee as established by the EEA Secretary. According to the regulations implementing the Act (301 CMR 28.06), the purpose of the fee is to compensate the Commonwealth for unavoidable impacts of ocean development projects to the broad public interests and rights in the lands, waters, and resources of the planning area, as well as to support the planning, management, restoration, or enhancement of marine habitat, resources, and uses pursuant to the Act. The Act and its implementing regulations state that commercial or recreational fishing permits and licenses are not subject to the fee.*
>
> *The regulations also require the EEA Secretary to promulgate a fee structure for ocean development projects based on their scope, scale, and effects on protected resources or uses. A fee structure and accompanying guidance were adopted in the 2015 ocean plan with input from an advisory working group comprised of representatives from the regulated community, commercial fishing and environmental interests, and state agencies. For the 2021 ocean plan, the fees were revised to reflect federal Cost of Living Adjustments.*[30]
>
> *Three activity classes were established for the fee structure, and general guidelines were developed to differentiate a proposed project's scope, scale, and effects. Using the fee structure in Appendix 3 as guidance, project proponents provide information and analysis during MEPA review to inform the determination of the fee. This information is submitted in the Draft EIR filing (or in the case of a Single EIR, in the Expanded ENF) and should include a detailed description and analysis of:*
>
> - *The nature and location of the project;*
> - *Project alternatives;*
> - *Impacts of the project and its alternatives, including both short-term and long-term impacts for all phases and cumulative impacts;*
> - *Measures and management techniques to be taken to avoid, minimize, and mitigate potential impacts to the environment, water-dependent uses, and public trust interests;*
> - *Public benefits of the project, and other mitigation proposed, separate and distinct from the Ocean Development Mitigation Fee;*
> - *Proposed Section 61 Findings; and*
> - *Information for a Public Benefits Determination, including the nature of the tidelands affected by the project and the public benefit* of the project.

The project proponent uses this information to determine the appropriate fee class. Proponents may request that the fee be paid over several years, up to a maximum of 10 years. Proponents may also seek a reduction of the fee based on a clear demonstration of need or hardship. The MEPA filing shall include a statement of the specific circumstances that constitute the need or hardship, and the relief requested.

During the EIR process, agencies, stakeholders, and the public may provide comments to the EEA Secretary on the proposed fee class. These comments can concur with the proposed fee class or recommend a different one as substantiated by their review and comments. The EEA Secretary shall issue a determination of the final fee to be referenced in the final MEPA Certificate. The determination will be based on the MEPA filing, comments received, evaluation of the proposed project and its effects, public benefits, other proposed mitigation, and other applicable information. As administrator of the fee, the EEA Secretary retains broad discretion in determining the fee amount and any conditions necessary to ensure that the "as-built" project is consistent with the project as described in the final MEPA EIR filing.

Consistent with the guidance provided in the 2021 OMP Appendix 3, this SEIR presents the following information and analysis to inform and determine the Ocean Development Mitigation Fee.

The nature and location of the project:

- The submarine cable is proposed across Vineyard Sound, with landing points on Surf Drive in Falmouth and Eastville Avenue in Oak Bluffs. The cable corridor is generally parallel to and west of the existing 99 Cable. The new submarine cable is approximately 6.27 miles long – comprised of 5.66 miles of cable installed by trenchless construction plus 2,153 feet by HDD at the Falmouth landing site, and 1,100 feet by HDD at the Oak Bluffs landing site.

Project alternatives:

- Eversource evaluated various alternatives to address Martha's Vineyard electrical reliability and demands (existing and future) to determine the approach that best balance's system reliability, cost, and environmental impacts. Section 3.0 identifies and evaluates alternative means of meeting the Project purpose and need. Alternatives evaluated included:

    - the No-Build Alternative,
    - On-Island Generation (Battery Storage and Diesel Generators);
    - Four Cable Option; and
    - A 5th Cable.

Additionally, landside cable routing alternatives from the landing sites were evaluated as well as submarine cable routes. As described in Section 3.1, Eversource dismissed the no-build alternative because it would not meet the identified project purpose and need. There is no feasible or practical on-Island electrical generation alternative, therefore that was not considered beyond the conceptual stage. On-Island battery storage was evaluated, and preliminary study, design and costs were developed. Those assessments determined that on-Island battery storage was too costly and furthermore, it would not meet the long-term demand needs or be able to integrate dispersed renewable generation into the Island's electrical system, therefore on-Island battery storage was removed from further consideration. Based on the alternatives assessment, the option of constructing a 5th Cable to Martha's Vineyard was selected as the preferred alternative.

In Falmouth four landside cable routes were evaluated to connect the cable from the existing Stephens Lane Substation to the waterfront in an underground duct and manhole system. That evaluation identified the route along Jones Road, the Shining Sea Bikeway, Mill Road, and Surf Drive as the preferred route. This route minimizes construction-period disruptions to the built and natural environments.

Eversource's analyses show that construction of the Project is the best approach to meeting the identified need based on balancing system reliability, cost, and environmental impact. Please refer to the narrative provided in Section 3.0 for a discussion of the alternatives considered.

Measures and management techniques to be taken to avoid, minimize, and mitigate potential impacts to the environment, water-dependent uses, and public trust interests:

The selected construction methods described in Section 2.0 are themselves the primary mitigation to avoid and minimize potential Project impacts. Once installed, the buried landside and submarine cable impacts will be negligible, therefore the assessment focused on mitigating construction-period impacts.

Avoiding and Minimizing Coastal Resources:

The use of HDD at both landfalls avoids altering beach, intertidal resources and eelgrass beds along the Falmouth shoreline, while in Oak Bluffs it avoids intertidal resources, beach, and dune. The use of hydroplow construction to bury the cable below the seabed is a less disruptive construction technique than traditional trench and backfill construction. The use of these two construction techniques are themselves measures to mitigate alterations to SSUs and coastal resources. Furthermore, the Project will observe TOY restrictions as may be developed by NHESP and/or the DMF. Eversource will consult with NHESP via MEPA review and during Project permitting to identify the appropriate TOYs to avoid a "take." See Section 10.0 for a more detailed discussion of mitigation techniques.

Public benefits of the project, and other mitigation proposed, separate and distinct from the Ocean Development Mitigation Fee:

The basic Project purpose is to improve the reliability of grid-based electricity on Martha's Vineyard, because reliable electrical power is critical to protecting and maintaining public health and safety for the residents and visitors to Martha's Vineyard. Additionally, the 5th Cable will support the goals of Island leaders which include: increased penetration of electrical vehicle use on the island, reducing fossil fuel use on the Island, and better integrating distributed renewable power into the Island's power grid. Further, as per 310 CMR 9.12 the cable is an infrastructure crossing facility –a water dependent use– and thus it is presumed to serve a proper public purpose which provides greater benefit than detriment to the rights of the public in tidelands [310 CMR 9.31].

Beyond those benefits to the public, the following benefits will be realized:

- After the 5th Cable is in service Eversource will cease its contract to use the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators. The future of the generators will be determined by the generator's independent owners, not Eversource.

- The Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.

- The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

The Project's public benefits are summarized in Section 6.7.3.

Proposed Section 61 Findings:

Proposed Section 61 findings are presented in Section 10.0.

Information for a Public Benefits Determination, including the nature of the tidelands affected by the project and the public benefit of the project:

Information for the Public Benefit Determination is provided herein, in Section 1.3.2 above.

7.1.3.1 Ocean Development Mitigation Fee Structure

As described in the 2021 OPM Appendix 3, "*…the fee serves to offset, in part, unavoidable impacts on the broad public interests and rights in the lands, waters, and resources of the planning area not otherwise mitigated under separate authorities.*" The Fee Structure from Appendix 3 is presented in **Table 7.3 - Ocean Mitigation Development Fee Schedule** below, copied from the 2021 OMP.

The 5th Cable meets all but one of the criteria described as a Class I activity. The Project:

- Is limited in scale, size, and footprint, and is located in an existing cable crossing corridor.
- Its effects are limited in duration, to the constriction-period only.
- It has negligible or minor effects on habitat or natural resources (see Attachment H – Essential Fish Habitat Report).
- Has negligible or minor effects on water-dependent uses.

The proposed Project is expected to temporarily alter approximately 8.23 acres of seafloor which places it in the Class II category based on size only. Whereas the Project falls within Class II only based on the size criterion, and provides greater public benefit than detriment, we respectfully request a fee of **$100,000** which is the lower end of the Category 2 fee range.

Table 7.4 Ocean Mitigation Development Fee Schedule

Activity Class	Project Scope, Scale, and Effects	Fee
Class I	• Project is limited in scale, size, and footprint. • Project footprint is less than 6 acres and project extent is generally confined to the seafloor (i.e., does not also include, or has only very minor expression in, the water column, water surface, and/or area above the ocean). • Effects are limited in duration (i.e., primarily during construction/installation). • Project has negligible or minor effects on habitat or natural resources. • Project has negligible or minor effects on water-dependent uses.	$12,000-$50,000
Class II	• Project is moderate in scale, size, and footprint. • Project footprint is 6-20 acres and project extent may include a limited amount of water column, water surface, and/or area above the ocean. • Effects are more than temporary, extend beyond construction/installation, or are recurrent. • Project has moderate effects on habitat or natural resources. • Project has moderate effects on water-dependent uses.	$100,000-$350,000
Class III	• Project is large and/or complex in scale, size, and footprint. • Project footprint is greater than 20 acres and project extent may include a moderate/major amount of water column, water surface, and/or area above the ocean. • Effects are frequent, recurring, and/or continuous in duration and permanent/lasting. • Project has major effects on habitat or natural resources. • Project has major effects on water-dependent uses.	$600,000-$6,000,000

Negligible. Effects are at the lowest levels of detection, barely measurable, with no perceptible adverse consequences to the resources.
Minor .... Effects are measurable or perceptible but are slight. Impacts are to very few resources. Most impacts to the affected resources are avoided or mitigated. Affected resources will recover quickly.
Moderate. Effects are measurable and perceptible. Impacts are to more than a few resources. Impacts to the affected resources are unavoidable. Affected resources will recover within a short time span.
Major .... Effects are noticeable, substantial, and/or lasting. Impacts to the affected resources are unavoidable and affected resources will take appreciable time to recover or may not fully recover.

7.2 Wetlands

This section provides a discussion of the Project's proposed impacts, mitigation, and regulatory compliance specific to wetlands.

7.2.1 Wetlands Protection Act

The Massachusetts Wetlands Protection Act (G.L. c. 131 § 40) and implementing regulations (310 CMR 10.00) is a state law and regulation administered locally by Conservation Commissions. In addition to administering the WPA, the Conservation Commissions of Falmouth, Tisbury and Oak Bluffs administer local wetland bylaws: Falmouth Chapter 235 Wetlands Protection Bylaw, Oak Bluffs General Wetlands Bylaw, and the Tisbury General Wetlands By-Law. The WPA and bylaws require the preparation of a Notice of Intent for certain activities within a wetland resource area and/or work within 100 feet of certain wetland resource areas (i.e., the 100-foot Buffer Zone). The general performance standards for work or activities occurring within wetland resource areas are identified in the WPA and bylaws.

The Proponent will file NOIs for the Project with the Conservation Commissions in Falmouth, Oak Bluffs, and Tisbury. Those filings will more thoroughly address the Project's potential wetland impacts in terms of protected interests and the methods by which the Project will meet the performance standards for each resource area. As the Project involves a buried cable in both the marine and landside sections of the alignment, it will result in no permanent alteration of resource areas or adversely affect their presumed interests. Project construction requires unavoidable work in resource areas, but these will be temporary and minimized with appropriate mitigation measures.

7.2.1.1 Coastal Wetlands

Project work will be located in or proximate to the following coastal wetland resource areas or the 100-foot buffer zone to applicable resource areas:

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Barrier Beach;
- Land Containing Shellfish; and
- Land Subject to Coastal Storm Flowage.

As shown on Figure 19 – National Heritage and Endangered Species Program Mapping, the route across Vineyard Sound passes through NHESP Priority Habitats for State-Protected Rare Species and Estimated Habitats for Rare Wildlife. Accordingly, the Proponent will seek consultation with the NHESP via a Joint WPA-MESA Notices of Intent.

7.2.1.2 Compliance with Performance Standards

Cable construction is limited to work in Land Under the Ocean, Land Containing Shellfish and Land Subject to Coastal Storm Flowage. No work is proposed in the following wetland resource areas:

- **Barrier Beach:** There are Barrier Beach units present along Surf Drive. No new duct and manhole system is required in Surf Drive because the new cable will be installed in the existing duct system
- **Coastal Dune:** The use HDD construction avoids altering Coastal Dune in Falmouth and Oak Bluffs.

- **Coastal Beach:** The use of HDD construction avoids altering Coastal Beach in Falmouth and Oak Bluffs.

The following is a review of resource areas in which work will occur.

Land Under the Ocean

Land Under the Ocean is defined at 310 CMR 10.25(2) as: "… land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction…" The regulations at 10.25(1) also read that "When a proposed project involves the dredging, removing, filling or altering of land under the ocean beyond the nearshore area, the issuing authority shall presume that such land is significant to the protection of marine fisheries and, where there are shellfish, to the protection of land containing shellfish and that it is not significant to storm damage prevention, flood control or protection of wildlife habitat."

The regulatory performance standards for work in Land Under the Ocean stipulate that: *"When land under the ocean or nearshore areas of land under the ocean are found to be significant to the protection of marine fisheries, protection of wildlife habitat, storm damage prevention or flood control, 310 CMR 10.25(3) through (7) shall apply:"*

> *10.25(3) Improvement dredging for navigational purposes affecting land under the ocean shall be designed and carried out using the best available measures so as to minimize adverse effects on such interests caused by changes in: the sub sections as specified in 10.25(3)(a) – (d).*

Not Applicable. The MVRP does not involve improvement dredging.

> *10.25(4) Maintenance dredging for navigational purposes affecting land under the ocean shall be designed and carried out using the best available measures so as to minimize adverse effects on such interests caused by changes in marine productivity which will result from the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, the accumulation of pollutants by organisms, or the destruction of marine fisheries habitat or wildlife habitat.*

Not Applicable. The MVRP does not involve maintenance dredging.

> *10.25(5) Projects not included in 310 CMR 10.25(3) or (4) which affect nearshore areas of land under the ocean shall not cause adverse effects by altering the bottom topography so as to increase storm damage or erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes.*

Complies. The proposed cable installation in nearshore areas involves burying the cable in natural sediments with no changes to the bottom topography and thus will not increase storm damage or erosion of coastal beaches or coastal dunes. There are no salt marshes or coastal banks at the cable landfall sites.

10.25(6) Projects not included in 310 CMR 10.25(3) which affect land under the ocean shall if water-dependent be designed and constructed, using best available measures, so as to minimize adverse effects, and if non-water-dependent, have no adverse effects, on marine fisheries habitat or wildlife habitat caused by:

a. *alterations in water circulation;*

b. destruction of eelgrass (Zostera marina) or widgeon grass (Rupia maritina) beds;

c. alterations in the distribution of sediment grain size;

d. changes in water quality, including, but not limited to, other than natural fluctuations in the level of dissolved oxygen, temperature or turbidity, or the addition of pollutants; or

e. alterations of shallow submerged lands with high densities of polychaetes, mollusks or macrophytic algae.

The submarine cable is a water-dependent use as defined in 310 CMR 9.02. Hydroplow or ROV cable construction techniques are the best available means of burying the submarine cable that minimizes the adverse effect on standards (a) through (e). More specifically use of either of these techniques will:

a. Not change bottom topography and therefore will not alter water circulation;
b. Use of HDD will avoid altering eelgrass;
c. Both techniques fluidize the sediment resulting in cable burial by the native extant sediment in the cable corridor thus not altering distribution of sediment grain size;
d. Once installed the presence o the buried cable will not change water quality. Turbidity during cable laying is expected. Sediment analysis indicates the sediment is free of anthropogenic contamination therefore any spread of suspended solids will not adversely affect water quality;
e. Marine surveys did not document the presence of high densities of polychaetes, mollusks or macrophytic algae.

10.25(7) Notwithstanding the provisions of 310 CMR 10.25(3) through (6), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

Correspondence from the NHESP (refer to Attachment E – Agency Communications) indicates the state-listed species present in the area are shore birds. Work over open water will not disturb nesting, and the limited size of the work area as compared to the expanse of feeding habitat is de minimus. Work at the landfall sites in Falmouth and Oak Bluffs, proximate to beach and dune, is scheduled outside of the nesting seasons to avoid adverse effects on these species.

Land Containing Shellfish

Land Containing Shellfish is defined at 310 CMR 10.34(2) as: *"…land under the ocean, tidal flats, rocky intertidal shores, salt marshes and land under salt ponds when any such land contains shellfish."* Where mapped, Land Containing Shellfish is presumed significant to the protection of both shellfish and marine fisheries.

> *When a resource area, including land under the ocean, tidal flats, rocky intertidal shores, salt marshes, or land under salt ponds is determined to be significant to the protection of land containing shellfish and therefore to the protection of marine fisheries, 310 CMR 10.34(4) through (8) shall apply:*
>
> *310 CMR 10.34 (4) Except as provided in 310 CMR 10.34(5), any project on land containing shellfish shall not adversely affect such land or marine fisheries by a change in the productivity of such land caused by:*
>
> *a. alterations of water circulation;*
>
> *b. alterations in relief elevation;*
>
> *c. the compacting of sediment by vehicular traffic;*
>
> *d. alterations in the distribution of sediment grain size;*
>
> *e. alterations in natural drainage from adjacent land; or*
>
> *f. changes in water quality, including, but not limited to, other than natural fluctuations in the levels of salinity, dissolved oxygen, nutrients, temperature or turbidity, or the addition of pollutants.*

The use of a trenchless construction technique avoids permanent changes to the seafloor and prevents alterations to water circulation, bottom contours, sediment grain size or compaction, or water quality.

> *(5) Notwithstanding the provisions of 310 CMR 10.34(4), projects which temporarily have an adverse effect on shellfish productivity but which do not permanently destroy the habitat may be permitted if the land containing shellfish can and will be returned substantially to its former productivity in less than one year from the commencement of work, unless an extension of the Order of Conditions is granted, in which case such restoration shall be completed within one year of such extension.*

The use of trenchless construction does not change the seafloor habitat and will not alter the long-term benthic productivity.

> *(6) In the case of land containing shellfish defined as significant in 310 CMR 10.34(3)(b) (i.e., those areas identified on the basis of maps and designations of the Shellfish Constable), except in Areas of Critical Environmental Concern, the issuing authority may, after consultation with the Shellfish Constable, permit the shellfish to be moved from such area under the guidelines of, and to a*

suitable location approved by, the Division of Marine Fisheries, in order to permit a proposed project on such land. Any such project shall not be commenced until after the moving and replanting of the shellfish have been commenced.

Not applicable, mapping is based on MassGIS mapping.

(7) Notwithstanding 310 CMR 10.34(4) through (6), projects approved by the Division of Marine Fisheries that are specifically intended to increase the productivity of land containing shellfish may be permitted. Aquaculture projects approved by the appropriate local and state authority may also be permitted.

Not applicable as this is not an aquaculture project.

(8) Notwithstanding the provisions of 310 CMR 10.34(4) through (7), no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

Correspondence from the NHESP (refer to Attachment E – Agency Communications) indicates the state-listed species present in the area are shore birds. Work in Land Containing Shellfish and over open water will not disturb nesting, and the limited size of the work area as compared to the expanse of feeding habitat is de minimus. Consultation with the NHESP will be pursued by filing a Joint WPA-MESA NOI for this project.

Land Subject to Coastal Storm Flowage

Land Subject to Coastal Storm Flowage is defined at 310 CMR 10.04 as "… *land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater.*" Although the regulations do not include performance standards for LSCSF, this resource area is generally presumed significant to storm damage prevention and flood control.

In the case of both landings, the proposed work will not alter the existing topography or land surface in LSCSF therefore will not increase the horizontal or vertical extent of flooding, and will not adversely affect the interests of storm damage prevention or flood control.

7.2.1.3 Benthic habitats and Sediment Suspension

The Essential Fish Habitat Report (Attachment H) assessed potential impacts to benthic habitats due to sediment suspension and determined that the sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Using the SSFATE model, Swanson et al. (2006) modeled TSS from the installation of notional cables during hydroplow activities in the waters of Horseshoe Shoal, near Barnstable Harbor, MA. The model showed that deposition occurs close to the cable installation route at concentrations of 100 mg/L for 2-to-3-hour durations. Approximately 30% of the fluidized sediment, commensurate with previous studies, was assumed to be vertically distributed into the water column, with the remainder staying in the limits of the plowed trench. Sediment types observed in Horseshoe Shoal are similar to those in the Project Area, indicating that suspended solids will likely be short-lived and localized during installation of the 5th submarine cable. In addition, TSS levels will be below the threshold for adverse effects on fish (1,000 mg/l for most fish, and 200 mg/l for sensitive fish/invertebrate life stages) and benthic communities (390 mg/l; EPA 1986). TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away. Although slow moving or sessile invertebrates will be unable to leave the area during installation, the short duration and limited concentration of suspended sediments are not expected to seriously harm organisms. Therefore, elevated TSS levels during cable installation is not likely to result in reductions in the quality or quantity of EFH or have substantial negative effects on species with designated EFH or considered NOAA Trust Resources in the area.

7.2.1.4 Cable Burial and Protection Options

Eversource's priority will be to achieve sufficient burial depth of the offshore cables and to reduce or avoid the need for any cable protection wherever possible. However, there remains a risk that sufficient burial may be unsuccessful in areas where the seafloor is composed of consolidated materials, or submerged boulders that would hamper cable burial, making cable protection necessary. A plow pre-pass is planned to investigate if there are any locations where the hydroplow is unable to penetrate to the design depth. Then a determination will be made if the route can be adjusted to avoid an impenetrable area, or if the area is unavoidable and cable protection will be necessary, with the goal of minimizing potential impacts.

The review of cable protection options is presented in Section 2.8 above.

7.2.1.5 Post Construction Monitoring

A post-installation location survey will be carried out to verify that the contractor has buried the cable to the required depth and in the correct position. The selected submarine cable installation contractor will be required to prepare and "as-built" plan documenting the cable location. A post-construction survey of the marine bottom along the cable route will be conducted after the cable is installed. This survey will consist of the following:

- Multi-beam Bathymetry;
- Side Scan Sonar; and
- Underwater Video.

The purpose is to document seafloor conditions along the cable corridor.

7.3 Waterways

The Public Waterfront Act, M.G.L. Chapter 91 and its implementing regulations at 310 CMR 9.00 regulate activities located in, under, or over flowed tidelands, filled tidelands, Great Ponds and certain non-tidal rivers and streams on which public funds have been expended. These activities are broadly defined to include the placement or construction of new fill and/or structures, the demolition or removal of existing fill and/or structures, and/or the change in use of such fill or structures.

According to MassGIS data and MassMapper, and as per correspondence with MassDEP, the Project involves construction of the submarine cable beneath flowed tidelands of Vineyard Sound (from mean high water in Falmouth across to the mean high water line in Oak Bluffs). We acknowledge that MassGIS data identifies filled tidelands extending across a portion of the duct and manhole route in Mill Road, Falmouth. MassDEP was consulted about this mapping and apparent georeferencing inconsistencies in the MassGIS filled tideland data layer. MassDEP concurred with this assessment that there are no filled tidelands along Mill Road, see correspondence between Epsilon Associates and MassDEP dated May 11, 2022 and June, 14, 2022 in Attachment E – Agency Correspondence.

The Project is defined as an "Infrastructure Crossing Facility," [310 CMR 9.02] which reads in part as:

> *"…any infrastructure facility which is a bridge, tunnel, pipeline, aqueduct, conduit, cable, or wire, including associated piers, bulkheads, culverts, or other vertical support structures, which is located over or under the water and which connects existing or new infrastructure facilities located on the opposite banks of the waterway…"*

As an Infrastructure Crossing Facility –a submarine cable across Vineyard Sound to provide electrical service from the mainland to Martha's Vineyard Island– it will cross the flowed tidelands of Vineyard Sound and cannot be located away from those tidelands while achieving the Project purpose. This conclusion is supported by the following subsections of the thew Waterways Regulations:

310 CMR 9.12(2)(b) 16. which reads in part:

> *"(b) The Department shall find to be water-dependent-industrial the following uses: …*
> *16. other industrial uses or infrastructure facilities which cannot reasonably be located at an inland site as determined in accordance with 310 CMR 9.12(2)(c) or (d)."*

301 CMR 9.12(2)(d) which reads:

> *"(d) In the case of an <u>infrastructure crossing facility</u>, or any ancillary facility thereto, for which an EIR is submitted, the <u>Department shall find such facility to be water-dependent</u> only if the Secretary has determined that <u>such facility cannot reasonably be located or operated away from tidal or inland waters</u>, based on a comprehensive analysis of alternatives and other information analyzing measures that can be taken to avoid or minimize adverse impacts on the environment, in accordance with M.G.L. c. 30, §§ 61 through 62H. If an EIR is not submitted, such finding may be made by the Department based on information presented in the application and during the public comment period thereon."*

As per 310 CMR 9.12(2)(d) the Proponent respectfully requests that the Secretary make a determination that the proposed Project is a water-dependent infrastructure crossing facility based on this EIR because:

- Crossing Vineyard Sound cannot be avoided;
- The alternatives analysis (Section 3.0) demonstrates there is no other option that meets the project purpose and need; and

- All reasonable measures have been taken to minimize impacts to the environment.

There are several existing and historic Chapter 91 licenses in the vicinity of the proposed Project. Those previously licensed structures and uses are related to submarine cables, an old pile wharf, some fill within Salt Pond, and a jetty that was licensed proximate to the proposed Falmouth landing site. **Table 7.4 - Chapter 91 License History in the Vicinity of Proposed Cable Route** lists the Chapter 91 license history in the vicinity of the proposed Project. See Attachment D – Chapter 91 Licenses for copies of these Chapter 91 Licenses.

Table 7.4 Chapter 91 License History in the Vicinity of Proposed Cable Route

License #	Date	Licensee	Activity/Use
H&L 2334	2/21/1900	Southern Massachusetts Telephone Company	Lay a submarine cable across Vineyard Sound from a point near Nobska Point Lighthouse in Woods Hole to a point near West Chop on Martha's Vineyard
H&L 3381	6/7/1909	J. Arthur Beebe	Build a pile wharf on Vineyard Sound in Falmouth (west of Mill Road)
DPW 991	3/26/1929	New England Telephone and Telegraph Company	Lay and maintain a submarine cable upon the surface of the bottom of Vineyard Sound from Nobska Point at Woods Hole in Falmouth to a cable house at Makonicky in Tisbury on Martha's Vineyard.
DPW 1833	11/27/1936	The Service Company	Fill solid in a part of Salt Pond at its property on Beach Street in Falmouth (west of Mill Road)
DPW 1745	12/15/1936	Western Union Telegraph Company	Lay and maintain submarine cable in Vineyard Sound from Nobska Point at Woods Hole in Falmouth to a point on Norton Point in Tisbury on Martha's Vineyard
DPW 2161	2/26/1940	Cape and Vineyard Electric Company	Lay and maintain a submarine in Vineyard Sound from Shore Street in Falmouth to a point 1600 feet westerly from West Chop Light in Tisbury
DPW 2169	3/20/1940	Cape and Vineyard Electric Company	Lay and maintain a submarine cable in, under and across Vineyard Sound from Shore Street in Falmouth to Squantum Avenue in Tisbury on Martha's Vineyard
DPW 3602	12/28/1953	The Falmouth Associates, Inc.	Build a stone jetty in Vineyard Sound at property in Falmouth
DPW 3633	5/10/1954	Cape and Vineyard Electric Company	Lay a second submarine cable in Nantucket and Vineyard Sounds from Elm Road in Falmouth to Squantum Avenue in Tisbury on Martha's Vineyard.
DPW 4998	12/1/1965	West Chop Trust	Construct a stone groin in Vineyard Sound at property in Tisbury
DEP 4142	9/30/1994	Commonwealth Electric Company	Place and maintain a 6.0-inch diameter electric cable and a ¾-inch diameter fiber optic cable with appurtenant duct banks and conduits in and over the waters of Vineyard Sound from Falmouth through Tisbury to Oak Bluffs.
DEP 6007	10/17/1996	Commonwealth Electric Company	Install and maintain a 23kv submarine electric power cable and an integrated fiber-optic cable in, under and over the waters of Vineyard Sound and Vineyard Haven Harbor
DEP 13588	11/4/2013	Comcast & NSTAR Electric Company	Construct and maintain an approximately ac5 mile long electric transmission and communications cable and to dredge in flowed tidelands of Vineyard Sound in Falmouth and Tisbury

The general purposes of the Waterways Regulations [310 CMR 9.01(2)] are to:

- Protect and promote the public's interest in tidelands;
- Preserve tidelands for water-dependent purposes;
- Protect public health, safety, and general welfare;
- Support public and private efforts to revitalize unproductive property along urban waterfronts; and
- Foster the right of people to natural, scenic, historic, and esthetic qualities of the environment.

Project compliance with Chapter 91 Standards is demonstrated below.

7.3.1 Basic Requirements and Proper Public Purpose Requirement (310 CMR 9.31)

Section 9.31 of the Waterways Regulations defines the basic requirements for waterways licenses and permits. This Project meets the basic requirements defined in 9.31(1)(a) because the Project is a water-dependent-industrial and as such is presumed to serve a proper public purpose in accordance with 9.31(2)(a) which reads:

> *"(a) Water-dependent Use Projects: The Department shall presume 310 CMR 9.31(2) is met if the project is a water-dependent use project."*

Because the Project is a water-dependent-industrial use in accordance with 310 CMR 9.12(2)(d), the Project meets this requirement.

7.3.2 Categorical Restrictions on Fill and Structures (310 CMR 9.32)

The Project is eligible for License because the Project involves construction of a water-dependent structure –infrastructure crossing facility– installed below the high water mark as per 310 CMR 9.32(1)(a) for projects in tidelands outside of ACECs and DPAs.

7.3.3 Environmental Protection Standards (310 CMR 9.33)

The Chapter 91 Waterways Regulations at 310 CMR 9.33 require all projects to *"comply with applicable environmental regulatory programs of the Commonwealth"*. The Proponent confirms that the reviews, approvals, and permits identified in Section 1.3 will be sought and complied with.

7.3.4 Conformance with Municipal Zoning and Harbor Plans (310 CMR 9.34)

Consistent with the Chapter 91 Waterways Regulations at 310 CMR 9.34, the proposed Project will conform to all applicable local zoning provisions. The Project is not located in an area covered by a municipal harbor plan, but will conform to all applicable local zoning provisions.

7.3.5 Standards to Preserve Water-Related Public Rights (310 CMR 9.35)

In accordance with 310 CMR 9.35, Chapter 91 jurisdictional projects "…*shall preserve any rights held by the Commonwealth in trust for the public to use tidelands and waterways for lawful purposes, and to preserve any public rights of access that are associated with such use.*" The consistency of the proposed Project with each of these protected rights is described below.

Navigation

The Regulations at 310 CMR 9.35(2)(a) stipulate that a project *"…shall not significantly interfere with public rights of navigation.*"

The buried submarine cable will not interfere with navigation. The cable is proposed to follow within or adjacent to an existing cable corridor demarcated on navigational charts.

Any potential Project-related interference with navigation will be temporary in nature, limited to the construction period, and will only occur in the area of active cable installation. The HDD installation will only require in-water work in the two locations where the HDD and hydroplow installations will connect and these locations are outside of navigation channels.

To further reduce unexpected impacts, the Proponent will coordinate with the U.S. Coast Guard, Steamship Authority and municipal Harbor Masters prior to initiating cable installation. This coordination will address the best way to communicate with fishermen, commercial vessel operators, and recreational boaters to advise all users of the location of the active work zone. Once installed, the proposed submarine cable will be located beneath the seafloor and will pose no hazard to navigation.

Free Passage Over and Through Water

As stipulated by 310 CMR 9.35(2)(b), a project "…*shall not significantly interfere with public rights of free passage over and through water.*"

The Project –a buried submarine cable– will not impede public rights of free passage over and through water other than necessary temporary restrictions for safety purposes during construction activities.

Access to Town Landings

Pursuant to 310 CMR 9.25(2)(c), a project *"…shall not significantly interfere with public rights associated with a common landing, public easement, or other historic legal form of public access from the land to the water that may exist on or adjacent to the project site.*"

The Project area does not contain a common landing. The beach access for swimming will be temporarily restricted during HDD operations for safety during construction. Once installation is completed and the HDD work areas area restored, the presence of the buried cable will not interfere with the public's access to the beaches in Falmouth and Oak Bluffs.

Fishing and Fowling

As required by 310 CMR 9.35(3)(a), a project *"…shall not significantly interfere with public rights of fishing and fowling."*

The proposed Project will not result in the elimination of fishing or fowling locations used by the public. The Project will have no significant adverse effects on any fishing grounds.

On-foot Passage

As set forth by 310 CMR 9.35(3)(b), a project "…*shall not significantly interfere with public rights to walk or pass freely on private tidelands for purposes of fishing, fowling, navigation, and the natural derivatives thereof.*"

After HDD Operations are completed and the work areas are restored, the buried cable will not interfere with the public rights of on-foot passage on tidelands.

Compensation for Interference with Public Rights in Commonwealth Tidelands

Pursuant to 310 CMR 9.35(4), "…*any water-dependent use project which includes fill or structures for private use of Commonwealth tidelands…shall provide compensation to the public for interfering with its broad rights to use such lands for any lawful purpose. Such compensation shall be commensurate with the extent of interference caused, and shall take the form of measures deemed appropriate by the Department to promote public use and enjoyment of the water, at a location on or near the project site if feasible.*"

No fill will occur in Commonwealth Tidelands as part of this Project. Although the cable will be located within Commonwealth Tidelands, it will be buried and will not interfere with any public uses.

Management of Areas Accessible to the Public

Pursuant to 310 CMR 9.35(5), "…*Any project that includes tidelands…accessible to the public…shall provide for long-term management of such areas which achieves effective public use and enjoyment while minimizing conflict with other legitimate interests, including the protection of private property and natural resources.*"

After HDD Operations are completed and the work areas are restored, the buried cable will not interfere with public access.

7.3.6 Standards to Protect Water-Dependent Uses (310 CMR 9.36)

The regulations at Section 9.36 are designed to protect any water-dependent uses occurring or proximate to the project. Subpart (1) indicates that the *"…project shall preserve the availability and suitability of tidelands…for water dependent purposes…"*; Subpart (2) states that *"…The project shall not significantly interfere with littoral or riparian property owners' right to approach their property from a waterway, and to approach the waterway from said property…"*; Subpart (3) stipulates that *"The project shall not* *significantly disrupt any water-dependent use in operation…"*; Subpart (4) states that *"The project shall not displace any water-dependent use that has occurred on the site within five years prior to the date of the license application…"*; and under Subpart (5), *"The project shall not include fill or structures for nonwatery-dependent or water-dependent, non-industrial uses which preempt water-dependent-industrial use within a Designated Port Area (DPA)".*

The Project is a water-dependent use that will not adversely affect other water-dependent uses occurring at or proximate to the cable. The Project will not interfere with littoral or riparian property owners' rights to approach their property from a waterway or to gain access to the waterway, and will not disrupt any water-dependent use in operation. The Project will not alter any waterways or access thereto. The project is not located within a DPA.

7.3.7 Engineering Construction Standards (310 CMR 9.37)

The Regulations at 310 CMR 9.37 govern the structural stability of proposed projects constructed in tidelands.

Specifically, Section 9.37(1) requires that *"…All fill and structures shall be designed and constructed in a manner that: (a) is structurally sound as certified by a Registered Professional Engineer; (b) complies with applicable state requirements for construction in flood plains, in accordance with the state Building Code, 780 CMR 744.00 and as hereafter may be amended, and will not pose an unreasonable threat to navigation, public health or safety, or adjacent buildings or structures, if damaged or destroyed in a storm; and (c) does not unreasonably restrict the ability to dredge any channels."*

The cable will be designed and certified by a Registered Professional Engineer and constructed in a manner that is structurally sound. This cable will include galvanized steel wire armor to protect against anchor drops and will not be susceptible to separation, as no splicing of the cable will occur (see Figure 2-1). Although some of the proposed upland work will be located within the 100-year floodplain, it will not itself impede or otherwise exacerbate floodwaters.

Section 9.37(2) provides requirements for residential structures or non-water dependent buildings within a flood zone. The Project does not involve residential structures or non-water-dependent structures, therefore this section is not applicable.

Section 9.37(3) provides requirements for projects with coastal or shoreline engineering structures. The Project does not involve construction of a coastal or shoreline engineering structure, therefore this section is not applicable.

Section 9.37(4) requires that (4) pipelines and conduits and their valves and protrusions shall be buried so that they will not present a hazard to navigation; will be adequately protected from scouring; will not be uncovered by sediment transport; and will not present a hazard or obstruction to fishing gear. Bottom contours shall be restored after burial. Pipelines carrying hazardous substances (e.g., oil) shall also be protected from anchor dragging and fish trawls. When the burial of pipelines, conduits, valves, and protrusions is not feasible, equivalent protection shall be provided by shrouding or other means.

The Project is a buried submarine cable for electric power. It will be buried beneath the seafloor using HDD and hydroplow construction techniques so it will not pose a hazard to navigation.

7.3.8 Use Standards for Recreational Boating Facilities (310 CMR 9.38)

The Project does not involve a recreational boating facility; therefore, these standards do not apply.

7.3.9 Standards for Marinas, Boatyards and Boat Ramps (310 CMR 9.39)

The Project is not a marina, boatyard, or boat ramp; therefore, these standards do not apply.

7.3.10 Standards for Dredging and Dredged Material Disposal (310 CMR 9.40)

Section 9.40(1) provides the limitations on dredging and disposal activity.

(a) "The Project shall not include any dredging of channels, mooring basins, or turnaround basins to a mean low water depth greater than 20 feet, unless said project:

1. Is located within a Designated Port Area; or

2. Serves a commercial navigation purpose of state, regional, or federal significance, and cannot reasonably be located in a Designated Port Area."

(b) "If the project is located in an ACEC, the project shall not include any of the following activities:

1. Improvement dredging, unless the dredging is: for the sole purpose of fisheries or wildlife enhancement; part of an Ecological Restoration Project; or conducted by a public entity for the sole purpose of the maintenance or restoration of historic, safe navigation channels or turnaround basins of a minimum length, width and depth consistent with a Resource Management Plan adopted by the municipality(ies) and approved by the Secretary.

2. Dredge material disposal, except for the sole purpose of beach nourishment, dune construction, reconstruction or stabilization with proper vegetative cover, the enhancement of fishery or wildlife resources, or unless the dredge material disposal is part of a Ecological Restoration Project in accordance with 314 CMR 9.07(1)(c) and 310 CMR 10.11(6)(b) and 310 CMR 40.000: Massachusetts Contingency Plan, if applicable, provided that any fill or dredged material used in an Ecological Restoration Project may not contain a chemical above the RCS-1 concentration, as defined in 310 CMR 40.000: Massachusetts Contingency Plan."

The Project does not include traditional dredging in intertidal or subtidal areas, and the Project is not located in an ACEC. Hydroplow cable construction will reposition sediment which meets the definition of dredging in 314 CMR 9.02. This will not require removal and disposal of sediments.

Section 9.40(2) requires the following resource protections:

(a) *The design and timing of dredging and dredged material disposal activity shall be such as to avoid interference with anadromous/catadromous fish runs. At a minimum, no such activity shall occur in such areas between March 15th and June 15th of any year, except upon a determination by the Division of Marine Fisheries, pursuant to M.G.L. c. 130, §19, that such an activity will not obstruct or hinder the passage of fish.*

(b) *The design and timing of dredging and dredge material disposal shall be such as to minimize adverse impacts on shellfish beds, fishery resource areas, and submerged aquatic vegetation. The Department may consult with the Department of Fish and Game or the natural resource officer of the municipality regarding the assessment of such impacts.*

As described in Section 2.1 and 2.2, the Project anticipates sediment dispersal to be small. Sediment chemical characterization found relatively clean sediments. DMF is expected to identify a TOY restriction for in-water from April 15 to June 15 to protect spawning aggregations and incubating squid eggs.

Section 9.40(3) includes the following operational requirements for dredging:

(a) *The extent of dredging shall not exceed that reasonably necessary to accommodate the navigational requirements of the project and provide adequate water circulation.*

(b) *The shoreward extent of dredging shall be a sufficient distance from the edge of adjacent salt marshes to avoid slumping…*

(c) *In general, no basin, cabal, or channel shall be dredged deeper than the main channel to which it is connected.*

(d) *To the maximum reasonable extent, basins shall have wide openings and short entrance channels to promote tidal exchange within the basin.*

(e) *In general, hydraulic dredging shall be favored over mechanical methods, except when open water disposal of fine grained material is proposed.*

The Project does not include traditional dredging. The hydroplow installation will fluidize the bottom sediments to allow the cable to sink to a depth of between 6- to 10-feet below the seafloor, then the fluidized sediment will settle on top of the cable within the trench. This installation will not impact water circulation or tidal exchange.

Section 9.40(4) includes the following operational requirements for dredged material disposal:

(a) *Where determined to be reasonable by the Department, clean dredged material shall be disposed of in a manner that services the purpose of beach nourishment….*

(b) *In the event ocean disposal of dredged material is determined to be appropriate by the Department…..*

The Project does not include any dredging material disposal, therefore this section does not apply.

Section 9.40(5) requires the following supervision of dredging and disposal activities:

(a) *The licensee or permittee shall inform the Department in writing at least three days before commencing any authorized dredging or dredged material disposal.*

(b) *The licensee or permittee shall provide, at his/her expense, a dredging inspector approved by the Department who shall accompany the dredged material while in transit and during discharges, either upon the scows containing the dredged material or upon the boat towing them, for the following activities:*

1. *Any offshore disposal;*
2. *Any onshore disposal of dredged material greater than 10,000 cubic yards; or*
3. *The disposal of materials defined by the Department as potentially degrading or hazardous.*

The Project does not include traditional dredging with dredged material disposal, therefore this section does not apply.

7.3.11 Conservation of Capacity for Water-Dependent Use (310 CMR 9.51)

The Regulations at 310 CMR 9.51 state that *"… A nonwater-dependent use project that includes fill or structures on any tidelands shall not unreasonably diminish the capacity such lands to accommodate water-dependent use."*

This Project is water-dependent; therefore, this section does not apply.

7.3.12 Utilization of Shoreline for Water-Dependent Purposes (310 CMR 9.52)

Pursuant to 310 CMR 9.52, *"A nonwater-dependent use project that includes fill or structures on any tidelands shall devote a reasonable portion of such lands to water-dependent use…"*

This Project is water-dependent; therefore, this section does not apply.

7.3.13 Activation of Commonwealth Tidelands for Public Use (310 CMR 9.53)

Pursuant to 310 CMR 9.53, "*A nonwater-dependent use project that includes fill or structures on Commonwealth tidelands, except in Designated Port Areas,* [emphasis added] *must promote public use and enjoyment of such lands to a degree that is fully commensurate with the proprietary rights of the Commonwealth therein, and which ensures that private advantages of use are not primary but merely incidental to the achievement of public purposes. …*"

This Project is water-dependent; therefore, this section does not apply.

7.3.14 Consistency with Coastal Zone Management Policies (310 CMR 9.54)

Pursuant to 310 CMR 9.54, *"nonwater-dependent use projects located in the coastal zone shall be consistent with all policies of the Massachusetts Coastal Zone Management Program…"*

The Project is a water-dependent use; therefore, these standards do not apply. Regardless, compliance with the Massachusetts CZM Management Plan is provided in Section 7.1.1.

7.3.15 Standards for Nonwater-dependent Infrastructure Facilities (310 CMR 9.55)

310 CMR 9.55(1) reads in part; "*The requirements of 310 CMR 9.51 through 9.53, shall not apply to nonwater-dependent use projects consisting of infrastructure facilities on tidelands or Great Ponds.* …"

This Project is water-dependent; therefore, this section does not apply.

7.3.16 Standards for Facilities of Limited Accommodation (310 CMR 9.56)

310 CMR 9.56 reads in part: "*Facilities of Limited Accommodation may be authorized on filled Commonwealth Tidelands or filled Private Tidelands under certain circumstances where a project site cannot support Facilities of Public Accommodation for a period of time. …*"

Not appliable. The Project is water-dependent infrastructure crossing facility and not a facility of public accommodation.

7.4 Consistency with MCZM Program Policies

The Proponent provides this review to document that the Project complies with the program policies of Massachusetts' approved Coastal Zone Management Plan ("the Plan") and will be conducted in a manner consistent with such policies.

The following sections list each of the Program Policies and Management Principles contained in the Plan and describe how the Project is consistent.

7.4.1 Coastal Hazards

Coastal Hazards Policy #1

Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.

The coastal wetland resource areas located in the Project area are generally not degraded and provide the beneficial functions that are protected interests of the WPA, including storm damage prevention and flood control. Through careful route selection and proper use of construction techniques such as HDD, the Project is designed to avoid coastal resource areas.

The transition from offshore to onshore cable both in Falmouth and Oak Bluffs will be installed via HDD to avoid impacts to Coastal Beach and Coastal Dune, plus intertidal habitats.

The underground cable route in both Falmouth and Oak Bluffs will require work within LSCSF. No above-ground structures or changes to topography are proposed in LSCSF, and the Project will have no effect on flood velocities or floodplain storage capacity, yielding no changes to the interests of storm damage prevention and flood control.

The submarine cable will be installed via hydroplow and will not alter bathymetry or cause and loss or conversion of hard/complex seafloor.

Coastal Hazard Policy #2

Ensure construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Approve permits for flood or erosion control projects only when it has been determined that there will be no significant adverse effects on the project site or adjacent or down coast areas.

The Project will not adversely interfere with water circulation or sediment transport, because the cable installed by HDD and hydroplow will not alter the morphology or composition of the seafloor. The Project is not a flood or erosion control project.

Coastal Hazard Policy #3

Ensure that state and federally funded public works projects proposed for location within the coastal zone will:

- *not exacerbate existing hazards or damage natural buffers or other natural resources;*
- *be reasonably safe from flood and erosion related damage;*
- *not promote growth and development in hazard-prone or buffer areas, especially in Velocity zones and ACECs; and*
- not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvements Acts.

Not Applicable. The Project is not a state or federally funded public works project.

Coastal Hazard Policy #4

Prioritize public funds for acquisition of hazardous coastal areas for conservation or recreation use, and relocation of structures out of coastal high hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

Not Applicable. The Project does not involve the use of public funds.

The Project does not propose any structures that will be subject to hazardous coastal conditions, because the cable will be buried beneath the seafloor and underground. Shoreline change rates, as reported by CZM, were evaluated at the landfall sites in both Falmouth and Oak Bluffs and the shoreline in these two areas has been relatively stable. The cable at both, the Falmouth and Oak Bluffs landfall sites are located within coastal floodplain, however they are not considered to be at undue risk since they will be buried below ground. The Proponent has commissioned a shoreline erosion model of the Falmouth landfall site. The scope of the model is presented in Section 9.2.3. The results of the modeling effort will presented in permit application for review by the DEP and commenting agencies.

7.4.2 Energy

Energy Policy #1

For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

As an infrastructure crossing facility, it is by definition a water dependent use (310 CMR 9.02) and also considered to be a coastally dependent energy facility. The Project purpose is to increase the reliability of grid-based electrical service on Martha's Vineyard and therefore cannot be located away from the coast.

Energy Policy #2

Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

The new underground and submarine electric distribution cable will improve reliability with increased grid-based electric service to meet current and future electricity demands on Martha's Vineyard. The Project will also improve the ability to integrate dispersed renewable generation into the Island's electrical system.

7.4.3 Growth Management

Growth Management Policy #1

Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.

The proposed submarine and underground cable and its landings in Falmouth and Oak Bluffs will not be visible and therefore will not alter the quality and character of the local communities. A review of the regional policies is provided in the previously submitted PEIR (Sections 6.4 and 6.5).

Growth Management Policy #2

Ensure that state and federally funded infrastructure projects in the coastal zone primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

Not Applicable. The Project is not a state or federally funded infrastructure project.

Growth Management Policy #3

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.

Not Applicable. This is not a revitalization project. This privately-funded Project will improve the reliability of Island's grid-based electrical system to meet current and future electricity, thus benefiting residents and businesses on the Island.

7.4.4 Habitat

Habitat Policy #1

Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

The Project is designed to avoid impacts to coastal habitats and wetland resource areas to the maximum extent practicable, and to minimize and mitigate unavoidable impacts in accordance with applicable federal, state, and local regulations. By complying with performance standards identified in the Massachusetts WPA, the Project will serve the protected interests identified in the statute.

The Project route will specifically avoid impacts to: eel grass, barrier beaches, salt ponds, coastal beaches, coastal dune, and freshwater wetlands. Use of the HDD installation technique at Falmouth and Oak Bluffs landing areas was specifically selected will avoid altering dunes, beaches, and eelgrass.

The submarine cable route will be located in Land Under the Ocean. As described in the ENF and herein, the submarine cable route crosses areas mapped shellfish suitability areas and hard/complex bottom. The submarine cable will be installed using hydroplow construction, and as described in the EFH Assessment no long-term effects on fish habitat are anticipated. No loss or conversion of hard/complex bottom is anticipated and therefore no changes to nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes is projected. For continency purposes, cable protection through hard bottom is evaluated in the alternatives analysis (Section 3.4).

Temporary impacts along the underground cable routes in Falmouth and Oak Bluffs will be limited to LSCSF. No above-ground structures or changes to topography are proposed within LSCSF. The Project will have no effect on wave and storm damage protection, and landform movement and processes.

Habitat Policy #2

Advance the restoration of degraded or former habitats in coastal and marine areas.

Not Applicable. The Project is not a restoration project, however, it is designed to avoid alteration of coastal dune, coastal beach and eel grass.

7.4.5 Ocean Resources

Ocean Resources Policy #1

Support the development of sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects ecological resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse effects on the coastal and marine environment and other water-dependent uses.

Not Applicable. The Project is not an aquaculture project.

Ocean Resources Policy #2

Except where such activity is prohibited by the Ocean Sanctuaries Act, the Massachusetts Ocean Management Plan, or other applicable provision of law, the extraction of oil, natural gas, or marine minerals (other than sand and gravel) in or affecting the coastal zone must protect marine resources, marine water quality, fisheries, and navigational, recreational and other uses.

Not Applicable. The Project does not involve the extraction of oil, natural gas, or marine minerals.

Ocean Resources Policy #3

Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources, navigation, or shoreline areas due to alteration of wave direction and dynamics. Extraction of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment or shoreline stabilization.

Not Applicable. The Project does not involve offshore sand and gravel mining, beach nourishment or shoreline stabilization.

7.4.6 Ports and Harbors

Ports and Harbors Policy #1

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial re-use.

Dredging is defined in 314 CMR 9.02 as, "*The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands.*"

The Project does not include traditional dredging activities. Repositioning of will occur during hydroplow activities and to bury the cable at the HDD – hydroplow transition. Due to the coarse-grained nature of surficial sediments along the proposed cable route, any Project-generated turbidity related to hydroplow operation or the transition from HDD is expected to be temporary and limited in spatial scope. Repositioned sediments are expected to settle back in to the hydroplow trough.

Ports and Harbors Policy #2

Obtain the widest possible public benefit from channel dredging and ensure that Designated Port Areas and developed harbors are given highest priority in the allocation of resources.

Not Applicable. The Project does not involve the dredging navigation channels, nor is it located within a DPA or developed harbor.

Ports and Harbors Policy #3

Preserve and enhance the capacity of Designated Port Areas (DPAs) to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.

Not Applicable. The Project is not located in a DPA.

Ports and Harbors Policy #4

For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.

The Project will have no impact on the availability of the waterfront for vessel-related activities.

<u>Ports and Harbors Policy #5</u>

Encourage, through technical and financial assistance, expansion of water dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of visual access.

Not Applicable. The Project is not located in a DPA, developed harbor, or urban waterfront. The cable will be buried resulting in changes to the aesthetics or views.

7.4.7 Protected Areas

<u>Protected Areas Policy #1</u>

Preserve, restore, and enhance coastal Areas of Critical Environmental Concern, which are complexes of natural and cultural resources of regional or statewide significance.

Not Applicable. The Project is not located within or in the immediate vicinity of an ACEC.

<u>Protected Areas Policy #2</u>

Protect state designated scenic rivers in the coastal zone.

Not Applicable. The Project is not located in or near any state designated scenic rivers.

<u>Protected Areas Policy #3</u>

Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.

For onshore areas, construction and operation of the Project will not affect any known historic places. The Project includes an underground distribution line within existing roadways, paved bikeway, parking lot and previously disturbed areas. Potential effects, if any, to landside archaeological resources will be addressed with the MHC, as applicable, through Section 106 and the State Register Review processes.

No previously identified archaeological resources are located within the submarine cable corridor. Gray & Pape, Inc. conducted a marine archaeological survey in Vineyard Sound within the cable corridor. The Project is sited to avoid any marine archaeological resources.

7.4.8 Public Access

<u>Public Access Policy #1</u>

Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

The Project does not involve development of a coastal site. The Project involves installing submarine cable across Vineyard Sound from a landfall site off Surf Drive in Falmouth to a landfall site off Eastville Avenue in Oak Bluffs. By definition, the Project is a water-dependent infrastructure project (310 CMR 9.02). All permanent structures will be buried and will not interfere with the public's interest in flowed tidelands. See the Public Benefit Determination Review in Section 1.3 above.

Public Access Policy #2

Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that the adverse impacts of developments proposed near existing public access and recreation sites are minimized.

The Landfall Site in Falmouth is located within an existing paved parking lot at Surf Drive Beach. It is anticipated that a portion of the parking lot will be closed during HDD activities, however, portions of the parking lot will remain available as will beach access. HDD construction activities are temporary and are expected to last for approximately 4-weeks. Additionally, HDD activities will be performed during the off-season in Falmouth and Oak Bluffs (after Labor Day and before Memorial Day). As noted above, all structures will be located underground at the landfall sites and the work areas restored to pre-construction conditions yielding no change to public access to waterfront and recreational areas.

Public Access Policy #3

Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities, giving highest priority to regions of high need or limited site availability. Provide technical assistance to developers of both public and private recreation facilities and sites that increase public access to the shoreline to ensure that both transportation access and the recreation facilities are compatible with social and environmental characteristics of surrounding communities.

Not Applicable. See Public Access Policy #2. The Project does not involve any new or expansion of recreational facilities.

7.4.9 Water Quality

Water Quality Policy #1

Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

Not Applicable. The Project does not involve a new or reconstructed drainage system and does not require or propose any new point-source discharges. Limited withdrawals during construction may include water for cable installation (if jet-plow is used). These modest and temporary water withdrawals are not anticipated to have any meaningful impact on water quality.

Water Quality Policy #2

Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

The Project will not alter existing stormwater volumes or drainage patterns, and will not result in any new nonpoint source pollution. Construction-period sedimentation and erosion controls summarized above are included in the Project design and will be implemented during construction. Because the Project will disturb more than one acre of land, a SWPPP will be developed for the Project and coverage under the NPDES Construction General Permit (GCP) for Stormwater Discharges from Construction Activities will be obtained.

Water Quality Policy #3

Ensure that subsurface waste discharges conform to applicable standards, including the siting, construction, and maintenance requirements for on-site wastewater disposal systems, water quality standards, established Total Maximum Daily Load limits, and prohibitions on facilities in high-hazard areas.

Not Applicable. The Project does not propose any subsurface waste discharges.

7.4.10 Conclusion

As described herein, the Project complies with the enforceable policies of Massachusetts' approved Coastal Zone Management Plan and will be conducted in a manner consistent with such policies.

7.5 Water Quality Certification Regulations (314 CMR 9.00)

The MassDEP 401 Water Quality Certification Program regulates the discharge of dredged or fill material, dredging, and dredged material disposal in waters of the Commonwealth for the purpose of reviewing the effects of the discharge on water quality standards. The Project proposes installation of a submarine cable that will be buried in the seafloor, and as such it will reposition a narrow swath of sediment; however, the Project will not involve traditional dredging or dredge material disposal. The following sections describe Project conformance with Section 401 Water Quality Certification Criteria.

7.5.1 Criteria for Evaluation of Discharge of Dredged or Fill Material

In accordance with 314 CMR 9.06(1) through (8), the proposed Project conforms to Water Quality Certification criteria for discharge of dredged or fill material as follows:

1. *No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.*

The Project is a water-dependent Infrastructure Crossing Facility for which there is no alternative but to cross Vineyard Sound. Although the Project is characterized as "dredging" since it will reposition a narrow swath of seafloor sediments, the sediments along the proposed route will re-settle over the cable after disturbance. Given the proposed installation techniques turbidity-related impacts of short-duration are expected.

2. *No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetlands, land under water or ocean, or the intertidal zone…*

As described above, proposed installation techniques minimize potential impacts to coastal and marine resources. HDD installation will avoid impacts to eel grass, intertidal resources, Coastal Beach and Coastal Dune at the Falmouth landfall site; and intertidal resources, Coastal Beach and Coastal Dune at the Oak Bluffs landfall site. Furthermore, since the hydroplow to be used for cable burial will glide along the seafloor surface, the area of disturbance will be limited to the 10- to 12-foot-wide cable burial route. This method will not require exaction and side-casting of sediment, and fluidized sediment will re-settle over cable.

3. *No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters…*

The Project is not proposed within Outstanding Resource Waters; therefore, this criterion does not apply.

4. *Discharge of dredged or fill material to an Outstanding Resource Water specifically identified in 314 CMR 4.06(1)(d)… is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08.*

The Project does not involve the discharge of dredged or fill material to an Outstanding Resource Water; therefore, this criterion does not apply.

5. *No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation.*

The Project does not involve the discharge of dredged or fill material for the impoundment or detention of stormwater; therefore, this criterion does not apply.

6. *Stormwater discharges shall be provided with stormwater best management practices to attenuate pollutants and to provide a setback from the receiving water or wetland in accordance with the following Stormwater Management Standard.*

Not applicable, no stormwater discharges are required for the Project. Construction-period BMPs are proposed to manage stormwater during construction. See Section 10.

7. *No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth.*

The Project does not require traditional dredging and no dredge material disposal is required. Hydroplow construction will result in repositioning of sediment. Sediment analysis demonstrates the substrate is composed of coarse-grained materials and it is considered to be free of anthropogenic derived contamination. See Section 4.1.1 and tables 4.2 through 4.4 above, and correspondence with MassDEP in Attachment E – Agency Communications.

Thus, the Project is not expected to cause any adverse effects to the physical, chemical or biological integrity of waters in Vineyard Sound.

8. *Notwithstanding the provisions of 314 CMR 9.06(1) through (7), the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth. Such projects include, but are not limited to, dam removal, salt marsh restoration, stream restoration, nutrient management, control or removal of aquatic nuisance vegetation, or vegetated management to improve wildlife habitat.*

The Project is not proposed to restore or otherwise improve the natural capacity of any wetland; therefore, this criterion does not apply.

7.5.2 Criteria for Evaluation of Dredging and Dredged Material Management

The proposed Project complies with applicable criteria for dredging and dredged material disposal as stipulated in 314 CMR 9.07.

7.5.2.1 General Performance Standards

The Project will comply with the general performance standards defined at 314 CMR 9.07(1):

(a) No dredging shall be permitted unless appropriate and practicable steps have been taken which will first avoid, and if avoidance is not possible then minimize, or if neither avoidance or minimization are possible, then mitigate, potential adverse impacts to land under water or ocean, intertidal zone and special aquatic sites. No dredging shall be permitted if there is a practicable alternative that would have less impact on the aquatic ecosystem. An alternative is practicable if it is available and capable of being implemented after taking into consideration; costs, existing technology and logistics in light of overall project purposes, and is permittable under existing federal and state statutes and regulation.

The proposed cable route is the product of a comprehensive alternatives analysis described above in Section 3.0. The Proponent has also performed extensive surveys of the marine route. Use of HDD avoids impacts to the intertidal zone an both landfalls and eelgrass at the Falmouth landfall site.

(b) *All applications, except for maintenance projects, shall include a comprehensive analysis of practicable alternatives as defined in 314 CMR 9.07(1)(a). The scope of alternatives to be considered shall be commensurate with the scale and purpose of the proposed activity, the impacts of the proposed activity, and the classification, designation and existing uses of the affected wetlands and waters in the Surface Water Quality Standards at 314 CMR 4.00.*

The proposed cable route is the product of a comprehensive alternatives analysis, as explained in response (a) above.

(c) *Dredging and dredged material management shall be conducted in a manner that ensures the protection of human health, public safety, public welfare and the environment.*

Traditional dredging is not proposed. Repositioning of subtidal sediment will not adversely affect human health, public safety, public welfare and the environment.

(d) *Applications submitted to the Department shall meet the criteria and performance standards of 314 CMR 9.07. If the project submitted by the applicant does not meet a particular provision of 314 CMR 9.07 and criteria of 314 CMR 4.00, the applicant shall demonstrate to the Department's satisfaction that the project will provide an equivalent level of environmental protection.*

The Project will meet all criteria and performance standards of 314 CMR 9.07, as presented herein.

(e) *Dredged material shall not be disposed if a feasible alternative exists that involves the reuse, recycling, or contaminant destruction and/or detoxification. An evaluation of whether such an alternative is feasible shall consider:*
1. *the volume and physical characteristics of the dredged material;*
2. *the levels of oil and/or hazardous materials present within the dredged material;*
3. *the relative public health and environmental impacts of management alternatives; and*
4. *the relative costs of management alternatives.*

The Project does not involve sediment disposal, therefore this provision is not applicable.

(f) *The Department may consider any additional information including but not limited to that submitted under MEPA or NEPA on impacts from the dredging activity, management of the dredged material, the alternatives available for reuse or disposal techniques, alternative sites for the various management activities, or information related to other Department programs.*

The Project does not involve sediment reuse or disposal, therefore this provision is not applicable.

(g) *Dredged material management activities or facilities subject to the 401 Water Quality Certification, shall comply with the provisions of 314 CMR 9.00 and the conditions of the 401 Water Quality Certification. The Certification does not relieve the proponent of the obligation to comply with all other applicable federal, state and local statutes and regulations*

The Project will obtain all other necessary federal, state and local approvals as listed in Table 1.1.

(h) Dredged material, including sediment, placed on or in the land at an upland location is subject to the release notification requirements and thresholds of 310 CMR 40.0300 and 40.1600 for soil, unless such placement is in accordance with the provisions of 3 10 CMR 40.0317(10) and 314 CMR 9.07 (4), (6), (9), (10), or (11).

This provision is not applicable, since no dredged sediment placement is proposed.

(i) No dredging is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Dredging may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No dredging is permitted for the impoundment or detention of stormwater in Outstanding Resource Waters.

This provision is not applicable, since no dredging is proposed to manage stormwater.

(j) No dredging shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of waters of the Commonwealth.

Sediment along the cable installation route was tested and the proposed project does not pose a risk to the waters of the Commonwealth (see Section 4.1.1).

(k) No dredging shall be permitted in Outstanding Resource Waters, except for the following activities specified in this paragraph, which remain subject to an alternatives analysis and other requirements of 314 CMR 9.07….

This provision is not applicable, no work is proposed in an Outstanding Resource Water.

(l) Notwithstanding any other provision of 314 CMR 9.07, the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth. Such projects include, but are not limited to, dam removal, salt marsh restoration, stream restoration, nutrient management, control or removal of aquatic nuisance vegetation, or vegetation management to improve wildlife habitat.

This provision is not applicable, as this is not a wetland or resource restoration project.

7.5.2.2 Dredging Performance Standards

The Project will comply with the dredging performance standards defined at 314 CMR 9.07(3):

(a) The resuspension of silt, clay, oil and grease and other fine particulate matter shall be minimized to protect aquatic life and other existing and designated uses of waters of the Commonwealth.

Sediment testing demonstrates that the majority of the route is comprised of coarse grained sediments which is generally free of fines (i.e., sediment passing the #200 sieve). The hydroplow installation will generate short-duration increased turbidity along the plow path. No significant impacts to aquatic life are anticipated as described in the EFH Report (Attachment H).

(b) Improvement dredging activities shall minimize and, to the maximum extent possible, avoid affecting areas of ecological importance including but not limited to vegetated wetlands, shellfish habitat, spawning habitat, habitat of state-listed rare wildlife, salt marsh, intertidal zone, riffles and pools, and vegetated shallows.

Not applicable, this is not an improvement dredging project.

(c) Where feasible, a minimum of 25 feet shall remain unaltered between the edge of vegetated wetlands, salt marsh or vegetated shallows, and waterward edge of the top of the slope of a dredging area.

Complies. HDD exit hole is greater than 25 feet from the seaward limit of eel grass.

(d) Dredging shall not be undertaken during migration, spawning, or juvenile development periods of finfish, shellfish, crustaceans or merostomatans in locations where such organisms may be affected, except as specifically approved by the Department. Restricted time periods for dredging, or in-water sediment management, will be established by the Department after consultation with Massachusetts Division of Marine Fisheries or Division of Fisheries and Wildlife. Any applicant proposing to dredge during the recommended restricted time period must demonstrate to the Department's satisfaction that measures to minimize impacts (e.g., dredging in the dry, the use of silt curtains, etc.) will be sufficient to avoid adverse affects to the species of concern….

As described previously, the hydroplow installation will be of short duration and involves the repositioning of a narrow swath of seafloor sediments associated with hydroplow operations, and is not a traditional dredging project. The proponent will comply with TOY restrictions established by DMF and/or NHESP.

(e) In evaluating the potential effects of suspension of contaminated sediment on aquatic organisms, the Department may compare the bulk sediment chemistry with recognized guideline values…

See Section 4.1.1 for a summary of sediment testing results, and correspondence with MassDEP regarding sediment testing and results (Attachment E).

Section 8.0

Marine Fisheries

8.0 MARINE FISHERIES

An Essential Fish Habitat Assessment ("EFH") was prepared by RPS in April of 2022. The report reviewed the type of habitat present in the proposed cable corridor, identified the species with EFH designated within the project area, and analyzed potential impacts to EFH. A copy of the EFH is presented in Attachment H**.**

Habitat identified was largely based on the 2021 Marine Survey summarized in the PEIR and in Section 4.1.1 above, and a copy is provided with this SEIR as Attachment G. Habitat in the study corridor included complex habitats along much of the cable route. Sand ripples, sand waves, sandy gravel waves, boulder fields, coarse sand and gravel, and cobble and boulder areas covered with epibionts were all found within the cable corridor. Sparse to moderate eelgrass was observed growing in gravelly sand and sandy gravel, in depths less than 17 feet and extending just over 1,300 feet from the Falmouth shoreline.

The proposed cable route crosses through habitat that is suitable for bay scallop (*Argopecten irradians*) near the landfall area in Falmouth, MA. It crosses through habitat that is suitable for both bay scallop and quahog (*Mercenaria mercenaria*) near the southern landing area on Martha's Vineyard (see Figure 18). It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area.

Twenty-eight fish species were identified as having EFH designated in the Project area that was further designated by life cycle stage. Habitat Area of Particular Concern ("HAPC") was identified for two species; Atlantic Cod and Summer Flounder. The mapped HAPC for Atlantic cod overlaps the majority of the northern and southern portions of the cable route. HAPC for Summer Flounder is not mapped, but consists of areas of all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, for adult and juvenile summer flounder. In addition to fish and invertebrate species with designated EFH, seventeen NOAA-trust resources (anadromous fish, shellfish, crustaceans, or their habitats) overlap the Project area.

The potential for HDD disturbance to EFH exists at the two punch-out exit sites where the transition from HDD to hydroplowing occurs. At these locations, divers jet surficial sediment layers out of the way for cable installation, and drilling fluids can be released into the environment, with the potential to smother nearby benthic habitats and sessile organisms. Unplanned releases can occur when drill fluid escapes through geologic fractures in the bore hole. Planned releases involve the amount of fluid that is released during HDD punch-out. At the bore hole exit, divers excavate a pit with venturi pumps (a submersible, handheld pump) and a barge-mounted hydraulic pump removes the fluids to holding tanks on the barge. No substantial adverse impacts are expected due to the distance from the bore hole exit to sensitive eelgrass habitat and the limited duration and concentration of suspended sediments and expected rapid recovery to biotic communities near exit bore holes. Prior to HDD punch out, a field survey will be used to confirm the absence of eelgrass in the proposed punch-out locations.

Hydroplowing directly impacts the benthic surface in a relatively narrow, 3- to 5-foot wide, and shallow, 6- to 10-foot deep plow furrow caused by the stinger. The hydroplow skids can make shallow “ski tracks” on either side of the plow furrow. Immediately post-construction, the hydroplow point of contact will be observed as a 3- to 5-foot wide plow furrow, and a 1- to 2-foot deep with ski tracks along the hydroplow corridor.

The most direct and deleterious effect to benthic habitat comes from the hydraulic action of the blade and water jetting of a portion of surface and subsurface sediment, epifaunal and infaunal organisms, and flora immediately in front of the plow. The greatest indirect hydroplow disturbances come from the effects of suspended sediments, which can affect water and sediment quality, and mobile and sessile organisms as suspended sediments settle over nearby undisturbed habitat types. The sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Total Suspended Solid (“TSS”) plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away. Although slow moving or sessile invertebrates will be unable to leave the area during installation, the short duration and limited concentration of suspended sediments are not expected to seriously harm organisms. Therefore, elevated TSS levels during cable installation is not likely to result in reductions in the quality or quantity of EFH or have substantial negative effects on species with designated EFH or considered NOAA Trust Resources in the area.

In April 2014, Eversource completed similar HDD and hydroplow submarine cable installation just west of the current Project Area, and a post-construction survey was completed within six weeks of installation. Results from the post-construction survey in the HDD punch-out area showed that habitats immediately around the exit bore holes had recovered and consisted of coarse sediments with branching brown and red algae and common slipper shells. The survey did not find any evidence of drill fluid covering the area, suggesting the hydraulic pump system was effective in removing drill cuttings and fluids and/or natural processes (currents, storms) washed away excess fluids and cuttings. Results from the post-construction survey in the hydroplowed area showed rapid recovery of habitats and community, with the only disturbance observed including the presence of a narrow sand furrow from cable plowing, that created slightly higher bathymetric relief and attracted black sea bass. Either side of and crossing the cable showed signs of biogenic activity, pebbles, and cobbles; indicating that sediment deposition did not smother the area. The post-installation survey also observed sand waves, indicative of routine surficial sediment movement throughout the area.

In addition to the habitat disturbance and habitat alteration from hydroplowing, other impact producing factors to EFH include increased vessel traffic and noise during cable installation, and electromagnetic fields (“EMFs”) from the cable once in service. Mobile benthic fish and invertebrates may be displaced temporarily by noise, sedimentation, and installation activities but will likely be able to escape harm by avoiding the Project area during construction. There will only be a slight increase in risk from the few vessels added to baseline activity of the numerous existing vessels and ferries in the Project area. Any associated increase in risk of injury or mortality due to noise related to vessels will be too small to be detected or measured, and species in the Project area are acclimated to these levels, therefore effects to EFH are insignificant. Cable EMFs are likely less intense than the geomagnetic field of Earth and it is generally assumed that marine animals will not be able to detect these EMFs unless directly over the center of a cable. The installed cable will be encased in a protective sheathing and buried approximately 2- to 3-meters below the sediment and is expected to have low EMF detection levels. With no known studies to date of negative effects of EMF on marine organisms and the protection of the cable with sheathing and depth of sediment, no EMF impacts are expected from this project.

Potential adverse effects to eggs and larvae of species with EFH in the Project area will be reduced through adherence to TOY restrictions recommended for five of the EFH species (Atlantic cod, winter flounder, longfin inshore squid, northern shortfin squid, and Atlantic surfclam). Proposed project activity is planned to occur in winter (December to March) which is outside of the Time of Year restriction for each of these species with the exception of winter flounder. EFH for winter flounder spawning adults and eggs generally includes coastal benthic habitats from MLW to the 5 m bathymetric contour, which is roughly 2,000-2,500 ft from shore at both ends of the project cable route. Therefore, hydroplow operations will take place almost entirely outside of winter flounder spawning grounds. In addition to adhering to TOY restrictions, impacts to eelgrass, considered HAPC for summer flounder, and complex boulder habitat will be avoided by using HDD. During HDD activities, venturi pumps will also be used to mitigate the spread of planned releases of drill fluid and sedimentation of nearby habitats.

Overall, project impacts are primarily expected to be temporary and cause no substantial adverse effect on habitat or associated species. Installation of the submarine cable is not expected to have substantial adverse effects on EFH/HAPC and associated species or NOAA Trust Resources given observed recovery of nearby habitat after similar installation activities and limited spatial impact area.

The Proponent will continue to coordinate with DMF to avoid interference with the spring trawl survey, and plans to continue to communicate with DMF throughout the permitting and construction process.

Section 9.0

Climate Change

9.0 CLIMATE CHANGE

9.1 Introduction

In accordance with MEPA's Interim Protocol on Climate Change Adaptation and Resiliency (dated October 1, 2021), the Proponent evaluated the potential climate change impacts on the project via the Resilient Massachusetts Action Team ("RMAT") Climate Resilience Design Standards Tool. See the RMAT output in **Attachment J – RMAT Tool Output.**

The installed buried terrestrial and submarine cable will not result in environmental impacts, by being buried it is considered to be resilient, and will have no effect on sea levels. Eversource has also taken steps to ensure that the new equipment yard is resistant to the potential effects from sea level rise and climate change, while Substation #933 is well inland and not subject to flooding or projected flooding associated with sea level rise and climate change.

The field of climate change study is constantly evolving, and the Massachusetts State Hazard Mitigation and Climate Adaptation Plan (https://resilientma.org/shmcap-portal/#/) currently identifies the following four primary climate change interactions – changes in: precipitation, sea level rise, extreme weather, and rising temperatures.

Potential climate related impacts are particularly relevant to communities located near the coast, such as Falmouth and Oak Bluffs, and specifically to the Project area, which includes work along the shore. The RMAT Tool Output identified the risks as follows:

- Sea Level Rise / Storm Surge - High
- Extreme Precipitation / Urban Flooding - Moderate
- Extreme Precipitation / Riverine Flooding - Moderate
- Extreme Heat - High

Eversource focused its assessment of potential vulnerabilities to the distribution line infrastructure on changes in precipitation and extreme weather events, including the potential exposure of the Project area to flooding.

Generally, climate change research indicates an expectation of more frequent and intense storm events. Within the Project Area, climate models suggest there will be an increase in precipitation, with an up to 2-inch estimated increase in total annual precipitation between the 2030s and 2090s (https://resilientma.org/map/). More frequent and intense storm events, and increased annual precipitation, could result in more localized flooding in the Project area.

The FEMA mapped flood zone is defined as the 100-year flood event which represents a flood event that has a 1% probability of occurring in any given year. The terrestrial routes on both the Falmouth and Oak Bluffs side have portions that are within the 100-year floodplain. See **Figures 20** and **21.**

9.2 Project Design to Promote Resilience

Underground electrical distribution cables in duct and manholes systems are inherently adaptive and resilient to the potential effects of climate change. For example, most of the adverse weather conditions that traditional overhead electrical line infrastructures are exposed to above-ground can be avoided (e.g., wind and precipitation). While an overhead line typically takes less time to repair than an underground line in the event of an outage (days rather than weeks), an underground distribution line generally alleviates the need for more frequent investments in distribution infrastructure maintenance and repairs. The expected benefits would include a more secure energy supply with fewer instances of weather-related power outages.

In addition to the above, the underground distribution line facilities are not affected by flooding and will not cause flooding or exacerbate existing flooding situations. The Project does not involve any fill or permanent aboveground structures in the 100-year floodplain, and the use of HDD technology to install the distribution line beneath the Falmouth and Oak Bluffs shoreline (including the mapped 100-year floodplain limits) avoids changes to surface grades where flood storage is presently provided. Further, the splice vaults (manholes) will include sealant placed between precast concrete joints. However, these measures will not fully waterproof the splice vaults. It is expected that water will be able to enter the splice vaults especially rainwater via the covers and groundwater seepage during the life of these structures. In the event a splice vault becomes filled with water, before any maintenance or routine inspection of the splice vault can be completed, the splice vault would have to be drained before entering, which is a typical practice. Further, all the equipment to be installed inside the splice vaults, including the cable itself, is designed to withstand inundation and operate while fully submersed in water, including salt water. Corrosion control measures will be included in the splice vaults to mitigate corrosion of any exposed metal structures or equipment.

9.2.1 Oak Bluffs Eastville Avenue Equipment Yard

Risk to electrical infrastructure facilities can be minimized through careful site design. To evaluate the potential for future flood risk at the Oak Bluffs parcel, Eversource considered existing conditions based on FEMA data and an on-site survey to assess the location of the flood plain in more detail, since a portion of the site is mapped within the 100-year floodplain. Regarding future conditions, portions of the site are within areas modeled as having flooding potential from precipitation events under the 2030 and 2070 100-year storm events and flooding from sea level rise/storm surge flooding in the 2070 100-year storm event.

According to Mass CZM's Sea Level Rise and Coastal Flooding Viewer, the equipment yard site could potentially experience coastal flooding above mean higher high water (the average height of daily highest tide) from the most extreme predictions (year 2100) of sea level rise (5-foot to 6-foot increases above mean higher high water). This projection does not account for storm surge, waves, erosion, and other dynamic factors.

In consideration of the above potential sea level rise and coastal flooding scenarios, Eversource has incorporated several resiliency measures into the design of the Eastville Avenue parcel to mitigate impacts due to the potential for more frequent flooding and adverse consequences associated with increasing sea level rise. The equipment will be protected such that flood waters cannot penetrate to critical areas. These protective measures include placing all openings to the surface above projected flood levels, sealing conduits with plugs intended to withstand projected hydrostatic pressures and directing storm water flows from the open space above the station away from the station. Furthermore, there will be nothing in the design that will prevent the use of deployable flood barriers in the future should they become necessary.

9.2.2 Falmouth Landing Site

The proposed 5th Cable includes a new transition manhole in the Surf Drive Beach parking lot to transition the new submarine cable to the landside cable. There is an existing concrete duct and manhole system in Surf Drive, and the proposed cable will use that existing system. A new duct and manhole system is proposed in Mill Road from the existing Surf Drive duct system and extending northward eventually ending at Substation #933. A short segment of new duct at the Mill Road – Surf Drive intersection and extending about 130 feet in Surf Drive is needed to tie the new duct system into the existing duct and manhole system. The new duct system in Mill Road will be buried in a trench dug to 4- to 6-feet below grade which means the duct will be buried 2- to 4-feet below grade (burial depth at the top of the duct) depending on depth of trench and orientation of the duct layout.

Vulnerability

Surf Drive and the surrounding areas are vulnerable to coastal flooding, both due to storm surge as well as future sea level rise. The following documents to assess vulnerability and what adaptation and resiliency measures are prudent for the Project:

- Town of Falmouth: *Falmouth Climate Change Vulnerability Assessment and Adaption Planning* (January 2020),
- Coastal Resiliency Planning for the Surf Drive Area Executive Summary (DRAFT) (August 2020), and
- *Coastal Resiliency Planning for the Surf Drive Area* Draft Report (August 2020).

The most applicable of these documents for this Project assessment is the *Coastal Resiliency Planning for the Surf Drive Area* Draft Report (August 2020) (“Report”).

The Report distinguishes the differences of vulnerability and potential adaptation actions between the two segments of Surf Drive: Surf Drive (Barrier Beach) i.e., west of the Mill Road Parking Lot; and Surf Drive (East) i.e., the Mill Road parking lot and east. The proposed project is only located in the Surf Drive (East) segment. While each segment will experience similar conditions in the future, Surf Drive (Barrier Beach) impacts are anticipated in nearer time horizons as compared to the Surf Drive (East) section. Due to the lower-lying elevation of the barrier beach, and it being between Vineyard Sound and Salt Pond and Oyster Pond. Thus, the Surf Drive (Barrier Beach) segment has greater vulnerability to flooding, coastal erosion, and storm damage. By 2070, high tides are anticipated to flow over the barrier beach into Salt and Oyster Ponds and no longer be confined to the existing culverts beneath Surf Drive (Barrier Beach). As discussed below, potential adaptation actions differ for these two segments, with the consideration to be made by the Town for the abandonment of Surf Drive (Barrier Beach) by 2070. Figure 9 in the Report (page 20) depicts the flooding vulnerability of the Surf Drive area due to sea level rise and storm surge, which will cause inundation of Surf Drive and surrounding areas.

In the Mill Road parking lot there is an existing transition manhole for the 75 Cable. Based on present day conditions, there is a 50-100% annual chance of inundation during a storm and this parking lot may become vulnerable to flooding as a result of daily tides by 2050. Portions of the Mill Road parking lot may be impacted as early as 2030 due to the low-lying elevation of this parking lot.

The Surf Drive Beach parking lot is located in the Surf Drive (East) segment. Eversource maintains an existing transition manhole at the Surf Drive/Shore Steet intersection for the 99 Cable and proposes to install the transition manhole for the 5th Cable in the Surf Drive parking lot. The parking lot and Surf Drive (East) has a 50-100% annual chance of inundation due to storm surge presently and will experience inundation during storms at higher frequencies in the future. By 2070 portions of Surf Drive (East) and the Beach parking lot are expected to become flooded regularly by high tides.

Suggested Adaptation Measures in the Report

The Report presents potential adaptation actions for the Town of Falmouth to address future vulnerability and resiliency of Surf Drive. The actions are presented in a step-wise approach: Status Quo (i.e., no action), Natural Resources, Protection, Connection, and Managed Retreat.

For purposes of the MVRP, Eversource assumes the status quo action continues (i.e., Falmouth does not implement any significant adaptation actions) in the near-term. We note however, that there is Town infrastructure in Surf Drive (Barrier Beach), Surf Drive (East), and the Surf Drive Beach parking lot; and therefore, some action by the Town to protect Surf Drive, or at least portions of it, is likely. The status quo would result in more frequent flooding at the proposed 5th Cable transition manhole (Surf Drive Parking Lot) by 2070. That is approximately the limit of the design life for the submarine cable.

Mill Road and Surf Drive (Eastern Section) suggested adaptation measures:

- Protect Mill Road and Mill Road parking lot through nature-based solutions by 2050
- Enhanced protection of Mill Road and Mill Road parking lot through nature-based solutions by 2070
- Floodproof or elevate concrete transition manhole by 2050
- Transition Surf Drive Parking Lot to shell/dirt parking lot and portable facilities by 2030/2050
- Perform beach and dune nourishment to protect beach access hub by 2050

The major recommendation in the Report for the near-term (by 2050), specific to the existing electrical utilities, is for the Mill Road manhole (and presumably the Surf Drive/Shore Street manhole) to be floodproofed (waterproofed). While the underground cabling is not vulnerable to flooding, the transition manholes are.

For the Mill Road manhole, the Report recommends by 2050 the existing buried electrical cable should be extended landward along Mill Road (estimated 2,300-feet), where a new transition manhole should be installed at a higher elevation. The Report does not address the existing 99 Cable transition manhole in the Surf Drive parking lot.

The Report recommends in the near-term that the Town implement nature-based solutions (i.e., beach and dune nourishment) for Surf Drive (Barrier Beach) by 2030.

The Report recommends by 2030 the Surf Drive Beach parking lot be transitioned to a shell or dirt parking lot. In the future, if and when Surf Drive (Barrier Beach) is unable to be maintained and is abandoned, access to the Beach will be limited and Surf Drive (East) and the Surf Drive Beach parking lot will become the major access hub for the entire beach. By transitioning this area to a shell or dirt parking lot, this will allow the continued access for beachgoers as well as Eversource to access and maintain the existing manhole, and proposed manhole, in this parking lot.

Longer-term (2050-2070), the Report recommends several adaptation actions for both Mill Road and Surf Drive (East) and associated parking lots, as well as the beach and dune systems. It is expected the Town would implement one or more of the measures presented in Section 4 of the Report. The least costly, and natured-based adaptation action: nature base protection along Mill Road and the parking lot; with beach and dune nourishment by at least 2050 through 2070 to protect Surf Drive (East) and the Surf Drive Beach parking lot, which at this point, will serve as the primary access point for the entire barrier beach. This access would be needed, if in fact maintenance of Surf Drive (Barrier Beach) ceases and the westerly roadway section is abandoned between 2050 and 2070.

More robust and permanent adaptation actions for Mill Road and Surf Drive, and the parking lots, would provide a greater level of protection and extend the access along Surf Drive. With the vulnerabilities and recommendation adaptive management strategies to be considered and resiliency and adaptions to be made over the next 30 years, this gives time for both the Town and Eversource to consider the best potential adaptation actions to be made.

Resiliency and Adaptation Measures included in the MVRP Design

Routing:

The submarine cable needs to come ashore and thus the shoreline to landside transition is by definition in a vulnerable zone relative to future sea level rise and shoreline change. The four existing cables across Vineyard Sound connect in Falmouth at three locations: Elm Road, Mill Road and the Surf Drive/Shore Street intersection (from west to east). The 5th Cable is designed to landfall at the Surf Drive Beach parking Lot.

The proposed MVRP will utilize existing duct within Surf Drive (East Section) and will not use Surf Drive (Barrier Beach Section). The Proponent performed an extensive landside cable route analysis to determine several options for routes to finalize the preferred option. Four routes were examined for the new 5th Cable from the Stephen's Lane Substation #933 to the Surf Drive Beach parking lot. These four routes were developed and vetted in conjunction with the Town of Falmouth.

Land use between these four routes includes densely populated areas, including Falmouth Center. The four routes are described in Section 3.5. All the options considered would require the cable to be routed through Surf Drive, at varying lengths. The preferred landside cable route was selected because this route option: avoids wetlands and Barrier Beach; avoids cultural and historic resource districts; avoids Environmental Justice ("EJ") communities; minimizes work in public roads; and avoids the high traffic and densely populated areas along Main Street (Route 28) and through downtown Falmouth.

Route Options 1 and 2 use a shorter segment of Surf Drive but would pass through the densely developed parts of Town and would result in traffic impacts. Option 4 uses an extensive length of Surf Drive including the Surf Drive (Barrier Beach) stretch, which as described above, will likely be abandoned between 2050 and 2070.

The only road that could be used for the duct and manhole system that would avoid Surf Drive is Shore Street. This option would require installing the cable through Falmouth center. Thus, it was not evaluated beyond the conceptual stage.

Option 3 was selected as the preferred route because it balances the impacts to wetland, cultural and historical resources, and minimizes work in densely populated areas to avoid traffic and business-related impacts.

MVRP Design:

Measures to improve the resiliency of the MVRP included the above routing analysis, as well as specific-construction and design elements.

- There is the existing concrete duct and manhole system in Surf Drive and the new cable will be installed within the existing duct so that no new duct is needed in Surf Drive.
- New duct will be buried approximately 4-6-feet below grade, with the top of the duct being 2- to 3-feet below grade depending on location and duct orientation.
- The existing and proposed electrical infrastructure will be floodproofed (waterproofed).
- The specific cable selected is designed to be submerged, therefore, should the transition manholes or duct be inundated, the cable will remain operable.
- During final design the Proponent will evaluate moving the transition manhole further landward.

All submarine cables need to transition through vulnerable areas to connect to upland facilities. Installing infrastructure along the coastline, and thereby in vulnerable areas, is unavoidable. Therefore, the adaption and resiliency designed into the MVRP and proposed infrastructure balances cost, reliability, and environmental impact, to meet the design life of the Project, approximately 30- to 40-years. The design life is comparable to the 2050 planning horizon provided in the Report. Therefore, this gives the Proponent (Eversource) and the Town of Falmouth time to address longer-term adaption actions and resiliency improvements, as shoreline and flooding changes are monitored.

9.2.3 Beach Erosion Desktop Assessment

As requested by CZM, the Proponent is preparing a beach erosion assessment using a 2-D model to evaluate future shoreline erosion at the Falmouth landing site. This modeling approach was developed in consultation with CZM. The results of this modeling effort will be provided to CZM and DEP during permitting process. This schedule was discussed with MEPA staff and accepted by MEPA.

The scope for this modeling effort involves the following:

Environmental data collection and assessment

Datasets from publicly available sources will be used to assess recent short-term shoreline change rate, and beach profile. The Town has been contacted to acquire any survey data (pre- and post-Superstorm Sandy) to use that to validate the model.[24] Sand fronting the landing site was collected, sent to an accredited lab for sieve analysis, and the grain size distribution will be used in the modeling study.

To calibrate the model, data related to water level during Superstorm Sandy will be collected from the town collected field survey, if available. To model erosion form 50- and 100- year events, the Massachusetts Flood Risk Model dataset, developed by the Woods Hole Group, will be analyzed and the appropriate total water level with associated return periods from nearby save points will be extracted. Those datasets will be used for modeling the erosion of the present shoreline from LiDAR data, and future shoreline based on different sea level rise scenarios. To assess the future condition during the life of the project, sea level rise from two intermediate emissions in 2050 and 2070 will be acquired from USACE climate tool to be used as new water level.

Topography and bathymetry data will be collected from publicly available sources.

Model application, and model calibration.

The transport model application for the coastal waters to transfer the offshore wave to the coastal area and force the sediment transport model over a 2km extent of the shoreline. The XBeach model will be used to simulate the morphological impacts of storms on the beach (with a mixed grain size from sand,

[24] To date the Town has not been able to confirm they have, or forwarded, pre- and post-Sandy survey data.

gravel and cobble) shoreline. As a calibration and validation study, the model will be run with site-specific data to capture erosion and damage to sections of Surf Drive during Superstorm Sandy, if such survey is available from the Town.

The model will be set up to use different water levels as based condition and total water level as boundary conditions for different scenarios.

Sediment transport modeling

After calibrating the model using existing datasets, the different return period (50- and 100- year) event scenarios will be modeled in present day, 2050, and 2070 sea level and shoreline conditions (considering the shoreline change based on the developed rate). The results will be presented as maps to show the erosion and water level in each scenario. Following CZM recommendation, the model will be run with the assumption that the paved road does not exist and is not a hard surface, as it has been getting damaged during smaller coastal storm events.

Two-dimensional (2D) modeling of sediment transport will be considered to analyze the erosion and potential exposure of the cable during 50-year and 100-year events and their sequential impacts (i.e., back-to-back events), will be simulated at three shoreline and sea level conditions:

i. Present-day water level;

ii. Medium sea level rise in 30 year (2050); and

iii. Medium sea level rise in 50 years (2070).

Each of these cases will be run for all three storm conditions. Therefore, a total of nine scenarios will be run to evaluate the impacts of the storms on the landing site. The modeling results will assess whether the fronting beach is likely to be breached by these storms.

Section 10.0

Mitigation and Draft Section 61 Findings

10.0 MITIGATION AND DRAFT SECTION 61 FINDINGS

10.1 Draft Section 61 Findings

In accordance with MEPA (M.G.L. c. 30, Section 61) and its implementing regulations at 301 CMR 11.12(5), "*…any State Agency that takes Action on a project for which the Secretary required an EIR shall determine whether the project is likely, directly or indirectly, to cause Damage to the Environment and shall make a finding describing the Damage to the Environment and confirming that all feasible measures have been taken to avoid or minimize the Damage to the Environment*." The MEPA regulations at 301 CMR 11.12(5) further detail the methods by which the Agency(ies) taking action shall make its findings and identify the appropriate mitigation, as follows:

> *(a) Contents of Section 61 Findings. In all cases, the Agency shall base its Section 61Findings on the EIR, including all studies, analyses and assessments contained therein regarding environmental and public health impacts and effects on Environmental Justice Populations, and shall specify in detail: all feasible measures to be taken by the Proponent or any other Agency or Person to avoid Damage to the Environment or, to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable; if applicable, any and all actions to reduce the potential for unfair or inequitable effects upon an Environmental Justice Population; an Agency or Person responsible for funding and implementing mitigation measures, if not the Proponent; and the anticipated implementation schedule that will ensure that mitigation measures shall be implemented prior to or when appropriate in relation to environmental impacts. In accordance with M.G.L. c. 30, § 61, the reasonably foreseeable climate change impacts of a project, including its additional GHG emissions, and effects, such as predicted sea level rise, are within the subject matter of any required Permit, Land Transfer or Financial Assistance.*
>
> *(b) Section 61 Findings and Agency Action. Provided that mitigation measures are specified as conditions to or restrictions on the Agency Action, the Agency shall:*
>
> 1. *make its Section 61 Findings part of the Permit, contract, or other document allowing or approving the Agency Action, which may include additional conditions to or restrictions on the Project in accordance with other applicable statutes and regulations; or*
> 2. *refer in its Section 61 Findings to applicable sections of the relevant Permit, contract, or other document* approving or allowing the Agency Action.
>
> *(c) Subject Matter Jurisdiction Limitations. In the case of a Project undertaken by a Person that requires one or more Permits or a Land Transfer but does not involve Financial Assistance, any Participating Agency shall limit its Section 61 Findings, or any mitigation measures specified as conditions to or restrictions on the Agency Action, to those aspects of the Project that are within the subject matter of any required Permit or within the area subject to a Land Transfer.*

> *(d) <u>Proposed Section 61 Findings.</u> Proposed Section 61 Findings prepared by a Proponent in accordance with 301 CMR 11.07(6)(k) are intended to assist a Participating Agency in fulfilling its obligations in accordance with M.G.L. c. 30, §§ 61 and 62K. The Proponent's preparation of Proposed Section 61 Findings shall not mean that a Participating Agency has made its own Section 61 Findings. Except in accordance with 301 CMR 11.06(4) and 11.08(7), the Proponent's Proposed Section 61 Findings shall not limit an Agency's*

Depending on a particular agency's procedures, the various Section 61 Findings may be part of permits or agency actions, or may be stand-alone documents. Moreover, agencies will generally limit Section 61 Findings to impacts and mitigation within the scope of the subject matter of their permits (e.g., MassDEP Section 61 Findings will address water quality and waterways matters).

The proposed Section 61 Findings below and the subsequent sections contain commitments the Proponent has made as a basis for respective agency Section 61 Findings. These commitments include mitigation measures for potential impacts related to wetlands, construction-period stormwater management, underwater archaeological resources, navigation, and construction noise and emissions. The Proponent will provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed.

10.1.1 Massachusetts Department of Environmental Protection

Project Name:	Martha's Vineyard Reliability Project
Project Location:	Falmouth, Tisbury and Oak Bluffs
Project Proponent:	NSTAR Electric Company d/b/a Eversource Energy
EEA Number:	16562
Date Noticed in Monitor:	May 25, 2022

The following Findings for the Martha's Vineyard Reliability Project (EEA #16562) were prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [insert date] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Single EIR (SEIR), dated [insert date] adequately and properly complied with the MEPA statute and regulations.

The Martha's Vineyard Reliability Project includes a new 23 kV underground and submarine distribution cable between Falmouth on Cape Cod and Oak Bluffs on Martha's Vineyard, modifications at the existing Stephens Lane substation in Falmouth, and a new equipment yard off Eastville Avenue in Oak Bluffs. The buried submarine cable is proposed to pass through state waters in the towns of Falmouth, Tisbury, and Oak Bluffs. The underground onshore cable will be located in the towns of Falmouth and Oak Bluffs.

The purpose of the Project is to improve the reliability of the grid-based electrical system on Martha's Vineyard to meet existing and future grid-based electrical energy needs on Martha's Vineyard, thus ensuring consistent and reliable energy services to its customers on the Island. Derivative benefits will be achieved on the Island, and those include the following.

- The 5th Cable will allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emission on the Island.

- The Project will allow Eversource to decommission the five existing diesel generators, which will: (1) move toward the Martha Vineyard Commission's Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators. Decommissioning the diesel generators on Martha's Vineyard will reduce air emissions, by approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO2, based on 2020/2021 operating hours and EPA AP-42 emission factors.

- Lastly, by connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

Derivative benefits will be achieved in Falmouth, and those include the following.

- The Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.

- The Proponent will install electric vehicle charging stations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

The proposed submarine cable route will begin at the landfall site off Surf Drive in an existing paved parking lot near the intersection of Shore Street and Surf Drive in Falmouth. From this point, the proposed cable will cross Vineyard Sound and will make landfall in Oak Bluffs in the Eastville Avenue ROW. Both landing sites support the landing of the existing 99 Cable. The preferred method of cable installation across the Vineyard Sound is by trenchless construction, e.g., hydroplow or remotely operated vehicle trenching machine. Horizontal directional drilling will be used at: (1) the Falmouth landfall for approximately 2,153 feet seaward to avoid beach, dune, eelgrass and intertidal resources; and (2) the Oak Bluffs landfall for approximately 1,100 feet seaward to avoid beach, dune, and intertidal resources. The landside underground duct and manhole system in both Falmouth and Oak Bluffs will be installed via open trench and back fill construction techniques. Equipment upgrades will be made at Substation #933 off Stephen's Land in Falmouth, within the existing substation footprint. A new equipment yard will be constructed off Eastville Avenue in Oak Bluffs on a parcel owned by Eversource.

As this Project is currently described, the following state permits and/or approvals will be required from the Department:

- 401 Water Quality Certification; and
- Chapter 91 Waterways License and Dredge Permit.

Based upon its review of the MEPA documents, the permit applications submitted to date, and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permits required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permits. The Proponent will provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed.

Furthermore, this water-dependent Infrastructure Crossing Facility is presumed to meet the criteria related to public benefit review, and the Proponent has provided an analysis of the potential impacts and proposed public benefits.

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Department of Environmental Protection

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By

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[Date]

10.1.2 Massachusetts Department of Transportation

Project Name:	Martha's Vineyard Reliability Project
Project Location:	Falmouth and Oak Bluffs
Project Proponent:	NSTAR Electric Company d/b/a Eversource Energy
EEA Number:	16562
Date Noticed in Monitor:	May 25, 2022

The following Findings for the Martha's Vineyard Reliability Project (EEA #16562) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [insert date] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's Single EIR (SEIR), dated [insert date] adequately and properly complied with the MEPA statute and regulations.

The Martha's Vineyard Reliability Project includes a new 23 kV underground and submarine distribution cable between Falmouth on Cape Cod and Oak Bluffs on Martha's Vineyard, modifications at the existing Stephens Lane substation in Falmouth, and a new equipment yard off Eastville Avenue in Oak Bluffs. The buried submarine cable is proposed to pass through state waters in the towns of Falmouth, Tisbury, and Oak Bluffs. The underground onshore cable will be located in public ROWs the towns of Falmouth and Oak Bluffs.

The purpose of the Project is to improve the reliability of the grid-based electrical system on Martha's Vineyard to meet existing and future grid-based electrical energy needs on Martha's Vineyard, thus ensuring consistent and reliable energy services to its customers on the Island. Derivative benefits will be achieved on the Island, and those include the following.

- The 5th Cable will allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emission on the Island.

- The Project will allow Eversource to decommission the five existing diesel generators, which will: (1) move toward the Martha Vineyard Commission's Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators. Decommissioning the diesel generators on Martha's Vineyard will reduce air emissions, by approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO2, based on 2020/2021 operating hours and EPA AP-42 emission factors.

- Lastly, by connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

Derivative benefits will be achieved in Falmouth, and those include the following.

- The Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.

- The Proponent will install electric vehicle charging stations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

The proposed submarine cable route will begin at the landfall site off Surf Drive in an existing paved parking lot near the intersection of Shore Street and Surf Drive in Falmouth. From this point, the proposed cable will cross Vineyard Sound and will make landfall in Oak Bluffs in the Eastville Avenue ROW. Both landing sites support the landing of the existing 99 Cable. The preferred method of cable installation across the Vineyard Sound is by trenchless construction, e.g., hydroplow or remotely operated vehicle trenching machine. Horizontal directional drilling will be used at: (1) the Falmouth landfall for approximately 2,153 feet seaward to avoid beach, dune, eelgrass and intertidal resources; and (2) the Oak Bluffs landfall for approximately 1,100 feet seaward to avoid beach, dune, and intertidal resources. The landside underground duct and manhole system in both Falmouth and Oak Bluffs will be installed via open trench and back fill construction techniques. Equipment upgrades will be made at Substation #933 off Stephen's Land in Falmouth, within the existing substation footprint. A new equipment yard will be constructed off Eastville Avenue in Oak Bluffs on a parcel owned by Eversource.

As this Project is currently described, the following state permits and/or approvals will be required from the Department:

- State Highway Access Permit / Rail Division Use and Occupancy License.

Based upon its review of the MEPA documents, the permit applications submitted {insert date], and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permits required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permits. The Proponent will provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed.

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Department of Transportation

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By

____
[Date]

10.2 Mitigation Summary

The most important mitigation measure for this Project is the careful selection of the preferred cable route and selected submarine cable construction techniques. As described in Section 3.0, the Proponent considered a number of alternative routes and determined that the preferred route and construction techniques would satisfy the Project purpose and best balance's the reliability, cost, and environmental impacts of the Project. The potential environmental effects are associated with the construction phase, as once the cable installed no ongoing potential adverse effects are anticipated. Long-term environmental benefits to be derived by the Martha's Vineyard Reliability Project include:

- The 5^{th} Cable will allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emission on the Island.

- The Project will allow Eversource to decommission the five existing diesel generators, which will: (1) move toward the Martha Vineyard Commission's Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators. Decommissioning the diesel generators on Martha's Vineyard will reduce air emissions, by approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO_2, based on 2020/2021 operating hours and EPA AP-42 emission factors.

- By connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

- The Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This Project element has already begun and is ongoing.

- The Proponent will install electric vehicle charging stations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.

In addition to proper route selection, a number of mitigation measures involving construction methodology and schedule will avoid and minimize potential environmental impacts. The mitigation measures are summarized below in **Table 10.1 – Summary of Impacts and Mitigation Measures**. The attributes of each mitigation measure are summarized below.

10.3 EJ Population Mitigation Measures

The Proponent has a fundamental responsibility to provide and maintain reliable electrical service throughout its service area, for the benefit of all customers, both EJ populations and non-EJ populations. A reliable supply of electricity is essential for the health, safety, and welfare of the public and the economy. Thus, providing a reliable electrical distribution system to the Island will benefit all residents of Martha's Vineyard.

The following measures are incorporated into the Project to mitigate potential impacts on EJ Populations proximate to the Project:

- The landside cable route in Falmouth was selected to avoid construction through mapped EJ communities.

- Decommissioning the diesel generators on Martha's Vineyard will reduce air emissions, by approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO_2, based on 2020/2021 operating hours and EPA AP-42 emission factors. This will benefit multiple EJ communities that are within a 5-mile radius of the generators. See Figure 10.

- The widening of the Shining Sea Bikeway will benefit residents and visitors to Falmouth, including the three nearby EJ communities.

- The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.

- The 5th Cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island, benefiting EJ and non-EJ populations alike.

- Construction-period air emission mitigation measures summarized in Table 10.1 will benefit EJ populations proximate to the landside construction sites.

- Construction-period noise mitigation measures summarized in Table 10.1 will benefit EJ populations proximate to the landside construction sites.

- Construction-period traffic mitigation measures summarized in Table 10.1 will benefit EJ populations proximate to the landside construction sites.

10.4 GHG Self Certification

The Certificate on the EENF reads in part:

> *"To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, the Proponent must provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above shall be incorporated into the draft Section 61 Findings included in the Single EIR*."

The Proponent certifies that upon completion of the Project, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the Project and will illustrate the degree of GHG reduction from a Baseline case, as Baseline is defined herein, and how such reductions are achieved. Details of the Proponent's implementation of operational measures will also be included.

Table 10.1 Summary of Impacts and Mitigation Measures

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Coastal Wetlands and Tidelands	Temporary impacts to: ♦ Land Under the Ocean (LUO) ♦ Land Containing Shellfish (LCS) ♦ Land Subject to Coastal Storm Flowage (LSCSF)	♦ HDD construction at the landfalls avoid impacts to Coastal Beach, Coastal and eelgrass ♦ Trenchless construction across Vineyard sound minimize alteration to LUO and LCS. ♦ Trenchless construction across Vineyard avoids permanent alteration to LOU and LCS. ♦ Landside work will restore surface grades and conditions to match pre-construction conditions resulting in no effect on LSCSF.	♦ Orders of Conditions from Falmouth, Tisbury, and Oak Bluffs Conservation Commissions ♦ WQC from MassDEP ♦ Ch. 91 Licesne from MassDEP ♦ GP from USACE	During construction	Cost included in overall Project budget	Proponent Town of Falmouth
State-Listed Species	Submarine Cable located within Priority and Estimated Habitat for: ♦ Least Tern, ♦ Common Tern, and ♦ Roseate Tern, which is also a federal-listed species.	♦ Work in the Sound, on the water sheet, is not expected to effect foraging habitat for these species. ♦ No work is proposed on the beach or dune. ♦ Construction proximate to the beaches and dunes, which may support nesting habitat will be timed to avoid the nesting seasons. ♦ An observer will be present at HDD operation site in Falmouth when work occurs within 1-month of the TOY period.	♦ Take Determination or Letter from NHESP ♦ Consultation under Section 7 with USFWS	During construction	Cost included in overall Project cost	Proponent
Water Quality	The Project is not expected to result in any significant impacts to water quality.	♦ A Preliminary Inadvertent Release Plan has been developed for the HDD activities and identifies the minimum standards for the contractor's project-specific IR Plan. ♦ A construction Stormwater Pollution Prevention Plan ("SWPPP") will be prepared and implemented during construction including the use of BMPs during construction to protect water quality.	Preparation of the SWPPP and submittal of the e-NOI to EPA prior to construction	During construction	Cost included in overall Project costs	Proponent & Landside Cable Contractor
Underwater Archaeological Resources	HDD and submarine cable-trenching operations have the potential to impact underwater archaeological resources, should they be present.	♦ The results of the marine archaeological assessment completed for the Project were sent to MHC and MBUAR during MEPA review. ♦ Alignment was selected to avoid known and any identified resources.	Consultation under Section 106 with MHC, etc.	Prior to construction.	Cost included in overall Project cost	Proponent

Table 10.1 Summary of Impacts and Mitigation Measures (Continued)

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Navigation	In-water construction will require temporary navigation restrictions in the immediate vicinity of Project vessels.	♦ In-water construction will be timed to avoid the busy recreational boating season. ♦ Proponent will coordinate with U.S. Coast Guard, municipal Harbor Masters, and the Steamship Authority prior to initiating cable installation.	Notice to Mariners from USCG	During construction.	Cost included in overall Project cost	Proponent & Marine Contractor
Fisheries	In-water construction will temporarily disturb bottom sediment. Cable protection, if needed, may change seafloor substrate,	♦ Use hydroplow to minimize bottom disturbance. ♦ Schedule in-water work in compliance with any TOYs established by DMF. ♦ Select cable protection system to minimize change in benthic habitat.	Letter of Authorization Scientific Permit from DMF	During construction.	Cost included in overall Project cost	Proponent & Marine Contractor
Air Quality	Short-term, temporary air emissions during construction (vessels, construction vehicles, construction equipment) and possibly the generation of fugitive dust. Benefits will be achieved by decommissioning the five on-Island diesel generators.	♦ Construction equipment engines will comply with requirements for the use of ULSD in off-road engines. ♦ Contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on diesel engines. ♦ Contractors will abide by the 5-minute idle law. ♦ Mechanical sweeping of construction areas and surrounding streets and sidewalks, as necessary. ♦ Using covered trucks or enclosed trailers to transport aggregate and soils. ♦ Removal of all dirt/mud from the wheels and undercarriage of all trucks prior leaving the HDD sites. ♦ Wetting and / or covering of exposed soils and stockpiles to prevent dust generation, as necessary. ♦ Minimizing stockpiling of material and debris on-site ♦ Minimizing the duration that soils are left exposed. ♦ The Project will avoid annual emissions from the 5 decommissioned diesel generators.	None	During construction. Decommission of on-Island generators in May 2025.	Cost included in overall Project cost	Proponent & Landside Contractor

Table 10.1 Summary of Impacts and Mitigation Measures (Continued)

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Noise	Temporary impacts on noise during construction	♦ Minimize amount of work conducted outside of typical construction days and hours. ♦ Ensure appropriate mufflers are installed and maintained on construction equipment. ♦ Ensure appropriate maintenance and lubrication of construction equipment to provide the quietest performance. ♦ Require muffling enclosures on continuously-operating equipment such as air compressors and welding generators. ♦ Require contractor to turn off construction equipment when not in use and minimizing idling times. ♦ Mitigating impact of equipment on sensitive locations by using shielding or buffering distance to the extent practical.	None	During construction.	Cost included in overall Project cost.	Proponent, Landside Contractor, and Marine Contractor
Historic and Archaeological Resources	Landside route does not pass through known historic resource and archaeological resources.	♦ Landside route located in existing disturbed public ROWs. ♦ Proponent will continue to coordinate with the MHC to avoid any previously unknown historic or archaeological resources.	None	During construction.	Cost included in overall Project cost.	Proponent
Stormwater	Impacts will be temporary and limited to the construction period.	♦ Erosion and sedimentation control BMP's (i.e., silt fence and/or hay bales) to be used around HDD staging and temporary work areas and installation of inlet protection. ♦ SWPPP to be prepared and followed including minimum weekly erosion inspection. ♦ HDD drill cuttings and drill fluids will be collected, managed, and disposed of in accordance with local and state standards.	SWPPP to be prepared and e-Notice of Intent submitted to EPA (NPDES program)	During construction.	Cost included in overall Project cost.	Proponent and Landside Contractor

Table 10.1 Summary of Impacts and Mitigation Measures (Continued)

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Traffic	Temporary traffic impacts during construction	♦ Traffic management plan will be prepared for minimizing construction-period traffic disruptions to multimodal forms of transportation (vehicles, bicycles, pedestrians). ♦ Underground distribution line scheduled to be constructed off-season between September (after Labor Day) and May (before Memorial Day). ♦ Construction schedule will minimize impacts to neighboring seasonal residential homes and potentially result in fewer traffic related impacts due to a lower volume of vehicles on Cape and Island roadways off-season.	Grant of Location and Street Opening Permit from Towns of Falmouth and Oak Bluffs	During construction.	Cost included in overall Project cost	Proponent and Landside Contractor
Environmental Justice		♦ The 5th Cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island, benefiting EJ and non-EJ populations alike. ♦ Decommissioning of five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators which may benefit air quality for EJ populations within the 5-mile radii of the two generator sites. The future of the generators will be determined by the generator's independent owners, not Eversource. ♦ Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors, including the EJ community in Falmouth that partially borders this route.	None			

Table 10.1 Summary of Impacts and Mitigation Measures (Continued)

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Environmental Justice (Continued)		♦ Relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing. ♦ Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource. ♦ See all other mitigation subject matters such as air quality, noise, traffic, recreation, etc. which provide mitigation to EJ communities.				
Energy	Improving the reliability of the electric grid to Martha's Vineyard	♦ Provides redundant electric distribution cable to Martha's Vineyard, to improve the reliability of grid-based electricity to the Island, meet existing and projected load growth, and allow for better integration of distributed renewable power. ♦ The 5th Cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island. ♦ Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.	None	During Operations	Cost included in overall Project cost	Proponent
Recreation	Construction along the Shining Sea Bikeway	♦ Shining Sea Bikeway will be widened from 10- to 13-feet along the segment in which the duct and manhole system is installed, this will improve recreational and exercise opportunities for area residents and visitors.	State Highway Access Permit and Rail Division Use and Occupancy License from MassDOT	During Construction and Operations	Cost included in overall Project cost	Proponent and Town of Falmouth

Table 10.1 Summary of Impacts and Mitigation Measures (Continued)

Subject Matter	Impact	Mitigation Measure(s)	Agency Action Required	Schedule	Cost	Responsible Party
Greenhouse Gas	Reduction of GHG Emissions	♦ Decommissioning of five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators. ♦ Allows for increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard further supporting the reduction of GHG emission on the Island	None	May 2025	None	Proponent
Economics	Additional economic benefits for the region	♦ Project will generate construction jobs. ♦ Meeting current and future electrical demands with a reliable cable will support the year-round and seasonal economy on Martha's Vineyard.	None	Construction Phase Operations Phase	None	Proponent

Section 11.0

Response to Comments

11.0 RESPONSE TO COMMENTS

This Chapter provides responses to the comment letters received by the Secretary during the review of the Expanded Environmental Notification Form. The comment letters were annotated and individual comments coded in the right-hand margin as provided in **Attachment L – EENF MEPA Certification and Comment Letters**. The responses to the comments are listed below with the corresponding code numbers and a brief synopsis of the comments. Comment letters were received from the following agencies and organizations:

Table 11.1 Secretary's Certificate and Comment Letters

Commenter	Date	Abbreviation
EEA Secretary's Certificate on the Draft EIR	July 15, 2022	MEPA
Massachusetts Division of Marine Fisheries	July 5, 2022	DMF
Cape Cod Commission	July 8, 2022	CCC
Massachusetts Office of Coastal Zone Management	July 8, 2022	CZM
Boston Residents Group	July 8, 2022	BRG
Massachusetts Department of Transportation	July 8, 2022	DOT
Natural Heritage and Endangered Species Program of Massachusetts Division of Fisheries & Wildlife	July 8, 2022	NHESP
Massachusetts Department of Environmental Protection	July 13, 2022	DEP
Peter Johnson-Staub Acting Town Manager of the Town of Falmouth	July 5, 2022	FALM

11.1 EEA Secretary's Certificate on the Draft EIR Comments

MEPA 01 **The Single EIR should identify any changes to the project since the filing of the EENF/Proposed EIR.**

There have been no significant changes to the Project since the dual EENF / Proposed EIR was filed.

MEPA 02 **It [the Single EIR] should identify and describe state, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. The Single EIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards.**

Since the original MEPA filing, the Proponent has submitted a Notice of Intent to the Falmouth Conservation Commission for the landside cable from Substation #933 to Surf Drive. The Order of Conditions (DEP File No. 25-4790) was issued approving the landside cable duct and manhole system construction. Additionally, a Development of Regional Impact ("DRI") application was submitted to the Cape Cod Commission. A full list of state, federal, and local permits and their status is presented in Section 1.3.

The Project is consistent with applicable statutory and regulatory standards and requirements. A description of these standards and requirements and a discussion of the Project's consistency with those standards is presented in Section 7.0.

MEPA 03 **The Single EIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, pedestrian and bicycle accommodations, and stormwater and utility infrastructure. The Single EIR should provide detailed plans, sections, and elevations to accurately depict existing and proposed conditions, including proposed above- and below-ground structures, on- and-off-site open space, and resiliency and other mitigation measures.**

Updated project plans are presented in Attachment M. These plans depict existing and proposed conditions, including man-made and natural features germane to environmental review including, but not limited to, transportation, pedestrian and bicycle accommodations, stormwater and utility infrastructure, proposed above- and below-ground structures, stormwater, resiliency and other mitigation measures.

MEPA 04 **The Single EIR should provide supplemental information in support of the project's purpose and need with respect to increasing the supply of electricity to meet future load growth. It should provide an analysis documenting why four cables cannot meet the electricity needs of Martha's Vineyard, clarify whether the Preferred Alternative has the potential to expand capacity in non-peak periods, and, if so, estimate the maximum**

potential amount of increased capacity and associated energy generation that is made possible by the project. The Single EIR should clarify what, if any, regulatory process is necessary to expand capacity in this fashion.

Eversource, as a regulated utility, must design, operate, and plan its system in accordance with forecasted load growth. Thus, in accordance with good utility practice, cost minimization for rate payers, prudent planning and operation, and its charter as a franchised rate-regulated electric utility system improvements are based on predicted load growth. The four existing cables servicing Martha's Vineyard can supply 43 MVA. The Project will provide an additional 23 kV cable, increasing the firm capacity of the system to 68 MVA. The most recent extreme weather (90/10) non-coincident ten-year forecast for Martha's Vineyard is 64 MW for 2025 when the five diesel generators are retired, and increases to 67 MVA by 2030. Section 1.1 details the Purpose and Need of the Project.

The additional capacity provided by the 5th Cable is needed to meet the Proponent's obligation to provide reliable electrical service to its Martha's Vineyard customers during peak and non-peak periods. This is defined as the capacity to supply electricity even during N-1 conditions.[25] The 5th Cable meets that need and is not proposed to increase electrical supply to Martha's Vineyard beyond what is predicted in the demand forecast.

Electric utility infrastructure, and submarine cables in particular, are expensive, capital-intensive, require extensive permitting, and have very long lead times to design, purchase, construct, and commission. When a utility implements a T&D upgrade solution, it is designed to address future load growth for many years, to avoid the need to come back gain to implement more upgrades.

Martha's Vineyard, in particular, through the Martha's Vineyard Commission's Climate Action Task Force, is one of the subareas of the Commonwealth which has expressed interest in incentivizing electrification of various end uses such as heating, cooking, and electric vehicle charging in an attempt to reduce fossil fuel use and greenhouse gas emissions. This will increase electric load growth, making it more imperative that Eversource install sufficient capacity to address this load growth.

EFSB review is not required for the proposed 5th Cable. EFSB review would be required to, (1) increase electrical distribution beyond forecasted demand, or (2) for construction of a transmission cable, defined as 69kV or greater. Whereas neither of these two criteria are met or exceeded, EFSB review is not required.

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[25] An N-1 condition is the firm capacity of distribution system minus one of the critical elements in the system (e.g., a cable, transformer, etc.). For Martha's Vineyard the current system element used to determine the N-1 capacity is the 75 Cable.

MEPA 05 **The Single EIR should analyze an alternative involving only four cables, including replacement of Cable #91 with a higher-capacity cable, and an on-Island energy generation alternative that avoids the need for a fifth cable.**

The Martha's Vineyard distribution system is presently supplied with and designed for 25 kV supply. Replacing the 91 Cable with a higher capacity cable, e.g., a 69 kV or 115 kV cable, would require a new transmission to distribution substation on the Island to step down the power from the higher capacity cable to integrate it into the Island's grid. That would require a full substation site to be acquired and developed on the island. Additionally, a second higher capacity cable would require redundancy to ensure a reliable supply during an N-1 condition, because the new higher capacity cable would be the outage for which N-1 condition is needed. The full analysis of an alternative involving only four cables and on-Island energy generation is presented in Section 3.0.

In summary a "four cable" alternative becomes a five cable alternative because the redundancy needed for the higher capacity cable. Thus no reduction in coastal and marine impacts. This option would also require greater land disturbance for the transmission to distribution substation compared the equipment yard needed for the proposed Project.

MEPA 06 **The EENF/Proposed EIR did not evaluate alternative routes across Vineyard Sound; as described below, this analysis should be provided in the Single EIR.**

Three alternate routes across Vineyard Sound were identified assessed impacts to OMP mapped hard and complex seafloor, impacts to Land Under the Ocean and Land Containing Shellfish, the standard to avoid cable crossings, and the DPU standard to have the straightest path possible. This demonstrates that the route presented in this SEIR is the LEDPA, and remains the Preferred Cable Alignment. A full analysis is presented in Section 3.4.

MEPA 07 **However, as noted by CZM, the analysis [of on shore cable route alternatives] did not consider impacts to LSCSF or the long-term resiliency of each route with respect to storm-induced shoreline erosion. The Proponent should provide an additional analysis of the vulnerability of the preferred route to erosion and review alternatives that minimize vulnerability to erosion.**

A shoreline erosion assessment is being prepared and will be presented to the CZM Office and other agencies during the permitting process. The scope of the modeling effort was developed in consultation with CZM.

MEPA 08 **The Single EIR should analyze any other relevant short-term and long-term environmental or public health impacts of the project, including construction period activities.**

Potential construction-period effects on EJ and non-EJ populations include air emissions, dust, noise and traffic related the HDD operations at the landfall sites and construction of the duct and manhole systems. Short-term construction period impacts were analyzed and determined not to have an environmental or public health impact. A detailed analysis of construction period impacts is presented in Section 6.7.1.2. Once built the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise or increase traffic.

MEPA 09 **If any disproportionate adverse effects or increased risks of climate change are identified, the Single EIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings.**

Analysis of construction period impacts determined that the proposed Project does not contribute to any disproportionate adverse effects or increased climate change risks to the EJ populations within the DGA. This analysis is presented in Section 6.8.

MEPA 10 **The Single EIR should discuss the air quality and other benefits of the project, and whether those benefits would specifically benefit EJ populations so as to promote the equitable distribution of Environmental Burdens and Environmental Burdens, in accordance with "Environmental Justice Principles" as defined in 301 CMR 11.02.**

The Proponent has a fundamental responsibility to provide and maintain reliable electrical service throughout its service area, for the benefit of all customers, both EJ populations and non-EJ populations. A reliable supply of electricity is essential for the health, safety, and welfare of the public and the economy. Thus, providing a reliable electrical distribution system to the Island will benefit all residents of Martha's Vineyard.

Decommissioning the diesel generators on Martha's Vineyard will reduce air emissions, by approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO2, based on 2020/2021 operating hours and EPA AP-42 emission factors. This will benefit multiple EJ communities that are within a 5-mile radius of the generators. The widening of the Shining Sea Bikeway will benefit residents and visitors to Falmouth, including the three nearby EJ communities. A discussion of all Project benefits and environmental benefits is presented in Section 6.7.3.

MEPA 11 **The Single EIR should provide an update on public involvement activities undertaken by the Proponent and describe its plan for outreach during subsequent permitting for the project.**

Public involvement activities that have occurred since the initial MEPA filing include pre-construction outreach involving open houses in Falmouth. EJ Outreach is described in Section 6.6.

MEPA 12 **The Single EIR, or a summary thereof, should be circulated to the EJ Reference List provided for the project prior to the filing of the Single EIR.**

The SEIR will be circulated to the EJ reference list.

MEPA 13 **The Single EIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate "vulnerable health EJ criteria," in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts.**

A vulnerable health criteria analysis concluded that Falmouth meets the vulnerable health criteria for heart attack, Tisbury meets the vulnerable health criteria for heart attack, childhood blood lead, low birth weight, and childhood asthma, and Oak Bluffs meets the vulnerable health criteria for childhood blood lead. Census tract 72001 in Tisbury meets the vulnerable health criteria for low birth weight. A full analysis of vulnerable health criteria is provided in Section 6.2, The Project does not involve any impacts that will materially exacerbate vulnerable health EJ criteria.

MEPA 14 **In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed.**

Data from the DPH EJ Tool is presented in Section 6.3. Table 6.2 provides a summary of the Vulnerable Health Data and whether it is located in the immediate vicinity of the Site. All data was provided at the community or census tract level and could not be utilized to determine the "immediate vicinity" of the site. Nonetheless, no Project impacts were identified that could materially exacerbate the vulnerable health criteria conditions identified. One of the benefits of the Project is the decommissioning of the five diesel generators in West Tisbury and Oak Bluffs which will likely improve local air quality in the immediate vicinity of these generators.

MEPA 15 **To the extent any required Permits for the project contain performance standards intended to protect public health, the Single EIR should contain specific discussion of such standards and how the project intends to meet or exceed them.**

The environmental compliance review for required permits is presented in Section 7.0, Compliance with the environmental regulations is expected to yield adequate protection of the associated public health and safety interests germane to the environmental regulations.

MEPA 16 **As requested by CZM and DMF, the Proponent should provide the results of the marine surveys in the formats identified in their comment letters.**

Marine survey data was provided to CZM and DMF in the requested formats.

MEPA 17 **The Single EIR should quantify the length of cable to be buried in each type of seafloor along the proposed route. It should characterize and describe temporary and permanent impacts to hard/complex seafloor and estimate the habitat recovery time.**

The length of cable to be buried by hydroplow in each seafloor types identified from the fall 2021 Marine Survey is presented in Table 7.1.

The submarine cable routes alternatives analysis, SEIR Section 3.4, documents the maximum potential permanent seafloor alteration resulting from cable protection. That is approximately 5,535 feet. The remainder of the route is expected to require only temporary disturbance from jet plow cable installation.

In terms of seafloor recovery time, construction of the nearby NSATR/Comcast Cable, referred to now as the Eversource #75 Cable (EEA No. 14755) and completed in late-April 2014, provides a case study of cable installation by jet plow through Vineyard sound. The post-construction survey was conducted in late-May / early-June approximately six weeks after construction was completed. After only six weeks the surveys documented only minor disturbance resulting from cable installation, described as a narrow furrow of 2- to 10-feet wide and 1- to 2-foot deep with a sandier substrate than adjacent areas. No visible disturbance was observed in the areas used for anchoring associated with the HDD activities. A summary of the survey is provided in Section 7.1.

Eversource's priority will be to achieve sufficient burial depth of the cable and to reduce or avoid the need for any cable protection wherever possible. Therefore, at a minimum there would be zero permanent impacts to hard/complex seafloor. However, as described in Section 3.4, cable protection may be needed. While 10-foot wide cable protection is expected, a conservative estimate of a 30-foot wide cable protection was assumed. If all cobble and boulder areas identified in the 2021 Marine Survey required 30-foot wide cable protection, the maximum square footage of permanent impacts would be 3.81 acres, as described in Section 3.4 and summarized in Table 3.3.

MEPA 18 **The Single EIR should provide a more detailed justification for the estimate of cable protection area or provide a range of estimates.**

Cable protection impacts are estimated to range from no alteration (0 sq ft) if no cable protection is needed, and up to 3.81 acres assuming a 30-foot wide protection footprint if cable protection is needed across all cobble and bolder areas identified in the 2021 Marine Survey. Section 2.8 further discusses the construction contingency for cable protection.

MEPA 19 **The Single EIR should provide a supplemental analysis to support a determination that the Preferred Alternative is the least environmentally damaging practicable alternative,**

that all practicable measures have been taken to avoid areas of hard/complex seafloor SSU and that the project will not significant alter SSUs.

The preferred alternative was compared to three other possible routes and it was determined that the preferred alternative is the least environmentally damaging practicable alternative and takes all practicable measures to avoid areas of hard/complex seafloor. A detailed analysis is presented in Section 3.4. Temporary impacts to hard/complex seafloor are expected to naturally recover and show only minor disturbance after a few months, as detailed in Section 7.1.

MEPA 20 **The analysis should quantify temporary and permanent impacts to hard/complex seafloor of the Preferred Alternative. It should review alternative offshore cable routes, including routes that avoid or minimize impacts to SSUs, and qualitatively and quantitatively compare the alternative routes.**

Cable protection (i.e., permanent) impacts are estimated to range from 0 acres (if no cable protection is needed) up to 3.81 acres if cable protection is needed across all cobble and bolder seafloor type identified in the fall 2021 Marine Survey. Three alternate cable routes were identified and analyzed with the goal of minimizing impacts to SSUs. The length and area impacts (both temporary and permanent) for each route are quantified in **Tables 3.1** and **3.2**. A discussion of cable route comparisons is presented in Section 3.4.

MEPA 21 **The Single EIR should demonstrate that the proposed construction methods and mitigation measures will minimize impacts to SSUs.**

The selected construction methods are themselves the primary mitigation to avoid and minimize potential Project impacts to SSUs. The use of HDD at both landfalls avoids altering coastal beach, intertidal resources and eelgrass beds along the Falmouth shoreline, while in Oak Bluffs it avoids intertidal resources, coastal beach, and dune. The use of hydroplow construction to bury the cable below the seabed is a less disruptive construction technique than traditional trench and backfill construction. Further detail is provided in 3.4 and Section 7.1.3 responding to the ocean development mitigation fee.

MEPA 22 **Based on the analysis of project impacts and mitigation measures provided in the Single EIR, comments from Agencies and the public, an evaluation of the public benefits of the project and other relevant factors, I will establish the ocean development mitigation fee for this project in the certificate on the Single EIR.**

This statement is acknowledged, and responses to the guidance used to determine the ocean development mitigation fee are presented in Section 7.1.3.

MEPA 23 **The EENF/Proposed EIR did not evaluate potential impacts to benthic habitat associated with suspension of sediments during cable installation or identify potential mitigation measures; this analysis should be provided in the Single EIR.**

Sediment grain size analysis shows that the substrate across Vineyard Sound is primarily sand and gravel within minimal fines (passing the #200 sieve). Percent of fines across the Sound were less than 1% in 17 of the 24 stations sampled; 1% to 3% in 4 of the 24 stations sampled; and greater than 10% in 3 of the 24 station sampled. The three station with 10% of more fines in the approach the Vineyard Haven Harbor. Note, in the seven other stations explored the substrate was too coarse (i.e., cobbles and larger) to collect a sample for sieve analysis.

The Essential Fish Habitat report evaluates the potential impact from suspension of sediments on mobile and sessile organisms. The report notes that sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away. Although slow moving or sessile invertebrates will be unable to leave the area during installation, the short duration and limited concentration of suspended sediments are not expected to seriously harm organisms. Therefore, elevated TSS levels during cable installation is not likely to result in reductions in the quality or quantity of EFH or have substantial negative effects on species with designated EFH or considered NOAA Trust Resources in the area. A summary of the EFH report is presented in Section 8.0, and the full report is presented as Attachment H.

MEPA 24 **The Single EIR should provide a detailed description of steps that will be taken to minimize permanent impacts associated with the placement of cable protection, including techniques for deepening the cable trench and the use of armoring materials that match the characteristics of the surrounding seafloor.**

A hydroplow pre-pass is planned to investigate if there are any locations where the hydroplow is unable to penetrate the seafloor to install the cable to the design depth. Then a determination will be made if the route can be adjusted slightly to avoid a discrete obstruction (e.g., a large boulder) or that the patch of hard seafloor is unavoidable and that cable protection will be necessary. If cable protection is needed, the standard options for cable protection are rock placement, concrete mattresses (alternately, for smaller-scale applications the mattresses may be filled with grout and/or sand, referred to as grout/sandbags), and finally half-shell pipes or similar products made from composite materials (e.g., Subsea Uraduct from Trelleborg Offshore) or cast iron with suitable corrosion protection. The Proponent acknowledges that the type of cable protection will be conditioned in permits (e.g., Order of Conditions, Section 401 WQC) and the Proponent will comply with the cable protection type conditioned in permits. Areas requiring cable protection, if any, will be the only locations where post-installation conditions at the seafloor will permanently differ from existing conditions. Construction contingencies are further detailed in Section 2.8.

MEPA 25 **The Single EIR should identify post-construction surveys, such as video transects, that will be undertaken to document recovery of benthic habitat along the cable route. I encourage the Proponent to consult with CZM regarding appropriate post-construction surveys.**

The selected submarine cable installation contractor will be required to prepare and "as-built" plan documenting the cable location. A post-construction survey of the seafloor along the cable route will be conducted after the cable is installed. This survey will consist of the following:

- Multi-beam Bathymetry;
- Side Scan Sonar; and
- Underwater Video.

The purpose is to document seafloor conditions along the cable corridor.

MEPA 26 **The Single EIR should provide an analysis in support of a finding of water-dependency and review the project's conformance with the relevant c. 91 regulatory standards.**

The project is an "infrastructure crossing facility" that will cross the flowed tidelands of Vineyard Sound and cannot be located away from those tidelands while achieving the Project purpose, therefore the Project is classified as a "water-dependent use" project. Compliance with Chapter 91 regulatory standards is presented in Section 7.3.

MEPA 27 **The Proponent should coordinate with DMF during the construction period to minimize interference of the project with DMF's bottom trawl survey conducted annually in Vineyard Sound the spring and autumn.**

DMF provided contact information for Steve Wilcox, the Resource Survey Assessment Program Manager, which the Proponent has corresponded with to avoid interference with the bottom trawl survey in Vineyard Sound. Email correspondence with Mr. Wilcox is provided in Attachment E – Agency Communications.

MEPA 28 **The Single EIR should include an update on any coordination with NHESP that the Proponent has undertaken with NHESP after the EENF/Proposed EIR was filed and identify additional potential mitigation measures.**

NHESP suggested measures be taken to reduce or minimize impact should construction have the potential to run into nesting season. Updated communication with NHESP is presented in Attachment E.

MEPA 29 **The Single EIR should include the results of a quantitative desktop analysis (using existing LIDAR data etc.) of the shoreline erosion likely to occur in a major hurricane or storm event at the cable landfall location and along Surf Drive for the life of the project, including sea level rise… Depending on the results of the erosion analysis, the**

Proponent should consider alternate landfall locations and other onshore cable route options that more directly lead away from areas prone to shoreline erosion.

The Proponent coordinated with CZM to develop a scope and modeling approach to assess shoreline erosion. That analysis is in process and will be presented during the permitting process.

MEPA 30 **The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures.**

Mitigation measures are presented in Section 10 Mitigation and Draft Section 61 Findings.

MEPA 31 **This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations.**

The assessment provided in Section 6.0 identifies few impacts to EJ communities and that are primarily temporary impacts during the construction phase. Table 10.1 presents a comprehensive list of mitigation measures. The major mitigation commitments relative to EJ populations include:

- The 5th Cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island, benefiting EJ and non-EJ populations alike.
- Decommissioning of five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators which may benefit air quality for EJ populations within the 5-mile radii of the two generator sites. The future of the generators will be determined by the generator's independent owners, not Eversource.
- Shining Sea Bikeway will be widened by 3 feet from Jones Road to Mill Road, with some 8-foot-wide pull-off areas where manholes will be located, which will improve recreational and exercise opportunities for area residents and visitors, including the EJ community in Falmouth that partially borders this route.
- Relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage. This project has already begun and is ongoing.
- Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth. The exact location and number of stations has not been determined by the Town of Falmouth and Eversource.
- See all other mitigation subject matters in Table 10.1 such as air quality, noise, traffic, recreation, etc. which provide mitigation to EJ communities.

MEPA 32 **The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.**

Table 10.1 was updated to identify parties responsible, agency action or permit associated with each category, Project phasing, and costs

MEPA 33 **The Proponent must provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above shall be incorporated into the draft Section 61 Findings included in the Single EIR.**

A self-certification statement has been added to Section 10.4.

MEPA 34 **The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF/Proposed EIR that specifically address each issue raised in the comment letter; references to a chapter or sections of the Single EIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response.**

A copy of the Certificate on the ENF is provided in Attachment L**.** This Section 11.0 addresses each comment directly. In addition, Attachment L includes all comment letters with the comments annotated so that responses provided in this section can be easily tracked.

11.2 Commonwealth of Massachusetts Division of Marine Fisheries (DMF) Comments

DMF 01 **A Letter of Authorization from MA DMF will be needed for any activities that could result in the collection of fishing gear in Vineyard Sound and Massachusetts state waters. A Scientific Permit from MA DMF will be needed for any activities that could result in the collection of marine plants or animals in Vineyard Sound and Massachusetts state waters.**

Comment acknowledged. The Proponent will seek a Letter of Authorization and Scientific Permit before hydroplow activities begin.

DMF 02 **The MA DMF bottom trawl survey operates throughout Vineyard Sound annually during spring and fall (King et al., 2010). Coordination with MA DMF is recommended to ensure lack of direct conflict with this survey during survey activities and cable installation. Coordination and communication can be made with Steve Wilcox, the Resource Survey Assessment Program Manager (*steve.wilcox@mass.gov*).**

The Proponent corresponded with Steve Wilcox to avoid interference with the bottom trawl survey in Vineyard Sound. Copies of e-mail correspondence with Mr. Wilcox are provided in Attachment E **– Agency Communications.**

DMF 03 **Avoidance of in-water silt producing work associated with cable laying from April 15 to June 15 is recommended to protect spawning aggregations and incubating eggs of squid in Nantucket and Vineyard Sounds (Evans et al., 2011). The proposed sequencing of in-water work from Fall 2023 to winter 2023/2024 would avoid this time of year (TOY) restriction period.**

The Proponent will adhere to the TOY restriction for squid, requiring no in-water activity between April 15 and June 15. In-water work is currently scheduled for fall 2023, as stated in Section 2.6.

DMF 04 **Through the Ocean Plan, the Commonwealth established a standard substrate map. We would like to see that the data produced by this effort be compatible with that substrate map, since it underlies the interpretation of hard/complex seafloor. Toward that end, substrate analyses from project survey work should be produced in the same Excel spreadsheet as the Commonwealth's substrate data and interpreted substrate units should be produced as an ArcGIS shapefile or geodatabase. All data should be provided digitally in formats compatible with ArcGIS to enable comparison with existing datasets. Acoustic mosaics should be provided as geotiffs at the maximum resolution possible. There should be at least four geotiffs provided: multibeam backscatter, sidescan sonar backscatter, multibeam bathymetry, and backscatter draped on bathymetry. The date of data collection should be easily discernable for all products.**

GIS data from the fall 2021 Marine Survey was provided to DMF and CZM.

DMF 05 **Potential prohibition or relocation of fishing (fixed or mobile gear) for any length of time as a result of survey, installation, or repair procedures should be addressed in the permitting process. The size, length, and potential economic impact of closures should be included in the description.**

The Ocean Management Plan (OMP Figure 21) does not identify any Fixed Fishing Facilities in the submarine cable corridor. The Proponent will coordinate with the DMF regarding potential conflicts with mobile fishing operations or gear during the permitting process.

DMF 06 **Anticipated areas requiring covering should be described in greater detail, both in terms of the spatial distribution and existing habitat characteristics. Potential hard cover alternatives should be evaluated in terms of area of impact, habitat equivalency, and potential conflict with fishing activities.**

Section 2.8 on construction contingency evaluates the different types of cable protection - rock placement, gabion rock bags, concrete mattresses, and half-shell pipes. It is expected the protection method approved / conditioned during the permitting process will be informed by consultation DMF and will use materials to minimize adverse effects on adjacent habitat.

DMF 07 **Since cable burial will be relied upon to minimize adverse effects associated with EMF transmission (6-10 foot burial anticipated), plans for cable burial monitoring should be described in the permitting process.**

As stated in Section 2.7, Eversource is planning to conduct non-intrusive surveys, such as a multi-beam survey, of the cable corridor every five years to confirm the cable has remained buried. Post-construction surveys are described in Section 7.2.1.5.

DMF 08 **The cable installation work in nearshore waters containing eelgrass is proposed to be performed using Horizontal Directional Drilling (HDD) and the PEIR includes a frac out contingency plan (Attachment G). A mitigation plan should also be established in the permitting process in the event that inadvertent release and associated direct impacts to eelgrass occur.**

A project-specific IR mitigation plan for HDD activities will be established with input from the HDD contractor, after the contractor is selected.

11.3 Cape Cod Commission (CCC) Comments

CCC 01 **The preferred and alternative onshore cable routes are primarily located within existing roadway or bikeway layouts. Existing infrastructure, including roads, sidewalks, parking lots, and street trees, should be replaced to the same or better condition, and Commission staff suggest that the applicant clarify pavement restoration plans. On roadways where work will be performed in the shoulder area, there may be an opportunity to leave a graded surface that would be suitable for future installation of sidewalks or multi-use paths, if desired by the Town.**

The pavement restoration plan has been developed in consultation with the Falmouth DPW.

CCC 02 **Commission staff suggest that strategies, such as night work at certain major intersections, should be considered to reduce impacts to regional traffic (i.e., Route 28) and access to Falmouth Hospital.**

The Proponent and the Town of Falmouth signed a MOU limiting construction activity to occur between 7:00 am and 6:00 pm, Monday through Friday.

CCC 03 **The Project will tie into an existing substation, with new equipment upgrades proposed within the existing substation footprint. Commission staff do not anticipate significant adverse impacts to natural resources from the proposed onshore installation routes or substation upgrades presented, provided construction best management practices are followed.**

Construction BMPs will be followed as noted in Table 10.1.

CCC 04 **Because this Project requires an EIR in some form, this Project is deemed a Development of Regional Impact under § 12(i) of the Cape Cod Commission Act, c. 716 of the Acts of 1989.**

A DRI Application was submitted to the Cape Cod Commission on August 30, 2022.

11.4 Office of Coastal Zone Management (CZM) Comments

CZM 01 **The Massachusetts Ocean Management Plan (OMP) and implementing regulations at 301 CMR 28.00 set out standards for certain marine uses including submarine cable laying. Cable laying activities in the ocean planning area are presumptively excluded from Special, Sensitive, or Unique (SSU) resource areas as mapped in the OMP. A project alternative that is located outside of mapped SSU resources is presumed to be a less environmentally damaging practicable alternative than a project located within a mapped SSU resource. The SSU areas that cable projects in the ocean planning area must avoid are North Atlantic right whale core habitat, humpback whale core habitat, fin whale core habitat, areas of hard/complex seafloor, intertidal flats, and eelgrass. According to the mapped SSU resources in the 2021 OMP and the proponent's survey results within the proposed construction corridor, SSU resources potentially impacted by the project are areas of hard/complex seafloor and eelgrass.**

Impacts to eelgrass will be avoided by using HDD to install the cable beneath the eel grass meadow. Impacts to hard and complex seafloor are analyzed in Section 3.4.

CZM 02 **While in general cable-laying projects are presumptively excluded from areas with hard/complex seafloor, the presence of relatively small areas of hard-bottom substrate, such that the cable route cannot be practicably located without going through these areas of hard-bottom substrate, within acceptable limits, is permissible, based on review and determination by the Secretary in consultation with Executive Office of Energy and Environmental Affairs (EEA) agencies. In cases where the crossing of hard/complex seafloor is more than de minimis, the OMP siting standard requires the proponent to demonstrate that the maps delineating the SSU resources do not accurately characterize the resource or that 1) no less environmentally damaging alternative is practicable, 2) the project will cause no significant alteration of SSU resources, and 3) the public benefits of the project outweigh the potential detriments posed by impacts to SSU resources.**

OMP standards are addressed directly in Section 7.1.1. An analysis of alternate cable routes in comparison to the preferred route determined that the preferred alignment is the least environmentally damaging practicable alternative based on OMP criteria. See Section 3.4. No permanent alternation of SSU resources will occur unless cable protection is needed. Project benefits are described in Section 3.4 and Section 6.7.3 and analyzed against the detriment of the Project in Section 7.1. It is the Proponents opinion that the Project benefits out weight the potential impacts to SSUs.

CZM 03a **As part of the analysis, the proponent should demonstrate how the proposed project compares to a cable laying project in an alternative location and how the proposed project minimizes impacts. The comparison of alternatives should be quantitative as well as qualitative. Regarding the public benefits determination, again the applicant provided supplemental information after the submittal of the EENF/PEIR on how the**

project will improve electrical grid reliability, reduce fossil fuel use, increase electrical vehicle use, replace five diesel generators, improve the Shining Sea Bikeway, increase sidewalk clearance by relocating utility poles, and increase the number of electrical vehicle charging stations; however, the details of these improvements in some cases is lacking.

A quantitative and qualitative discussion of the preferred and alternate cable routes is presented in Section 3.4. Project benefits are described in Section 3.4 and Section 6.7.3 and analyzed against the detriment of the Project in Section 7.1.

CZM 03b **The SEIR should provide specific details (e.g., numeric reductions in emissions) for all of these anticipated improvements and include them in a public benefits determination section.**

After the 5th Cable is in service, Eversource will cease its contract to use the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators, estimated to be approximately 45 tons/year of nitrogen oxides (NOx), 0.9 tons/year of particulate matter, and 2,300 tons/year of CO2, based on 2020/2021 operating hours and EPA AP-42 emission factors.

CZM 04 **The SEIR should include a description of how the project meets the OMP standards as described above. As part of that demonstration, the proponent should quantify the length of cable and the acres of disturbance within each of the several types of seafloors crossed by the project (flat sand, sand waves, gravel pavement, cobble pavement, boulder field).**

Compliance with the OMP standards is presented point by point in Section 7.1. Table 3.1 quantifies the estimated length of hydroplow impacts in mapped OMP seafloor and unmapped seafloor types for the Preferred Cable Alignment. Table 7.1 presents the length of CMEC seafloor substrate in the 1,000-foor wide survey corridor based on the fall 2021 Marine Survey.

CZM 05 **The SEIR should also characterize and describe the expected impacts of cable installation through hard/complex seafloor and describe both the short-term impacts (e.g., area physically disturbed and the area covered by measurable sediment drape during installation) and long-term impacts (e.g., area covered by cable protection) and estimated recovery time. The above information should be used in the demonstration that no less environmentally damaging practicable alternative exists, that all practicable measures have been taken to avoid the hard/complex SSU, and that there will be no significant alteration.**

Based on a post-construction survey of the buried cable installed by hydroplow in 2014, the sea floor is expected to exhibit only minor disturbance of short-term impacts after six weeks, as described in Section 7.1. Long term impacts are only expected if cable protection is needed. The upper range of impacts from cable protection is detailed in Section 3.4.

CZM 06 **The proponent's video and sub bottom profile data suggest that significant areas of the proposed cable corridor contain cobble and boulder substrate with less than the proposed 6 to 10 feet of unconsolidated sediments necessary for burying the cable (i.e., depth to "acoustic basement" as depicted in Figures 11A-C in Attachment H). In areas where adequate cover is not available, the PEIR describes how the proponent intends to protect the cable with either rock, concrete mattresses, sandbags, or half-shell pipes. Where required, CZM supports the placement of cable protection that mimics the natural surrounding substrate. The expected area of seafloor that will be permanently converted via the proposed protection measures should be quantified in the SEIR and used to inform the mitigation proposal. CZM recommends that the proponent consider a post-construction video survey over the buried cable to document the as-built conditions.**

The maximum area of the preferred route requiring cable protection is the overlap of hard bottom seafloor and where the depth to acoustic basement was 6-feet or less. This yields those areas with hard bottom substrate, based on the fall 2021 Marine Survey. The upper estimate of cable protection is identified as 3.81 ac., as detailed in Section 3.4. This is a conservatively high estimate because it: (1) assumes the entire length of hard bottom will require cable protection, and (2) that the cable protection system will be 30-feet wide for the entire length. The 75 Cable constructed in 2014 provides a recent case study which showed that: (1) hydroplow cable installation construction was able to achieve design burial depth in similar seafloor types; (2) only a short segment, approximately 15 feet of cable, was exposed and needed protection; and (3) adequate cable protection can be achieved with a system as narrow as 10-feet wide.

For these reasons the 3.81 ac. of cable protection presented herein is presumed to be the high-end estimate. Post-construction surveys to document seafloor conditions along the cable corridor are described in Section 7.2.1.5.

CZM 07 **Following the post-lay survey, if the proponent and the permitting agencies find that the cable is not adequately buried, CZM recommends that the proponent first make another attempt to bury the cable to the appropriate depth (via jet plow, hand jetting, or other means) and only then consider importing and placing cover that mimics the surrounding seafloor to ensure that the cable will not be exposed during the lifetime of the project. CZM supports the proponent's plan to conduct non-intrusive surveys, such as a multi-beam survey, of the cable corridor every five years to confirm the cable remains buried.**

A hydroplow pre-pass is planned to investigate if there are any locations where the hydroplow is unable to penetrate to the design depth. Then a determination will be made if the route can be adjusted slightly within the surveyed corridor to avoid an impenetrable area, or if the area is unavoidable and cable protection will be necessary. The goal is to minimize seafloor alteration. This construction contingency is presented in Section 2.8.

CZM 08 **The proponent should conduct a field survey just prior to HDD exit hole construction to verify that eelgrass remains absent in the proposed locations.**

A survey will be conducted to confirm the absence of eelgrass prior to HDD punch out. HDD construction is described in Section 2.1.

CZM 09a **Pursuant to the OMP and its regulations, the project is subject to an ocean development mitigation fee to compensate the Commonwealth for the unavoidable impacts of the project on the broad public interests and rights in the lands, waters, and resources of the ocean planning area and to support the planning, management, restoration, or enhancement of marine habitat, resources, and uses pursuant to the Massachusetts Oceans Act. Details on the ocean development mitigation fee are contained in the OMP (Volume 1 Appendix 3) and at 301 CMR 28.06. The EENF (p. 20) suggests that the proposed project will require 6.4 to 7.7 acres of dredging, which would place the project into Class II for mitigation fee purposes. In supplemental information provided to the agencies the proponent proposed a mitigation fee of $75,000—midway between a Class I and Class II Ocean development project.**

Comment acknowledged. The Proponent will pay the OMP fee as determined by the Secretary. The proposed ocean mitigation fee is described in Section 7.1.3.

CZM 09b **Based on MEPA filings; comments received; the evaluation of the proposed project and its effects, public benefits, and other mitigation proposed; and other information, the Secretary will determine the mitigation fee in the final MEPA certificate. Given the proposed length of cable (~3,000 feet) that will traverse rocky seafloor in the proposed cable corridor and although not foreseen in the PEIR, but with the expectation that some amount of cable protection will be necessary, the final ocean development mitigation fee may be increased to reflect the potential for additional long-term impacts to the seafloor.**

Comment acknowledged. The Proponent will pay the OMP fee as determined by the Secretary. No changes have been made to the proposed ocean mitigation fee, as described in Section 7.1.3.

CZM 10 **CZM requests that the benthic and geophysical survey information be provided to EEA agencies in formats compatible with ArcGIS (e.g., shapefiles). CZM recommends that the GIS data: 1) relate horizontally to the Massachusetts State Plane Coordinate System Mainland Zone (NAD83, meters) and, where applicable, vertically to NAVD88 and 2) be**

completely compliant and thoroughly substantiated by metadata, compliant with the FGDC Standard, Content Standard for Digital Geospatial Metadata, FGDC-STD-001-1998, Sections 1-7, and the Federal Geographic Data Committee (FGDC) Geospatial Positioning Accuracy Standard, Parts 1-5, as appropriate. The National Standard for Spatial Data Accuracy provides guidelines in section 3.2.3, Accuracy Reporting, for reporting positional accuracy in Metadata. All metadata must include ISO Dataset Topic Categories and NASA/GCMD Earth Science Keywords as CSDGM Theme Keyword.

GIS data meeting these specifications was provided to CZM and DMF.

CZM 11 **To assess the vulnerability of the preferred cable route along Surf Drive to Mill Road to coastal erosion, a quantitative desktop analysis (using existing LIDAR data etc.) of the shoreline erosion likely to occur in a major hurricane or storm event at the cable landfall location and along Surf Drive for the life of the project, including sea level rise, is required. This analysis is critical to determine if the preferred cable route is vulnerable to erosion over the design life of the project.**

The Proponent coordinated with CZM to develop a scope and modeling approach to assess shoreline erosion. That analysis is in process and will be presented during the permitting process.

CZM 12 **Depending on the results of the erosion analysis, the proponent may consider the option of landing at Surf Drive and running the cable north, up Walker Street, to minimize vulnerability to major erosion in storms. Other cable route options that head landward from the cable landing site may also be considered.**

Four landside cable routes in Falmouth were considered, as presented in Section 3.5. Options 1 and 2 utilize Walker Street, but with input from the Town of Falmouth were not selected as the preferred alternative, partially due to the route having to go through the densely developed Main Street area. The Project does not include construction of a new duct and manhole system in Surf Drive, but rather will use the existing infrastructure in Surf Drive.

11.5 Boston Residents Group (BRG) Comments

BRG 01 **Proponent to provide detail of historic, current, and projected electrical demand on Martha's Vineyard on which the proposed reliability project is based.**

Historic, current, and projected electrical demand on Martha's Vineyard is discussed in the purpose and need section in Section 1.1.

BRG 02 **Proponent does not list Energy Facility Siting Board as among anticipated state-level reviews. Please explain whether EFSB has already occurred for the project, by docket number reference, or, alternatively, why EFSB review is not required.**

EFSB review is not required because the capacity of the proposed Project (25 kV) is less than the minimum voltage that triggers EFSB review.

BRG 03 **Please clarify by a precise listing which elements of the proposed MV Reliability Project are included within the "Infrastructure Crossing Facility" designation.**

Elements of the Project which are considered part of the "Infrastructure Crossing Facility" designation include all components located within flowed tidelands as described in Section 7.3.

BRG 04 **Please confirm that for operation of the "Infrastructure Crossing Facility" submarine cable, the ancillary facilities of substation #933 and the Eastville Avenue transformers may be located outside Chapter 91 tidelands, as currently proposed.**

The Stephens Lane Substation is an existing facility and Eastville Avenue equipment yard is a new facility. Both are located outside of tidelands and are not subject to Chapter 91 jurisdiction.

11.6 Massachusetts Department of Transportation (DOT) Comments

DOT 01 **There is an HSIP Crash Cluster in Falmouth just beyond the intersection of Jones Street with Stephens Lane providing access to the substation. The Proponent should coordinate with MassDOT District 5 to limit impacts on public safety and MassDOT jurisdictional roadways during Project development.**

Coordination with MassDOT District 5 will occur prior to construction.

DOT 02 **Once completed, the Project is anticipated to result in fewer than one vehicle trip per day. Based on the limited trip generation and temporary construction delays, MassDOT does not anticipate that the transportation impacts resulting from Project development will have significant impacts on the transportation system.**

Comment acknowledged.

DOT 03 **Based upon the above criteria, MassDOT recommends that no further environmental review be required based on transportation-related issues. The Proponent should coordinate with the Towns of Oak Bluffs, Falmouth, and Tisbury, as well as MassDOT District 5 to minimize traffic disruption and safety impacts during project construction. If you have any questions regarding these comments, please contact *Curtis.B.Wiemann@dot.state.ma.us***

Comment acknowledged. A traffic mitigation plan will be coordinated with the towns of Falmouth and Oak Bluffs and MassDOT prior to construction of the Project. Construction-period traffic management plans ("TMPs") were prepared and submitted to Dot and the DPW.

11.7 Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (NHESP) Comments

NHESP 01 **Based on the information contained within the EENF and PEIR, and in advance of a formal filing pursuant to the MESA, the Division anticipates that this project may require conditions to avoid a prohibited Take of state-listed species including but not limited to preventing disturbance to state-listed species and their habitat during the breeding period (April 1 – August 31). The Division anticipates that any state-listed species concerns can be addressed during the MESA review process.**

Comment acknowledged. The Proponent looks forward to continuing to coordinate with NHESP on conditions necessary to avoid a Take including TOY restrictions during the permitting process. Presently work in and proximate to the mapped habitats is scheduled to occur outside the TOY restriction period noted in this comment.,

NHESP 02 **The Division will not render a final decision until the MEPA review process and associated public and agency comment period is completed, and until all required MESA filing materials are submitted by the proponent to the Division. As our MESA review is not complete, no alteration to the soil, surface, or vegetation and no work associated with the proposed project shall occur until the Division has made a final determination.**

Comment acknowledged.

11.8 Massachusetts Department of Environmental Protection (DEP) Comments

DEP 01 **The project Proponent has acknowledged the need to file a Notice of Intent, 401 Water Quality Certification, and Chapter 91 License application. The Wetlands Program has reviewed several similar Projects and believes that the proposed work can be undertaken and conditioned to avoid, minimized and mitigate any potential Damage to the Environment through the Program's permitting Process. The Proponent has already developed the Sampling and Analysis Plan (SAP), necessary for the combined 401/c. 91 permit, which has been approved.**

Comment acknowledged. Results of the sampling analysis are presented in Attachment G – Marine Survey Report

DEP 02 **In addition, the Proponent is reminded that the Local Planning Boards and/or other local authorities may require stormwater controls beyond that of the Wetlands Protection Act. These controls are usually created to keep stormwater onsite so as not to create nuisance conditions offsite.**

Comment acknowledged. The Proponent will coordinate with municipalities to ensure all stormwater controls are being followed prior to construction.

DEP 03 **Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed Project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP-310 CMR 40.0000].**

The Proponent reviewed the MassGIS database and did not identify any disposal sites in the Project area.

DEP 04 **The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this Project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.**

Any hazardous material encountered, if encountered, will be managed pursuant to the Utility-Related Abatement Measure ("URAM") provisions of the Massachusetts Contingency Plan ("MCP"). Eversource will also contract with a Licensed Site Professional ("LSP") as necessitated by conditions, consistent with the requirements of the MCP at 310 C.M.R. 40.0460 et seq. This is detailed in the description of onshore upland installation in Section 2.3.

DEP 05 **A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post- construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases.**

A draft SWPPP pursuant to the NPDES CGP has been prepared. A project-specific spills contingency plan will be prepared in coordination with the contractor prior to construction.

DEP 06 **If the Project involves the use of Gas Insulated Switchgear (GIS), the Proponent must follow the state (310 CMR 7.72) and federal regulations to reduce sulfur hexafluoride (SF6) emissions from that switchgear.**

If GIS is used, state and federal regulations to reduce sulfur hexafluoride will be followed.

DEP 07 **MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emissions standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, the Proponent should then use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emissions reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.**

A list of equipment will be maintained in coordination with the contractor once selected.

DEP 08 **MassDEP reminds the Proponent that unnecessary idling (i.e., in excess of five minutes), with limited exception, is not permitted during the construction and operations phase of the Project (310 CMR 7.11). Regarding construction period activity, typical methods of reducing idling include driver training, periodic inspections by site supervisors, and posting signage. In addition, to ensure compliance with this regulation once the Project is occupied, MassDEP requests that the Proponent install permanent signs limited idling to five minutes or less on-site.**

Idling limits will be posted at HDD sites during construction, and duct and manhole construction vehicle operators will be reminded of idling limits in coordination with the contractor.

DEP 09 **Reuse of any demolition material requires submittal of MassDEP's BWP SW41 – Beneficial Use Determination – Restricted Applications. The permit is intended to protect public health, safety, and the environment by comprehensively regulating the reuse of waste materials as effective substitutes for a commercial product or**

commodity. Information pertaining to this requirement is available at: *https://www.mass.gov/doc/instructions-sw-39--40-41-42-beneficial-use-determinations/download*.

No demolition material is expected to be reused for the Project.

DEP 10 **MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs. Further guidance can be found at: *https://recyclingworksma.com/construction-demolition-materials-guidance/***

No recyclable materials are expected to be generated during the Project.

DEP 11 **Asphalt, brick, and concrete (ABC) rubble, such as the rubble generated by the demolition of buildings or other structures must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to Mass DEP's Information Sheet, entitled "Using or Processing Asphalt Pavement, Brick, and Concrete Rubble, Updated February 27, 2017", that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found online at the MassDEP website:** *https://www.mass.gov/diles/documents/2018/03/19/abc-rubble.pdf*

Asphalt pavement will be saw cut and removed with a backhoe/excavator, then loaded into a dump truck and removed from the site. Pavement material will be handled separately from excavated soil and will be recycled at an asphalt batching plant. Trench excavation is detailed in Section 2.3.2.

DEP 12 **The Proponent should be aware that wood is not allowed to be buried or disposed of at the Site pursuant to 310 CMR 16.00 & 310 CMR 19.000 unless otherwise approved by MassDEP.**

No wood is expected to be generated or need to be disposed of during the Project.

DEP 13 **The Project Proponent is advised that demolition activity must comply with both Solid Waste and Air Quality Control regulations. Please note that MassDEP promulgated revised Asbestos Regulations (310 CMR 7.15).**

No demolition is proposed during the Project.

DEP 14 **As part of the asbestos survey, samples must be taken of all suspect asbestos containing building materials and sent to a DLS certified laboratory for analysis, using USEPA approved analytical methods.**

Comment acknowledged. No building demolition or building materials are expected to be encountered during the Project.

DEP 15 **If asbestos containing material (ACM) is identified in the asbestos survey, the Proponent must hire a DLS licensed asbestos abatement contractor to remove and dispose of any asbestos containing material(s) from the facility or facility component in accordance with 310 CMR 7.15, prior to conducting any demolition or renovation activities. The removal and handling of asbestos from the facility or facility components must adhere to the Specific Asbestos Abatement Work Practice Standards required at 310 CMR 7.15(7). The Proponent and asbestos contractor will be responsible for submitting an Asbestos Notification Form ANF-001 to MassDEP at least ten (10) working days to prior to beginning any removal of asbestos containing materials as specified at 310 CMR 7.15(6).**

Comment acknowledged. No building demolition and no building materials are expected to be encountered during the Project.

DEP 16 **The Proponent shall ensure that all asbestos containing waste material from any asbestos abatement activity is properly stored and disposed of at a landfill approved to accept such material in accordance with 310 CMR 7.15(17). The Solid Waste Regulations at 310 CMR 19.061(3) list the requirements for any solid waste facility handling or disposing of asbestos waste. Pursuant to 310 CMR 19.601(3)(b)1, no asbestos containing material; including VAT, asphaltic-asbestos felts or shingles; may be disposed at a solid waste combustion facility.**

Comment acknowledged. No building demolition and no building materials are expected

DEP 17 **In accordance with the Air Quality Regulations at 310 CMR 7.09 (2), the Proponent must submit a BWP AQ 06 Notification Prior to Construction or Demolition form to MassDEP for any construction or demolition of an industrial, commercial or institutional building or residential building with 20 or more dwelling units at least ten (10) working days prior to initiations of said construction or demolition Project. The Proponent should propose measures to prevent or alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition.**

Comment acknowledged. The Project does not include any building demolition.

DEP 18 **The "Certificate of the Secretary of Energy and Environmental Affairs on the Expanded Environmental Notification Form" may indicate that this Project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA**

Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issues permits for the Project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation.

Draft Section 61 findings are presented in Section 10.0 for pertinent DEP permits required for the Project.

11.9 Peter Johnson-Staub Acting Falmouth Town Manager (FALM) Comments

FALM 01 **The Town worked cooperatively/collaboratively with Eversource to evaluate underground routes from their substation to Surf Drive. The Town supports the selected route –using the Shining Sea Bikeway– to minimize traffic disruption, impact to residents and businesses. The selected route avoids streets with high underground utility congestion –including public utilities such as water and sewer– to avoid potential impacts to these essential services during construction. The Town supports using the existing Surf Drive duct bank, to the extent practicable.**

The Proponent looks forward to continuing to work with the Town of Falmouth on this Project. Alternate onshore routes considered are described in Section 3.5.

Attachment A

SEIR Distribution List

SINGLE ENVIRONMENTAL IMPACT REPORT DISTRIBUTION LIST

State and Regional Agencies

Secretary Bethany A. Card **(2 copies)**
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114
MEPA@mass.gov

Department of Environmental Protection
Commissioner's Office
Attn: MEPA Coordinator
100 Cambridge St. 9th Fl
Boston, MA 02114
helena.boccadoro@mass.gov

Department of Environmental Protection
Southeastern Regional Office
Attn: MEPA Coordinator
20 Riverside Drive
Lakeville, MA 02347
george.zoto@mass.gov
jonathan.hobill@mass.gov

Massachusetts Department of Environmental Protection – Waterways Division
Attn: Daniel J. Padien, Program Chief
One Winter Street
Boston, MA 02108
DEP.Waterways@mass.gov

Massachusetts Department of Environmental Protection – Water Quality Certification
One Winter Street
Boston, MA 02108
DEP.Wetlands@mass.gov

MassDOT
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

MassDOT
Highway Division District #5
Attn: MEPA Coordinator
1000 County Street
Taunton, MA 02780
barbara.lachance@dot.state.ma.us

Massachusetts Historical Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800,
Boston, MA 02114-2136
david.s.robinson@mass.gov

Martha's Vineyard Commission
P.O. Box 1447
Oak Bluffs, MA 02557
turner@mvcommission.org
morrison@mvcommission.org

Cape Cod Commission
3225 Main Street
Barnstable, MA 02630
ksenatori@capecodcommission.org
regulatory@capecodcommission.org

MEPA Office
Attn: EEA EJ Director
100 Cambridge Street, Suite 900
Boston, MA 02144
MEPA-EJ@mass.gov

Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway Street, Suite 800
Boston, MA 02114
robert.boeri@mass.gov

Division of Marine Fisheries (South Shore)
Attn: Environmental Reviewer
836 South Rodney French Blvd
New Bedford, MA, 02744
DMF.EnvReview-South@state.ma.us

Natural Heritage and Endangered Species
Program
Division of Fisheries & Wildlife
1 Rabbit Hill Road
Westborough, MA 01581
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The Steamship Authority
Attn: Robert B. Davis, General Manager
P.O. Box 284
Woods Hole, MA 02543
rdavis@steamshipauthority.com

Local Agencies/Representatives

Select Boards
Falmouth Board of Selectmen
Attn: Douglas C. Brown, Chairman
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
selectboard@falmouthma.gov
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Tisbury Select Board
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edefoe@tisburyma.gov

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56 School Street
Oak Bluffs, MA 02557
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59 Town Hall Square
Falmouth, MA 02540
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56 School Street
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Historical Commission
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Attn: Ed Haddad, Chairman
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
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Health Departments
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59 Town Hall Square
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Chairwoman	Andrews-Maltais	Tribal		Chairwoman	Wampanoag Tribe of Gay Head (Aquinnah)	chairwoman@wampanoagtribe-nsn.gov
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Hauke	Kite-Powell	Local Group	Falmouth	Chair	Woods Hole Diversity Advisory Committee	hauke@whoi.edu

Attachment B

Figures

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\Fig1_USGS_Locus_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

Figure 1

USGS Locus Map

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\Fig2_Aerial_Locus_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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Figure 2
Aerial Locus

G:\Projects2\MA\MA\6097\2022\MXD\Fig3_Diesel_Generators_Locus_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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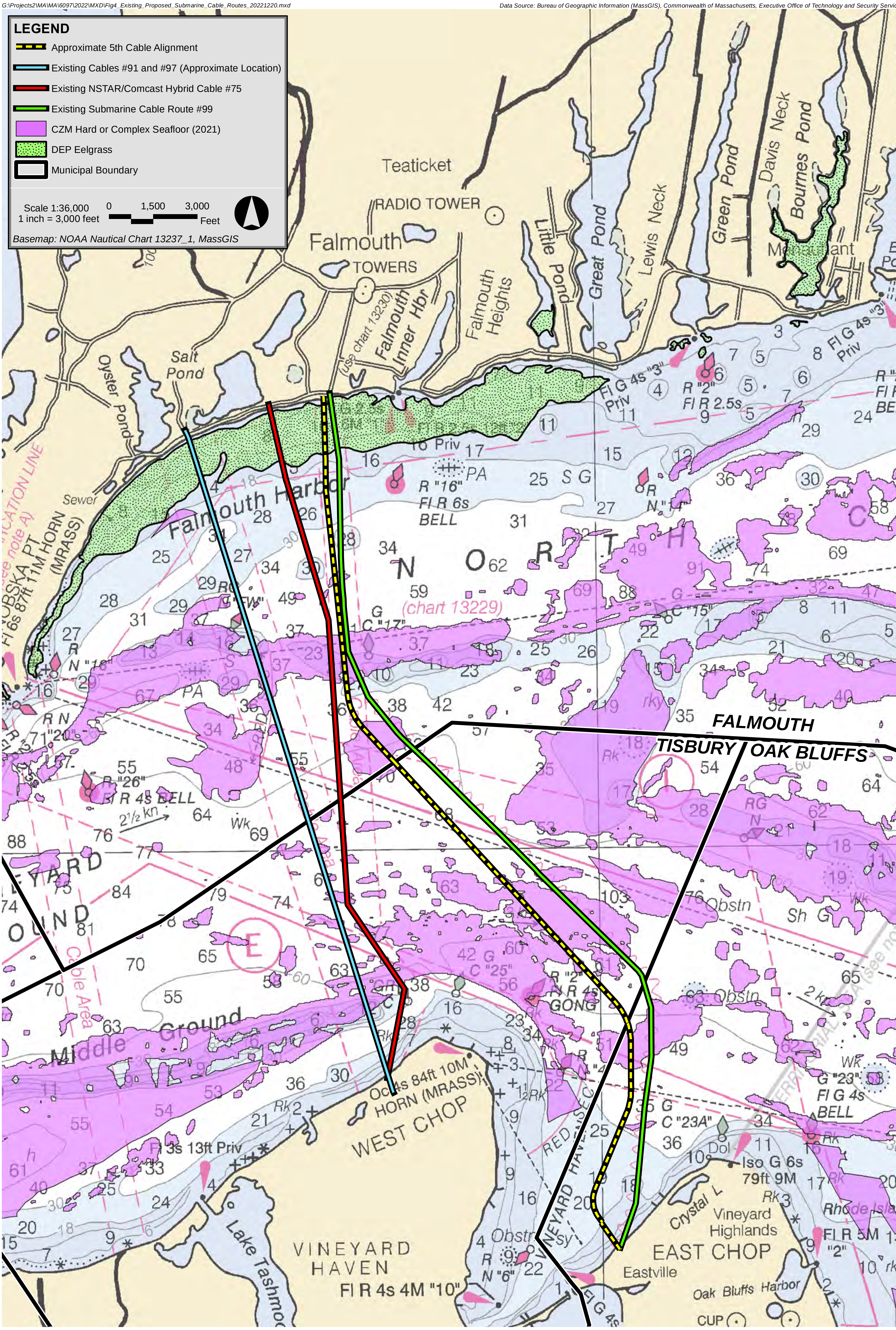
Figure 3

Existing Peak Demand Generators Locus Map



Martha's Vineyard Reliability Project

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Figure 4

Existing and Proposed Submarine Cable Routes

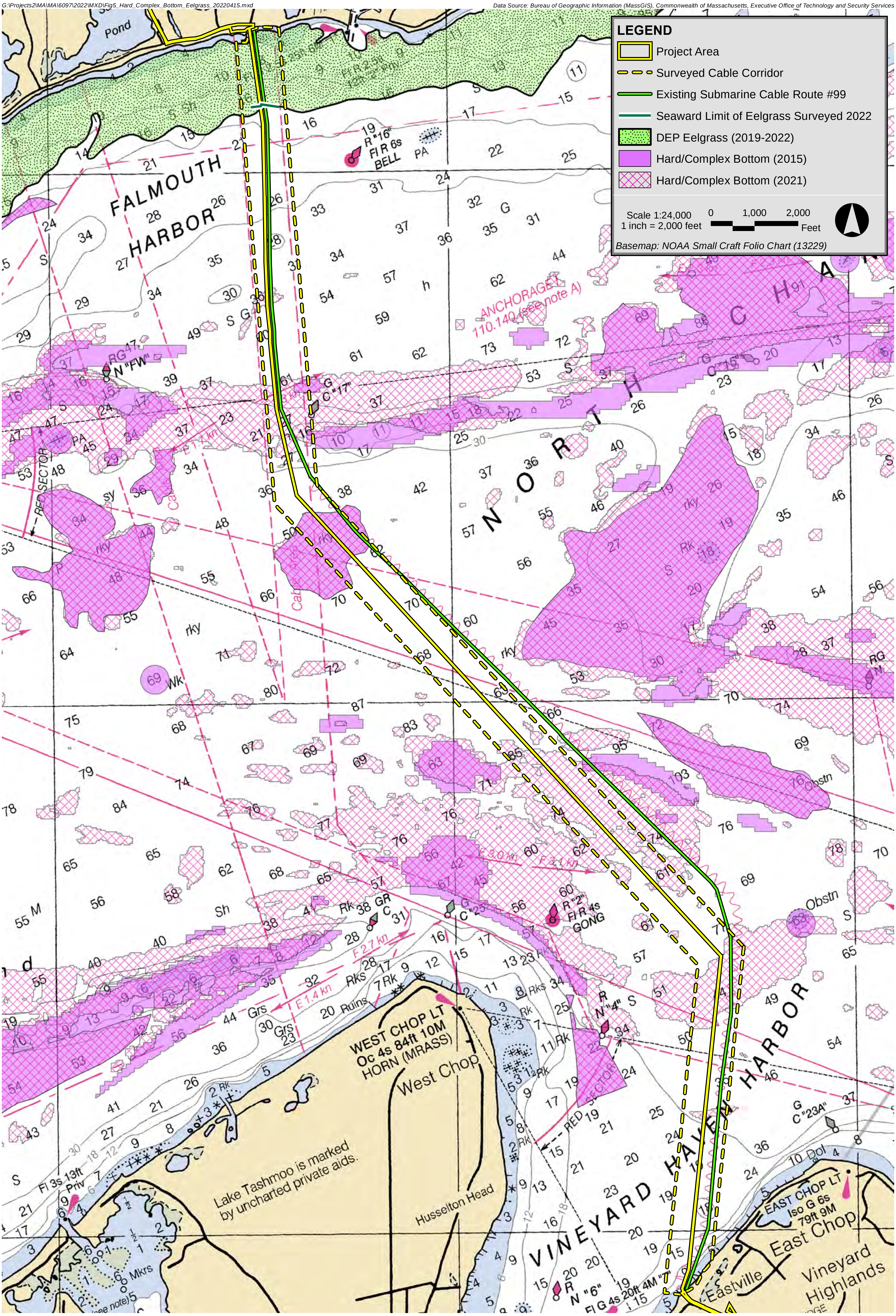
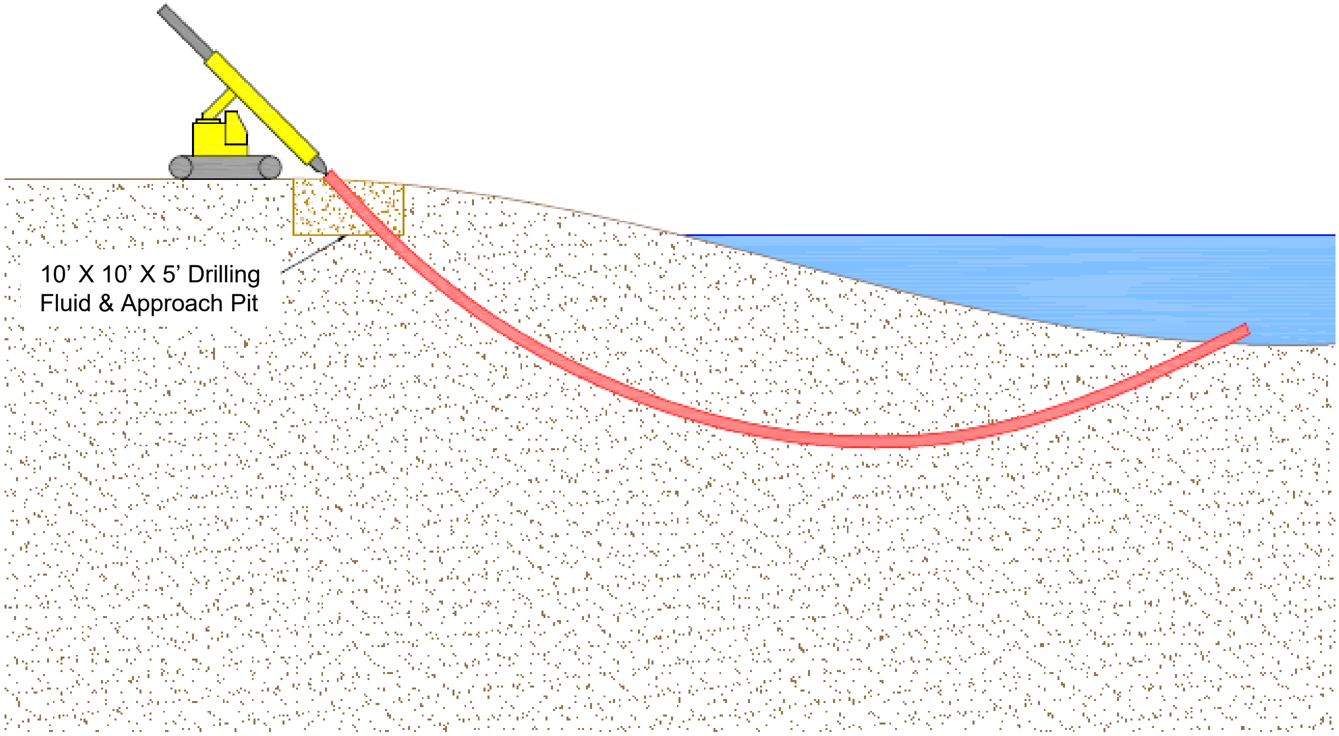
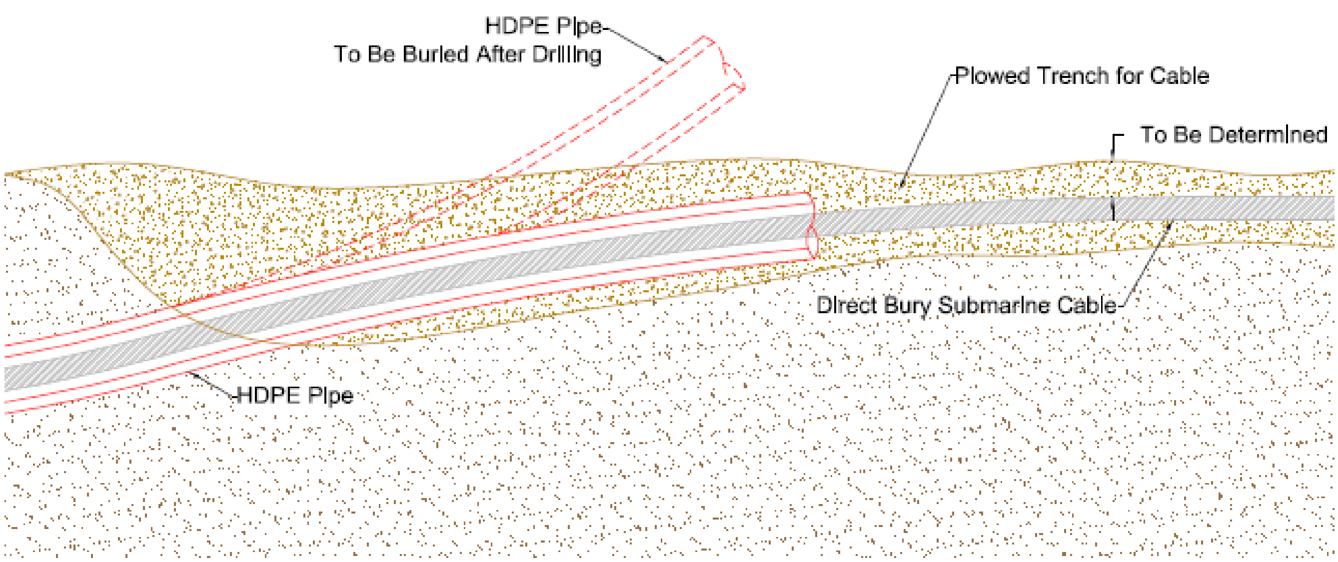


Figure 5

Hard/Complex Bottom and Eelgrass Areas



Drawing 1: Land-Based Directional Drill Setup and Trajectory



Drawing 2: Transition from Directional Drill Conduit to Plowed Cable

Photograph 1: Surf Drive and northern edge of paved parking area, facing west

Photograph 2: Paved parking area, facing south

Photograph 3: Back of coastal dune and wooden fence/seawall adjacent to cable landing site, facing southwest

Photograph 4: Seaward edge of coastal dune adjacent to cable landing site, facing west

Photograph 5: Coastal beach south of paved parking area, facing south

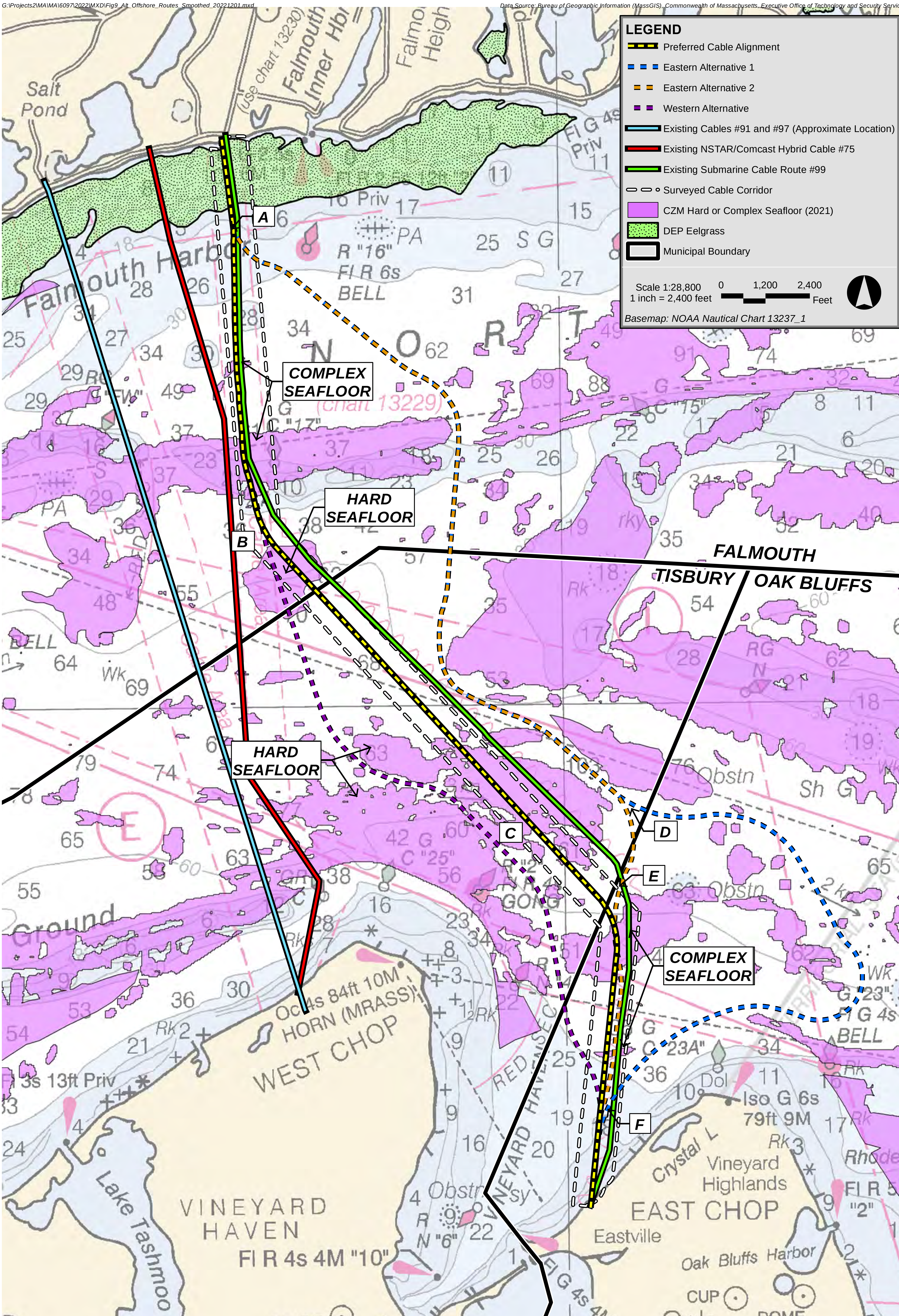
Photograph 6: Concreate seawall and coastal beach adjacent to cable landing site, facing west

Photograph 1: View of the coastal beach and coastal dune on site facing Northeast

Photograph 2: View of delineated dune facing East

Photograph 3: View of delineated dune from the roadway facing Northwest

Photograph 4: View of the end of Eastville Avenue that extends to the back of the coastal dune, facing east



Martha's Vineyard Reliability Project

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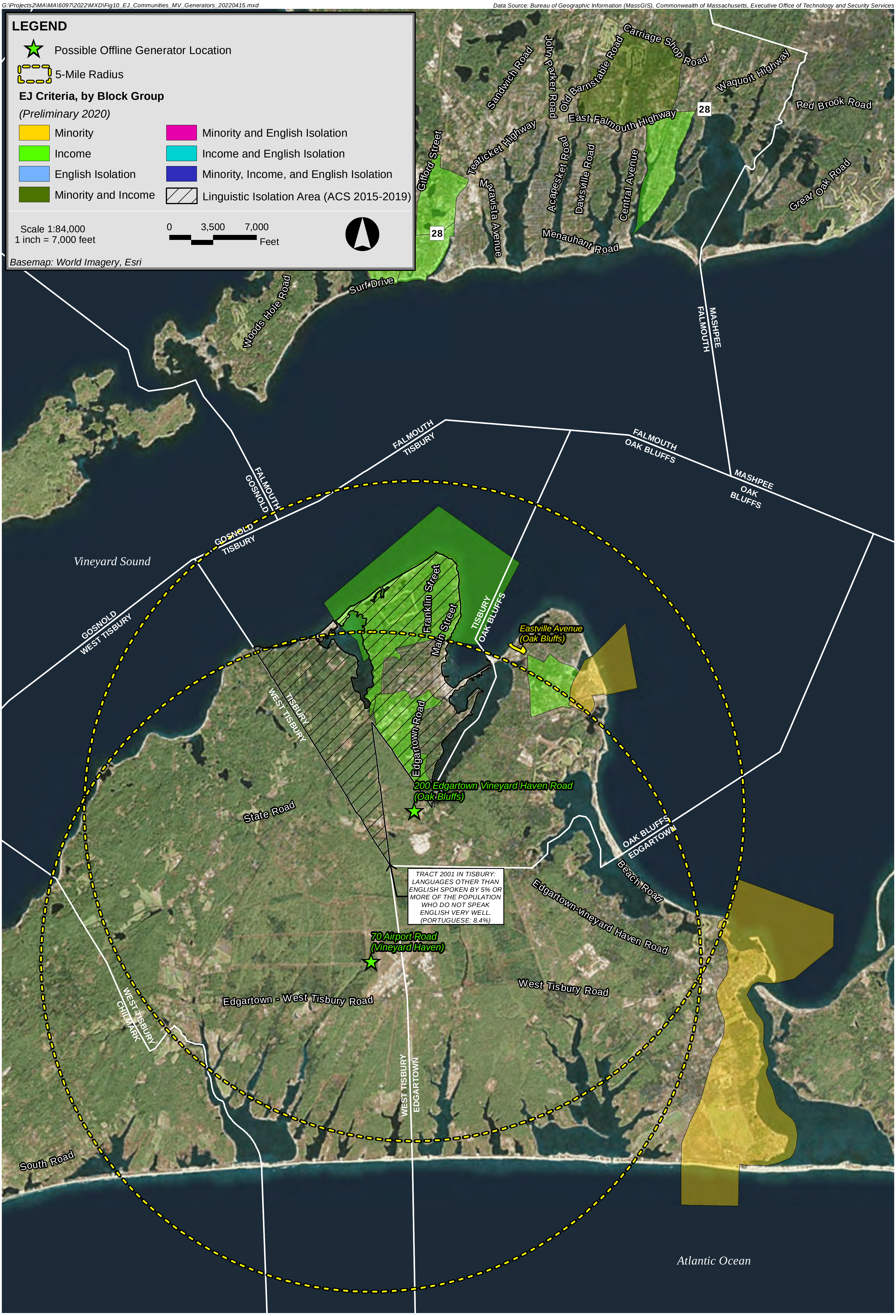
Figure 9
Alternate Submarine Cable Routes

G:\Projects2\MA\MA\6097\2022\MXD\Fig10_EJ_Communities_MV_Generators_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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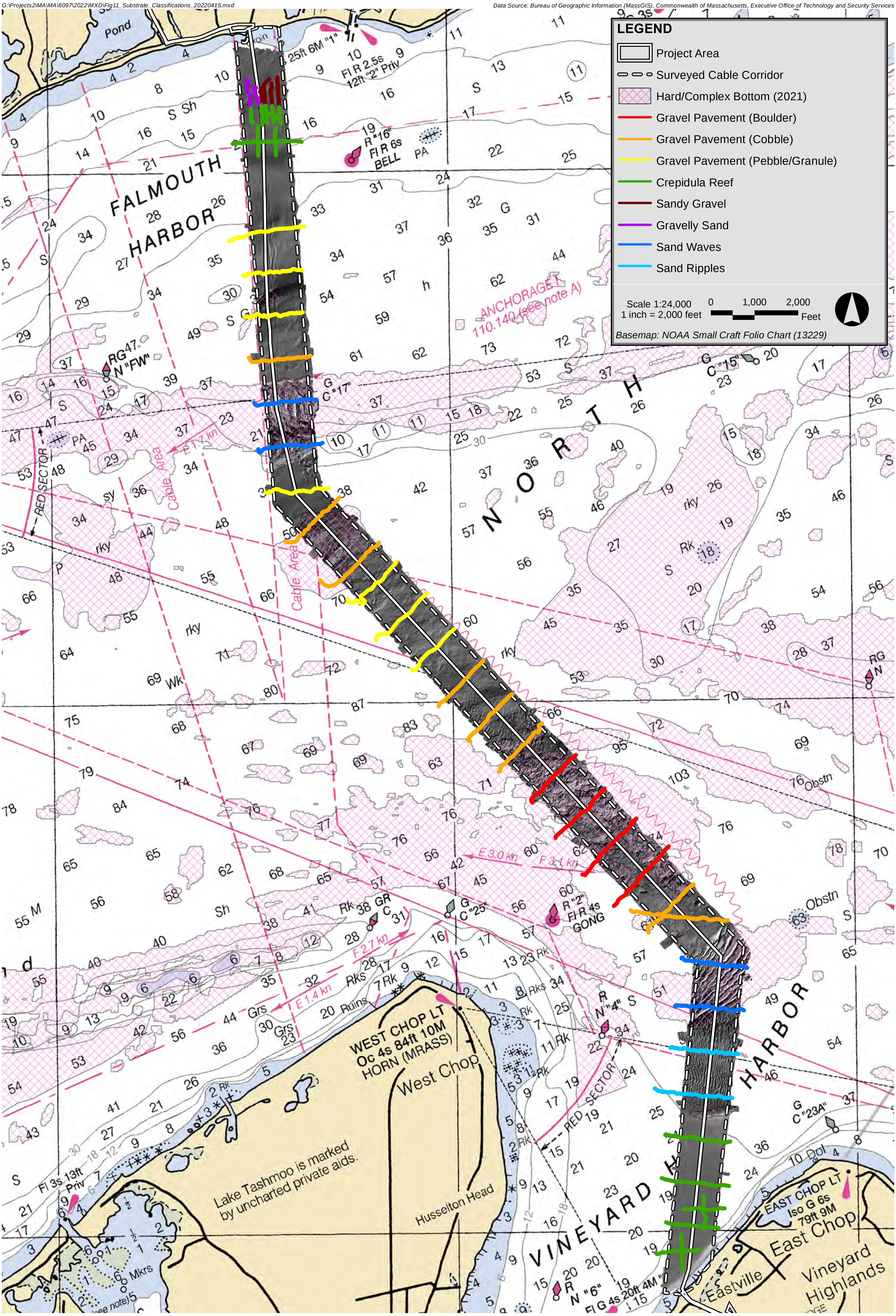
Figure 10

Environmental Justice Populations - Diesel Generators (Martha's Vineyard)

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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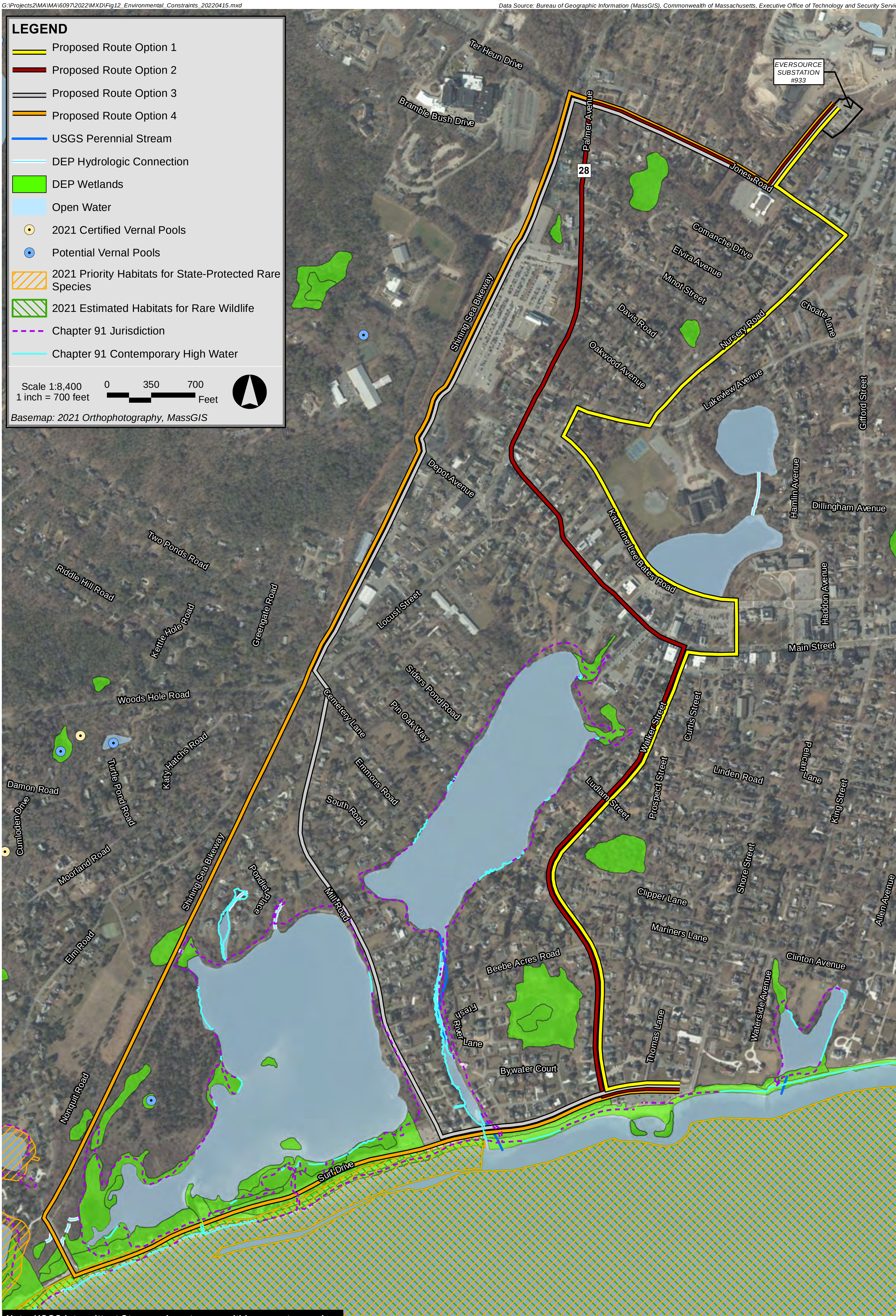
Figure 11

Dominant CMECS Substrate Classification

G:\Projects2\MA\MA\6097\2022\MXD\Fig12_Environmental_Constraints_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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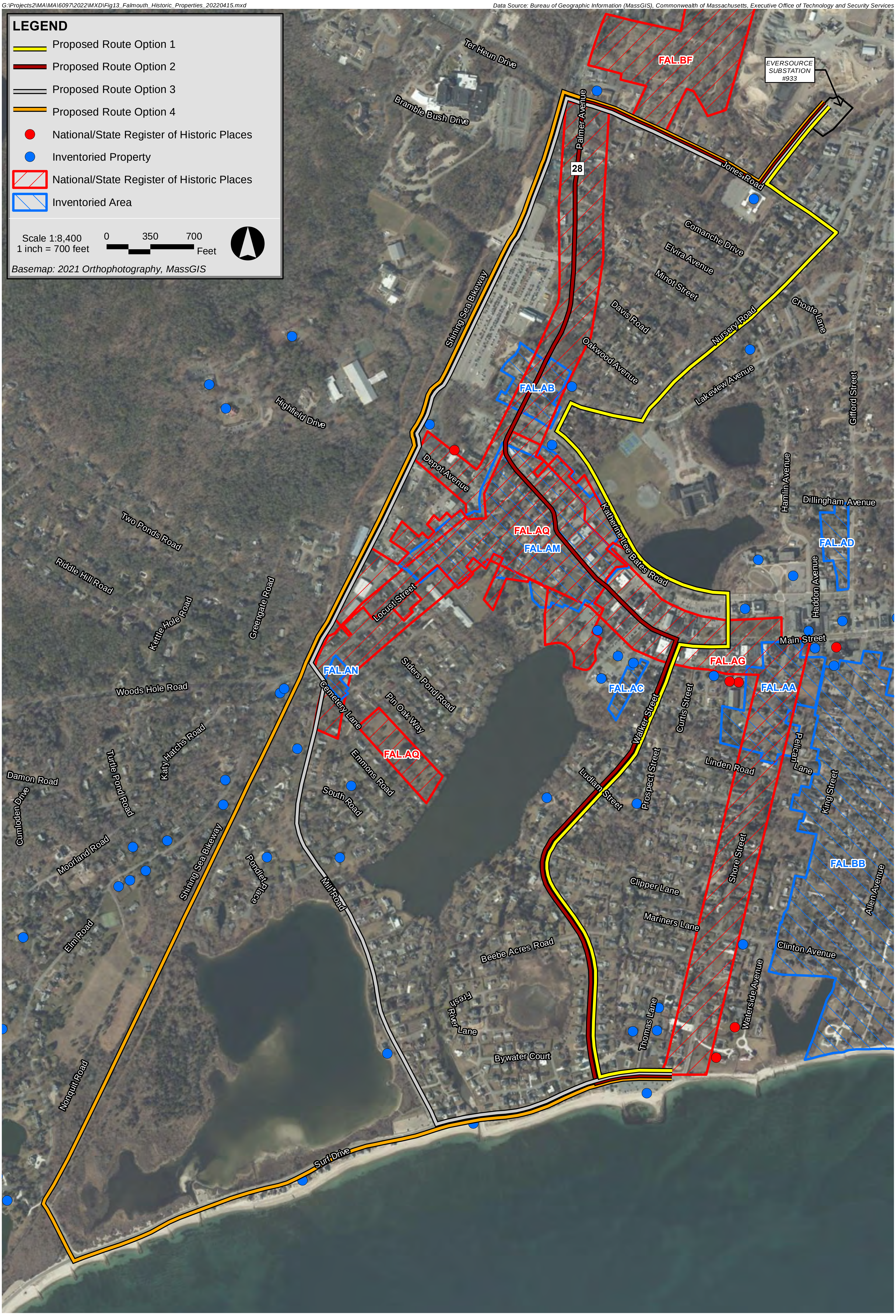
Figure 12

Environmental Constraints in Falmouth


LEGEND
Proposed Route Option 1
Proposed Route Option 2
Proposed Route Option 3
Proposed Route Option 4
National/State Register of Historic Places
Inventoried Property
National/State Register of Historic Places
Inventoried Area
Scale 1:8,400
1 inch = 700 feet
0 350 700
Feet
Basemap: 2021 Orthophotography, MassGIS
EVERSOURCE SUBSTATION #933
FAL.BF
FAL.AB
FAL.AQ
FAL.AM
FAL.AN
FAL.AQ
FAL.AG
FAL.AC
FAL.AA
FAL.AD
FAL.BB
28
Ter Heun Drive
Bramble Bush Drive
Palmer Avenue
Jones Road
Comanche Drive
Elvira Avenue
Minot Street
Davis Road
Choate Lane
Nursery Road
Oakwood Avenue
Lakeview Avenue
Gifford Street
Shining Sea Bikeway
Highfield Drive
Depot Avenue
Hamlin Avenue
Dillingham Avenue
Katharine Lee Bates Road
Two Ponds Road
Riddle Hill Road
Haddon Avenue
Greengate Road
Kettle Hole Road
Locust Street
Main Street
Woods Hole Road
Siders Pond Road
Cemetery Lane
Pin Oak Way
Walker Street
Curtis Street
Katy Hatchs Road
Emmons Road
Pelican Lane
Linden Road
Damon Road
Turtle Pond Road
Prospect Street
Ludlam Street
South Road
King Street
Cumloden Drive
Moorland Road
Shining Sea Bikeway
Pondview Place
Mill Road
Shore Street
Clipper Lane
Allen Avenue
Mariners Lane
Elm Road
Clinton Avenue
Beebe Acres Road
Fresh River Lane
Thomas Lane
Waterside Avenue
Bywater Court
Nonquit Road
Surf Drive

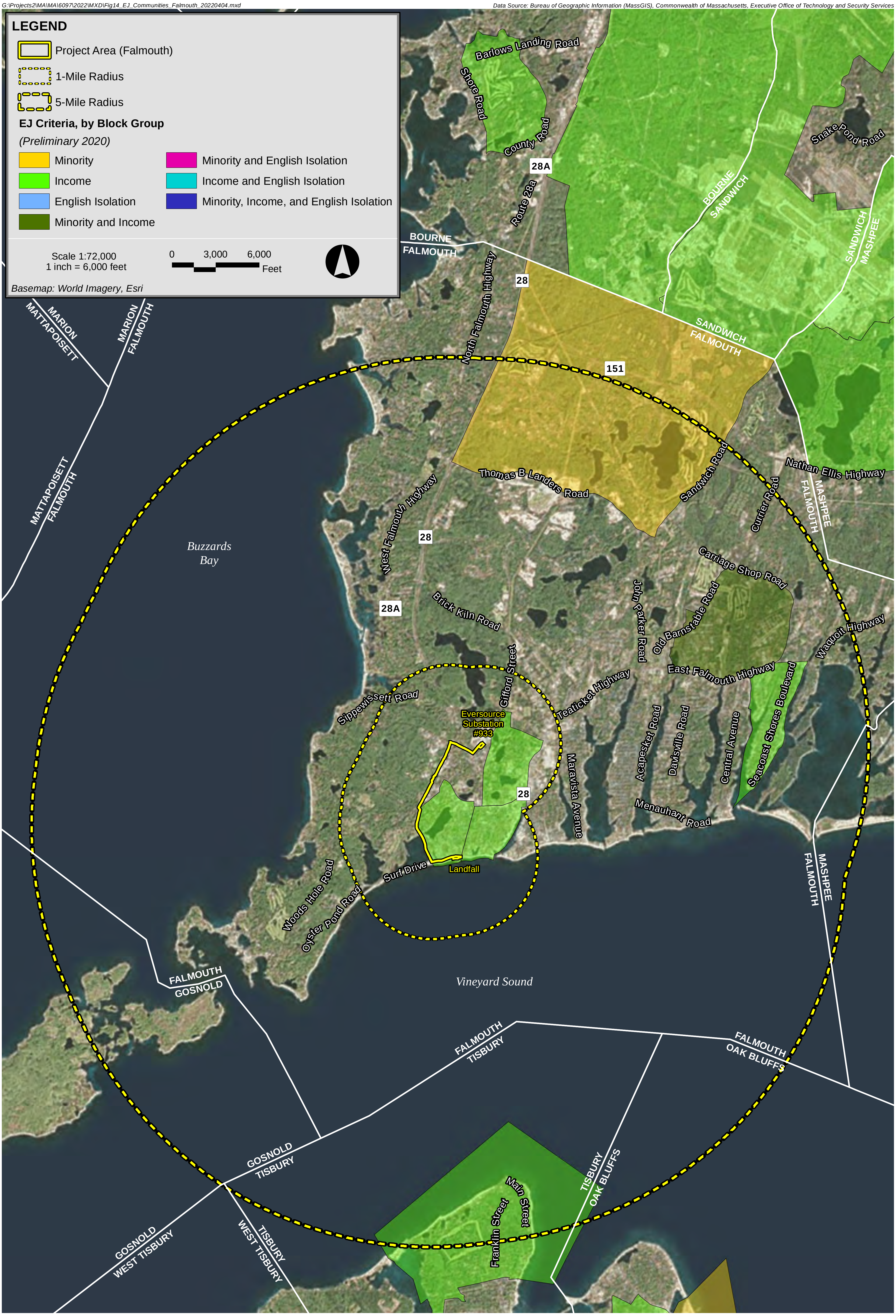
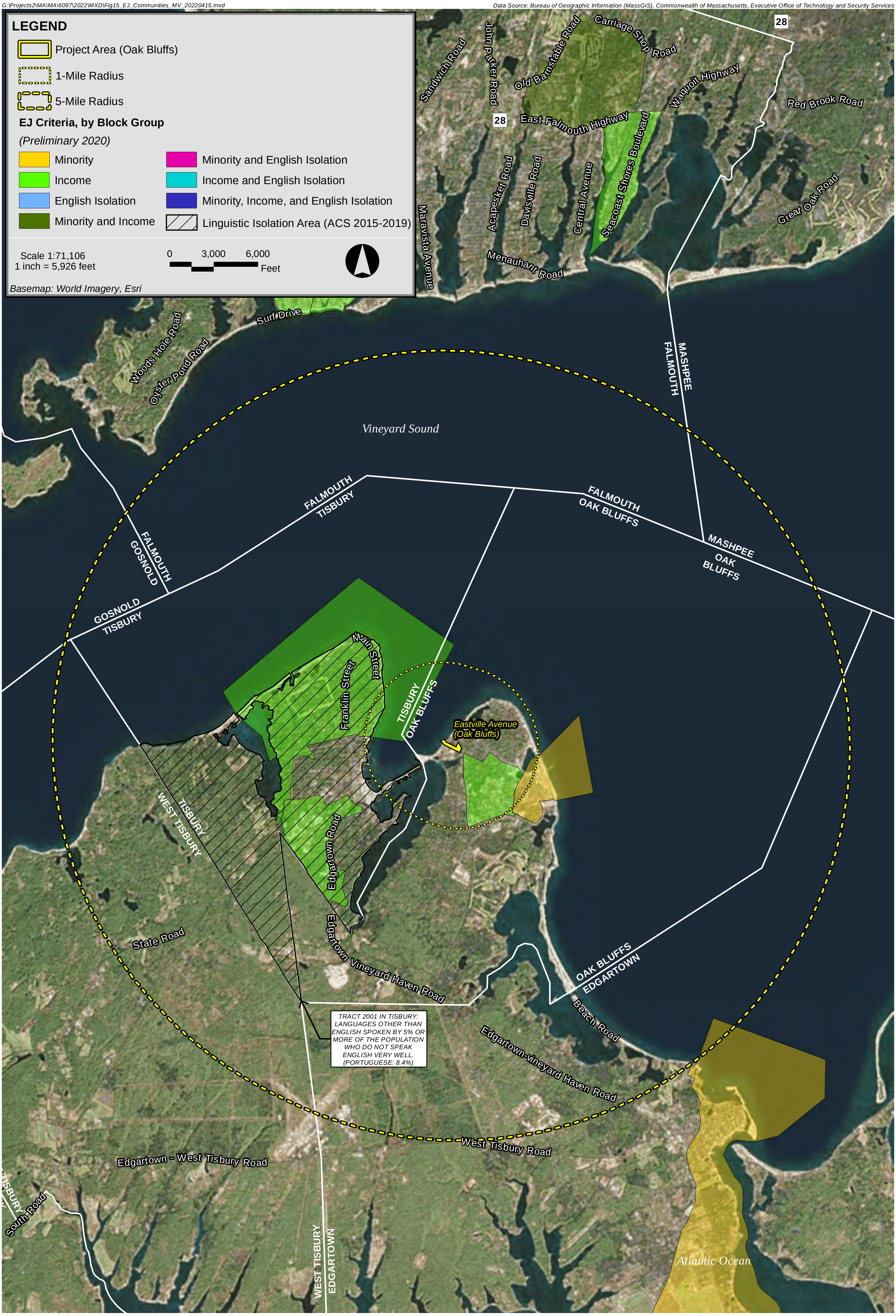


Figure 14
Environmental Justice Populations (Falmouth)

G:\Projects2\MA\MA\6097\2022\MXD\Fig15_EJ_Communities_MV_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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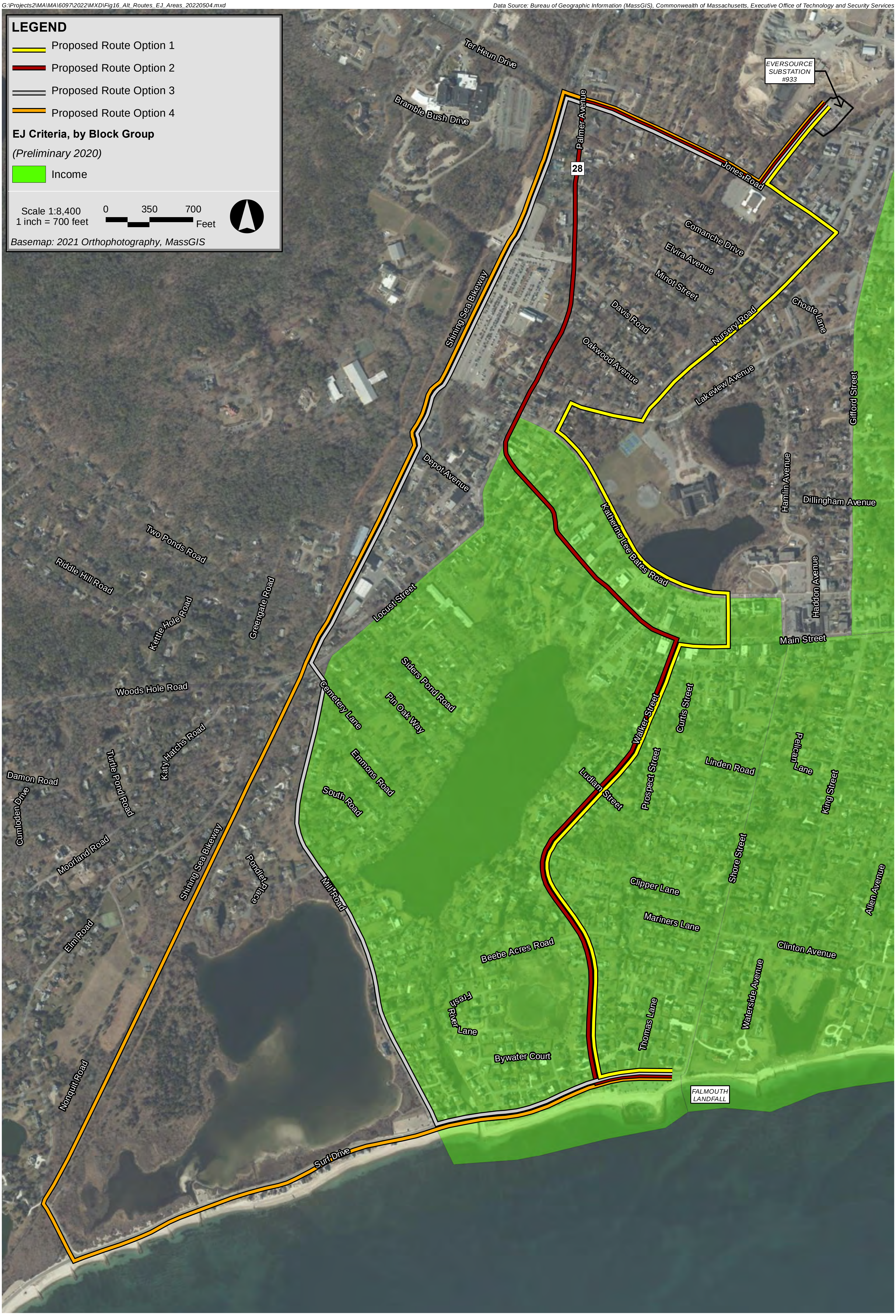
Figure 15

Environmental Justice Populations (Oak Bluffs)

G:\Projects2\MA\MA\6097\2022\MXD\Fig16_Alt_Routes_EJ_Areas_20220504.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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Figure 16

Environmental Justice Populations (Falmouth Alternative Routes)

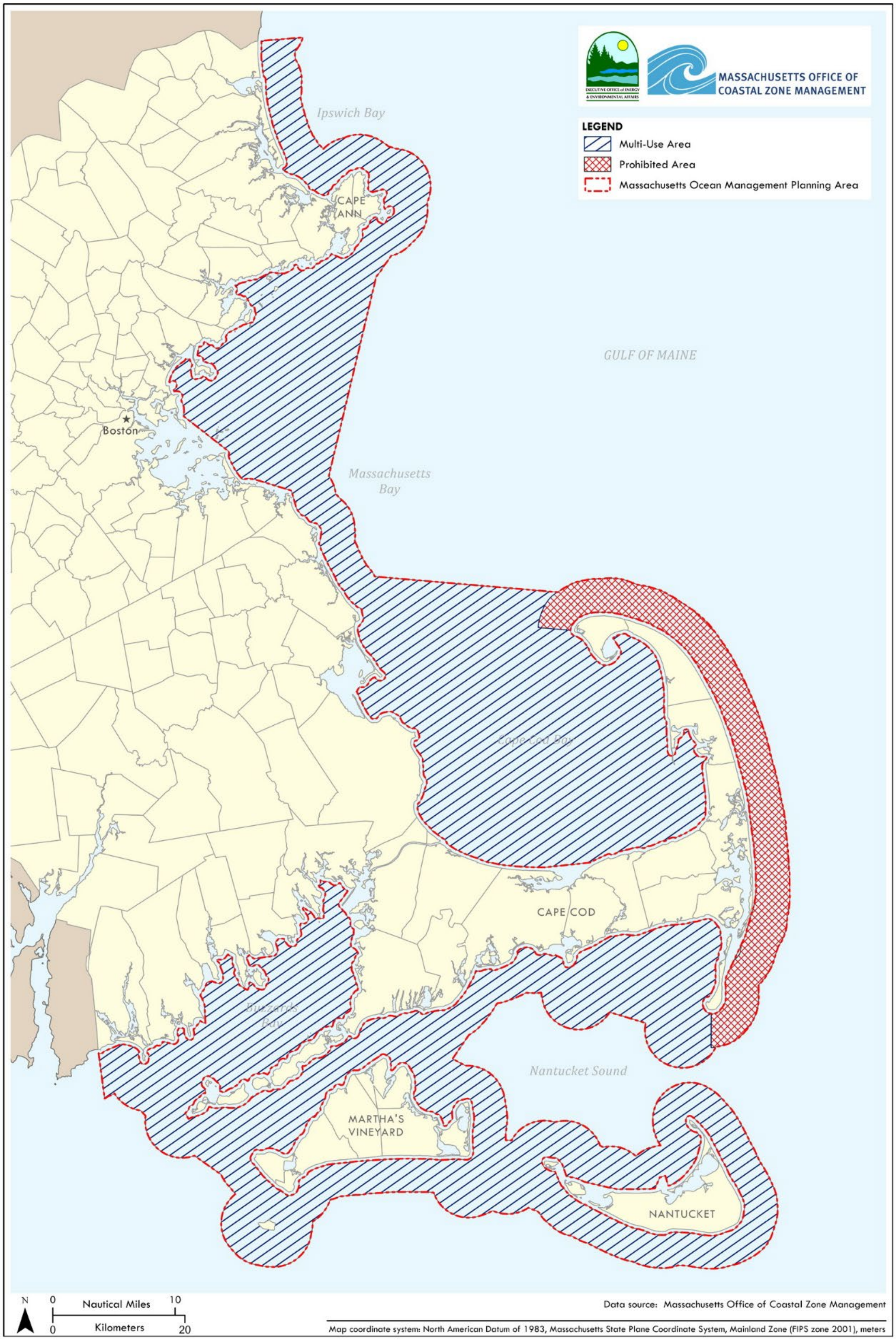
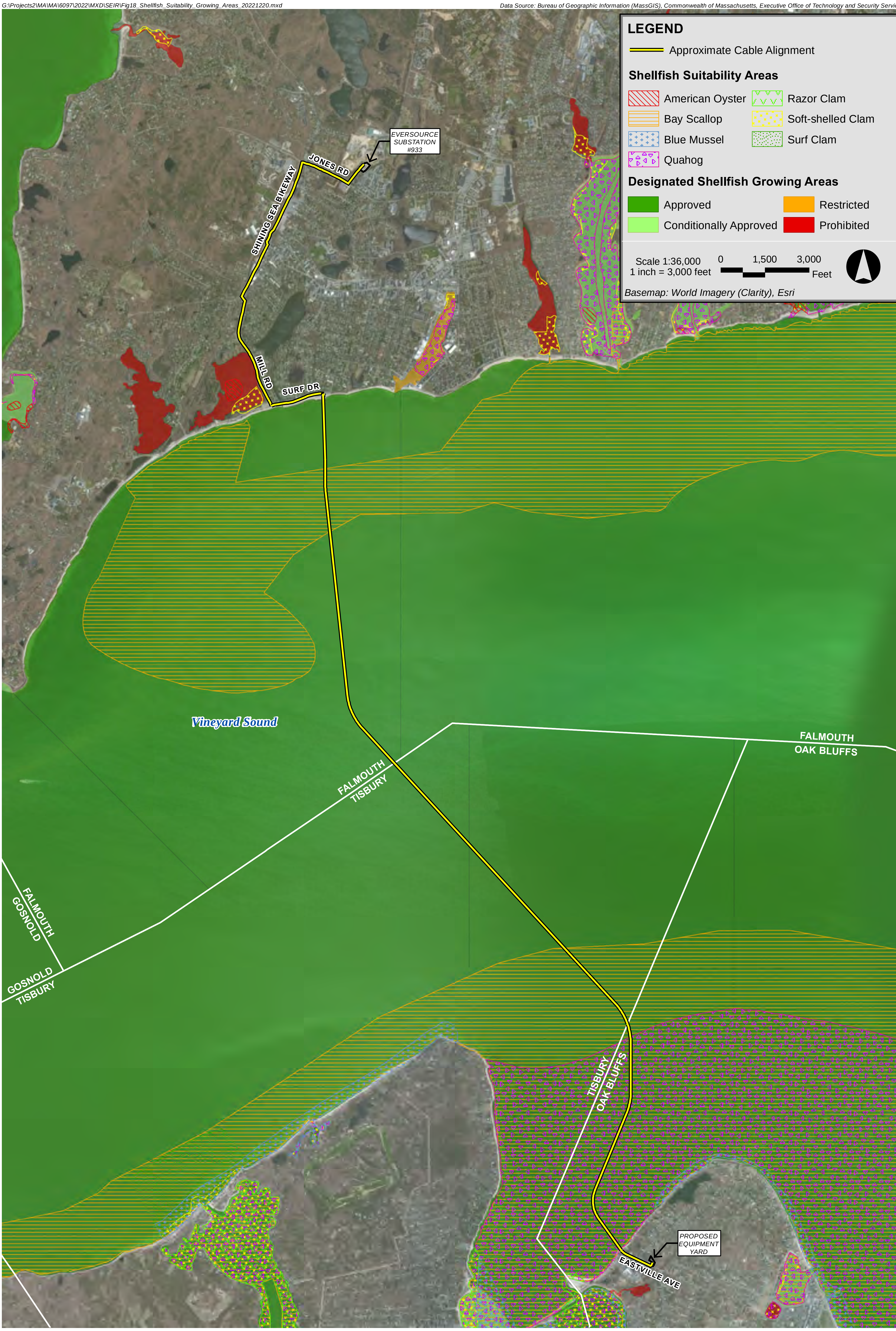


Figure 17

Management Areas Designated in the Ocean Plan

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\Fig18_Shellfish_Suitability_Growing_Areas_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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Figure 18

Shellfish Suitability and Designated Growing Areas

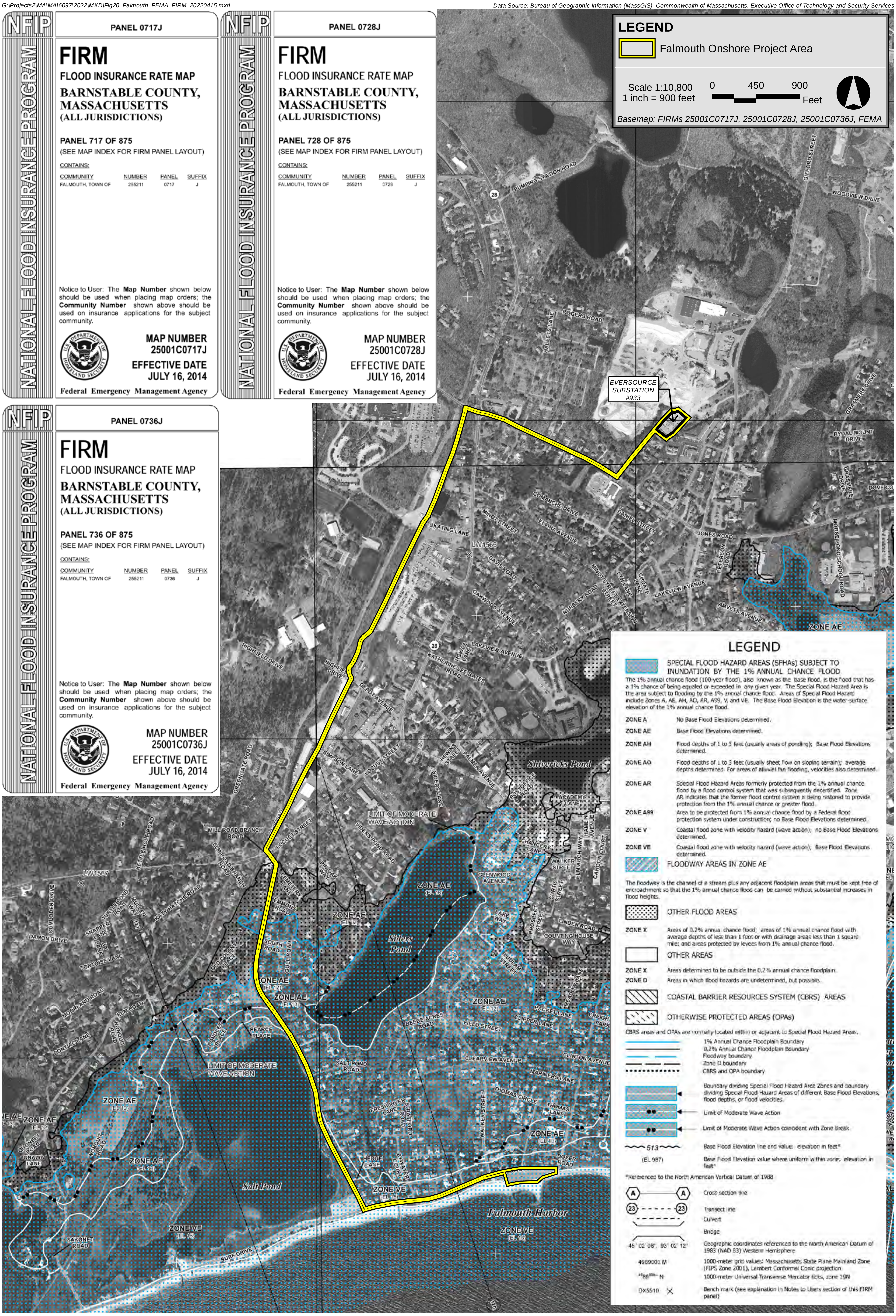
Martha's Vineyard Reliability Project

EVERSOURCE

Figure 19

Natural Heritage and Endangered Species Program Mapping

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

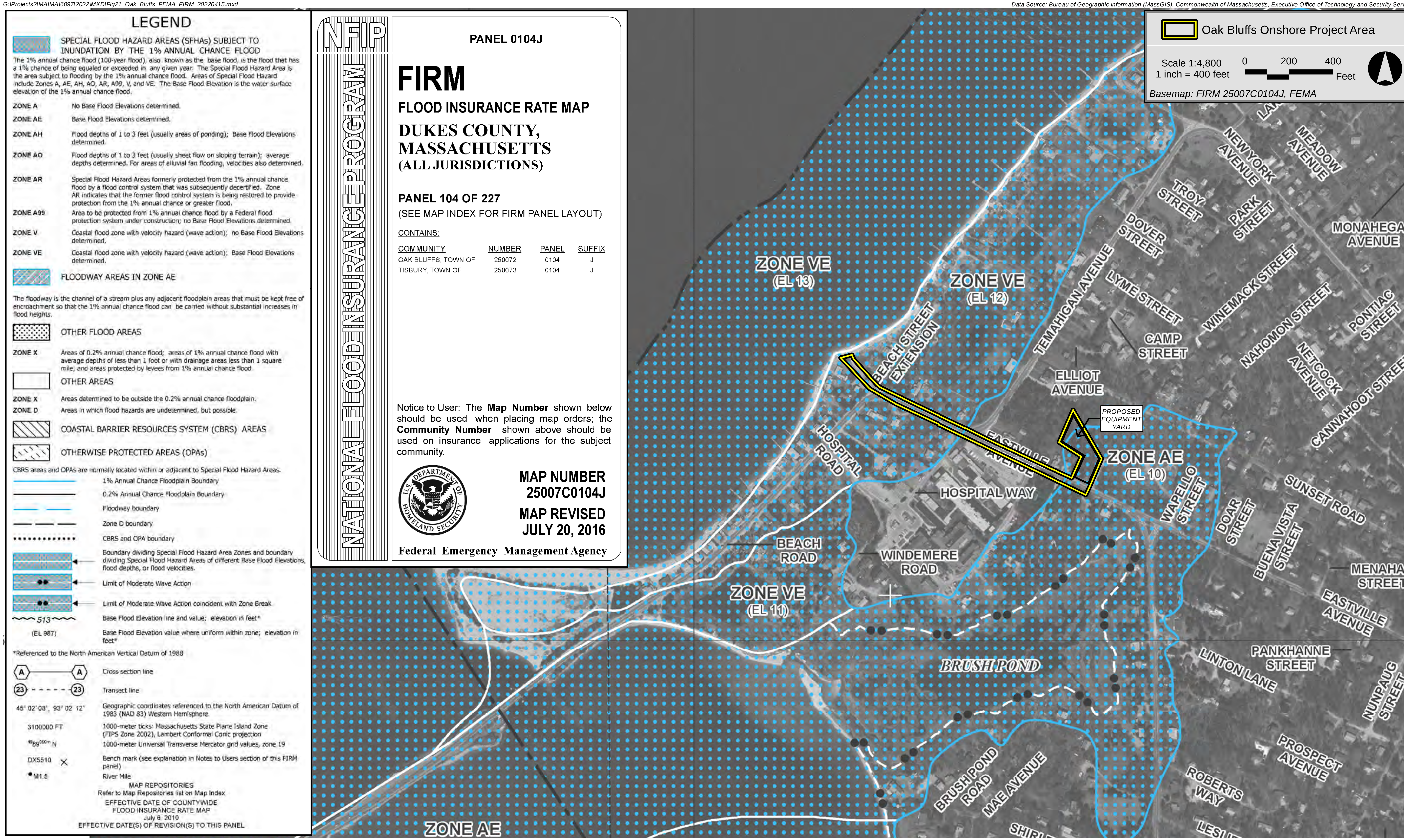
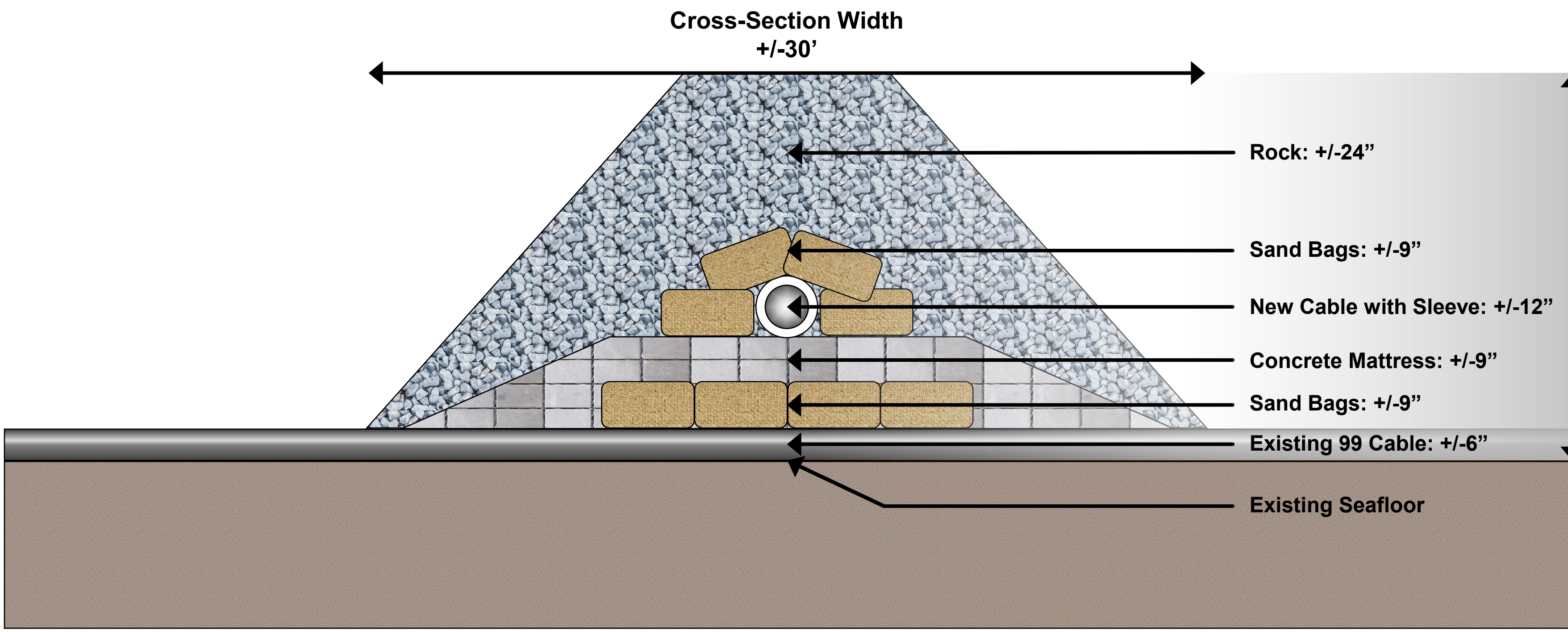


Figure 21

FEMA Q3 Flood Zones (Oak Bluffs)



Typical Cross-Section N.T.S.

Figure 22

Typical Cable Crossing Protection System

Attachment C

Map Set of Project Route

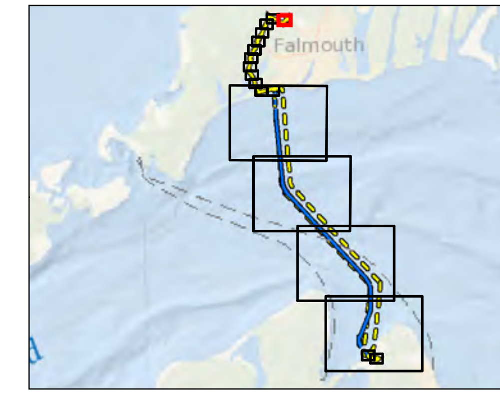
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet
0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
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- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

Field Delineated Resources

- Bordering Vegetated Wetland
- Top of Bank
- Dune Delineation
- Field Delineated Wetland
- Field Delineated Coastal Dune

MassGIS Data Layers

- Open Water
- Approximate Wetland (not delineated)
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- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Sheet 1 of 18

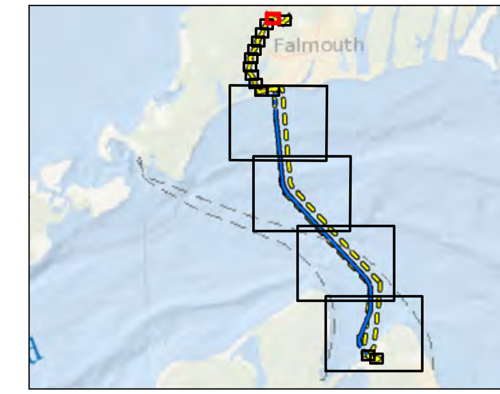
G:\Projects2\MA\MA\6097\2022\MXD\SEIR\App_C_Falmouth_Map_Set_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet
0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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Attachment C

Project Map Set

Sheet 2 of 18

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\App_C_Falmouth_Map_Set_20221220.mxd

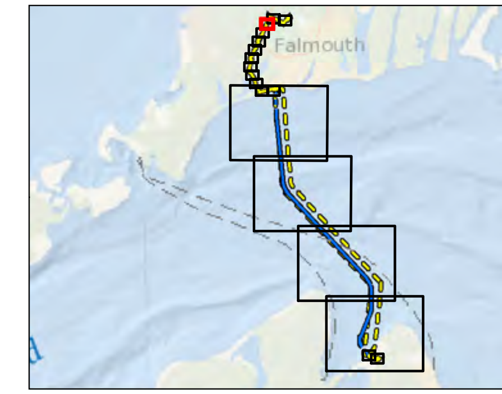
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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Attachment C

Project Map Set

Sheet 3 of 18

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\App_C_Falmouth_Map_Set_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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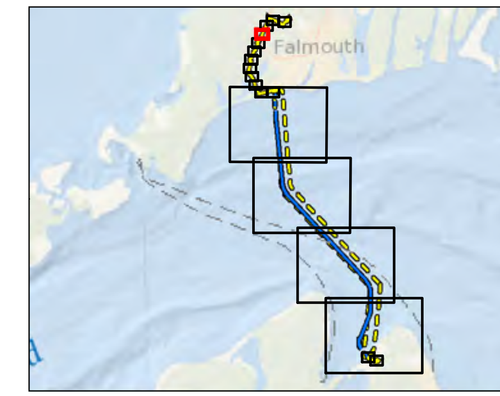
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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Attachment C

Project Map Set

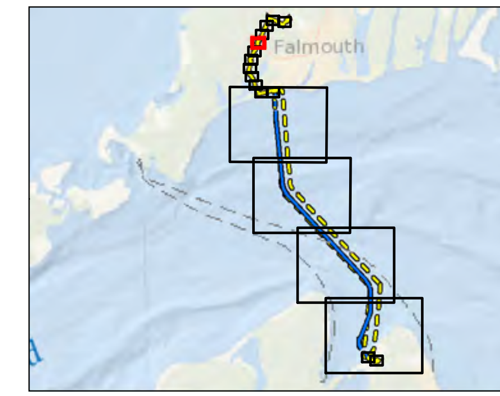
Sheet 4 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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Attachment C

Project Map Set

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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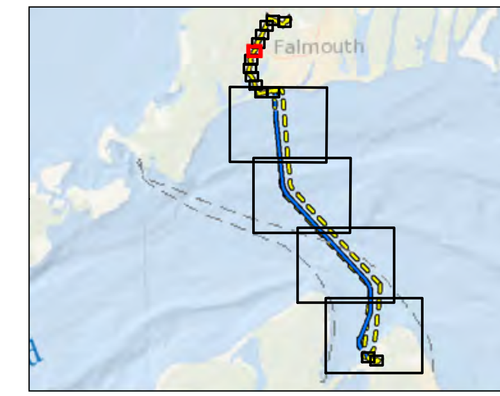
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
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Attachment C

Project Map Set

Sheet 6 of 18

G:\Projects2\MA\MA\6097\2022\MXD\SEIR\App_C_Falmouth_Map_Set_20221220.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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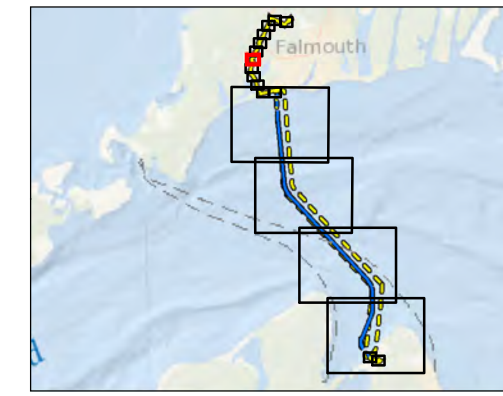
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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Attachment C

Project Map Set

Sheet 7 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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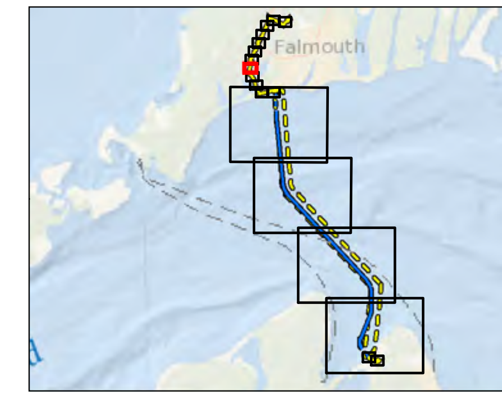
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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1 inch = 100 feet
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Map Projection: MA State Plane Mainland
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Attachment C

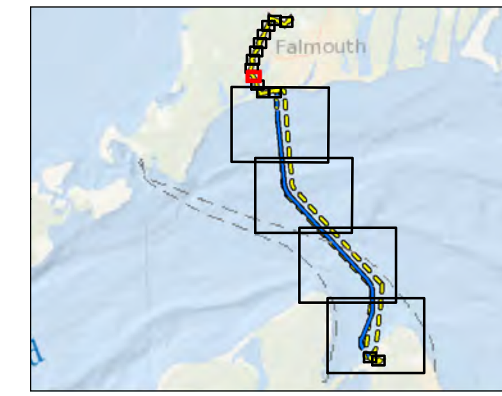
Project Map Set

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Attachment C

Project Map Set

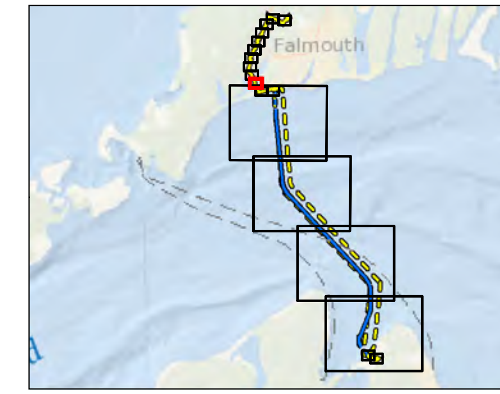
Sheet 9 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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MassGIS Data Layers

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Attachment C

Project Map Set

Sheet 10 of 18

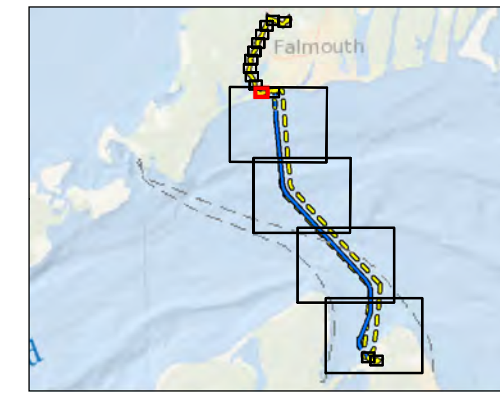
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
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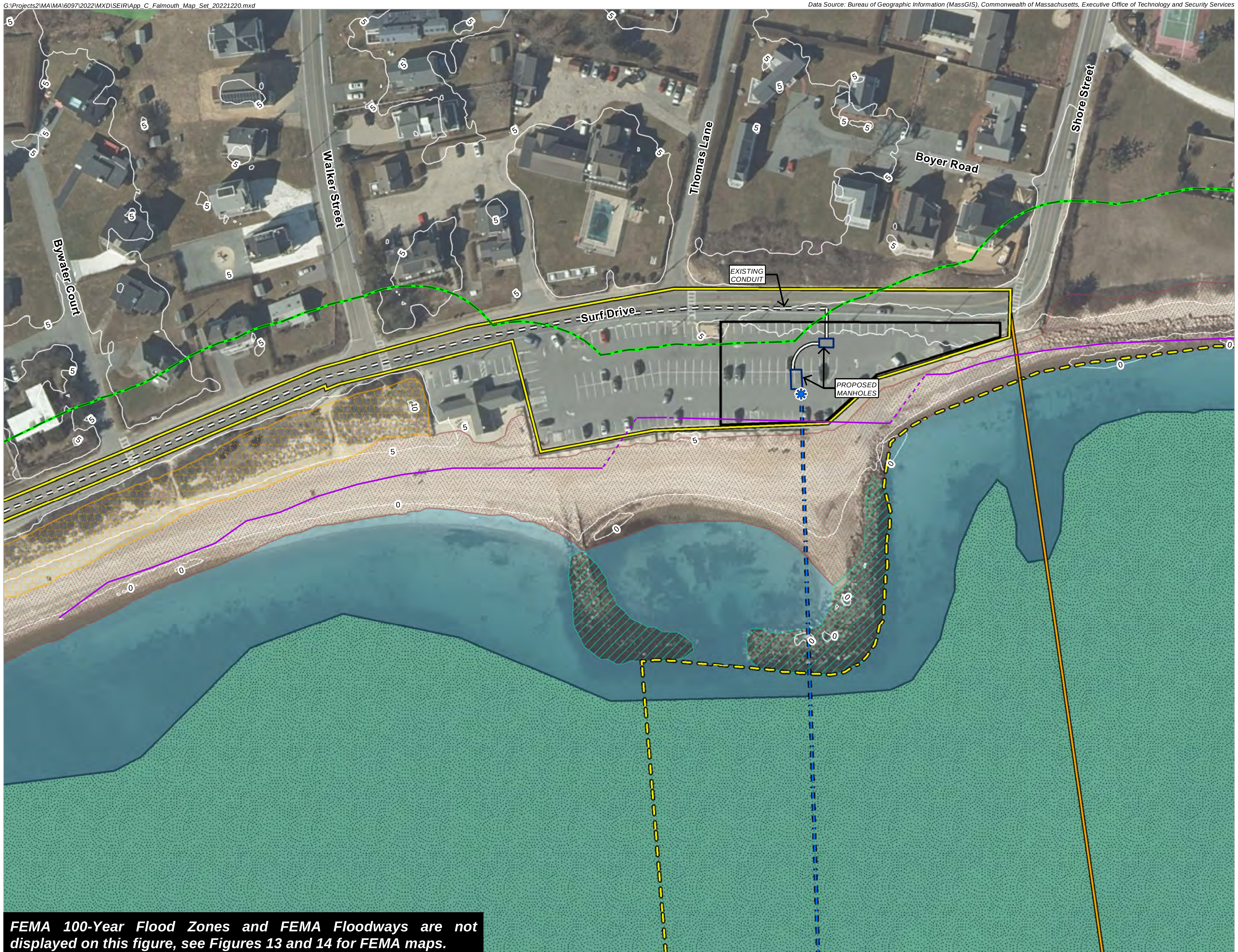
Attachment C

Project Map Set

Sheet 11 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS

Falmouth

SCALE

1:1,200
1 inch = 100 feet
0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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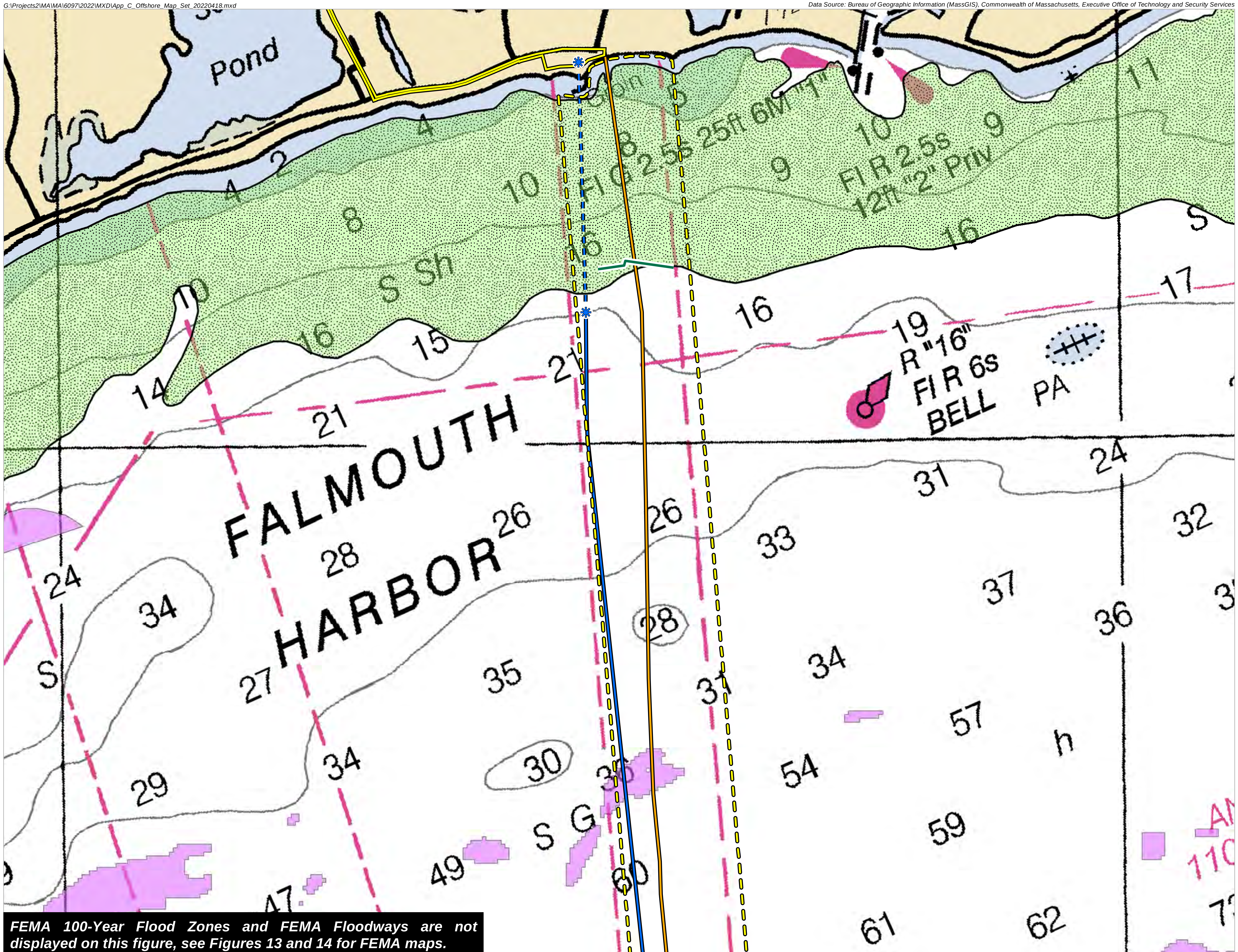
Attachment C

Project Map Set

Sheet 12 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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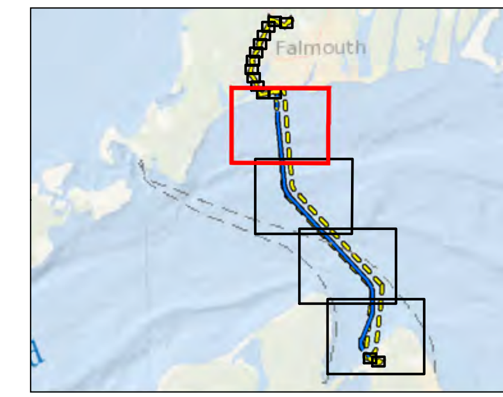
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:9,600
1 inch = 800 feet

0 400 800 Feet

Map Projection: MA State Plane Mainland
Basemap: NOAA Small Craft Folio Chart (13229)

LEGEND

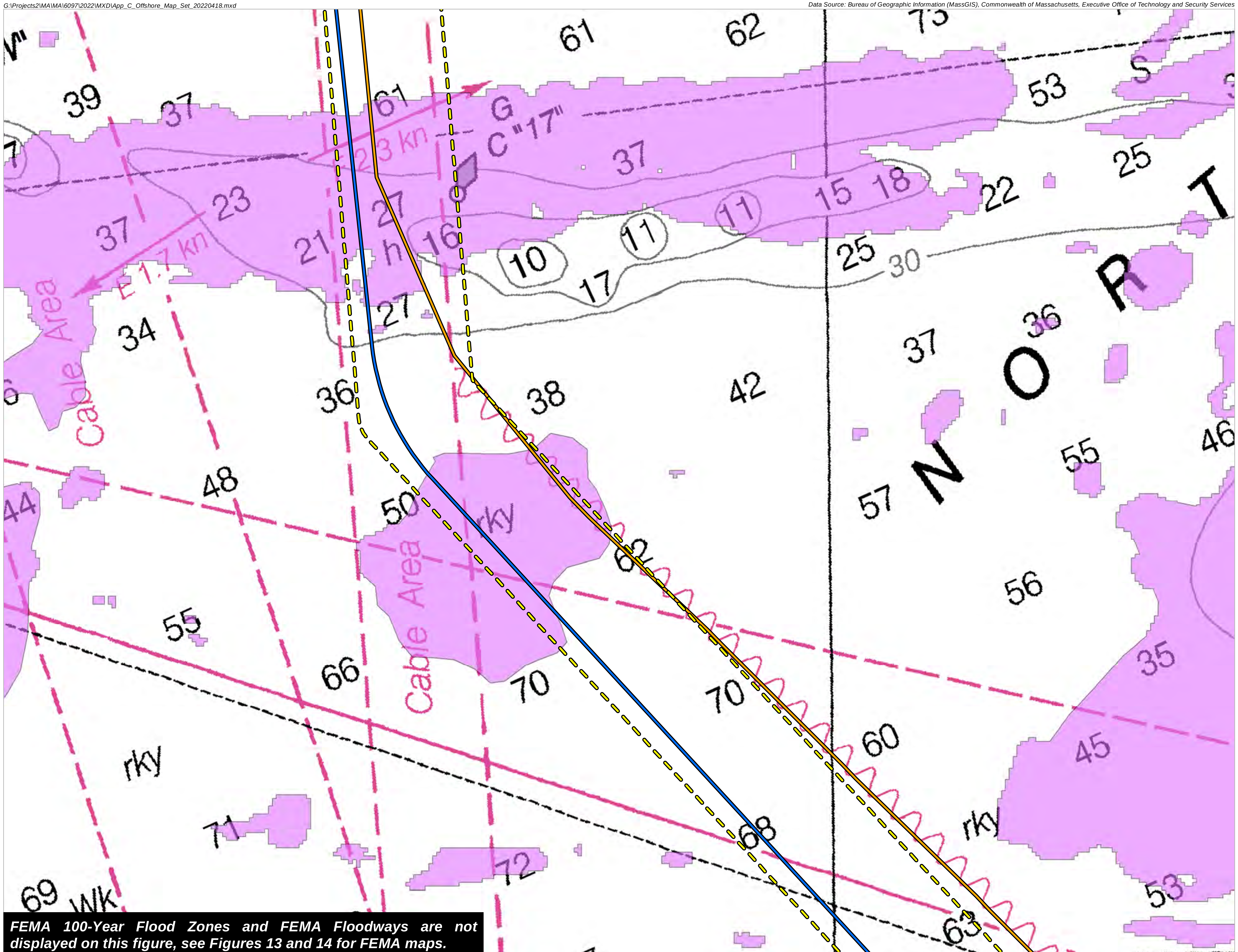
- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Offshore Cable Alignment
  Dashed where using HDD
- Approximate Existing #99 Cable
  Based on 2021 Locational Survey
- Seaward Limit of Eelgrass Surveyed 2022
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Sheet 13 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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Martha's Vineyard Reliability Project

EVERSOURCE

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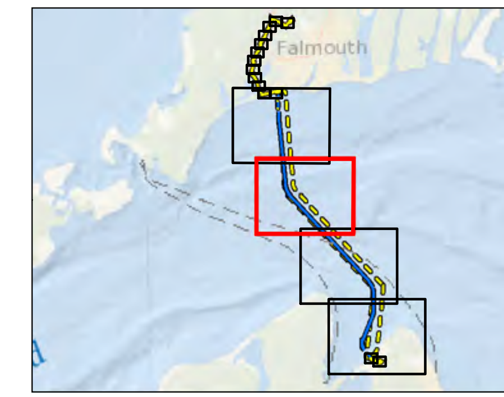

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Map Projection: MA State Plane Mainland
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LEGEND

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- Seaward Limit of Eelgrass Surveyed 2022
- DEP Eelgrass (2019-2022)
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Attachment C

Project Map Set

Sheet 14 of 18

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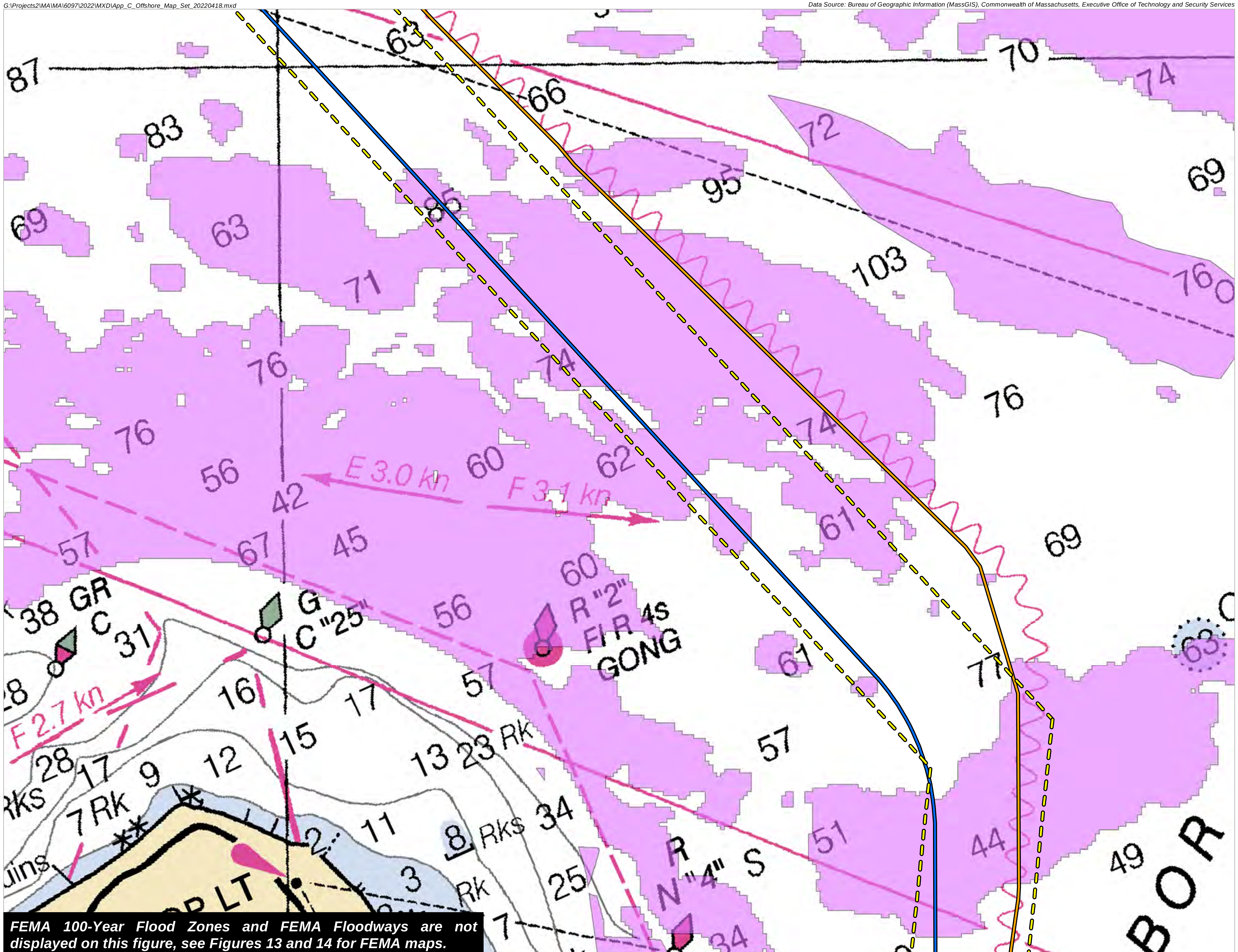
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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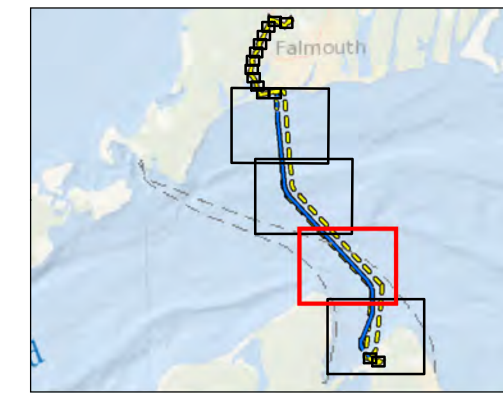
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



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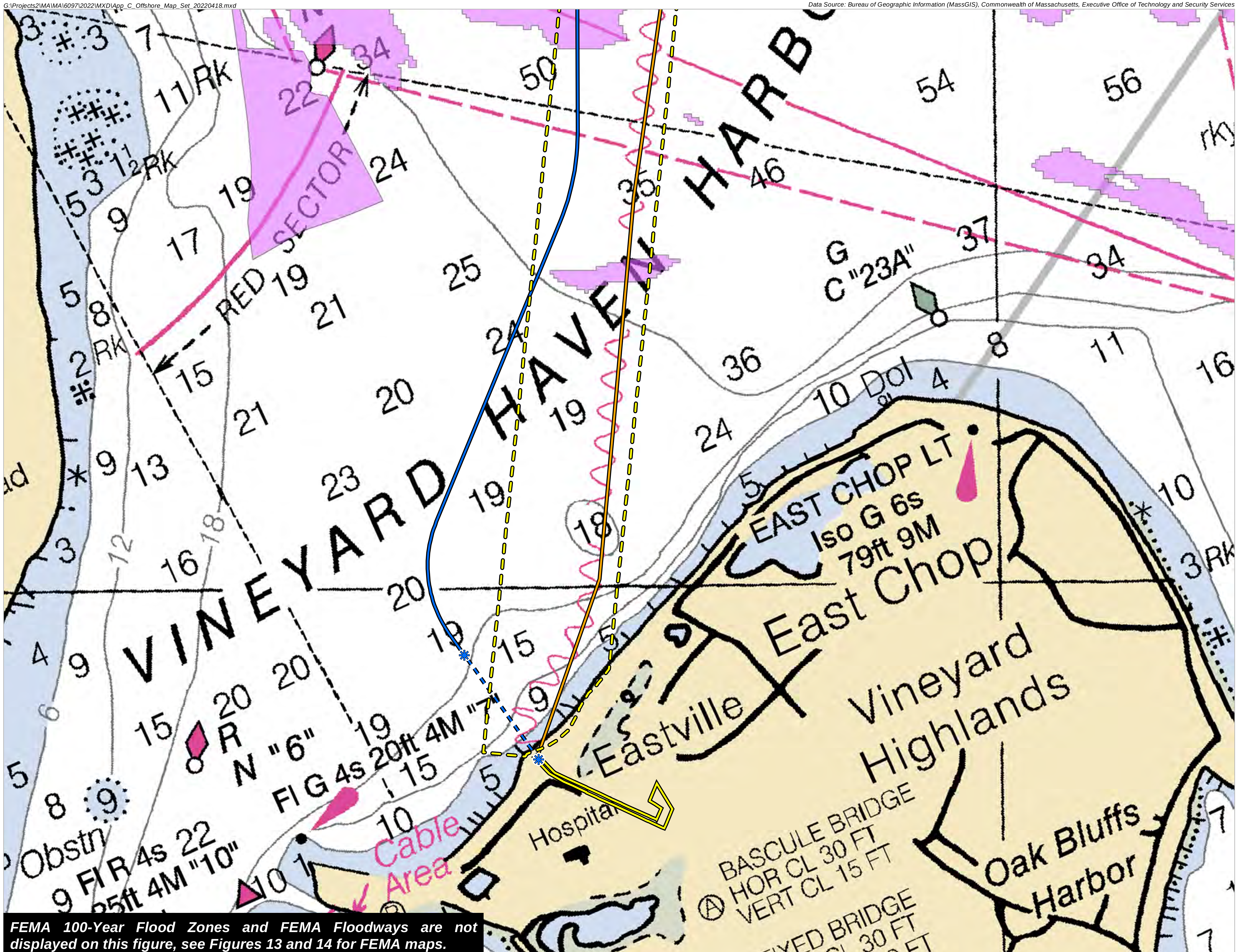
Attachment C

Project Map Set

Sheet 15 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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Martha's Vineyard Reliability Project

EVERSOURCE

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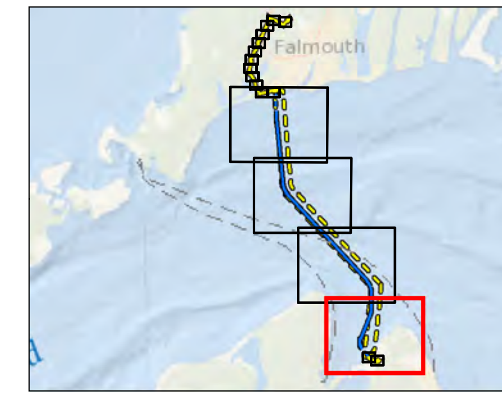

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Attachment C
Project Map Set
Sheet 16 of 18

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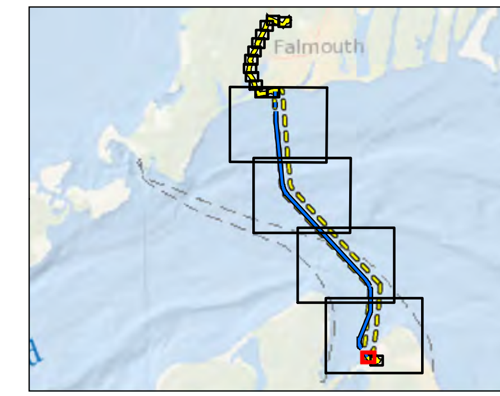
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

Field Delineated Resources

- Bordering Vegetated Wetland
- Top of Bank
- Dune Delineation
- Field Delineated Wetland
- Field Delineated Coastal Dune

MassGIS Data Layers

- Open Water
- Approximate Wetland (not delineated)
- Barrier Beach System
- Barrier Beach - Coastal Beach
- Coastal Beach
- Coastal Dune
- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

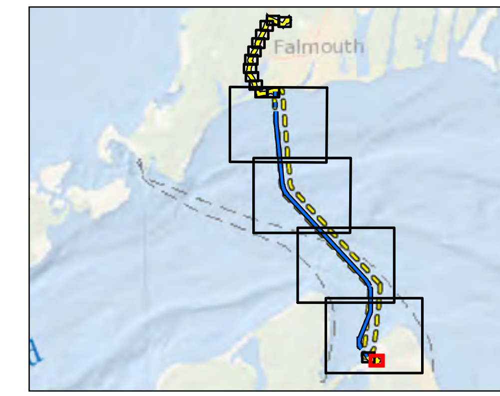
Sheet 17 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

Field Delineated Resources

- Bordering Vegetated Wetland
- Top of Bank
- Dune Delineation
- Field Delineated Wetland
- Field Delineated Coastal Dune

MassGIS Data Layers

- Open Water
- Approximate Wetland (not delineated)
- Barrier Beach System
- Barrier Beach - Coastal Beach
- Coastal Beach
- Coastal Dune
- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Attachment D

Chapter 91 Licenses

New England Telephone and Telegraph Company. E. S. S.

Commonwealth of Massachusetts.

No. 2334.

Whereas, the Southern Massachusetts Telephone Company of Boston, in the County of Suffolk, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to lay a submarine cable across Vineyard Sound from a point near Nobska Point Light House in Woods Hole to a point near West Chop on Martha's Vineyard and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen of the towns of Falmouth and Tisbury;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said Southern Massachusetts Telephone Company, subject to the provisions of the nineteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto, to lay a submarine cable across Vineyard Sound from a point near Nobska Point Light House in Woods Hole to a point near West Chop on Martha's Vineyard, in the location, and as shown on the accompanying plans No. 2334, 2334a, 2334b.

This license is granted subject to the laws of the United States.

The Plans of said work

~~is~~ are on file in the office of said Board, numbered 2334, 2334a, 2334b, and ~~a~~ duplicates of said plans accompany this License, and ~~is~~ are to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized, shall be ascertained by said Board, and compensation therefor shall be made by the said heirs, successors and assigns, by paying into the treasury of the Commonwealth cents for each cubic yard so displaced, being the amount hereby assessed by said Board, the same to be reserved as a compensation fund for the harbor of~~

~~This License is also granted in consideration of the payment into the treasury of the Commonwealth~~

~~by the said~~ ....

~~for the rights and privileges hereby granted in land of said Commonwealth, of the further sum of~~ ....

....

~~being the amount determined by the Governor and Council to be just and equitable therefor.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year from the date hereof, in the Registry of Deeds for the ~~District of the~~ Counties of Barnstable and Dukes.

In Witness Whereof, said Board of Harbor and Land Commissioners have hereunto set their hands this Twenty-first day of February in the year ~~eighteen hundred and ninety~~ nineteen hundred.

Woodward Emery	*Harbor and*
Clinton White	*Land*
Chas. E. Doten	*Commissioners.*

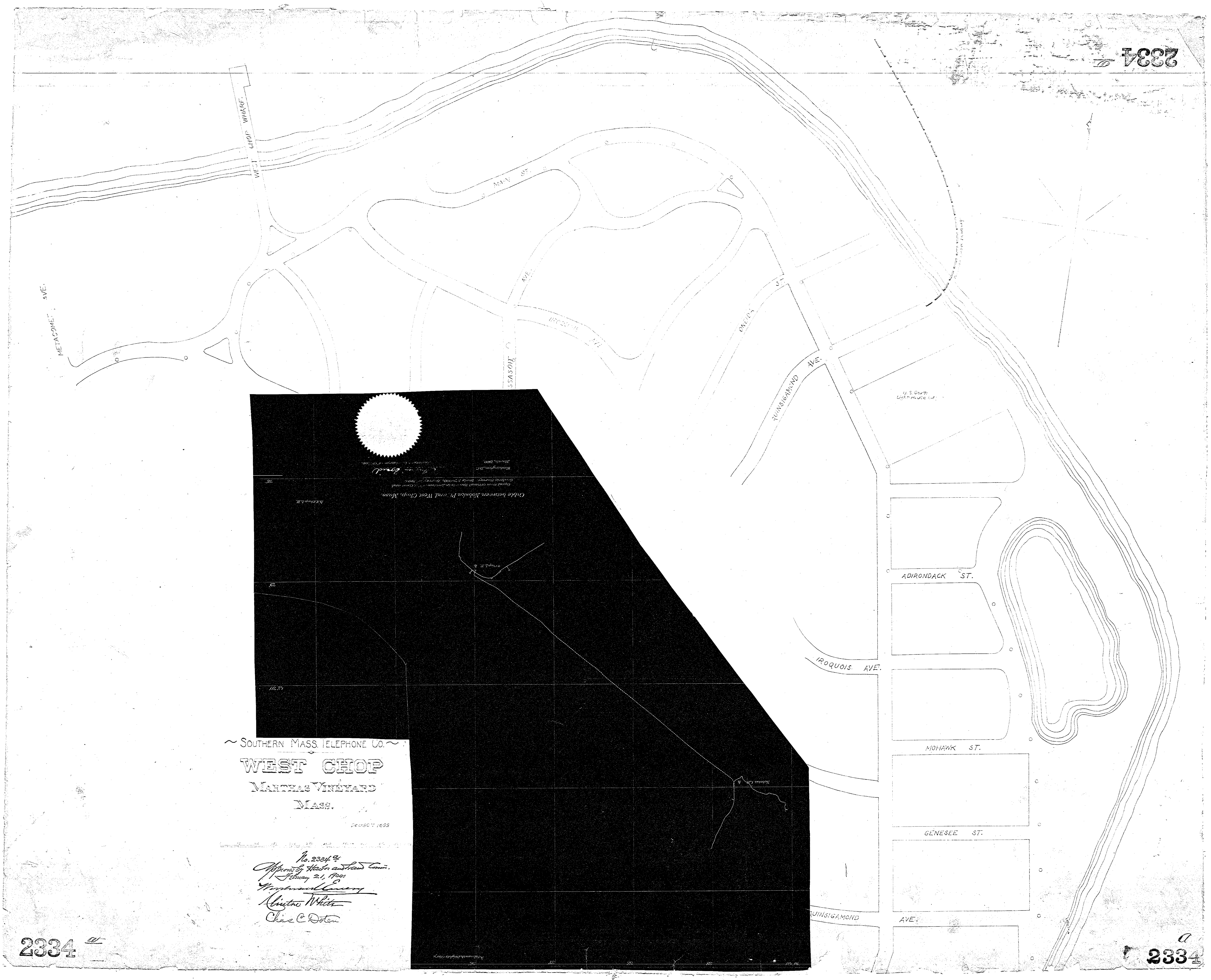
A true Copy.
Attest: Frederick N. Wales.
Clerk of Board.

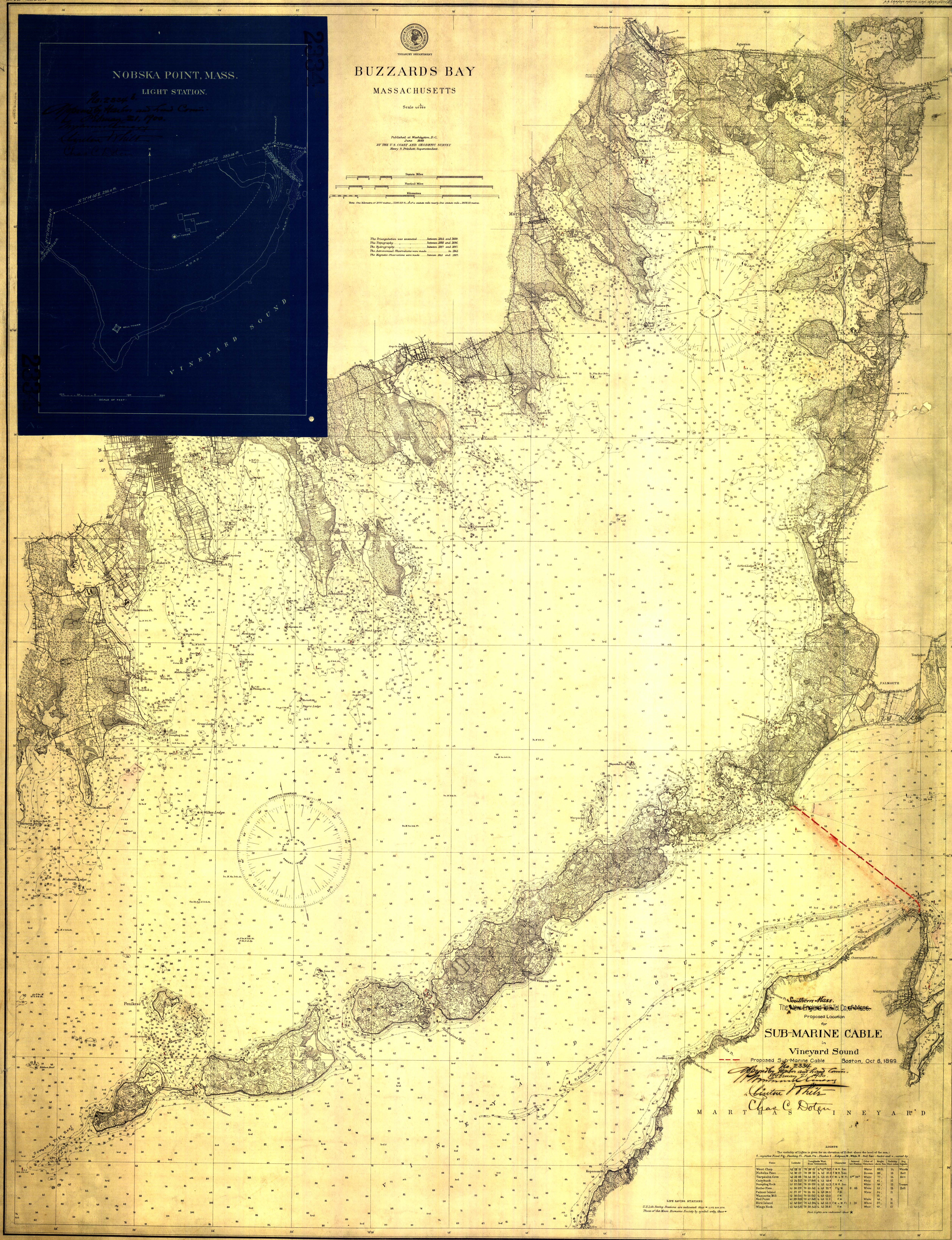
COMMONWEALTH OF MASSACHUSETTS.

BOSTON, Feb. 21, 1900. ~~189~~ .

Approved by the Governor and Council.

E. F. Hamlin
Executive Secretary.


2334 a
WEST CHOP WHARF
MAIN ST.
METACOMET AVE.
IROQUOIS AVE.
QUINSIGAMOND AVE.
ADIRONDACK ST.
MOHAWK ST.
GENESEE ST.
~ SOUTHERN MASS. TELEPHONE CO. ~
WEST CHOP
MARTHAS VINEYARD
MASS.
No. 2334 a
Approved by Harbor and Land Comrs.
February 21, 1900
Chas. C. Doten
2334 a
a 2334


No. 249 PRICE 50 CENTS
NOBSKA POINT, MASS.
LIGHT STATION.
No. 2334 b.
N. 74° 16' 30" E 383.38 ft.
N. 71° 14' 30" E. 299.0 ft.
S. 79° 10' E 89.90 ft.
OIL HOUSE
WOOD HOUSE
DWELLING.
LT. TOWER.
BELL TOWER.
ROAD.
fence
VINEYARD SOUND
SCALE OF FEET.
TREASURY DEPARTMENT
BUZZARDS BAY
MASSACHUSETTS
Scale 1/40000
Published at Washington, D.C.
June 1899
BY THE U.S. COAST AND GEODETIC SURVEY
Henry S. Pritchett, Superintendent.
Statute Miles
Nautical Miles
Kilometres
Note. One kilometre or 1000 metres = 3280.83 ft. = 5/8 of a statute mile nearly. One statute mile = 1609.35 metres.
The Triangulation was executed between 1844 and 1889.
The Topography between 1888 and 1896.
The Hydrography between 1887 and 1897.
The Astronomical Observations were made in 1845
The Magnetic Observations were made between 1845 and 1887.
Marion
Mattapoisett
FALMOUTH
Vineyard Haven
Chappaquansett Pond
Nortons Pt.
Lombards Cove
Pauls Pt.
Southern Mass.
The New England Tel.&Tel. Co. of Mass.
Proposed Location
for
SUB-MARINE CABLE
in
Vineyard Sound
Proposed Sub-Marine Cable
Boston, Oct 6, 1899.
No. 2334.
Approved by Harbor and Land Comm.
February 21, 1900.
Chas C. Doten
MARTHAS VINEYARD
LIGHTS
LIFE SAVING STATIONS

Commonwealth of Massachusetts.

No. 3 3 8 1.

Whereas, J. Arthur Beebe, ______

of Falmouth ______, in the County of Barnstable ______, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to build a pile wharf on Vineyard Sound in the town of Falmouth, ______

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen ______ of the town ______ of Falmouth ______;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said J. Arthur Beebe, ______

______ subject to the provisions of the ninety-sixth chapter of the Revised Laws, and of all laws which are or may be in force applicable thereto, to build and maintain a pile wharf on Vineyard Sound in the town of Falmouth, in conformity with the accompanying plan No. 3 3 8 1: Beginning at a point marked A on said plan, in the high water line and in front of the boat house of the said Beebe, and running southerly, at right angles with the general trend of the shore, 195 feet to a point marked B; thence run-nine easterly, at right angles with said line A-B, 17 feet to a point marked C; thence running northerly, parallel with said line A-B, 10 feet to a point marked D; thence running westerly, parallel with said line B-C, 10 feet to a point marked E; thence running northerly, parallel with said line A-B, 185 feet, more or less, to a point marked F in the high water line; thence running westerly to A, the point of beginning.

This license is granted subject to the laws of the United States.

The Plan of said work

is on file in the office of said Board, numbered 3381, and a duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized, shall be ascertained~~ by said Board, and compensation therefor shall be made by the said

heirs, successors

and assigns, by paying into the treasury of the Commonwealth

cents for each cubic yard so displaced, being the amount

~~hereby assessed by said Board, the same to be reserved as a compensation fund for the harbor of~~

~~This License is also granted in consideration of the payment into the treasury of the~~ Commonwealth by the said

for the rights and privileges hereby granted in land of said Commonwealth, of the further sum of

~~being the amount determined by the Governor and Council to be just and equitable therefor.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year from the date hereof, in the Registry of Deeds for the ~~District of the~~ County of Barnstable.

In Witness Whereof, said Board of Harbor and Land Commissioners have hereunto set their hands this seventh day of June, in the year nineteen hundred and nine.

Geo. E. Smith	*Harbor and Land Commissioners.*
Samuel M. Mansfield	
Heman A. Harding	

COMMONWEALTH OF MASSACHUSETTS.

Boston, June 9. 1909

Approved by the Governor and Council.

E. F. Hamlin
Executive Secretary.

A true copy.
Attest: Frederick R. Wiles
Clerk of Board.

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 9 9 1.

Whereas, The New England Telephone and Telegraph Company of Massachusetts,---

~~of~~ --------------------- ~~, in the County of~~ ------------------------ ~~and Commonwealth aforesaid~~, has applied to the Department of Public Works for license to lay and maintain a submarine cable in and across Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a cable house at Makonicky in the town of Tisbury on the island of Marthas Vineyard, and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the------------------------- Selectmen----------- of the towns---of Falmouth and Tisbury---------;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said The New England Telephone and Telegraph Company of Massachusetts

--, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in and across Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a cable house at Makonicky in the town of Tisbury on the island of Marthas Vineyard, in conformity with the accompanying plan No. 991.

Said submarine cable may be laid upon the surface of the bottom of Vineyard Sound, as shown on said plan.

This license is granted subject to the laws of the United States, and upon condition that said New England Telephone and Telegraph Company of Massachusetts, its successors and assigns, shall, upon request in writing by the Department of Public Works, or its successors, change the location of or lower said cable to such depth as said Department may prescribe, or remove said cable from tide water; and said Company, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said Company, its successors and assigns, as an unauthorized and unlawful structure in tide water.--

The plan of said work, numbered ----------9 9 1-------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be made by the said

heirs, successors

Form WD 54
1M sets-12-'28. No. 4178-2b.

~~and assigns, by paying into the treasury of the Commonwealth~~

~~cents for each cubic yard so displaced, being the amount hereby assessed~~

~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registr~~y~~ies of Deeds for the ~~District of the County of~~ Counties of Barnstable and Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-sixth day of March, in the year nineteen hundred and twenty-nine.

F E Lyman

Richard K Hale

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

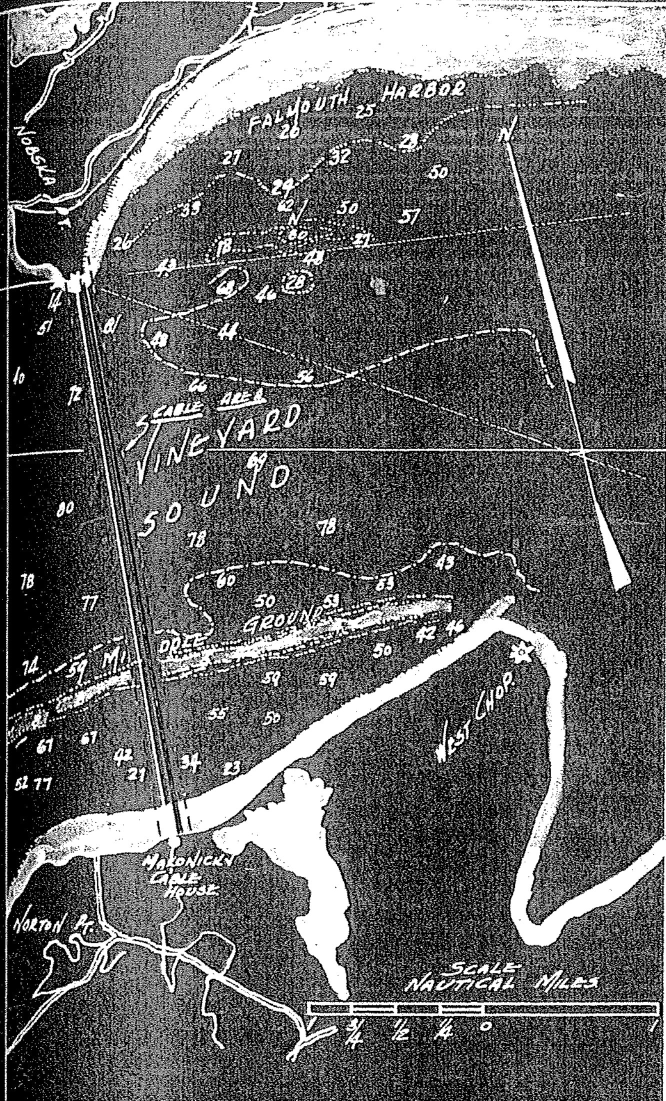
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of , the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, March 27, 1929

Approved by the Governor and Council.

William L. Reed
Executive Secretary.

A true copy. Attest: Mary A. Riley *Secretary.*



LEGEND

PLAN TO ACCOMPANY PETITION OF
THE NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY OF MASS.
FOR PERMISSION TO PLACE A
SUBMARINE CABLE

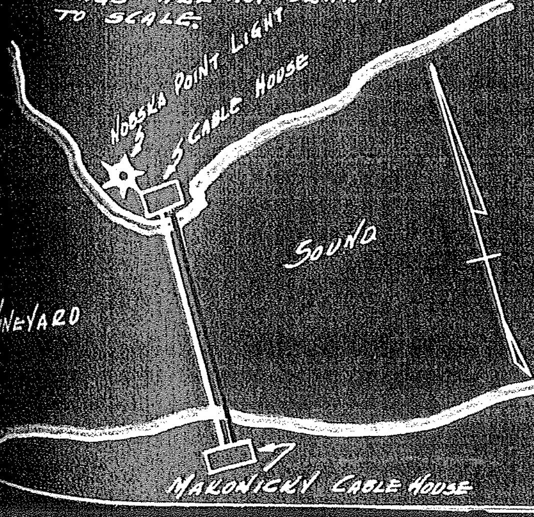
ACROSS	FROM	TO
VINEYARD SOUND	NOBSKA POINT	MARTHAS VINEYARD IS.

-:SUMMARY:-

PROPOSED SUBMARINE CABLE
PRESENT SUBMARINE CABLE

SCALE 1 INCH = 80000 INCHES.   DATED FEB. 4, 1929 E.C.C.

BOTH OF THESE DETAIL CABLE LANDINGS ARE NOT DRAWN TO SCALE.



NO. 991
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MARCH 26, 1929

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 1833.

Whereas, The Service Company,------------------------------

of Foxborough-------, in the County of Norfolk----------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to fill solid in a part of Salt Pond at its property on Beach Street in the town of Falmouth,---

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the -------------------- Selectmen-----------of the town--- of Falmouth-------------------;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Service Company------------------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to fill solid in a part of Salt Pond at its property on Beach Street in the town of Falmouth, in conformity with the accompanying plan No. 1833.

Solid filling may be placed in a part of Salt Pond in front of property of the licensee within an area varying in width and averaging about 75 feet wide, in the location shown in red on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing any filling of property not owned by the licensee without the consent of the owner or owners of such property.

The filling shall be carried out in a manner that will prevent the escape of material outside of the limits of the area within which filling is authorized by this license, and if required by the Department, the licensee shall build a rubble wall or other barrier satisfactory to the Department, to retain the filling places.--

The plan of said work, numbered ----------1 8 3 3,------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made by the said~~

~~heirs, successors~~

Form WD 54
1M sets-12-'28. No. 4178-2b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each cubic yard so displaced, being the amount hereby assessed

~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ---------------------- ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-seventh---------------- day of November,---------------- in the year nineteen hundred and thirty-six.

Wm F Callahan

Richard K Hale

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said~~

~~of the further sum of~~

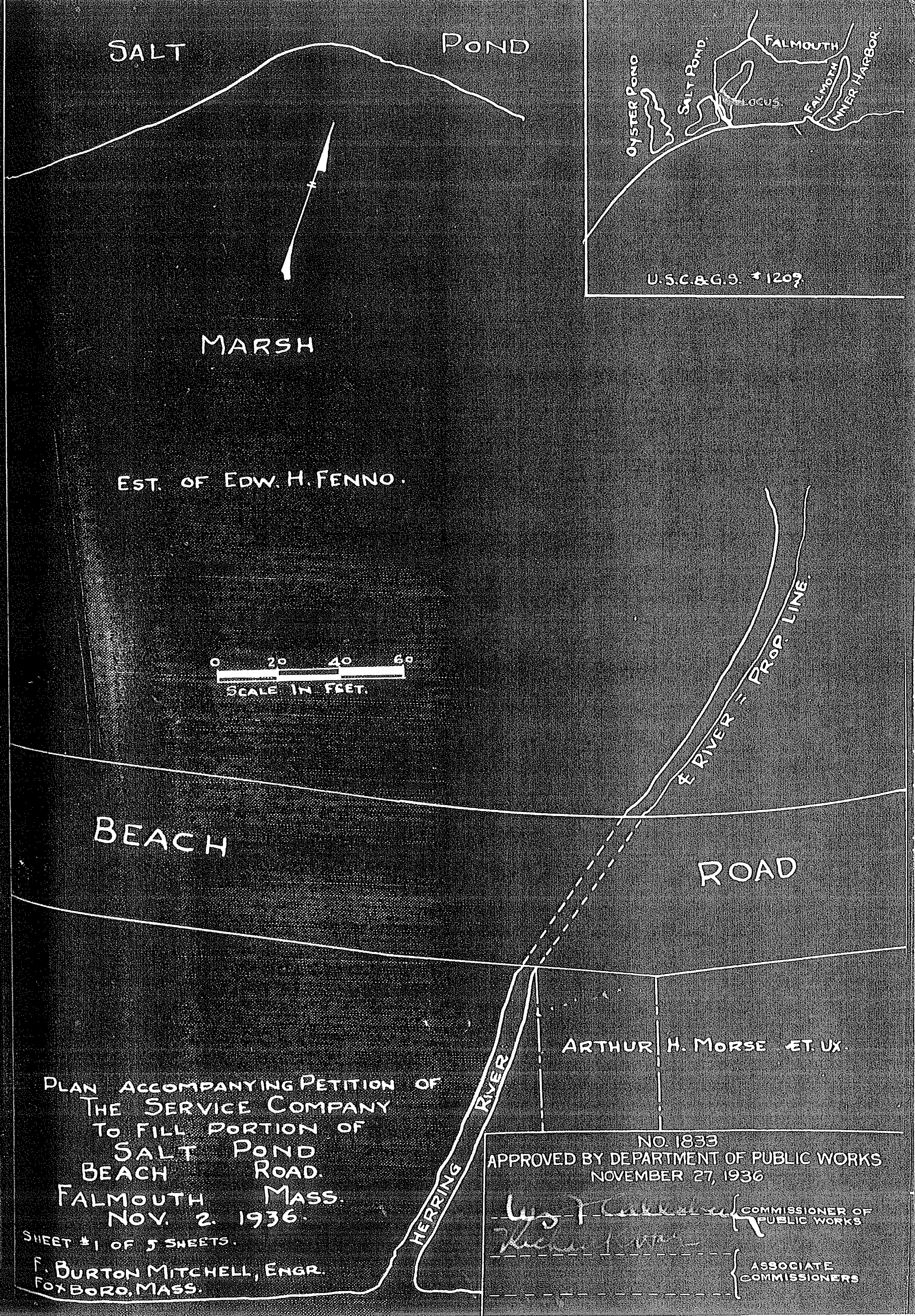
~~the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, Nov. 30, 1936

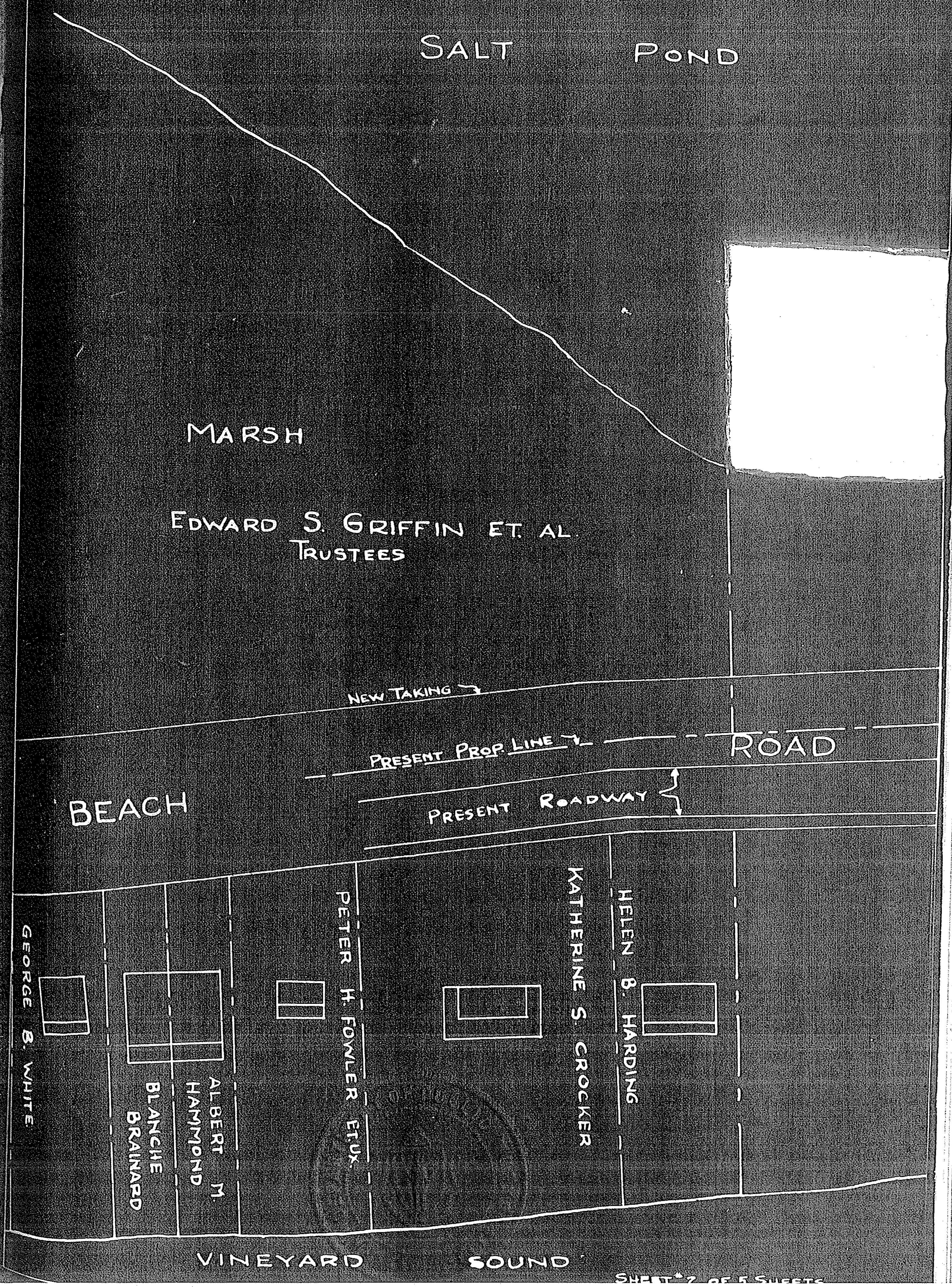
Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

A true copy. Attest: Mary A. Riley *Secretary.*

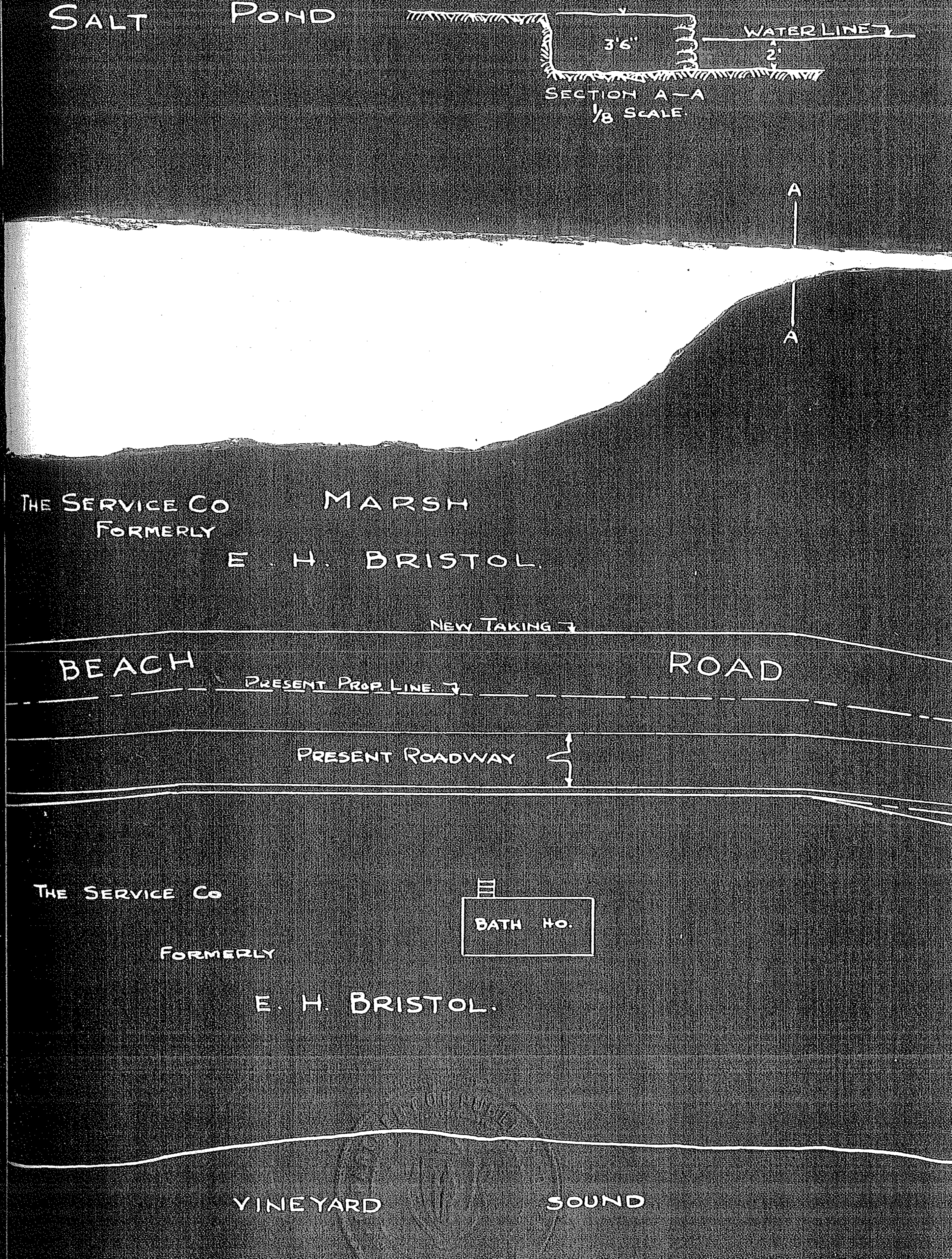

SALT
POND
FALMOUTH
OYSTER POND
SALT POND
LOCUS.
FALMOUTH
INNER HARBOR.
U.S.C.&G.S. #1209.
MARSH
EST. OF EDW. H. FENNO.
0
20
40
60
SCALE IN FEET.
℄ RIVER = PROP. LINE
BEACH
ROAD
ARTHUR H. MORSE ET. UX.
HERRING RIVER
PLAN ACCOMPANYING PETITION OF
THE SERVICE COMPANY
TO FILL PORTION OF
SALT POND
BEACH ROAD.
FALMOUTH MASS.
NOV. 2. 1936.
SHEET #1 OF 5 SHEETS.
F. BURTON MITCHELL, ENGR.
FOXBORO, MASS.
NO. 1833
APPROVED BY DEPARTMENT OF PUBLIC WORKS
NOVEMBER 27, 1936
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS

LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936



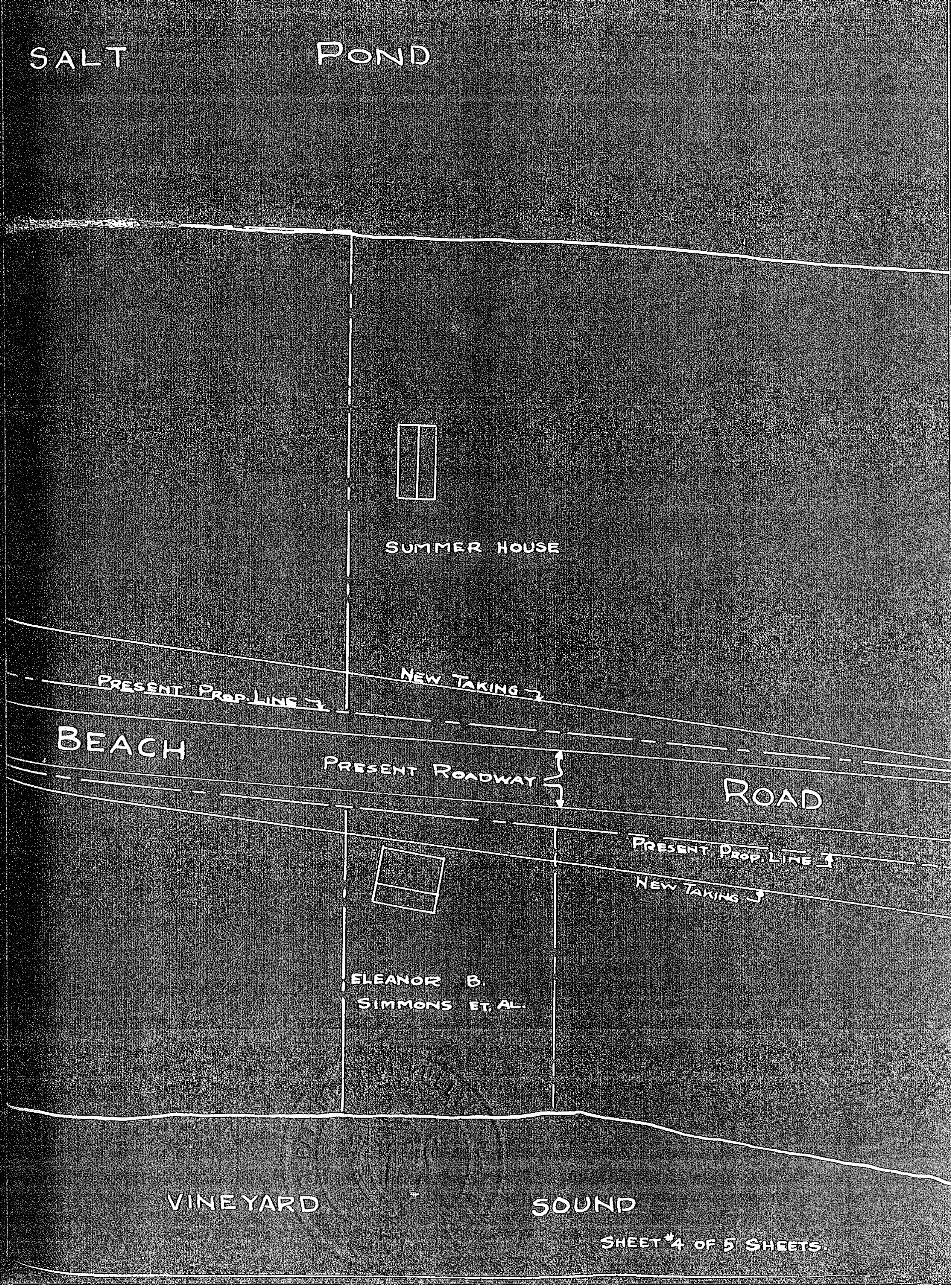
SHEET 2 OF 5 SHEETS

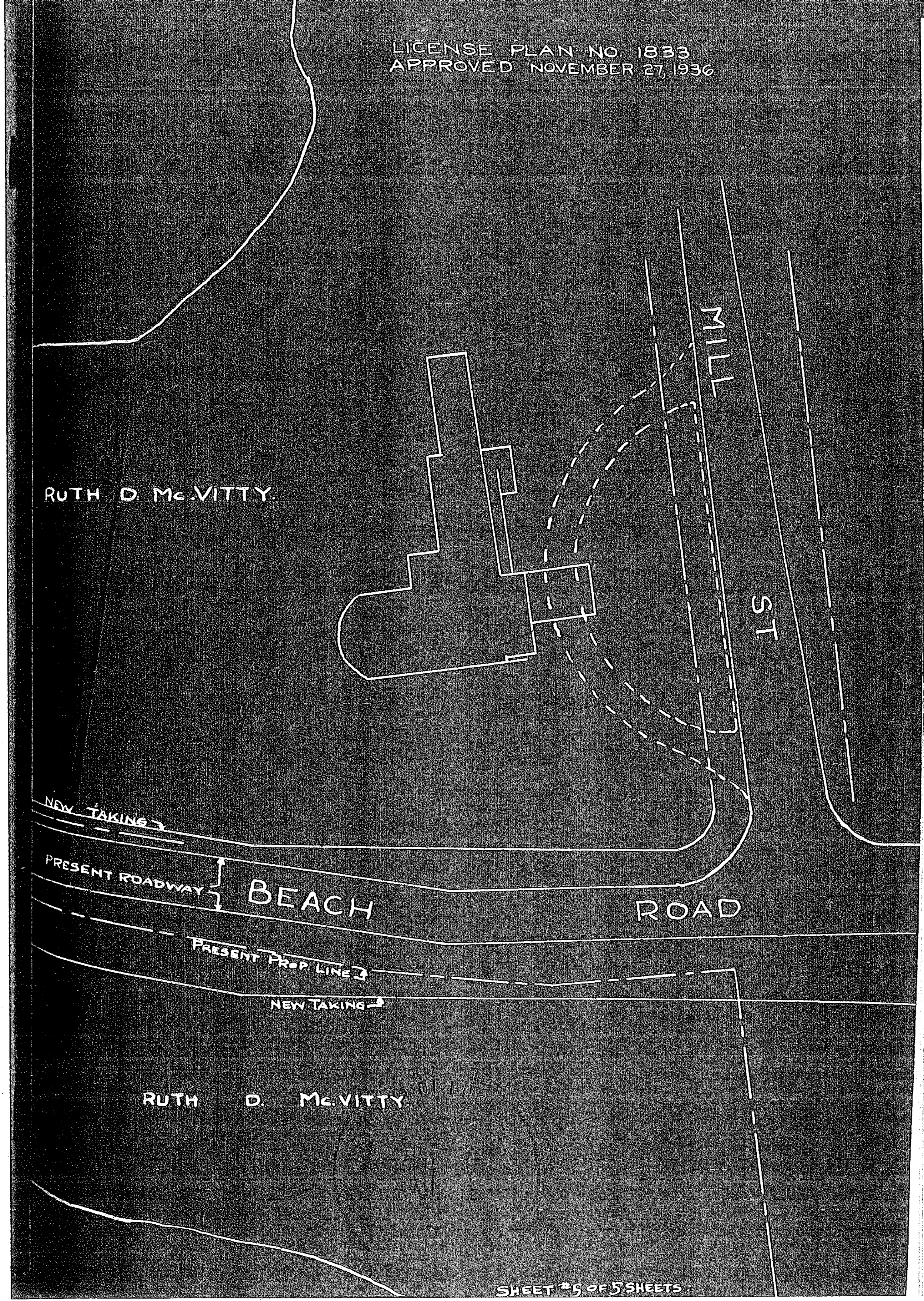
LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936



SHEET #3 OF 5 SHEETS.

LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936




LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936
RUTH D. Mc.VITTY.
MILL
ST
NEW TAKING
PRESENT ROADWAY
BEACH
ROAD
PRESENT PROP. LINE
NEW TAKING
RUTH D. Mc.VITTY.
SHEET #5 OF 5 SHEETS.

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 1745.

Whereas, The Western Union Telegraph Company, of New York,

~~of~~ - ~~, in the County of~~ - ~~and Commonwealth aforesaid~~, has applied to the Department of Public Works for license to lay and maintain a submarine cable in Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a point upon the shore of Marthas Vineyard Island in the town of Tisbury, - - - - - - - - - - - - - - - - - and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the - Selectmen - - - - - - - - - - of the towns - - of Falmouth and Tisbury - - - - - - - ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Western Union Telegraph Company - - - - - - - -, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a point upon the shore of Marthas Vineyard Island in the town of Tisbury, in conformity with the accompanying plan No. 1745.

Said submarine cable may be laid upon the surface of the bottom of Vineyard Sound, in the location shown on said plan and in accordance with the details of construction there indicated.

Nothing in this license shall be construed as authorizing any use or occupancy of land, flats or structures not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the said Western Union Telegraph Company, its successors and assigns, shall, upon request in writing by the Department of Public Works, or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said Company, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.---

The plan of said work, numbered----------1 7 4 5,------------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made~~ by the said

~~heirs, successors~~

Form WD 54
500 sets-3-'35. No. 4006-b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each ~~cubic yard so~~ displaced, being the amount hereby assessed

~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registries of Deeds for the ~~District of the~~ County of Barnstable and the County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this fifteenth day of December, in the year nineteen hundred and thirty-six.

Wm F Callahan
Richard K Hale
Frank L Kane
Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

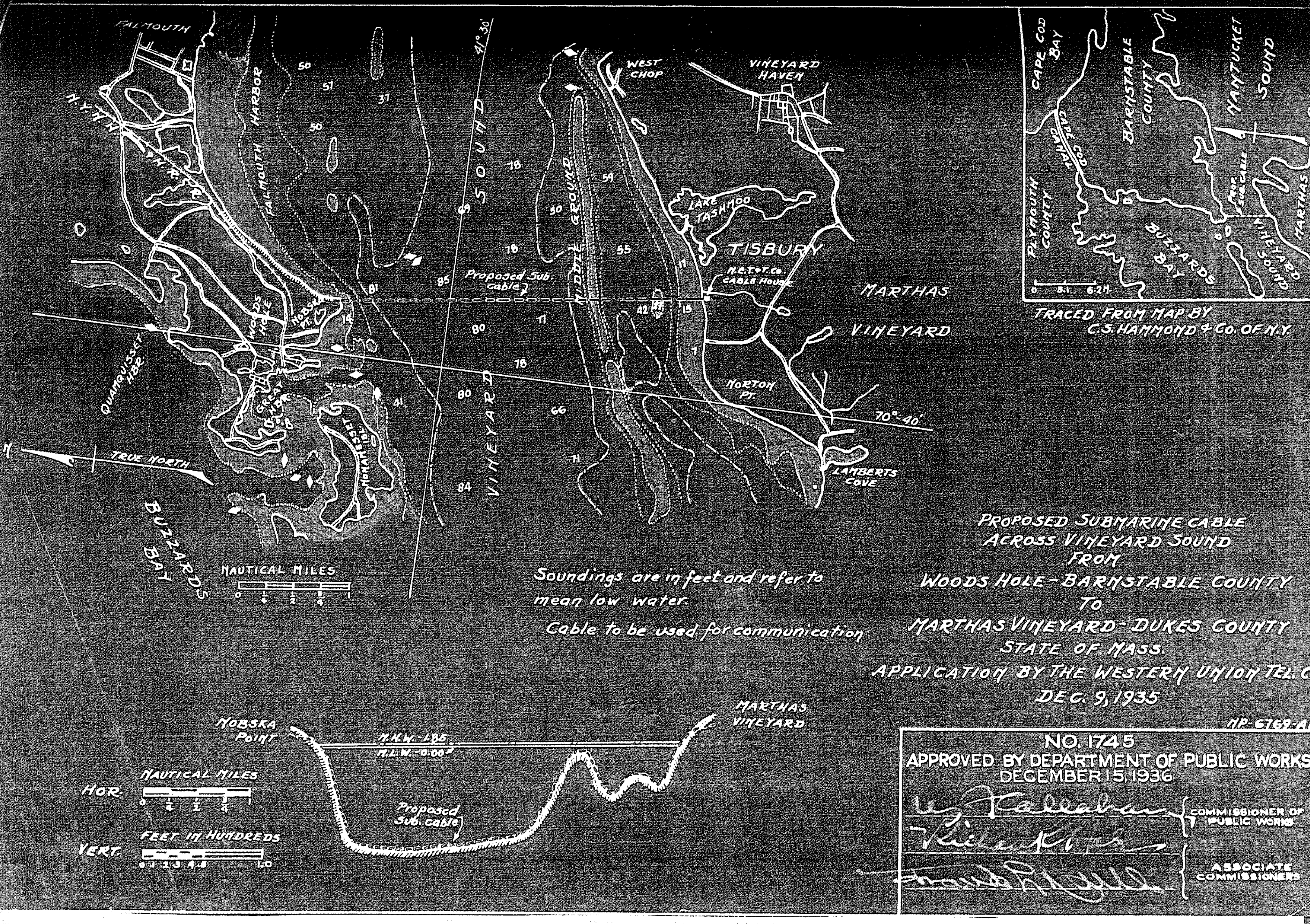
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

BOSTON, Dec. 16, 1936

Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

A true copy. Attest: Mary A Riley *Secretary.*


FALMOUTH
N.Y.N.H.&H.R.R.
FALMOUTH HARBOR
WOODS HOLE
NOBSKA PT.
GREAT HBR.
QUAMQUISSET HBR.
NONAMESSET ISL.
TRUE NORTH
BUZZARDS BAY
NAUTICAL MILES
VINEYARD SOUND
41°30'
70°-40'
Proposed Sub. cable
MIDDLE GROUND
WEST CHOP
VINEYARD HAVEN
LAKE TASHMOO
TISBURY
N.E.T.&T.Co. CABLE HOUSE
MARTHAS VINEYARD
NORTON PT.
LAMBERTS COVE
CAPE COD BAY
CAPE COD CANAL
PLYMOUTH COUNTY
BARNSTABLE COUNTY
NANTUCKET SOUND
PROP. SUB. CABLE
VINEYARD SOUND
MARTHAS VINEYARD
TRACED FROM MAP BY C.S. HAMMOND & CO. OF N.Y.
Soundings are in feet and refer to mean low water.
Cable to be used for communication
PROPOSED SUBMARINE CABLE ACROSS VINEYARD SOUND FROM WOODS HOLE - BARNSTABLE COUNTY TO MARTHAS VINEYARD - DUKES COUNTY STATE OF MASS.
APPLICATION BY THE WESTERN UNION TEL. CO.
DEC. 9, 1935
NOBSKA POINT
MARTHAS VINEYARD
M.H.W. - 1.85
M.L.W. - 0.00
Proposed Sub. cable
HOR. NAUTICAL MILES
VERT. FEET IN HUNDREDS
NP-6769-A1
NO. 1745
APPROVED BY DEPARTMENT OF PUBLIC WORKS
DECEMBER 15, 1936
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS

Form WD 54.
500 sets-3-'35. No. 4006-a

The Commonwealth of Massachusetts

No. 2161.

Whereas, the Cape and Vineyard Electric Company----------

of Barnstable------- , in the County of Barnstable--------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury,---------------------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the --------Select-men--------------- of the towns-- of Falmouth and Tisbury-------- ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said --Cape and Vine-yard Electric Company---------------- , subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 2161.

Said cable may be laid on the surface of the bed of said Sound from a point at the end of Shore Street in the town of Falmouth to a point about 1600 feet westerly from West Chop Light in the town of Tisbury, in the location shown on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.

The plan of said work, numbered---------2 1 6 1--------------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be made by the said ~~heirs, successors~~

Form WD 54
500 sets-3-'35. No. 4006-b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents ~~for each cubic yard so displaced, being the amount hereby assessed by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ---------------- ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-sixth-------------- day of February--------------- in the year nineteen hundred and forty.

...roved,

...rector Division
...of Waterways.

John W. Beal
Paul C. Ryan
George W. Schryver

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

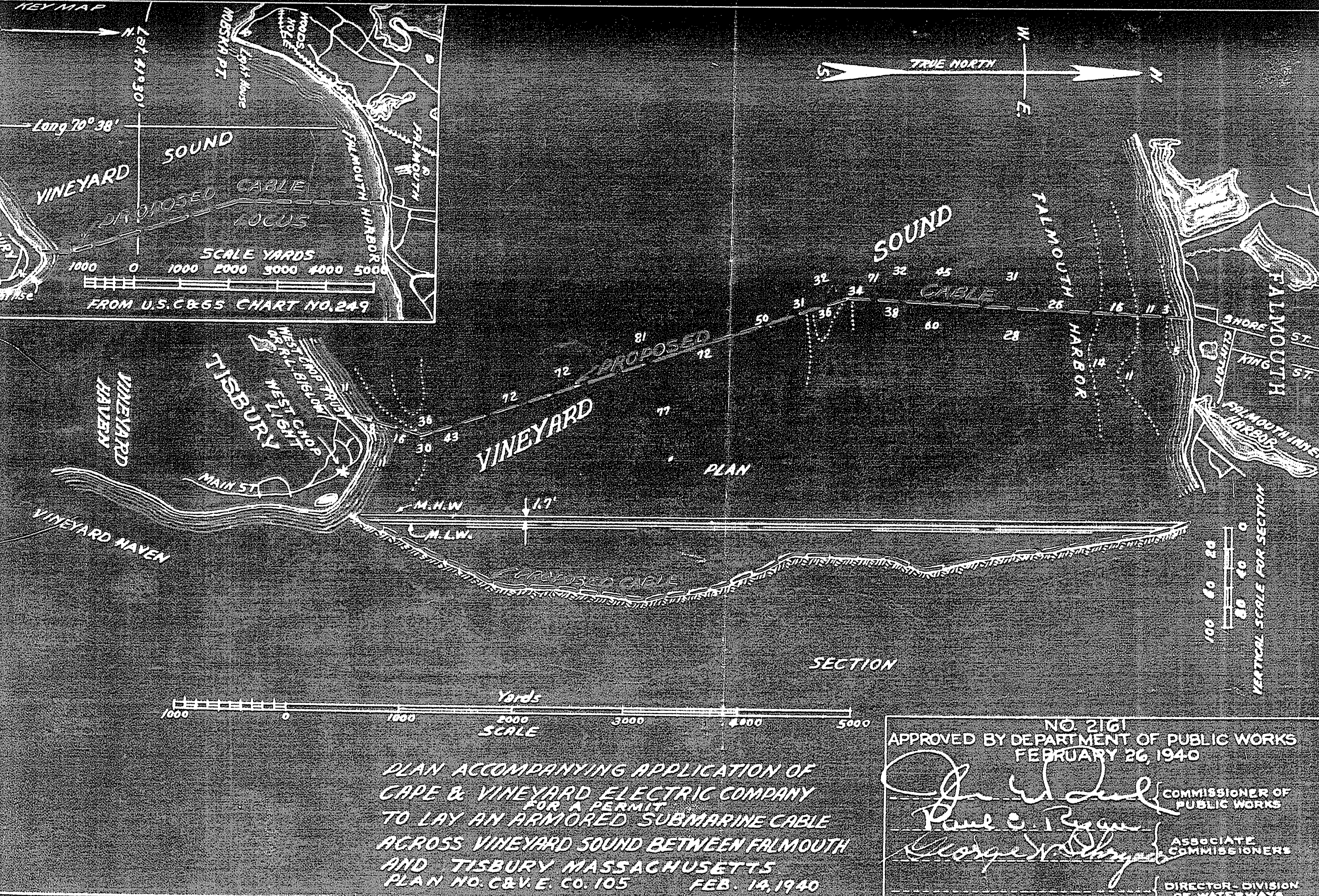
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, Mar. 6, 1940

Approved by the Governor and Council.

Wm. L. Reed
Executive Secretary.

A true copy. Attest: Mary A. Riley *Secretary.*


KEY MAP
Lat. 41°30'
Long 70°38'
HOBSKA PT.
Light House
WOODS HOLE
FALMOUTH
FALMOUTH HARBOR
SOUND
VINEYARD
PROPOSED CABLE
FOCUS
SCALE YARDS
1000 0 1000 2000 3000 4000 5000
FROM U.S.C.&G.S. CHART NO. 249
TRUE NORTH
N.
S.
W.
E.
FALMOUTH
SHORE ST.
KING ST.
CLINTON
FALMOUTH INNER HARBOR
FALMOUTH HARBOR
SOUND
CABLE
PROPOSED
VINEYARD
PLAN
TISBURY
WEST CHOP LIGHT
WEST CHOP TRUST OR R.L. BIGLOW
MAIN ST.
VINEYARD HAVEN
M.H.W.
M.L.W.
1.7'
PROPOSED CABLE
SECTION
VERTICAL SCALE FOR SECTION
0 20 40 60 80 100
Yards
1000 0 1000 2000 3000 4000 5000
SCALE
NO. 2161
APPROVED BY DEPARTMENT OF PUBLIC WORKS
FEBRUARY 26, 1940
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS
DIRECTOR-DIVISION OF WATERWAYS
PLAN ACCOMPANYING APPLICATION OF
CAPE & VINEYARD ELECTRIC COMPANY
FOR A PERMIT
TO LAY AN ARMORED SUBMARINE CABLE
ACROSS VINEYARD SOUND BETWEEN FALMOUTH
AND TISBURY MASSACHUSETTS
PLAN NO. C&V.E. CO. 105 FEB. 14, 1940

Form WD 54.
500 sets-3-'35. No. 4006-a

The Commonwealth of Massachusetts

No. 2169.

Whereas, the Cape and Vineyard Electric Company,----------

of Barnstable----- , in the County of Barnstable-------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury,----------------------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ---------------- Selectmen--------- of the towns--of Falmouth and Tisbury------- ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Cape and Vineyard Electric Company---- , subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 2169.

Said cable may be laid on the surface of the bed of said Sound from a point at the end of Shore Street in the town of Falmouth to a point at the end of Squantum Avenue in the town of Tisbury, in the location shown on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.

This license is issued in substitution for license No. 2161, dated February 26, 1940, and is granted for the purpose of allowing the said cable to be laid in a straight line under the tide waters of Vineyard Sound.

The plan of said work, numbered ------------2 1 6 9,------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made by the said~~

~~heirs, successors~~

Form WD 54
500 sets-3-'35. No. 4006-b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for ~~each cubic yard so~~ displaced, being the amount hereby assessed ~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registr~~y~~ ies of Deeds for the ~~District of the~~ County of Barnstable and the County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twentieth day of March, in the year nineteen hundred and forty.

Approved,

Director Division of Waterways.

John W. Beal
Paul C. Ryan
George W. Schryver
Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth~~ by the said of the further sum of

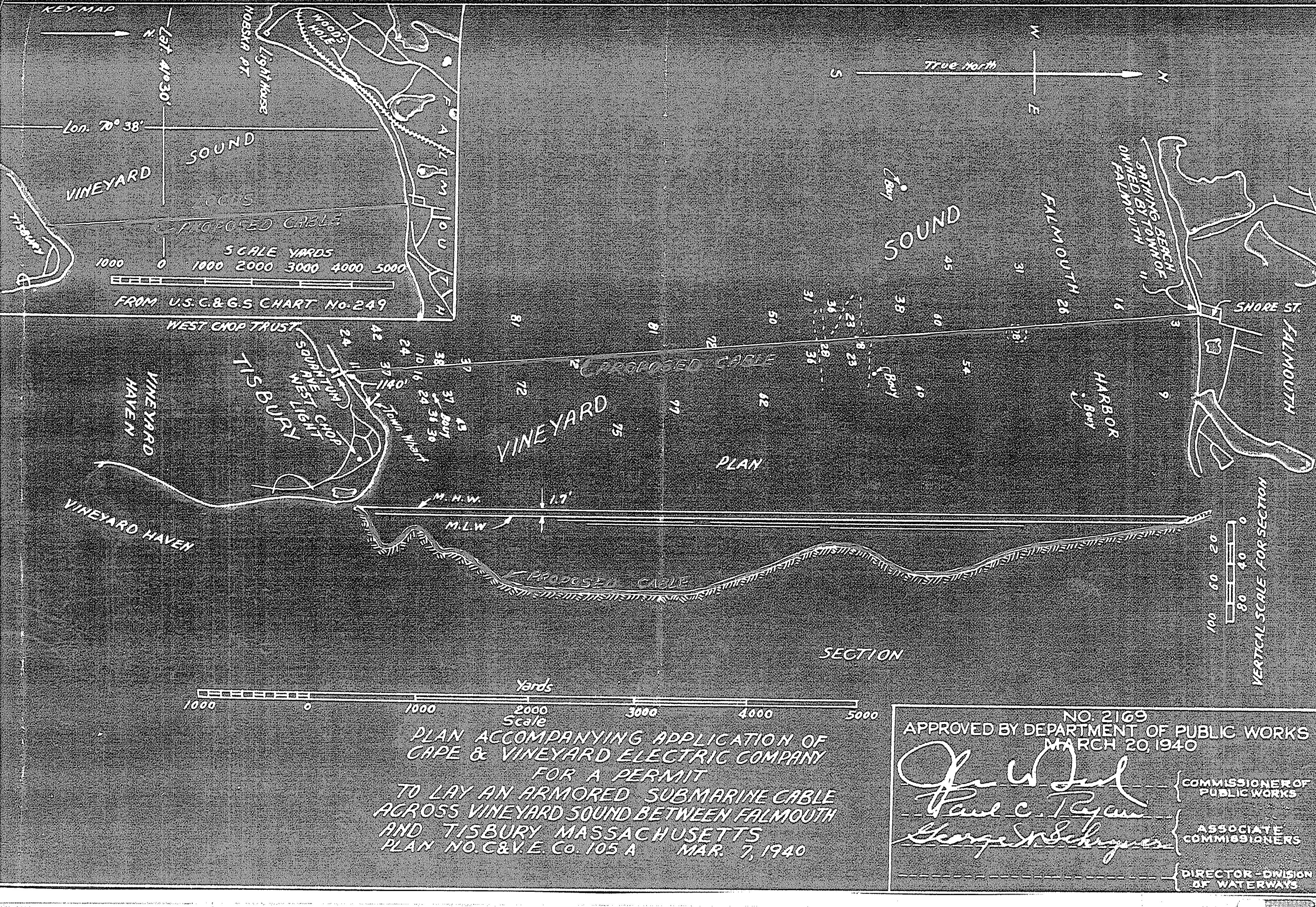
the amount deter~~mined by~~ the Governor and Council as a just and equitable charge for rights and priv~~ileges hereby granted in land of the Commonwealth.~~

Boston, March 27, 1940

Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

A true copy. Attest: .... *Secretary.*


KEY MAP
N
Lat. 41°30'
Lon. 70° 38'
HOBSKA PT.
Light House
WOODS HOLE
FALMOUTH
VINEYARD SOUND
PROPOSED CABLE
SCALE YARDS
1000 0 1000 2000 3000 4000 5000
FROM U.S. C.&G.S. CHART NO. 249
TISBURY
True North
N
S
W
E
BATHING BEACH OWNED BY TOWN OF FALMOUTH
SHORE ST.
FALMOUTH
FALMOUTH HARBOR
Bouy
SOUND
VINEYARD
PROPOSED CABLE
WEST CHOP TRUST
SQUANTUM AVE
WEST CHOP LIGHT
1140'
Town Wharf
TISBURY
VINEYARD HAVEN
VINEYARD HAVEN
PLAN
M.H.W.
M.L.W.
1.7'
PROPOSED CABLE
SECTION
VERTICAL SCALE FOR SECTION
0 20 40 60 80 100
Yards
1000 0 1000 2000 3000 4000 5000
Scale
PLAN ACCOMPANYING APPLICATION OF
CAPE & VINEYARD ELECTRIC COMPANY
FOR A PERMIT
TO LAY AN ARMORED SUBMARINE CABLE
ACROSS VINEYARD SOUND BETWEEN FALMOUTH
AND TISBURY MASSACHUSETTS
PLAN NO. C&V.E. Co. 105 A MAR. 7, 1940
NO. 2169
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MARCH 20, 1940
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS
DIRECTOR-DIVISION OF WATERWAYS

Form WD 54-A. 500-9-52-907819

The Commonwealth of Massachusetts

No. 3602.

Whereas, The Falmouth Associates, Inc.,--------------------------

of . Falmouth------------, in the County of Barnstable----------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to build a stone jetty in Vineyard Sound, at its property in the town of Falmouth,---------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ------------------ Selectmen--------------- of the town-------of Falmouth--------------------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said--

Falmouth Associates, Inc.--------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to build and maintain a stone jetty at Surf Drive in Vineyard Sound, at its property in the town of Falmouth, in conformity with the accompanying plan No. 3602.

A stone groin or jetty may be built extending into tidewater from the mean high water line a distance of approximately 60 feet with top width of 4 feet and side and end slopes of 1-1/2 horizontally to 1 vertically, in the location shown on said plan and in accordance with the details of construction there indicated.

Said groin may be built with its top at elevation 5.3 feet above mean low water at the mean high water line and sloping to elevation 3.3 feet above mean low water, amounting to 2 feet above mean high water, at the outer end, as shown on said plan.

This license is granted subject to the laws of the United States.

The plan of said work, numbered -----------3 6 0 2,--------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made by the~~ said

~~heirs, successors~~

~~and assigns, by paying into the treasury of the Commonwealth~~

~~cents for each cubic yard so displaced, being the amount hereby assessed by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ---------- ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-eighth------------------ day of December,--------------------in the year nineteen hundred and fifty-three.

John A. Volpe
Fred B. Dole
Francis V. Matera
Department of Public Works

Approval recommended,

R G Bessette
Director Division of Waterways.

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said~~

~~or the further sum of~~ no charge

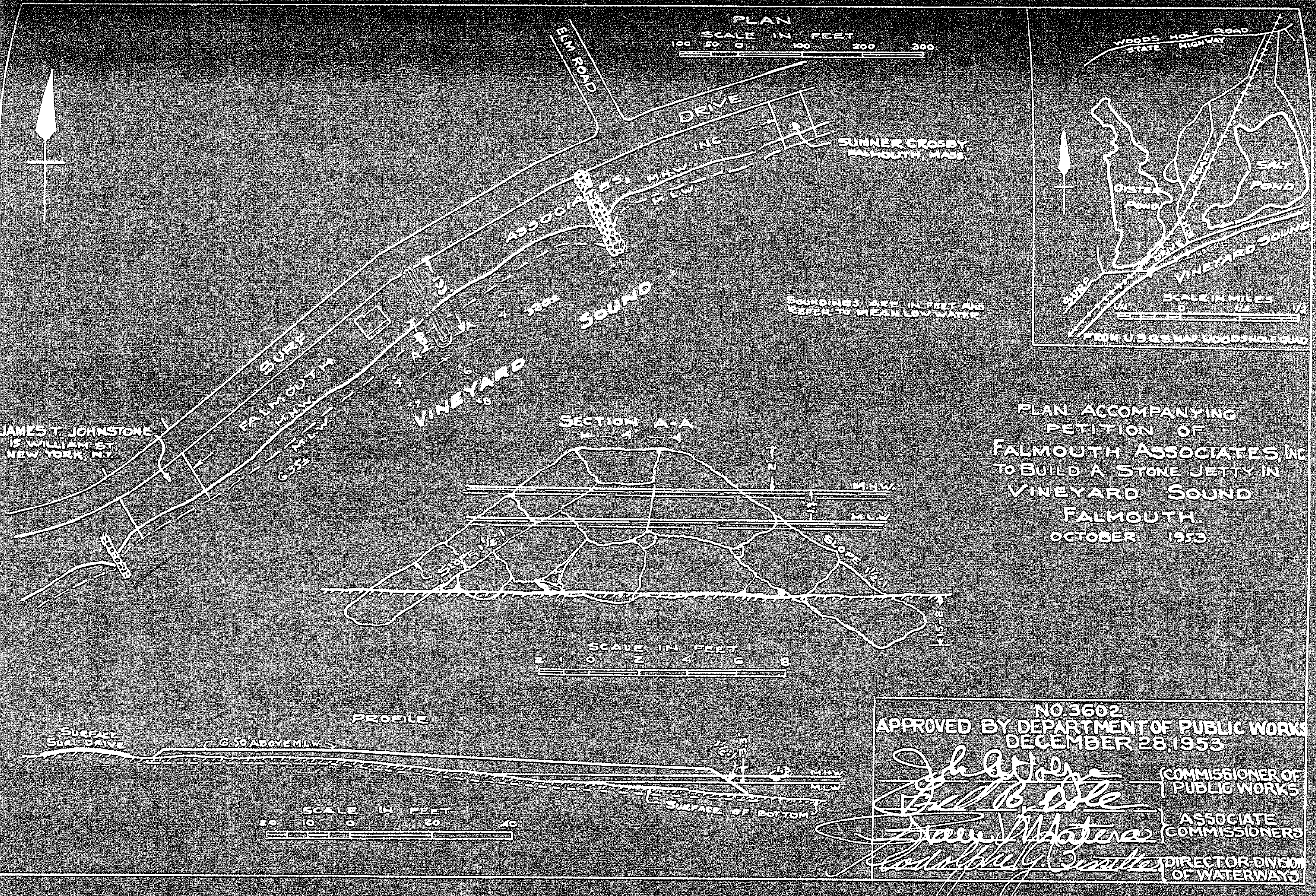
~~the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, Jan. 7, 1954

Approved by the Governor and Council.

Clarence R. Elam
Executive Secretary.

A true copy. Attest: Mary E. McMorrow
Secretary.


PLAN
SCALE IN FEET
100 50 0 100 200 300
ELM ROAD
DRIVE
SURF
FALMOUTH ASSOCIATES, INC.
M.H.W.
M.L.W.
SUMNER CROSBY
FALMOUTH, MASS.
JAMES T. JOHNSTONE
15 WILLIAM ST.
NEW YORK, N.Y.
VINEYARD SOUND
SOUNDINGS ARE IN FEET AND REFER TO MEAN LOW WATER
WOODS HOLE ROAD
STATE HIGHWAY
OISTER POND
SALT POND
VINEYARD SOUND
SCALE IN MILES
1/4 0 1/4 1/2
FROM U.S.G.S. MAP WOODS HOLE QUAD
SECTION A-A
SLOPE 1½:1
SCALE IN FEET
2 1 0 2 4 6 8
PROFILE
SURFACE SURF DRIVE
G. 5.0' ABOVE M.L.W.
SURFACE OF BOTTOM
SCALE IN FEET
20 10 0 20 40
PLAN ACCOMPANYING
PETITION OF
FALMOUTH ASSOCIATES, INC
TO BUILD A STONE JETTY IN
VINEYARD SOUND
FALMOUTH.
OCTOBER 1953.
NO. 3602
APPROVED BY DEPARTMENT OF PUBLIC WORKS
DECEMBER 28, 1953
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS
DIRECTOR-DIVISION OF WATERWAYS

Form WD 54-A. 500-9-52-907819

The Commonwealth of Massachusetts

No. 3633.

Whereas, the Cape and Vineyard Electric Company,---------------------

of Barnstable------------, in the County of Barnstable---------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay a second submarine cable in Nantucket and Vineyard Sounds, between the town of Falmouth and the town of Tisbury,--

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ------------------ Selectmen------------------ of the towns------- of Falmouth and Tisbury---------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said--

Cape and Vineyard Electric Company--------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to place a submarine cable in Vineyard and Nantucket Sounds, in the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 3633.

A submarine cable may be laid on the beds of said Sounds from a point near the foot of Elm Road on the Falmouth shore, to a location near the foot of Squantum Avenue on the Tisbury shore or Marthas Vineyard Island, in the locations shown on said plan and in accordance with the details there indicated.

Said cable may leave the shores at said locations as shown on said plan and as shown in more detail on plans on file with the Department of Public Works.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tidewater; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tidewater.----------------

The plan of said work, numbered ----------3 6 3 3,---------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be ~~made by the said~~

~~heirs, successors~~

Form WD 54-B. 500-9-52-907819

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each ~~cubic yard so~~ displaced, being the amount hereby assessed ~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registries of Deeds for the ~~District of the~~ Counties of Barnstable and Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this tenth day of May, in the year nineteen hundred and fifty-four.

John A. Volpe
Fred B. Dole
Lewis J. Fritz

Department of Public Works

Approval recommended,

R G Bessette
Director Division
of Waterways.

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said~~

~~or the further sum of~~

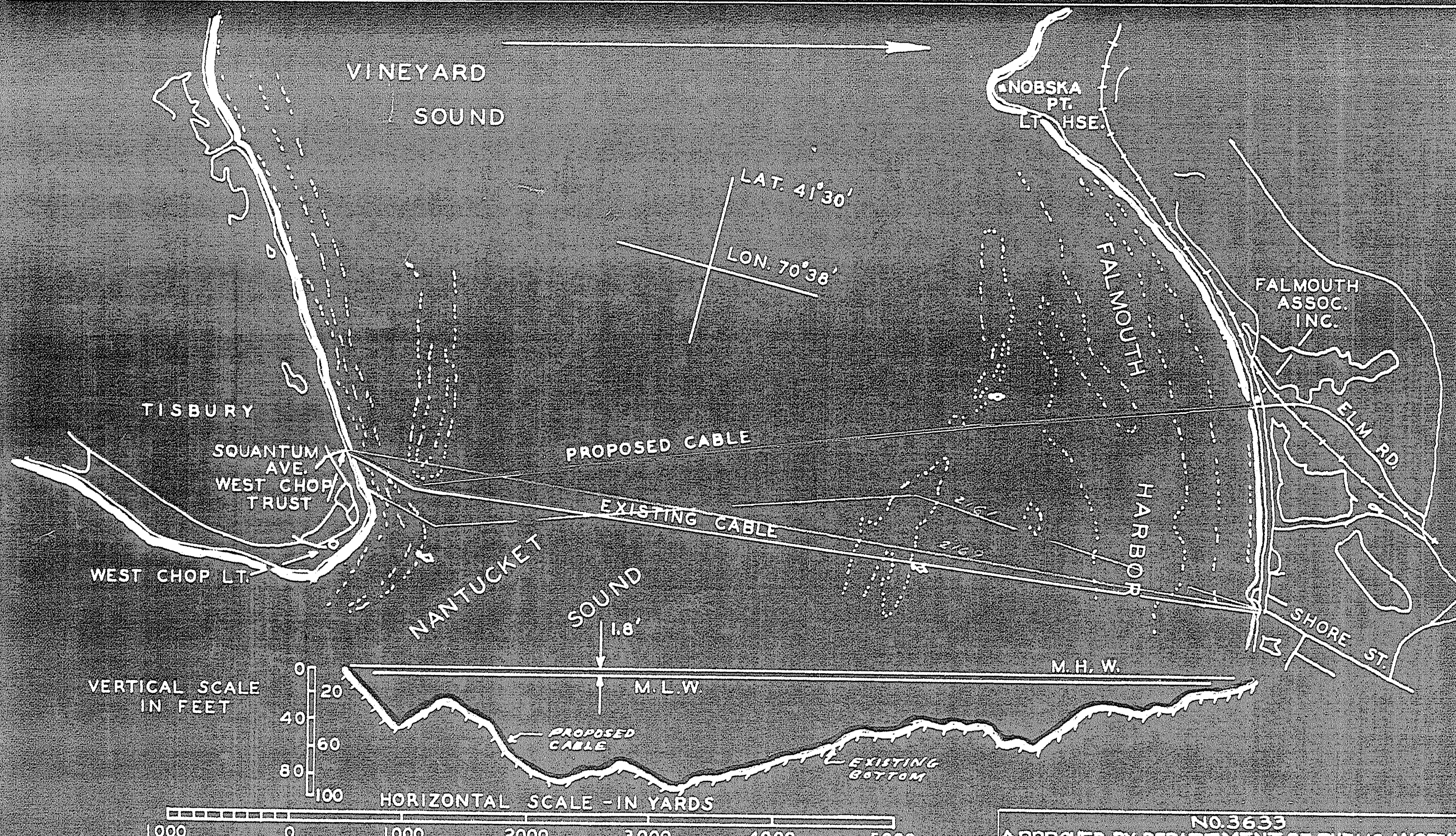
~~the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, May 20, 1954

Approved by the Governor and Council.

Clarence R. Elam
Executive Secretary.

A true copy. Attest: Mary E. McMorrow *Secretary.*



CAPE & VINEYARD ELECTRIC CO.

TRACED FROM
U.S.C. & G.S. CHART 249

PLAN FOR SECOND ARMORED SUBMARINE CABLE
BETWEEN FALMOUTH AND TISBURY MASSACHUSETTS

N.E.G.E.A. NO. 5225

FEB 26, 1954

NO. 3633
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MAY 10, 1954

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

DIRECTOR-DIVISION OF WATERWAYS

Form WD 54

1500 sets (2) 10-61-931508

The Commonwealth of Massachusetts

No. 4998.

Whereas, West Chop Trust---------------------------------------

of Tisbury---------, in the County of Dukes County----- and Commonwealth aforesaid, has applied to the Department of Public Works for license to construct a stone groin in Vineyard Sound, at its property in the town of Tisbury,--

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen-------------of the town------- of Tisbury------------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor ~~and Council,~~ authorizes and licenses the said ------------------------------------

West Chop Trust------------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to maintain an existing pile and timber pier and to build and maintain a stone groin in Vineyard Sound, at its property in the town of Tisbury, in conformity with the accompanying plan No. 4998.

An existing pile and timber pier may be maintained as now built extending northwesterly into tidewater a distance of 116 feet from the mean high water line with a width of 6 feet, a further distance of 8 feet increasing to 10 feet in width and a further distance of 56 feet at said width of 10 feet, and having a timber platform 6 feet by 20 feet at the northeasterly side at its outer end, in the location shown on said plan and in accordance with the details there indicated.

A stone groin may be built extending into tidewater a distance of 38 feet from the mean high water line with a top width of 4 feet, and side slopes at 1-1/4 to 1 and an end slope reaching a further distance of 10 feet into tidewater, in the location shown on said plan with its center line 25 feet southwesterly of that of said pier, and in accordance with the details there indicated.

This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that use by boats or otherwise of the structures hereby licensed shall involve no discharge of sewage or other polluting matter into the adjacent tidewaters except in strict conformity with the requirements of the local and State health departments.-----------------------------------

The plan of said work, numbered --------4 9 9 8,---------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said Department, and compensation therefor shall be made by the said heirs, successors~~

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each cubic yard ~~so displaced, being the amount hereby assessed by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry ------ of Deeds for the ------- ~~District of the~~ County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this ----------first----------day of--------December,----------in the year nineteen hundred and sixty-five.

J.T.H.

F. W. Sargent
Anthony C. Rosselli
D. R. Dwight

} *Department of Public Works*

John D. Warner
R. S. Foster

THE COMMONWEALTH OF MASSACHUSETTS

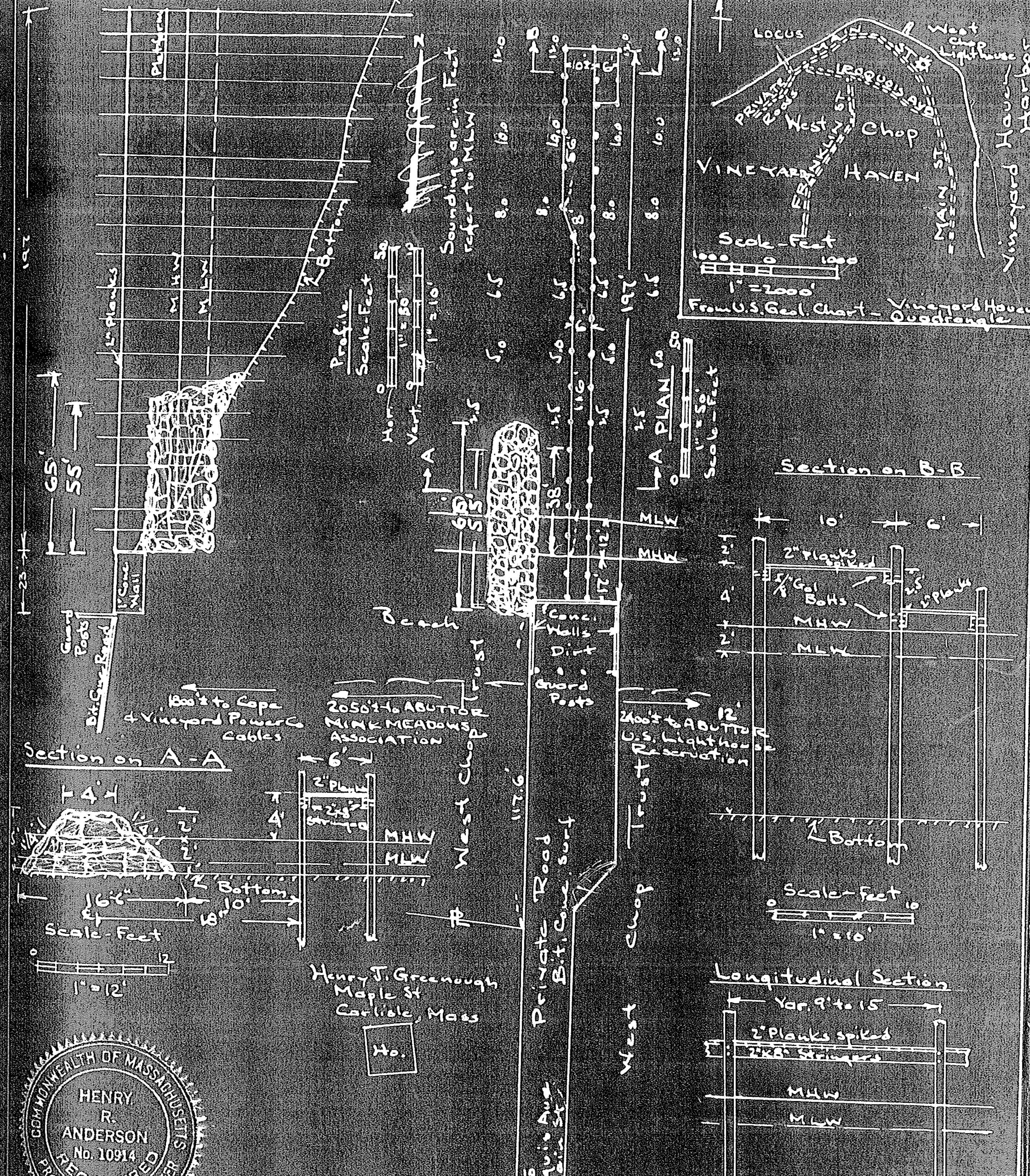
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of the amount determined by the Governor and council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Approved by the Governor. ~~and Council~~

BOSTON, Dec. 3, 1965

John A. Volpe
Governor. ~~*Executive Secretary*~~.

A true copy. Attest: Edward F. Doyle Secretary.



PLAN ACCOMPANYING PETITION OF
WEST CHOP TRUST
TO MAINTAIN EXISTING PIER
AND CONSTRUCT A STONE GROIN
IN
VINEYARD SOUND
Tisbury

August 1965

LICENSE PLAN NO. 4998
APPROVED BY DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS *DECEMBER 1 1965*

_________________ COMMISSIONER - DEPT. OF PUBLIC WORKS

____
____
_________________ ASSOCIATE COMMISSIONERS
R. S. Foster

BP:09394-0303 94-10-05 11:43 #59091

Plan Book 506 Page 32-40

NOT AN OFFICIAL COPY

The Commonwealth of Massachusetts

NOT AN OFFICIAL COPY

No. 4142

NOT AN OFFICIAL COPY

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Whereas, Commonwealth Electric Company

of -- Wareham --, in the County of -- Plymouth -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to ----- place and maintain a 6.0-inch diameter electric cable and a 3/4-inch diameter fiber optic cable with appurtenant duct banks and conduits -----

and has submitted plans of the same; and whereas due notice of said application, ~~and of the time and place fixed for a hearing thereon~~, has been given, as required by law, to the -- Boards of Selectmen -- of the Towns of -- Falmouth, Tisbury and Oak Bluffs;

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

----- Commonwealth Electric Company -----, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to ----- place and maintain a 6.0-inch diameter electric cable and a 3/4-inch diameter fiber optic cable with appurtenant duct banks and conduits -----

in and over the waters of -- Vineyard Sound -- from the Town of -- Falmouth --, through the Town of -- Tisbury --, to the Town of -- Oak Bluffs -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. 4142, (9 Sheets).

The structures authorized hereby shall be limited to the following use(s): for the transmission of electricity and telecommunications.

This License shall expire thirty(30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for a term of years not to exceed that which was originally authorized.

This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cables, raise it to such height or lower it to such depth as said Department may prescribe or remove it entirely, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and over the waters of Vineyard Sound.

The Licensee may excavate materials, below the mean high water shoreline, to facilitate the placement of the duct banks, conduits and cables. Approximately 7.0 cubic yards of material may be excavated at the Falmouth site, and 7.5 cubic yards of material may be excavated at the Oak Bluffs site. Said dredging shall be performed by mechanical means, and all spoils shall be used to backfill the trenches upon completion of work. Any excess spoils shall be disposed of at an approved upland location.

Please see pages 3 and 4 for additional conditions to this license.----

Duplicate of said plan, number 4142 is on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G.L. Chapter 131, s.40.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

9. This License authorizes structure(s) and/or fill on:

 x Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

 x Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

 ___ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license.

10. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

STANDARD WATERWAYS DREDGING CONDITIONS

1. This Waterways License is issued subject to all applicable federal, state county and municipal laws,, ordinances, bylaws, and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G. L. Chapter 131, s. 40. In particular, this issuance is subject to the provisions of Sections 52 to 56, inclusive, of Chapter 91 of the Federal Laws, which provide, in part, that the transportation and dumping of the dredged material shall be done under the supervision of the Department, and that the Licensee shall be liable to pay the cost of said supervision whenever the owner of the days after notification in writing from the Treasurer of the Commonwealth that the same is due.

2. This Waterways License is issued upon the express condition that the dredging and transport and disposal of dredged material shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

3. All subsequent maintenance dredging and transport and disposal of this dredged material during the term of this License shall conform to all standards and conditions applied to the original dredging operation performed under this License.

4. After completion of the work hereby authorized, the Licensee shall furnish, to the Department, a suitable plan showing the depths at mean low water over the area dredged, The dredging under this License shall be so conducted as to cause no unnecessary obstruction of the free passage of vessels. In doing the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Licensee shall,at his expense, remove the shoal areas. The Licensee shall pay all costs associated with such work, Nothing in this License shall be so construed as to impair the legal tights of any person, or authorize dredging on land not owned by the Licensee without consent of the owner(s) of such property,

5. The Licensee shall assume and pay all claims and demands arising in any manner from the work authorized herein, and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, suits, damages, costs and expenses incurred by reason thereof.

6. The Licensee shall, at least three days before commencing any piece of dredging in the tide water, give written notice to the Department of the location and amount of the proposed work, and the time at which it is expected work will begin.

7. Whosoever violates any provision of this License shall be subject to a fine of $25,000 per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed $25,000 per day for each day such violation occurs or continues.

BP:09394-0307 94-10-05 11:43 #59091

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said --- Commonwealth Electric Company --- by paying into the treasury of the Commonwealth -- two dollars and zero cents ($2.00) -- for each cubic yard so displaced, being the amount hereby assessed by said Department (0.0 cu.yds. = $0.00).

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the Counties of -- Barnstable and Dukes.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this thirtieth day of September in the year nineteen hundred and ninety-four.

Commissioner	Thomas B. Powers	Department of Environmental Protection
Acting Director	William A. [illegible]	
Acting Section Chief	Jeffrey R. Martin	

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said

----- Commonwealth Electric Company -----

the further sum of

----- sixty-one thousand, one hundred seventy dollars and zero cents ($61,170.00) -----

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

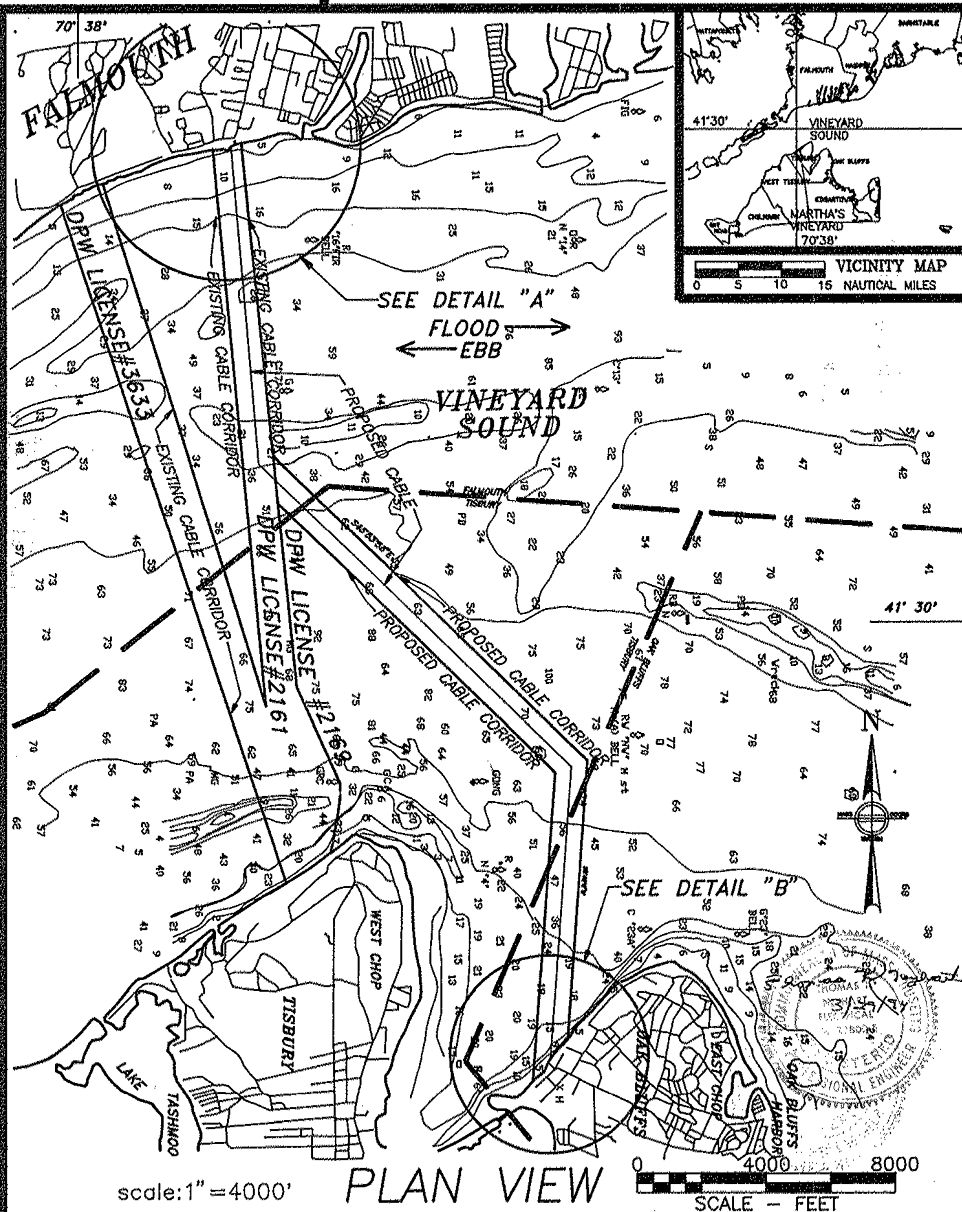
Approved by the Governor.

William F. Weld
Governor

BOOK 506 PAGE 32

506-32

Oct 5 11 42 AM '94



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PLAN VIEW

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 1 OF 9

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection of Massachusetts
Thomas B. Powers COMMISSIONER
William A. ... DIVISION DIRECTOR
Jeffrey R. Martin Acting SECTION CHIEF
SEP 30 1994 DATE

4142

94-3411

506-33

RECEIVED
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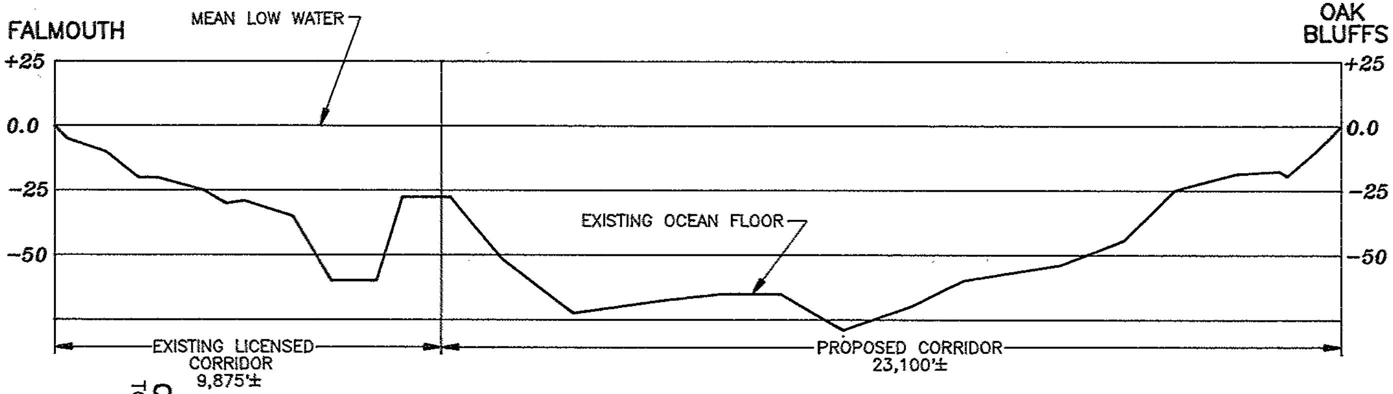


PROFILE VIEW
OCEAN FLOOR
FALMOUTH TO OAK BLUFFS

SCALE: HORZ. 1"=3,300' VERT. 1"= 50'

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

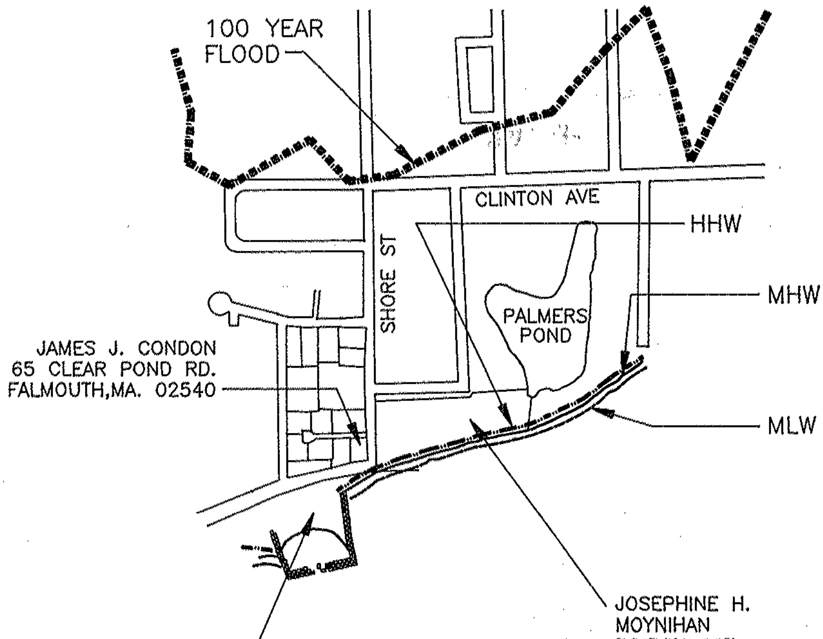
PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 2 OF 9

COMMONWEALTH OF MASSACHUSETTS
THOMAS ... ELECTRICAL No. ...
REGISTERED PROFESSIONAL ENGINEER
3/29/94

94-3411

BOOK 506 PAGE 34

506-34



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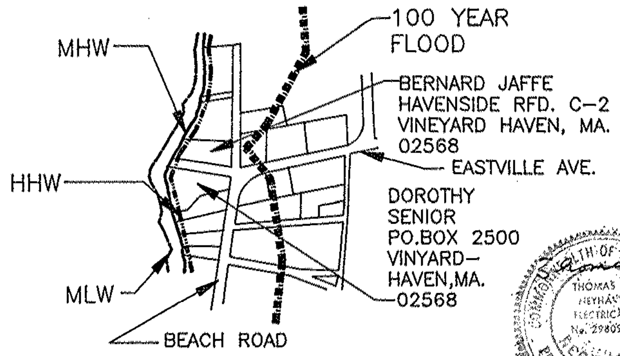

DETAIL B

SCALE: 1-6250

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 3 OF 9

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

BOOK 506 PAGE 35

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NOT AN OFFICIAL COPY
NOT AN OFFICIAL COPY

506-35

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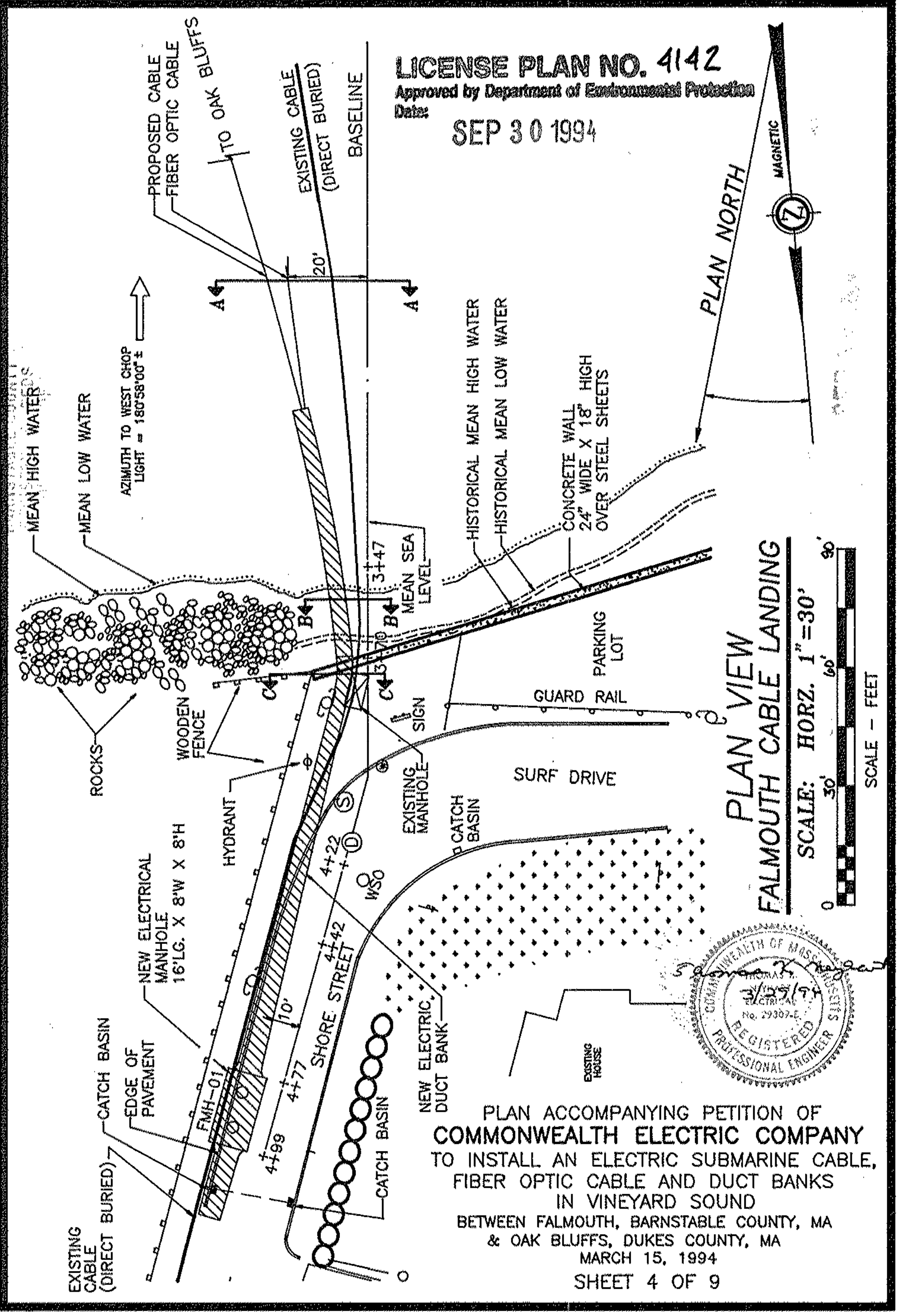
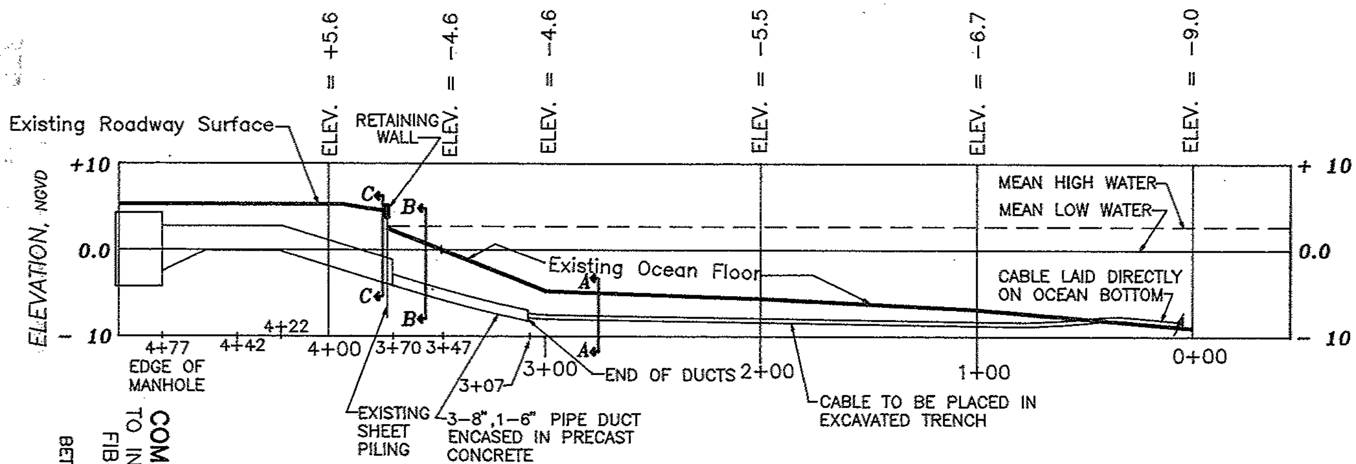


84-3411

BOOK 506 PAGE 36

506-36



PROFILE VIEW
FALMOUTH CABLE LANDING

SCALE: HORZ. 1"=60' VERT. 1"= 15'

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 5 OF 9

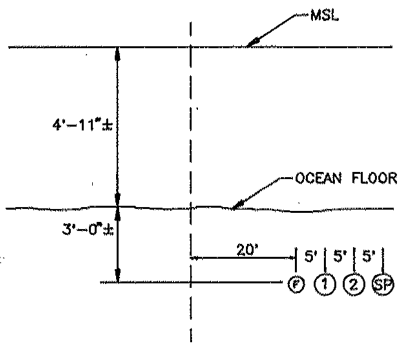
(Seal: COMMONWEALTH OF MASSACHUSETTS, THOMAS K. ..., ELECTRICAL No. 29809-E, REGISTERED PROFESSIONAL ENGINEER, 3/15/94)

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

BOOK 506 PAGE 37

506-37



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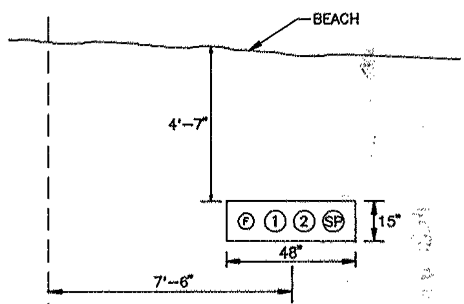

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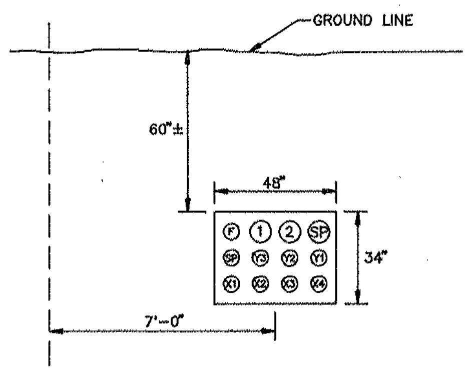

SECTION "C-C"
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COMMONWEALTH OF MASSACHUSETTS
THOMAS K. NEYHART
ELECTRICAL
No. 29809-E
REGISTERED PROFESSIONAL ENGINEER
3/29/94

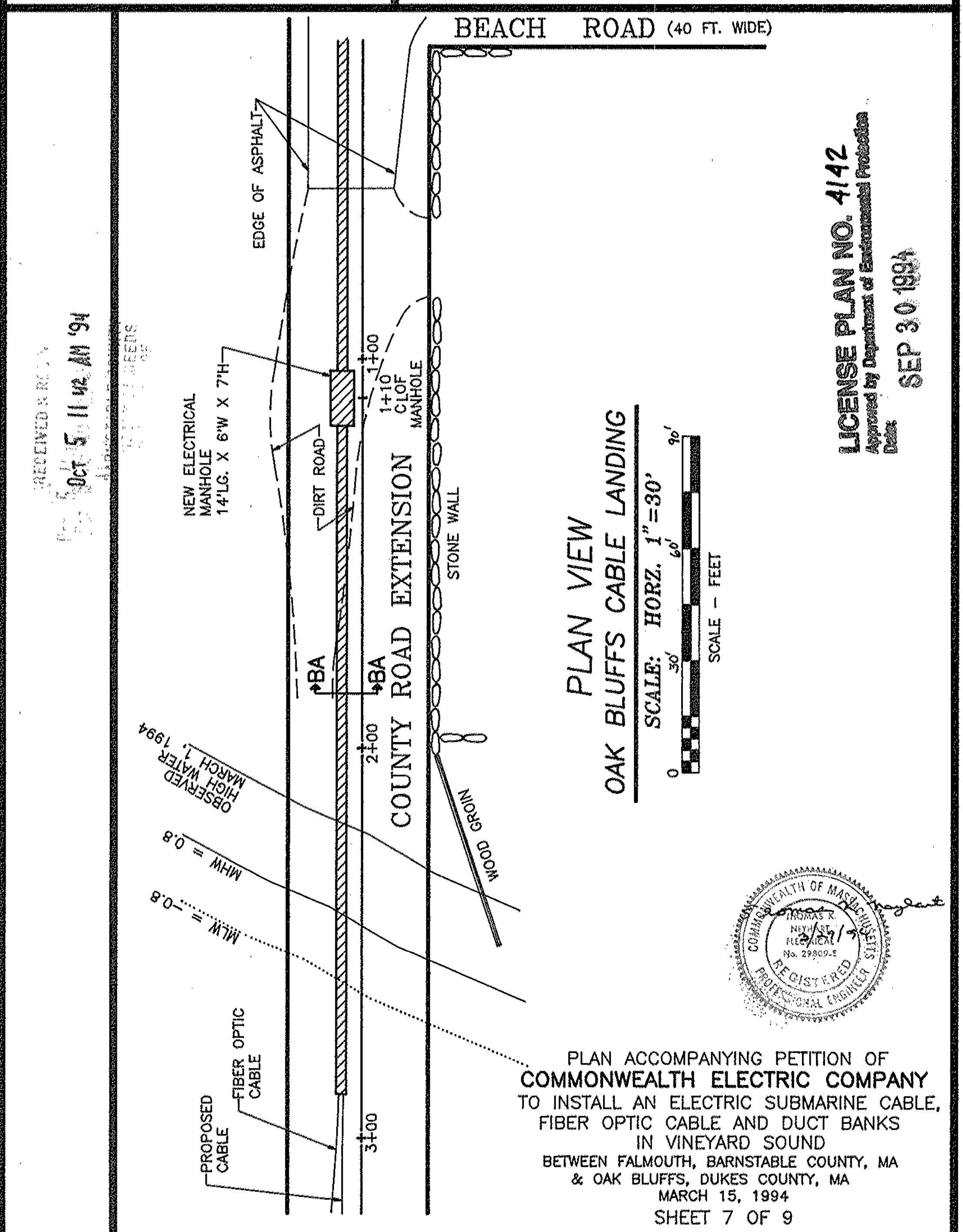
PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 6 OF 9

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

BOOK 506 PAGE 38

506-38



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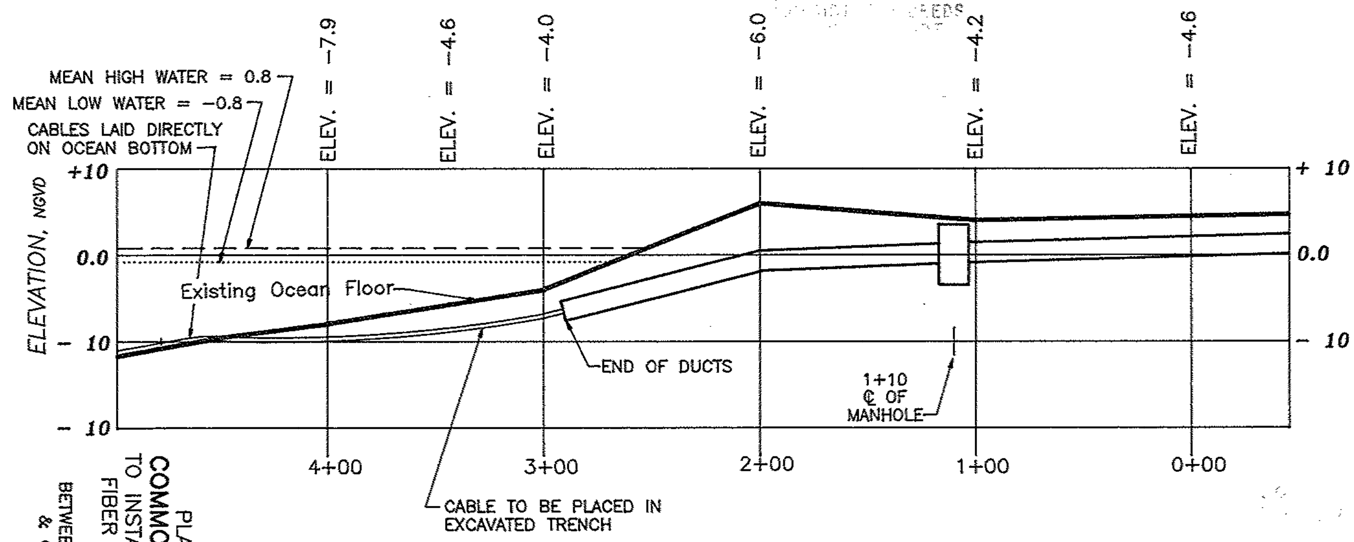
84-3411

506-39



PROFILE VIEW

OAK BLUFFS CABLE LANDING

SCALE: HORZ. 1"=60' VERT. 1"= 15'

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 8 OF 9

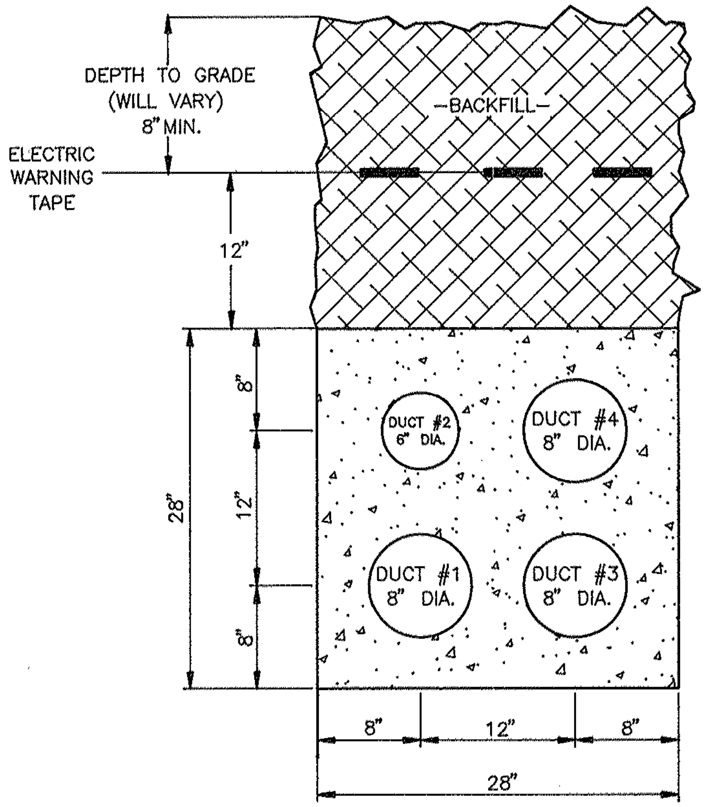
COMMONWEALTH OF MASSACHUSETTS
NEYHART
No. 29809-E
REGISTERED PROFESSIONAL ENGINEER

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

506-40

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994



CROSS SECTION DUCT BANK
OAK BLUFFS CABLE LANDING
VIEW BA—BA

SCALE: 1"=10"

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 9 OF 9

94-3411

Bk: 10441-027 59568

10-17-1996 @ 03:56

The Commonwealth of Massachusetts

No. 6007

Whereas, Commonwealth Electric Company

of -- Wareham --, in the County of -- Plymouth -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to ----- install and maintain a 23 kv submarine electric power cable and an integrated fiber-optic cable -----

and has submitted plans of the same; and whereas due notice of said application, ~~and of the time and place fixed for a hearing thereon~~, has been given, as required by law, to the - Boards of Selectmen - of the Towns of -- Falmouth, Tisbury and Oak Bluffs;

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

----- Commonwealth Electric Company -----, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to ----- install and maintain a 23 kv submarine electric power cable and an integrated fiber-optic cable -----

in, under and over the waters of -- Vineyard Sound and Vineyard Haven Harbor -- in the Towns of -- Falmouth, Tisbury and Oak Bluffs -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. 6007, (8 Sheets).

SHORE STREET - FALMOUTH

SEE BARNSTABLE PLAN BOOK 528, PAGES 46-53

The structures authorized hereby shall be limited to the following use(s): transmission of electricity and telecommunications.

This License shall expire thirty(30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for a term of years not to exceed that which was originally authorized.

SPECIAL WATERWAYS LICENSE CONDITIONS

1. The existing electric and fiber-optic cables illustrated on the accompanying license plan, as well as the associated pipe ducts, were previously authorized pursuant to DEP Waterways License No. 4142. Except as indicated in Special Condition #2 if this license, said existing cables shall be maintained in conformance with the terms and conditions of License No. 4142.

2. The licensee shall make every effort to bury both the proposed cables, and existing cables authorized pursuant to DEP License No. 4142, to a depth of approximately 10 feet below grade for a linear distance of approximately 13,000 feet from the Oak Bluffs landing. Said burial shall be in conformance with Sheet Nos. 1, 2, 7 and 8 of the accompanying license plan.

3. Burial shall take place by means of hydraulic jetplow embedment. No sediments shall be removed from the waters of Vineyard Sound or Vineyard Haven Harbor.

4. No maintenance dredging is authorized herein.

5. This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cables, raise it to such height or lower it to such depth as said Department may prescribe or remove it entirely, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and over the waters of Vineyard Sound.

6. In partial compensation for private use of structures on Commonwealth tidelands, which interferes with the rights of the public to use such lands, the Licensee shall allow the public to pass on foot, for any purpose and from dawn to dusk, within the area of the subject properties lying seaward of the high water mark. This condition shall not be construed to prevent the Licensee from taking reasonable measures to discourage unlawful activity by users of the area(s) intended for public passage, including but not limited to trespassing on adjacent private areas and deposit of refuse of any kind or nature in the water or on the shore. Further, the exercise by the public of free on-foot passage in accordance with this condition shall be considered a permitted use to which the limited liability provisions of M.G.L. c.21, s.17c shall apply.

Please see page 3 for additional conditions to this license.

Duplicate of said plan, number 6007 is on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G.L. Chapter 131, s.40.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

9. This License authorizes structure(s) and/or fill on:

X Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

X Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

___ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license.

10. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

BK 10441-030 59568

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said by paying into the treasury of the Commonwealth for each cubic yard so displaced, being the amount hereby assessed by said Department.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the Counties of -- Barnstable and Dukes.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this ninth day of October in the year nineteen hundred and ninety-six.

Director ______________________ Department of Environmental Protection

Program Chief ______________________

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said

----- Commonwealth Electric Company -----

the further sum of

----- fifty-two thousand, fifty dollars and zero cents ($52,050.00) -----

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

Approved by the Governor.

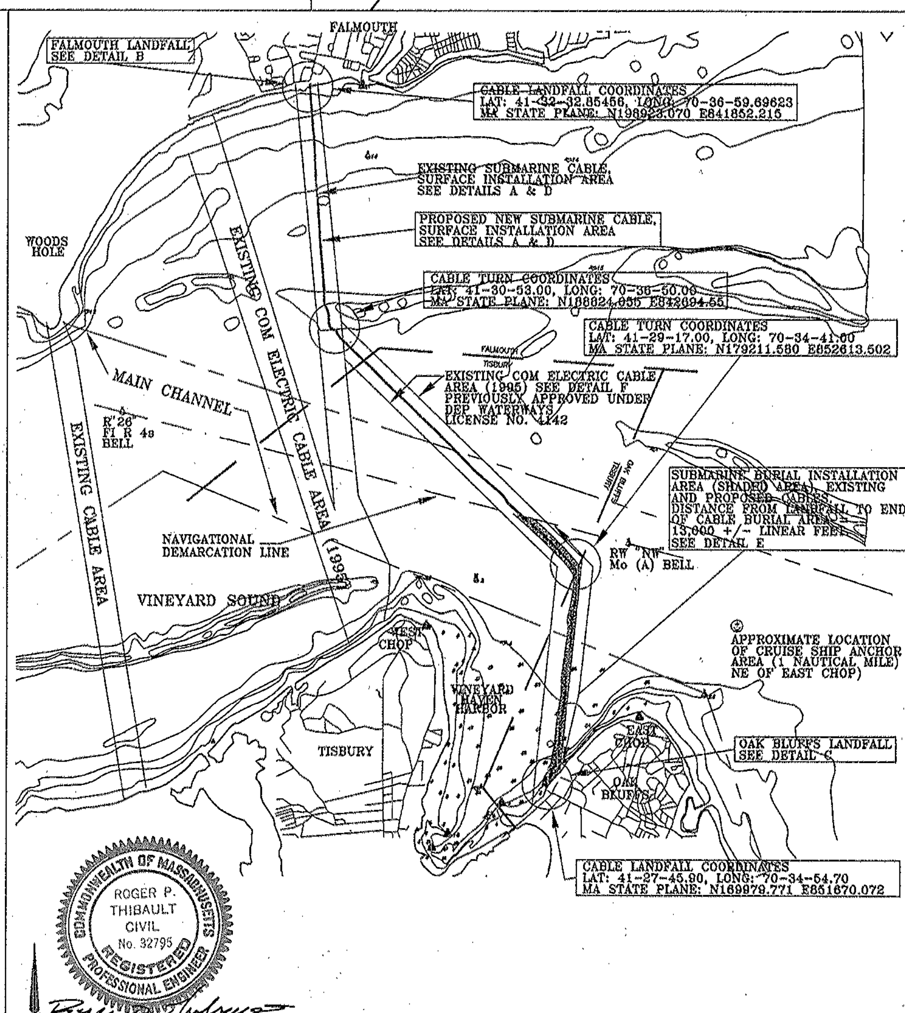
____
Governor

JM X

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



OVERALL PROJECT PLAN/LOCUS MAP

SCALE: 1" = 5,000'-0"

SHEET 1 OF 8

PLANS ACCOMPANYING PETITION OF THE COMMONWEALTH ELECTRIC COMPANY
TO:
Install an electric and fiber optic submarine cable.
AT:
Vineyard Sound between Falmouth, Barnstable County, MA and Oak Bluffs, Dukes County, MA

AUGUST 12, 1996

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection of Massachusetts
DIVISION DIRECTOR
PROGRAM CHIEF
OCT 09 1996 DATE

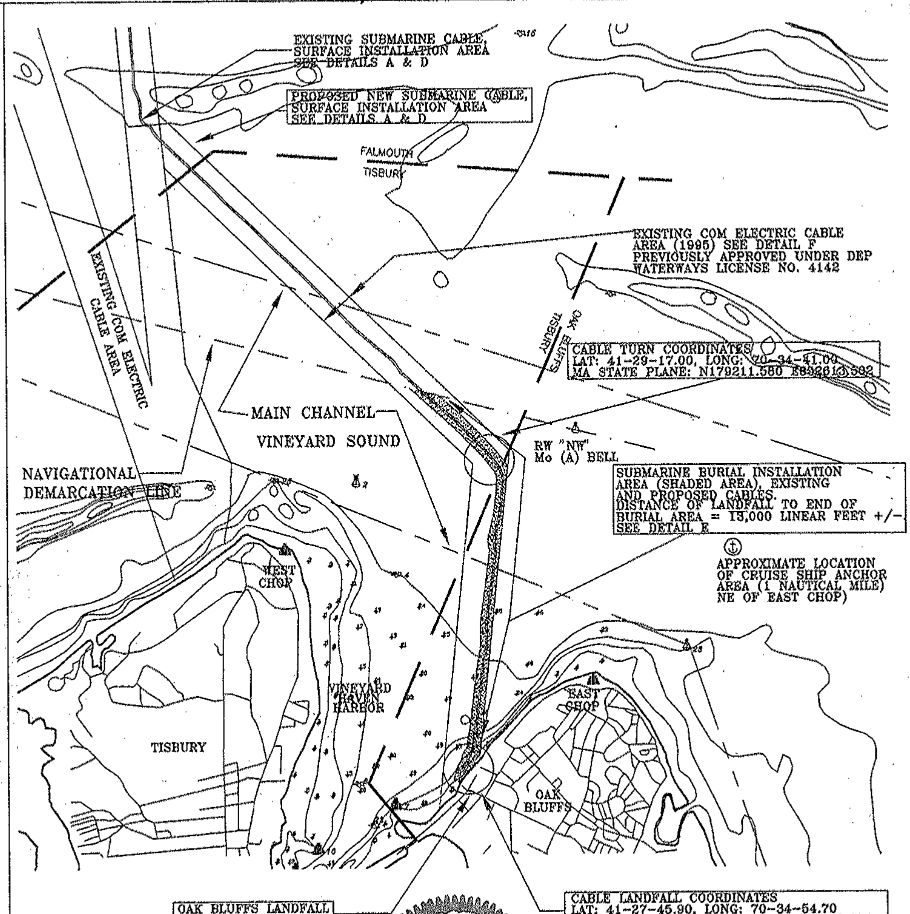
W96-5188

6007

I CERTIFY THAT THIS PLAN
WAS PREPARED CONFORMS TO
THE RULES AND REGULATIONS
OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED
PROFESSIONAL ENGINEER

Roger P. Thibault



COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED
PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TISBURY/OAK BLUFFS FOCUS AREA

SCALE: 1" = 3,500'-0"

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 2 OF 8

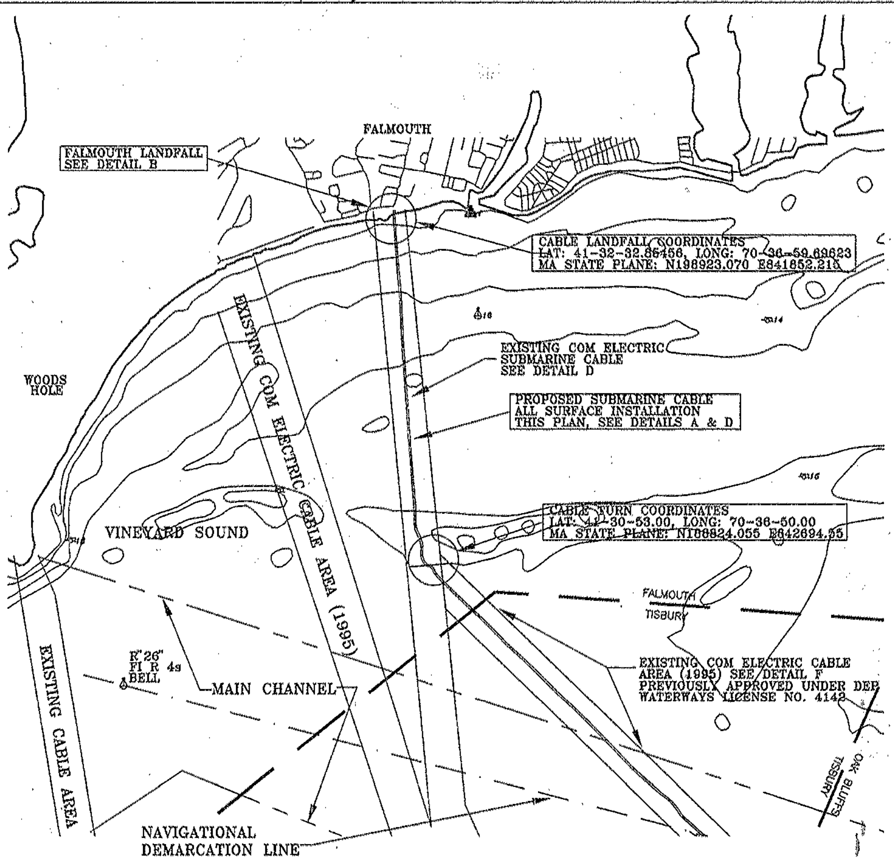
BOOK 528 PAGE 49

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

BARNSTABLE ss. RECEIVED 3:50 P.M. OCT 10 1996 AND IS RECORDED



LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
FALMOUTH FOCUS AREA

SCALE: 1" = 3,500'-0"

PLANS ACCOMPANYING PETITION OF THE COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 3 OF 8

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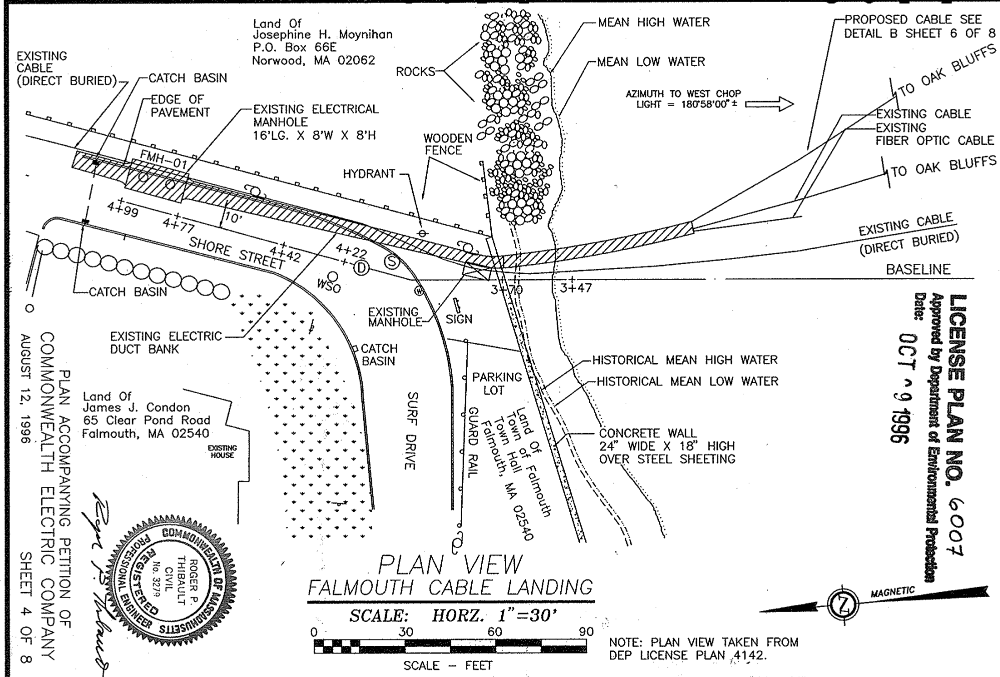
3:50 Oct 17 1996
AND AS RECORDED

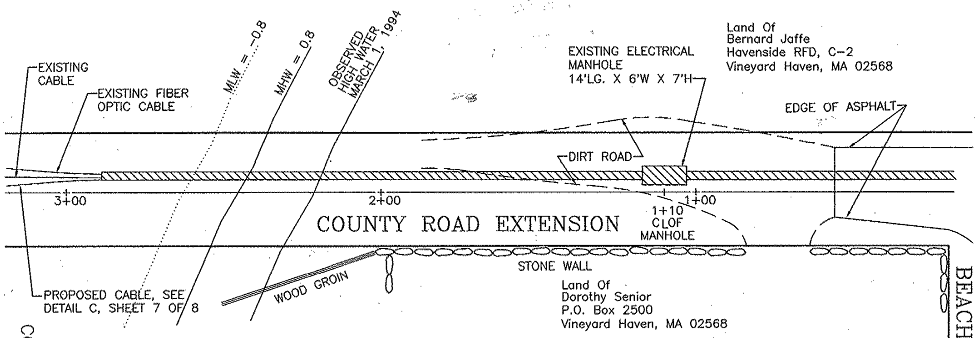


BOOK 528 PAGE 49

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32793
REGISTERED PROFESSIONAL ENGINEER

BARNSTABLE ss, RECEIVED
3:50 Am Oct 17 1996
AND IS RECORDED



PLAN VIEW

OAK BLUFFS CABLE LANDING

SCALE: HORZ. 1"=30'

0 30 60 90

SCALE – FEET

NOTE: PLAN VIEW TAKEN FROM DEP LICENSE PLAN NO. 4142

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date:

PLAN ACCOMPANYING PETITION OF COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996
SHEET 5 OF 8

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

OCT 09 1996

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

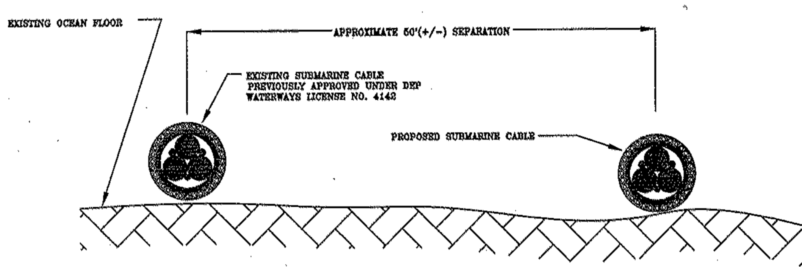
BOOK 528 PAGE 50

BOOK 528 PAGE 51

I CERTIFY THAT THIS PLAN WAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

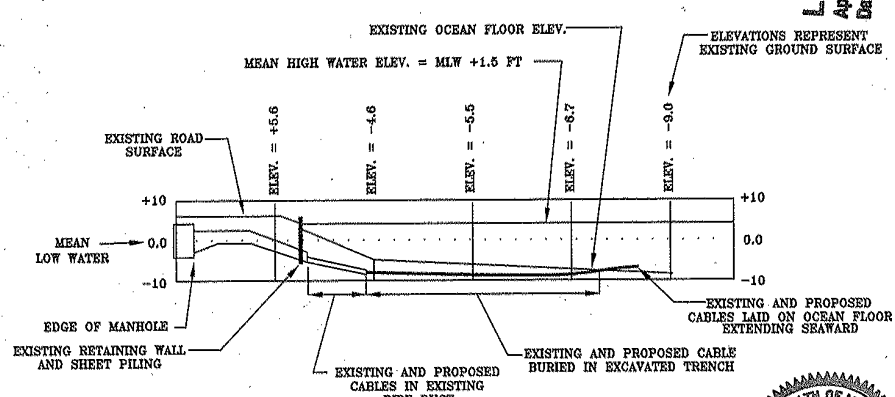
Roger P. Thibault



LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

DETAIL A

TYPICAL CROSS SECTION VIEW FROM THE SOUTH
NEW AND PROPOSED SUBMARINE CABLE
SURFACE INSTALLAION AREA
NOT TO SCALE



DETAIL B

PROFILE VIEW
SURFACE INSTALLATION SUBMARINE CABLE – FALMOUTH LANDFALL
NOT TO SCALE

NOTE: EXISTING CABLE LANDFALL CONDUITS PREVIOUSLY APPROVED UNDER DEP WATERWAYS LICENSE NO. 4142

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

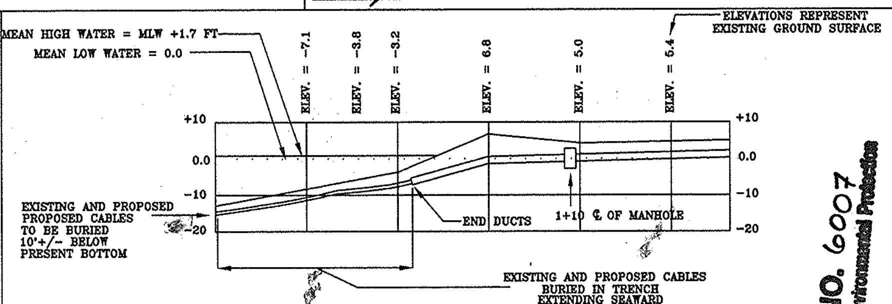
SHEET 6 OF 8

BOOK 528 PAGE 52

I CERTIFY THAT THIS PLAN HAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



DETAIL C

PROFILE VIEW

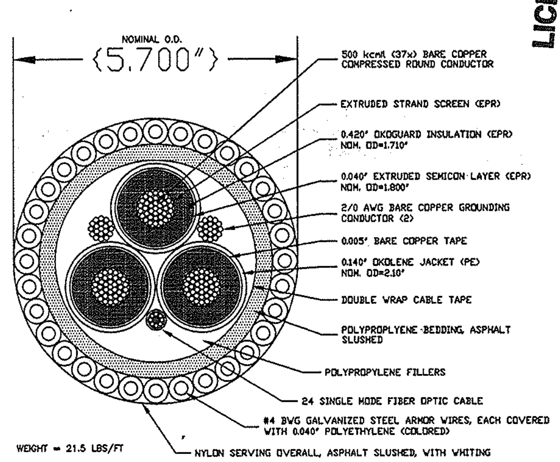
BURIED SUBMARINE CABLE - OAK BLUFFS LANDFALL

NOT TO SCALE

NOTE: EXISTING CABLE LANDFALL CONDUITS PREVIOUSLY APPROVED UNDER DEP WATERWAYS LICENSE NO. 4142

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

BARNSTABLE ss. RECEIVED Oct 17 1996 3:50 PM
AND IS RECORDED



3/C 500 KCMIL OKOGUARD SHLD OKOLENE WITH 2-2/0 AWG GRD & 1 - SINGLE MODE FIBER OPTIC CABLE, OKOLENE COVERED #4 BWG STEEL ARMOR WIRES 23 KV

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

DETAIL D

TYPICAL CROSS SECTION

EXISTING AND PROPOSED

MARTHA'S VINEYARD SUBMARINE CABLES

NOT TO SCALE

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

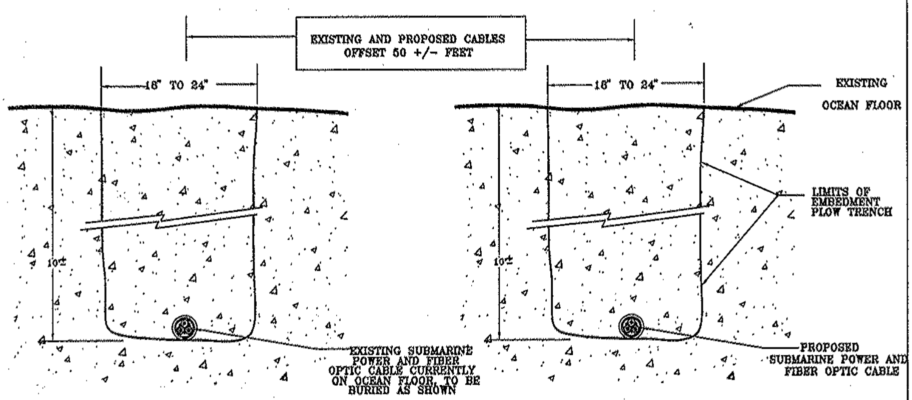
SHEET 7 OF 8

BOOK 528 PAGE 53

I CERTIFY THAT THIS PLAN HAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

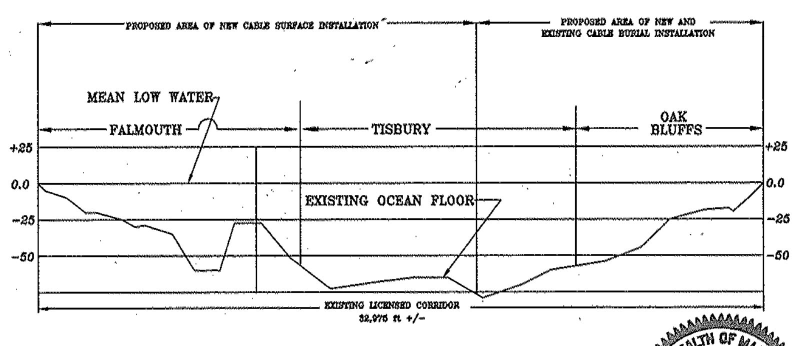
Roger P. Thibault



DETAIL E

TRENCH CROSS SECTION VIEW FROM THE SOUTH
SUBMARINE BURIAL INSTALLATION AREA
EXISTING AND PROPOSED CABLES
NOT TO SCALE

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996



DETAIL F

OCEAN FLOOR PROFILE VIEW
FALMOUTH TO OAK BLUFFS
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 8 OF 8

The Commonwealth of Massachusetts

No. 13588

Whereas, Comcast, Northeast Division and NSTAR Electric Company

of -- Chelmsford -- in the County of -- Middlesex – and Westwood—in the County of – Norfolk, respectively, have applied to the Department of Environmental Protection to -- construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge; -------------------------------

and have submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the -- Towns -- of –Falmouth and Tisbury------

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

Comcast, Northeast Division and NSTAR Electric Company --, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to -- construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge; -------------------------------

in flowed tidelands of – Vineyard Sound-- in the -- Towns -- of – Falmouth and Tisbury----in accordance with the locations shown and details indicated on the accompanying DEP License Plans No. 13588 dated August 28, 2013 (7 sheets).

This License is valid for a term of thirty (30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for the term of years not to exceed that authorized in this License.

The structures authorized hereby shall be limited to the following uses: transmission of electricity and communications services to the public.

This License is subject to the following Special and Standard Conditions:

1. This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cable, raise it to such height or lower it to such depth as said Department may prescribe or remove the cable entirely based on a demonstrated navigational or environmental issue, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or cause the removal of said circuit at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and under the waters of Vineyard Sound.

2. The Licensees shall construct and maintain the submarine cables as described and delineated on the License Plans and in the application filed for this project dated May 7, 2013, on file with the Department.

3. The Licensees shall maintain adequate sediment cover over the cable and conduit, to the extent practicable, to ensure that the structures do not pose a hazard to navigation or fishing gear. The Licensees shall notify the Department in the event that the cable or conduit becomes exposed and any measures to be implemented in compliance with this condition.

4. The Licensee shall allow the public to pass freely on foot for any lawful purpose within the area of any of the subject properties lying seaward of the historic mean high water mark where the circuits make landfall, as located on the License Plans. Passage within said area shall be available to the general public, free of charge, twenty-four (24) hours a day. This condition shall not be construed to prevent the Licensee from taking reasonable measures to discourage unlawful activity by users of the area intended for public passage. The intent of this condition is to provide public activities such as strolling and viewing of the bay in addition to the public rights of fishing, fowling, and navigation that already exist in private tidelands. Said allowance of passage shall commence immediately upon completion of construction of the project.

5. Within the waters of the Commonwealth, the Licensee shall in no way discourage, restrict, impede or otherwise interfere with the exercise of public rights of access to tidelands for fishing, fowling, navigation and the natural derivatives thereof upon completion of construction. During construction, the licensee may implement reasonable measures necessary to protect public safety. To mitigate temporary impacts to navigation, the Licensees shall: a) install the cable between October and May to minimize impacts to recreational boating, and b) coordinate with the U.S. Coast Guard, the harbormasters of Tisbury and Falmouth, and the Massachusetts Steamship Authority prior to initiating cable installation and implement measures deemed necessary by those agencies to mitigate impacts to navigation

6. Prior to the commencement of work, the Licensees shall make a payment of twenty thousand dollars ($20,000) to the Massachusetts Ocean Resources and Waterways Trust Fund, and provide proof of said payment to the Department within two weeks of the payment. In the event that the project does not rely solely on the use of an ROV and/or hydroplow and work vessels with dynamic positioning systems to install the cable, with the exception of small vessels used by divers and post-construction monitoring vessels, the Licensees shall inquire of the Department as

to whether a new or amended license is required reflecting a higher Ocean Development Mitigation Fee, as described in the MEPA Certificates issued for this project.

7. All vessels used in the project shall be maintained in sea-worthy condition. Construction and construction-support vessels shall, at a minimum, implement best management practices to control discharge of drainage and trash. Discharges of sanitary waste, grey water, and other discharges are prohibited unless otherwise authorized a NPDES permit, NPDES general permit, or other NPDES authorization applicable to this project.

8. Any changes made to the project as described in the Chapter 91 License Application, License Plans or supplemental documents on file with the Department will require further notification and approval by the Department in accordance with 310 CMR 9.22 or 9.24.

9. Except for any monitoring, mitigation, operation, maintenance, or other activities specifically authorized by the Department for a different timeframe, all construction work authorized herein shall be completed within five (5) years of the date of issuance of this License. Said construction period may be extended by the Department for one or more one year periods without public notice, provided that the Applicant submits to the Department, thirty (30) days prior to the expiration of said construction period, a written request to extend the period and provides an adequate justification for said extension

10. The Licensee shall request, in writing, that the Department issue a Certificate of Compliance in accordance with 310 CMR 9.19 within sixty (60) days of completion of the licensed project. The request shall include a set of plans depicting the actual as-built location of the circuits. The request shall be accompanied by a certification by a registered professional engineer or registered land surveyor licensed in the Commonwealth that the project was completed in accordance with the License.

11. Upon the nullification, expiration, or revocation of this License, the Licensee shall remove all structures authorized in this License, unless the Department determines that continued existence of said structures will promote the public interests served by M.G.L. c. 91 or that removal methods pose a greater risk or environmental impact. Such removal shall take place upon written notice to and at the direction of the Department.

12. The total Occupation Fee for this project is $156,236.00. This payment shall be made in a series of five installments of $31,247.20. The first installment shall be made prior to license issuance. The remaining four installments shall be made annually, no later than the anniversary date of the issuance of this License.

Please see following Standard Waterways Dredging Conditions, page 4 and following Standard Waterways License Conditions, page 5. ---

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A duplicate of said plans, DEP License Plan No. (13588) (7 sheets), is on file in the office of said Department, and the original of said plans accompanies this License and is to be referred to as a part hereof.

STANDARD WATERWAYS DREDGING CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the licensee to conform to all terms and conditions stated herein.

2. This license is issued upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the licensee prior to the commencement of any activity hereby authorized.

3. This license shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the licensee, or his agent, and those persons who have filed a written request, with the Department, for such notice and has afforded the licensee a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this license void.

4. This license is issued subject to all applicable federal, state, county, and municipal laws, ordinances, by-laws, and regulations, including but not limited to, a valid Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, s.40. The Department acknowledges that certain state and local approvals may be in the form of a composite permit issued by the Energy Facilities Siting Board. In particular, this issuance is subject to the provisions of Sections 52 to 56, inclusive of Chapter 91 of the General Law and its Regulations 310 CMR 9.40(5), which provides, in part, that the transportation and dumping of the dredge material shall be done under the supervision of the Department, and, when required, the licensee shall provide at his/her expense a dredge inspector approved by the Department. When said inspector is required, a report certified by the dredge inspector shall be submitted to the Department within 30 days after the completion of the dredging. The report shall include daily logs of the dredging operation indicating volume of dredge material, point of origin, point of destination and other appropriate information.

5. This Waterways License is issued upon the express condition that dredging and transportation and disposal of dredge material shall be in strict conformance with all applicable requirements and authorizations of the DEP, Wetlands and Waterways Regulation Program.

6. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this license, shall conform to all standards and conditions applied to the original dredging operation performed under this license.

7. After completion of the work authorized, the licensee shall furnish, to the Department a suitable plan showing the depths at mean low water over the area dredged. The dredging under this license shall be conducted as to cause no unnecessary obstruction of the free passage of vessels. In doing the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the licensee shall, at his expense remove the shoal areas. The licensee shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the licensee shall pay all costs associated with such work. Nothing in this license shall be construed as to impair the legal rights of any persons, or authorize dredging on land not owned by the licensee without consent of the owner(s) of such property.

8. The licensee shall assume and pay all claims and demands against the Commonwealth of Massachusetts, its officers, employees, and agents arising in any manner from the work authorized herein, and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, audits, damages, costs and expenses incurred by reason thereof.

9. The licensee shall, at least three days before commencing any dredging in the tide water, give written notice to the Department of the time, location and amount of the proposed work.

10. Whosoever violates any provisions of this license shall be subject to a fine of $25,000 per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed $25,000 per day for each day such violation occurs or continues.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This License may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, s.40. The Department acknowledges that certain state and local approvals may be in the form of a composite permit issued by the Energy Facilities Siting Board.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP.

9. This License authorizes structure(s) and/or fill on:

_X_ Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the Licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

_X_ Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

__ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this License, unless otherwise expressly provided by this License, the Licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said – Comcast-Northeast Division and NSTAR Electric Company -- by paying into the treasury of the Commonwealth -- two dollars and zero cents ($2.00) -- for each cubic yard so displaced, being the amount hereby assessed by said Department. (0.00 cubic yards = $0.00).

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within sixty (60) days from the date hereof, in the Barnstable County Registry of Deeds and Dukes County Registry of Deeds.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this 31st day of October in the year two thousand and thirteen.

Commissioner ________________ Department of Environmental Protection

Program Chief ________________

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said – Comcast, Northeast Division and NSTAR Electric Company------------------------------------

-- the further sum of – One Hundred Fifty Six Thousand and Two Hundred and Thirty Six Dollars ($156,236.00) --

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

Approved by the Governor.

____

Governor

SHEET INDEX:

SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY

AT: FALMOUTH/TISBURY

IN: VINEYARD SOUND

BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASSACHUSETTS

0 3,000 6,000

SCALE IN FEET

PROPERTY INFORMATION:

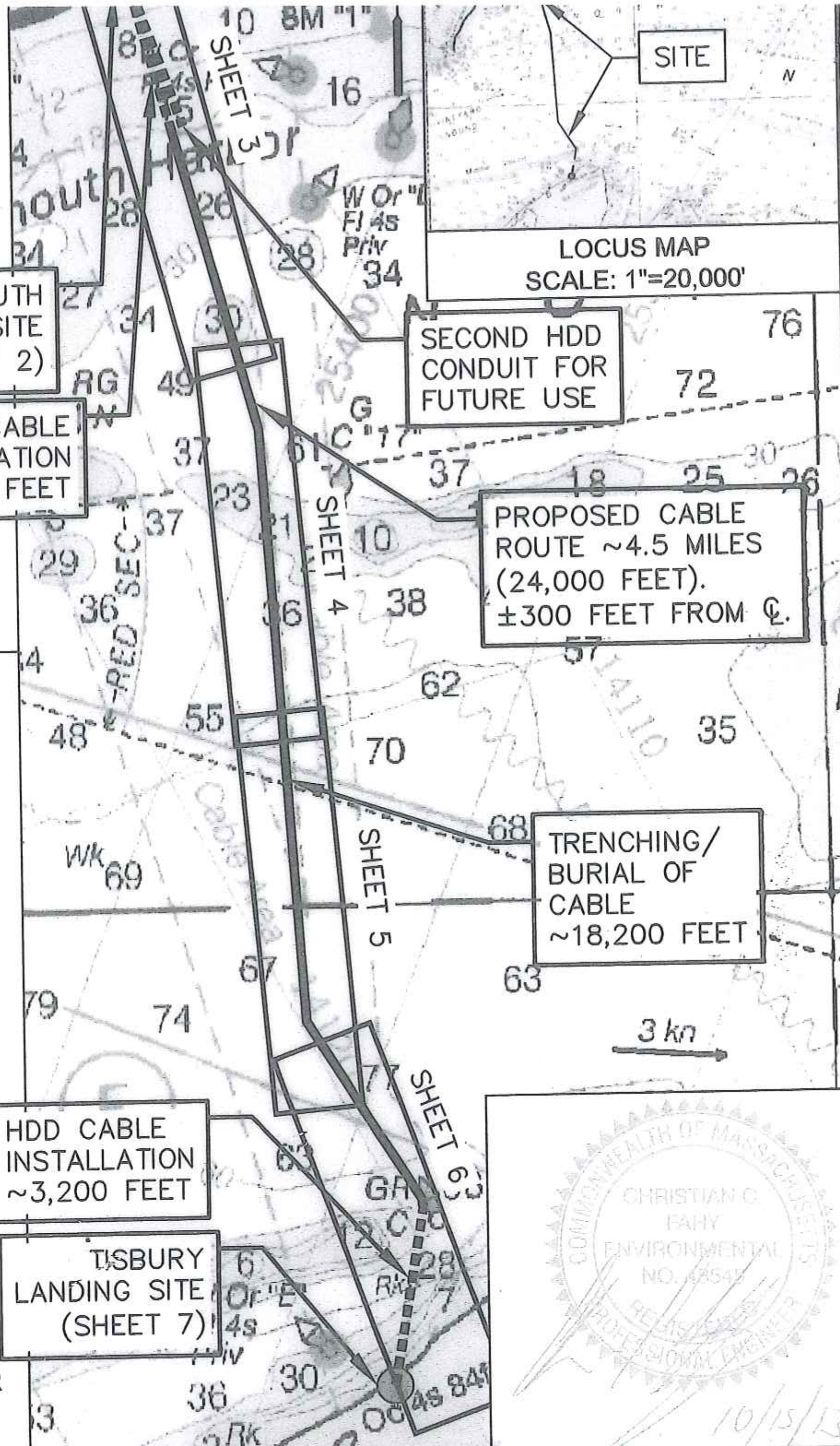
FALMOUTH:

- LOT 1B & LOT 2A: TOWN OF FALMOUTH; VACANT LAND, SURF DRIVE.

TISBURY:

- LOT 3: SHERIFF'S MEADOW FOUNDATION, INC.; VACANT LAND, MAIN ST.
- LOT 4: STUART E. LUCAS, TR.; 14 CATUMET AVE.
- LOT 5: STUART E. LUCAS ET AL.; 22 CATUMET AVE.
- LOT 6: WEST CHOP TRUST.; VACANT LAND, MAIN ST.

NOTE: EASEMENTS TO BE ADDED AFTER LEGAL DOCUMENTS WITH PROPERTY OWNERS ARE EXECUTED.



MARTHA'S VINEYARD HYBRID CABLE PROJECT

GENERAL VICINITY MAP & KEY SHEET

APPLICATION BY: COMCAST, NORTH CENTRAL DIVISION / NSTAR ELECTRIC
330 BILLERICA ROAD, CHELMSFORD, MA 01824 / 1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: 1"=3,000'

DATE: AUG. 28, 2013

SHEET: 1 OF: 7

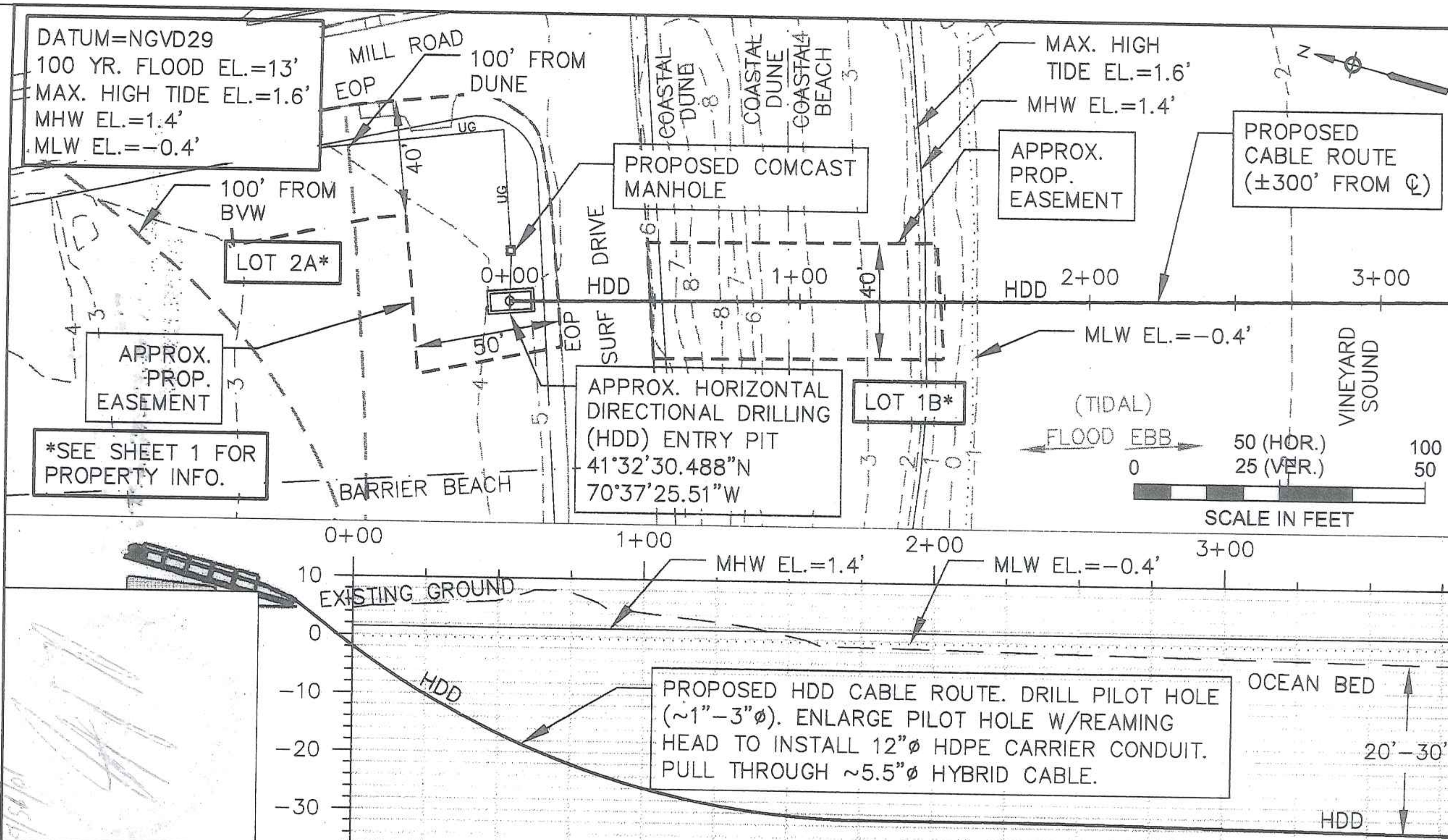
PLAN ACCOMPANYING
PETITION OF:

COMCAST, NORTH CENTRAL DIVISION AND
NSTAR ELECTRIC
MARTHA'S VINEYARD FIBER OPTIC CABLE PROJECT
VINEYARD SOUND
FALMOUTH & TISBURY
BARNSTABLE & DUKES COUNTY

OCT 31 2013

LICENSE PLAN NO. 13588

Approved by Department of Environmental Protectio
of Massachusetts



SITE INFORMATION:
VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

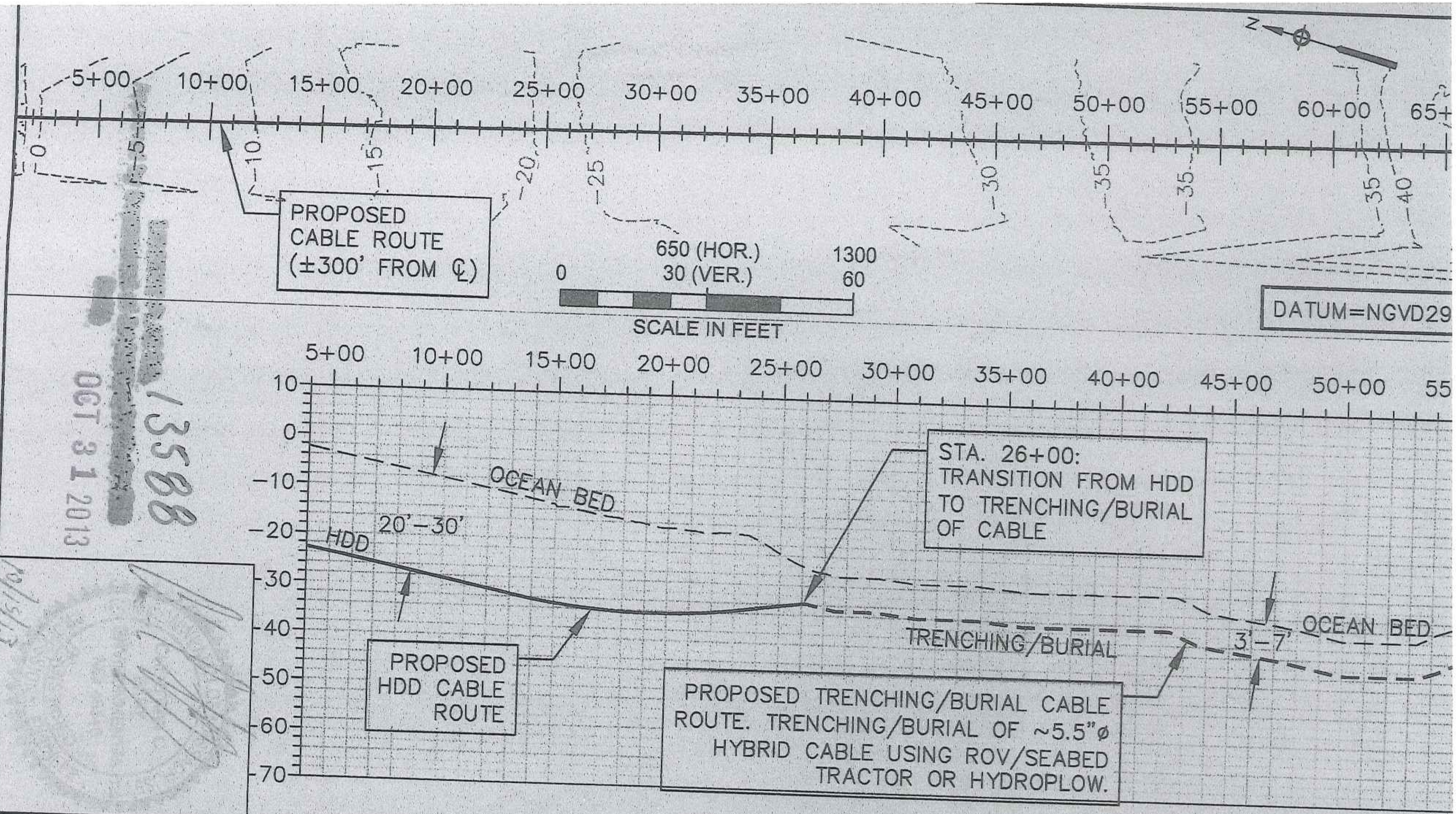
MARTHA'S VINEYARD HYBRID CABLE PROJECT

FALMOUTH LANDING - PLAN & SECTION

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=50' VER: 1"=25'
DATE: AUG. 28, 2013
SHEET: 2 OF: 7



[redacted] 13588

OCT 31 2013

10/15/13

SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

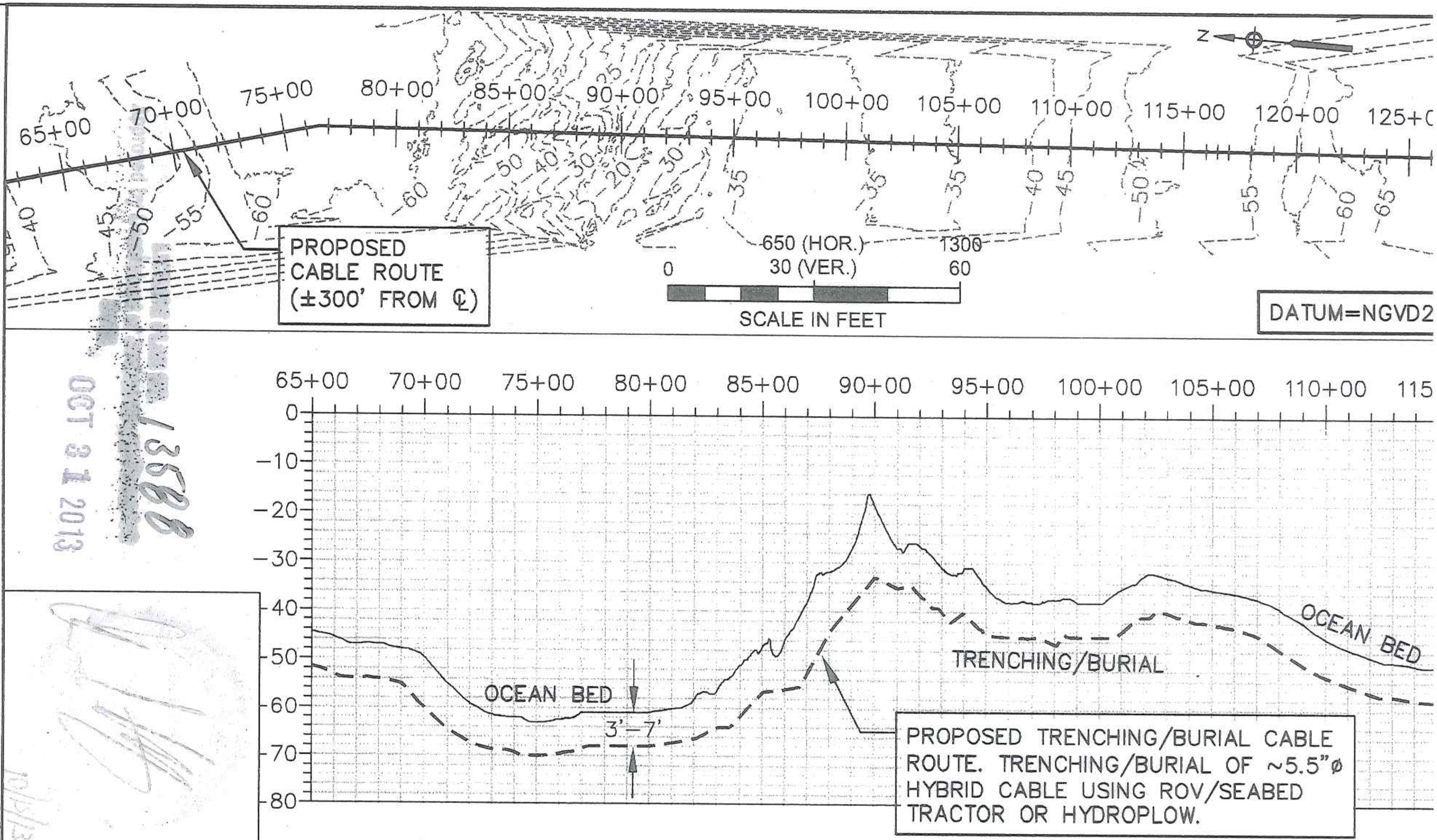
APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=650' VER: 1"=30'

DATE: AUG. 28, 2013

SHEET: 3 OF: 7



SITE INFORMATION:
VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

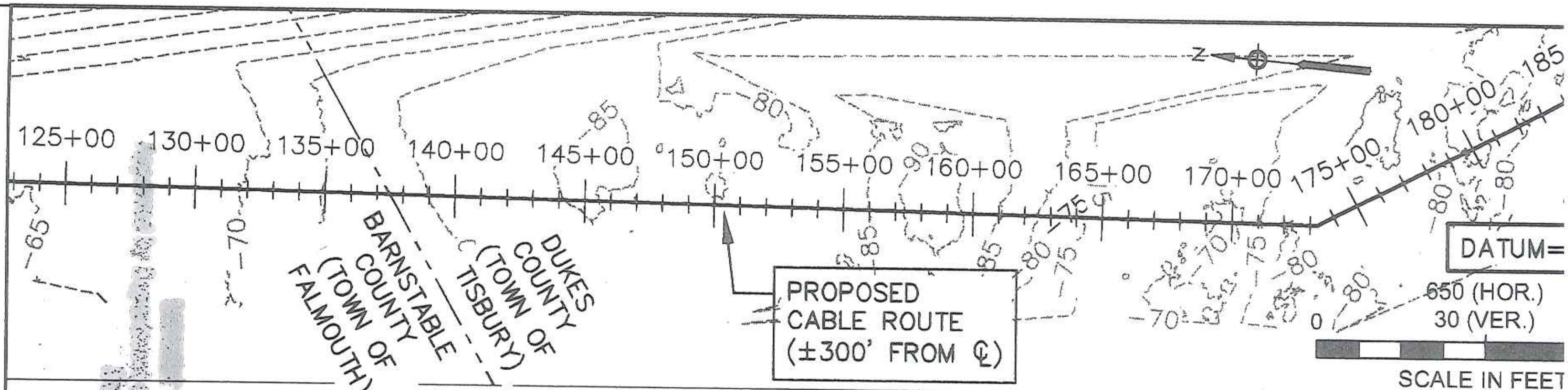
MARTHA'S VINEYARD HYBRID CABLE PROJECT

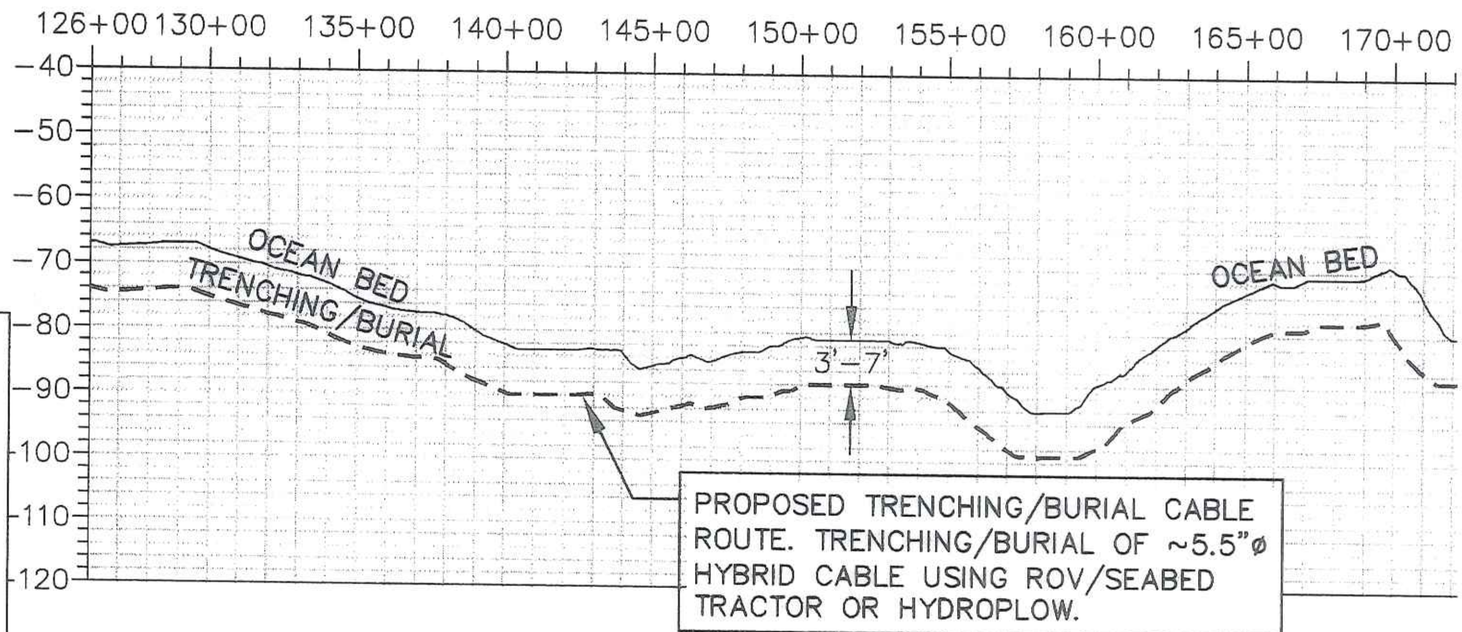
SUBMARINE ROUTE - PLAN & SECTION

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=65 VER: 1"=30'
DATE: AUG. 28, 201
SHEET: 4 OF: 7





SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

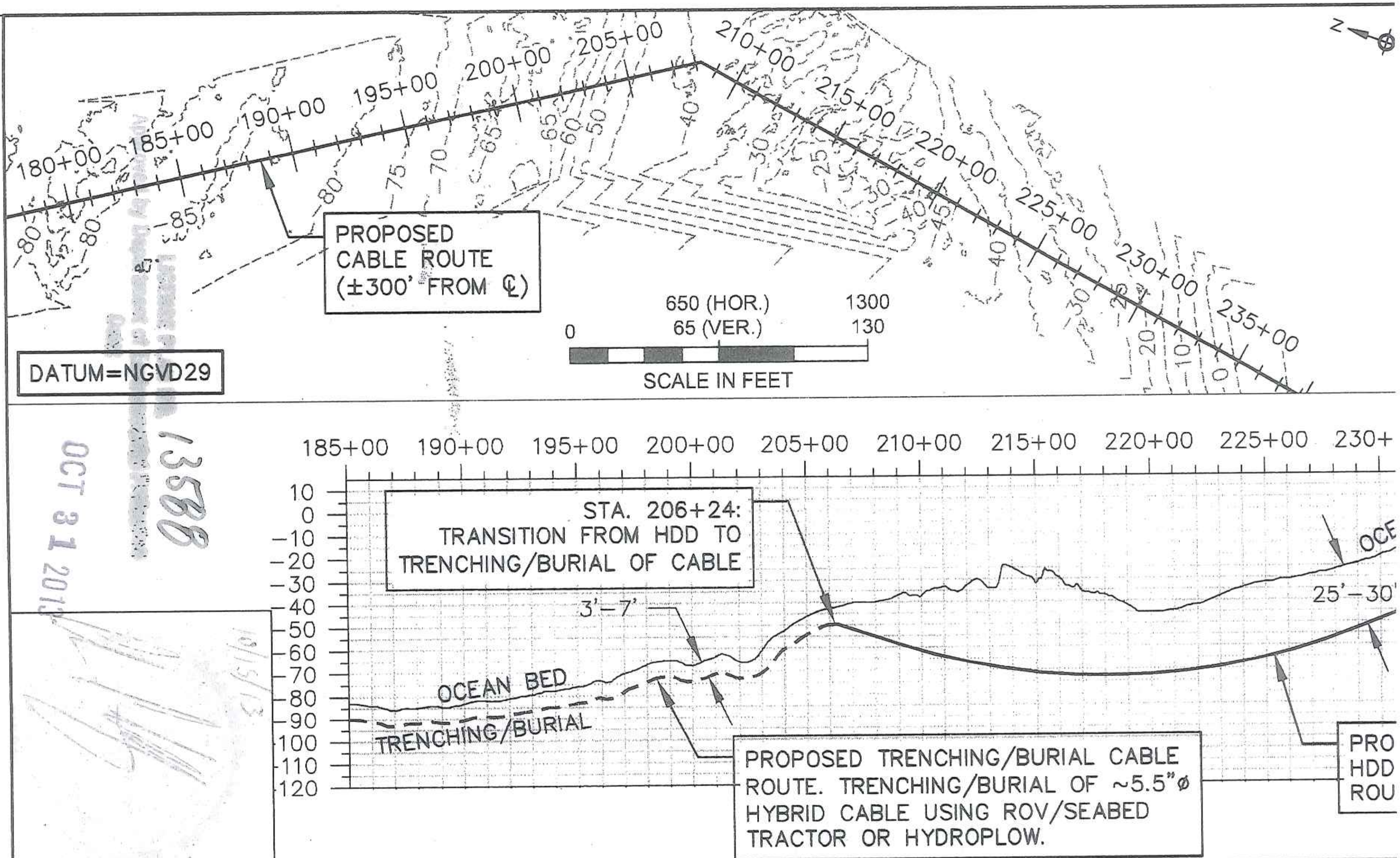
APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR VER

DATE: AUG.

SHEET: 5



SITE INFORMATION:
VINEYARD SOUND FROM
FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

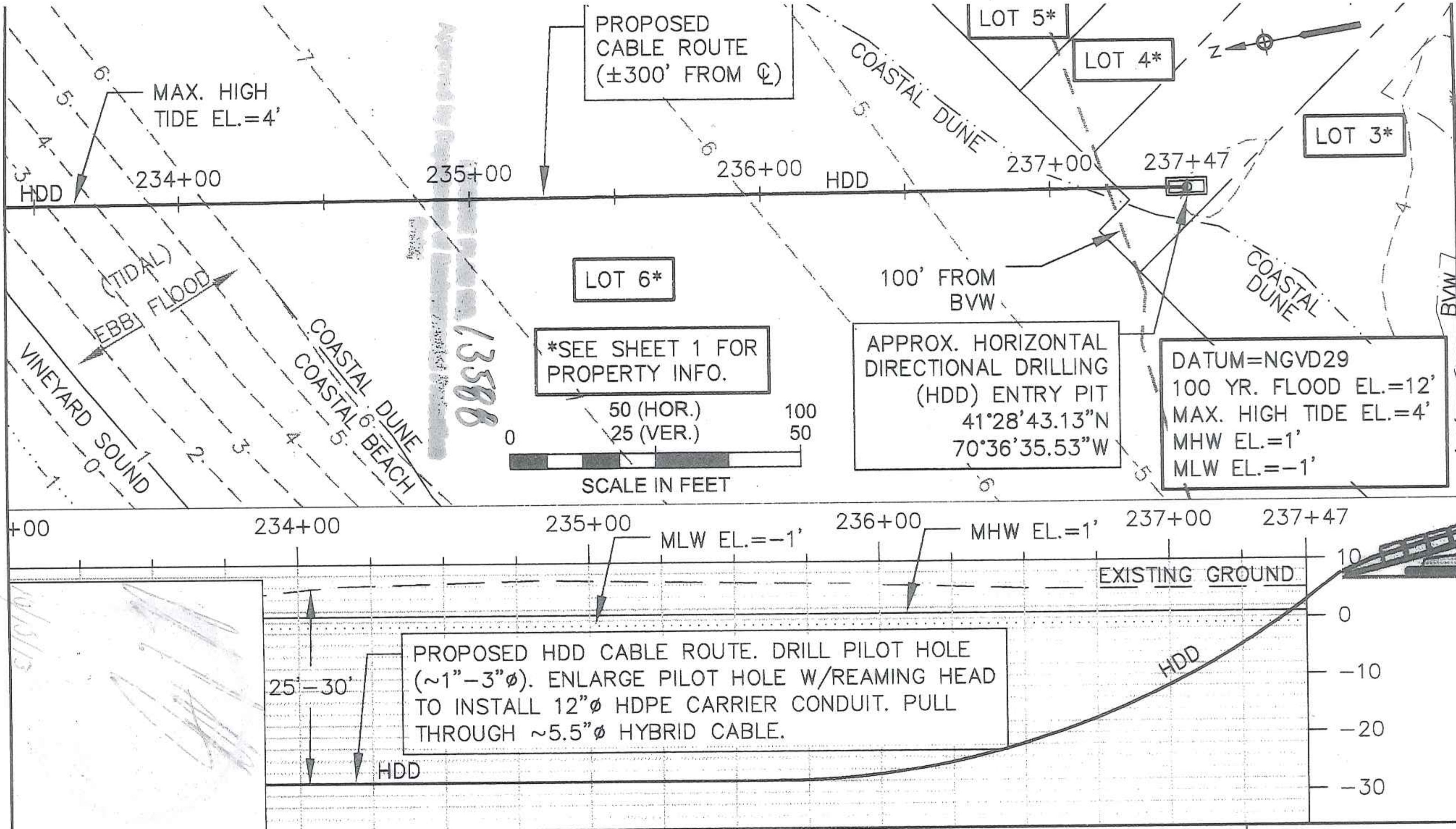
APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR / VER

DATE: AUG

SHEET: 6



SITE INFORMATION:	MARTHA'S VINEYARD HYBRID CABLE PROJECT	SCALE: HOR: 1"=50' VER: 1"=25'
VINEYARD SOUND FROM FALMOUTH TO TISBURY AT: FALMOUTH/TISBURY IN: VINEYARD SOUND BARNSTABLE/DUKES COUNTY COMMONWEALTH OF MASS.	TISBURY LANDING - PLAN & SECTION	DATE: AUG. 28, 2013
	APPLICATION BY: COMCAST, NORTH CENTRAL DIVISION, 330 BILLERICA ROAD, CHELMSFORD, MA 01824 NSTAR ELECTRIC, 1 NSTAR WAY, WESTWOOD, MA 02090	SHEET: 7 OF: 7

CERTIFICATION:

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

COMMONWEALTH OF MASSACHUSETTS — CHRISTIAN C. FAHY — ENVIRONMENTAL — NO. 48545 — REGISTERED PROFESSIONAL ENGINEER

10/15/13

MAP SOURCE:

NOAA RASTER NAVIGATIONAL CHART
13237_1, 03-01-2007

SHEET INDEX:

1. VICINITY MAP & KEY SHEET
2. FALMOUTH LANDING - PLAN & SECTION
3. SUBMARINE ROUTE - PLAN & SECTION
4. SUBMARINE ROUTE - PLAN & SECTION
5. SUBMARINE ROUTE - PLAN & SECTION
6. SUBMARINE ROUTE - PLAN & SECTION
7. TISBURY LANDING - PLAN & SECTION

SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY

AT: FALMOUTH/TISBURY

IN: VINEYARD SOUND

BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASSACHUSETTS

0 3,000 6,000
SCALE IN FEET

PROPERTY INFORMATION:

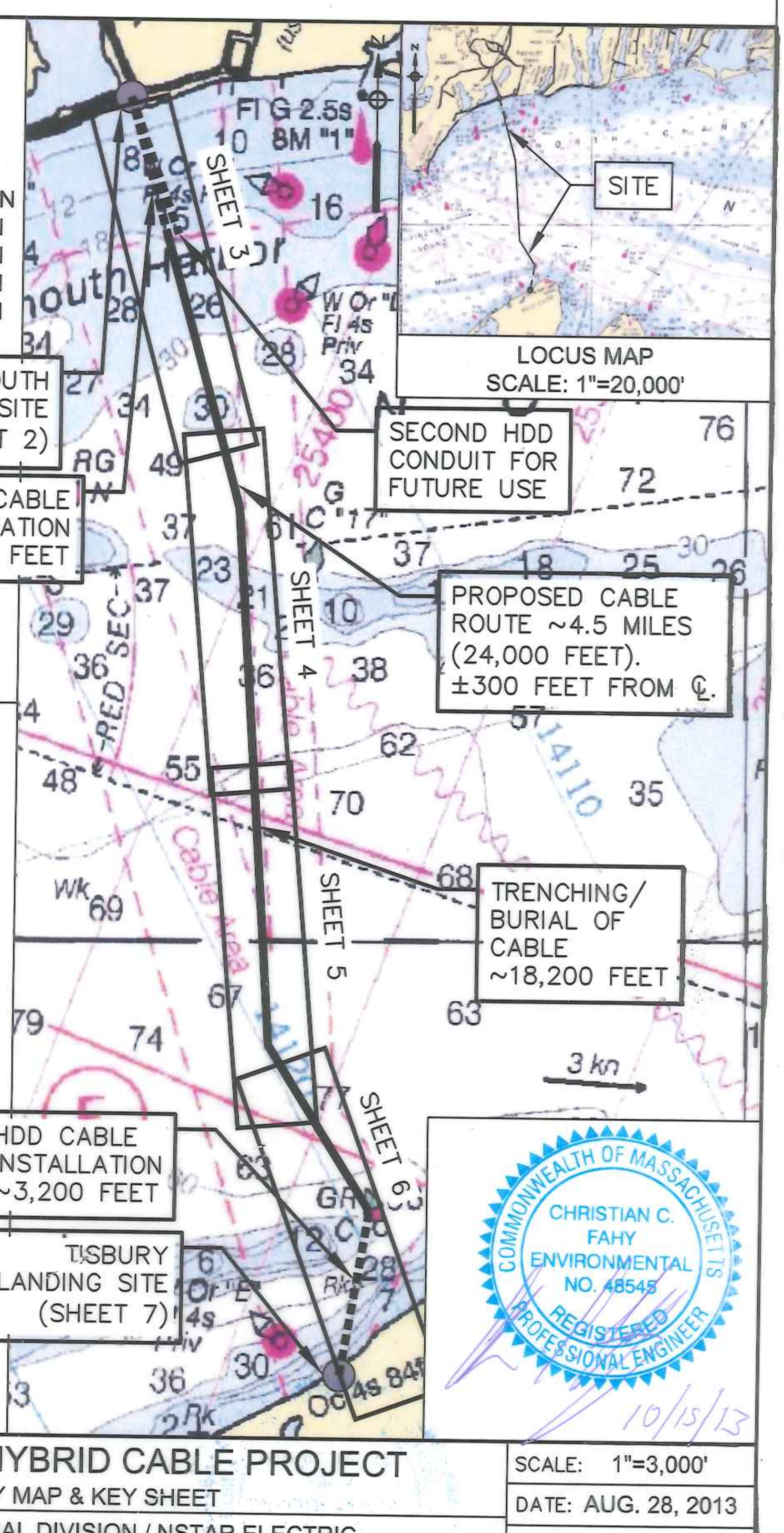
FALMOUTH:

- LOT 1B & LOT 2A: TOWN OF FALMOUTH; VACANT LAND, SURF DRIVE.

TISBURY:

- LOT 3: SHERIFF'S MEADOW FOUNDATION, INC.; VACANT LAND, MAIN ST.
- LOT 4: STUART E. LUCAS, TR.; 14 CATUMET AVE.
- LOT 5: STUART E. LUCAS ET AL.; 22 CATUMET AVE.
- LOT 6: WEST CHOP TRUST.; VACANT LAND, MAIN ST.

NOTE: EASEMENTS TO BE ADDED AFTER LEGAL DOCUMENTS WITH PROPERTY OWNERS ARE EXECUTED.



COMMONWEALTH OF MASSACHUSETTS — CHRISTIAN C. FAHY — ENVIRONMENTAL — NO. 48545 — REGISTERED PROFESSIONAL ENGINEER

10/15/13

MARTHA'S VINEYARD HYBRID CABLE PROJECT

GENERAL VICINITY MAP & KEY SHEET

APPLICATION BY: COMCAST, NORTH CENTRAL DIVISION / NSTAR ELECTRIC
330 BILLERICA ROAD, CHELMSFORD, MA 01824 / 1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: 1"=3,000'
DATE: AUG. 28, 2013
SHEET: 1 OF: 7

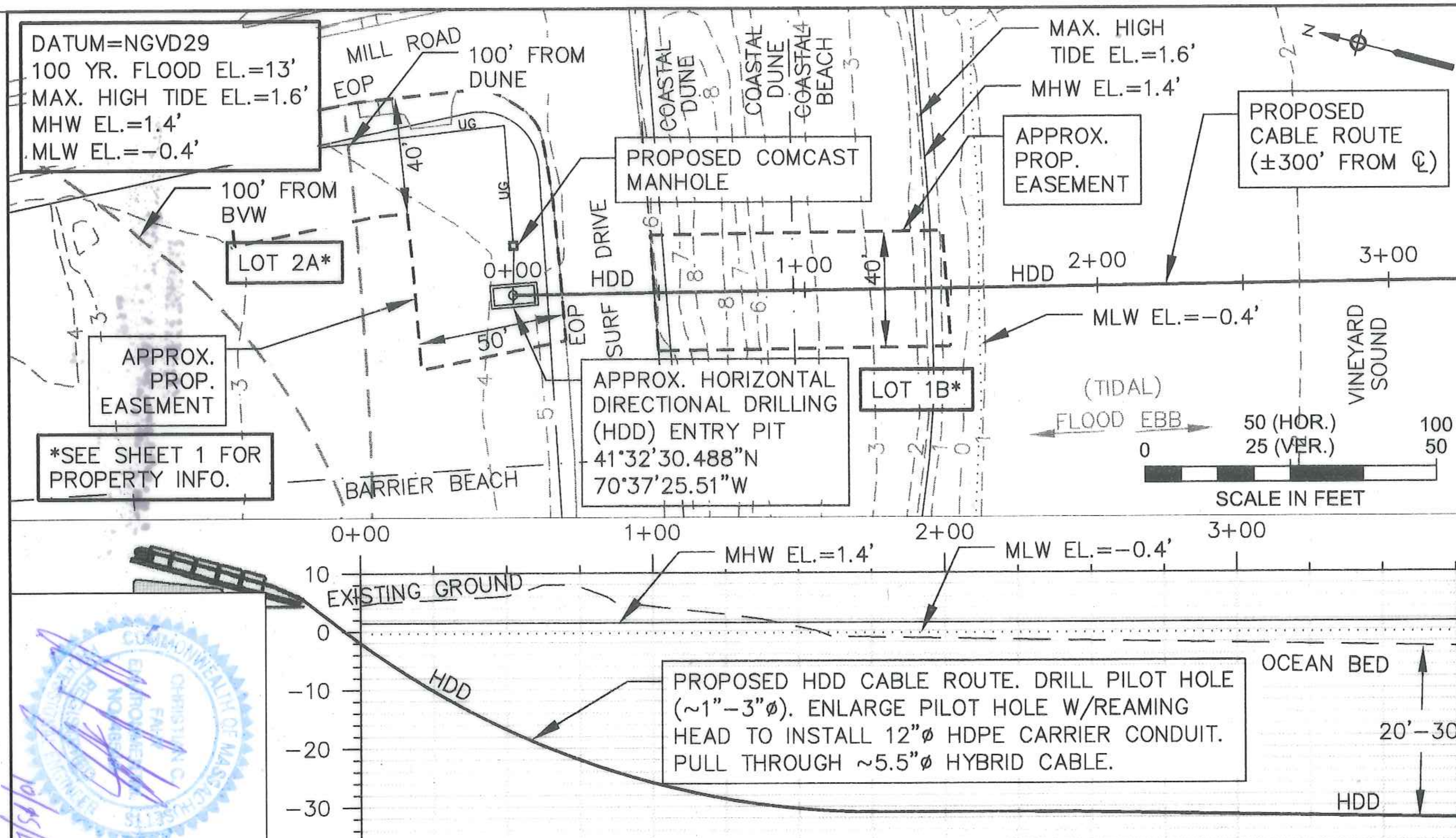
PLAN ACCOMPANYING PETITION OF:

COMCAST, NORTH CENTRAL DIVISION AND
NSTAR ELECTRIC
MARTHA'S VINEYARD FIBER OPTIC CABLE PROJECT
VINEYARD SOUND
FALMOUTH & TISBURY
BARNSTABLE & DUKES COUNTY

OCT 31 2013

LICENSE PLAN NO. 13588

Approved by Department of Environmental Protection of Massachusetts



SITE INFORMATION:
VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

FALMOUTH LANDING - PLAN & SECTION

SCALE: HOR: 1"=50' VER: 1"=25'

DATE: AUG. 28, 2013

SHEET: 2 OF: 7

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

[redacted]

OCT 31 2013

13588

CERTIFICATION:

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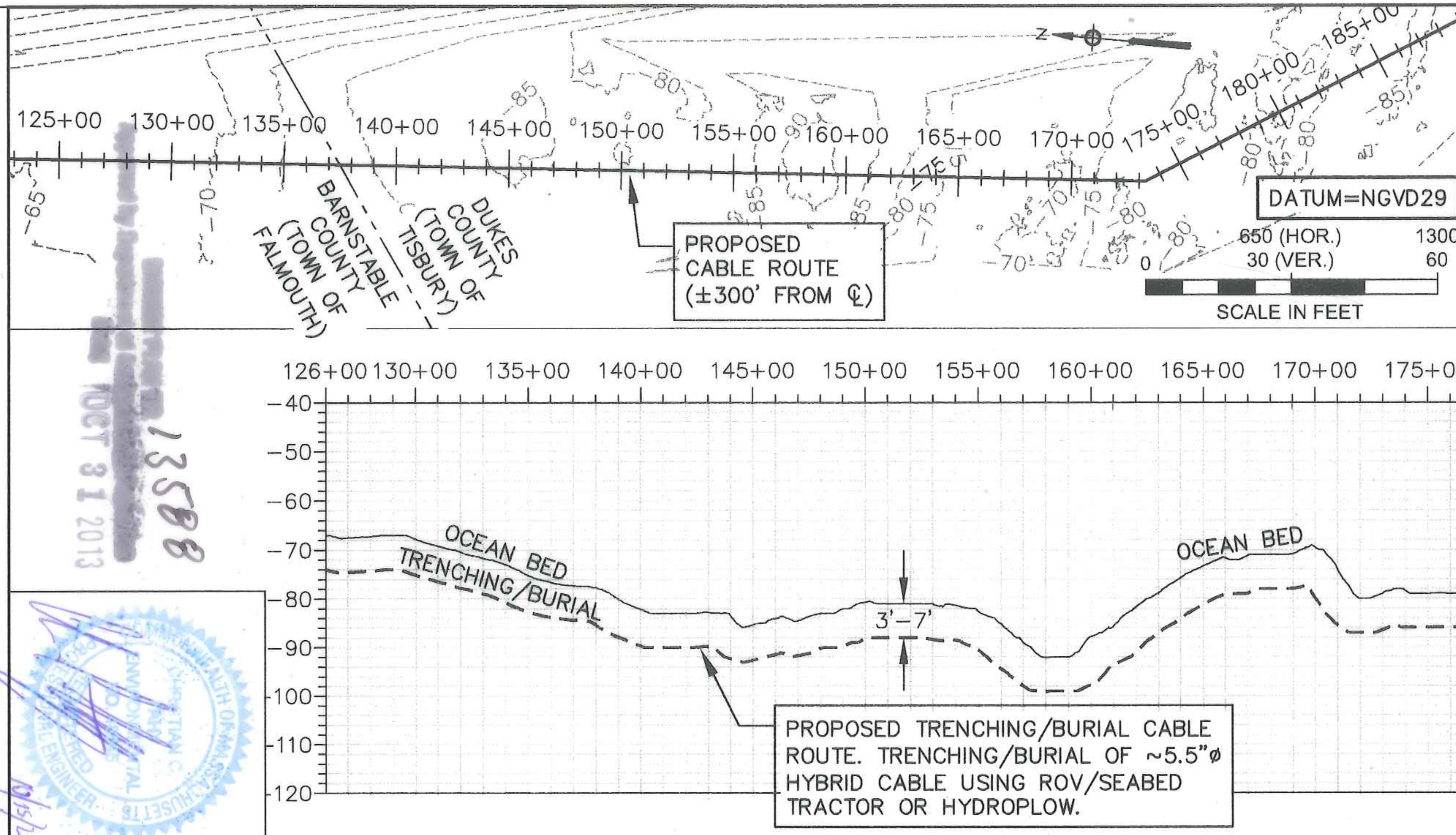
10/15/13



13588
OCT 31 2013

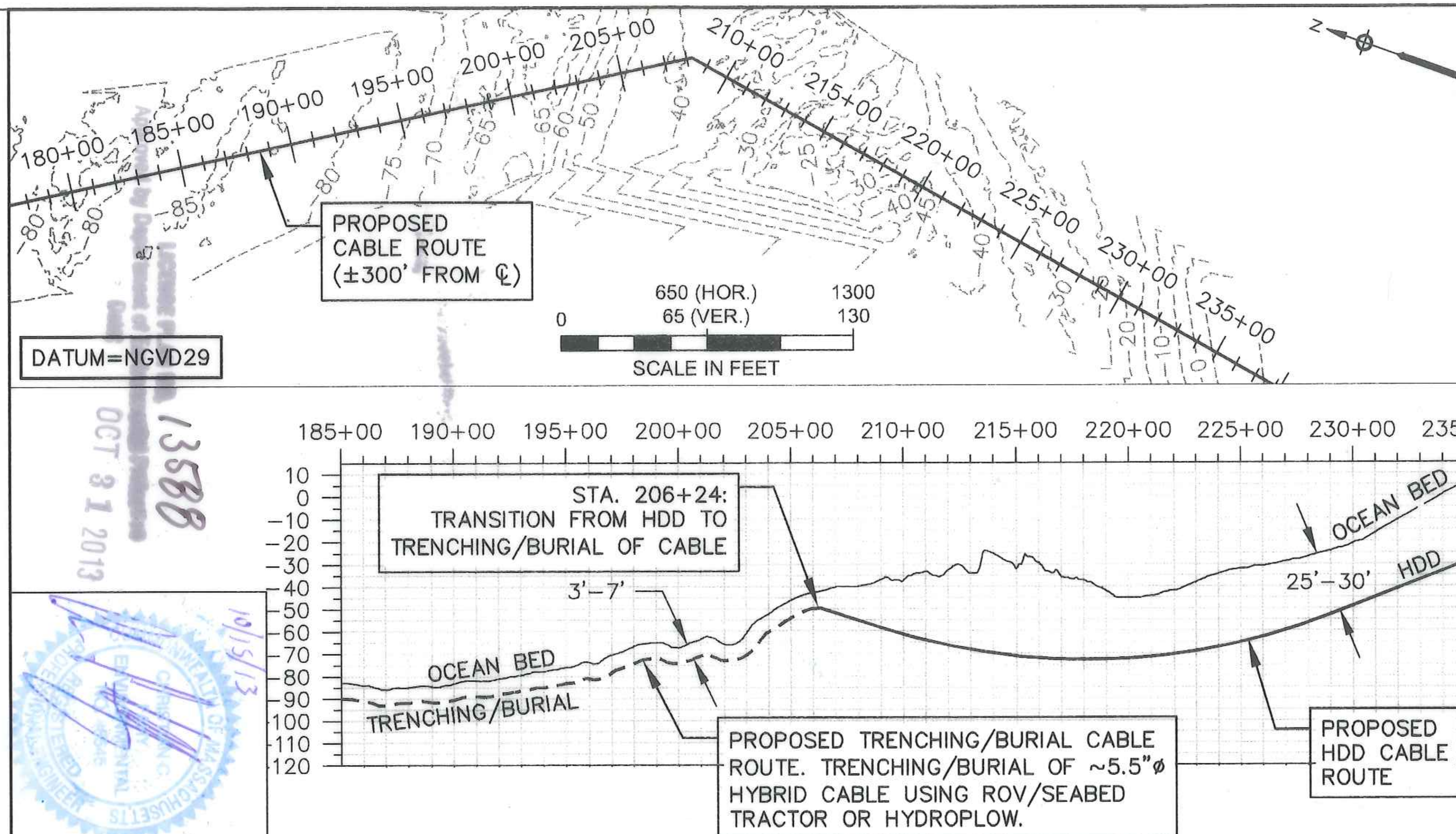
10/15/13

SITE INFORMATION: VINEYARD SOUND FROM FALMOUTH TO TISBURY AT: FALMOUTH/TISBURY IN: VINEYARD SOUND BARNSTABLE/DUKES COUNTY COMMONWEALTH OF MASS.	MARTHA'S VINEYARD HYBRID CABLE PROJECT SUBMARINE ROUTE - PLAN & SECTION APPLICATION BY: COMCAST, NORTH CENTRAL DIVISION, 330 BILLERICA ROAD, CHELMSFORD, MA 01824 NSTAR ELECTRIC, 1 NSTAR WAY, WESTWOOD, MA 02090	SCALE: HOR: 1"=650' VER: 1"=30' DATE: AUG. 28, 2013 SHEET: 5 OF: 7

CERTIFICATION:

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

10/15/13



SITE INFORMATION:

VINEYARD SOUND FROM
FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=650' VER: 1"=65'

DATE: AUG. 28, 2013

SHEET: 6 OF: 7

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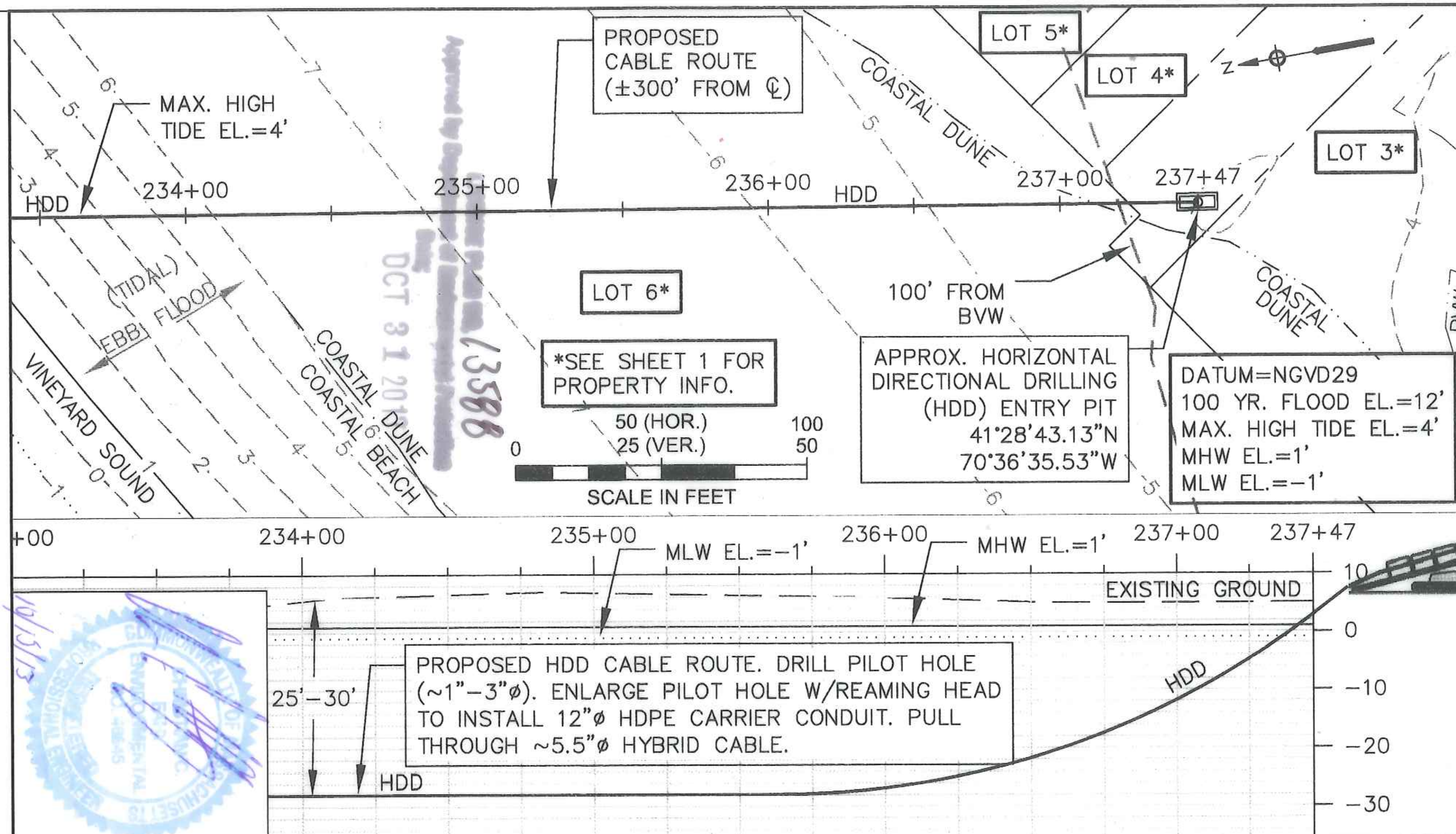
10/15/13



SITE INFORMATION:

VINEYARD SOUND FROM
FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

TISBURY LANDING - PLAN & SECTION

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=50' VER: 1"=25'

DATE: AUG. 28, 2013

SHEET: 7 OF: 7

CERTIFICATION:

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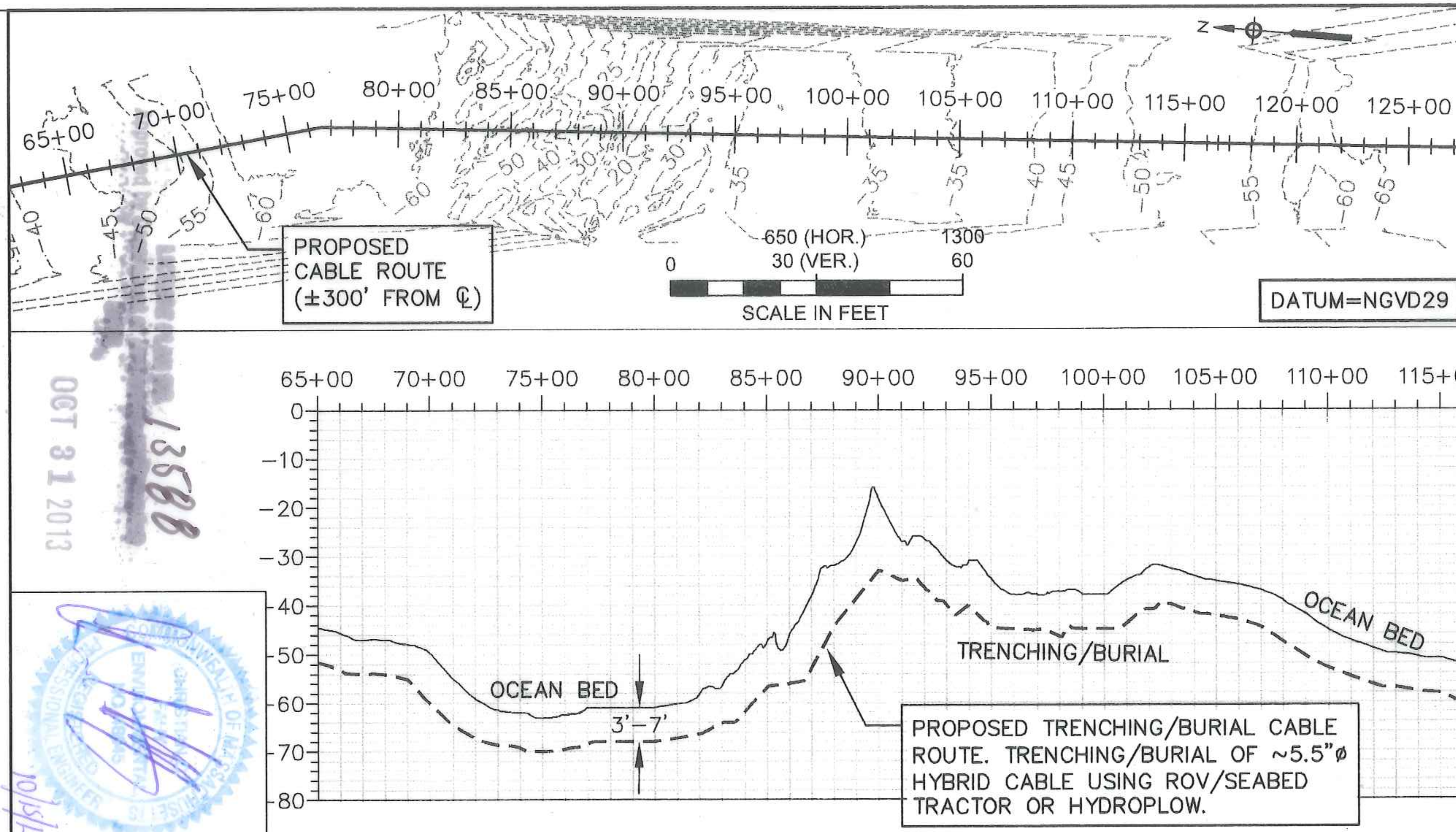
10/15/13



SITE INFORMATION:

VINEYARD SOUND FROM
FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

APPLICATION BY:

COMCAST, NORTH CENTRAL DIVISION	NSTAR ELECTRIC
330 BILLERICA ROAD, CHELMSFORD, MA 01824	1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=650' VER: 1"=30'

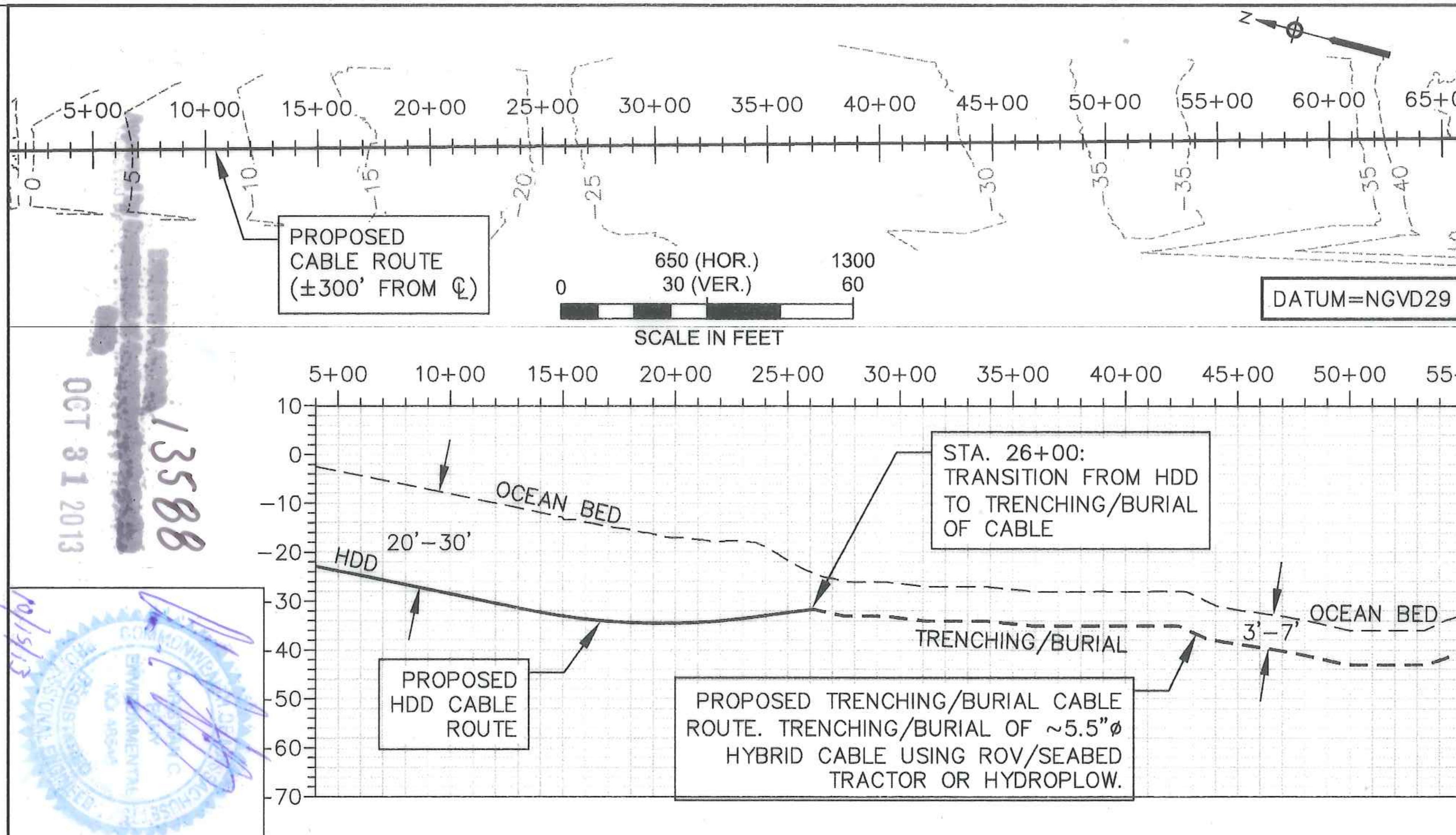
DATE: AUG. 28, 2013

SHEET: 4 OF: 7

CERTIFICATION:

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

10/15/13



SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY
AT: FALMOUTH/TISBURY
IN: VINEYARD SOUND
BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASS.

MARTHA'S VINEYARD HYBRID CABLE PROJECT

SUBMARINE ROUTE - PLAN & SECTION

APPLICATION BY:

COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=650' VER: 1"=30'

DATE: AUG. 28, 2013

SHEET: 3 OF: 7

CERTIFICATION:

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

10/15/13

Attachment E

Agency Communications

- MassDEP
- MHC
- MBUAR
- NHESP
- DMF

MassDEP

From:	Wong, David W (DEP)
To:	Sean Scannell
Cc:	Dwight Dunk; Waldrip, Matthew A
Subject:	RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Date:	Thursday, August 19, 2021 1:54:45 PM

Dear Mr. Scannell,

Thanks for your sediment Sampling and Analysis Plan (SAP). It is well designed, displayed, and elaborated. As a result, your SAP is approved without any revision/modification.

Please let me know if you have any questions.

Sincerely,

David

David WH Wong, Ph.D.
401 Water Quality Certification Program
Division of Wetlands and Waterways
Bureau of Water Resources
Massachusetts Department of Environmental Protection
Phone: 617-874-7155
David.W.Wong@mass.gov

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Thursday, August 19, 2021 9:51 AM
To: Wong, David W (DEP) <david.w.wong@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound

Mr. Wong,

Please see the attached proposed project-specific Sediment Sampling and Analysis Plan (SAP) to support the planning and design efforts of Eversource Energy for the proposed 5th Submarine Cable between Falmouth and Oak Bluffs. The sediment testing field work described in this project-specific SAP is intended to fulfill the requirements of the 401 Water Quality Certification ("WQC") program and to provide field data to support the installation of the cable.

Should you have any questions regarding this submission, please do not hesitate to contact Dwight Dunk at (978) 897-7100 or via email at ddunk@epsilonassociates.com.

Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

MEMORANDUM

Date: August 19, 2021

To: David Wong, Massachusetts Department of Environmental Protection (“MassDEP”)

From: D. R. Dunk

Subject: Sediment Sampling and Analysis Plan (SAP) | Eversource 5th Submarine Cable Project

---

Epsilon Associates, Inc. prepared this memorandum to describe the proposed project-specific Sediment Sampling and Analysis Plan (“SAP”) to support the planning and design efforts of Eversource Energy (“Eversource”) for the proposed 5th Submarine Cable between Falmouth and Oak Bluffs. Eversource proposes to install a 5th submarine cable within Vineyard Sound. This 5th submarine cable will be installed adjacent to and west of the extant #99 submarine cable (refer to Figure 1 – Potential 5th Cable Route).

The sediment testing field work described in this project-specific SAP is intended to fulfill the requirements of the 401 Water Quality Certification (“WQC”) program and to provide field data to support the installation of the cable. Therefore, in accordance with 314 CMR 9.07(2)(b)5. we respectfully request approval of this project-specific SAP to collect 31 sediment cores within the proposed survey and sampling corridor in Vineyard Sound (refer to Figure 2 – Proposed 5th Submarine Cable Route Survey and Sampling Plan).

Proposed Sediment Sampling Plan

The proposed cable route measures approximately 33,145-feet from the Falmouth to Oak Bluffs. A combination of horizontal directional drill and hydroplow will be used to install the submarine cable. The hydroplow installation portion is estimated to be approximately 29,500-feet of this route. The target depth of cable installation is 6- to 10-feet below the seabed, which correlates to approximately 27,315 to 44,797 cubic yards (“cy”) of sediment repositioning. At those volumes, the standard number of cores based on one core per 1,000 cy would be 27 to 45 cores. The proposed project specific sampling program includes 31 cores to be advanced every approximately 1,000 feet along the hydroplow cable route to meet the requirements of the Massachusetts Bureau of Underwater Archaeological Resources (MBUAR”) which requires one core to be collected no greater than every approximately 1,000-feet.

Whereas the "dredging[1]" for cable installation will not require excavation and disposal of sediments (traditional dredging), but rather only the repositioning of sediments; and the number of cores exceeds the DEP standard number of cores for a 6-foot cable burial and will adequately characterize sediment quality for the 10-foot burial, we respectfully request approval of this project specific SAP per 314 CMR 9.07(2)(b)5.

Coring Operations

Coring operations will be conducted by CR Environmental, inc. ("CR") of Falmouth, MA. Based on CR's coring experience within Vineyard sound, the dominate substrate in most of the deeper portions along the proposed cable alignment is expected to be coarse sand and gravel along with patches of gravel and cobble. Furthermore, these areas are mapped as "rocky" on NOAA charts.

After a preliminary review of the geophysical data, the final core locations along the cable route will be selected. Sediment will be collected by advancing cores (vibracores) into the substrate. The vibracores will be collected using a NAVCO pneumatic vibracore system. The NAVCO pneumatic vibracore system includes a 1,750 vpm Bin/Hopper Vibrator, 50 cfm portable air compressor, hoses, galvanized steel core barrels, stainless steel catcher and brass core head assemblies.

The vibracores will be collected in 10-foot-long galvanized steel core barrels with hard plastic cellulose acetate butyrate ("CAB") liners to 10 feet below bottom or refusal, whichever is encountered first. A Ted Young 0.1m^2 modified Van Veen grab sampler will also be provided as a backup sediment sampling system if cores cannot be collected in hard bottom areas. Mud line depths at core locations will be recorded using the vessel mounted Humminbird echosounder. Positioning during the coring effort will be accomplished with a Hemisphere V-104 GPS, heading sensor and HYPACK software, this system is capable of sub-meter accuracy.

Operations will be planned around slack tide periods and cores will be advanced approximately every 1,000 feet along the cable route for a total of 31 cores.

Laboratory Sediment Analysis

Sediment samples will be collected, and grain size analysis will be conducted on each sample. Based on sediment results for the 2014 NSTAR/Comcast hybrid cable to the west and more recent sampling for the

---

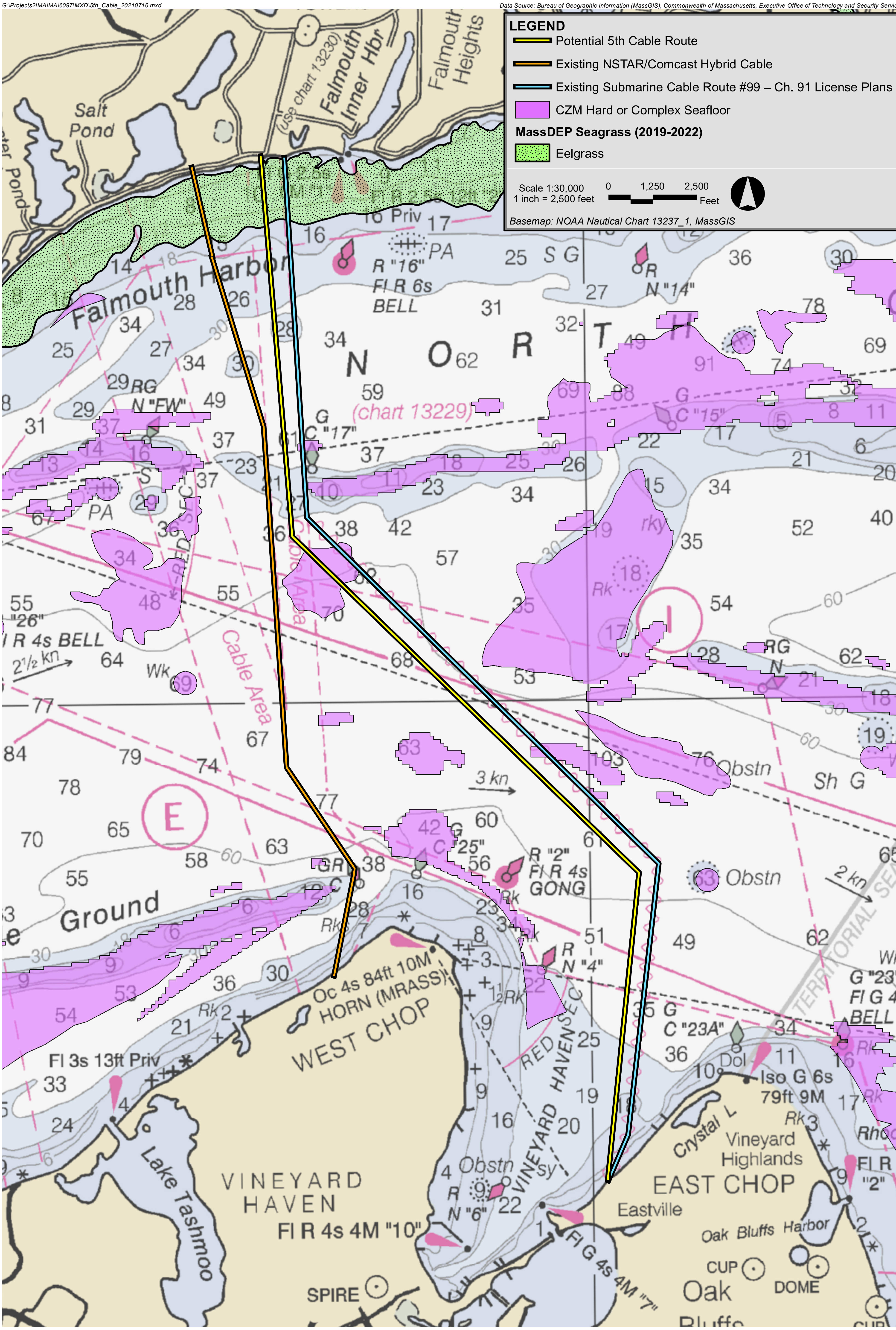
[1] Dredging is defined as: The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high-water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands. [314 CMR 9.02]

Vineyard Wind export cable to the east, the sediment in Vineyard Sound between Falmouth and Oak bluffs is primarily coarse sand with less than 10% fines (i.e., passing the No. 200 sieve).

Samples will also be collected for potential chemical analyses, should they be required. Since the Project is unlikely to contain anthropogenic concentrations of oil or hazardous materials, in accordance with 314 CMR 9.07(2)(a) no chemical testing is required where the sediment contains less than 10% fines. However, CR will collect sufficient sediment volume to conduct chemical testing if after sieve testing the sediment contains more than 10% fines. Due to the short "hold time" for volatile organic carbons ("VOCs"), testing for VOCs will be done concurrent with sieve testing. All other parameters have longer hold times so that testing for those analytes can be delayed until after the sieve results are received, if required. Should the samples contain more than 10% fines, the sediments will be analyzed for the full suite of parameters in accordance with 314 CMR 9.07(2)(b)6. which includes: percent water, Total Organic Carbon ("TOC"), metals, Polycyclic Aromatic Hydrocarbons ("PAHs"), Polychlorinated Biphenyls ("PCBs"), Extractable Petroleum Hydrocarbons ("EPH"), Volatile Organic Compounds ("VOCs"), and Toxicity Characteristic Leaching Procedure ("TCLP"), if necessary.

encl. Figure 1 – Potential 5th Cable Route
Figure 2 – Proposed 5th Submarine Cable Route Survey and Sampling Plan

cc: M. Waldrip, Eversource

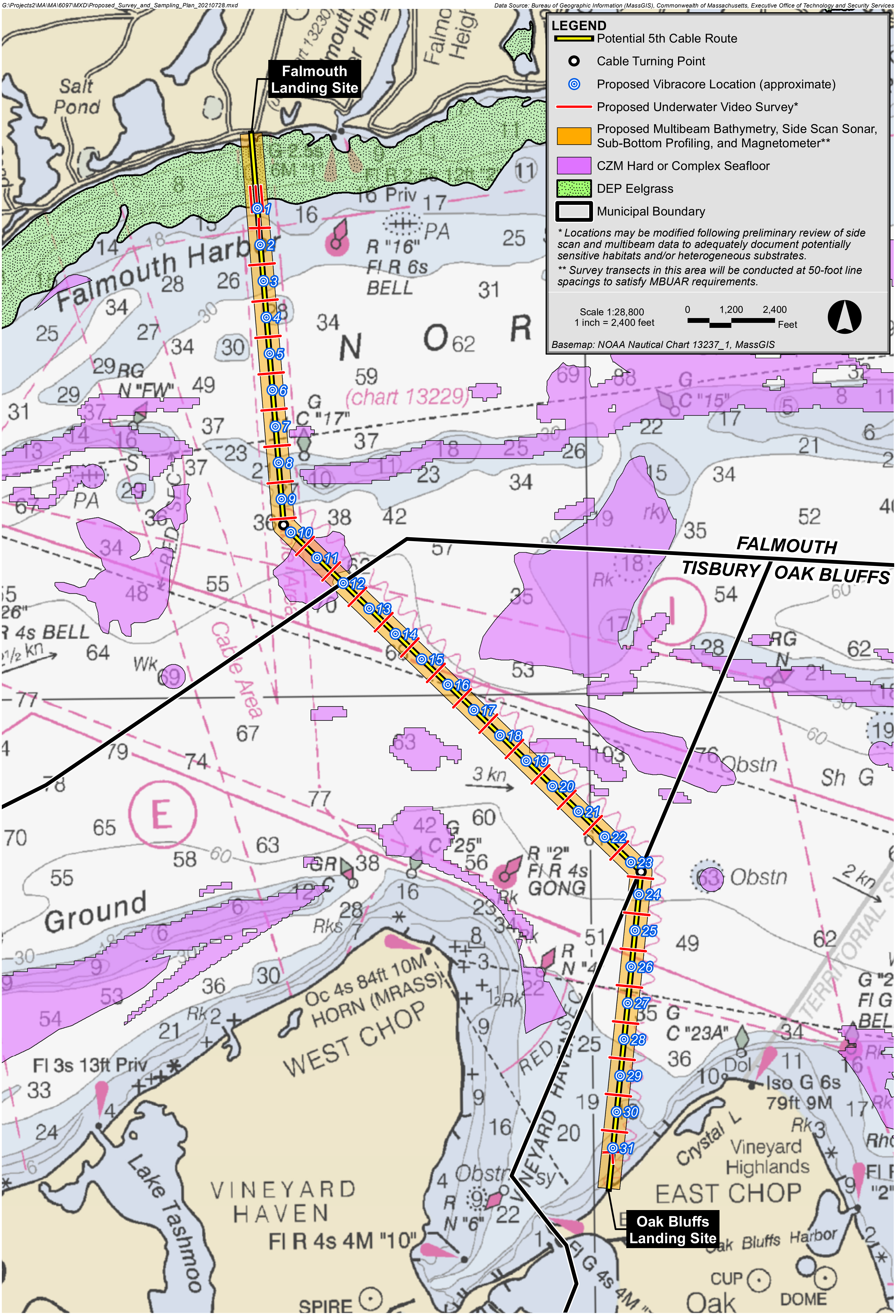


5th Cable

Figure 1
Potential 5th Cable Route

G:\Projects2\MA\MA\6097\MXD\Proposed_Survey_and_Sampling_Plan_20210728.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



5th Cable

Epsilon ASSOCIATES INC.

Figure 2

Proposed 5th Submarine Cable Route Survey and Sampling Plan

From:	Wong, David W (DEP)
To:	Sean Scannell
Cc:	Dwight Dunk; Waldrip, Matthew A
Subject:	RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Date:	Tuesday, January 25, 2022 7:57:36 PM

Dear Mr. Scannell,

Thanks for keeping MassDEP updated on the SAP for Eversource Energy's 5th Submarine Cable Project. The analysis result is sound, and the data are convincing. Based on the results of this project-specific SAP information, MassDEP approves your request that no further chemical testing is required.

Thanks for complying with MassDEP's regulation in protecting our environment during development.

Please let me know if you have any questions.

Sincerely,

David

David WH Wong, Ph.D.
401 Water Quality Certification Program
Division of Wetlands and Waterways
Bureau of Water Resources
Massachusetts Department of Environmental Protection
Phone: 617-874-7155
David.W.Wong@mass.gov

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Tuesday, January 25, 2022 5:06 PM
To: Wong, David W (DEP) <david.w.wong@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Importance: High

Dr. Wong,

Please see the attached submission of the results for the project-specific SAP conducted in support of Eversource Energy's 5th Submarine Cable Project. Based on the results of the project-specific SAP and sediment analyses, we believe the project planning and design can proceed without any further chemical testing. We respectfully request written concurrence by your Department indicating that no further chemical testing is required based on the information provided within this submission.

Should you have any questions regarding this submission, please do not hesitate to contact Dwight Dunk at (978) 897-7100 or via email at ddunk@epsilonassociates.com, or myself at the number and email address provided in my signature below.

Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Wong, David W (DEP) <david.w.wong@state.ma.us>
Sent: Thursday, August 19, 2021 1:55 PM
To: Sean Scannell <sscannell@epsilonassociates.com>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound

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Sincerely,

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Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

MEMORANDUM

Date: May 11, 2022

To: Massachusetts Department of Environmental Protection, Southeast Regional Office

From: S. Scannell, Epsilon Associates, Inc.

Subject: Request for Opinion – Chapter 91 Jurisdiction

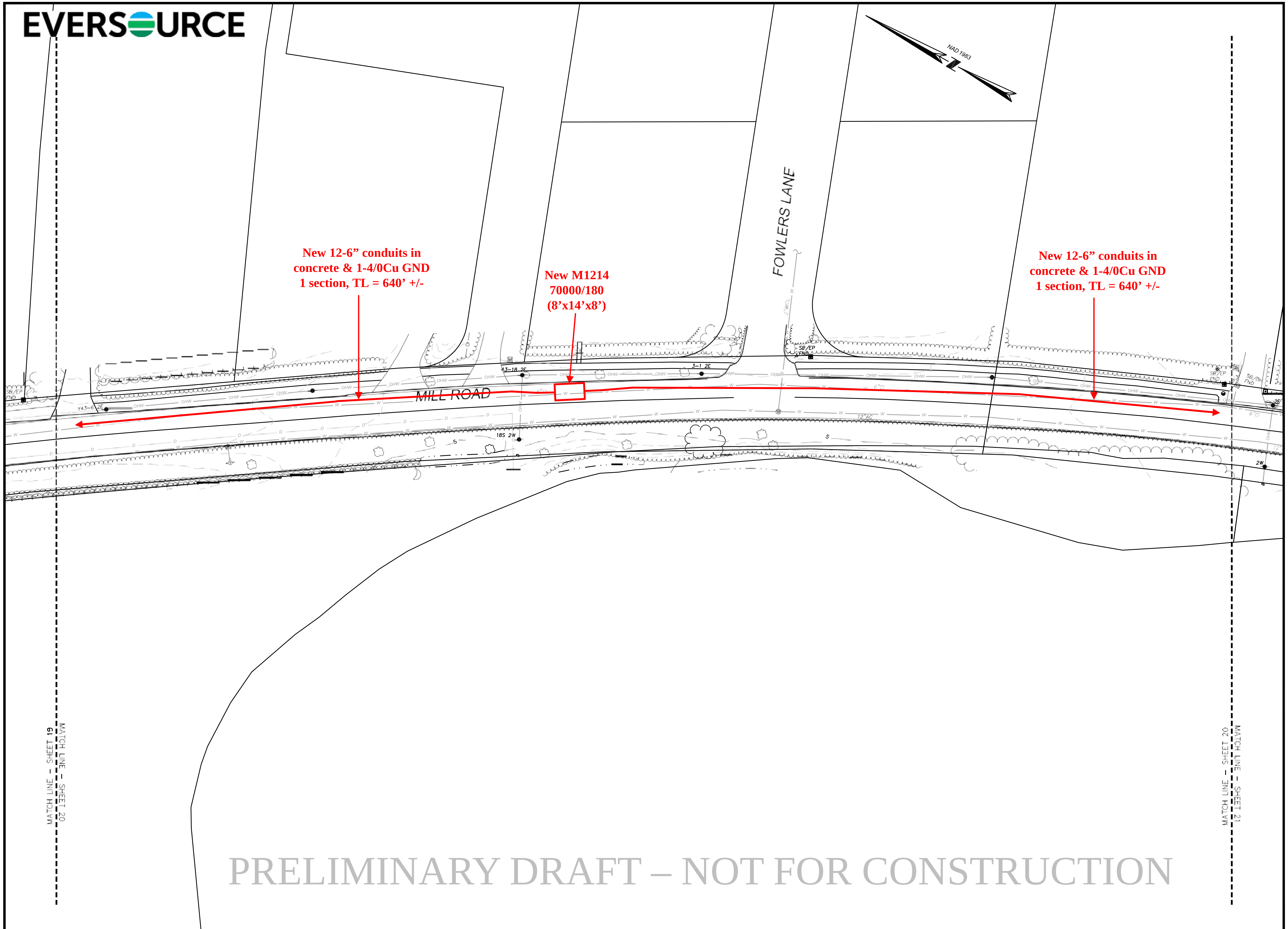
Pursuant to a phone conversation between Brendan Mullaney of the Massachusetts Department of Environmental Protection ("MassDEP" or "Department") and Sean Scannell of Epsilon Associates, Inc. ("Epsilon") on May 5, 2022, we respectfully request the Department's opinion on the potential georeferencing issue with the mapped Chapter 91 Jurisdiction along Mill Road in Falmouth, Massachusetts. Refer to Figure 1 – Ch.91 Jurisdiction.

By way of background, Eversource Energy ("Eversource") is proposing to install a new underground cable (public utility infrastructure) within the Mill Road right-of-way ("ROW") in Falmouth. This work proposed by Eversource is categorized as a Public Service Project for utilities to be installed entirely within the public ROW. The work includes installing a new duct bank (conduit) and manholes along the easterly edge of Mill Road (refer to the attached Draft Engineering Details and Conduit Layout). The duct bank is to be 37-inches-wide with an approximately 4-foot-wide trench for installation. The manholes are to be approximately 8 feet by 14 feet in size, with an approximate excavation size of 10 feet by 16 feet. All of this proposed work will be within the roadway layout and ROW. There will be no permanent alteration to the landscape as all facilities will be installed underground and the roadway will be restored to existing conditions upon completion.

Through the planning and design process, we identified the area of Mill Road in Falmouth as having a possible georeferencing issue associated with the Chapter 91 Jurisdiction data layer available through MassGIS and Mass Mapper. Please refer to the attached Figure 1. Based on the published Chapter 91 Jurisdiction data, the proposed limit of work is presumed to be within Filled Tidelands. However, in review of the extent of jurisdiction, it is our opinion there appears to be a georeferencing issue associated with the jurisdictional boundaries and a possible horizontal "shift" – see the attached Figure 1 which depicts the jurisdictional boundaries along Mill Road and the tidal creek to the east of Mill Road that crosses beneath Shore Drive via culvert.

We therefore respectfully request the Department's opinion on this possible georeferencing issue associated with the planning and permitting for this Public Service Utility Project.

Figure 1
Ch. 91 Jurisdiction - Falmouth



WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS

(BARNSTABLE COUNTY)

EXISTING CONDITIONS

FEBRUARY 10, 2022

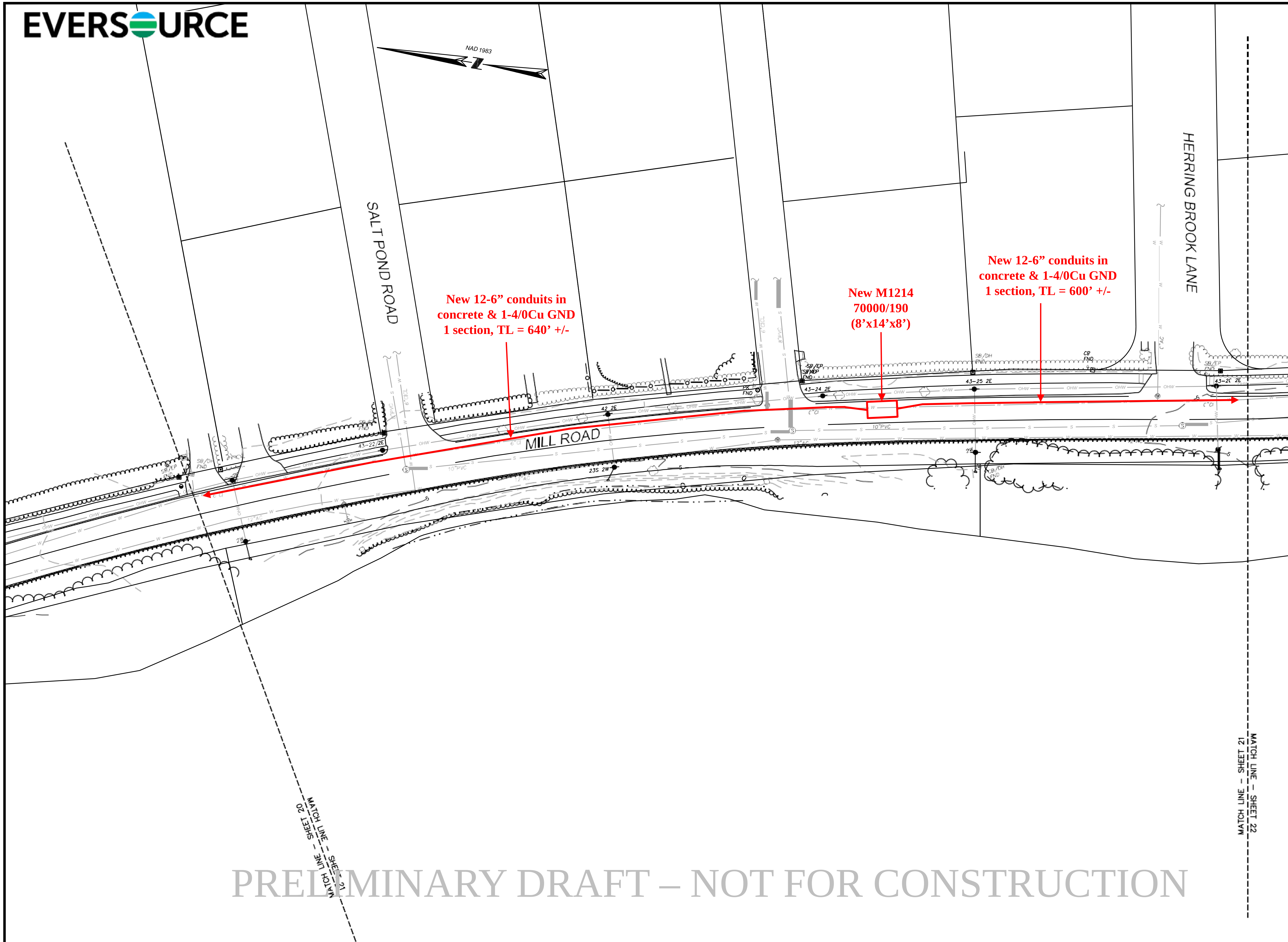
Falmouth, MA
Dan Frois, Engineer
Rev. 03, 04-21-2022
Page 20 of 28

PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'

PROJ. MGR.: S.EWALD
FIELD: F.MCIVER
CALC./DESIGN: S COHEN
DRAWN: S COHEN
CHECK: S.EWALD
FILE: P:\1360300\S\Dr\1360300EC.dwg
DWG.: 1360300EC
JOB. NO: 1-3603.00
SHEET 20 OF 28



PRELIMINARY DRAFT – NOT FOR CONSTRUCTION

WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS
FEBRUARY 10, 2022

Falmouth, MA
Dan Frois, Engineer
Rev. 03, 04-21-2022

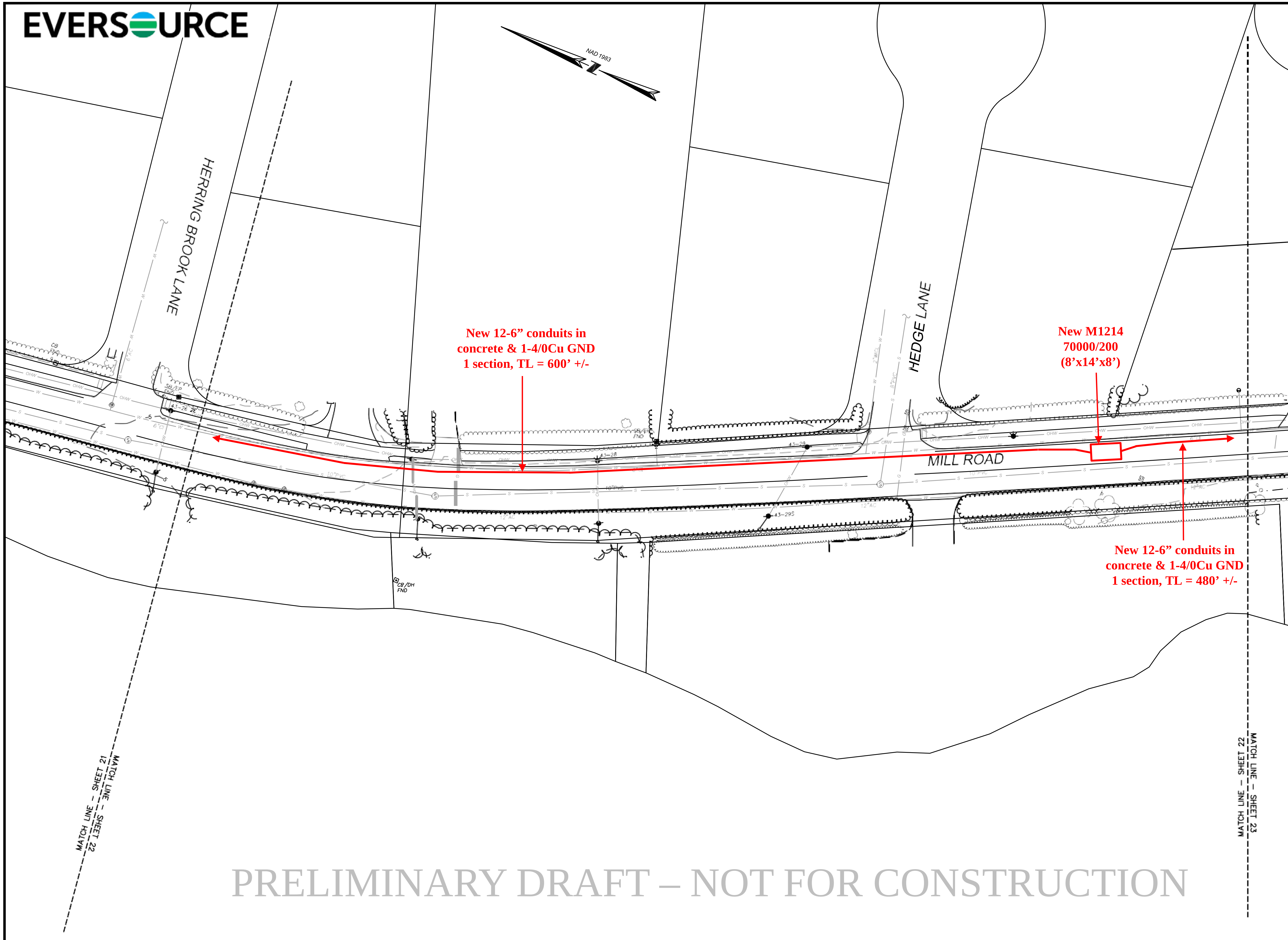
PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'

PROJ. MGR.: S.EWALD
FIELD: F.MCIVER
CALC./DESIGN: S. COHEN
DRAWN: S. COHEN
CHECK: S.EWALD
FILE: P:\1360300\S\Dr\1360300EC.dwg
DWG.: 1360300EC
JOB. NO: 1-3603.00
SHEET 21 OF 28

EVERSOURCE



WO# 8622532
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Falmouth, MA
Dan Frois, Engineer
Rev. 03, 04-21-2022
Page 22 of 28

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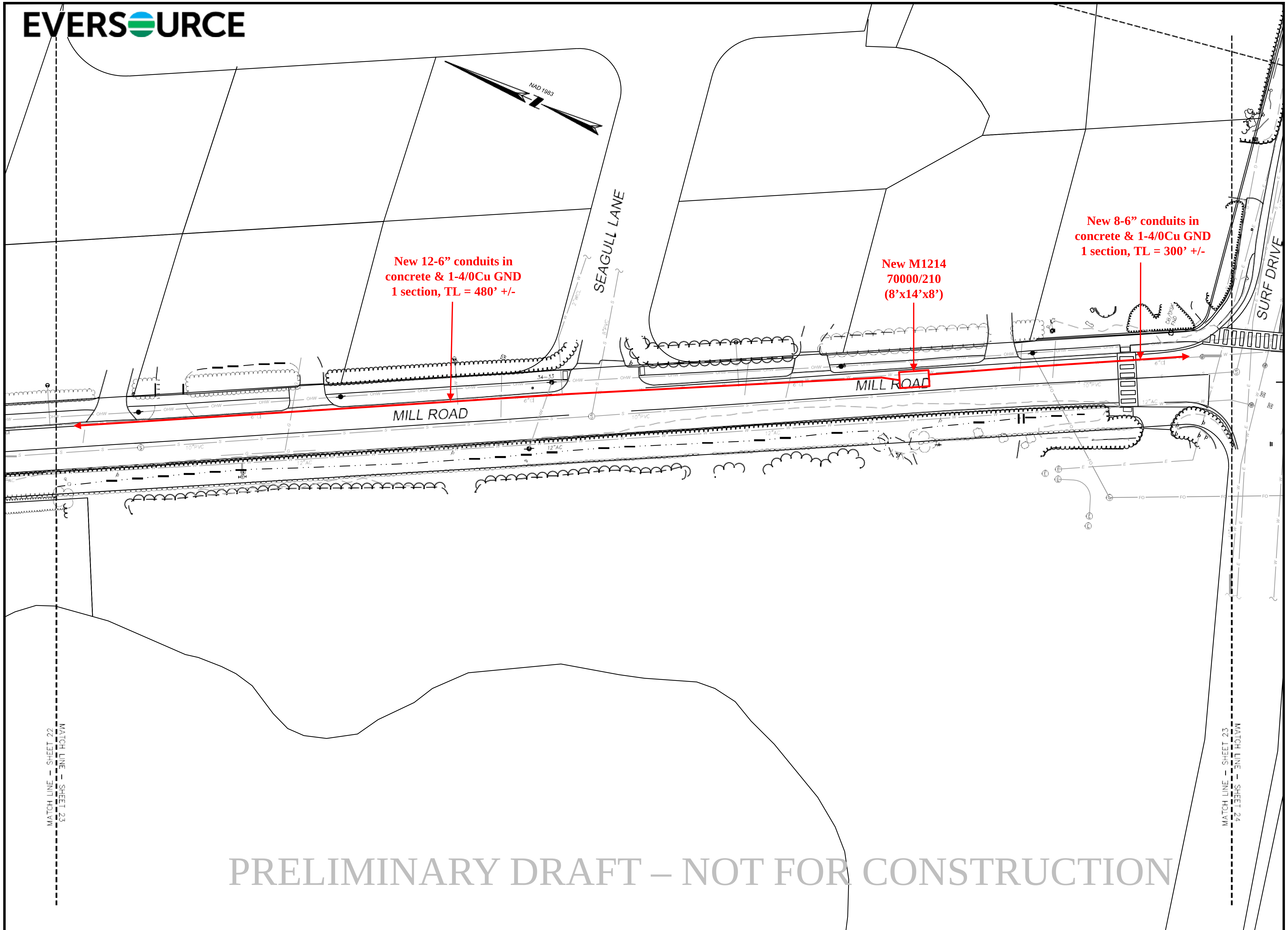
JOB. NO: 1-3603.00

SHEET 22 OF 28



WO# 8622532
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22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS
FEBRUARY 10, 2022

Falmouth, MA
Dan Frois, Engineer
Rev. 03, 04-21-2022
Page 23 of 28

PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'
0 2.5 5 10 METERS
0 10 20 40 FEET

PROJ. MGR.: S.EWALD		
FIELD: P.MCIVER		
CALC./DESIGN: S COHEN		
DRAWN: S COHEN		
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FILE: P:\1360300\S\Dr\1360300EC.dwg		
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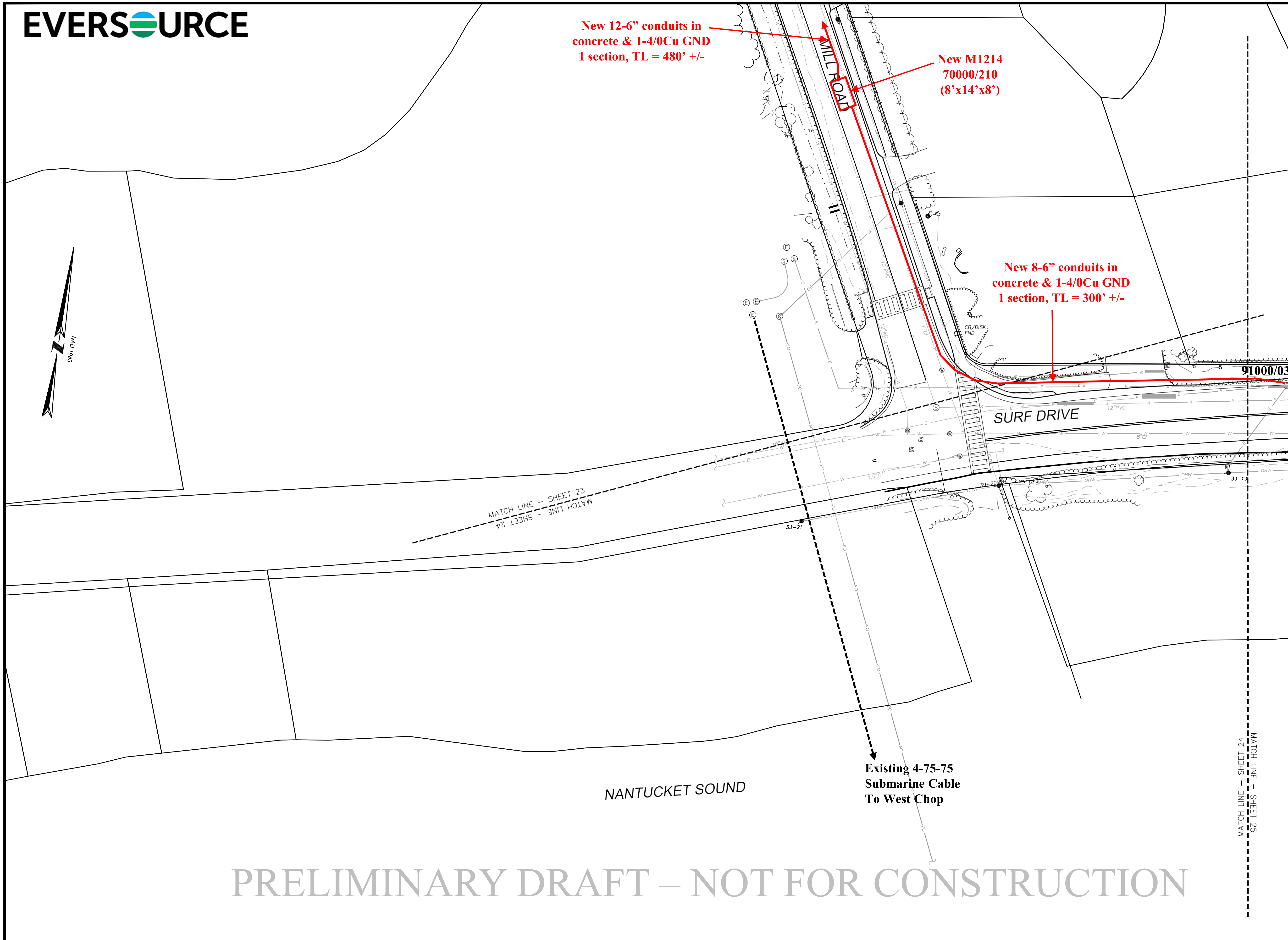
JOB. NO: 1-3603.00		23 OF 28



WO# 8622532
Engineering Details
Conduit Layout
New Line
4-70-70
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS
FEBRUARY 10, 2022

Falmouth, MA
Dan Frois, Engineer
Rev. 00, 05-03-2022
Page 1 of 5

PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'
0 2.5 5 10 METERS
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DRAWN: S COHEN
CHECK: S.EWALD
FILE: P:\1360300\S\Dr\1360300EC.dwg
DWG.: 1360300EC
JOB. NO: 1-3603.00
SHEET 24 OF 28

Dwight Dunk

From: Mullaney, Brendan (DEP) <brendan.mullaney@state.ma.us>
Sent: Thursday, May 19, 2022 2:24 PM
To: Sean Scannell
Cc: Dwight Dunk; Waldrip, Matthew A
Subject: Re: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Hi Sean,

The Waterways Program has reviewed the information you submitted regarding the installation of a new underground cable within the Mill Road Right-of-Way in Falmouth. A portion of the road lies within the "Historic High Water" layer according to MassGIS and thus is presumed to be within Filled Tidelands. You have observed that there appears to be a georeferencing issue associated with the mapped location of the Historic High Water Line and that the line, as depicted in the MassGIS layer, is shifted from the true limit of Filled Tidelands.

Based upon the review of the information, we concur with your assessment and agree that the line as depicted on MassGIS is shifted anywhere from 10-40'+ to the east from the actual extent of Historic High Water. Based upon this assessment, the proposed underground cable along this section of Mill Road will not be located within Filled Tidelands and not subject to Chapter 91 jurisdiction.

Please note that this determination only applies to this particular section of Mill Road in Falmouth and that the Historic High Water Line is presumed to represent the extent of Chapter 91 jurisdiction unless otherwise determined by the Program. Feel free to contact me with any questions on this matter.

Regards,
Brendan

Brendan Mullaney | Environmental Analyst
MassDEP Wetlands & Waterways Program
Southeast Regional Office
20 Riverside Dr. | Lakeville, MA 02347
(508) 946-2707

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Wednesday, May 18, 2022 2:50 PM
To: Mullaney, Brendan (DEP) <Brendan.Mullaney@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Hi Brendan,

I just wanted to touch base with you with respect to the Department's review and opinion on the Chapter 91 jurisdiction along Mill Road we discussed recently. Curious to know if an opinion has been made yet, or if it still be worked on.

Feel free to call me with any questions. Thanks,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Sean Scannell
Sent: Wednesday, May 11, 2022 2:33 PM
To: Mullaney, Brendan (DEP) <brendan.mullaney@state.ma.us>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Brendan,

Pursuant to our conversation last week, please see the attached Memo regarding the Chapter 91 jurisdiction along Mill Road in Falmouth. Included is a brief description of the work proposed, a figure depicting the area of interest, and several draft sheets of the proposed limit of work.

Should you require any further information, or would like to schedule a call to discuss, please let me know.

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Sean Scannell
Sent: Wednesday, May 4, 2022 3:04 PM
To: Mullaney, Brendan (DEP) <brendan.mullaney@state.ma.us>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Sounds great, Brendan. Thank you. I'll send a Teams invite this afternoon.

Chat tomorrow.
Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250

Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Mullaney, Brendan (DEP) <brendan.mullaney@state.ma.us>
Sent: Wednesday, May 4, 2022 3:03 PM
To: Sean Scannell <sscannell@epsilonassociates.com>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Hi Sean – that should work – how about Teams if you have any plans / screens to share?

Thanks,
Brendan

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Wednesday, May 4, 2022 1:14 PM
To: Mullaney, Brendan (DEP) <Brendan.Mullaney@mass.gov>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Hi Brendan,

How does 3pm sounds for a call? If that works, do you have a preference on telephone, Zoom, or Microsoft Teams?

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Mullaney, Brendan (DEP) <brendan.mullaney@state.ma.us>
Sent: Wednesday, May 4, 2022 7:06 AM
To: Sean Scannell <sscannell@epsilonassociates.com>
Subject: RE: Chapter 91 Jurisdiction - Mill Road, Falmouth, MA - Discussion

Hi Sean,

I am available tomorrow between 9-11 or later in the afternoon after 2 –

Please let me know if you're available –

Thanks,
Brendan

Brendan Mullaney | Environmental Analyst
MassDEP Wetlands & Waterways Program
Southeast Regional Office
20 Riverside Dr. | Lakeville, MA 02347
(508) 946-2707

MHC

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

August 30, 2021

Matthew Waldrip
Eversource Energy
247 Station Drive
Westwood, MA 02090

RE: Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs, MA.
MHC #RC.70200.

Dear Mr. Waldrip:

Staff of the Massachusetts Historical Commission (MHC), have reviewed the Project Notification Form (PNF) and a copy of the Massachusetts Board of Underwater Archaeological Resources (MBUAR) Special Use Permit application and marine archaeological reconnaissance scope of work prepared and submitted by Gray & Pape, Inc., for the project referenced above.

The PNF indicates that the project requires federal permits, including a permit from the US Army Corps of Engineers. The MHC looks forward to consultation with the involved federal agencies pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). A copy of the Environmental Notification Form (ENF) should be submitted to the MHC when it is filed with the MEPA office.

Additional information is required by the MHC to ascertain the project area of potential effect. Scaled existing and proposed conditions project plans for the preferred project alternative, sized no larger than 11" by 17", should be submitted to the MHC for review and comment.

Project plans should show the complete project impact area, including terrestrial and near-shore areas required for any HDD cable entrance and exit pits, access routes, equipment storage and materials staging areas in Falmouth and Oak Bluffs. The NOAA chart included in the submittal suggests that the terrestrial portions of the project impact area may be located in proximity to historic and/or archaeological resources recorded in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth.

The MHC looks forward to reviewing a copy of the draft marine archaeological reconnaissance survey report that has been prepared consistent with 950 CMR 70.14. If the project requires ground impacts within archaeologically sensitive areas above mean low water, then additional identification efforts for archaeological resources may be required. Any archaeological survey conducted for the project above mean low water must be conducted under a State Archaeologist's permit (950 CMR 70) by a qualified archaeological consultant.

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

These comments are provided to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws Chapter 9, Sections 26-27C (950 CMR 70-71), and MEPA (301 CMR 11). If you have questions or require additional information, please contact Jonathan K. Patton at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Brooke Kenline-Nyman, Eversource
Paul M. Maniccia, USACOE-NED, Regulatory
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
David Weeden, Mashpee Wampanoag Tribe
David S. Robinson, MBUAR
Sarah Korjeff, Cape Cod Commission
Adam Turner, MVC
Dwight Dunk, Epsilon
Kim Smith, Gray & Pape

MBUAR

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014 Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

October 5, 2021

Kimberly M. Smith, M.A., RPA
Marine Archaeologist
Gray & Pape, Inc.
60 Valley Street, Suite 103
Providence, RI 02909

RE: Formal Approval of Special Use Permit No. 21-003, Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs

Dear Ms. Smith,

This letter confirms the vote taken by the Massachusetts Board of Underwater Archaeological Resources on September 30, 2021 to formally approve granting Special Use Permit No. 21-003 to Gray & Pape, Inc. for the purpose of conducting marine archaeological reconnaissance survey in Vineyard Sound between Falmouth and Oak Bluffs as detailed in the work plan and maps accompanying the application for the Eversource Energy 5th Submarine Cable Project. The duration of this permit (SUP 21-003) shall be one year from the date of issuance with its expiration date as September 30, 2022.

This permit is herein granted to Gray & Pape, Inc. and is dependent upon compliance with the Board's Regulations (312 CMR 2.00). All work must be conducted in accordance with Board directives, standard conditions and the Technical Proposal included in the application. Activities allowed under this permit include archaeological reconnaissance and remote sensing survey, video documentation, benthic grab sample collection, and vibracore sampling in the permit area.

For projects subject to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), permittees are directed to consult with and provide their proposed research design and methodology to the State Historic Preservation Office/Massachusetts Historical Commission and the lead federal agency in accordance with 36 CFR 800.4, prior to conducting the field investigation.

This permit does not relieve the permittee or any other person of the necessity of complying with all other federal, state and local statutes, regulations, by-laws and ordinances.

If you should have any questions or need further assistance, please do not hesitate to contact the Board by email (david.s.robinson@mass.gov) or at the address above.

Sincerely,

David S. Robinson
Director

/dsr

Cc: Brona Simon, MHC
Robert Boeri, Todd Callaghan, Lisa Engler, Stephen McKenna, MCZM (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)
Dwight Dunk, Sean Scannell, Epsilon Associates, Inc. (via email attachment)
Charlotte M. Cogswell, CR Environmental, Inc. (via email attachment)

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014 Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

August 10, 2021

Kimberly M. Smith, M.A., RPA
Marine Archaeologist
Gray & Pape, Inc.
60 Valley Street, Suite 103
Providence, RI 02909

RE: Issuance of Provisional Special Use Permit 21-003, Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs, MA

Dear Ms. Smith,

This letter confirms the acceptance and provisional approval by the Massachusetts Board of Underwater Archaeological Resources of the Special Use Permit application submitted by Gray & Pape, Inc., for marine archaeological reconnaissance survey in Vineyard Sound between Falmouth and Oak Bluffs as detailed in the work plan and maps accompanying the application for the Eversource Energy 5th Submarine Cable Project. This provisional permit (No. 21-003) is effective upon issuance, August 10, 2021, for the duration of one year. Formal approval of this permit will be considered by the Board at its next regularly scheduled meeting on September 30, 2021.

This permit is herein granted to Gray & Pape, Inc., and dependent upon compliance with the Board's Regulations (312 CMR 2.00). All work must be conducted in accordance with Board directives, standard conditions and the Scope of Work included in the application. Activities allowed under this permit include archaeological reconnaissance and remote sensing, video documentation, benthic grab sample collection, and vibracore sampling in the permit area. For projects subject to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), permittees are directed to consult with and provide their proposed research design and methodology to the State Historic Preservation Office/Massachusetts Historical Commission and the lead federal agency in accordance with 36 CFR 800.4, prior to conducting the field investigation.

This permit does not relieve the permittee or any other person of the necessity of complying with all other federal, state and local statutes, regulations, by-laws and ordinances.

Review of your provisional permit by the full Board has been scheduled for Thursday, September 30, 2021 at 12:30 PM via Zoom's remote video tele-conferencing platform. Instructions for logging-in will be provided prior to the meeting.

If you should have any questions or need further assistance, do not hesitate to contact the Board by email (david.s.robinson@mass.gov) or at the address above.

Sincerely,

David S. Robinson
Director

/dsr
Cc: Brona Simon, MHC
Robert Boeri and Stephen McKenna, MCZM (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)
Dwight Dunk and Sean Scannell, Epsilon, (via email attachment)
Charlotte M. Cogswell, CR Environmental, Inc. (via email attachment)

NHESP

Epsilon
ASSOCIATES INC.

Projects:\6097\Eversource 5th Martha's Vineyard Cable

October 28, 2021
Regulatory Review
Natural Heritage and Endangered Species Program
MA Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

Subject: Eversource Energy 5th Submarine Cable from Falmouth to Oak Bluffs – Vineyard Sound

To whom it may concern:

Epsilon Associates, Inc. ("Epsilon") submits the attached Request for State-listed Species Information Form to obtain information on the state-listed species present in Vineyard Sound between Falmouth and Oak Bluffs, MA. Epsilon is conducting due diligence for Eversource Energy to install a 5th submarine cable in Vineyard Sound from Falmouth to Oak Bluffs, MA (see attached Figure 1 – Potential 5th Cable Route). The new cable will be installed via hydroplow construction technique for the majority of its length within Vineyard Sound, and will utilize horizontal direction drilling ("HDD") at the landing sites to avoid impact to intertidal resources. We identified the location of the cable installation as proximate to mapped estimated habitats of rare wildlife (EH 1366) and priority habitat of rare species (PH 2158). We respectfully request information on the state listed species so we may provide the clients with a necessary list of approvals and permits required to proceed with cable installation.

Please contact me at (978) 897-7100 or via email at sscannell@epsilonassociates.com with any questions regarding this request.

Sincerely,
EPSILON ASSOCIATES, INC.

Sean Scannell

Sean Scannell
Project Scientist

Encl: Request for State-listed Species
Figure 1 – Potential 5th Cable Route
Filing Fee – Check No. 44504

3 Mill & Main Place, Suite 250
Maynard, MA 01754
www.epsilonassociates.com

978 897 7100
FAX 978 897 0099

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

Request for State-listed Species Information

Please complete this form to request state-listed species information from the Natural Heritage & Endangered Species Program for a particular location (please submit only one project per form).

Fee: $50.00, Payable to Comm. of MA – NHESP (as required in 321 CMR 10.17(3))
No fee required if request is for conservation purposes or habitat management *and* you are a non-profit conservation group, government agency or are working with a government agency.

Requestor Information

Name: Sean Scannell
Affiliation: Epsilon Associates, Inc.

Address: 3 Mill & Main Place, Suite 250

City: Maynard
State: MA
Zip Code: 01754

Daytime Phone: 978-897-7100
Ext.
Email address: sscannell@epsilonassociate

Project Information

Project or Site Name: Eversource Energy 5th Submarine Cable from Falmouth to Oak Bluffs

Location: Vineyard Sound
Town: Falmouth, Oak Bluffs, Tisbu

Name of Landowner or Project Proponent (if different from Requestor):

Acreage of the Property:

Description of Proposed Project and Current Site Conditions: (If necessary attach additional sheet)

The Project Location is Vineyard Sound between Falmouth, MA and Oak Bluffs, MA (see the attached Figure). The new submarine cable will be installed via hydroplow construction technique for the majority of the length within Vineyard Sound, and will utilize horizontal directional drilling (“HDD”) ay the landing sites to avoid impact to intertidal resources. Epsilon is conducting due diligence for Eversource Energy to install this 5th submarine cable to improve service reliability for Martha’s Vineyard.

Required: Enclose a map with the site location clearly marked and centered on the page.

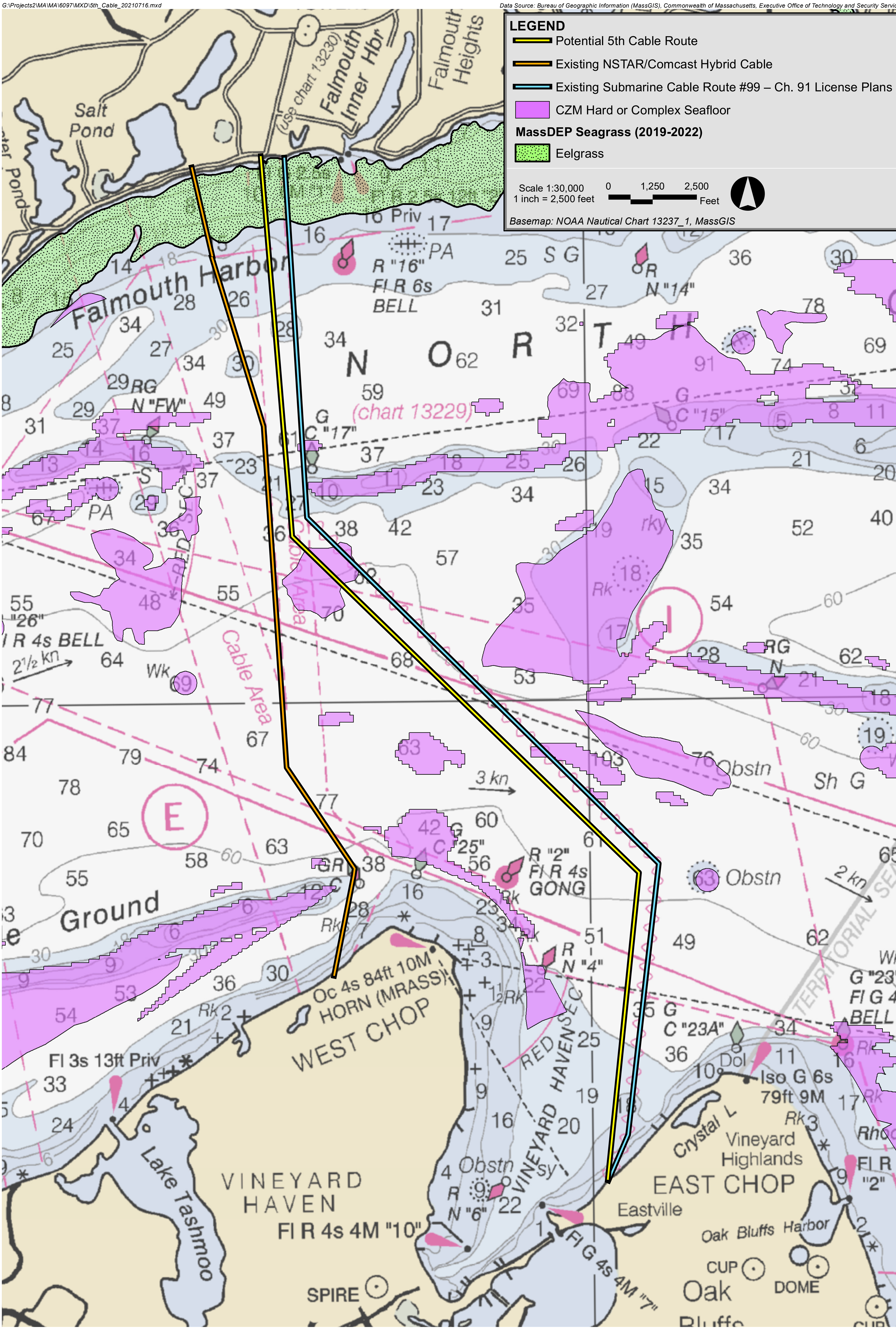
Please **mail** this completed form, a topographic map, and fee (if applicable) to the above address, Attn: Regulatory Review.

If no fee is required, you can email the information to natural.heritage@state.ma.us.

A written response will be returned within 30 days of receipt of all information required.

G:\Projects2\MA\MA\6097\MXD\5th_Cable_20210716.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



5th Cable

Epsilon Associates Inc.

Figure 1

Potential 5th Cable Route

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

December 7, 2021

Sean Scannell
Epsilon Associates, Inc.
3 Mill & Main, Suite 250
Maynard MA 01754

RE: Project Location: Eversource 5th Submarine Cable Falmouth to Oak Bluffs
Town: FALMOUTH, OAK BLUFFS, TISBURY
NHESP Tracking No.: 21-40597

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program of the MA Division of Fisheries & Wildlife (the "Division") for information regarding state-listed rare species in the vicinity of the above referenced site. Based on the information provided, this project site, or a portion thereof, is located **within** *Priority Habitat 2158* (PH 2158) and *Estimated Habitat 1366* (EH 1366) as indicated in the *Massachusetts Natural Heritage Atlas* (15th Edition) for the following state-listed rare species:

Scientific name	Common Name	Taxonomic Group	State Status
Sterna hirundo	Common Tern	Bird	Special Concern
Sterna dougallii	Roseate Tern	Bird	Endangered
Sternula antillarum	Least Tern	Bird	Special Concern

The species listed above are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.mass.gov/nhesp).

Please note that projects and activities located within Priority and/or Estimated Habitat **must** be reviewed by the Division for compliance with the state-listed rare species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00).

Wetlands Protection Act (WPA)

If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the Division so that it is received at the same time as the local conservation commission. If the Division determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, then the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with the Division to discuss potential project design modifications that would avoid adverse effects to rare wildlife habitat.

A streamlined joint MESA/WPA review process is available. When filing a Notice of Intent (NOI), the applicant may file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review. For a copy of the NOI form, please visit the MA Department of Environmental Protection's website: https://www.mass.gov/how-to/wpa-form-3-wetlands-notice-of-intent.

MA Endangered Species Act (MESA)

If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be sent to Natural Heritage Regulatory Review to determine whether a probable Take under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). For a MESA filing checklist and additional information please see our website: https://www.mass.gov/regulatory-review.

We recommend that rare species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to rare species and their habitats is likely to expedite endangered species regulatory review.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. If the purpose of your inquiry is to generate a species list to fulfill the federal Endangered Species Act (16 U.S.C. 1531 et seq.) information requirements for a permit, proposal, or authorization of any kind from a federal agency, we recommend that you contact the National Marine Fisheries Service at (978)281-9328 and use the U.S. Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac). If you have any questions regarding this letter please contact Emily Holt, Endangered Species Review Assistant, at (508) 389-6385.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Assistant Director

Nicole Perlot

From: Hoenig, Amy (FWE) <amy.hoenig@state.ma.us>
Sent: Monday, October 31, 2022 12:23 PM
To: Nicole Perlot
Cc: Glorioso, Lauren (FWE)
Subject: RE: NHESP Tracking # 21-40597

Hello Nicole –

Thank you for the updated information regarding the construction for MV Reliability Project. Please be sure to include specific information regarding the construction schedule and timeline relative to the TOY restriction for state protected coastal birds (April 1 – August 31) with the required forms and materials for review of this project pursuant to the Massachusetts Endangered Species Act. In addition to the construction schedule/timeline, it may be appropriate to provide contingencies for working within or proximate sensitive habitat areas in case of weather delays or other installation/construction delays. For example, the time of year restriction for work within or proximate to nesting habitat (coastal dunes and beaches) begins April 1, and therefore, it may be prudent to include specific measures that would be taken beginning in March should work or associated access have the potential to result in any incursion into the nesting habitat during time of year restriction (e.g., cessation of work, coastal bird monitors, contacts, etc.). The project should describe all measures to reduce or minimize impact as well as site restoration, as appropriate.

Certainly, a streamlined NOI/MESA filing process is an option for the project. This project occurs in multiple municipalities, correct? Do you anticipate a single NOI or one for each municipality?

Thank you,

Amy Hoenig
Endangered Species Review Biologist
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
Temporary phone #: (508) 506-1926
office: (508) 389-6364 | e: Amy.Hoenig@mass.gov
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From: Nicole Perlot <nperlot@epsilonassociates.com>
Sent: Wednesday, October 26, 2022 12:29 PM
To: Glorioso, Lauren (FWE) <lauren.glorioso@mass.gov>; Hoenig, Amy (FWE) <Amy.Hoenig@mass.gov>
Subject: NHESP Tracking # 21-40597

Lauren and Amy,
Thank you for NHESP's comment letter on the Martha's Vineyard Reliability Project to install a new submarine cable between Falmouth and Martha's Vineyard, EEA File # 16562 and NHESP Tracking # 21-40597.
I wanted to confirm that construction is anticipated to take place outside of the TOY breeding period restrictions April 1 – Aug 31.
At this time, can you anticipate any other mitigation measures that may be necessary?

Also, can you confirm that a joint MESA and NOI filing should be acceptable for this project?
Thanks!

Nicole Perlot
Project Scientist

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DMF

Nicole Perlot

From: Logan, John (FWE) <john.logan@state.ma.us>
Sent: Sunday, October 23, 2022 9:15 PM
To: Wilcox, Steve (FWE); Nicole Perlot
Cc: Rousseau, Mark (FWE); Davis, Amanda (FWE)
Subject: RE: EENF 16562 Avoiding Conflict with Trawl Survey

Hi Nicole,

Thanks for reaching out early to our Resource Survey team to avoid potential conflicts during cable laying next Fall. Regarding cable protection, we would prefer to see materials that most closely mimic the habitat where the protection would be required. However, based on reviews of other cable laying projects, it appears that the required area of armoring also varies with material type so there can be a trade-off of habitat value vs. area of impact (and also differences in potential gear conflicts w/commercial fisheries). Ideally, if you could provide a set of proposed armoring alternatives for DMF review, we would be able to offer our input on our preference of the listed alternatives. CZM would also likely have input on this aspect of the project.

Thanks

John

____

John Logan, Ph.D.
Habitat Program
MA Division of Marine Fisheries
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New Bedford, MA 02744
(508) 742-9722
http://www.mass.gov/eea/agencies/dfg/dmf/
https://www.researchgate.net/profile/John_Logan
Join the conversation! DMF is on Twitter, Flickr, Facebook, and YouTube.

From: Wilcox, Steve (FWE) <steve.wilcox@mass.gov>
Sent: Wednesday, October 19, 2022 10:00 AM
To: Nicole Perlot <nperlot@epsilonassociates.com>
Cc: Rousseau, Mark (FWE) <mark.rousseau@mass.gov>; Logan, John (FWE) <john.logan@mass.gov>; Davis, Amanda (FWE) <Amanda.Davis@mass.gov>
Subject: RE: EENF 16562 Avoiding Conflict with Trawl Survey

Hi Nicole,

The MADMF fall trawl survey covers all MA state waters and will take place from September 4 – September 25, 2023. If the cruise goes as scheduled, we will be operating in Nantucket/Vineyard Sound between September 16 - September 25. The survey has randomly selected stations and we have not selected the fall 2023 sites yet. I've attached a map that shows all our historic tow lines (1978-2022) within the area you mentioned. Please let me know if I need to extend the map further in any direction. The survey is confined by bottom type and cannot tow on rocky/broken bottom. High currents, areas that are too shallow, and other obstacles also hinder our ability to tow the net. The map should give a good representation of the areas within this region we can successfully survey.

- If the planned cable route does not go through any historical tow lines, or if the planned installation dates do not land between 9/16/2023 – 9/25/2023, there shouldn't be any overlap between our projects
- If the route does go through historical tow lines and installation is planned during 9/16-9/25, we can check for overlap with our stations once they are selected.

I am copying some folks from the habitat team to assist with your question related to cable protection.

Will you be able to provide detailed information or a shapefile post installation about where the cable was buried vs armored? This information will be used for future station selection and tow planning efforts.

Please let me know if there are any other questions that I can answer.

Thanks,

Steve

Steve Wilcox
Senior Marine Fisheries Biologist
Resource Assessment Project
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From: Nicole Perlot <nperlot@epsilonassociates.com>
Sent: Tuesday, October 18, 2022 3:48 PM
To: Wilcox, Steve (FWE) <steve.wilcox@mass.gov>
Subject: EENF 16562 Avoiding Conflict with Trawl Survey

Hi Steve,

EENF 16562 is for the Martha's Vineyard Reliability Project, which involves hydroplow activities to lay a submarine cable in Vineyard Sound between Falmouth and Oak Bluffs. This work is currently scheduled for fall 2023, and is expected to take 20 days. As we work to refine this schedule to a more specific date, could you provide any more detailed information of when and where the trawl survey usually takes place so we can do our best to avoid conflicting routes? Additionally, we are looking at cable protection measures if the cable is unable to be buried to the desired depth in bolder or cobble areas. Does DMF have any preferences or recommendations in regard to cable protection?

Nicole Perlot
Project Scientist

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Attachment F

Preliminary Inadvertent Release Contingency Plan

Inadvertent Release Contingency Plan for Horizontal Directional Drilling

Martha's Vineyard Reliability Project
Falmouth, MA and Oak Bluffs, MA

Prepared for:
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
Westwood MA, 02090

Prepared by:
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754

April 15, 2022

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1.0 INTRODUCTION

NSTAR Electric Company d/b/a Eversource Energy ("Eversource") proposes the Martha's Vineyard Reliability Project which involves constructing a submarine cable across Vineyard Sound. The Project is needed to improve the reliability of Eversource's distribution system to and on Martha's Vineyard. The proposed Martha's Vineyard Reliability Project includes an approximately 2.7-mile underground duct bank and manhole system which will house the onshore distribution cable from the existing Eversource Stephens Lane Substation in Falmouth to the paved parking lot at the intersection of Surf Drive and Shore Street in Falmouth. The cable will then span an approximate 6.8-mile submarine route across Vineyard Sound to a landfall site off Eastville Avenue in Oak Bluffs on Martha's Vineyard. An approximate 0.25-mile underground duct bank and manhole system will house the onshore distribution cable from the landfall site to an existing Eversource parcel off Eastville Avenue. New equipment will be installed in the existing Eversource Substation in Falmouth, and a new driveway, manholes, and equipment will be installed in the Eversource Parcel in Oak Bluffs to facilitate the connection of the new cable to the grid. Combined these elements comprise the "Project."

Eversource proposes that the cable be installed via Horizontal Directional Drilling ("HDD") at each landfall site, in both Falmouth and Oak Bluffs, to avoid potential impacts to coastal wetland resource areas and Special, Sensitive, or Unique ("SSU") resources. This draft Inadvertent Release Contingency Plan ("IR Plan") was developed to support the environmental permit applications and provide information to bidders responding to Eversource's Request for Proposals to construct the Project. The selected HDD contractor will be tasked to develop a site- and project-specific IR Plan based on their construction means, method and equipment.

A primary potential environmental concern associated with HDD involves the inadvertent release ("IR") of drilling fluids during the drilling process. The purpose of this draft IR Plan is to establish general procedures to prevent a fluid release (or frac-out) during HDD construction and to outline the steps to manage, control and minimize the impacts in the event that an IR of drilling fluid occurs. The objectives of this plan are to:

- Provide an overview of the HDD process with a specific focus on the management and use of drilling fluids;
- Identify controls to be implemented during construction to minimize the potential of an IR;
- Provide a means of monitoring to permit early detection of IRs;
- Protect areas that are considered environmentally sensitive (coastal resources, biological resources, or cultural resources);
- Establish the baseline site-specific environmental protection measures to utilize prior to, during, and following drilling and pipe installation activities to minimize and control erosion and sediment releases to adjoining resources;

- Establish the baseline for a general response program for construction that is understood and can be implemented immediately by field crews in the event of an IR of drilling fluid occurs; and

- Establish the baseline for a chain of command for reporting and notifying, in a timely manner, the construction management team, the Owner, and the proper authorities in the event of an IR of drilling fluid and of the response actions that are to be implemented.

It is important to note that this document serves as the preliminary framework for the Contractor's submittal presenting a site- and-contractor-specific IR Plan consistent with the site conditions and constraints, and the Contractor's selected means, methods and equipment. This plan was prepared to support the environmental permit applications and will be updated with the selected Contractor's specific information prior to the start of HDD construction. The selected HDD Contractor will be responsible for incorporating specific permit conditions, applicable regulatory requirements, site specific environmental features and geotechnical information into its IR Plan. The final plan will be submitted for review and approval by Eversource's environmental representative prior to the start of construction.

2.0 DESCRIPTION OF HDD PROCESS

The construction sequence for installation via HDD at the landfalls will consist of the following methods:

- <u>Approach Pit</u>: Land-based HDD rigs are typically staged behind an approach pit, which for this Project will measure approximately 10 by 20 feet for the drill path entry point. The approach pit will provide the contractor with access to the proper trajectory for drilling and will also serve as a reservoir for drilling fluids (i.e., a slurry consisting predominantly of water and bentonite, a naturally occurring, inert and non-toxic clay) used to extract material from the drill head.

- <u>Pilot Hole</u>: A small diameter pilot hole will be drilled from the approach pit to the pre-determined location offshore where typical offshore cable installation will terminate. The pilot hole will be drilled at an angle of typically 8 to 18 degrees such that it arcs down beneath the nearshore coastal resources and extends to a depth of approximately 25 to 35 feet beneath the surface of the seafloor. The path of the pilot hole will then arc back up towards the desired point on the seafloor that will be the transition point offshore cable installation and the seaward end of the HDD. Drilling fluid (a bentonite slurry) will cool and lubricate the drill bit, stem, and other equipment, and will also serve to seal the sides of the bore.

- <u>Surfacing of HDD Pilot Hole</u>: Given the coarse-grained nature of sediments at the HDD exit hole location and the small diameter of the pilot hole, little to no turbidity is expected as the drill head reaches the seafloor surface. Although not anticipated, a small amount of bentonite clay could be released at the exit point of the HDD operation. Where the pilot hole exits the seafloor, it is expected that the contractor will lower a gravity cell (typically a 20-foot by 20-foot steel box, similar to a trench box) at the exit hole to retain any incidental bentonite drilling fluid released when the pilot drill "punches out."

The drilling fluid (typically bentonite and water based with selected polymers/additives to improve and modify fluid and drilling properties to address site-specific ground characteristics) is pumped through nozzles in the drill head to support the hole and to hydraulically transport drill cuttings from the drill bit back to the entry pit. Environmentally acceptable polymers and additives may be used on this project. Bentonite clay is an inert, naturally occurring substance and is appropriate for use in sensitive environments because it poses minimal environmental risks; for this reason, bentonite is commonly used for the HDD process. Nevertheless, the contractor will minimize the amount of bentonite near the exit hole and will have controls near the exit hole to minimize and contain any bentonite. Any bentonite retained by the gravity cell will be removed before the gravity cell is removed.

- Reaming and HDPE Conduit Insertion: After the pilot hole is established, the cutter head will be replaced with a larger diameter cutter head, or reamer. Upsizing of the bore hole is achieved by reaming the hole with successively larger cutter heads. The current plan is that the reaming passes will not punch out of the exit hole with each pass to minimize the volume of cutting fluids released during the reaming operation. Only for the final pass will the reamer punch out.

  The HDPE pipe lengths will be thermally fused and staged either onshore or offshore depending on the pulling direction for the pull-in. Lastly, the drill string is pulled back through the bore hole with the new interconnection HDPE conduit attached. The pullback will be one continuous until the lead end of the conduit reaches the entry pit.

- Cable Insertion and Transition: Upon conclusion of the reaming and conduit pullback, the end of the conduit will be capped and remain exposed on the seafloor. The conduit will likely have a messenger wire passing through it with a cap on each end until the cable is installed. Divers will assist with the messenger line retrieval/operations and perform cable pull-in monitoring while the submarine cable is inserted into the conduit and pulled through the conduit to the land connection.

- Disposal of drill cuttings and drill fluids: The HDD installation method will produce a slurry of two co-mingled byproducts: drill cuttings and excess drill fluids (water and bentonite clay). During drilling, this slurry will be collected from the reservoir pit and will be processed through a filter/recycling system where drill cuttings (solids) will be separated from reusable drill fluids. Non-reusable material consisting of drill cuttings and excess drill fluids will be trucked to an appropriate disposal site.

- Landward Manholes and Infrastructure: The submarine cable will be pulled back through the conduit installed via HDD, from which it will enter the transition vault or manhole, where it will transition to onshore cabling.

- Site Restoration: The contractor will restore the approach pit work area to match existing conditions. Any paved areas that disturbed for the HDD will be properly repaved, per the Company's agreement with the Towns of Falmouth and Oak Bluffs.

Specific to this plan, it is important to have an awareness of the function and composition of the HDD drilling fluids. The drilling fluid composition and drilling fluid management are integral components of the HDD process with the following purposes:

- Support and stabilize the drill hole,
- Suspend and transport cuttings from drill bit through the drill hole annulus,
- Control fluid loss through the bore's side walls by forming a filter cake on the bore hole walls,
- Managing and modifying the drilling fluid mix to improve its cutting carrying characteristics, its pumpability, and its hole stabilization and support characteristics,
- Power the downhole cutting tools (e.g., via mud motors if required); and,
- Serve as a coolant and lubricant to the drill bit during the drilling process, and lubricant during the pipe insertion process.

The drilling fluids are composed primarily of potable water, which will likely be obtained from municipal or private sources. As mentioned above, the drilling fluid also contains bentonite clay as a means to increase viscosity. Bentonite is a naturally occurring, nontoxic, inert substance that meets NSF/ANSI 60 NSF Drinking Water Additives Standards and is frequently used for drilling potable water wells. While bentonite is non-toxic and commonly used in farming practices, it has the potential to impact plants, fish and their eggs if discharged to waterways in significant quantities. Frequently, additives are used to: amend the drilling fluid, improve its compatibility with the ground and groundwater chemical characteristics, improve its cutting suspension and carrying characteristics, improve its hole stabilization ability, and reduce seepage loss through the ground characteristics. Environmentally acceptable additives are required for this project.

During the HDD process and subsequent conduit insertion, the drilling fluid pumped downhole will tend to flow along the path of least resistance. Generally, this will be through the annulus between the drill string and the drill hole side wall. However, the bore alignment may encounter ground conditions where the path of least resistance is an existing fracture, fissure or hole of anthropogenic origin, areas with low overburden confinement, or coarse sand/gravel zones in the soil. When this occurs, circulation can be lost or reduced. This is a common occurrence in the HDD process, but does not necessarily prevent completion of the bore or result in a release to the environment. Drilling fluid seepage associated with IR's are most likely to occur near the bore entry and exit points where the drill head is shallow. They infrequently occur at other deeper locations along the directional bore path. Again, environmentally acceptable additives to amend the properties of the drilling fluid will be used as necessary to prevent and limit releases and losses through such paths of lower flow resistance.

3.0 ORGANIZATION AND STAFF RESPONSIBILITIES

Responsibilities of Various Organizations

The principal organizations involved in this project include the Regulatory Agencies, Owner, Design Engineer, and HDD Construction Contractor. The roles and responsibilities of the principal organizations relative to HDD are discussed in the following subsections.

Regulatory Agencies

Eversource is working to obtain necessary permit authorizations and approvals to implement the Project. Anticipated regulatory agencies reviewing and issuing permits include:

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers ("USACE")	Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 Individual Permit
U.S. Coast Guard ("USCG")	Notice to Mariners
State	
Massachusetts Department of Environmental Protection ("MassDEP")	Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act Chapter 91 Waterways License
Local	
Falmouth Conservation Commission	Massachusetts Wetlands Protection Act ("WPA") Order of Conditions
Tisbury Conservation Commission	WPA Order of Conditions

Owner

Eversource is the "Owner". Eversource will provide Construction Manager(s) and Environmental Monitoring for the Project and will be responsible for correspondence and coordination among the parties including the HDD contractor and the Design Engineer.

Design Engineer

The Design Engineer for the HDD Design has yet to be selected. During construction, the Design Engineer will be responsible for reviewing and accepting required contractor submittals, shop drawings, and material certificates. The Owner in coordination with the Design Engineer will take responsibility for review and acceptance of submittals, and documenting the materials and methods used comply with the contract documents.

HDD Construction Contractor

The HDD Construction Contractor ("HDD Contractor") for this Project has yet to be selected. The HDD Contractor will be responsible to complete the pipe installation by HDD in accordance with the design criteria, contract documents, environmental compliance permits and local, state, and federal regulations. The HDD Contractor will be expected to use the appropriate construction procedures and techniques to complete the installation, including a site- and contractor-specific means and methods IR Plan prepared by the Contractor in accordance with the contract documents.

The HDD Drill Operator ("Drill Operator") will be responsible for operating the HDD drill rig and observing and managing changes in annular fluid pressure or loss of circulation. The Drill Operator will communicate with other members of the drill crew as needed when issues arise. The HDD Contractor will be responsible for developing the specific lines of communication within their organization and shall dedicate a responsible person for communicating IRs to the Owner's Construction Management team and Environmental Monitor.

Lines of Communication and Authority

In the case of a detected or suspected IR of drilling fluids from the boring, the Drilling Operator will notify the HDD Contractor's foreman or superintendent and the Owner's Construction Manager immediately. The Owner will be responsible for notifying regulatory agencies, as necessary.

Training

The HDD Contractor will ensure that all construction personnel have appropriate environmental training before beginning work. Eversource's Environmental Monitor will also conduct a project orientation and field training meeting for staff assigned with specific roles during the HDD installation and will review the site-specific environmental concerns and permit conditions. The Owner and Design Engineer will also attend the orientation meeting to review the procedures that will be used to document IRs in accordance with the HDD specifications.

4.0 FLUID RELEASE MINIMIZATION MEASURES

HDD Design

The HDD crossings are being designed to reduce the potential risk of an inadvertent fluid release during construction. Design considerations include:

- Generally, for the formation of IRs, the more critical stage of the HDD process tends to be during the initial pilot hole drilling when the annular space between the bore sidewall and the drill string is the smallest;
- Adjusting the drill alignment to miss existing infrastructure including existing utilities;

- Establishing a drill alignment line that allows for gradual angular changes to minimize pressure build-up;

- Requiring drilling fluid composition and drilling procedures that minimize drilling fluid pressures;

- Requiring drilling fluids that adequately address site-specific drilling concerns while posing the least threat to the environment;

- Preliminary analyses indicate that the likely potential IR to the ground surface is the first 25 feet after the entry pit, and the last 25 feet before the exit pit. This is common for HDD operations as the bore approaches the surface. For both HDD operations, entry will occur in a paved parking area and exit will occur in land under the ocean; and

- The Contractor should consider utilizing real-time annular pressure monitoring with the use of a down-hole annular pressure tool throughout pilot hole drilling operations, or provide alternative monitoring methods and/or best drilling practices to so that the drilled and bored (reamed) holes do not become plugged with drill cuttings leading to hydrofracture and IR.

Contingency Plan

As mentioned above, prior to construction the selected HDD Contractor will be required to submit a final Site- and Contractor-Specific Inadvertent Release Contingency Plan for review and acceptance by the Owner. The project specifications will require that the following major elements be addressed in detail in the Contractor's Plan:

- Work plan and detailed description of the drilling program (details for executing pilot hole, reaming, pull-back operations, and schedule), this plan will include necessary procedures for addressing problems that are typically encountered during HDD installations through the anticipated subsurface for each drill location, including the use of a gravity cell, or other acceptable method, to retain drilling fluids at the exit point;

- Drilling fluid composition design and on-hand amendments to alter fluid properties to reduce pressures, potential for plugging, and seepage losses;

- Description of the proposed drilling equipment and drill site layout;

- Material Safety Data Sheet ("MSDS") information for all drilling fluid products proposed for use;

- Procedures for drilling fluid pressure control, and fluid and pressure loss monitoring and management to aid in the detection of an IR (i.e., metering of makeup water, recording of drilling fluid product quantities utilized, fluid return volumes, fluid and cuttings disposal quantities, turbidity of surface water, etc.);

- Contingency plans for addressing IRs into water, which includes the specific procedures used to halt the release and then contain, clean-up, and remove materials from the release site;

- Notification procedures and chain-of-command in the event of a release;
- Criteria for evaluating the need for a drill hole abandonment and the associated plan for sealing the drill hole if abandoned; and,
- Drilling fluid management and disposal procedures.

The workspace layout for HDD materials and equipment will be configured to reduce the likelihood of a release. The entry and exit points are setback from the shoreline to allow detection and response, in the event of a release. Erosion and sediment control measures will be placed between the entry location and the beach.

Emergency Response Equipment

In addition to providing a site-specific IR Plan, the HDD Contractor will be responsible for implementing the necessary safeguards to minimize the likelihood of a fluid release and management/control should a release occur. The contractor will also have a remediation contractor on call should additional support be needed during an IR. To maximize protection to sensitive environmental areas, many of these measures will be: pre-positioned at the site, readily available and operational prior to the start of drilling. Such additional spill response will be employed immediately, as secondary measures, in the event of a fluid release. Emergency response equipment may include, but is not limited to:

- Vacuum trucks
- Boats or similar vessel to facilitate a water response
- High power pumps
- Hoses with suction heads
- Sediment controls
- Storage tanks/drums for drilling muds
- Absorbent booms
- Plastic sheeting
- Conventional clean up items: shovels, push brooms, squeegees, pails
- Supporting equipment: light plant with generator, light towers, electrical cords, extra radios, cellular phones, batteries, flashlights, lanterns

Early Fluid Release Detection

The HDD method has the potential for seepage or fluid loss into pervious geologic formations through which the bore path crosses. This may occur because of, low overburden confinement, or from seepage through porous soils such as coarse sand and gravel. It is important to note that IRs of drilling fluid can occur even if the down-hole pressures are minimal. Subsurface conditions that could be conducive and lead to IRs or drill difficulties include:

- Highly permeable soil such as cobbles and gravel;
- Considerable differences in the elevations of HDD entry and exit points (typically greater than 50 feet);
- Disturbed soil, such as unconsolidated fill; and,
- Soft soils with low overburden capacity.

An experienced drill crew is the most effective measure to detect reaction to drilling fluid seepage prior to a surface release and promptly stop the drilling, and they can modify the drilling fluid composition, properties and pressures to address indications of loss of drill fluid. The HDD Contractor will be required to utilize experienced drill crews as the HDD alignment is adjacent to environmentally sensitive areas. The following factors can be used to identify the potential for drill fluid release:

- The loss of pressure within the drill hole utilizing a downhole pressure monitoring system;
- A substantial reduction in the volume of return fluid (loss of circulation); and
- The lack of drill cuttings returning in the drill fluid

In addition to an experienced drill crew, the HDD Contractor will be required to perform periodic (at least twice a day) visual inspection and monitoring of the drill bit or reaming bit for signs of an IR. If visual monitoring indicates a potential release, additional measures such as turbidity measurements and bentonite accumulation measurements will be required.

5.0 INADVERTENT RELEASE MONITORING AND NOTIFICATIONS

The HDD Contractor is responsible for monitoring the drilling operation to detect a potential IR by observing and documenting the flow characteristics of drilling fluid returns to the HDD entry/exit pits and by visual inspection along the drill path. If drilling fluid to the HDD entry/exit pits are lost, the HDD Contractor shall implement the following steps:

- The Drill Operator will monitor and document pertinent drilling parameters/conditions and observe and monitor the drill path for evidence of an IR. If there is evidence (typically visual) of a release, the contractor will be required to stop the drilling immediately;
- The HDD Contractor will notify the Owner’s Construction Manager or Environmental Monitor of significant loss of drilling fluid returns at the drill rig;
- The HDD Contractor will take steps to modify the drill fluid properties and pressures to reduce the potential of drill fluid loss or release; and

- The Drill Operator will take steps to restore drilling fluid circulation in accordance with the requirements of the HDD technical specifications.

If a fluid release is identified, an immediate response is necessary and the proper corrective actions must be taken to minimize impacts to environmentally sensitive resources (e.g., watercourse, waterbodies, and wetlands).

Inadvertent Release Notification

The Drill Crew will notify the Owner's Construction Manager or Environmental Monitor immediately if an IR is identified regardless of its location. The HDD Contractor will be responsible for notifying applicable regulatory agencies, as necessary. IRs that occur within uplands that are properly contained and removed from the site may not be reported to regulatory agencies at the discretion of the Owner. The HDD Contractor shall not resume HDD activities until the release is controlled and confirmation has been received from the proper authorities. The Owner's Construction Manager will notify the HDD Contractor when HDD drilling operations may resume.

6.0 INADVERTENT RELEASE RESPONSE (UPLAND)

If the IR is **terrestrial** the following specific processes will be followed:

- Contain any surface IRs by use of conventional sediment controls

- In the event of an excessively large IR, a spill response team (e.g., Clean Harbors) would be called to assist the contractor in containment and cleanup of excess drilling fluid in the water. Phone numbers of the spill response team will be available on site at all times

- Place pumps or vacuum equipment at source of IR to recover drilling fluid and into containment tanks and disposed of at an approved facility.

A common reason for upward movement and release of drill fluid is from pressure exerted by drill pumps. Lowering drill fluid pressure is a first step to limiting a release and can be accomplished by stopping drill rig pumps and allowing pressure to bleed off. With no pumping pressure in the hole, surface seepage will generally stop, then the HDD Contractor can trip the drill steel back a selected distance and attempt to clear cuttings from the annulus to re-establish circulation.

The contractor will be required to contain/isolate and remove fluid that released to the surface. On land this can be done through use of berms, straw bales, or silt fence in conjunction with excavating a small sump if needed. Sufficient spill-absorbent material will also be available on-site.

If a release is identified in an upland area, the HDD Contractor will be required to immediately respond as described above to limit the extent of the release. After containment is established, cleanup and removal can be conducted by hand, with vacuum trucks, or other equipment. The Environmental Monitor will be present during clean up and removal activities, as they may need to be conducted outside of the pre-authorized temporary workspace areas. The Environmental Monitor, Construction Manager, and the HDD Contractor will work closely to determine the best course of action for IRs occurring within upland areas.

Upon containment of the release, the HDD Contractor will be required to evaluate the cause of the seepage and develop mitigation strategies to limit the likelihood of recurrence. The location of the seepage and the area around the seep will be monitored upon the re-start of the HDD operations for changes in conditions. The segments of borehole nearest the entry points and other areas of low overburden cover tend to be the most susceptible to surface seepage as they have the least amount of soil confinement. These locations may have areas of dry land where seepage detection is easily identified and contained. If areas of high risk for IRs are identified during the HDD design phase, they can be protected from an uncontrolled release through use of strategically placed confinement/filter beds, straw bales, silt fence, or earthen berms placed prior to the start of drilling. Introduction of non-toxic, engineer approved, "Loss Circulation Materials" as in cotton seed hulls, newspaper, cedar fibers or corn cobs may be introduced to help regain circulation and prevent further IR's.

7.0 INADVERTENT RELEASE RESPONSE (IN WATER)

If the IR is in the water the following specific processes will be followed:

- The underwater release point will be identified
- In the event of an excessively large IR, a spill response team (e.g., Clean Harbors) would be called to assist the contractor to contain and cleanup of excess drilling mud in the water. Phone numbers of the spill response team will be available be on site (see below section regarding Emergency Response Equipment for more detail)
- A Gravity Cell (trench box) or similar barrier will be deployed at the IR or release point to help contain the release.
- A dive team will then be deployed to help clean up the fluid release.
- Divers will place pumps or vacuum equipment at source of IR to recover drilling fluid and place removed material in containment tanks and disposed of at an approved land-based facility.

If an IR occurs within the water, the HDD Contractor will be required to cease drilling operations, reduce pressures in the borehole immediately, and notify the Owner's Construction Manager and Environmental Monitor. The Environmental Monitor, with input from the Drill Operator, will evaluate the potential impact of the release on a site-specific basis and will determine the appropriate course of action. The contractor will be required to develop general response methods for marine resource area(s) and pre-place necessary materials and equipment at the site prior to construction. Specific response actions will be determined in consultation with the Environmental Monitor and Contractor and could include the following:

- Shutting down or slowing the drill fluid pumps – slowing fluid pumps is preferred because there are risks to the complete shut down;
- Modifying the drill fluid properties, add agents to reduce drilling fluid pressures and/or to plug/seal release path;
- Tripping the drill steel back a selected distance and attempt to clear cuttings from the annulus to re-establish circulation
- Stopping drilling activities for 24 hours to allow the bentonite in the subsurface pathways to gel and seal the pathways;
- Evaluate the current drill methods to identify site specific improvements to lower the risk of additional IRs;
- Implementation of proper in-water control measures including, but not limited to gravity cells, silt curtains, and turbidity curtains. These activities will require that qualified personal and equipment and other support materials, and supplies be prepositioned and readily available at or near the site; and

8.0 DRILL HOLE ABANDONMENT PLAN

In the event the HDD Contractor must abandon a drilled hole, a plan to fill the abandoned hole will be implemented as outlined in the contractor's project-specific Inadvertent Release Contingency Plan and an alternative plan/alignment for the HDD landfall will be evaluated. If it becomes necessary to abandon a partially completed hole, the abandoned hole will be filled with a mixture of high-yield bentonite, water, and drill spoil. The first ten feet of the bore path will be compacted and filled with soil to prevent future settlement. The HDD Contractor's site-specific abandonment plan will be accepted by the Design Engineer and Owner prior to being performed in the field.

After the abandoned hole is filled, an alternate entry and exit hole and bore path alignment will be evaluated by the HDD Contractor, Owner, and the Design Engineer. The new alignment will be offset from the abandoned hole by at least 10 feet (except at the ends where a 5-foot offset may be used) to help limit the risk of steering difficulties due to the presence of or hydraulic connection causing drill fluid loss to the abandoned hole.

Attachment G

Marine Survey Report

GEOPHYSICAL AND UNDERWATER VIDEO SURVEYS SEDIMENT SAMPLING EVERSOURCE 5TH CABLE

Vineyard Sound, Falmouth and Vineyard Haven, MA

Red transects of Gravel Pavement (boulders) in deeper water of the southern half of the Eversource 5th Cable Corridor

Diverse Colonizers at VS-19 72 ft below MLLW - Sulfur Sponge, Northern Star Coral, and Juvenile Sea Bass

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March 2022

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APPENDICES

1.0 INTRODUCTION

CR Environmental, Inc. (CR) conducted bathymetric and geophysical surveys, a towed underwater video survey and sediment sampling to characterize the proposed 5th Cable corridor between Oak Bluffs and Falmouth, Massachusetts (Figure 1). The survey area consisted of approximately 3.16 km^2 spanning 10 km of Vineyard Sound. Survey components included: towed underwater video; multibeam bathymetry and backscatter; side scan sonar; sub-bottom sonar; and magnetometry. The survey operation was based out of Falmouth Harbor. Hydrographic and geophysical operations were conducted first to ensure safe deployment of the video system and selection of sediment sampling stations. The survey and sampling efforts were executed between August 19 and November 22, 2021. Remote sensing data acquisition was completed on September 14th. The underwater video survey was conducted between September 29 and October 1. Sediment sampling was conducted between November 17 and 22. Towed underwater video transects and sediment sample locations were cleared by marine archaeologists at Gray & Pape, Inc. prior to work commencing.

CR's survey and processing methods were designed to allow synergistic analysis of data from multiple sensors using GIS software to provide accurate mapping of surface and sub-surface characteristics and features of interest within the survey area.

2.0 DATA ACQUISITION AND PROCESSING METHODS

2.1 Bathymetric and Geophysical Survey Methods

2.1.1 Vessels and Navigation

Multibeam bathymetry, towed side scan sonar, and magnetometry surveys were conducted using CR's 25-foot vessel *Cyprinodon*. To expedite data acquisition sub-bottom profiling was conducted using the 24-foot vessel *Hayden Jane.* Each vessel was equipped with a side-mounted transducer pole and clean 110-volt power supplies. The surveys were designed and supervised by a NSPS Certified Hydrographer. The survey crews included qualified hydrographers, USCG licensed vessel captains and crew members familiar with deployment and retrieval of towed instruments. Vessel positioning was performed using a Hemisphere VS-330 RTK GPS system and HYPACK survey software.

Transect spacing for sub-bottom sonar and magnetometer surveys was set to 50 ft (15.2 m) per Massachusetts Board of Underwater Archaeological Resources (MBUAR) requirements (Figure 1). Bathymetric and side scan sonar data were simultaneously collected along these transects, yielding greater than 200-percent seafloor coverage for these sensors. Additional multibeam transects were occupied in shallow areas to achieve full seafloor coverage. Cross-line transect spacing for multibeam bathymetry and sub-bottom sonar was set to 1,640 ft (500 m). Towed underwater video data were collected along transects spaced approximately 1,000 ft (305 m) apart oriented perpendicular to the survey corridor alignment.

2.1.2 Bathymetry and Acoustic Backscatter

Multibeam bathymetric data were collected in waters deeper than approximately 3 m Mean Lower Low Water (MLLW) using a Teledyne Reson T20-R multibeam echo sounder (MBES). Approximately 317 km (197 miles) of transects were occupied. In addition to high-resolution bathymetry, the T20-R MBES recorded high-resolution quantitative backscatter ("Snippets") and side scan sonar data. These backscatter data allowed mapping of the distribution of surficial sediment texture (roughness). Motion and heading corrections were provided by an IxBlue OCTANS V fiber-optic geocompass. Corrections for water surface fluctuations were acquired using the Hemisphere RTK GPS system and verified using tide data collected by a digital water level recorder installed adjacent to a shoreline benchmark established on a wooden pier at the mouth of Falmouth Harbor. The benchmark was surveyed using RTK GPS. The benchmark elevation was 1.356 m NAVD88 (0.966 m MLLW). MBES system components were interfaced to a computer running HYPACK acquisition and processing software.

MBES data were acquired using a transmit frequency of 250-kHz and a 0.039 millisecond pulse. Power and gain settings remained constant throughout the survey to minimize backscatter differences between transects. Using this frequency the MBES beam angle was approximately 1.75 degrees with an acoustic footprint of 0.24 m^2 to 1.27 m^2 across the swath at the mean site depth.

Patch calibration tests were performed daily to verify angular offsets between the MBES transducer and the motion/heading sensor. Water column sound velocity was determined at the beginning and end of each survey day by collecting profiles using an AML Minos-X sound velocity profiler. The water column was well mixed during the survey. Transducer draft was verified daily using the "Bar Check" method, in which a metal plate is lowered to a known depth beneath the transducer. Echo sounder depths consistently matched the bar depth to within 1 cm.

MBES data were processed using HYPACK L]W[IIT† software. Components of processing included removal of outlying soundings associated with water column interference (e.g., vegetation, fish), application of sound velocity profiles and conversion of soundings to MLLW elevations using RTK GPS and tide gage data. Bathymetric data were filtered to accept only beams falling within an angular limit of 55° from nadir (vertical). Multibeam data were exported as an ASCII space delimited text file using the average elevation in 1 m x 1 m cells per US ACOE recommendations (US ACOE, 2013). A grid was created from this data to facilitate visualization and interpretation. The grid and a 3-dimensional surface visualization were provided to Gray and Pape, Inc. to aid their archaeological review of data.

Bathymetric data accuracy and uncertainty was quantified using comparisons between data collected on primary transects and on perpendicular cross-lines. These differences were statistically analyzed and tabulated for comparison with accuracy recommendations published by the US Army Corps of Engineers (US ACOE, 2013).

2.1.2.1 Multibeam backscatter processing

The MBES system recorded backscatter data in Snippets and side scan formats. A backscatter Snippet is the series of amplitude values in the signal reflected from a beam's footprint on the seabed. One Snippet is produced for each of the T20-R system's 256 beams for each sonar ping. These backscatter data were processed using HYPACK's implementation of GeoCoder software developed by NOAA's Center for Coastal and Ocean Mapping Joint Hydrographic Center (CCOM/JHC). GeoCoder was used to create a mosaic best suited for substrate characterization through the use of innovative beam-angle correction algorithms.

Snippets data were extracted from cleaned files and a mosaic of beam time-series (BTS) backscatter data was created using GeoCoder, and was exported in grey-scale TIF raster format. BTS data for the survey were also exported in ASCII format with fields for Easting, Northing, and backscatter (dB) using a 0.20 m cell resolution. These data were gridded and used to develop a map of seabed backscatter values (sediment roughness). The grid was converted to ESRI raster format to facilitate comparison with other data layers using GIS software. A second raster was produced by applying a mild Gaussian filter to the grid to minimize near nadir artifacts.

MBES side scan data were processed using Chesapeake Technology, Inc. SonarWiz software. Processing steps included water column removal and application of moderate time-varied gain to raw files. Data were exported as a GeoTIF mosaic with a pixel resolution of 0.25 m x 0.25 m.

2.1.3 Side Scan Sonar

Towed side scan sonar data were acquired using an Edgetech, Inc. Model 4125 400/900 kHz system. The system was interfaced to a computer running Edgetech, Inc. Discover acquisition software. The acquisition computer was interfaced to a Hemisphere RTK GPS system via serial connection.

Sonar data were collected using both 400- and 900–kHz frequencies and 25 - 50 meter range scale to accommodate the range of water depths encountered over the survey area while maximizing image resolution. Survey transects were spaced to ensure greater than 100 percent insonification of the seabed, often greater than 300-percent. The survey team prioritized maintenance of appropriate sonar altitude despite strong currents.

Towed side scan data were processed using SonarWiz software. Data were first corrected for towfish layback and signal attenuation. The position of the towfish was calculated in real-time using a HYPACK mobile device utility which considers "cable out" relative to the GPS antenna, the cable catenary curve, and the effects of vessel course corrections. Layback corrections were further adjusted and verified during post processing using targets visible on parallel files with opposite courses. These corrected data were converted to XTF format and provided to Gray and Pape, Inc. to aid their archaeological review of data.

CR created mosaics of 400- and 900-kHz data in georeferenced TIF format suitable for analysis using GIS or CAD software. Targets (Contacts) of potential interest were digitized from 900-kHz data in SonarWiz. Each Contact was measured, described and tabulated. High resolution images have been provided for each Contact

2.1.4 Sub-Bottom Sonar

Sub-bottom sonar data were acquired using an Innomar Compact profiling system interfaced to a RTK GPS system. The GPS antenna was installed directly above the transducer and no layback offsets were required. The transmit beamwidth of the system is approximately 2-degrees. Transmit power was optimized and signal gain dynamically adjusted to minimize clipping (signal saturation) of hard-bottom reflectors while maximizing penetration. The system was operated using an 8-kHz center frequency. Data were recorded in Innomar "RAW" data format using Innomar's SESWIN software.

Sub-bottom data were processed using Chesapeake Technology's SonarWiz software. Appropriate adjustments to time-varied gain (TVG) were made during processing. Data were converted from Innomar's proprietary "RAW" format and exported in SEG-Y format. These data were delivered to Gray and Pape, Inc. to aid their archaeological review of data.

CR digitized the seafloor for each profile. CR next carefully inspected each sub-bottom profile for the presence of buried features of interest. The "acoustic basement" was digitized for each profile. In the context of this project, acoustic basement is the maximum interpreted sonar penetration (i.e., maximum overburden thickness). In some instances, this basement may clearly indicate the surface of ledge, in others an acoustically opaque or diffuse layer due to scattering (e.g., coarse gravel), and in others the presence of entrained natural gases associated with microbial activity. A combined ASCII text layer was exported from "thickness" layers computed by subtracting seafloor depth from basement depth. These data were converted to grid format and filtered to remove artifacts. Sub-bottom profiles were exported in JPG format with accompanying GIS shapefiles (polylines) of navigation data.

2.1.5 Magnetics

Magnetic data were acquired using a Marine Magnetics, Inc. Explorer high resolution marine magnetometer system. Transect spacing was set to 50 ft to comply with MBUAR requirements. The magnetic data acquisition system consisted of a towfish-mounted Overhauser magnetic sensor and pressure/depth sensor, an onboard power supply and serial interface, and a data acquisition computer. The 4-Hz data stream from the magnetic sensor was routed to the HYPACK navigation computer via serial port, and HYPACK recorded magnetic readings in gammas (1.0 gamma = 1 nanoTesla) as a separate field within the same raw data file containing RTK GPS navigation data.

The magnetometer was towed at a fixed distance (10 m) behind the side scan sonar towfish using a combined cable tether with the magnetometer towfish adjusted to neutral buoyancy. This towing configuration provided the survey technicians with a real-time depiction of the altitude of both sensors, minimizing potential impacts with the seabed and simplifying layback corrections (Section 2.3).

Magnetometer data were processed using HYPACK's Magnetometer Processor Module. Each magnetic survey transect was first inspected in profile format for signals which indicate the presence of ferrous anomalies (objects) or utilities. Observed anomalous signals were digitized to an ASCII database including fields for position, approximate magnitude (in nT), and shape. Signal shape classifications include Dipolar (DP), Monopolar (MP) and Multiple Component MC). Images of each anomaly (in profile) were stored with measurements in a database.

After inspecting each data file and digitizing anomalies, magnetic measurements were merged into a single ASCII comma-delimited database containing all total field (TF) magnetic intensity measurements for the survey area. The database included fields for Northing, Easting, and magnitude (in nanoTeslas – nT). This combined data set was transformed into magnetic gradients by subtracting subsequent measurements, thereby minimizing interference from geological features or temporal variations of magnetic fields. The resultant data set was imported to Golden Software, Inc. Surfer Surface Modeling Software. A grid was calculated and used to create a map depicting magnetic gradients. The map was exported as a georeferenced TIF image file for analysis in GIS software.

2.2 Towed Underwater Video Sled Survey Methods

On September 29, 30, and October 1, 2021, CR Environmental, Inc. (CR) performed a towed underwater video sled survey to document bottom substrate and biota, and identify any potential Special, Sensitive or Unique Areas (SSU's) such as hard/complex seafloor, and eelgrass beds along the 1,000 ft (305 m) wide Eversource 5th Cable corridor. Underwater video data were collected along 41 transects as directed by Epsilon Associates. Twenty-eight of the cross-corridor transects were spaced approximately 1,000 ft (305 m) apart along the length of the corridor and the remaining tighter spaced transects were in shallower waters at the northern and southern landfall extents.

2.2.1 Vessel and Navigation

Vessel operations for the underwater video sled survey were performed from CR's 25-foot fiberglass survey vessel, *Charlotte Anne*. The vessel has a large, enclosed pilothouse, bench for survey equipment, stern mounted lifting davit and hauler, and 12-volt and 110-volt power supplies.

Navigation for the surveys was accomplished using a Hemisphere V104 Sub-meter GPS and Heading Sensor that was serially interfaced to a shipboard computer running HYPACK hydrographic surveying software. This system calculated X and Y positions in the desired grid system (UTM North, Zone 19 Meters), recorded navigation data, and provided a steering display for the vessel captain.

Progress of the video sled survey along the proposed transects was followed in HYPACK using georeferenced imagery (e.g., orthophotos) as a background file by the vessel captain thus ensuring video transect coverage at the chosen transect locations.

GPS offsets from the GPS antennae to the stern mounted davit on *Charlotte Anne* were input to the HYPACK software and laybacks (distance from the video sled to davit) were adjusted regularly using line angle and line out.

2.2.2 Video Sled Survey

Underwater video data were collected using CR's portable towed video sled consisting of a lightweight aluminum frame, Outland Technologies' (OTI) high-definition fixed focus color video camera, and two wide-angle LED video lights with variable output control. The OTI video camera was cabled to an OTI-1080 HD DVR recorder and high-resolution daylight monitor at the surface. In addition, a GoPro Hero 4+ Black video camera in a Golem Gear deep water housing was mounted below the OTI camera and programmed to record full HD video at 1080P, 30 frames per second, and take 12 megapixel still frames every 5 seconds. Prior to deploying the video sled, the time on the OTI DVR and GoPro cameras were synced to the time on the navigation system. OTI and GoPro cameras were also synced simultaneously by videotaping the transect number and date on a white board prior to deployment of the sled and by recording position at the time of the initial contact with the bottom with both cameras operating.

The video sled was operated in drift and towed mode. The sled was raised and lowered using the stern-mounted davit on the *Charlotte Anne*, and the height of the system off the bottom was continually adjusted to achieve the best bottom coverage and video quality. When the video camera was one foot off the bottom, the viewing area of the camera was approximately 1.5 feet x 1.5 feet (18 inches x 18 inches), and the video quality was optimal for bottom sediment characterizations and biota identifications. For scaling purposes, lasers were set 10 inches (25 cm) apart and a calibration check was performed prior to video operations.

Camera footage was backed up on an external hard drive at the end of the underwater video operation. The video transect data from the OTI camera video footage displayed time from the GPS and these data were reviewed for preliminary substrate mapping. Seabed screen captures were prepared from each transect and a preliminary substrate figure was provided to Epsilon and Gray & Pape to help plan and guide the sediment sampling operations.

Subsequently, the higher resolution GoPro camera footage was reviewed by CR's marine biologist for the final species identifications and bottom substrate classification using CMECS guidelines. For each transect the video was paused approximately every 30 seconds and a screen capture created.

Substrate and biota notes were taken for each screen capture.

The most abundant CMECS substrate component was determined visually for each screen capture. The frequency of dominant substrate components for each transect were calculated from the screen capture data to determine the final dominant substrate or substrates for a transect. Most dominant substrates had frequencies of 70-90%. Multibeam backscatter and side scan sonar data in the vicinity of the transects were also reviewed when determining the dominant CMECS substrate classifications.

Notes on biota for each screen capture within a transect included presence/absence data to assess species frequency, and rough counts for select species (e.g., fish, sea urchins). These data along with visual estimates of cover for sessile species such as sponges, tunicates, mussels and coral using CMECS modifiers (i.e., trace <1%, sparse (1-<30%, moderate 30-70%, dense 70-90%, complete 90-100%) were used to determine each transects biotic components: class, sub-class, biotic group, biotic community, co-occurring elements and associated taxa.

A representative subset of the screen captures taken along each video transect were annotated and provided with this report.

Data compiled for each transect included:

- The dominant CMECS (FGDC-STD, 2012) substrate and biotic component units,
- Presence/absence data for biota (fauna, seagrass and macroalgae) observed, and
- The presence of Special, Sensitive or Unique Areas.
- Water depth in Mean Lower Low Water (MLLW)
- Start and end coordinates in NAD83

Biotic data were reviewed amongst the transects to determine common assemblages observed along the cable corridor, and their association with substrate features. Aggregated CMECS classifications were completed for these common assemblages with accompanying representative screen captures.

All raw navigation data and edited GoPro underwater video data with the local time and file names have been furnished to Epsilon Associates.

2.3 Sediment Sampling Methods

2.3.1 Vessel and Navigation

Sediment vibracore and grab sampling was conducted from CR's 26-foot landing craft style vessel, *Lophius,* designed for shallow water sediment sampling operations. *Lophius* is equipped with a 1,000-pound capacity hydraulic winch and bow-mounted A-frame, portable generator, and a Humminbird combination radar, depth sounder, and chart plotter. The bow door can be lowered to the water surface.

Navigation for the sampling effort was accomplished using a Hemisphere VS 104 Differential GPS with built in heading capable of providing sub-meter horizontal position accuracy. The GPS was interfaced to a shipboard survey laptop running the latest version of HYPACK® hydrographic surveying software. During the sediment sampling operations, this system calculated X, Y positions in the desired grid system, recorded navigation data and provided a steering display for the vessel captain. Georeferenced imagery (e.g., orthophotos) and NOAA mapped charts were used as background files.

R/V *Lophius* during vibracoring operations on the 5th Cable corridor

The 25-foot support boat *Charlotte Anne* was provided to make security calls to vessels working in the area and the processing and storage of cores and samples by Epsilon.

2.3.2 Vibracore and Grab Sampling

Thirty-one sediment sampling stations were proposed. Stations were located mid-corridor and spaced approximately 1,000 ft (305 m) apart along the length of the corridor roughly coincident with the planned underwater video transects.

Following characterization of the areas of hard seafloor during the 5th Cable geophysical and underwater video field operations, and consultation with MBUAR, it was determined that vibracoring was not feasible at 18 of the 31 proposed sediment sampling stations. Instead grab samples were to be collected at these stations.

Vibracore and grab sampling was conducted over a 4-day period, November 17 through 22, 2021.

Two-point anchors were set for vibracoring operations. Coring was attempted at 13 of the 31 sample locations. Vibracores were successfully obtained at 12 stations. A grab was taken at VS-24 instead of a core. The core ID, coordinates, time and date of collection, water depth, core penetration and recoveries were recorded in HYPACK survey software.

Two cores were collected at each vibracore station, one for grain size and potential chemical analysis depending on grain size results, and a second was provided intact to marine archaeologists at Gray & Pape. Vibracores were collected using CR's NAVCO pneumatic vibracore system that includes a 1,750 vpm Bin/Hopper Vibrator, 50 cfm portable air compressor and 6-10 foot long 3-inch diameter galvanized steel core barrel with core cutter/catcher assemblies and clean 2 7/8-inch OD CAB hard plastic liner. The system is equipped with a check valve for retaining fine sediments. The liners were removed intact from the core barrel, labeled, and capped prior to transport to the support vessel. The core used for grain size and chemistry was opened, sampled for volatile organic compounds, photographed, logged, and sampled for grain size and other chemical constituents by Epsilon Associates field personnel. A generator and cutting shears were provided to safely open the core liners. The top of the intact core for Gray & Pape was capped and labelled with Station ID, water depth, penetration, recovery, and time.

Grab samples were collected at the remaining 19 sediment sampling stations using a Ted Young 0.1 m^2 modified Van Veen grab sampler. A minimum of three grab samples and maximum of five were taken to collect enough sediment for analyses. Sediment samples were inspected through the upper doors of the grab to ensure adequate recovery. If recovery was acceptable volatile organic compound samples were taken immediately upon retrieval. The grab was then emptied into a clean stainless steel bowl for further processing. A clean stainless-steel spoon was used to collect and transfer sediment to one gallon plastic bags for grain size analysis, and laboratory supplied sample jars for sediment chemistry. Sampling equipment was deconned between sampling events. Sediment samples were kept on ice in coolers prior to being transported by Epsilon Associates to Rhode Island Analytical, Warwick, RI.

3.0 RESULTS

The following Sections describe the bathymetric, geophysical and underwater video data results. GIS software provided accurate mapping of surface and sub-surface characteristics and features of interest within the survey area allowing synergistic analysis of data from multiple sensors. Video data were used to identify Coastal and Marine Ecological Classification (CMECS) substrate and biotic components found along the proposed 5th Cable corridor (FGDC, June 2012), and to aid in the interpretation of geophysical survey data. Mapped habitat roughness and complexity derived from geophysical data helped inform the CMECS classifications and identification of Special, Sensitive or Unique Species and Habitats (SSUs) under the Massachusetts Ocean Management Plan (EEA, 2021). Sediment sampling coordinates and collection notes are provided but reporting of any chemical or grain size analyses was conducted by others.

3.1 Multibeam Bathymetric and Acoustic Backscatter Results

Seafloor elevations in the survey corridor ranged from approximately -2.2 m to -31.0 m MLLW (-7.2 ft to -102 ft MLLW). The mean depth was -16.0 m (-52.5 ft) MLLW (Figure 2).

Bathymetric relief clearly identified the presence of sand ripples, sand waves, sandy gravel waves, boulder fields and portions of utility crossings (Figure 3).

Statistical analysis of multibeam bathymetric data intersections showed a negligible mean elevation bias of -0.01 m (-0.033 ft), and a mean vertical uncertainty of 0.12 m (0.39 ft), substantially lower than the values recommended by USACE (2013, Table 3-1: bias <0.2 ft, 95% uncertainty <0.8 ft) (Table 1). Uncertainty was driven by the presence of boulders and steep slopes relative to the acoustic beam footprint rather than systematic errors or biases. The analysis documented negligible tide biases and minimal horizontal uncertainty. Portions of the data contained low magnitude (~ 0.05 m) artifacts associated with navigating the strong currents at low speed.

3.1.1 Seafloor Roughness and Complexity

Several metrics of seafloor roughness and complexity were calculated and mapped using the bathymetric data. These included: rugosity, slope, vector ruggedness measure, and slope of slope.

3.1.1.1 Rugosity

Rugosity, a measure of seafloor roughness, is the ratio of surface area to planar area within a square 3 x 3 cell neighborhood. Values near 1.0 suggest flat terrain with higher values suggesting rougher more complex terrain. CMECS Table 10.11 defines rugosity values between 1.0 to < 1.25 as “Very Low”, values between 1.25 to <1.50 as “Low”, and 1.50 to <1.75 as “Moderate” (FGDC, June 2012).

Rugosity was calculated using QPS Fledermaus software to develop a grid suitable for analysis in ArcGIS. Rugosity values ranged from 1.0 to 1.47 with a mean of 1.0015. Ninety-nine percent of the rugosity values were very low, below 1.033. The higher rugosity values were in the areas of sand waves and boulders (Figure 4).

3.1.1.2 Slope

Slope was calculated using Surfer software. CMECS Table 10.12 defines slopes between 0 degrees to < 5 degrees as “Flat”, between 5 degrees to <25 degrees as “Sloping”, between 30 degrees to < 60 degrees as “Steeply Sloping”, and between 60 degrees to <90 degrees as vertical (FGDC, June 2012). Slopes within the survey corridor ranged from 0 degrees or flat to 60 degrees vertical. The mean slope value was 2.46 degrees. Ninety-nine percent of the slope values were lower than 15.9 degrees or flat to sloping. Sand waves and large angular boulders were responsible for the highest slope values (Figure 5).

3.1.1.3 Vector ruggedness measure

The Benthic Terrain Modeler (BTM) extension for ESRI ArcGIS developed by NOAA and MA CZM was used to calculate the Vector Ruggedness Measure (VRM) as presented in Sappington et al., (2007). The intent of the application of VRM to data was to spatially estimate the extent of seabed dominated by larger hard bottom substrates (i.e., large cobbles and boulders). VRM ruggedness values can range from 0 (no terrain variation) to 1 (complete terrain variation). BTM documentation suggests typical values for natural terrains range between 0 and about 0.4.

The VRM model was exported from ArcGIS and used to construct contours in Surfer software with intervals selected to minimize interferences associated with minor depth differences between transects (bathymetric artifacts). These contours were exported in shapefile format and imported to ArcGIS. Contours associated with obvious sand waves and sand wave fields were cleaned from the contour layer resulting in a map that represents the estimated extent of large hard bottom substrates (Figure 6).

VRM values ranged from 0 to 0.04 (mean = 0.0017). Ninety-nine percent of values were lower than 0.019. Values lower than 0.002 were associated with bathymetric artifacts.

The VRM model appeared to accurately delineate the extent of larger coarse substrates (cobble and boulder) when visually compared to bathymetric relief, side scan sonar and towed video data. Model sensitivity was sufficient to identify isolated boulders and troughs associated with existing cables in the northern portion of the corridor.

3.1.1.4 Slope of slope

Recent research has demonstrated that the seafloor slope of slope (habitat complexity in degrees of degrees) is a robust indicator of benthic habitat value from a fisheries perspective (Wedding and Yoklavich, 2015; Borland et al, 2021). The measure reflects the maximum rate of slope change, with higher values associated with increased diversity and fish abundance.

<u>Slope of slope</u> was calculated from the bathymetric grid using Surfer software and imported to ArcGIS. Slope of slope values ranged from 0 to 84 degrees of degrees (mean = 16) (Figure 7). Ninety-nine percent of values were less than 72 degrees of degrees. High values were associated with cobble and boulder substrates. The highest values were associated with sand waves. Lower values were associated with pebble substrate and the lowest values were associated with

Crepidula reef. The slope of slope model was sufficiently sensitive to detect relief associated with existing cables within the survey corridor.

3.1.2 Backscatter Results

Multibeam backscatter data (Snippets) allowed mapping of surficial seabed features and textures without the positional uncertainties associated with towed sonar systems. The backscatter mosaic (Figure 8) suggests the presence of eelgrass in the northernmost portion of the corridor extending approximately 400 m (1,312 ft) from the shoreline, though raw bathymetric data did not appear to have signatures associated with aquatic vegetation. The northern sand wave field which was clearly visible in bathymetric data exhibited the lowest backscatter, suggesting that substrates in this area are likely composed of sand without epibiota. The highest backscatter was mapped in the southern sand wave field, suggesting a coarser sand, gravel and cobble matrix without acoustic scattering associated with epibiota. Other portions of the survey corridor, including those which were suggested by bathymetric and video data to be dominated by large cobbles and boulders, possessed intermediate backscatter values. This suggests that much of this stable seabed may be covered with epibiota which scatters and absorbs acoustic signals, masking the reflectance of the geologic substrate.

3.2 Side Scan Sonar Results

Towed side scan sonar data allowed a more refined inspection of surficial bottom features than MBES backscatter layers albeit with a minor degradation of positional accuracy associated with the towed and 2-dimensional nature of the data. High resolution images and descriptions of digitized seabed features (Contacts) are presented in Appendix A and the locations of these Contacts are depicted on the sonar mosaic (Figure 9). Seventy-four digitized contacts have been described (Table 2) and delivered in GIS shapefile format.

Examples of digitized Contacts include boulders (C-0016) and boulder fields (C-0004); possible ledge outcrops (C-0029); signatures associated with cables (C-0003); debris (C-0012, C-0039, C-0062); fishing gear / conch traps (C-0070); fish schools, likely of false albacore, *Euthynnus alleteratus* (C-0024, C-0069); sand waves (C-0044); and a wreck in Vineyard Haven Harbor (C-0058) (Figure 9, Appendix A).

3.3 Sub-Bottom Sonar Results

Examples of sub-bottom profiles over different substrate types from north to south along the proposed cable route have been annotated. The locations of these five annotated profiles are depicted on Figure 10 and the profiles are shown on Figures 11A-C.

Profile 1 is a record collected over the northernmost portion of the survey corridor. Pebble/granule gravel pavement grades to cobbles in deeper water. Sonar penetration was greater over the cobble seabed in deeper water, approximately 6 - 8 m (20 - 26 ft) than over the pebble/granule dominated seabed (Figure 11A).

Profile 2 was collected over sandy seabed with pronounced sand waves. Sonar penetration on this profile was approximately 3 - 5 m (5 – 16 ft), with an acoustic basement suggestive of cobble (Figure 11A).

Profile 3 was collected over seabed of pebble/granule gravel pavement. Sonar penetration ranged from approximately 1 - 4 m (3 – 13 ft) with an acoustic basement suggestive of cobble and/or boulder (Figure 11B).

Profile 4 was collected over boulder dominated gravel pavement seabed. Sonar penetration in this area was minimal and acoustic basement was diffuse and suggestive of a coarse gravel matrix (Figure 11B).

Profile 5 was collected over the southern sand and pebble/granule seabed. Sonar penetration ranged from approximately 1 - 4 m (3-13 ft) over the sand/gravelly sand waves/ridges and decreased to less than 1 m over seabed dominated by *Crepidula* reef closer to the southern landfall. The interpreted acoustic basement was diffuse and suggestive of cobble and/or boulders (Figure 11C).

Each of the sub-bottom files was carefully inspected and the acoustic basement was interpreted and digitized. These files were combined to create map of depth to acoustic basement (minimum sediment thickness) (Figure 12). While sonar penetration was highly variable due to scattering by surface materials and sub-surface strata, the map conservatively depicts interpreted sediment thickness. Sediment thickness estimates ranged from approximately 0.6 - 5.6 m (2 - 18 ft) with a mean thickness of 1.8 m (6 ft). Sonar penetration was generally greatest in seabeds dominated by sand, gravelly sand and pebble/granule substrates. Penetration was lower in coarser sediments (cobble/boulder) and in many areas of high topographic relief. Sonar penetration did not appear to be depth dependent and reached its minima in shallow waters dominated by *Crepidula* reef.

3.4 Magnetics Results

The quality of magnetometer data was adversely affected by the presence of electric utilities. Although some of these interferences caused magnetic interferences with magnitudes beyond the sensor's ability to record, however, CR's processing approach allowed accurate mapping and description of magnetic anomalies associated with ferrous materials and magnetic fields surrounding utilities.

CR digitized 174 magnetic anomalies (Figure 13, Appendix B, and Table 3). An electric cable was mapped in the northern 3,300 m (10,827 ft) of the survey corridor, and data suggest an electric cable extending approximately 1,900 m (6,234 ft) from the southern limit of the survey corridor. In addition, a series of linearly arranged anomalies were observed over 850 m (2,789 ft) of the central boulder fields and may indicate a cable. Many of the large mapped individual anomalies are likely associated with electric cables.

Approximately co-located magnetic anomalies and side scan sonar contacts were correlated using ArcMAP software within a 10 m (33 ft) search radius. The evaluation was intended to demonstrate which anomalies were likely surficial. The results of the analysis were constrained by the limited number of side scan contacts relative to magnetic anomalies (i.e., not every boulder, conch trap or exposed cable segment was digitized as points in the side scan Contact database whereas every observed magnetic anomaly was digitized).

Table 4 lists approximately co-located magnetic anomalies and corresponding side scan Contacts. Six of the anomalies were associated with the wreck in the southernmost portion of the survey corridor in Vineyard Haven Harbor. Eleven of the anomalies were co-located with fishing gear (e.g., conch traps). Two of the anomalies were co-located with boulders, and one anomaly was co-located with unidentifiable debris.

Cables were observed on the surface of the seafloor at the northern video transect EG-2C, and video transects VS-15, 16, 17, and 18 in the central boulder field (Figure 14).

3.5 Sediment Sampling Results

Figure 15 is a plot of the 12 vibracore and 19 grab sampling stations along the 5th Cable corridor. Sampling coordinates for grabs and cores, water depth, and core penetration and recovery are provided on Table 5. At six grab sampling stations (15, and 17 through 21) only a few cobbles, sponges and tunicates were collected, and no sediment was available for grain size analysis. Vibracore recoveries ranged from 0.7 to 6 feet. Grain size and analytical results for the core and grab samples are reported elsewhere by Epsilon Associates.

3.6 Underwater Video Results

The Coastal and Marine Ecological Classification Standard (CMECS), a hierarchical arrangement of biogeographic and aquatic setting units and components (water column, geoform, substrate and biotic), was used to describe ecosystem features along the Eversource 5th Cable corridor in Vineyard Sound. (FGDC, 2012). Also provided are observation of any Massachusetts CZM Special, Sensitive or Unique Resources (SSUs) such as, eelgrass beds, hard/complex seafloor, or commercially important species.

The forty-one underwater video transects for the Eversource 5th Cable corridor included:

- Twenty-eight 1,000 ft (305 m) transects perpendicular to the cable route spaced approximately 1,000 ft apart,
- In Vineyard Haven Harbor, two North-South 1,000 ft, and two East-West 750 ft (229 m) cross- corridor transects,
- In outer Falmouth Harbor off of Shore Street, one East-West 1,600 ft (488 m), and two North-South 700 ft (213 m) cross-corridor transects at the proposed location of the HDD cable punch-out location, and
- An additional six 1,000 ft transects were occupied to map out the extent of the eelgrass bed off Falmouth Harbor.

Table 6 provides the bottom substrate and biotic components observed at each video transect based on the CMECS (FDGC, 2012). These are illustrated on Figure 14 for the dominant CMECS substrate classifications, and Figure 16 for the dominant CMECS biotic components. A list of flora and fauna observed by transect along with summary statistics of species observations by transect and frequency of observation across all transects and the subset with gravel pavement are provided on Table 7. Plates 1 to 41 are representative screen captures of bottom substrate and biota with the elapsed video time and CMECS components (Appendix C).

Vineyard Sound is a complex body of water that separates the Elizabeth Islands and Falmouth and Mashpee from the island of Martha's Vineyard. Two to three knot currents shape the shoreline, shoals and ocean bottom, and minimal slack tide periods and strong ever-changing winds make it a challenging area to conduct surveys. Underwater video survey operations for the 5th Cable corridor needed to be scheduled around slack tide periods, and operations often had to be suspended during maximum tides. Field crews continually adjusted the line out on the lifting davit to maintain the video sled ½ to one foot off the bottom which was often difficult in areas of boulder dominated substrate.

Due to the strong tides, video time on the bottom for the main cross-corridor transects varied from 10 to 43 minutes, and averaged 21 minutes. The cross-corridor video transects in outer Falmouth Harbor and Vineyard Haven Harbor varied from 6 to 12 minutes and the eelgrass transects off Falmouth from 8 to 12 minutes. Vessel speed during these surveys ranged from ½ knot to 2 knots. Despite the higher than optimal survey speed on several transects, bottom substrate, biota IDs, and rough counts were successfully obtained. The transects run at slack tide provided extremely detailed bottom coverage and excellent video quality. Although the video data has not adjusted for the difference in transect time on bottom or length, strong trends were seen in the uncorrected statistics.

3.6.1 CMECS Classification from Video Footage

The CMECS biogeographic setting for the 5th Cable corridor is the Virginian ecoregion of the cold temperate Northwest Atlantic province in the temperate North America realm. The water column in late September - early October 2021 was a Euhaline, Marine Nearshore Surface Layer with a Moderate Water temperature regime. The Geoform tectonic setting is a Passive Continental Margin, and the physiographic setting is a Sound. The Level 1 and 2 Geoform Components included Megaripples, Moraine, Ripples, Sediment Wave Fields, and Till Surfaces. The surveyed corridor also had Anthropogenic Cable Area Geoforms, as both live and former unused transmission cables run from Falmouth to Martha's Vineyard. These cables often cause bottom scouring, trap sand, and create bottom habitat for macroalgae and macrobenthos.

Visually estimated surficial substrates were primarily of geologic origin and consisted of coarse unconsolidated mineral substrate Gravel Pavement dominated by Boulder, Cobble or Pebble/Granule bottom at 19 of the 41 transects, and fine unconsolidated substrates of Sand Waves, Sand Ripples, Gravelly Sand, or Sandy Gravel at 12 transects.

Biogenic substrate of *Crepidula* Reef was observed at seven transects in Vineyard Haven Harbor and three transects in outer Falmouth Harbor. At the shallower inshore northern ends of the transects in outer Falmouth Harbor, the substrate transitioned to Gravelly Sand and Sandy Gravel (Figure 14).

Biotic Groups and Sub-classes associated with the corridor substrates are shown on Figure 16. They are listed below along with identified Biotic Communities:

1) Attached Sea Urchins
    a. Attached *Arbacia punctulata* (purple sea urchin) on Gravel Pavement of Pebble/Granule
2) Diverse Colonizers on Gravel Pavement of Pebble/Granule, Cobbles and Boulders
    a. Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)
3) Gastropod Reef
    a. *Crepidula* Reef
4) Gastropod Reef with co-occurring Leathery Leafy Algal Bed on *Crepidula* Reef
    a. *Crepidua* Reef with co-occuring *Codium* Community
5) Seagrass Bed on Gravelly Sand and Sandy Gravel
    a. *Zostera marina* (eelgrass) Herbaceous Vegetation
6) Inferred Fauna on Sand Ripples,

7) Soft Sediment Fauna on Sand Waves
8) Soft Sediment Fauna on Sand Waves with Attached Fauna in the Pebble/Granule Sand Wave Troughs.

Representative screen captures and classification of these aggregated CMECS units are provided in Appendix D. The screen capture water depths are relative to MLLW, and coordinates are provided on Table 8 and their location plotted on Figure 16. Table 6 provides additional information on the co-occurring elements and associated taxa for these CMECS units.

A total of 29 invertebrates, six fish, 15 algal species, and eelgrass were observed on the 5th Cable underwater video footage (Table 7).

Species observed at greater than 50% of the transects on the 5th Cable corridor included bushy bryozoan (*Bugula* spp.), jingle shell (*Anomia* spp.), tube worm (*Hydroides dianthus*), purple sea urchin (*Arbacia punctulata*), white invasive tunicate (*Didemnum candidum*), juvenile black sea bass (*Centropristis striata*), and branching red algae (Table 7).

The frequency for these same species excluding branching red algae was greatest on gravel pavement within the survey corridor. Other species frequently associated with gravel pavement were encrusting bryozoan (*Schizoporella unicornis*), northern star coral (*Astrangia poculata*), bread crumb sponge (*Halichondria panicea*), sulfur sponge (*Cliona celata*), dove snail (*Anachis* sp.), blue mussel (*Mytilus edulis*), and the tunicates sand sponge (*Amaroucium pellucidum*) and sea pork (*Amaroucium stellatum*).

Sulfur sponge, bread crumb sponge, the tunicate sand sponge, sea spiders (Pycnogonida), dove snail, and encrusting bryozoan were particularly associated with areas of gravel pavement dominated by cobbles and boulders. The tunicates sea pork and white invasive tunicate were also found on pebble/granule dominated gravel pavement.

Jingle shell, common oyster (*Crassostrea virginica*) and oyster drill (*Urosalpinx cinerea*) were primarily associated with pebble/granule gravel pavement.

Fish were observed at less than 17% of the survey corridor transects, and generally in low numbers. Juvenile black sea bass was the exception having been observed at 85% of the corridor transects and had the highest densities in the areas of gravel pavement dominated by boulders. Adult black sea bass, cunner (*Tautogolabraus adspersus*), puffer (*Sphaeroides maculatus*), scup (*Stenotomus chrysops*), and tautog (*Tautoga onitis*) were also primarily associated with areas of Diverse Colonizers on gravel pavement of cobbles and boulders. Sea robin (*Prionotus carolinus)* was associated with sand waves and ripples and gravel pavement of pebble/granule or boulders and cobbles.

Algal species most frequently observed along the 5th Cable corridor included dead man's fingers (*Codium fragile*) wire weed (*Sargassum filipendula*), purple laver (*Prophyra umbilicalis*), and species of branching red algae. Dead man's fingers and purple laver were predominantly associated with *Crepidula* Reef in waters 13 -24 ft below MLLW. Branching red algal species and wire weed were found on areas of Gravel Pavement and *Crepidula* Reef.

The area of Diverse Colonizers on gravel pavement of cobbles and boulders in the central portion of the survey corridor (transects VS-13 through -20) had the greatest faunal richness ranging from 15 to 18 species of fish and invertebrates in waters 63-86 ft below MLLW (Table 7, Figure 16). Average faunal species richness across these transects was 15.

High faunal richness, 15 to 16 species, was also observed at lower relief areas of Attached Sea Urchins on gravel pavement of pebble/granule at transects VS-2 and -3 possibly due to strong currents. Average faunal species richness for this CMECS unit was 11.

The lowest faunal species richness was in areas of Soft Sediment Fauna at Sand Waves without hard substrate in the troughs of the waves (e.g., transect VS-5), and *Crepidula* Reef transects VS-27 and -28, CS-4 through -7 where only 3 to 4 species were recorded in waters 15-19 ft below MLLW. Sand Waves in waters 30-50 ft below MLLW with Attached Fauna on Pebble-Granule substrate in their troughs (transects VS-6, and VS-22 and -23) had an average faunal species richness of 11.

The highest species richness for flora, macroalgae and eelgrass, was generally on nearshore transects of *Crepidula* Reef in waters 13-38 ft below MLLW. Eelgrass observed at the northern extent of the cable corridor in outer Falmouth Harbor was not observed in waters deeper than 17 ft below MLLW.

3.6.2 Commercial Species

Juvenile black sea bass were observed at 85% of the survey corridor transects and had the greatest density at transects VS-15 to VS-18, an area of Diverse Colonizers on Gravel Pavement dominated by boulders and cobbles. The seven adult black sea bass observed were only observed at this same area of hard/complex seafloor.

No summer flounder (*Paralichthys dentatus*) were observed during the fall survey. Earlier in the year they might have been observed utilizing the sand wave shoals.

Blue mussels were observed on 95% of the transects in areas of Gravel Pavement of pebble/granule, cobble, or boulder.

Numbers were low for the few other commercial species observed on the underwater video; one bay scallop (*Argopecten irradians*) and sea clam (*Spisula solidissima*), two knobbed whelk *(Busycon carica*) and common oyster, three long-finned squid (*Loligo pealei*), and six horseshoe crabs (*Limulus polyphemus*).

3.6.3 Special Sensitive and Unique Species and Habitats

Special sensitive and unique areas (SSUs) under the Massachusetts Ocean Management Plan mapped within the 5th Cable corridor include areas of hard/complex seafloor and eelgrass beds.

3.6.3.1 Hard/complex seafloor

*"*Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 ocean plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs, biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area "(EEA, 2021). Figure 17 shows the mapped Massachusetts Ocean Management Plan Layer for hard/complex seafloor in the vicinity of the 5th Cable survey corridor.

Overlay of the Massachusetts Ocean Management Plan's (MOMP's) mapped hard/complex seafloor with the CMEC substrate classifications shows that areas classified as Gravel Pavement dominated by boulders are mapped as well as some cobble dominated areas, and the northern and southern areas of Sand Waves (Figure 18).

Terrain ruggedness (Figure 6) derived from geophysical data collected for the 5th Cable indicates general concurrence with the areas of hard bottom mapped by MOMP (Figure 17). The active Eversource 99 Cable was also recognized at the northern end of the corridor. Plots of rugosity (Figure 4), slope (Figure 5) and slope of slope (Figure 7) also show the morphologically complex seafloor which includes the northern and southern areas of sand waves/ridges.

<u>Hard/Complex Seafloor of Cobbles and Boulders</u>
Nine of the twelve transects classified as Diverse Colonizers on Gravel Pavement of cobbles or boulders were in the vicinity of areas mapped by MOMP as hard/complex seafloor. Four had boulder dominated substrate and the remaining cobble. The three additional cobble dominated

areas with Diverse Colonizers at transects VS-4, VS-13 and VS-14 are potential SSUs (Figure 18). VS-4 lies just north of L'Hommedieu Shoal in an area of high currents.

Cobble dominated Gravel Pavement at Transect VS-4 on the north side of L'Hommedieu Shoal - Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) Community with sulfur sponge, sand sponge, sea pork, and blue mussels

Boulder dominated Gravel Pavement at Transect VS-18 Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) Community of sulfur sponge, sea pork, northern star coral, encrusting bryozoan, and tube worms

The Biotic Community at these twelve transects with hard and complex seafloor in deeper waters was Mollusk/Sponge/Tunicate Colonizers (Large Megafauna). At several, the colonies of sulfur sponge protruded 2-3 feet off the bottom and were interspersed with bread crumb sponge, large concentrations of the tunicates, sand sponge and sea pork, extensive patches of blue mussels, northern star coral, and encrusting bryozoan. Other smaller co-occurring species living within the sponges and tunicates included tiny dove snails and sea spiders. Associated mobile taxa were adult black sea bass and large schools of juvenile black sea bass.

Hard Seafloor of Pebble/Granule

Areas of coverage by Pebble/Granule Gravel Pavement were present at seven transects in the northern half of the 5th Cable corridor. These areas are not mapped as hard/complex seafloor by the Massachusetts Ocean Management Plan (Figure 18). Unlike Gravel Pavement of cobbles and boulders these pebble-granule dominated areas had little relief, and low rugosity, slope, and slope of slope values indicating a lack of complexity (Figures 4, 5, and 7).

Faunal richness and species frequency and biomass were lower in the Attached *Arbacia punctulata* community on Gravel Pavement of pebbles/granules compared to the more complex Mollusk/Sponge/Tunicate Colonizers community on Gravel Pavement comprised of cobbles and boulders.

Attached Arbacia punctulata with encrusting red algae, jingle shells, bushy bryozoan, invasive white tunicate, and surf clam shells in Gravel Pavement of Pebble/Granule at transect VS-2 in outer Falmouth Harbor

Specifically, the frequencies for sulfur sponge, bread crumb sponge, encrusting bryozoan (*Schizoporella unicornis*), sand sponge a tunicate, and *Sargassum* were lower; and no sea spiders or adult sea bass were observed (Table 7).

The Attached *Arbacia punctulata* community was more strongly associated with jingle shells, oysters, oyster drills (*Urosalpinx cinerea*), and encrusting red algae (*Lithothamnium lenormandi*).

Biogenic *Crepidula* Reef

Crepidula Reef was present at the northern and southern nearshore ends of the 5th Cable corridor in water depths ranging from 15 to 23 ft below MLLW. Although a form of biogenic reef, these areas were not mapped by Massachusetts Ocean Management Plan as hard/complex seafloor (Figure 18). The *Crepidula* Reef seafloor had low relief as shown on the bathymetric figures for rugosity, slope, ruggedness, and slope of slope (Figures 4, 5, 6 and 7). *Crepidula* Reef to the south at the entrance to Vineyard Haven Harbor (transects CS-4 to CS-7) was covered by the co-occurring invasive *Codium fragile* (Figure 16, Table 7, Appendix D). The northern *Crepidula* Reef had moderate bushy bryozoan and sparse benthic macroalga. A few juvenile black sea bass were observed at both areas; however, faunal richness was low averaging 4.5. Due to the presence of invasive algal cover, low relief and low diversity these areas should not be mapped as SSUs.

Crepidula Reef Community with purple sea urchin, jingle shell, and branching red algae at transect EG-1 in outer Falmouth Harbor

Shoals/Sand Waves

The 5th Cable corridor crosses L'Hommedieu Shoal off outer Falmouth Harbor and a small sand shoal outside the mouth of Vineyard Haven Harbor. The sand waves and ripples are mapped as complex seafloor by the Massachusetts Ocean Management Plan (Figure 17). These shoals are coincident with areas mapped during the 2021 bathymetric survey of the 5th Cable corridor (Figure 2) and assessments of bathymetric rugosity (Figure 4), slope (Figure 5) and slope on slope (Figure 7). Overlay of the NOAA DEM with CR's 2021 bathymetric data for L'Hommedieu Shoal indicated that the sand wave/ridge peaks are essentially permanent features, however the northern and southern tails of the waves/ridges may be more mobile.

In the summer months, L'Hommedieu Shoal and Middle Ground to the west of the cable corridor support large populations of summer flounder, striped bass (*Roccus saxatilis*), and bluefish (*Pomatomus saltatrix*). At the time of the survey in late September few fauna were observed associated with the sand bottom of the shoals on the 5th Cable corridor. Soft Sediment Fauna was assumed to be the biotic sub-class for sand substrate. Only a few mobile associated taxa, such as long-finned squid, hermit crabs (*Pagarus* spp.), horseshoe crab, sea robin, and one adult black sea bass buried in the sand were present (Table 7).

Long-Finned Squid in Sand Ripples at transect VS-23 through the southern shoal/Sand Wave area outside Vineyard Haven Harbor

An area of sand ripples at transect VS-25 near the mouth of Vineyard Haven Harbor was classified as Inferred Fauna. Polychaete worm holes, fecal castings, whelk egg cases, and one parchment worm tube were observed on the sand substrate (Appendix D).

Soft Sediment Fauna in Sand Waves and Attached Fauna in Troughs at transect VS-23 through the southern shoal outside Vineyard Haven Harbor

Higher invertebrate species richness was found at Sand Waves on transects VS-6, and VS-22 to VS-24. Troughs of these sand waves had a Pebble/Granule substrate in a matrix of sand and Attached Fauna of tunicates, *Crepidula,* dove snails, and hydroids (*Hydrozoa* sp.), mobile arthropods and juvenile black sea bass (Table 7, Appendix D).

3.6.3.2 Eelgrass

Eelgrass SSUs are defined as "areas that support communities of rooted eelgrass (*Zostera marina*)," and are mapped at the northern extent of the 5th Cable corridor (EEA, 2021).

Sparse to moderate eelgrass was observed in a Seagrass Bed growing in Gravelly Sand to Sandy Gravel at the northern inshore end of transects EG-1 through EG-6 in outer Falmouth Harbor (Figure 16). Eelgrass cover disappeared in water depths greater than 17 feet below MLLW where the seafloor transitioned to *Crepidula* Reef. The eelgrass bed is well inshore of the approximate punch out area for the proposed horizontal directional drilling.

Seagrass Bed of *Zostera marina* with horn snails and bushy bryozoan in a Gravelly Sand substrate at transect EG-2C in outer Falmouth Harbor

3.6.4 Anthropogenic Cable Geoform /Debris

Anthropogenic Cable geoforms were observed on nine underwater video transects, and the positions plotted to see if they aligned with any of the geophysical data. Video captures of extant cable(s) closely matched the positions of cable signatures observed in bathymetric data, and generally agreed with cable signatures in the side scan sonar records.

Debris and cables were observed during the underwater video survey at nine transects. Plates of screen captures are provided in Appendix C.

Unidentified debris and cables were observed in cobble/ boulder substrate on transects VS-9 screen capture C (Plate 9a.), VS-16-F (Plate 16a.), VS-17-E (Plate 17a.), and VS-18-E (Plate 18a.), and sand ripples at transect VS-25-G (Plate 25a.). A chest-like structure was observed in sand ripples at transect VS-24-P, and sandbags at VS-24-F and -M (Plates 24a. and b.) outside Vineyard Haven Harbor. An individual bone was observed in the sand waves of L'Hommedieu Shoal at transect VS-6-K (Plate 6b).

Cables were observed to provided structure and habitat for biota. On transect VS-8-B (Plate 8a.), and at transect EG-2C near the northern extent of the surveyed corridor, there were multiple observations of the Eversource 99 Cable (screen captures D, F, G, and J, Plates 37a. and b. - Appendix C). At transect EG-2C in gravelly sand species richness for fauna and flora was higher than in adjacent transects. Bushy bryozoans, hydroids, wire weed, and branching red algae were observed growing on the cable, and small schools of juvenile seabass within the algal canopy.

Live transmission Cable 99 on transect EG-2C provided hard substrate for the growth of branching red algae and bushy bryozoan

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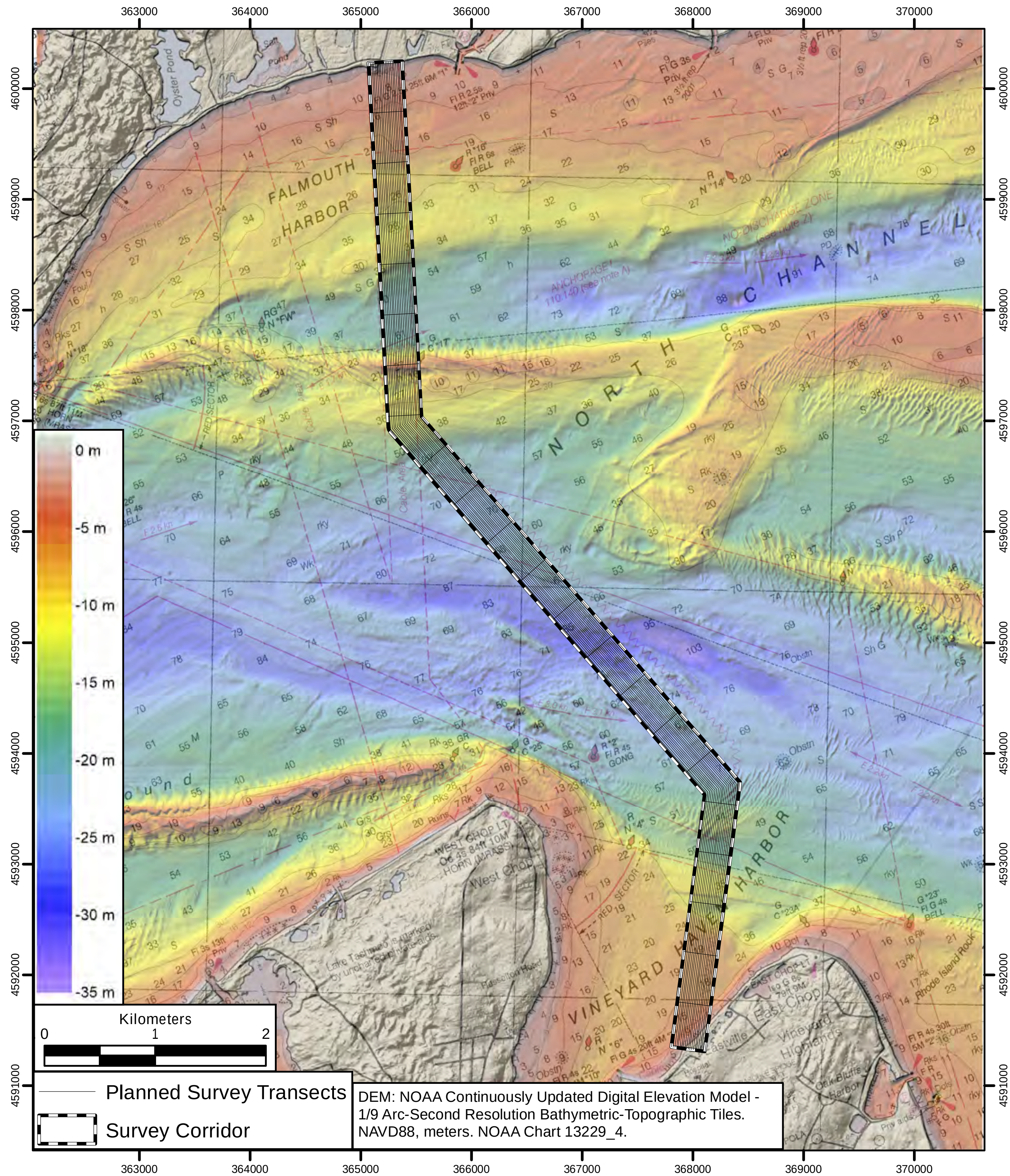
FIGURES



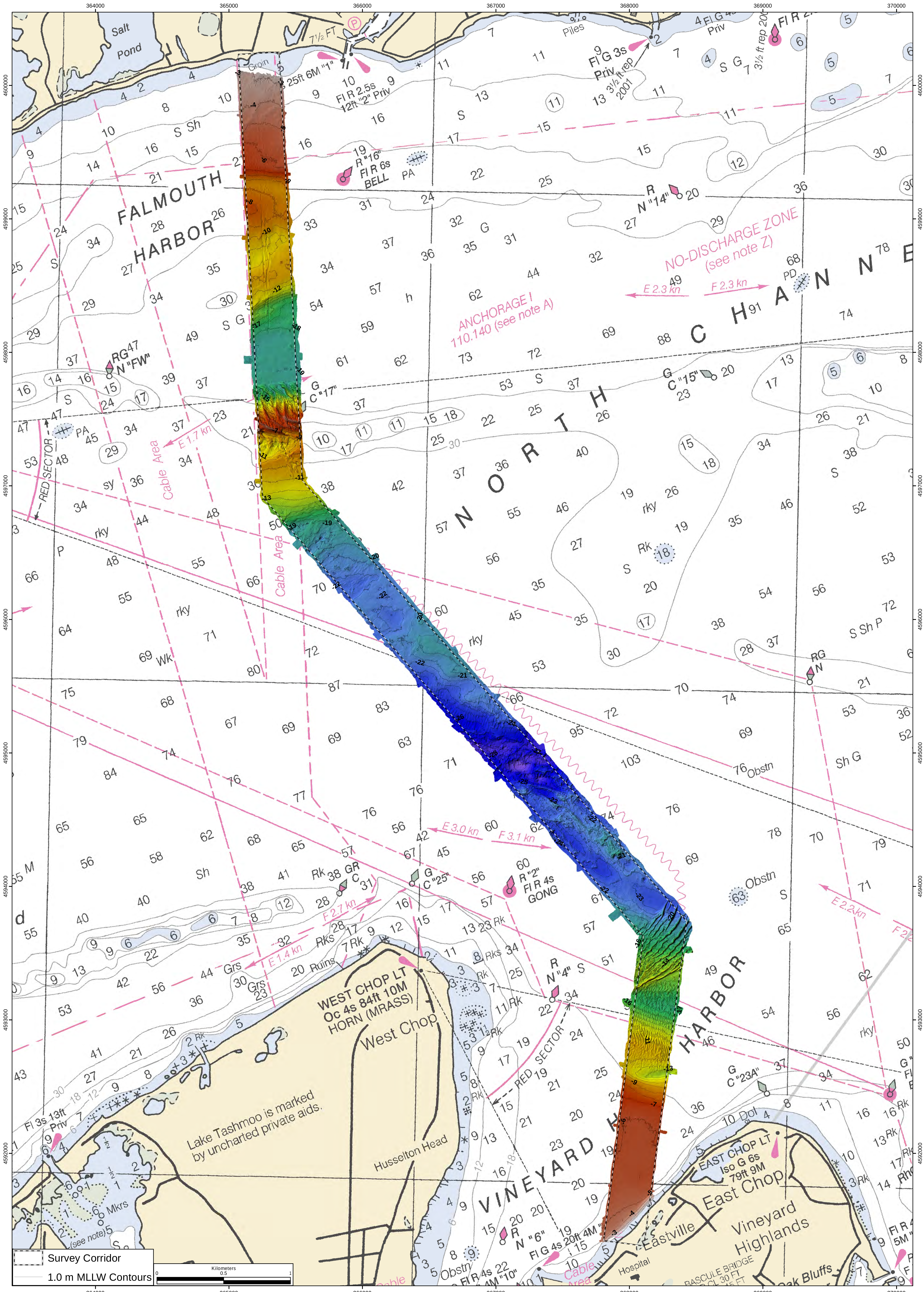
SURVEY LOCUS AND PLANNED SURVEY TRANSECTS
5th Cable Crossing
Vineyard Sound, Massachusetts

www.crenvironmental.com

N W E S

NOTES:
1) Primary transects for magnetics and sub-bottom sonar set to 15m separation, sub-bottom augmented by cross-lines spaced 470m apart.
2) Multibeam and side scan sonar transect spacing set to ensure >> 100% bottom coverage.
3) Grid UTM, Zone 19N, NAD 83 Meters

Figure 1

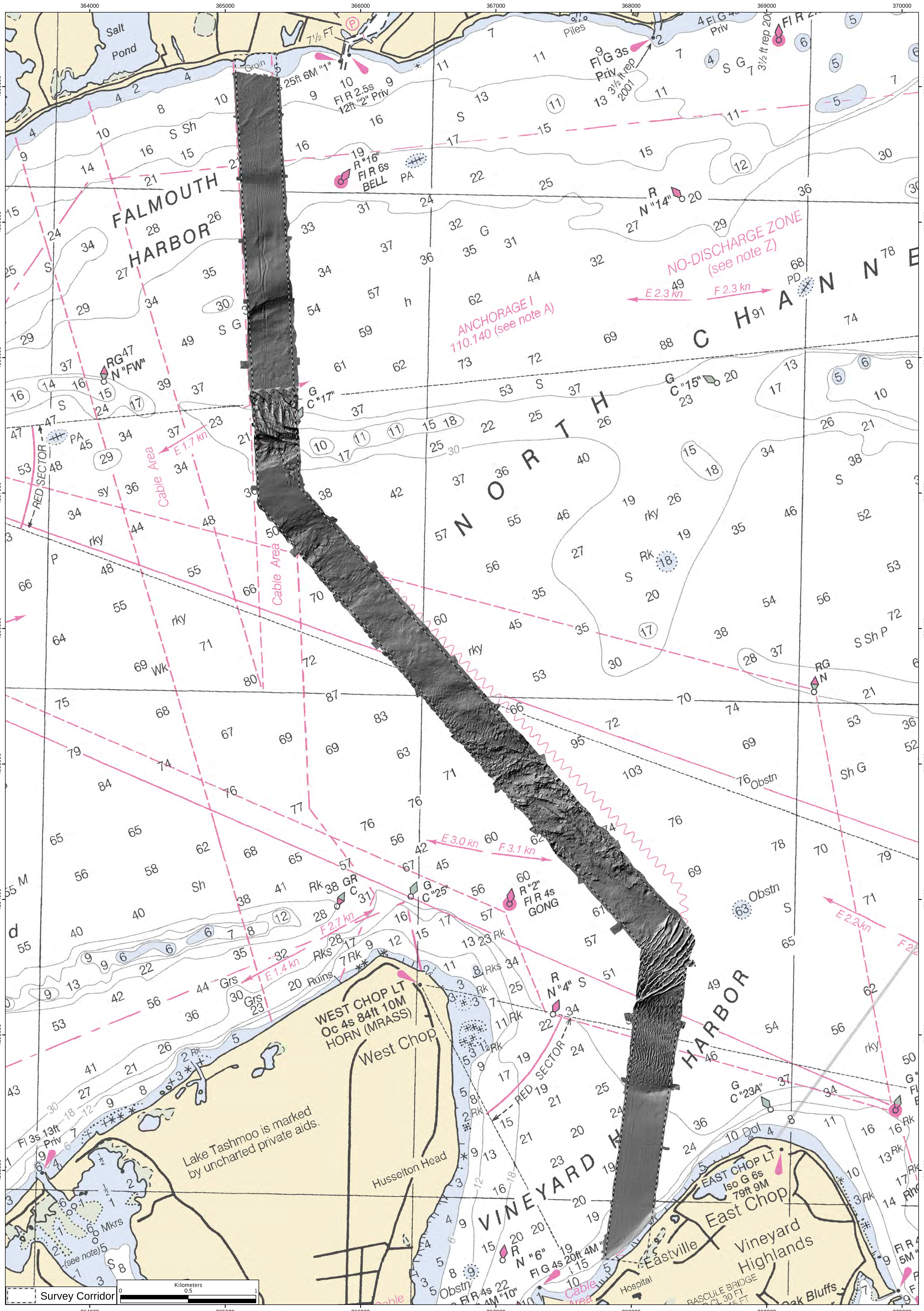


MEAN LOWER LOW WATER BATHYMETRY
1.0 m Contours and 5x Surface
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 2

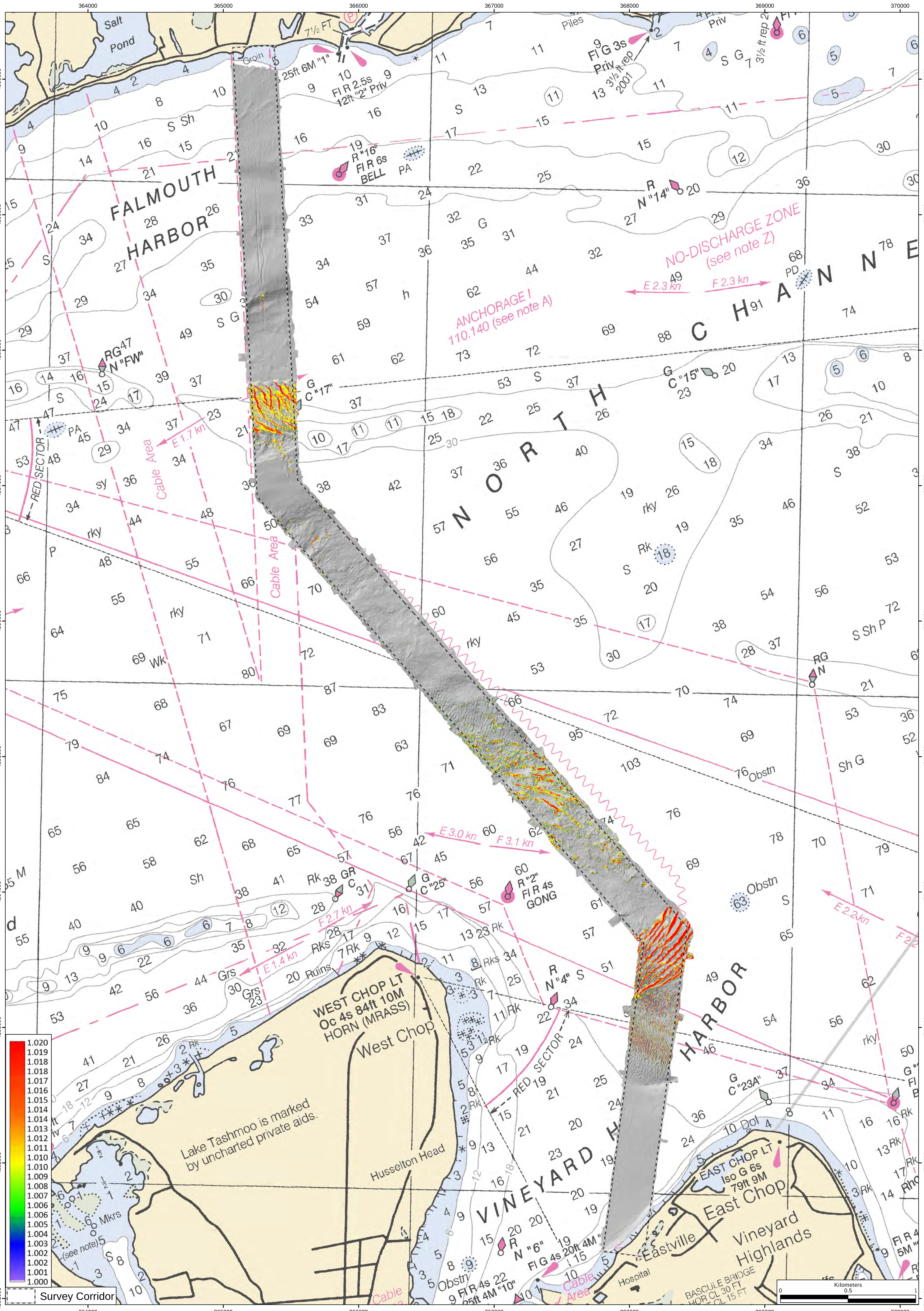


BATHYMETRIC RELIEF
5th Cable Crossing
Vineyard Sound, Massachusetts

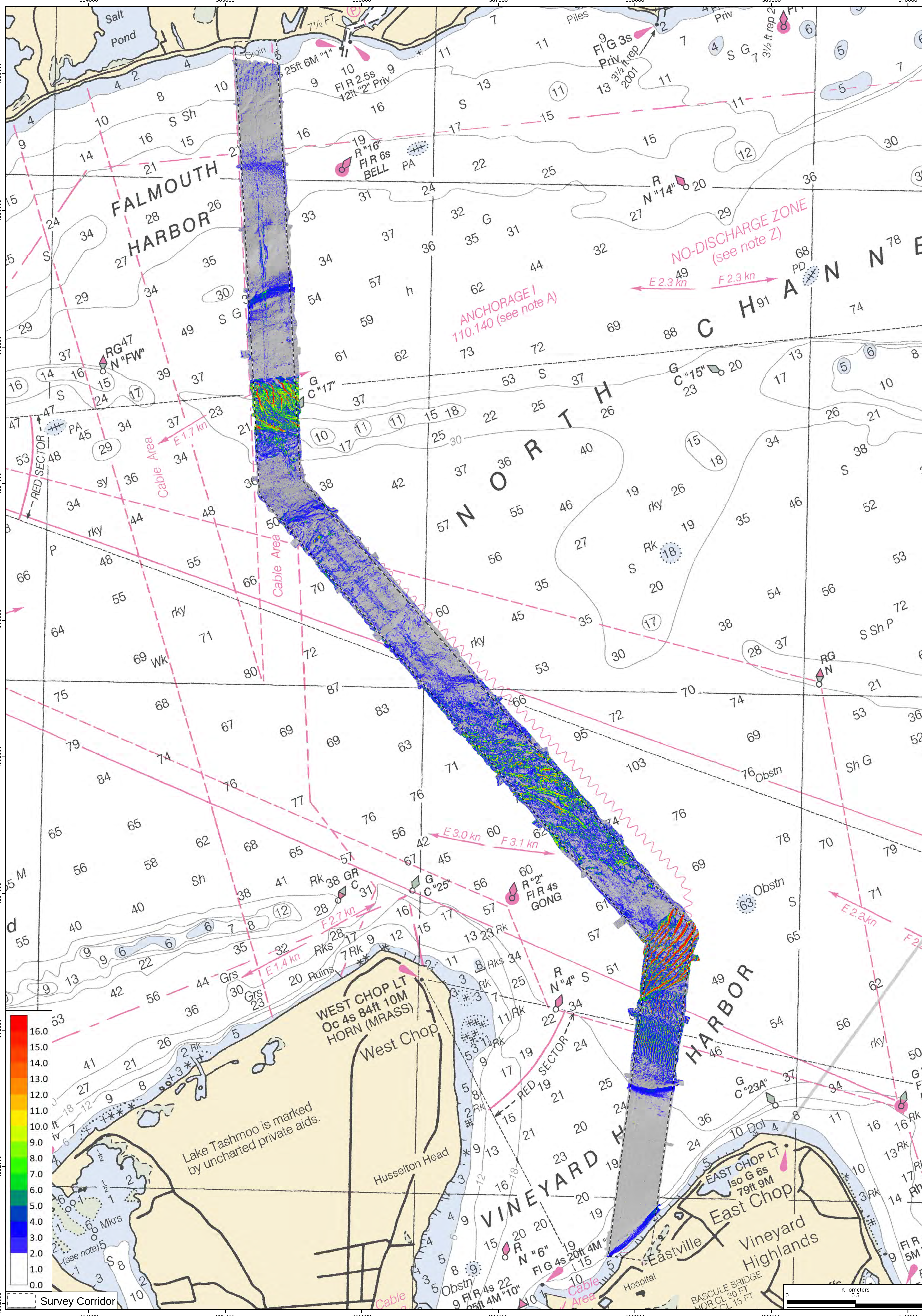
CR
www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 3



CR www.crenvironmental.com	SEAFLOOR RUGOSITY 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S
	NOTES: 1) Rugosity calculation discussed in Report Section X. 2) Grid UTM, Zone 19N, NAD 83 Meters	Figure 4

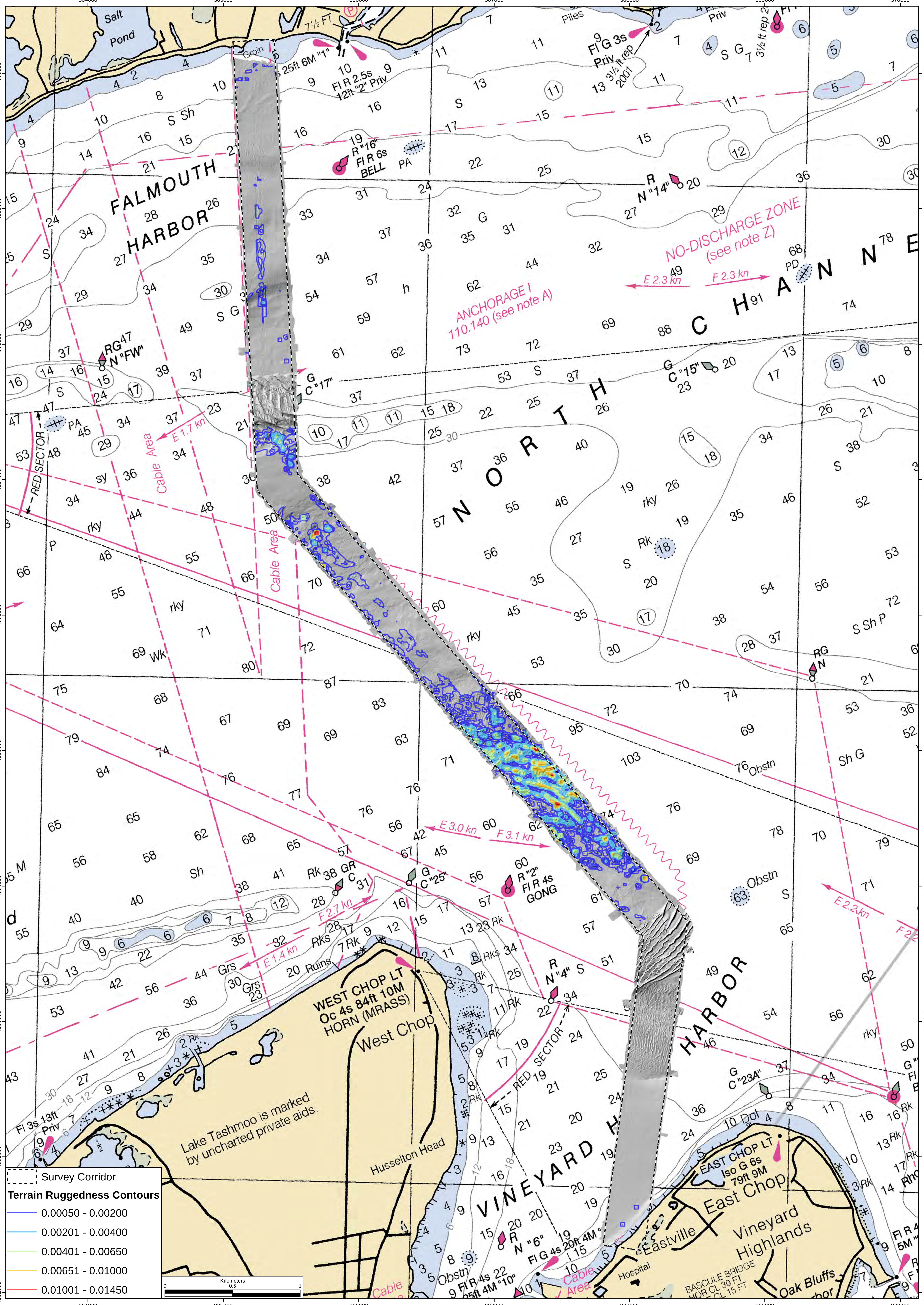


BATHYMETRIC SLOPE
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
www.crenvironmental.com

NOTES:
1) Terrain Slope (degrees).
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 5

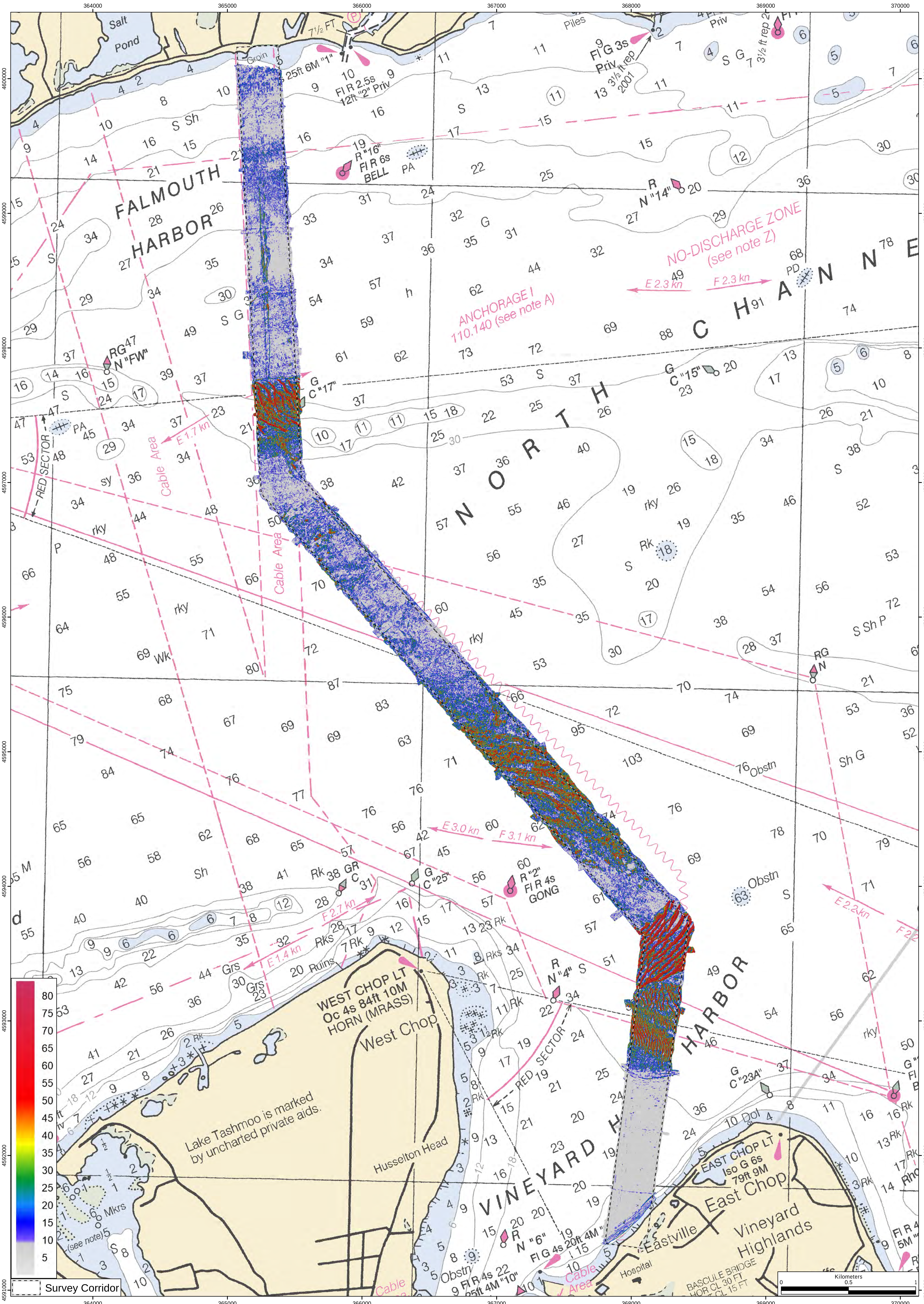


TERRAIN RUGGEDNESS CONTOURS
BASED ON BATHYMETRY
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Terrain ruggedness contours exclude sand wave fields.
3) Grid UTM, Zone 19N, NAD 83 Meters

Figure 6

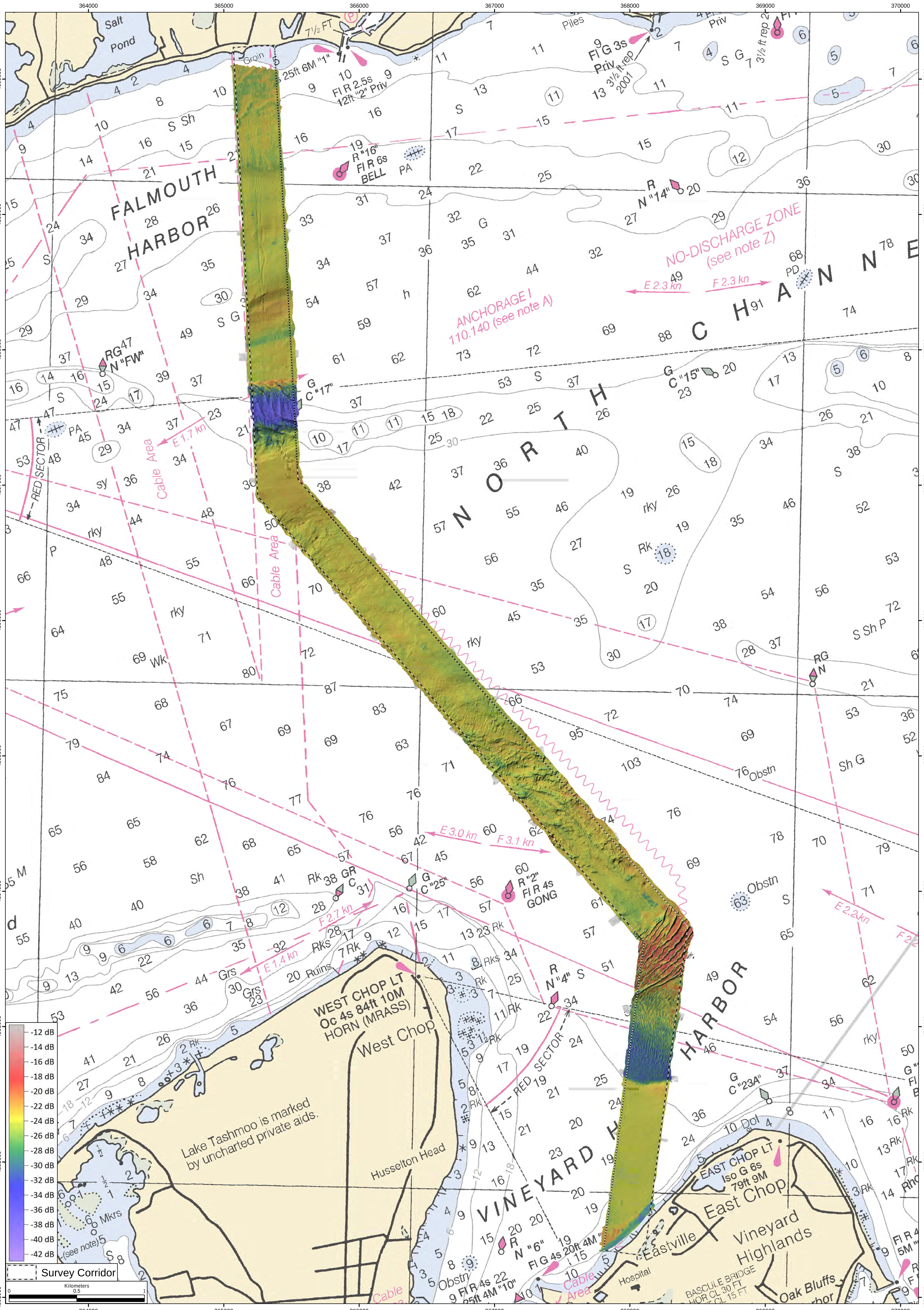


BATHYMETRIC SLOPE OF SLOPE
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
www.crenvironmental.com

NOTES:
1) Maximum rate of slope change (degrees of degrees).
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 7

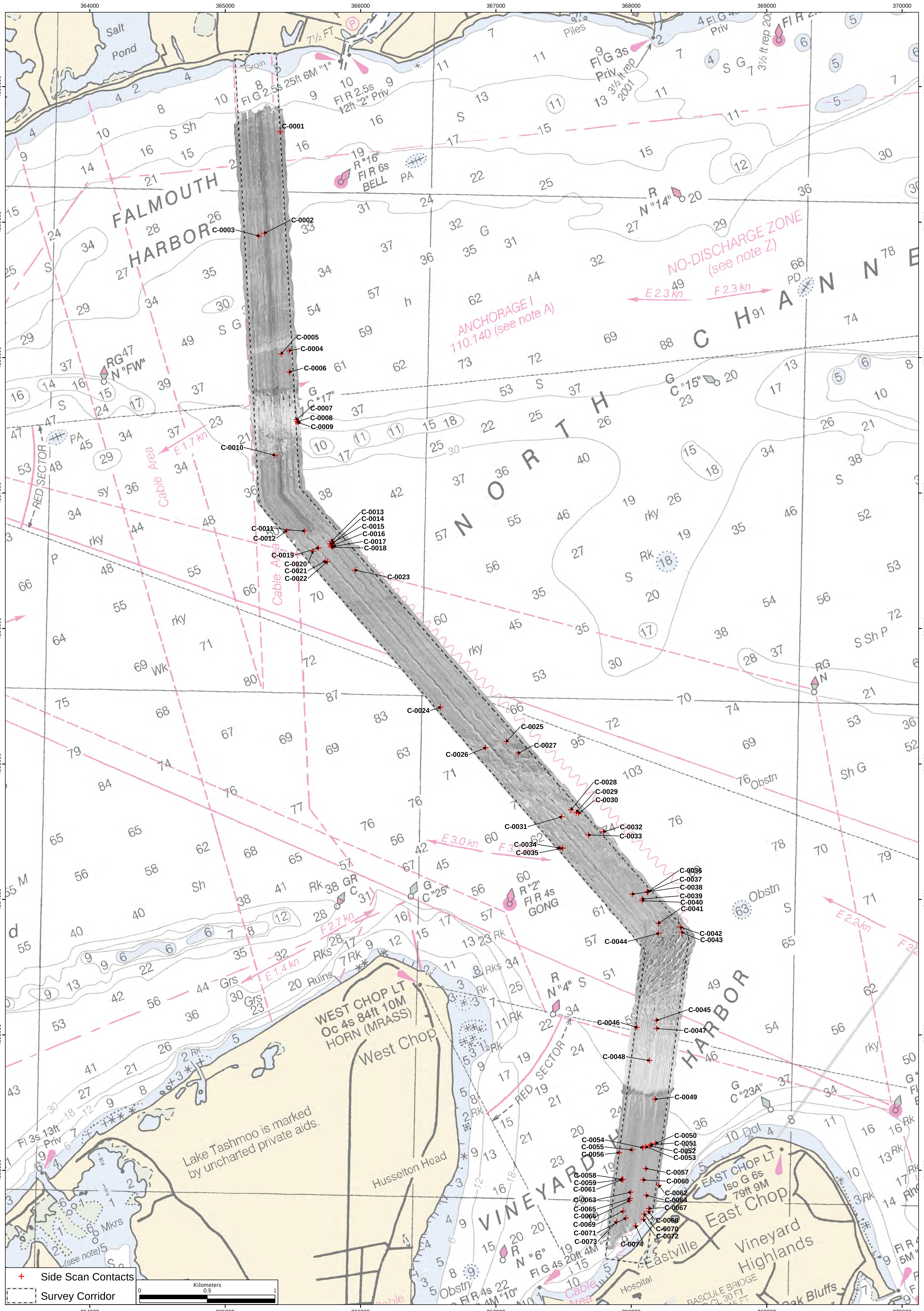


BEAM TIME SERIES BACKSCATTER MOSAIC
5th Cable Crossing
Vineyard Sound, Massachusetts

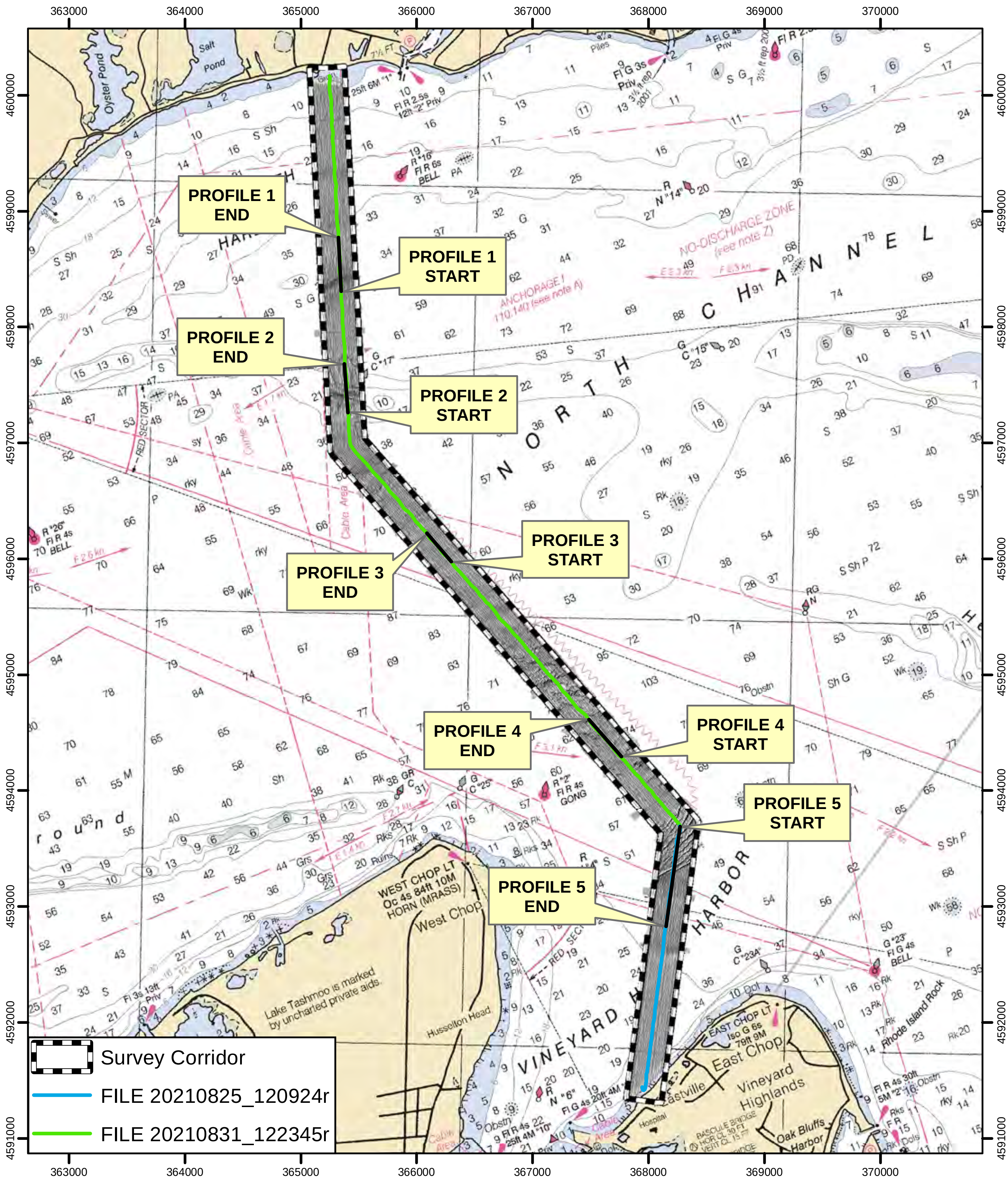
www.crenvironmental.com

NOTES:
1) Cooler colors suggest smoother surfaces.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 8



CR www.crenvironmental.com	400-kHz SIDE SCAN SONAR MOSAIC AND 900-kHz CONTACTS 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S	
	NOTES: 1) Detailed Contact imagery presented in Appendix A. 2) Grid UTM, Zone 19N, NAD 83 Meters	Figure 9	



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SUB-BOTTOM SONAR TRACKLINES AND INDEX TO PROFILES
15 meter Spacing
5th Cable Crossing
Vineyard Sound, Massachusetts

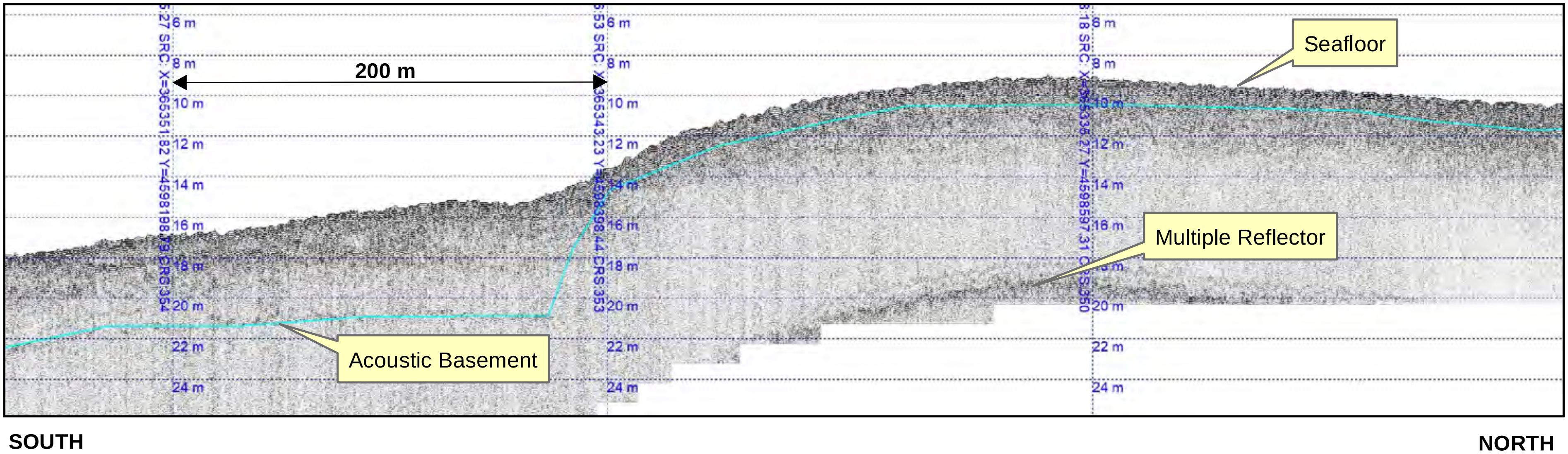
N W E S

NOTES:
1) Grid UTM, Zone 19N, NAD 83 Meters

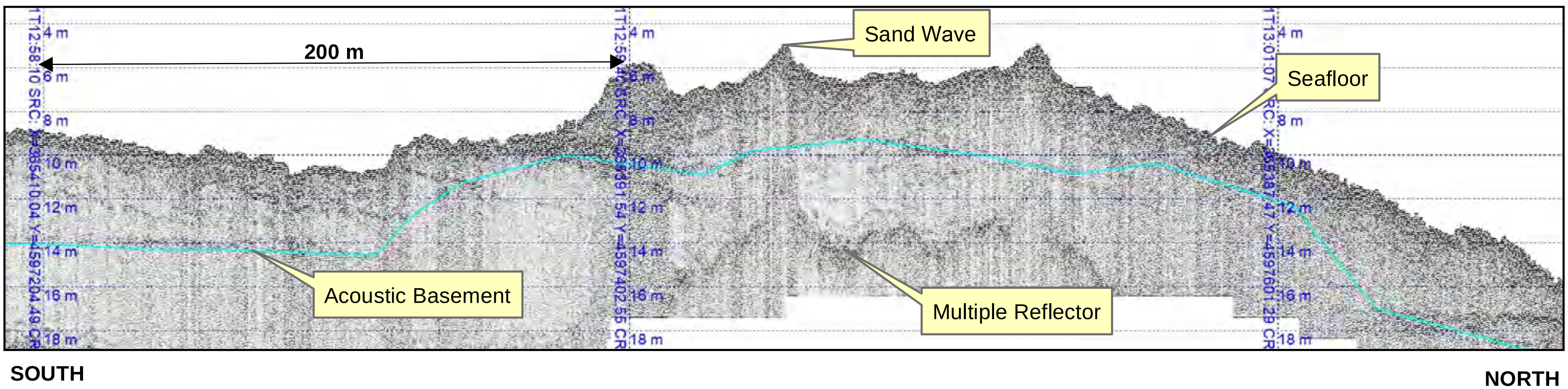
Kilometers
0 0.5 1

Figure 10

PROFILE 1 - PEBBLE/GRANULE to COBBLE BOTTOM

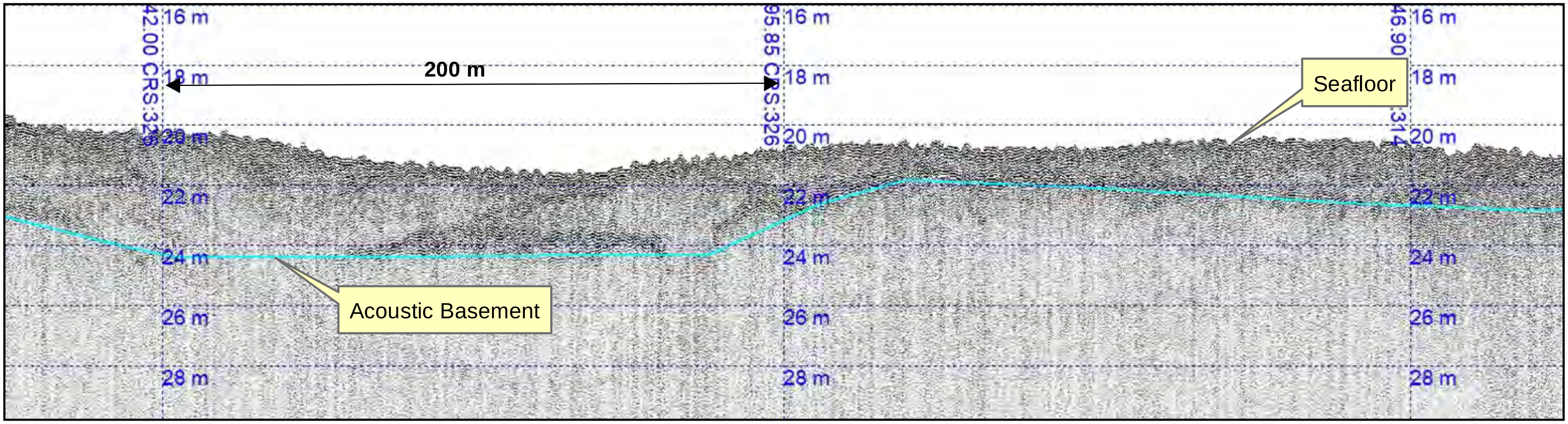


PROFILE 2 - SAND BOTTOM



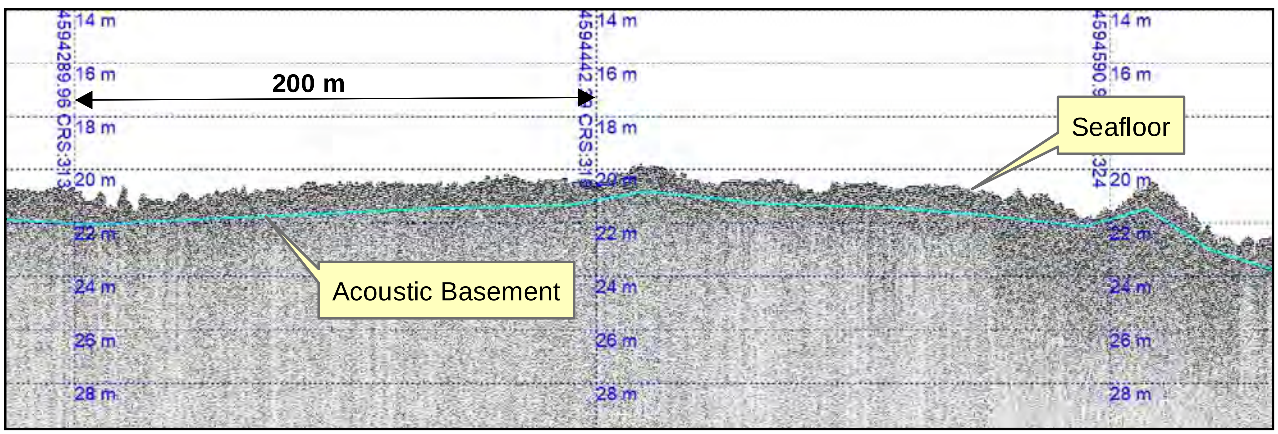
www.crenvironmental.com	EXAMPLES OF SUB-BOTTOM SONAR PROFILES 5th Cable Crossing Vineyard Sound, Massachusetts	N / S / E / W
	NOTES: 1) Profile locations shown on Figure 10.	Figure 11A

PROFILE 3 - PEBBLE/GRANULE BOTTOM



SOUTH **NORTH**

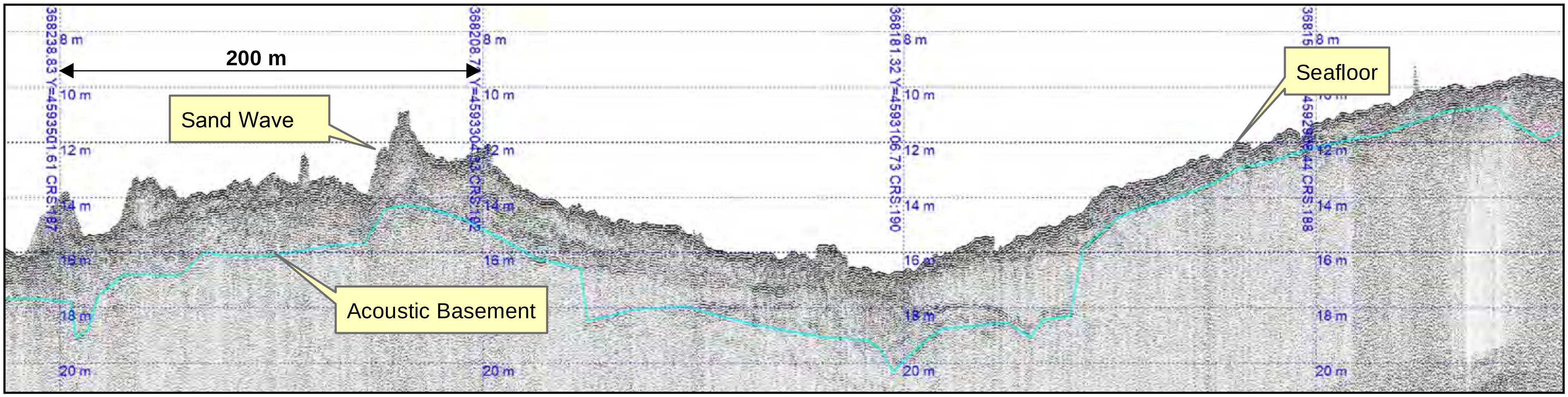
PROFILE 4 - BOULDER BOTTOM



SOUTH **NORTH**

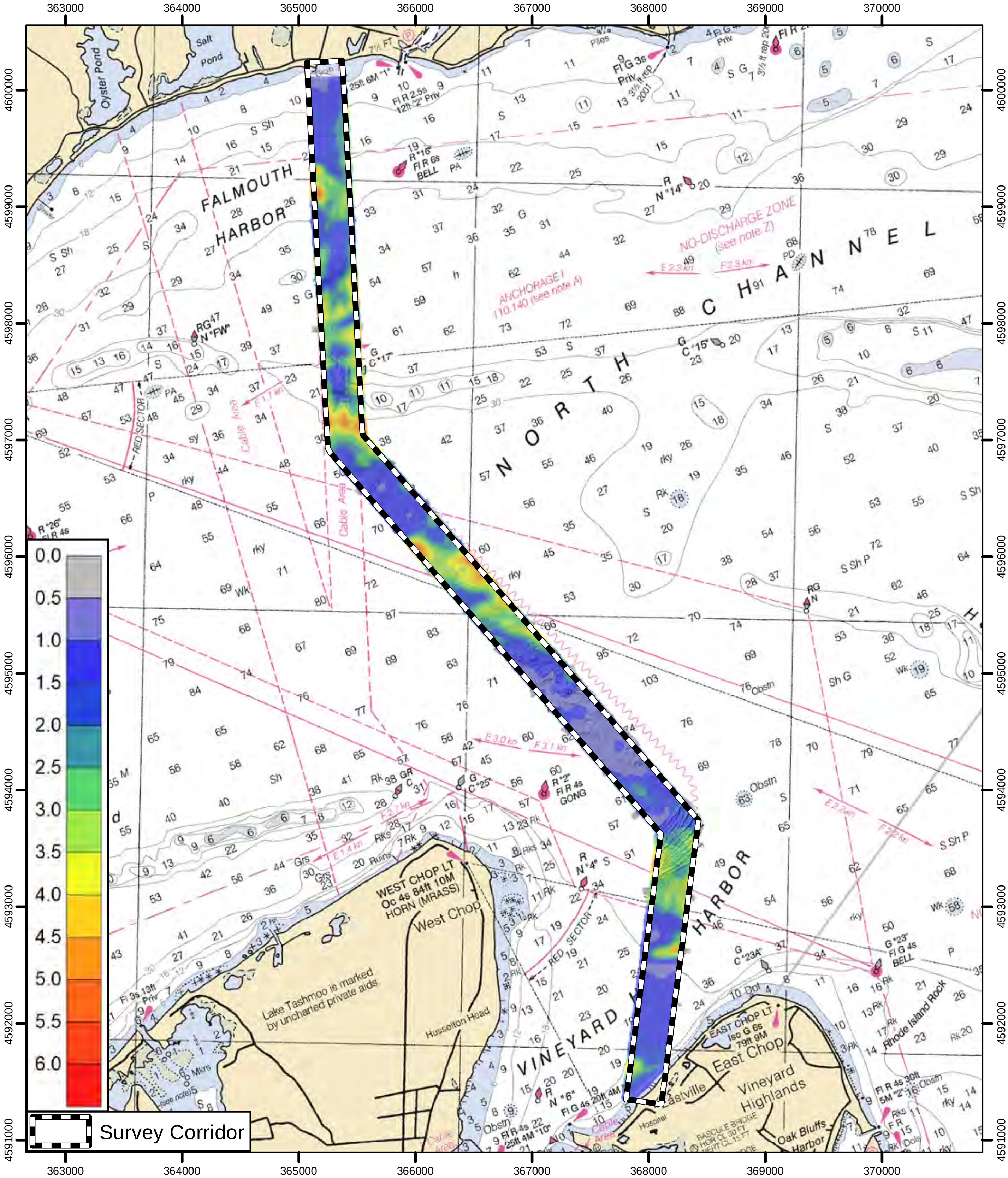
www.crenvironmental.com	EXAMPLES OF SUB-BOTTOM SONAR PROFILES 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S
	NOTES: 1) Profile locations shown on Figure 10	Figure 11B

PROFILE 5 - SAND / GRAVELLY SAND BOTTOM



NORTH **SOUTH**

www.crenvironmental.com	EXAMPLES OF SUB-BOTTOM SONAR PROFILES 5th Cable Crossing Vineyard Sound, Massachusetts	N / W / E / S
	NOTES: 1) Profile locations shown on Figure 10	Figure 11C



DEPTH TO ACOUSTIC BASEMENT BENEATH SEAFLOOR (m)
Based on Sub-Bottom Sonar
5th Cable Crossing
Vineyard Sound, Massachusetts

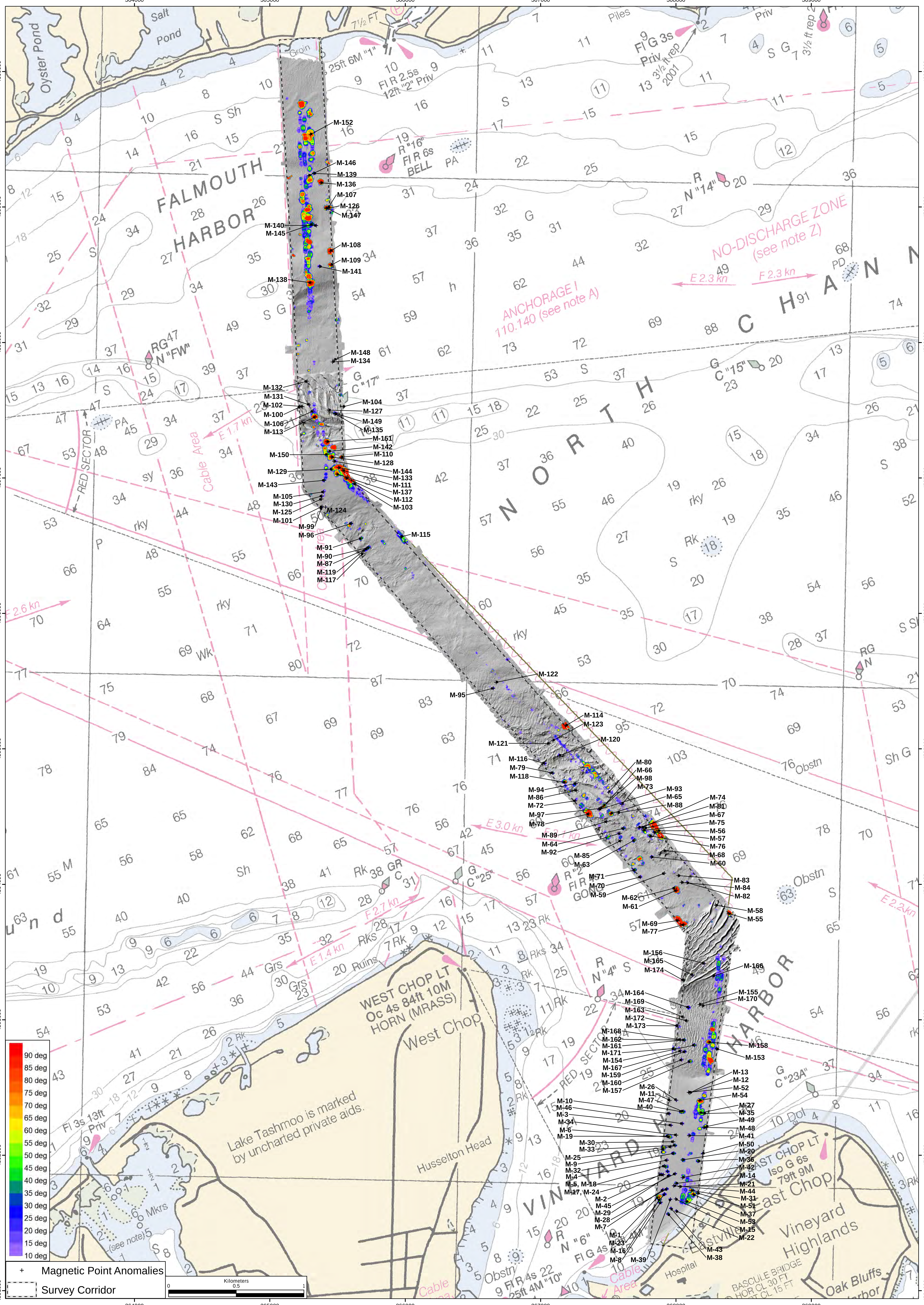
www.crenvironmental.com

N W E S

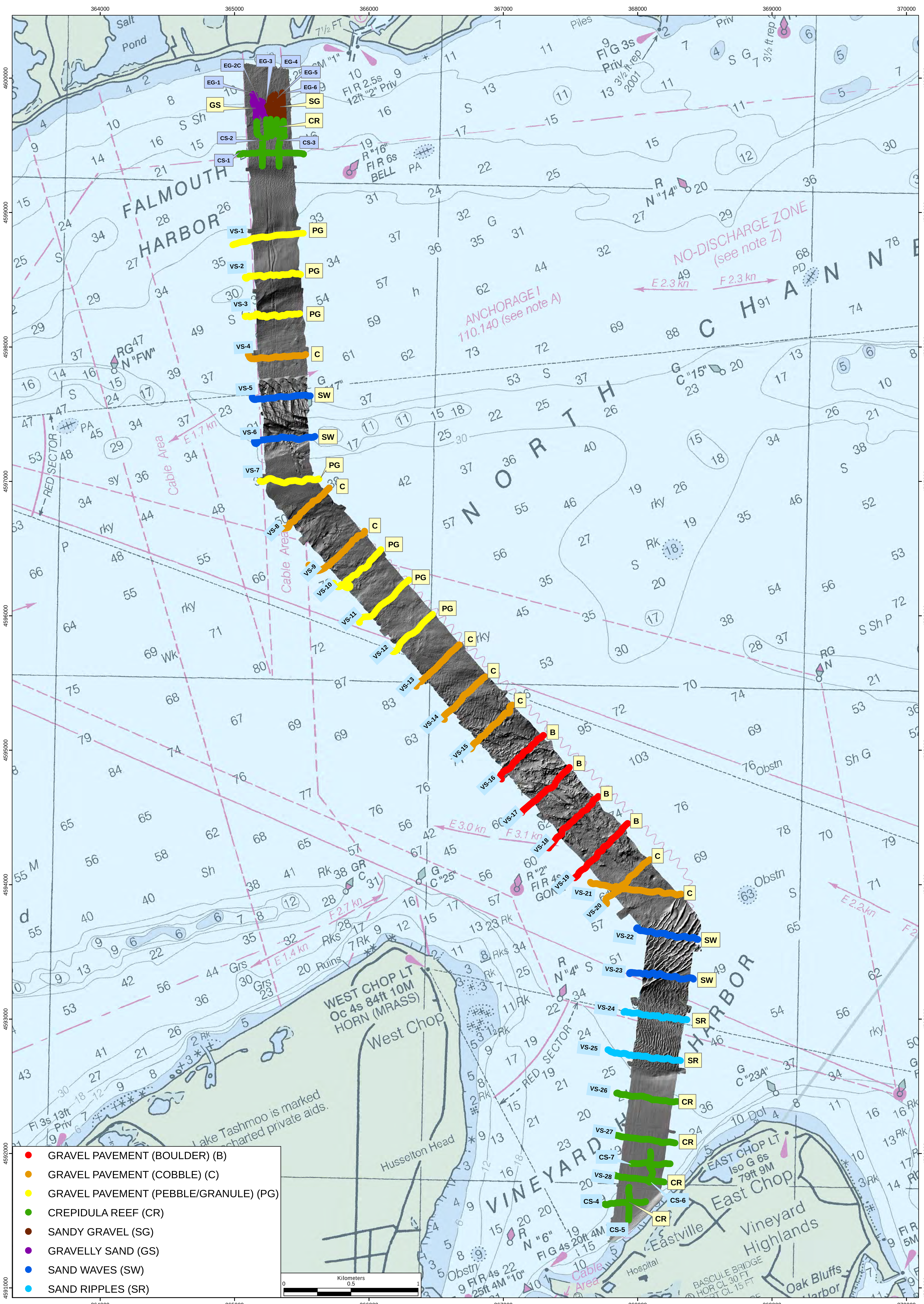
NOTES:
1) Grid UTM, Zone 19N, NAD 83 Meters

Kilometers
0 0.5 1

Figure 12



www.crenvironmental.com	MAGNETIC GRADIENT SLOPE AND DIGITIZED MAGNETIC ANOMALIES 5th Cable Crossing Vineyard Sound, Massachusetts	N / W / E / S
	NOTES: 1) Magnetic anomalies are described on Table 3. 2) Bathymetric relief layer uses 5x exaggeration. 3) Grid UTM, Zone 19N, NAD 83 Meters	Figure 13



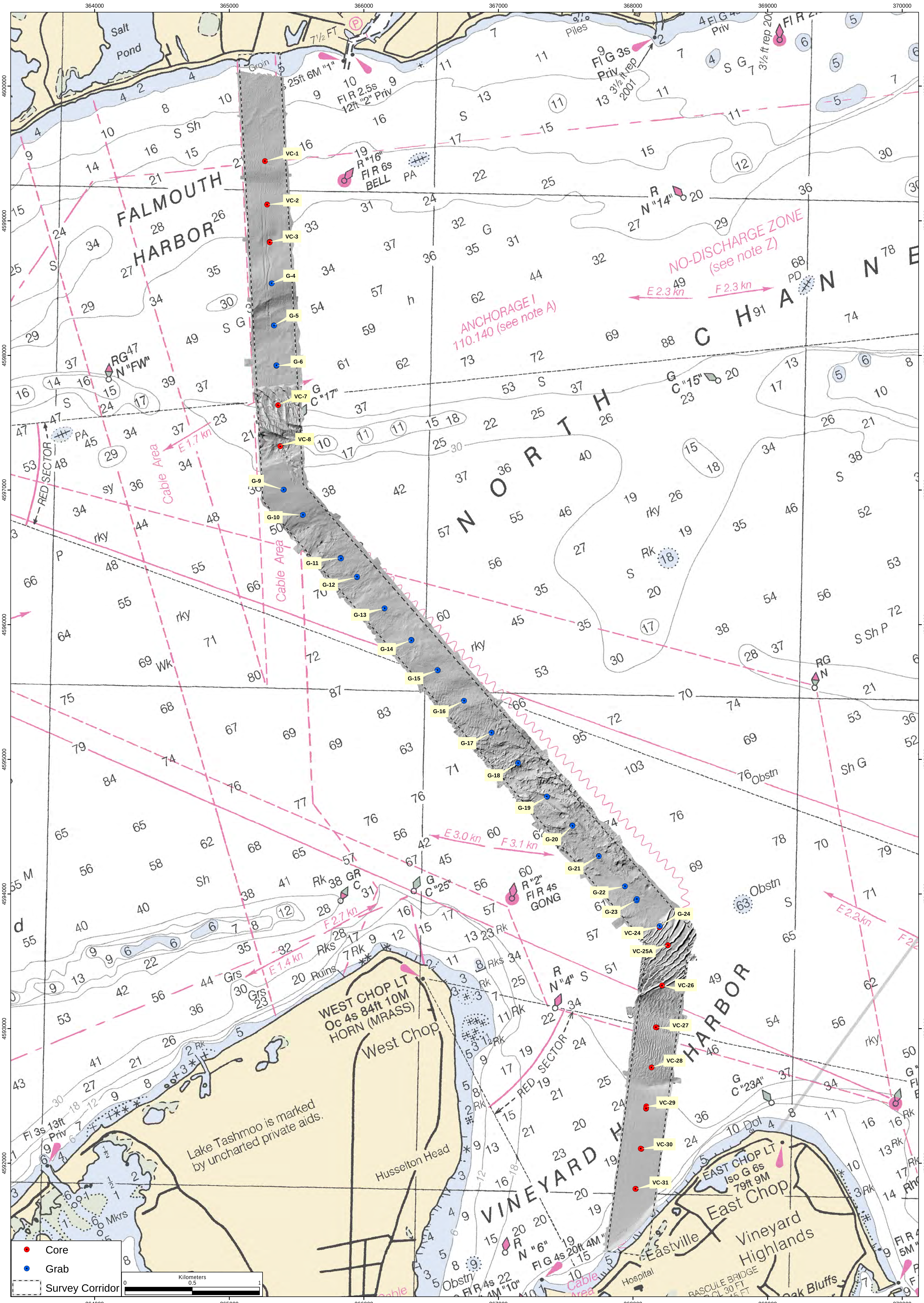
DOMINANT CMECS SUBSTRATE CLASSIFICATION
BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) Grid UTM, Zone 19N, NAD 83 Meters

1:12,000

Figure 14



CORE AND GRAB SAMPLE LOCATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
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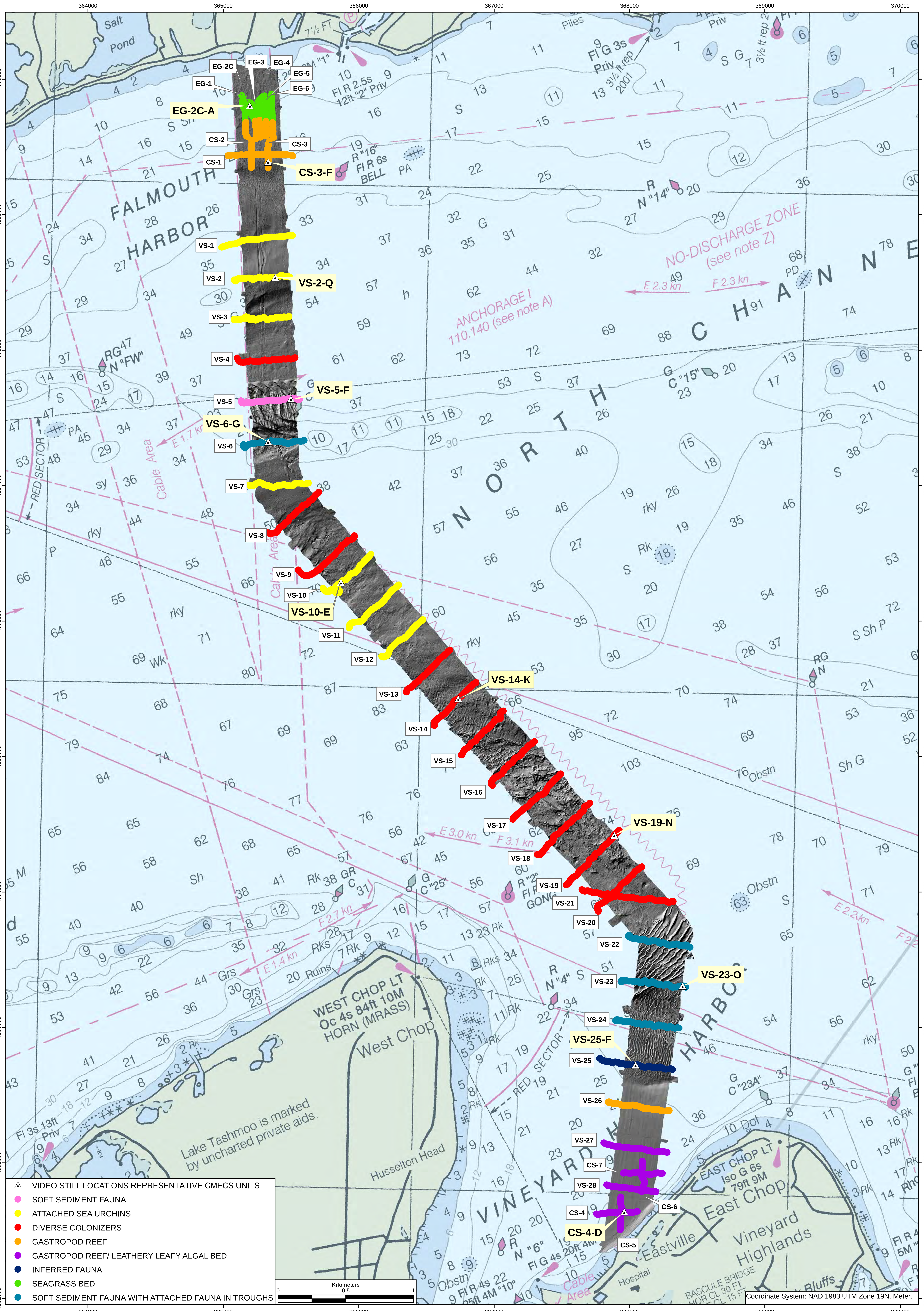
NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 15



DOMINANT CMECS BIOTIC COMPONENTS BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

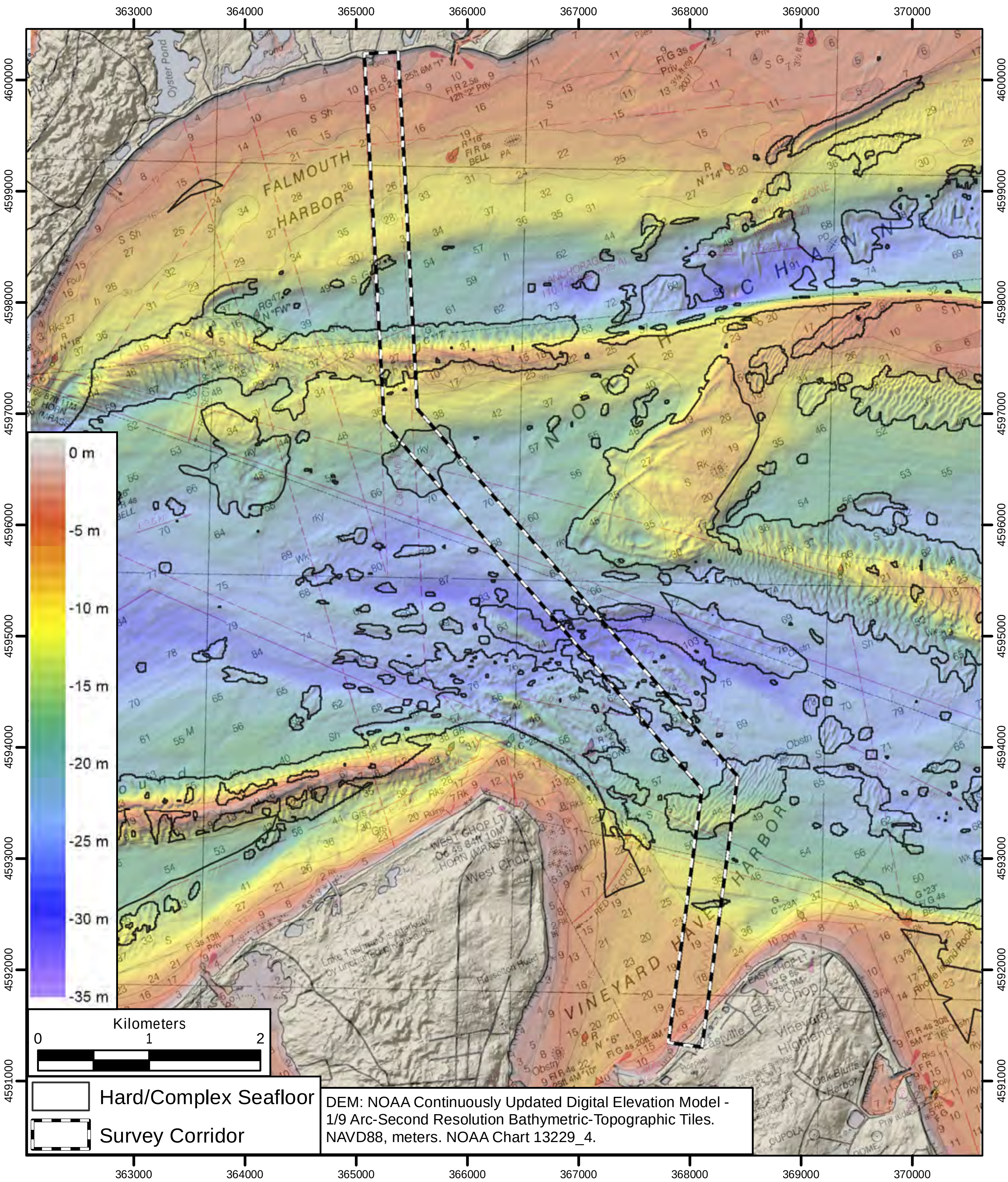
CR
www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) See Table X for detailed descriptions.

1:12,000

N W E S

Figure 16



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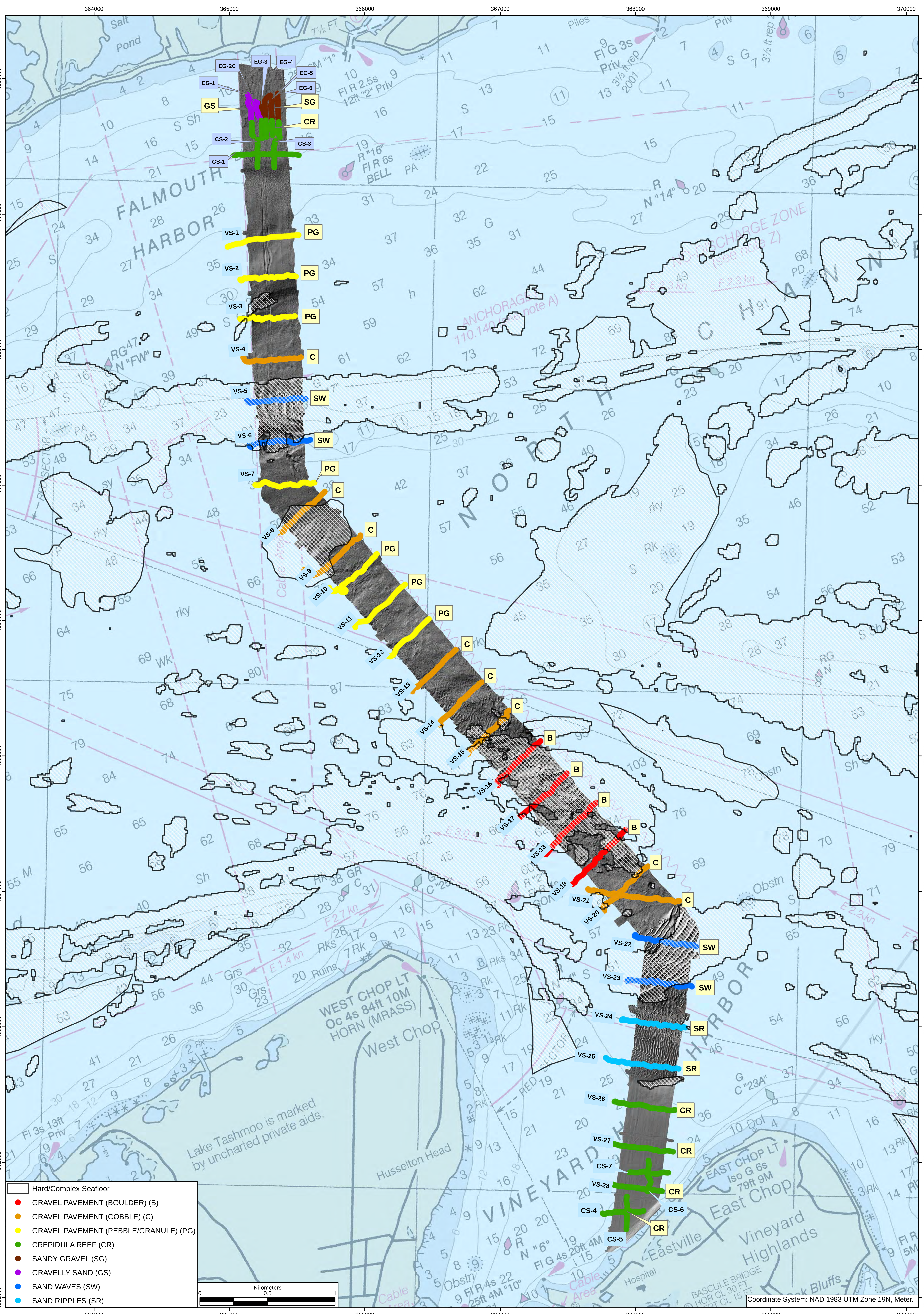
MASSACHUSETTS OCEAN MANAGEMENT PLAN
HARD / COMPLEX SEAFLOOR
5th Cable Crossing
Vineyard Sound, Massachusetts

N
W E
S

NOTES:
1) Souce: 2021 Massachusetts Ocean Management Plan Layer, hard_complex_seafloor_2021.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 17



DOMINANT CMECS SUBSTRATE CLASSIFICATION
BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) See Table X for detailed descriptions.

1:12,000

Figure 18

TABLES

TABLE 1

CROSS-LINE COMPARISON RESULTS
Eversource 5th Cable Hydrographic Survey
August 19 through September 14, 2021
Values in Meters

+/- Beam Angle Limit	Max Outlier	Mean Diff	Std Dev	95% Confidence
0	0.81	0.00	0.07	0.13
5	0.86	0.00	0.06	0.12
10	0.87	0.00	0.06	0.13
15	0.87	0.00	0.06	0.13
20	0.87	0.00	0.07	0.13
25	0.96	-0.01	0.06	0.11
30	0.96	-0.01	0.05	0.09
35	0.96	-0.02	0.06	0.12
40	0.83	-0.02	0.06	0.12
45	1.01	-0.03	0.06	0.12
50	1.09	-0.03	0.07	0.13
55	1.09	-0.04	0.07	0.13
60	1.09	-0.02	0.08	0.16
Average		-0.01	0.06	0.12

Notes:

1. Comparisons made between cross-line swaths and a reference surface created using mainstay data to +/- 55 degrees from nadir using 1m x 1m cell average elevations.

2. 95th percentile uncertainty calculated as 2x root mean square per ACOE recommendations.

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0001	365405.3	4599666.5	Boulder		0.7	2.3	1.3	1.3	0.0
C-0002	365289.8	4598917.3	Cable or fishing gear	Dimensions given for central target	0.2	1.5	0.3	0.6	0.0
C-0003	365250.1	4598897.2	Cable		0.3	0.0	0.3	1.1	0.0
C-0004	365473.2	4598050.0	Boulder Field		0.3	20.7	6.7	0.7	0.0
C-0005	365413.5	4598026.6	Boulder		2.5	3.1	1.0	2.4	0.0
C-0006	365473.7	4597892.6	Boulder		0.8	4.2	1.9	1.6	0.0
C-0007	365525.8	4597539.9	Fishing Gear		0.8	0.7	0.9	2.7	0.0
C-0008	365532.4	4597526.3	Boulder		1.0	5.4	1.1	2.3	0.0
C-0009	365539.9	4597520.9	Boulder		1.9	2.2	1.3	1.9	0.0
C-0010	365367.4	4597278.3	Possible Cable Segment		0.2	17.7	0.3	0.3	0.0
C-0011	365586.8	4596719.1	Boulder		2.1	4.3	3.5	5.8	0.0
C-0012	365454.4	4596721.5	Debris or Wreckage		0.0	7.0	1.6	0.2	0.0
C-0013	365785.9	4596643.3	Boulder	Possible debris	0.5	8.0	2.5	3.1	0.0
C-0014	365793.0	4596625.7	Boulder		1.3	6.1	2.3	4.7	0.0
C-0015	365774.0	4596623.2	Boulder		1.7	4.2	3.1	4.0	0.0
C-0016	365782.3	4596609.0	Boulder		1.6	3.5	1.3	4.6	0.0
C-0017	365802.9	4596606.0	Boulder		2.5	6.8	3.2	2.8	0.0
C-0018	365786.8	4596599.5	Boulder or debris		1.0	4.0	1.1	3.4	0.0
C-0019	365690.5	4596594.7	Boulder		5.2	8.0	2.2	6.1	0.0
C-0020	365649.3	4596570.5	Boulder		1.4	3.7	2.7	8.0	0.0
C-0021	365738.7	4596497.6	Boulder		1.6	5.7	3.0	9.1	0.0
C-0022	365753.6	4596492.3	Boulder		1.6	5.5	2.8	9.2	0.0
C-0023	365959.4	4596431.1	Boulder field	Anomalous cluster of rocks	1.1	5.2	9.7	1.3	0.0
C-0024	366590.7	4595418.5	Fish shoal (typical)	Inverted image	0.0	0.0	0.0	0.0	0.0
C-0025	367077.0	4595163.8	Sand	Anomolous sand formation. Possible buried object.	0.2	5.1	3.6	0.8	0.0
C-0026	366924.0	4595119.6	Fishing gear	Likely conch trap	1.2	1.3	1.0	3.5	0.0
C-0027	367164.2	4595079.2	Debris		0.0	6.2	1.9	0.0	1.4
C-0028	367554.8	4594661.4	Boulder Field	Measurments for typical boulder	1.1	2.3	1.6	2.3	0.0
C-0029	367593.6	4594639.6	Boulder or ledge		0.8	7.2	3.1	2.4	0.0
C-0030	367611.6	4594633.6	Trench		0.0	20.1	2.5	0.0	0.0
C-0031	367485.7	4594609.4	Boulder Field	Boulder ridge	0.0	0.0	0.0	0.0	0.0
C-0032	367794.5	4594498.4	Trench with possible cable segment		0.0	0.0	0.0	0.0	0.0
C-0033	367683.6	4594476.0	Boulder		1.3	3.0	1.7	1.7	0.0

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0034	367473.8	4594379.4	Boulder or debris		2.5	3.2	2.6	4.9	0.0
C-0035	367493.6	4594378.2	Boulder or debris		2.4	5.4	3.3	9.3	0.0
C-0036	368121.2	4594056.7	Boulder or debris		3.8	6.1	3.4	5.2	0.0
C-0037	368117.6	4594052.2	Boulder or debris		1.5	9.2	3.1	10.0	0.0
C-0038	368006.8	4594038.3	Possible cable segment		0.6	17.4	0.3	1.5	0.0
C-0039	368080.8	4594002.8	Debris	Possible debris field	1.6	6.7	3.9	1.9	0.0
C-0040	368080.1	4593990.4	Possible cable segment		0.2	11.2	1.8	0.3	0.0
C-0041	368200.1	4593822.7	Debris		0.5	6.5	0.7	2.3	0.0
C-0042	368362.3	4593795.3	Cable		0.0	35.1	0.2	0.0	0.0
C-0043	368372.7	4593757.3	Cable		0.0	27.6	0.0	0.0	0.0
C-0044	368202.2	4593748.6	Sand waves	Width = approximate wavelength (peak to peak)	0.0	0.0	1.7	0.0	0.0
C-0045	368185.6	4593105.5	Debris		0.6	3.2	1.3	1.9	0.0
C-0046	368042.8	4593054.7	Debris	Debris in sand waves	0.4	6.4	0.4	0.9	0.0
C-0047	368187.8	4593047.2	Debris	Debris in sand waves	0.2	1.6	2.5	0.7	0.0
C-0048	368134.4	4592809.5	Fishing gear	Likely conch trap near sand ridge	0.3	1.3	0.8	1.0	0.0
C-0049	368176.7	4592524.4	Debris		0.1	3.1	0.1	0.2	0.0
C-0050	368180.6	4592198.7	Fishing Gear	Likely conch trap	0.2	1.5	0.7	0.2	0.0
C-0051	368145.6	4592188.9	Fishing Gear	Likely conch trap	0.3	1.0	0.9	1.8	0.0
C-0052	368138.4	4592180.5	Fishing Gear	Likely conch trap	0.2	1.0	0.6	2.3	0.0
C-0053	368107.5	4592175.3	Fishing Gear	Likely conch trap	0.3	1.1	0.5	1.3	0.0
C-0054	368084.5	4592166.9	Fishing Gear	Likely conch trap	0.3	0.8	0.5	1.9	0.0
C-0055	368005.9	4592150.4	Fishing Gear	Likely conch trap	0.3	0.9	0.8	2.2	0.0
C-0056	367910.9	4592130.2	Fishing Gear	Likely conch trap	0.1	1.3	0.7	0.2	0.0
C-0057	368104.9	4592013.2	Fishing Gear	Likely conch trap	0.6	1.2	0.7	0.8	0.0
C-0058	367938.3	4591933.0	Wreck	Northern portion	0.8	19.3	3.5	3.6	0.0
C-0059	367932.9	4591932.6	Wreck		0.2	15.8	3.0	0.9	0.0
C-0060	368087.6	4591929.3	Fishing Gear	Likely conch trap	0.0	1.1	0.7	0.0	0.0
C-0061	367929.7	4591929.7	Wreck		0.5	18.8	8.0	2.9	0.0
C-0062	368203.9	4591889.6	Debris	Debris likely associated with wreckage to west	0.3	15.0	1.0	2.0	0.0
C-0063	367995.9	4591838.1	Fishing Gear	Likely conch trap	0.5	1.2	0.9	3.5	0.0
C-0064	368110.1	4591815.0	Fishing Gear	Likely conch trap	0.3	1.2	0.4	2.0	0.0
C-0065	367991.1	4591792.1	Fishing Gear	Likely conch trap	0.3	1.2	0.5	2.6	0.0
C-0066	367987.5	4591775.1	Fishing Gear	Likely conch trap	0.2	0.9	0.5	2.0	0.0
C-0067	368130.2	4591717.3	Fishing Gear	Likely conch trap	0.6	1.7	0.7	4.8	0.0

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0068	368127.8	4591696.0	Fishing Gear	Likely conch trap	0.5	1.4	1.0	4.0	0.0
C-0069	367939.1	4591698.0	Fish shoal (typical)		0.0	0.0	0.0	0.0	0.0
C-0070	368095.6	4591677.4	Fishing Gear	Likely conch trap	0.3	1.0	0.6	2.2	0.0
C-0071	367959.9	4591647.0	Fishing Gear	Likely conch trap	0.3	1.6	0.8	2.9	0.0
C-0072	368090.1	4591637.2	Debris		0.2	3.0	0.3	1.2	0.0
C-0073	367891.6	4591619.7	Trench		0.0	9.4	1.1	0.0	0.9
C-0074	368032.6	4591590.7	Fishing Gear	Likely conch trap	0.3	1.3	0.5	2.1	0.0

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-1	MAGTGT (272.64)	367867	4591692	272.6	15.3	29.6	Multiple Component
M-2	MAGTGT (34.07)	367890	4591859	34.1	7.8	14.6	Dipolar
M-3	MAGTGT (22.54)	367963	4592220	22.5	7.5	12.9	Dipolar
M-4	MAGTGT (12.95)	367933	4591963	13.0	7.5	12.7	Multiple Component
M-5	MAGTGT (75.85)	367924	4591914	75.9	11.0	18.2	Dipolar
M-6	MAGTGT (175.46)	367950	4592134	175.5	11.0	18.3	Dipolar
M-7	MAGTGT (21.96)	367903	4591744	22.0	7.5	13.8	Monopolar
M-8	MAGTGT (33.18)	367888	4591653	33.2	17.0	30.4	Multiple Component
M-9	MAGTGT (220.00)	367909	4592045	220.0	33.5	63.1	Multiple Component
M-10	MAGTGT (36.72)	367950	4592307	36.7	8.0	17.0	Dipolar
M-11	MAGTGT (12.09)	367954	4592404	12.1	7.1	15.1	Monopolar
M-12	MAGTGT (25.70)	368102	4592460	25.7	23.8	36.4	Dipolar
M-13	MAGTGT (25.70)	368102	4592460	25.7	23.8	36.4	Dipolar
M-14	MAGTGT (44.38)	368001	4591791	44.4	13.5	23.7	Dipolar
M-15	MAGTGT (12.39)	367998	4591677	12.4	6.7	12.1	Monopolar
M-16	MAGTGT (296.86)	367879	4591676	296.9	30.5	60.2	Multiple Component
M-17	MAGTGT (20.20)	367906	4591856	20.2	10.3	19.9	Monopolar
M-18	MAGTGT (20.89)	367914	4591921	20.9	7.2	12.0	Dipolar
M-19	MAGTGT (90.28)	367942	4592140	90.3	7.7	15.6	Dipolar
M-20	MAGTGT (96.66)	368048	4591965	96.7	19.3	34.3	Dipolar
M-21	MAGTGT (14.43)	368028	4591768	14.4	8.3	17.1	Dipolar
M-22	MAGTGT (16.70)	368002	4591587	16.7	6.8	12.9	Dipolar
M-23	MAGTGT (47.88)	367915	4591713	47.9	12.3	29.7	Monopolar
M-24	MAGTGT (46.11)	367938	4591881	46.1	9.5	17.4	Dipolar
M-25	MAGTGT (14.36)	367962	4592063	14.4	6.6	15.3	Dipolar
M-26	MAGTGT (23.77)	368003	4592406	23.8	12.0	22.4	Dipolar
M-27	MAGTGT (42568.55)	368178	4592312	42568.6	7.5	14.3	Multiple Component
M-28	MAGTGT (34.16)	367932	4591751	34.2	9.3	23.2	Monopolar
M-29	MAGTGT (36.68)	367948	4591850	36.7	9.3	17.1	Multiple Component
M-30	MAGTGT (10.74)	367981	4592099	10.7	23.7	43.1	Multiple Component
M-31	MAGTGT (423.87)	368114	4591740	423.9	8.7	16.7	Dipolar
M-32	MAGTGT (75.66)	367984	4592014	75.7	20.3	40.0	Dipolar
M-33	MAGTGT (51.62)	367993	4592072	51.6	5.8	11.0	Monopolar
M-34	MAGTGT (11.28)	368003	4592148	11.3	12.3	24.9	Multiple Component
M-35	MAGTGT (45.69)	368206	4592308	45.7	7.8	13.6	Dipolar
M-36	MAGTGT (78.90)	368163	4591956	78.9	8.0	13.9	Dipolar
M-37	MAGTGT (749.91)	368128	4591710	749.9	16.5	30.4	Multiple Component
M-38	MAGTGT (38.93)	367942	4591566	38.9	5.3	11.1	Dipolar
M-39	MAGTGT (27.20)	367959	4591675	27.2	5.3	9.9	Monopolar
M-40	MAGTGT (137.68)	368041	4592321	137.7	19.8	37.4	Multiple Component
M-41	MAGTGT (22.68)	368095	4592144	22.7	18.8	36.8	Multiple Component
M-42	MAGTGT (56.66)	368049	4591835	56.7	18.7	33.9	Multiple Component
M-43	MAGTGT (27.67)	367963	4591607	27.7	8.3	19.1	Monopolar
M-44	MAGTGT (19.96)	367984	4591774	20.0	5.5	13.3	Monopolar
M-45	MAGTGT (23.32)	367994	4591864	23.3	6.5	15.8	Monopolar
M-46	MAGTGT (43.69)	368047	4592232	43.7	16.8	39.1	Dipolar
M-47	MAGTGT (78.52)	368054	4592322	78.5	13.0	29.8	Monopolar
M-48	MAGTGT (60.73)	368206	4592205	60.7	11.8	18.8	Dipolar
M-49	MAGTGT (163.81)	368224	4592211	163.8	12.3	21.8	Dipolar
M-50	MAGTGT (35.86)	368197	4592011	35.9	9.5	16.4	Dipolar
M-51	MAGTGT (47.66)	368159	4591720	47.7	7.5	15.4	Dipolar
M-52	MAGTGT (21.58)	368093	4592464	21.6	28.0	45.9	Dipolar
M-53	MAGTGT (38482.51)	368075	4591660	38482.5	8.3	17.0	Multiple Component
M-54	MAGTGT (31664.83)	368173	4592404	31664.8	9.8	17.5	Multiple Component
M-55	MAGTGT (36957.06)	368389	4593784	36957.1	11.5	18.5	Multiple Component
M-56	MAGTGT (52778.16)	367867	4594396	52778.2	116.7	136.1	Multiple Component
M-57	MAGTGT (36.18)	367838	4594385	36.2	28.8	31.9	Dipolar
M-58	MAGTGT (11.89)	368293	4593846	11.9	39.7	41.6	Monopolar
M-59	MAGTGT (14.83)	367913	4594082	14.8	14.3	24.6	Dipolar

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-60	MAGTGT (48.34)	367819	4594202	48.3	18.8	33.3	Dipolar
M-61	MAGTGT (10769.83)	368003	4593956	10769.8	12.9	19.3	Multiple Component
M-62	MAGTGT (74.16)	367991	4593973	74.2	9.5	15.2	Dipolar
M-63	MAGTGT (108.53)	367693	4594327	108.5	9.0	15.5	Monopolar
M-64	MAGTGT (60.98)	367613	4594413	61.0	9.3	16.5	Dipolar
M-65	MAGTGT (1353.26)	367520	4594522	1353.3	16.8	30.4	Multiple Component
M-66	MAGTGT (476.17)	367466	4594578	476.2	11.6	21.3	Monopolar
M-67	MAGTGT (12.59)	367771	4594414	12.6	108.0	61.4	Dipolar
M-68	MAGTGT (11.44)	367911	4594248	11.4	40.5	32.0	Multiple Component
M-69	MAGTGT (10519.06)	368016	4593733	10519.1	37.0	64.9	Multiple Component
M-70	MAGTGT (44.96)	367738	4594054	45.0	13.0	25.6	Dipolar
M-71	MAGTGT (79.16)	367696	4594105	79.2	8.3	15.4	Monopolar
M-72	MAGTGT (22.51)	367257	4594616	22.5	9.5	17.6	Monopolar
M-73	MAGTGT (32.96)	367601	4594590	33.0	75.5	29.0	Monopolar
M-74	MAGTGT (16.25)	367749	4594418	16.3	56.8	23.7	Monopolar
M-75	MAGTGT (21.07)	367760	4594398	21.1	59.5	12.5	Monopolar
M-76	MAGTGT (23.62)	367806	4594358	23.6	21.8	2.8	Monopolar
M-77	MAGTGT (2896.83)	368058	4593702	2896.8	8.7	14.3	Monopolar
M-78	MAGTGT (51183.76)	367356	4594520	51183.8	15.6	26.0	Multiple Component
M-79	MAGTGT (53.32)	367090	4594822	53.3	14.5	27.3	Dipolar
M-80	MAGTGT (12.32)	367503	4594679	12.3	24.5	11.6	Monopolar
M-81	MAGTGT (28.51)	367726	4594419	28.5	102.5	52.3	Multiple Component
M-82	MAGTGT (39.06)	368081	4594013	39.1	55.4	49.4	Monopolar
M-83	MAGTGT (69.67)	368016	4594064	69.7	146.3	251.6	Multiple Component
M-84	MAGTGT (13.46)	368040	4594015	13.5	97.3	155.6	Multiple Component
M-85	MAGTGT (30.10)	367591	4594322	30.1	77.5	131.9	Multiple Component
M-86	MAGTGT (25.85)	367265	4594695	25.9	72.0	127.2	Multiple Component
M-87	MAGTGT (55.68)	365719	4596480	55.7	28.3	45.8	Monopolar
M-88	MAGTGT (9.95)	367572	4594527	10.0	43.0	49.3	Dipolar
M-89	MAGTGT (770.43)	367488	4594463	770.4	432.7	859.8	Multiple Component
M-90	MAGTGT (58.27)	365730	4596487	58.3	27.5	36.9	Monopolar
M-91	MAGTGT (81.33)	365674	4596555	81.3	22.2	35.5	Monopolar
M-92	MAGTGT (34.01)	367586	4594376	34.0	30.2	66.9	Monopolar
M-93	MAGTGT (32.74)	367432	4594552	32.7	28.5	54.5	Dipolar
M-94	MAGTGT (19.82)	367260	4594744	19.8	23.7	47.6	Monopolar
M-95	MAGTGT (23.18)	366650	4595447	23.2	17.3	29.8	Monopolar
M-96	MAGTGT (48.41)	365602	4596665	48.4	16.3	30.0	Monopolar
M-97	MAGTGT (21.05)	367443	4594560	21.1	48.0	52.8	Dipolar
M-98	MAGTGT (21.05)	367443	4594560	21.1	48.0	52.8	Dipolar
M-99	MAGTGT (35.56)	365381	4596782	35.6	26.5	37.4	Dipolar
M-100	MAGTGT (12.75)	365221	4597524	12.8	16.6	41.6	Dipolar
M-101	MAGTGT (22.32)	365385	4596790	22.3	17.0	36.2	Dipolar
M-102	MAGTGT (10.32)	365241	4597527	10.3	25.0	63.0	Dipolar
M-103	MAGTGT (38568.00)	365620	4596961	38568.0	123.8	211.2	Multiple Component
M-104	MAGTGT (25.23)	365541	4597525	25.2	22.8	45.5	Dipolar
M-105	MAGTGT (33.61)	365396	4596897	33.6	21.2	42.9	Dipolar
M-106	MAGTGT (80.33)	365317	4597494	80.3	74.8	136.1	Multiple Component
M-107	MAGTGT (788.32)	365431	4598996	788.3	14.7	24.0	Monopolar
M-108	MAGTGT (7566.56)	365446	4598675	7566.6	21.0	35.9	Multiple Component
M-109	MAGTGT (4764.12)	365452	4598572	4764.1	24.0	22.1	Multiple Component
M-110	MAGTGT (12523.26)	365528	4597153	12523.3	4.0	9.0	Monopolar
M-111	MAGTGT (32727.37)	365539	4597057	32727.4	6.5	21.7	Monopolar
M-112	MAGTGT (53236.59)	365562	4597001	53236.6	25.2	34.4	Dipolar
M-113	MAGTGT (38292.99)	365335	4597451	38293.0	74.5	120.2	Multiple Component
M-114	MAGTGT (7817.76)	367186	4595171	7817.8	13.0	20.5	Multiple Component
M-115	MAGTGT (365.48)	365970	4596566	365.5	106.2	145.0	Multiple Component
M-116	MAGTGT (43.63)	367029	4594893	43.6	22.3	41.4	Multiple Component
M-117	MAGTGT (20.80)	365688	4596444	20.8	17.8	37.0	Monopolar
M-118	MAGTGT (564.20)	367180	4594752	564.2	25.2	43.1	Dipolar

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-119	MAGTGT (44.68)	365700	4596469	44.7	30.0	52.8	Monopolar
M-120	MAGTGT (21.25)	367137	4594949	21.3	46.5	51.8	Multiple Component
M-121	MAGTGT (9.78)	367063	4595039	9.8	23.3	29.1	Monopolar
M-122	MAGTGT (22.63)	366671	4595491	22.6	43.7	65.0	Dipolar
M-123	MAGTGT (65.05)	367090	4595061	65.1	69.0	9.9	Multiple Component
M-124	MAGTGT (24.22)	365412	4596785	24.2	20.3	29.3	Dipolar
M-125	MAGTGT (23.90)	365381	4596845	23.9	24.0	46.7	Dipolar
M-126	MAGTGT (19.26)	365416	4598988	19.3	11.5	24.7	Monopolar
M-127	MAGTGT (9.65)	365435	4597501	9.7	15.0	22.6	Monopolar
M-128	MAGTGT (5670.87)	365456	4597154	38499.9	16.8	27.7	Multiple Component
M-129	MAGTGT (139.11)	365460	4597065	139.1	26.0	45.8	Multiple Component
M-130	MAGTGT (31.12)	365384	4596867	31.1	33.2	40.4	Multiple Component
M-131	MAGTGT (30.80)	365291	4597540	30.8	38.5	56.5	Multiple Component
M-132	MAGTGT (16.96)	365274	4597714	17.0	61.5	88.3	Multiple Component
M-133	MAGTGT (38378.41)	365507	4597077	38378.4	29.5	53.4	Multiple Component
M-134	MAGTGT (19.95)	365463	4597857	20.0	17.5	31.1	Monopolar
M-135	MAGTGT (42.60)	365482	4597474	42.6	17.3	32.3	Dipolar
M-136	MAGTGT (4647.32)	365376	4599180	4647.3	23.8	39.7	Multiple Component
M-137	MAGTGT (1394.00)	365495	4597028	1394.0	34.5	57.5	Multiple Component
M-138	MAGTGT (38434.33)	365303	4598441	38434.3	31.8	58.9	Multiple Component
M-139	MAGTGT (51.20)	365324	4599249	51.2	12.0	24.6	Monopolar
M-140	MAGTGT (18.88)	365343	4598864	18.9	15.3	28.7	Monopolar
M-141	MAGTGT (39.27)	365367	4598562	39.3	14.0	27.2	Dipolar
M-142	MAGTGT (154.55)	365436	4597196	154.6	82.0	171.2	Multiple Component
M-143	MAGTGT (51.82)	365402	4596983	51.8	20.8	27.6	Monopolar
M-144	MAGTGT (4253.49)	365473	4597124	4253.5	109.5	206.6	Multiple Component
M-145	MAGTGT (91.07)	365314	4598875	91.1	19.5	41.4	Monopolar
M-146	MAGTGT (936.62)	365287	4599231	936.6	77.7	170.3	Multiple Component
M-147	MAGTGT (1208.87)	365416	4598995	1208.9	12.7	24.0	Dipolar
M-148	MAGTGT (17.58)	365478	4597871	17.6	17.5	27.5	Dipolar
M-149	MAGTGT (62.69)	365481	4597477	62.7	29.0	58.7	Dipolar
M-150	MAGTGT (162.85)	365424	4597173	162.9	22.0	41.1	Dipolar
M-151	MAGTGT (37514.31)	365421	4597268	37514.3	26.7	48.3	Multiple Component
M-152	MAGTGT (615.50)	365299	4599535	615.5	55.8	132.7	Multiple Component
M-153	MAGTGT (53.63)	368300	4592786	53.6	13.2	27.8	Dipolar
M-154	MAGTGT (82.11)	368136	4592813	82.1	12.0	28.0	Dipolar
M-155	MAGTGT (23.97)	368174	4593111	24.0	18.0	36.3	Dipolar
M-156	MAGTGT (30.00)	368209	4593414	30.0	16.8	34.7	Monopolar
M-157	MAGTGT (124.41)	368103	4592694	124.4	12.0	26.0	Dipolar
M-158	MAGTGT (1019.85)	368244	4592834	1019.9	13.0	24.1	Dipolar
M-159	MAGTGT (32.07)	368066	4592766	32.1	15.4	35.9	Multiple Component
M-160	MAGTGT (37.09)	368042	4592705	37.1	12.8	34.4	Monopolar
M-161	MAGTGT (58.57)	368062	4592850	58.6	12.8	24.5	Dipolar
M-162	MAGTGT (58.57)	368062	4592850	58.6	12.8	24.5	Dipolar
M-163	MAGTGT (17.26)	368081	4592991	17.3	14.5	27.3	Multiple Component
M-164	MAGTGT (76.61)	368092	4593090	76.6	22.0	43.5	Dipolar
M-165	MAGTGT (28.15)	368123	4593329	28.2	18.1	33.6	Dipolar
M-166	MAGTGT (22.18)	368273	4593321	22.2	16.0	27.9	Dipolar
M-167	MAGTGT (26.11)	368034	4592770	26.1	10.8	30.1	Multiple Component
M-168	MAGTGT (14.28)	368033	4592852	14.3	8.3	17.7	Multiple Component
M-169	MAGTGT (8.36)	368053	4593019	8.4	12.7	27.5	Dipolar
M-170	MAGTGT (14.06)	368195	4593103	14.1	25.3	42.2	Dipolar
M-171	MAGTGT (75.83)	367986	4592787	75.8	13.0	23.3	Dipolar
M-172	MAGTGT (39.65)	368013	4592955	39.7	12.5	27.0	Dipolar
M-173	MAGTGT (39.65)	368013	4592955	39.7	12.5	27.0	Dipolar
M-174	MAGTGT (14.09)	368056	4593290	14.1	15.5	32.5	Dipolar

TABLE 4

CO-LOCATED MAGNETOMETER ANOMALIES AND SONAR CONTACTS
Eversource 5th Cable
Vineyard Sound, MA

Mag. Anomaly	Side Scan Contact	Side Scan Classifaction	Side Scan Description
M-5	C-0058	Wreck	Northern portion
M-5	C-0059	Wreck	
M-5	C-0061	Wreck	
M-14	C-0065	Fishing Gear	Likely trap
M-14	C-0066	Fishing Gear	Likely trap
M-18	C-0058	Wreck	Northern portion
M-18	C-0059	Wreck	
M-18	C-0061	Wreck	
M-34	C-0055	Fishing Gear	Likely trap
M-37	C-0067	Fishing Gear	Likely trap
M-37	C-0068	Fishing Gear	Likely trap
M-39	C-0071	Fishing Gear	Likely trap
M-44	C-0065	Fishing Gear	Likely trap
M-44	C-0066	Fishing Gear	Likely trap
M-53	C-0070	Fishing Gear	Likely trap
M-104	C-0007	Fishing Gear	
M-104	C-0008	Boulder	
M-104	C-0009	Boulder	
M-154	C-0048	Fishing gear	Likely trap
M-170	C-0045	Debris	

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

NOTES:
1-Values are in decimal feet, ng = no good/poor recovery
2- Vibracores were taken at stations labled "vc" and grabs were taken at stations labled "g"
3-Core attempts are identified by the letter at the end of Station ID (1ST attempt="a",2ND attempt="b",3RD attempt="c")
4-Grid: UTM NORTH, Ellipsoid: WGS-84, Zone: Zone 19(72W-66W), Distance: Meters

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
vc-25a[3]	368258.46	4593619.49	41.48336666	70.57801823	8:16:35	11/17/2021	58.8	6	5.3
vc-25b	368259.85	4593619.02	41.48336265	70.57800148	8:34:16	11/17/2021	58.7	ng	ng
vc-25c	368260.16	4593617.4	41.48334812	70.57799741	8:43:31	11/17/2021	58.7	ng	ng
vc-25d	368259.65	4593618.35	41.48335659	70.57800373	8:55:42	11/17/2021	58.5	ng	ng
vc-24a	368200.36	4593757.98	41.48460408	70.57874418	9:23:32	11/17/2021	70	ng	ng
vc-24b	368196.49	4593760	41.48462163	70.57879096	9:35:54	11/17/2021	65.9	ng	ng
vc-24c	368197.09	4593754.02	41.48456789	70.57878246	9:49:13	11/17/2021	68.8	ng	ng
vc-24d	368196.9	4593752.44	41.48455363	70.57878439	10:02:26	11/17/2021	69	ng	ng
vc-26a	368216.46	4593318.9	41.48065323	70.57845543	10:32:36	11/17/2021	44	ng	ng
vc-26b	368216.21	4593319.56	41.48065913	70.57845857	10:43:10	11/17/2021	44	4	3.1
vc-26c	368215.84	4593319.66	41.48065997	70.57846302	11:04:13	11/17/2021	43.8	3.5	2.8
vc-27a	368176.63	4593007.55	41.47784326	70.57886427	11:45:26	11/17/2021	48	ng	ng
vc-27b	368171.06	4593008.67	41.47785243	70.5789312	11:56:03	11/17/2021	48.8	4.5	3.35
vc-27c	368170.62	4593009.35	41.47785848	70.57893661	12:12:41	11/17/2021	48.8	4.5	3.45
vc-28a	368138.81	4592710.95	41.47516644	70.57925223	13:19:11	11/17/2021	35.7	4.5	3.88
vc-28b	368138.31	4592710.81	41.4751651	70.57925819	13:28:50	11/17/2021	36	5	3.9
vc-29a	368097.42	4592404.58	41.47240106	70.57968077	14:03:35	11/17/2021	25.6	6	5.85
vc-29a	368099.15	4592421.72	41.47255567	70.57966381	14:03:59	11/17/2021	25.6	6	5.85
vc-29b	368097.21	4592406.7	41.47242011	70.57968375	14:19:14	11/17/2021	25.6	6	5.9
vc-30a	368062.64	4592105.31	41.46970069	70.5800317	14:51:49	11/17/2021	19.5	6	5.4
vc-30b	368058.1	4592107.6	41.46972057	70.58008655	15:04:05	11/17/2021	19.3	6	5.4
vc-31a	368021.33	4591809.11	41.46702689	70.58046145	7:46:15	11/19/2021	20.5	6	6
vc-31b	368018.34	4591809.15	41.46702676	70.58049725	7:55:56	11/19/2021	20.5	6.5	6
vc-3a	365300.74	4598844.07	41.52991663	70.61460141	9:16:45	11/19/2021	37.1		0.7
vc-3b	365301.39	4598841.52	41.52989378	70.61459305	9:25:55	11/19/2021	37		1.3

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
vc-3c	365301.22	4598839.3	41.52987376	70.61459459	9:37:18	11/19/2021	37	3.5	2.8
vc-2a	365281.87	4599121.25	41.53240913	70.6148896	10:06:42	11/19/2021	29	2.5	1.45
vc-2b	365281.93	4599120.67	41.53240392	70.61488875	10:17:17	11/19/2021	29	5.5	4.6
vc-2c	365281.87	4599120.06	41.53239842	70.61488933	10:29:27	11/19/2021	29	4	2.5
vc-1a	365265.72	4599443.29	41.53530601	70.61515526	10:57:22	11/19/2021	20.7	3	2.3
vc-1b	365265.71	4599443.52	41.53530807	70.61515543	11:12:08	11/19/2021	20.8	4	1.1
vc-1c	365265.83	4599443.36	41.53530665	70.61515396	11:24:37	11/19/2021	21	3	2.3
g-5a	365331.36	4598223.14	41.52433104	70.61409552	8:14:11	11/20/2021	59		
g-5b	365333.18	4598221.79	41.52431919	70.61407342	8:21:43	11/20/2021	59		
g-4a	365314.34	4598534.64	41.52713287	70.61436917	8:33:21	11/20/2021	35		
g-4b	365315.82	4598535.41	41.52714005	70.61435161	8:39:01	11/20/2021	35		
g-6a	365350.23	4597923.14	41.52163306	70.61380231	8:49:11	11/20/2021	61		
g-6b	365351.8	4597925.01	41.52165016	70.61378392	8:53:39	11/20/2021	61		
g-6c	365349.24	4597926.53	41.52166341	70.61381493	8:59:44	11/20/2021	61		
g-6d	365352.01	4597925.65	41.52165596	70.61378155	9:09:19	11/20/2021	61		
g-9a	365405.44	4597002.15	41.51334988	70.61293491	9:19:25	11/20/2021	38		
g-9b	365402.8	4597002.61	41.51335358	70.61296664	9:24:14	11/20/2021	39		
g-10a	365545.89	4596814.25	41.51168165	70.61121048	9:29:27	11/20/2021	50		
g-10b	365547.78	4596815.8	41.51169592	70.61118819	9:36:37	11/20/2021	51		
g-11a	365828.44	4596496.29	41.50886615	70.60775502	9:42:42	11/20/2021	68		
g-11b	365825.09	4596493.06	41.50883651	70.60779443	9:45:34	11/20/2021	68		
g-11c	365829.89	4596490.9	41.50881786	70.60773645	9:49:53	11/20/2021	68		
g-12a	365949.06	4596351.57	41.5075833	70.60627798	9:56:03	11/20/2021	72		
g-12c	365949.66	4596356.15	41.50762464	70.60627181	10:04:07	11/20/2021	69		
g-13a	366153.52	4596120.89	41.50554046	70.60377767	10:12:38	11/20/2021	71		
g-13b	366154.39	4596121.21	41.50554349	70.60376732	10:23:20	11/20/2021	71		
g-14a	366353.19	4595886.64	41.50346463	70.6013341	10:30:19	11/20/2021	67		
g-14b	366354.99	4595885.7	41.50345646	70.60131233	10:37:04	11/20/2021	67		
g-14c	366352.86	4595887.95	41.50347637	70.60133835	10:39:44	11/20/2021	67		
g-14d	366351.61	4595882.81	41.50342988	70.60135218	10:42:14	11/20/2021	67		
g-15a	366548.99	4595662.34	41.50147768	70.59893924	10:47:09	11/20/2021	69		no sediment
g-15b	366549.55	4595660.14	41.50145797	70.59893205	10:49:47	11/20/2021	69		no sediment

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
g-15c	366546.86	4595661.66	41.5014712	70.5989646	10:51:46	11/20/2021	69		no sediment
g-16a	366744.05	4595434.56	41.49945922	70.59655263	10:57:05	11/20/2021	72		
g-16b	366744.49	4595434.96	41.4994629	70.59654744	10:59:33	11/20/2021	72		
g-16c	366744.32	4595434.15	41.49945558	70.5965493	11:02:24	11/20/2021	72		
g-17a	366949.77	4595198.56	41.49736847	70.59403667	11:07:46	11/20/2021	81		no sediment
g-17b	366949.81	4595199.11	41.49737343	70.59403632	11:10:30	11/20/2021	81		no sediment
g-17c	366948.15	4595196.94	41.49735362	70.59405572	11:12:50	11/20/2021	82		no sediment
g-18a	367144.65	4594970.36	41.49534609	70.59165242	12:28:22	11/20/2021	88		no sediment
g-18b	367146.34	4594972.72	41.49536762	70.5916327	12:30:17	11/20/2021	88		no sediment
g-18c	367145.88	4594970.68	41.49534918	70.59163776	12:32:41	11/20/2021	88		no sediment
g-19a	367362.18	4594721.61	41.49314238	70.58899255	12:38:33	11/20/2021	85		no sediment
g-19b	367362.3	4594721.65	41.49314276	70.58899112	12:42:19	11/20/2021	85		no sediment
g-19c	367359.17	4594723.45	41.49315845	70.589029	12:46:00	11/20/2021	85		no sediment
g-20a	367550.32	4594506.88	41.49124006	70.58669228	12:52:29	11/20/2021	71		no sediment
g-20b	367550.59	4594509.18	41.49126082	70.58668956	12:54:33	11/20/2021	70		no sediment
g-20c	367550.54	4594504.92	41.49122245	70.58668922	12:56:24	11/20/2021	71		no sediment
g-21a	367745.57	4594281.5	41.48924298	70.58430467	13:04:33	11/20/2021	71		no sediment
g-21b	367745.99	4594281.35	41.48924169	70.58429961	13:07:04	11/20/2021	72		no sediment
g-21c	367746.94	4594279.49	41.4892251	70.58428783	13:09:02	11/20/2021	73		no sediment
g-22a	367939.34	4594055.97	41.48724424	70.5819349	13:15:47	11/20/2021	75		
g-22b	367940.85	4594056.38	41.48724818	70.58191691	13:23:42	11/20/2021	75		
g-23a	368024.31	4593953.11	41.48633208	70.58089491	13:31:05	11/20/2021	75		
g-23b	368027.92	4593961.14	41.48640498	70.58085344	13:43:52	11/20/2021	75		
g-23c	368025.21	4593956.36	41.48636149	70.58088485	13:46:31	11/20/2021	74		
g-23d	368027.62	4593951.11	41.48631462	70.58085484	13:50:29	11/20/2021	74		
g-23e	368029.2	4593961.71	41.48641032	70.58083824	13:53:31	11/20/2021	74		
g-24a	368199.08	4593760.69	41.48462827	70.57876009	13:58:10	11/20/2021	68		
vc-7a	365363.22	4597630.65	41.51900171	70.61358125	13:12:25	11/22/2021	42.6	4.5	3.6
vc-7b	365362.85	4597630.57	41.51900093	70.61358566	13:25:47	11/22/2021	42.2	4	3
vc-8a	365379.36	4597326.28	41.51626392	70.61331981	13:53:01	11/22/2021	40.6	3.5	2.85
vc-8b	365379.08	4597325.96	41.51626099	70.61332309	14:04:31	11/22/2021	40.1	3.5	2.9

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	364986.8	4598758.9	365511.1	4598845.9	10.2	33	Pebble/Granule in matrix Sandy Gravel	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse[3] *Arbacia punctulata*	**Sparse -** Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-2	365079.9	4598518.4	365492.4	4598539.8	9.9	32	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Trace** - Tunicates (*Didemnum*), (*Amaroucium*); **Moderate** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods **Trace** (*Limulus*) Fish - **Trace** (*Prionotus*)
VS-3	365079.3	4598228.9	365485.1	4598247.9	14.9	49	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*);and **Trace** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Trace** (Juvenile *Centropritis*)
VS-4	365101.7	4597942.1	365530.0	4597944.7	18.5	61	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Tunicates (*Amaroucium*); **Trace** - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (Adult *Centropritis*)
VS-5	365131.3	4597626.5	365564.1	4597636.4	10.1	33	Sand (Waves)	Faunal Bed	Soft Sediment Fauna				Fish - **Trace** (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	365148.5	4597303.2	365597.5	4597334.1	9.1	30	Sand (Waves) Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna / Attached Fauna (in troughs)		Attached Sparse (*Didemnum*), Trace (*Amaroucium*) in troughs	**Trace** - Mollusks (*Mytilus*) in troughs; Hydroid (*Hydrozoa*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-7	365190.1	4597002.0	365628.9	4597018.5	11.1	36	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse** - Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-8	365322.2	4596654.1	365704.6	4596951.8	13.1	43	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Sparse -** Tunicates (*Amaroucium/Didendum*), Sponges (*Cliona*), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - **Trace** (Juvenile *Centropriti* s)
VS-9	365553.5	4596377.9	365968.1	4596629.6	19.2	63	Gravel Pavement (**Cobble**; Pebble/Granule)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Mollusks (*Mytilis*); **Sparse**- Tunicates (*Amaroucium/Didemnum*) and Echinoderms (*Arbacia*)**; Trace** - Coral (*Astrangia*)	Fish - **Trace** (Adult *Centropritis*)
VS-10	365737.9	4596242.2	366089.3	4596491.8	19.8	65	Gravel Pavement **(Pebble/Granule;** Cobble)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse** - Mollusks (Mytilis) (*Anachis*) **Trace -** Coral (*Astrangia*)	Fish - **Trace** (Juvenile *Centropritis*)

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-11	365929.9	4595949.5	366297.7	4596266.7	21.4	70	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Moderate** - Tunicates (*Didemnum*); **Sparse** - Mollusks (*Mytilis*), and **Trace** - Bryozoan (*Schizoporella*)	Mobile Arthopods - **Trace** (Pagurus) Fish - **Sparse** (Juvenile Centropritis)
VS-12	366169.7	4595740.1	366474.8	4596010.6	19.6	64	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Sparse** - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and **Trace** Coral (*Astrangia*); Sponge (Cliona),	Fish - **Trace** (Juvenile *Centropritis*)
VS-13	366353.2	4595474.8	366672.6	4595784.5	19.6	64	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Echinoderms (Arbacia); **Sparse** - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); **Trace** - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - **Trace** (Pagurus); Fish - **Sparse** (Juvenile *Centropritis*) **Trace** (Spaeroides)
VS-14	366562.0	4595229.0	366866.5	4595545.6	20.6	68	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); **Sparse** - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (*Arbacia*); **Trace** - Coral (*Astrangia*)	Mobile Arthopods - **Trace** (*Pagurus*) (Pycnogonida) Fish - **Moderate** (Juvenile *Centropritis*) **Trace** (*Spaeroides*) (*Stenotomus)*
VS-15	366757.8	4595009.3	367068.7	4595335.9	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates *(Amaroucium*), (*Cliona*), and *(Halichondria*); **Sparse** - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbaci* a); **Trace -** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*) **Trace** (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	366987.5	4594785.6	367298.5	4595110.6	26.1	86	Gravel Pavement **(Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Cliona*); **Sparse -** Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); **Trace** - Echinoderms (*Arbacia*)	Mobile Arthopods - **Trace** (Pagurus) (Pycnogonida); Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga)* *(Tautogolabru* s)
VS-17	367139.5	4594536.7	367491.7	4594871.3	23.2	76	Gravel Pavement (Boulder)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates *(Amaroucium*), Sponge (*Cliona)* , and Coral (*Astrangia*) ; **Sparse** - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga);* Mobile Arthropods - *(Pycnogonida)*

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-18	367319.4	4594275.6	367706.8	4594655.8	21.1	69	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and Sponge (*Cliona*); **Sparse-** Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis)* and Coral (*Astrangia*); **Trace** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*); **Trace** (Adult *Centropritis*), (*Spaeroides), (Tautogolabrus*); Mobile Arthropods - **Trace** (Pycnogonida)
VS-19	367532.3	4594050.1	367926.2	4594454.8	19.3	63	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (Anachis) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	367769.5	4593856.7	368092.4	4594185.5	20.9	69	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthopods **Trace** (Limulus) (Pycnogonida); Fish - **Sparse** (Juvenile *Centropritis*), **Trace** (*Tautoga*)
VS-21	367649.0	4594016.8	368324.1	4593929.2	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -**Tunicates (*Amaroucium/Didendum*); **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Halichondri* a) and Mollusks (*Anachis*); **Trace** - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Moderate** (Juvenile *Centropritis*)
VS-22	367992.7	4593671.9	368448.4	4593592.4	15.2	50	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Trace**- Hydroid (*Hydrozoa*); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - **Trace** (Juvenile *Centropritis)* (Adult *Centropritis*); Mobile Arthopods - (*Pagurus*) (*Ovalipes*)
VS-23	367941.1	4593336.6	368416.6	4593296.6	11.5	38	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Sparse** Attached (*Crepidula*); **Trace** - Hydroid (*Hydrozoa*); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish **- Sparse** (*Prionotus*), **Trace** (Juvenile *Centropritis*); Mobile Arthropods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	367898.3	4593049.4	368367.4	4592994.6	13.6	45	Sand (Ripples); Shell Rubble in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna in troughs			**Sparse** -Attached Tunicate (*Amoroucium*); Mollusks (Anachis); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - **Trace** (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (Pagurus)

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class[2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-25	367779.3	4592771.7	368318.9	4592689.5	10.5	34	Sand (Ripples)	Faunal Bed	Inferred Fauna			**Sparse** fecal casts**, Trace** Polychaete (*Chaetopterus*)	Fish - **Trace** (Juvenile *Centropritis*) (*Prionotus)* ; Mobile Arthopods (*Limulus*) (*Pagarus*)
VS-26	367844.2	4592446.7	368294.2	4592386.3	7.1	23	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderat**e - Bryozoan (*Bugula*); **Trace** - Leathery leafy algal bed (*Codium)* (*Sargassum*) (*Porphyra*)	Fish - **Sparse** (Juvenile *Centropritis*), **Trace** *Spaeroides*); Mobile Arthopods - **Trace** (*Limulus*)
VS-27	367811.0	4592147.0	368278.8	4592077.4	5.9	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderat**e - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - **Trace** (Limulus); Fish - **Trace** (Juvenile *Centropritis*)
VS-28	367832.5	4591837.5	368195.8	4591786.7	5.7	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*) (*Spaeroides*)
CS-1	365033.2	4599433.7	365513.0	4599434.7	5.6	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** - Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-2	365207.5	4599550.6	365206.8	4599346.8	6.0	20	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-3	365339.5	4599540.8	365331.4	4599344.9	5.5	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-4	367757.4	4591623.4	368058.5	4591641.5	5.0	16	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-5	367933.0	4591504.1	367936.9	4591748.1	4.5	15	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-6	368090.2	4591785.3	368095.2	4592013.0	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Mobile Arthopods - **Trace** (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	367956.2	4591923.9	368242.4	4591923.0	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
EG-1	365136.4	4599879.3	365165.5	4599685.8	3.9	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae)	Mobile Arthopods - **Trace** (*Limulus*); Fish - (*Tautoga*)
	365166.0	4599682.0	365177.6	4599576.8	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Trace - Echinoderms (Arbacia); Sparse** Benthic Macroalgae (*Porphyra) (Codium) and* Branching Red Algae	
EG-2C	365184.5	4599830.2	365235.1	4599693.1	4.0	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Sparse** (Zostera marina) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (Branching Red Algae) and **Trace** (*Sargassum*)	Fish - **Sparse** (Juvenile *Centropritis*)
	365236.4	4599691.6	365353.6	4599604.8	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Benthic Macroalgae (*Porphyra) and (*Branching Red Algae*);* **Trace** *(Ulva)*	
EG-3	365239.3	4599813.1	365238.0	4599705.6	4.4	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) and Bryozoan (Bugula), Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae) **Trace** (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	365239.0	4599702.8	365243.3	4599561.0	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*), and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	365301.0	4599878.3	365268.3	4599700.2	4.2	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) with Gastropd (Bittium) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	365268.7	4599697.6	365275.2	4599571.1	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (Porphyra) and (Branching Red Algae)	

TABLE 6

CMECS BIOTIC CLASSIFICATION AND SPECIAL, SENSITIVE OR UNIQUE AREAS
UNDERWATER VIDEO DATA
EVERSOURCE 5TH CABLE, VINEYARD SOUND, MA
November 2021

Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
EG-5	365313.9	4599847.5	365314.1	4599692.8	4.1	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); **Trace** (*Chaetopterus*); **Sparse** Benthic Macroalgae (*Porphyr* a), (*Ulva*) and (Branching Red Algae)	
	365314.0	4599690.5	365319.5	4599580.9	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra)* and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
EG-6	365356.8	4599891.1	365363.2	4599683.4	3.9	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
	365363.6	4599680.5	365372.8	4599569.2	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and **Trace** (*Sargassum*)	Fish - **Trace** (*Tautoga*)

References:

Federal Geographic Data Committee. Marine and Coastal Spatial Data Subcommittee.June 2012. Coastal and Marine Ecological Classification Standard, FGDC-STD-018-2012.

Marine and Coastal Saptial Data Subcommittee. August 2014. Recommendations for Coastal and Marine Ecological Classification Standard (CMECS). Technical Guidance Document 2014-3.

Notes:

1. Coordinates for the video transect start and end points are in Grid: UTM North, Ellipsoid: WGS-84, Zone: Zone 19 (72W-66W), Distance: Meters
2. Reference Figure 14 for the major CMECS substate components and Figure 16 for the dominant biotic components along the survey corridor; Appendix C for GoPro screen captures along each video transect; and Appendix D for characterization of the major seabed assemblages using units from multiple CMECS components.
3. CMECS modifiers were used to relay relative frequency within a transect (number of screen captures in which element was observed / total screen capture observation points, taken ~ every 30 seconds)

   Trace (<1%)
   Sparse (1 to <30%)
   Moderate (30 to 70%)
   Dense (70 to 90%)
   Complete (90 to 100%)

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Latin Name	VS-1B	VS-2	VS-3	VS-4	VS-5	VS-6	VS-7	VS-8
	Substrate Code[6]	GP (PG)	GP (PG)	GP (PG)	GP (C)	SW	SW	GP (PG)	GP (C)
FAUNA									
PORIFERA									
Bread Crumb Sponge	*Halichondria panicea*			X					X
Sulfur Sponge	*Cliona celata*				X				X
CNIDARIA									
Burrowing Anemone	*Ceriantheopsis americana*		X		X				
Bushy Hydroids	*Hydrozoa* sp.						X		
Northern Star Coral	*Astrangia poculata*	X	X	X	X			X	X
BRYOZOA									
Bushy Bryozoan [3]	***Bugula* spp.[3]**	X	X	X					X
Encrusting Bryozoan	*Schizoporella unicornis*		X	X	X				X
MOLLUSCA									
Bay Scallop [5]	*Argopecten irradians* [5]								
Blue Mussel [5]	*Mytilis edulis* [5]		X	X	X		X	X	X
Channeled Whelk [1]	*Busycotypus canaliculatus* [1]								
Common Oyster [5]	*Crassostrea virginica* [5]		X	X					
Dove Snails	*Anachis* spp.			X					X
Horn Snails	*Bittium alternatum*								
Jingle Shell	***Anomia* spp.**	X	X	X	X		X	X	X
Knobbed Whelk [1,5]	*Busycon carica* [1,5]	X							
Long-Finned Squid [1,5]	*Loligo pealei* [1,5]					X			
Oyster Drill	*Urosalpinx cinerea*		X	X			X		
Slipper Limpet	*Crepidula fornicata*								
Surf Clam [5]	*Spisula solidissima* [5]						X		
ANNELIDA									
Parchment Worm	*Chaetopterus pergamentaceus*		X						
Tube worm	***Hydroides dianthus***		X	X	X		X	X	X
ARTHROPODA									
Merostomata									
Horshoe Crab [1,5]	*Limulus polyphemus* [1,5]		X						
Pycnogonida									
Sea Spider									
Crustacea									
Barnacle	*Balanus* sp.						X		
Flat Clawed Hermit Crab	*Pagurus Pollicaris*								
Lady Crab	*Ovalipes occellatus*					X			
Long Clawed Hermit Crab	*Pagurus longicarpus*	X		X			X		
Echinoderms									
Purple sea urchin	***Arbacia punctulata***	X	X	X	X		X	X	X
VERTEBRATA									
Elasmobrachiomorphi									
Osteichthyes									
Black Sea Bass (Adult) [1,5]	*Centropristis striata* [1,5]				X				
Black Sea Bass (Juvenile) [1,5]	***Centropristis striata* [1,5]**		X	X	X			X	X
Cunner	*Tautogolabrus adspersus*								
Puffer	*Sphaeroides maculatus*								
Scup [1,5]	*Stenotomus chrysops* [1,5]								
Sea Robin	*Prionotus carolinus*		X			X			
Tautog [1,5]	*Tautoga onitis* [1,5]								
CHORDATA									
Sand Sponge	*Amaroucium pellucidum*				X				X
Sea Pork	*Amaroucium stellatum*		X	X	X		X	X	X
White Invasive Tunicate	***Didemnum candidum***	X	X	X	X		X	X	X
SPECIES RICHNESS FAUNA[2]		7	16	15	12	3	11	8	14
DEPTH BELOW MLLW (ft)		33	32	49	61	33	30	36	43

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**VS-9**	**VS-10**	**VS-11**	**VS-12**	**VS-13**	**VS-14**	**VS-15**	**VS-16**	**VS-17**	**VS-18**	**VS-19**
	GP (C)	**GP (PG)**	**GP (PG)**	**GP (PG)**	**GP (C)**	**GP (C)**	**GP (C)**	**GP (B)**	**GP (B)**	**GP (B)**	**GP (B)**
FAUNA											
PORIFERA											
Bread Crumb Sponge	X		X	X	X	X	X		X		X
Sulfur Sponge	X			X	X	X	X	X	X	X	X
CNIDARIA											
Burrowing Anemone											
Bushy Hydroids	X				X					X	
Northern Star Coral	X	X		X	X	X	X	X	X	X	X
BRYOZOA											
Bushy Bryozoan [3]			X	X	X	X	X	X	X	X	X
Encrusting Bryozoan	X		X	X	X	X	X	X	X	X	X
MOLLUSCA											
Bay Scallop [5]											
Blue Mussel [5]	X	X	X	X	X	X	X	X	X	X	X
Channeled Whelk [1]											X
Common Oyster [5]											
Dove Snails		X		X	X	X	X	X	X	X	X
Horn Snails											
Jingle Shell	X	X	X	X		X	X			X	
Knobbed Whelk [1,5]					X						
Long-Finned Squid [1,5]											
Oyster Drill											
Slipper Limpet											
Surf Clam [5]											
ANNELIDA											
Parchment Worm											
Tube worm	X	X	X	X	X	X	X	X	X	X	X
ARTHROPODA											
Merostomata											
Horshoe Crab [1,5]											
Pycnogonida											
Sea Spider						X	X	X	X	X	X
Crustacea											
Barnacle	X	X			X						
Flat Clawed Hermit Crab			X			X					
Lady Crab											
Long Clawed Hermit Crab					X			X			
Echinoderms											
Purple sea urchin	X	X	X	X	X	X	X	X	X	X	X
VERTEBRATA											
Elasmobrachiomorphi											
Osteichthyes											
Black Sea Bass (Adult) [1,5]	X					X	X	X		X	
Black Sea Bass (Juvenile) [1,5]		X	X	X	X	X	X	X	X	X	X
Cunner									X	X	
Puffer					X	X				X	
Scup [1,5]						X					
Sea Robin								X			
Tautog [1,5]								X	X		X
CHORDATA											
Sand Sponge			X		X	X	X	X	X	X	X
Sea Pork	X	X		X		X	X	X	X	X	X
White Invasive Tunicate	X	X	X	X	X	X	X	X	X	X	X
SPECIES RICHNESS FAUNA[2]	13	10	11	13	17	18	15	16	16	17	16
DEPTH BELOW MLLW (ft)	63	65	70	64	64	68	72	86	76	69	63

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**VS-20**	**VS-21**	**VS-22**	**VS-23**	**VS-24**	**VS-25**	**VS-26**	**VS-27**	**VS-28**	**CS-1**	**CS-2**	**CS-3**
	GP (C)	**GP (C)**	**SW**	**SW**	**SR**	**SR**	**CR**	**CR**	**CR**	**CR**	**CR**	**CR**
FAUNA												
PORIFERA												
Bread Crumb Sponge	X	X										
Sulfur Sponge	X	X										
CNIDARIA												
Burrowing Anemone												
Bushy Hydroids			X			X						
Northern Star Coral	X	X										
BRYOZOA												
Bushy Bryozoan [3]	X		X	X		X	X	X	X	X	X	X
Encrusting Bryozoan	X	X	X	X								
MOLLUSCA												
Bay Scallop [5]												
Blue Mussel [5]	X	X										
Channeled Whelk [1]												
Common Oyster [5]												
Dove Snails	X	X	X		X							
Horn Snails												
Jingle Shell	X	X								X	X	X
Knobbed Whelk [1,5]												
Long-Finned Squid [1,5]				X								
Oyster Drill					X	X						
Slipper Limpet			X	X		X	X	X	X	X	X	X
Surf Clam [5]												
ANNELIDA												
Parchment Worm	X					X				X		
Tube worm	X	X	X	X	X		X					
ARTHROPODA												
Merostomata												
Horshoe Crab [1,5]	X					X	X	X				
Pycnogonida												
Sea Spider	X											
Crustacea												
Barnacle			X	X		X	X			X		
Flat Clawed Hermit Crab			X			X						
Lady Crab			X									
Long Clawed Hermit Crab		X	X	X	X	X						
Echinoderms												
Purple sea urchin		X								X	X	X
VERTEBRATA												
Elasmobrachiomorphi												
Osteichthyes												
Black Sea Bass (Adult) [1,5]			X									
Black Sea Bass (Juvenile) [1,5]	X	X	X	X	X	X	X	X	X	X	X	X
Cunner												
Puffer							X		X			
Scup [1,5]												
Sea Robin				X	X	X						
Tautog [1,5]	X											
CHORDATA												
Sand Sponge	X	X										
Sea Pork	X	X	X		X							
White Invasive Tunicate	X	X	X									
SPECIES RICHNESS FAUNA[2]	17	14	13	9	7	11	7	4	4	7	5	5
DEPTH BELOW MLLW (ft)	69	72	50	38	45	34	23	19	19	18	20	18

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	CS-4	CS-5	CS-6	CS-7	EG-1	EG-2C	EG-3	EG-4	EG-5	EG-6
	CR	CR	CR	CR	GS/CR	GS/CR	SG/CR	SG/CR	SG/CR	SG/CR
FAUNA										
PORIFERA										
Bread Crumb Sponge										
Sulfur Sponge						X				
CNIDARIA										
Burrowing Anemone										
Bushy Hydroids						X				
Northern Star Coral										
BRYOZOA										
Bushy Bryozoan [3]	X	X	X	X	X	X	X	X	X	X
Encrusting Bryozoan										
MOLLUSCA										
Bay Scallop [5]						X				
Blue Mussel [5]										
Channeled Whelk [1]										
Common Oyster [5]										
Dove Snails										
Horn Snails						X	X	X	X	X
Jingle Shell						X		X	X	
Knobbed Whelk [1,5]										
Long-Finned Squid [1.5]										
Oyster Drill										
Slipper Limpet	X	X		X	X	X	X	X	X	X
Surf Clam [5]										
ANNELIDA										
Parchment Worm									X	
Tube worm			X							
ARTHROPODA										
Merostomata										
Horshoe Crab [1,5]					X					
Pycnogonida										
Sea Spider										
Crustacea										
Barnacle								X		
Flat Clawed Hermit Crab								X		
Lady Crab										
Long Clawed Hermit Crab			X							
Echinoderms										
Purple sea urchin					X					
VERTEBRATA										
Elasmobrachiomorphi										
Osteichthyes										
Black Sea Bass (Adult) [1,5]										
Black Sea Bass (Juvenile) [1,5]	X	X	X	X		X	X	X		X
Cunner										
Puffer										
Scup [1,5]										
Sea Robin										
Tautog [1,5]					X					X
CHORDATA										
Sand Sponge										
Sea Pork										
White Invasive Tunicate										
SPECIES RICHNESS FAUNA[2]	3	3	4	3	5	8	4	7	5	5
DEPTH BELOW MLLW (ft)	16	15	19	19	13-17	13-17	14-17	14-17	13-17	13-17

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Overall Freqency %	Gravel Pavement Frequency %	Hard Bottom only Frequency %	Hard /Complex Bottom Frequency %	Sand Waves/ Ripples Frequency %	*Crepidula* Reef Frequency %
FAUNA						
PORIFERA						
Bread Crumb Sponge	29	**63**	43	**75**	0	0
Sulfur Sponge	34	**68**	14	**100**	0	6
CNIDARIA						
Burrowing Anemone	5	11	14	8	0	0
Bushy Hydroids	17	16	0	25	**50**	6
Northern Star Coral	44	**95**	**86**	**100**	0	0
BRYOZOA						
Bushy Bryozoan [3]	**80**	**74**	71	75	50	**100**
Encrusting Bryozoan	44	**84**	**57**	**100**	33	0
MOLLUSCA						
Bay Scallop [5]	2	0	0	0	0	6
Blue Mussel [5]	46	**95**	**86**	**100**	17	0
Channeled Whelk [1]	2	5	0	8	0	0
Common Oyster [5]	5	11	29	0	0	0
Dove Snails	37	**68**	43	**83**	33	0
Horn Snails	12	0	0	0	0	31
Jingle Shell	**54**	**79**	**100**	67	17	38
Knobbed Whelk [1,5]	5	11	14	8	0	0
Long-Finned Squid [1,5]	5	0	0	0	33	0
Oyster Drill	12	11	29	0	**50**	0
Slipper Limpet	44	0	0	0	**50**	**94**
Surf Clam [5]	2	0	0	0	17	0
ANNELIDA						
Parchment Worm	12	11	14	8	17	13
Tube worm	**59**	**95**	**86**	**100**	**67**	13
ARTHROPODA						
Merostomata						
Horshoe Crab [1,5]	15	11	14	8	17	19
Pycnogonida						
Sea Spider	17	37	0	**58**	0	0
Crustacea						
Barnacle	24	16	14	17	**67**	19
Flat Clawed Hermit Crab	12	11	14	8	33	6
Lady Crab	5	0	0	0	33	0
Long Clawed Hermit Crab	27	26	29	25	**83**	6
Echinoderms						
Purple sea urchin	**56**	**95**	**100**	**92**	17	25
VERTEBRATA						
Elasmobrachiomorphi						
Osteichthyes						
Black Sea Bass (Adult) [1,5]	17	32	0	**50**	17	0
Black Sea Bass (Juvenile) [1,5]	**85**	**89**	**86**	**92**	**67**	**88**
Cunner	5	11	0	17	0	0
Puffer	12	16	0	25	0	13
Scup [1,5]	2	5	0	8	0	0
Sea Robin	15	11	14	8	**67**	0
Tautog [1,5]	15	21	0	33	0	13
CHORDATA						
Sand Sponge	29	**63**	14	**92**	0	0
Sea Pork	46	**84**	**71**	**92**	**50**	0
White Invasive Tunicate	**51**	**100**	**100**	**100**	33	0
SPECIES RICHNESS FAUNA [2]	**Avrg Richness**	14	11	15	9	5
DEPTH BELOW MLLW (ft)	**Avrg Depth**	61	50	67	38	12

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Latin Name	VS-1B	VS-2	VS-3	VS-4	VS-5	VS-6	VS-7	VS-8
	Substrate Code[6]	GP (PG)	GP (PG)	GP (PG)	GP (C)	SW	SW	GP (PG)	GP (C)
FLORA									
ALISMATALES									
Zosteraceae									
Eelgrass [1]	*Zostera marina* [1]								
CHLOROPHYTA									
Dead Man's Fingers	*Codium fragile*	X							
Green Fleece	*Enteromorpha erecta*								
Gutweed	*Enteromorpha* sp.								
Sea Lettuce	*Ulva lactuca*			X					X
PHAEOPHYTA									
Wire Weed	*Sargassum filipendula*						X		
Sea Lace	*Chorda filum*								
Epiphytic Filamentous Algae	*Ectocarpus confervoides*								
BACILLARIOPHYTA									
Diatom Mat									
RHODOPHYTA									
Branching red alga	***Rhodophyta***	X	X			X	X		X
Agardh's Red Algae	*Agardhiella subulata*								
Chenille	*Dasya pedicellata*								
Dulse	*Rhodymenia palmata*	X							
Encrusting Red Algae	*Lithothamnium lenormandi*	X	X	X				X	X
Kelp	*Laminaria agardhii*								
Purple laver	*Porphyra umbilicalis*	X							
SPECIES RICHNESS FLORA[2]		5	2	2	0	1	2	1	3
DEPTH BELOW MLLW (ft)		33	32	49	61	33	30	36	43

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	VS-9	VS-10	VS-11	VS-12	VS-13	VS-14	VS-15	VS-16	VS-17	VS-18	VS-19
	GP (C)	GP (PG)	GP (PG)	GP (PG)	GP (C)	GP (C)	GP (C)	GP (B)	GP (B)	GP (B)	GP (B)
FLORA											
ALISMATALES											
Zosteraceae											
Eelgrass [1]											
CHLOROPHYTA											
Dead Man's Fingers											
Green Fleece											
Gutweed						X					
Sea Lettuce							X				
PHAEOPHYTA											
Wire Weed										X	X
Sea Lace											
Epiphytic Filamentous Algae											
BACILLARIOPHYTA											
Diatom Mat											
RHODOPHYTA											
Branching red alga				X							X
Agardh's Red Algae											
Chenille											
Dulse											
Encrusting Red Algae											
Kelp											
Purple laver											
SPECIES RICHNESS FLORA[2]	0	0	0	1	0	1	1	0	0	1	2
DEPTH BELOW MLLW (ft)	63	65	70	64	64	68	72	86	76	69	63

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**VS-20**	**VS-21**	**VS-22**	**VS-23**	**VS-24**	**VS-25**	**VS-26**	**VS-27**	**VS-28**	**CS-1**	**CS-2**	**CS-3**
	GP (C)	**GP (C)**	**SW**	**SW**	**SR**	**SR**	**CR**	**CR**	**CR**	**CR**	**CR**	**CR**
FLORA												
ALISMATALES												
Zosteraceae												
Eelgrass [1]												
CHLOROPHYTA												
Dead Man's Fingers	X			X		X	X	X	X			
Green Fleece		X			X							
Gutweed												
Sea Lettuce										X		X
PHAEOPHYTA												
Wire Weed	X	X		X		X	X	X				
Sea Lace				X	X	X						
Epiphytic Filamentous Algae					X							
BACILLARIOPHYTA												
Diatom Mat								X				
RHODOPHYTA												
Branching red alga	X	X	X	X		X	X	X	X	X	X	X
Agardh's Red Algae									X			
Chenille				X								
Dulse	X											
Encrusting Red Algae												
Kelp										X	X	
Purple laver							X	X	X	X	X	X
SPECIES RICHNESS FLORA[2]	4	3	1	5	3	4	4	5	4	4	3	3
DEPTH BELOW MLLW (ft)	69	72	50	38	45	34	23	19	19	18	20	18

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**CS-4**	**CS-5**	**CS-6**	**CS-7**	**EG-1**	**EG-2C**	**EG-3**	**EG-4**	**EG-5**	**EG-6**
	CR	**CR**	**CR**	**CR**	**GS/CR**	**GS/CR**	**SG/CR**	**SG/CR**	**SG/CR**	**SG/CR**
FLORA										
ALISMATALES										
Zosteraceae										
Eelgrass [1]					X	X	X	X	X	X
CHLOROPHYTA										
Dead Man's Fingers	X	X	X	X	X	X		X		
Green Fleece										
Gutweed										
Sea Lettuce						X		X	X	
PHAEOPHYTA										
Wire Weed				X	X	X	X	X		X
Sea Lace										
Epiphytic Filamentous Algae					X					
BACILLARIOPHYTA										
Diatom Mat										
RHODOPHYTA										
Branching red alga	X	X	X	X	X	X	X	X	X	X
Agardh's Red Algae										
Chenille										
Dulse										
Encrusting Red Algae										
Kelp						X				
Purple laver	X	X	X	X	X	X	X	X	X	X
SPECIES RICHNESS FLORA[2]	3	3	3	4	5	6	3	5	3	3
DEPTH BELOW MLLW (ft)	16	15	19	19	13-17	13-17	14-17	14-17	13-17	13-17

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**Overall Freqency %**	**Gravel Pavement Frequency %**	**Hard Bottom only Frequency %**	**Hard /Complex Bottom Frequency %**	**Sand Waves/ Ripples Frequency %**	***Crepidula* Reef Frequency %**
FLORA						
ALISMATALES						
Zosteraceae						
Eelgrass [1]	15	0	0	0	0	38
CHLOROPHYTA					0	0
Dead Man's Fingers	34	11	14	8	5	**63**
Green Fleece	5	5	0	8	2	0
Gutweed	2	5	0	8	0	0
Sea Lettuce	20	16	14	17	0	31
PHAEOPHYTA						
Wire Weed	37	21	0	33	7	**50**
Sea Lace	7	0	0	0	7	0
Epiphytic Filamentous Algae	5	0	0	0	2	6
BACILLARIOPHYTA						
Diatom Mat	2	0	0	0	0	6
RHODOPHYTA						
Branching red alga	**68**	37	43	33	12	**100**
Agardh's Red Algae	2	0	0	0	0	6
Chenille	2	0	0	0	2	0
Dulse	5	11	14	8	0	0
Encrusting Red Algae	12	26	**57**	8	0	0
Kelp	7	0	0	0	0	19
Purple laver	41	5	14	0	0	**100**
SPECIES RICHNESS FLORA[2]	**Avrg Richness**	1	2	1	3	4
DEPTH BELOW MLLW (ft)	**Avrg Depth**	61	50	67	38	12

TABLE 7 NOTES:

1) Species selected for assessment of 'important fish resource areas' an SSU under the Massachusetts Ocean Management Plan

2) X designates presence of a species on a transect. Species Richness = the total number of species observed - not normalized for length of transect: 36 transects ~1,000 ft, two N-S 700 ft and one E-W 1.600 ft in outer Falmouth Harbor; two 750 ft E-W Vineyard Haven Harbor

3) Species with a frequency across transects greater than or equal to 50% are bolded

4) Reference Figure 14 for transect locations and CMECS substrate classification, and Figure 16 for Biotic classification

5) Commercially important species

6) Substrat GP-Gravel pavement: (PG-pebble/granule, C-cobble, or B-boulder dominated)
CR- Crepidula Reef
SG-Sandy Gravel
GS-Gravelly Sand
SW-Sand Waves
SR -Sand Ripples

TABLE 8

COORDINATES AND WATER DEPTH OF REPRESENTATIVE SCREEN CAPTURES OF MAJOR CMECS UNITS

ID	CMEC BIOTIC CLASSIFICATION UNIT	TRANSECT	PHOTO Plate	ELAPSED TIME (sec)	X	Y	LOCAL TIME	MLLW DEPTH (m)	MLLW DEPTH (ft)
EG-2C-A	Seagrass Bed	EG-2C	A	2:18	365194.3	4599803.8	2:39:37 PM	4.1	13.4
CS-3-F	Gastropod Reef	CS-3	F	4:55	365330.8	4599388.7	4:23:01 PM	6.1	20.0
VS-2-Q	Attached Sea Urchins	VS-2	Q	17:02	365383	4598537.9	9:50:26 AM	10.4	34.1
VS-5-F	Soft Sediment Fauna	VS-5	F	13:32	365497.8	4597639.6	11:37:35 AM	12.4	40.7
VS-6-G	Attached Fauna (Tunicates in Sand Wave Troughs)	VS-6	G	5:57	365331.7	4597322	11:50:59 AM	11.4	37.4
VS-10-E	Attached Sea Urchins	VS-10	E	4:49	365868	4596285.4	1:31:33 PM	22.4	73.5
VS-14-K	Diverse Colonizers (Cobble)	VS-14	K	25:10	366735.5	4595425.8	10:14:12 AM	22.8	74.8
VS-19-N	Diverse Colonizers (Boulder)	VS-19	N	18:03	367888.6	4594418.3	2:14:44 PM	22.1	72.5
VS-23-O	Attached Fauna (Gastropds in Sand Wave Troughs)	VS-23	O	26:05	368392.4	4593306.1	11:24:23 AM	14.7	48.2
VS-25-F	Inferred Fauna	VS-25	F	12:30	368044.5	4592721.5	9:56:13 AM	10.8	35.4
CS-4-D	Gastropod Reef/Large Leafy Algal Bed	CS-4	D	5:39	367961.2	4591638.1	11:14:27 AM	5.2	17.1

Notes:

1. See Appendix D for CMECS classifications of these units and representative screen captures
2. Locations plotted on Figure 16 by ID.
3. Ordered from North to South along the survey corridor
4. Depths are feet or meters below Mean Lower Low Water

APPENDICES

APPENDIX A

900 kHz Side Scan Sonar Targets

APPENDIX A

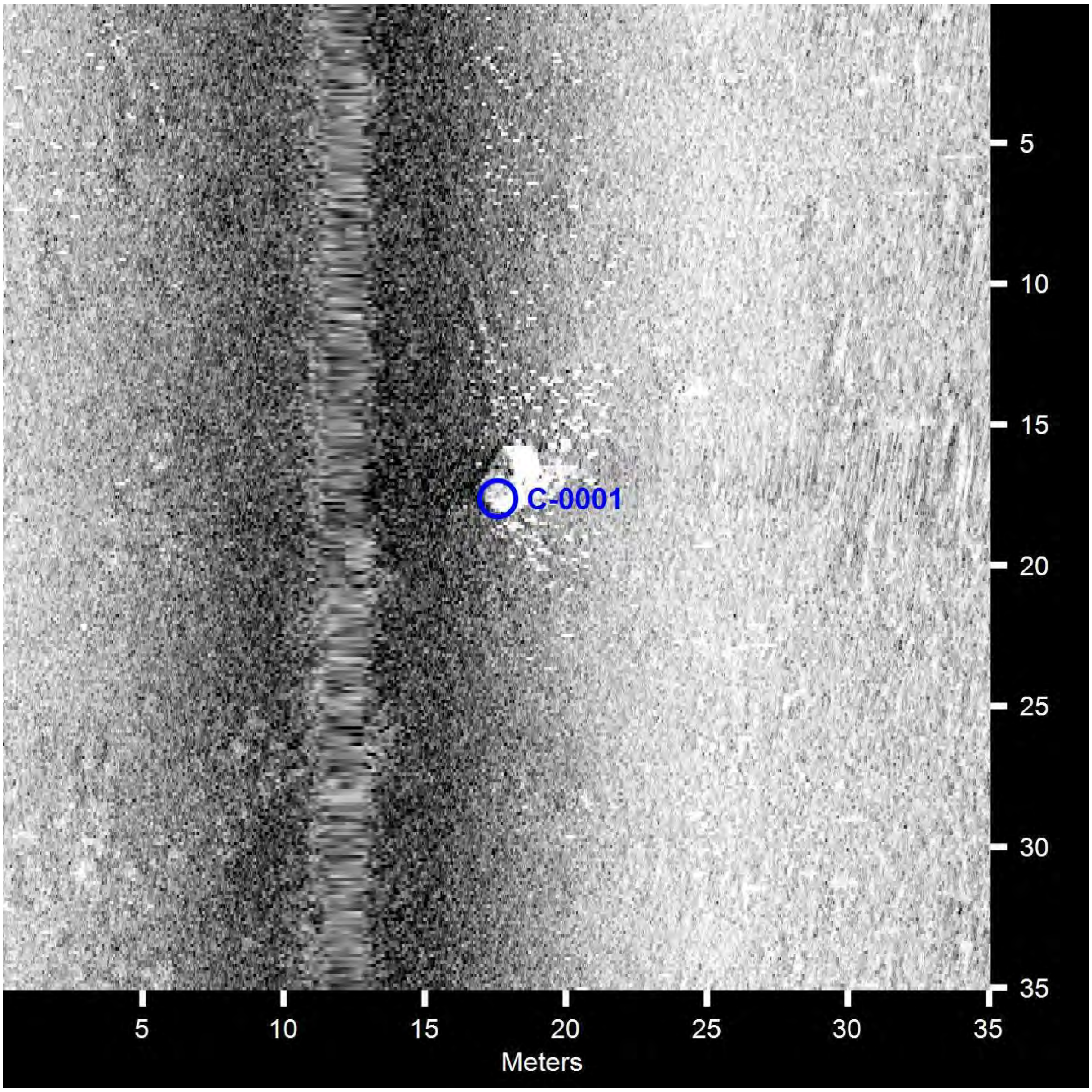
900-kHz SIDE SCAN SONAR CONTACTS
Eversource 5th Cable
Vineyard Sound, MA

Contacts in the report:

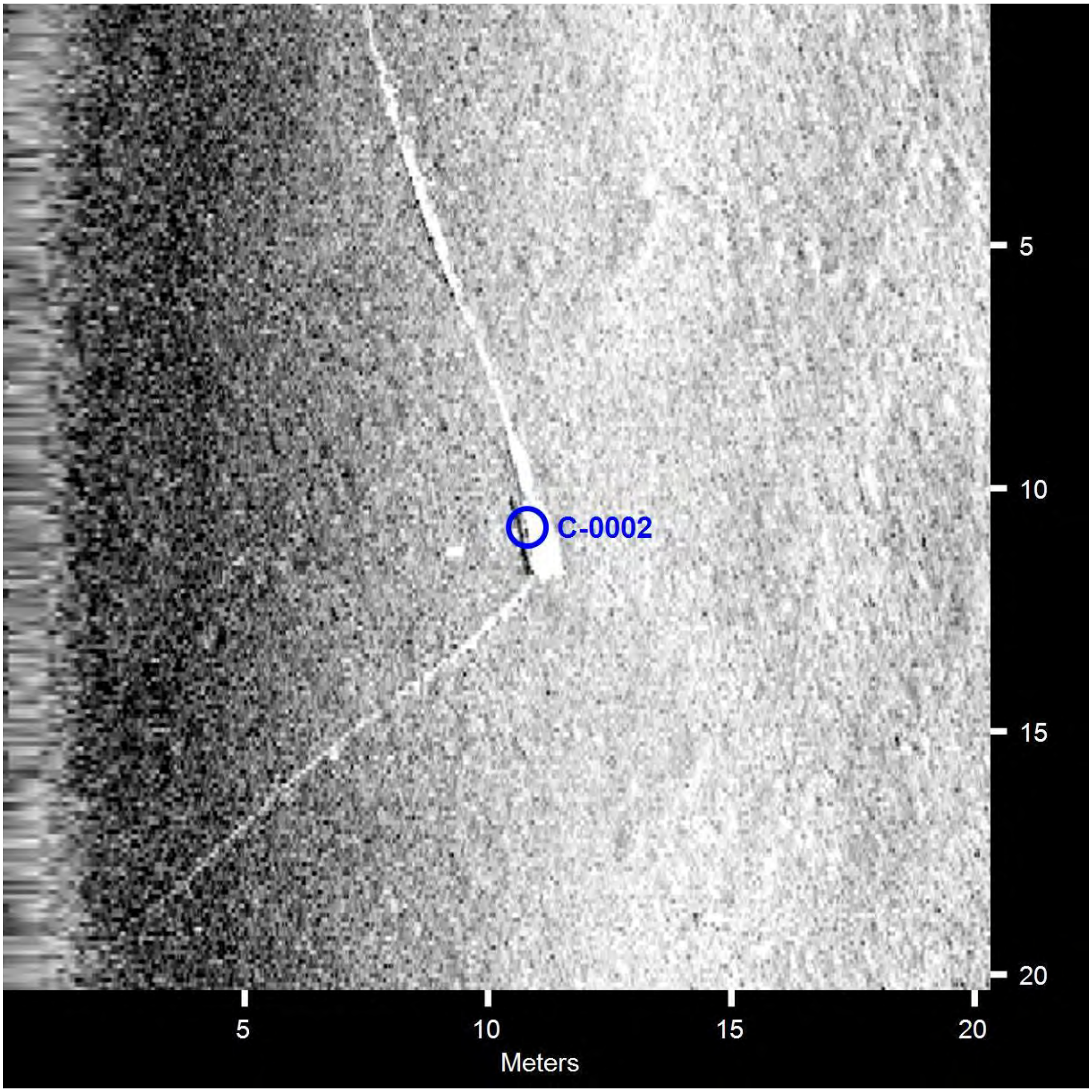
C-0001	8/25/2021 6:44:20 PM	41.5373392928	-70.6135325363
C-0002	9/7/2021 5:31:29 PM	41.5305741058	-70.6147485772
C-0003	8/25/2021 5:54:14 PM	41.5303860759	-70.6152204157
C-0004	8/25/2021 7:13:30 PM	41.5227962970	-70.6123571553
C-0005	9/7/2021 2:46:02 PM	41.5225756096	-70.6130670113
C-0006	8/25/2021 8:19:52 PM	41.5213790462	-70.6123163440
C-0007	8/25/2021 7:17:44 PM	41.5182119724	-70.6116133309
C-0008	8/25/2021 7:17:53 PM	41.5180908489	-70.6115307404
C-0009	8/25/2021 7:17:55 PM	41.5180431356	-70.6114402645
C-0010	9/7/2021 4:16:22 PM	41.5158295966	-70.6134520947
C-0011	8/25/2021 7:28:56 PM	41.5108317825	-70.6106988187
C-0012	8/31/2021 4:10:10 PM	41.5108309240	-70.6122854273
C-0013	8/23/2021 5:58:05 PM	41.5101830835	-70.6082968444
C-0014	8/31/2021 6:08:22 PM	41.5100253235	-70.6082083409
C-0015	8/31/2021 7:12:43 PM	41.5099993416	-70.6084348506
C-0016	8/31/2021 7:12:49 PM	41.5098730742	-70.6083324460
C-0017	8/31/2021 7:12:55 PM	41.5098494081	-70.6080857562
C-0018	8/31/2021 7:12:52 PM	41.5097889072	-70.6082771961
C-0019	8/25/2021 2:39:35 PM	41.5097289719	-70.6094296312
C-0020	8/31/2021 5:05:09 PM	41.5095040664	-70.6099175484
C-0021	8/23/2021 5:49:33 PM	41.5088630921	-70.6088308050

C-0022	8/23/2021 7:26:38 PM	41.5088180891	-70.6086501676
C-0023	8/31/2021 8:32:59 PM	41.5083013009	-70.6061721485
C-0024	8/31/2021 2:56:04 PM	41.4992888126	-70.5983853310
C-0025	8/31/2021 5:27:30 PM	41.4970761789	-70.5925056244
C-0026	8/23/2021 5:30:35 PM	41.4966533297	-70.5943280316
C-0027	8/20/2021 5:21:46 PM	41.4963296647	-70.5914420811
C-0028	8/20/2021 3:49:41 PM	41.4926324776	-70.5866721371
C-0029	8/20/2021 5:45:07 PM	41.4924422269	-70.5862037121
C-0030	8/20/2021 4:31:05 PM	41.4923911148	-70.5859864309
C-0031	8/20/2021 3:39:28 PM	41.4921524543	-70.5874889485
C-0032	8/20/2021 2:58:30 PM	41.4912037096	-70.5837658813
C-0033	8/20/2021 5:53:12 PM	41.4909839855	-70.5850891965
C-0034	8/23/2021 4:12:23 PM	41.4900791619	-70.5875808398
C-0035	8/20/2021 6:28:15 PM	41.4900723813	-70.5873429792
C-0036	8/20/2021 3:59:05 PM	41.4872811490	-70.5797578888
C-0037	8/20/2021 2:51:55 PM	41.4872400762	-70.5797998076
C-0038	8/23/2021 4:31:18 PM	41.4870963519	-70.5811232381
C-0039	8/20/2021 7:20:41 PM	41.4867884055	-70.5802290501
C-0040	8/23/2021 5:07:02 PM	41.4866767009	-70.5802348852
C-0041	8/23/2021 6:47:17 PM	41.4851867174	-70.5787615252
C-0042	8/20/2021 2:48:01 PM	41.4849665490	-70.5768132015
C-0043	8/20/2021 4:03:47 PM	41.4846264744	-70.5766804560
C-0044	8/20/2021 3:28:42 PM	41.4845196836	-70.5787199972
C-0045	9/8/2021 5:08:39 PM	41.4787268264	-70.5787780936
C-0046	9/8/2021 5:43:12 PM	41.4782460911	-70.5804772272
C-0047	9/8/2021 5:09:13 PM	41.4782018305	-70.5787392673
C-0048	9/8/2021 1:45:43 PM	41.4760532880	-70.5793263909

C-0049	8/19/2021 8:03:01 PM	41.4734926455	-70.5787582907
C-0050	8/19/2021 5:37:18 PM	41.4705608239	-70.5786399239
C-0051	8/19/2021 7:46:02 PM	41.4704669793	-70.5790566508
C-0052	8/19/2021 7:14:52 PM	41.4703899029	-70.5791416143
C-0053	8/19/2021 7:14:47 PM	41.4703383557	-70.5795095104
C-0054	8/19/2021 6:43:36 PM	41.4702584092	-70.5797829710
C-0055	8/19/2021 5:25:55 PM	41.4700972913	-70.5807205320
C-0056	8/19/2021 3:58:31 PM	41.4698999264	-70.5818536770
C-0057	8/19/2021 7:47:40 PM	41.4688784018	-70.5795060570
C-0058	8/19/2021 4:10:51 PM	41.4681286119	-70.5814828018
C-0059	8/19/2021 5:03:03 PM	41.4681240780	-70.5815470599
C-0060	8/19/2021 7:12:28 PM	41.4681200216	-70.5796945996
C-0061	8/19/2021 4:42:43 PM	41.4680979383	-70.5815842049
C-0062	8/19/2021 7:27:32 PM	41.4677814427	-70.5782931308
C-0063	8/19/2021 6:30:57 PM	41.4672841615	-70.5807724029
C-0064	8/19/2021 5:41:04 PM	41.4670948819	-70.5793998556
C-0065	8/19/2021 6:30:37 PM	41.4668685821	-70.5808190029
C-0066	8/19/2021 6:30:27 PM	41.4667154553	-70.5808591280
C-0067	8/19/2021 5:41:55 PM	41.4662185689	-70.5791383567
C-0068	8/19/2021 5:42:06 PM	41.4660262569	-70.5791620656
C-0069	8/19/2021 6:07:02 PM	41.4660129541	-70.5814213950
C-0070	8/19/2021 5:42:17 PM	41.4658535738	-70.5795433837
C-0071	8/19/2021 6:06:36 PM	41.4655569425	-70.5811618046
C-0072	8/19/2021 7:55:07 PM	41.4654899177	-70.5796009636
C-0073	8/19/2021 4:39:59 PM	41.4653001367	-70.5819732187
C-0074	8/19/2021 6:48:40 PM	41.4650620872	-70.5802790628



C-0001	**Dimensions and attributes**
● Click Position 41.5373392928 -70.6135325363 (WGS84) (X) 365405.31 (Y) 4599666.51 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825184104H.xtf	● Target Width: 1.3 Meters ● Target Height: 0.7 Meters ● Target Length: 2.3 Meters ● Target Shadow: 1.3 Meters ● Classification1**: Boulder** ● Description:

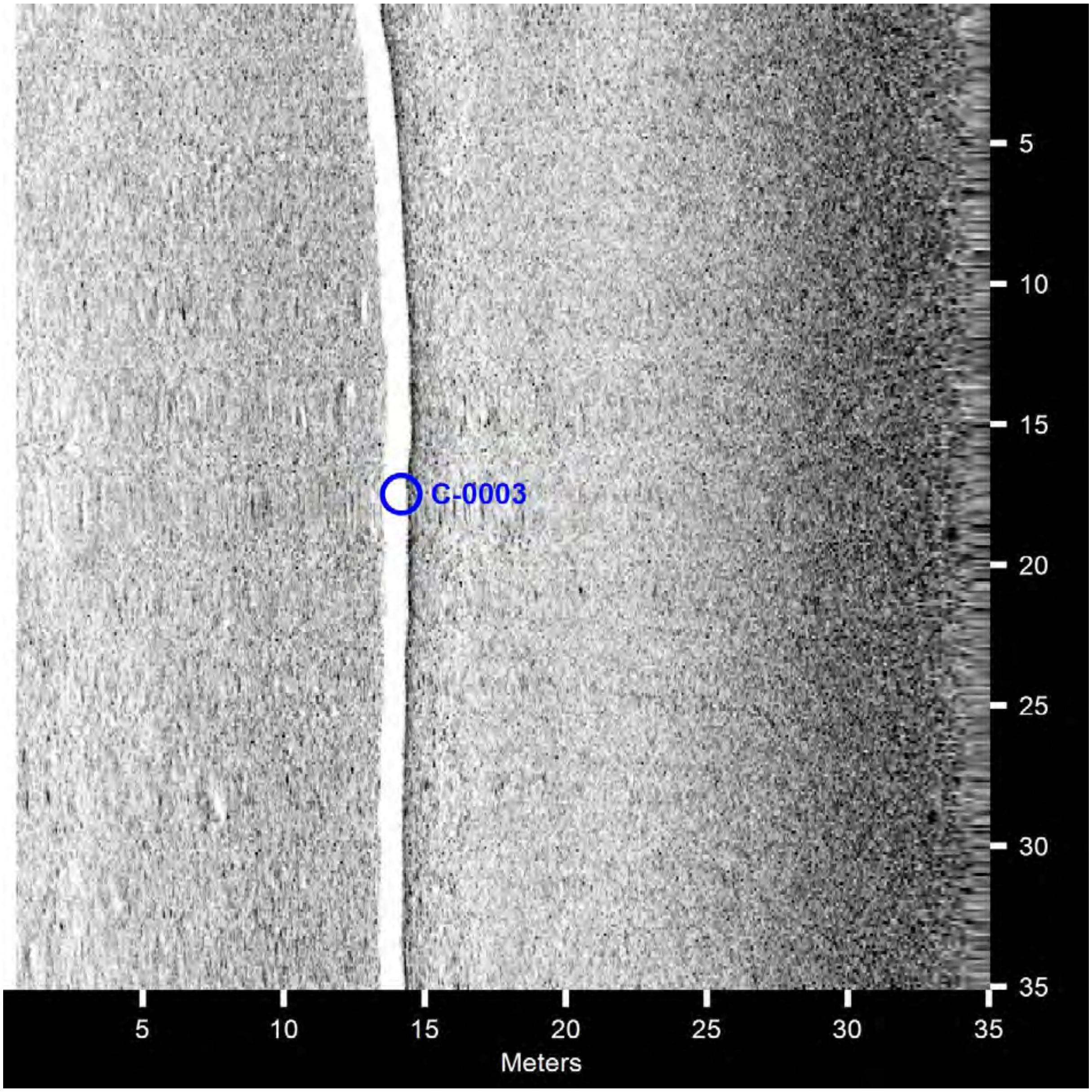


C-0002

- Click Position
  41.5305741058 -70.6147485772 (WGS84)
  (X) 365289.83 (Y) 4598917.30 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907171010H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.2 Meters
- Target Length: 1.5 Meters
- Target Shadow: 0.6 Meters
- Classification1**: Cable or fishing gear**
- Description: Dimensions given for central target

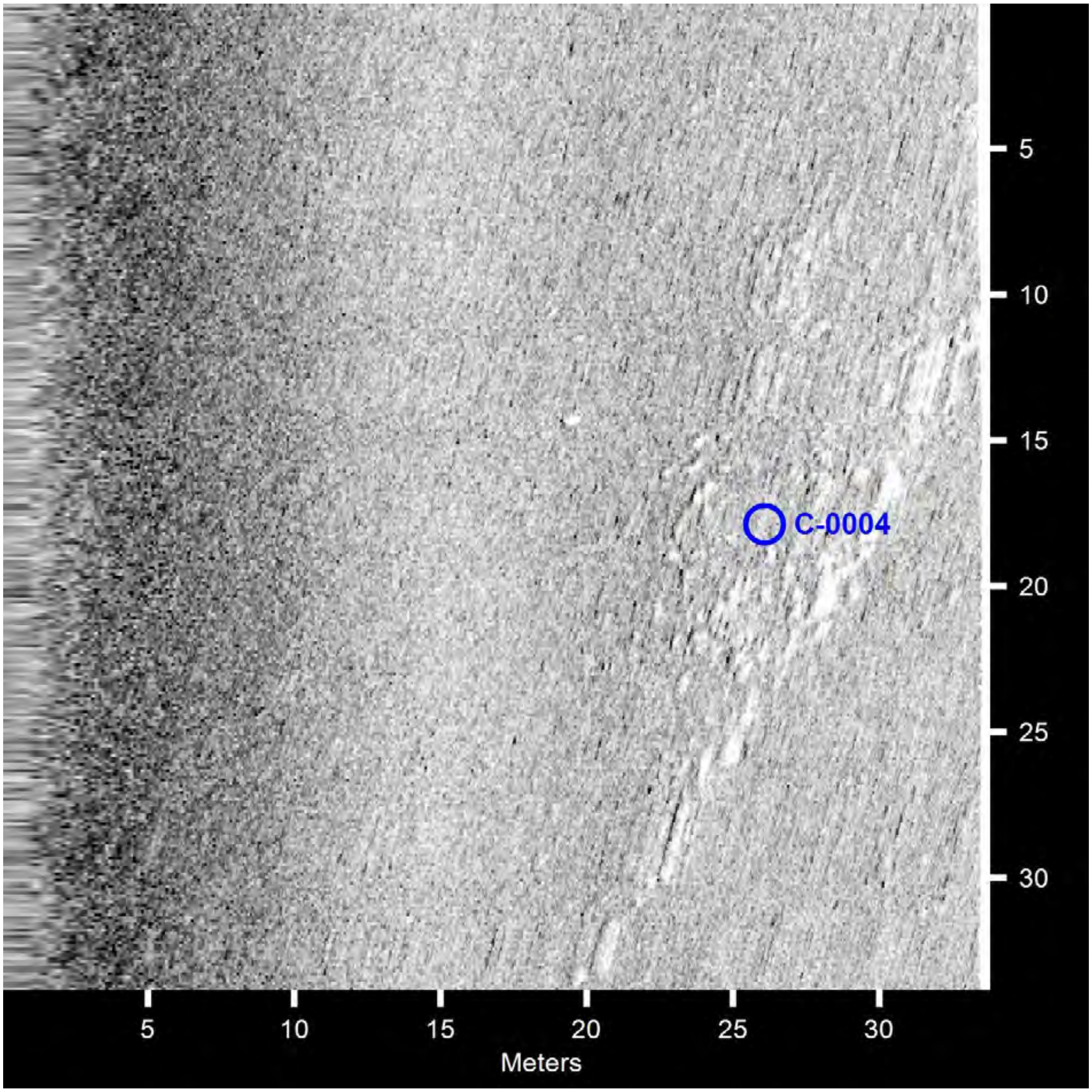


C-0003

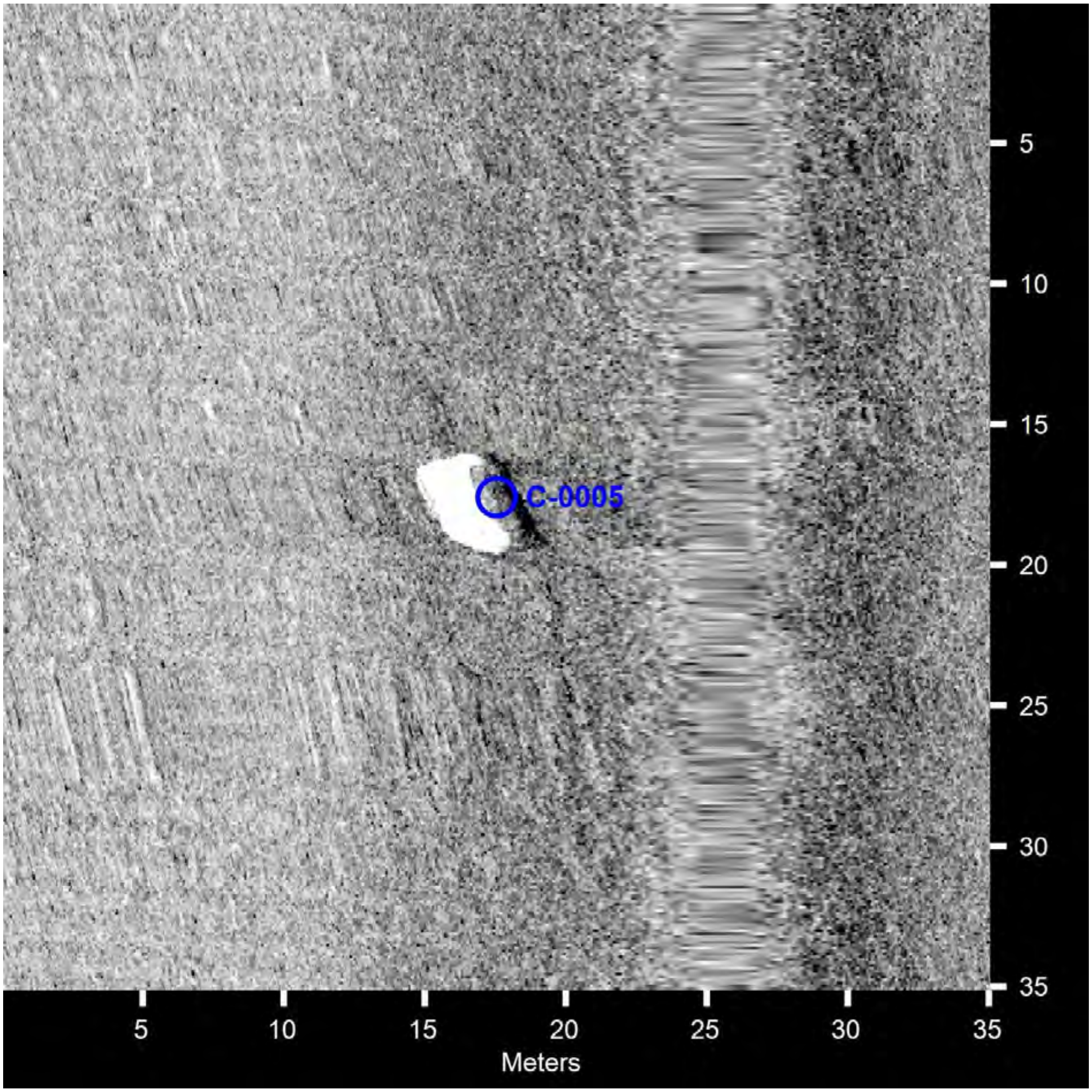
- Click Position
  41.5303860759 -70.6152204157 (WGS84)
  (X) 365250.07 (Y) 4598897.16 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825174557H.xtf

Dimensions and attributes

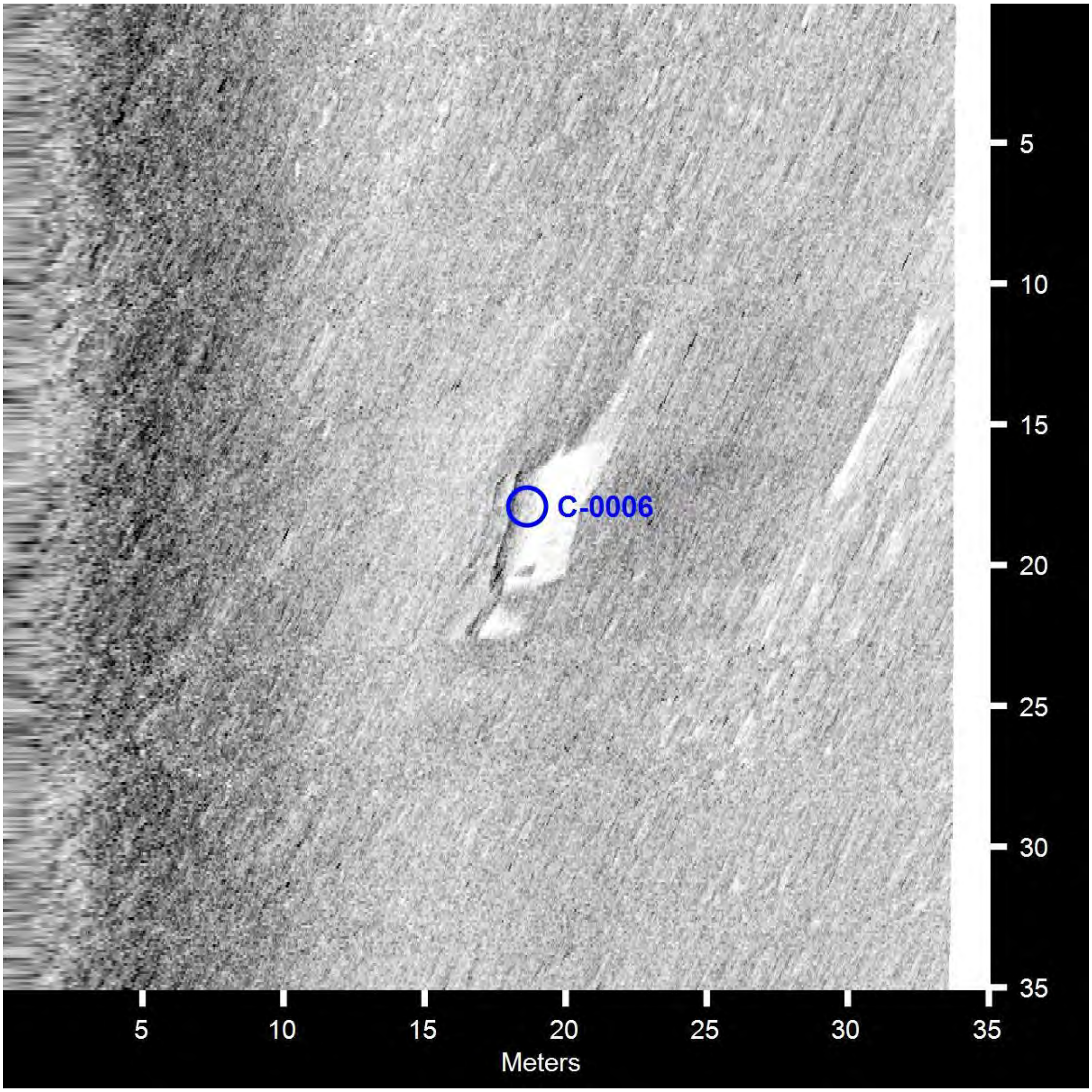
- Target Width: 0.3 Meters
- Target Height: 0.3 Meters
- Target Length: 0.0 Meters
- Target Shadow: 1.1 Meters
- Classification1: **Cable**
- Description:



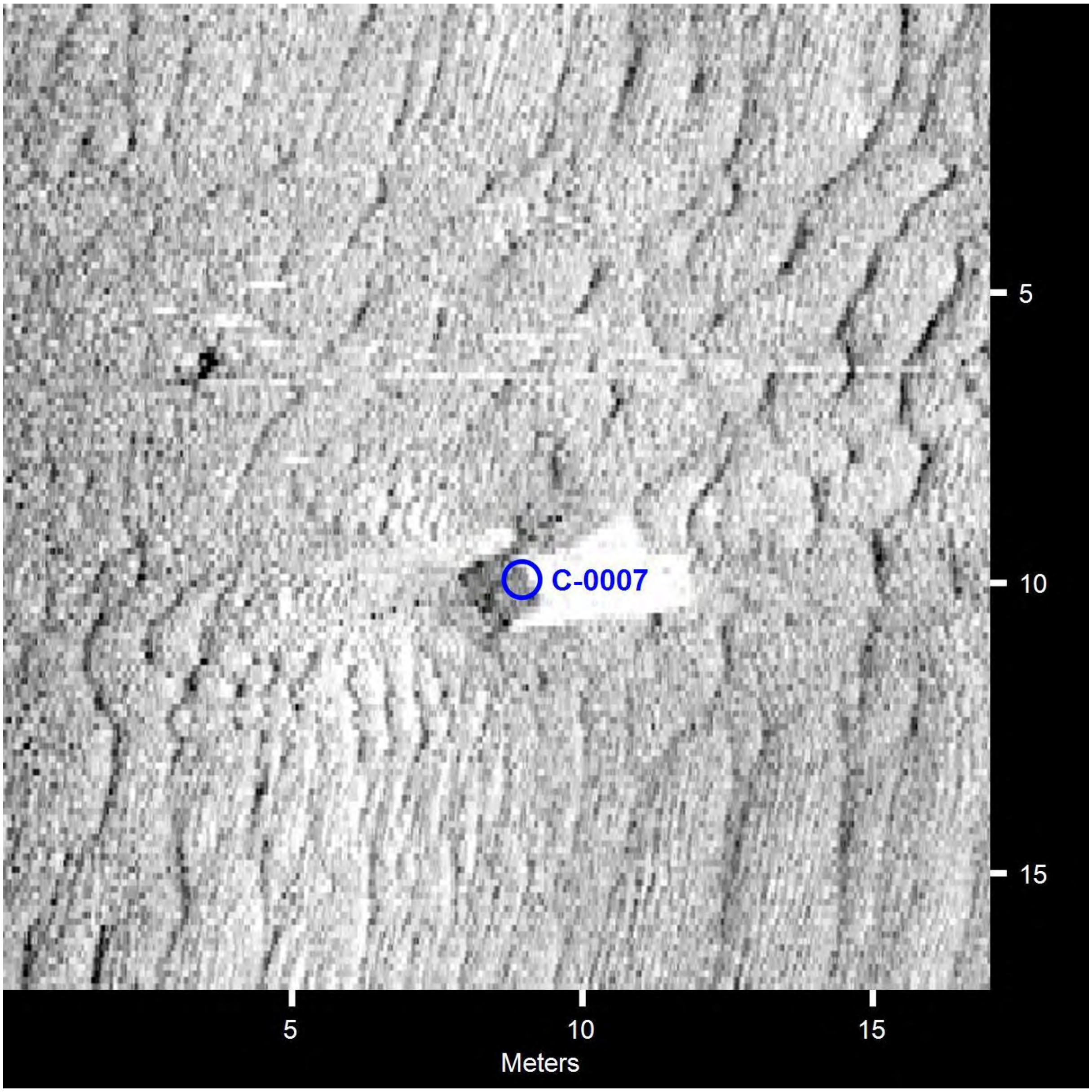
C-0004	Dimensions and attributes
● Click Position 41.5227962970 -70.6123571553 (WGS84) (X) 365473.22 (Y) 4598050.04 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 6.7 Meters ● Target Height: 0.3 Meters ● Target Length: 20.7 Meters ● Target Shadow: 0.7 Meters ● Classification1: **Boulder Field** ● Description:



C-0005	**Dimensions and attributes**
● Click Position 41.5225756096 -70.6130670113 (WGS84) (X) 365413.54 (Y) 4598026.64 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907142614H.xtf	● Target Width: 1.0 Meters ● Target Height: 2.5 Meters ● Target Length: 3.1 Meters ● Target Shadow: 2.4 Meters ● Classification1**: Boulder** ● Description:



C-0006	Dimensions and attributes
● Click Position 41.5213790462 -70.6123163440 (WGS84) (X) 365473.69 (Y) 4597892.62 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825200524.001H.xtf	● Target Width: 1.9 Meters ● Target Height: 0.8 Meters ● Target Length: 4.2 Meters ● Target Shadow: 1.6 Meters ● Classification1: **Boulder** ● Description:

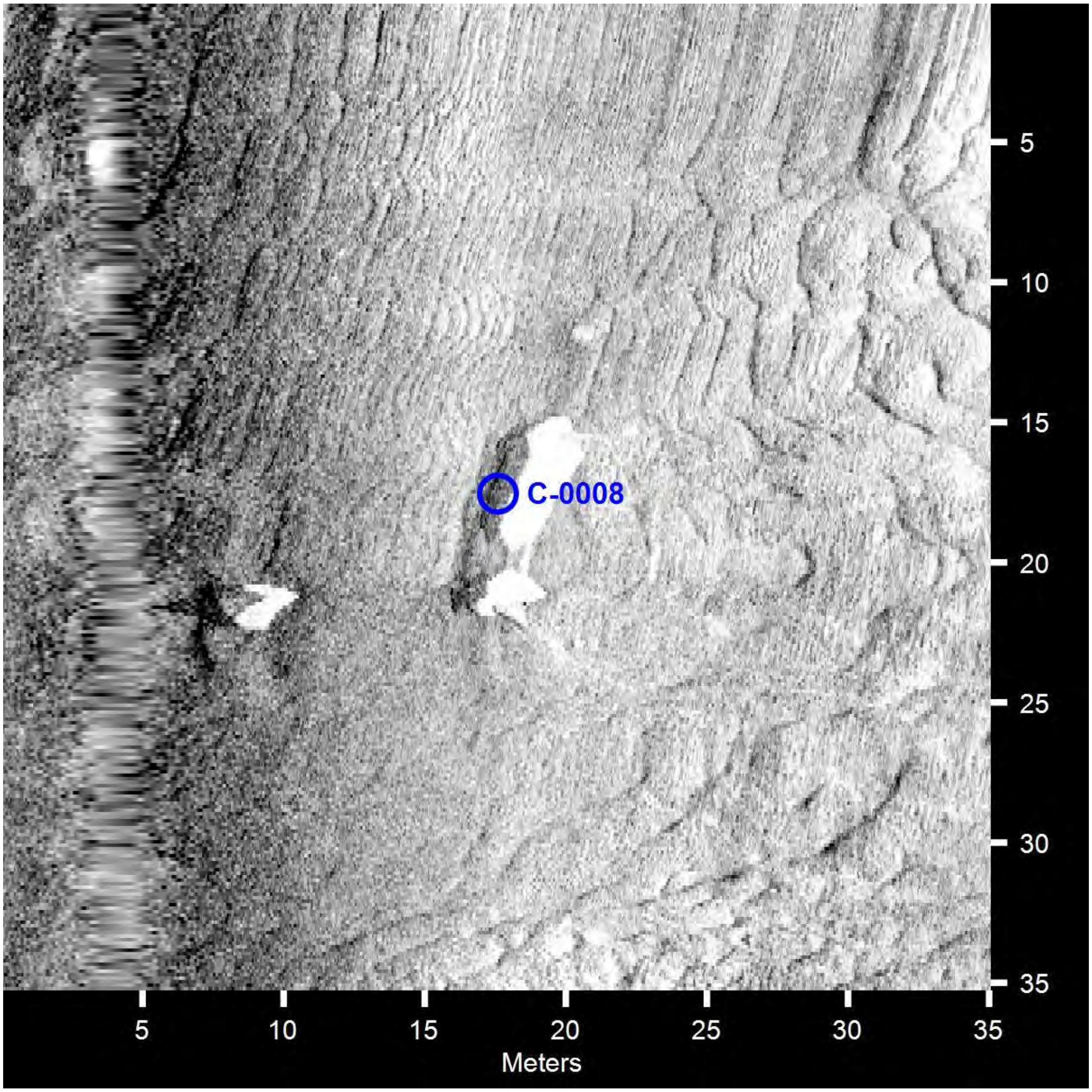


C-0007

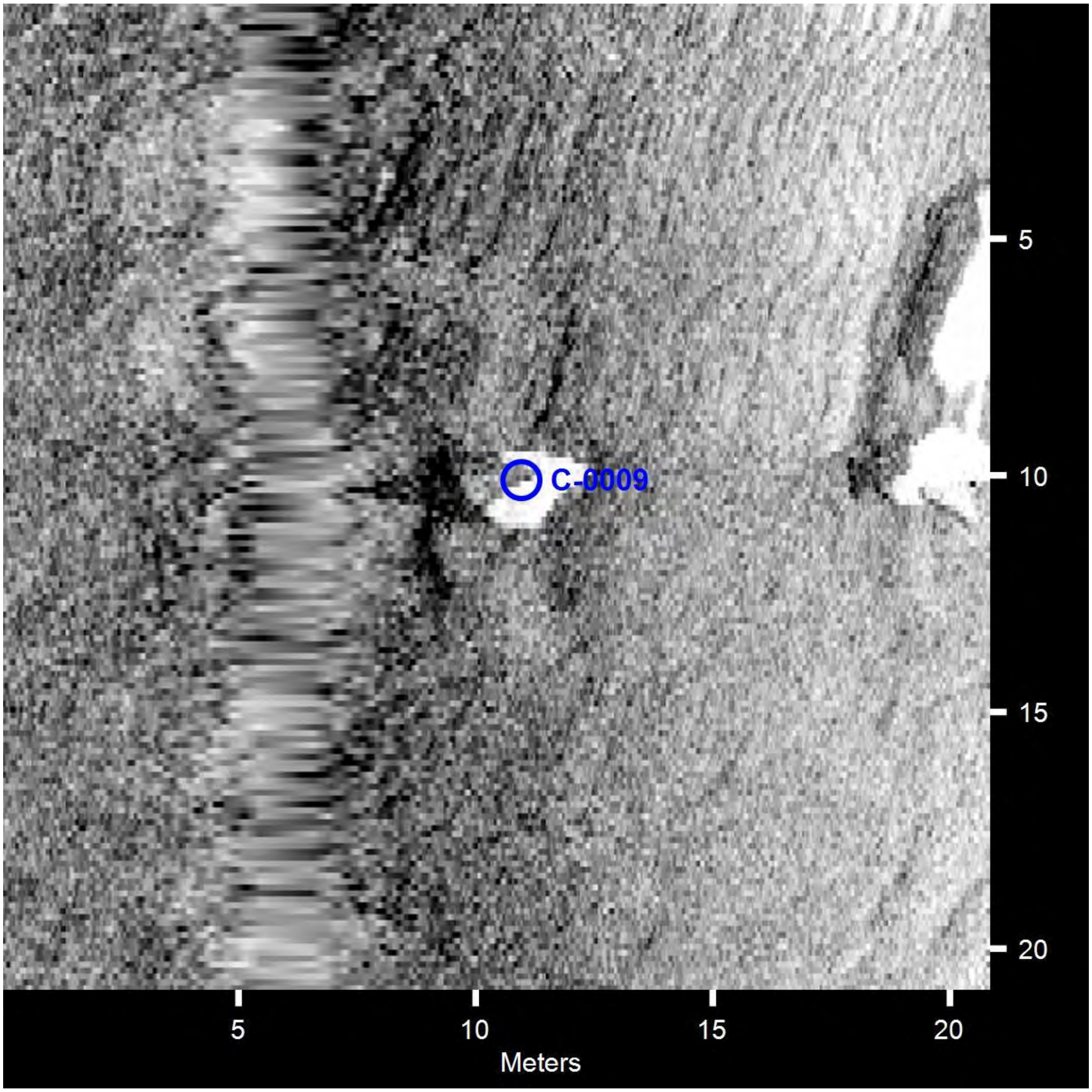
- Click Position
  41.5182119724 -70.6116133309 (WGS84)
  (X) 365525.79 (Y) 4597539.91 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf

Dimensions and attributes

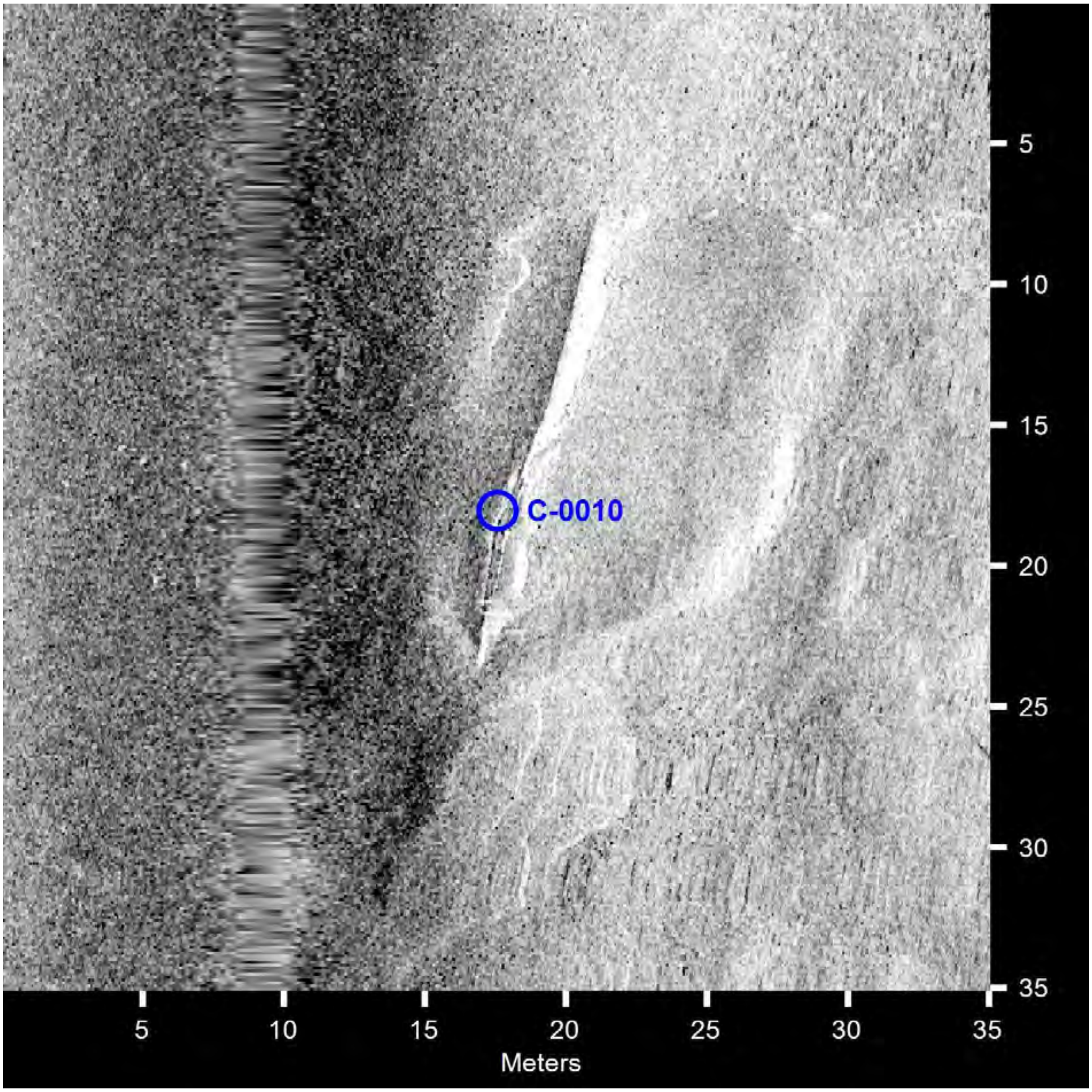
- Target Width: 0.9 Meters
- Target Height: 0.8 Meters
- Target Length: 0.7 Meters
- Target Shadow: 2.7 Meters
- Classification1**: Fishing Gear**
- Description:



C-0008	Dimensions and attributes
● Click Position 41.5180908489 -70.6115307404 (WGS84) (X) 365532.43 (Y) 4597526.33 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 1.1 Meters ● Target Height: 1.0 Meters ● Target Length: 5.4 Meters ● Target Shadow: 2.3 Meters ● Classification1**: Boulder** ● Description:



C-0009	**Dimensions and attributes**
● Click Position 41.5180431356 -70.6114402645 (WGS84) (X) 365539.88 (Y) 4597520.89 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 1.3 Meters ● Target Height: 1.9 Meters ● Target Length: 2.2 Meters ● Target Shadow: 1.9 Meters ● Classification1**: Boulder** ● Description:

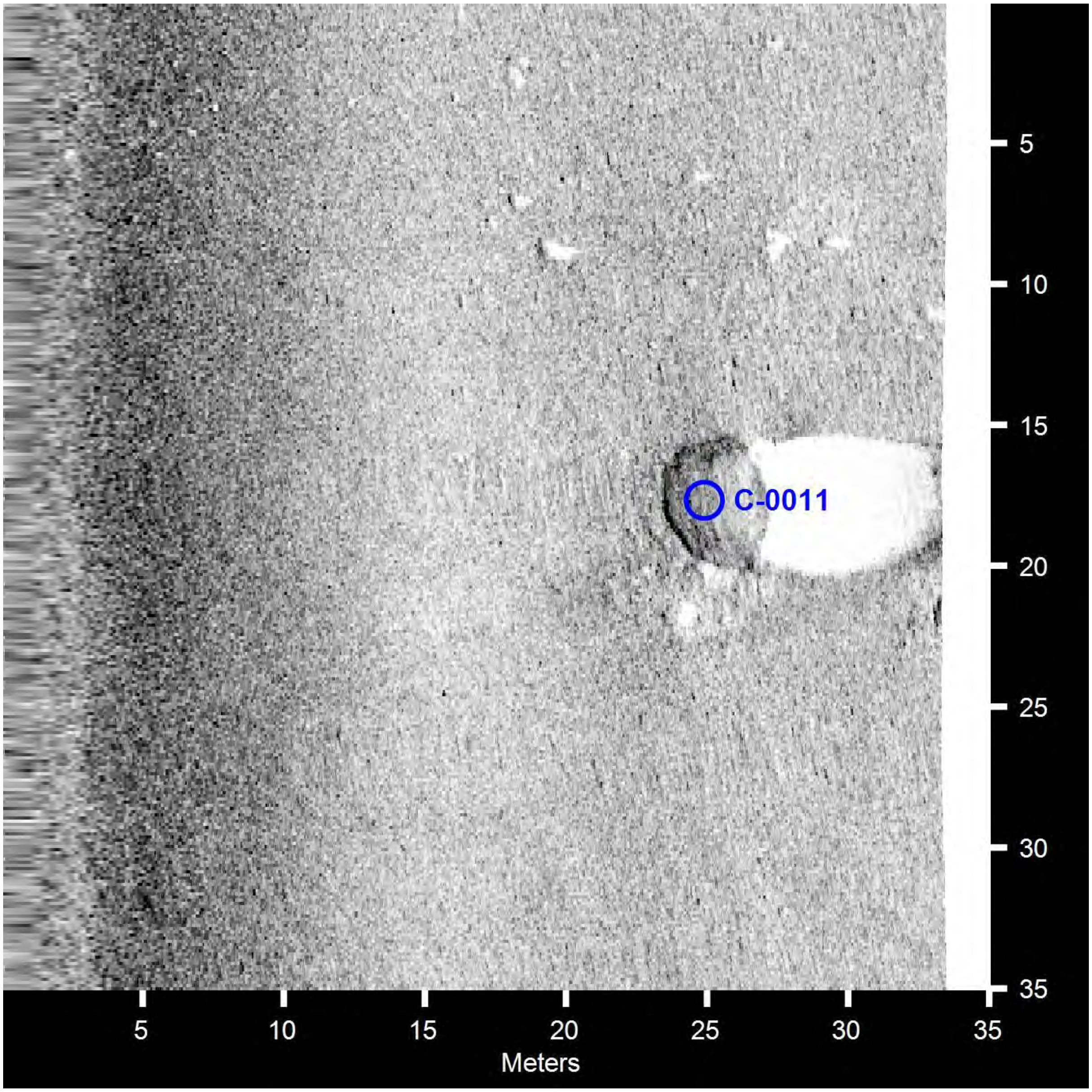


C-0010

- Click Position
  41.5158295966 -70.6134520947 (WGS84)
  (X) 365367.42 (Y) 4597278.27 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907160829H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.2 Meters
- Target Length: 17.7 Meters
- Target Shadow: 0.3 Meters
- Classification1: **Possible Cable Segment**
- Description:

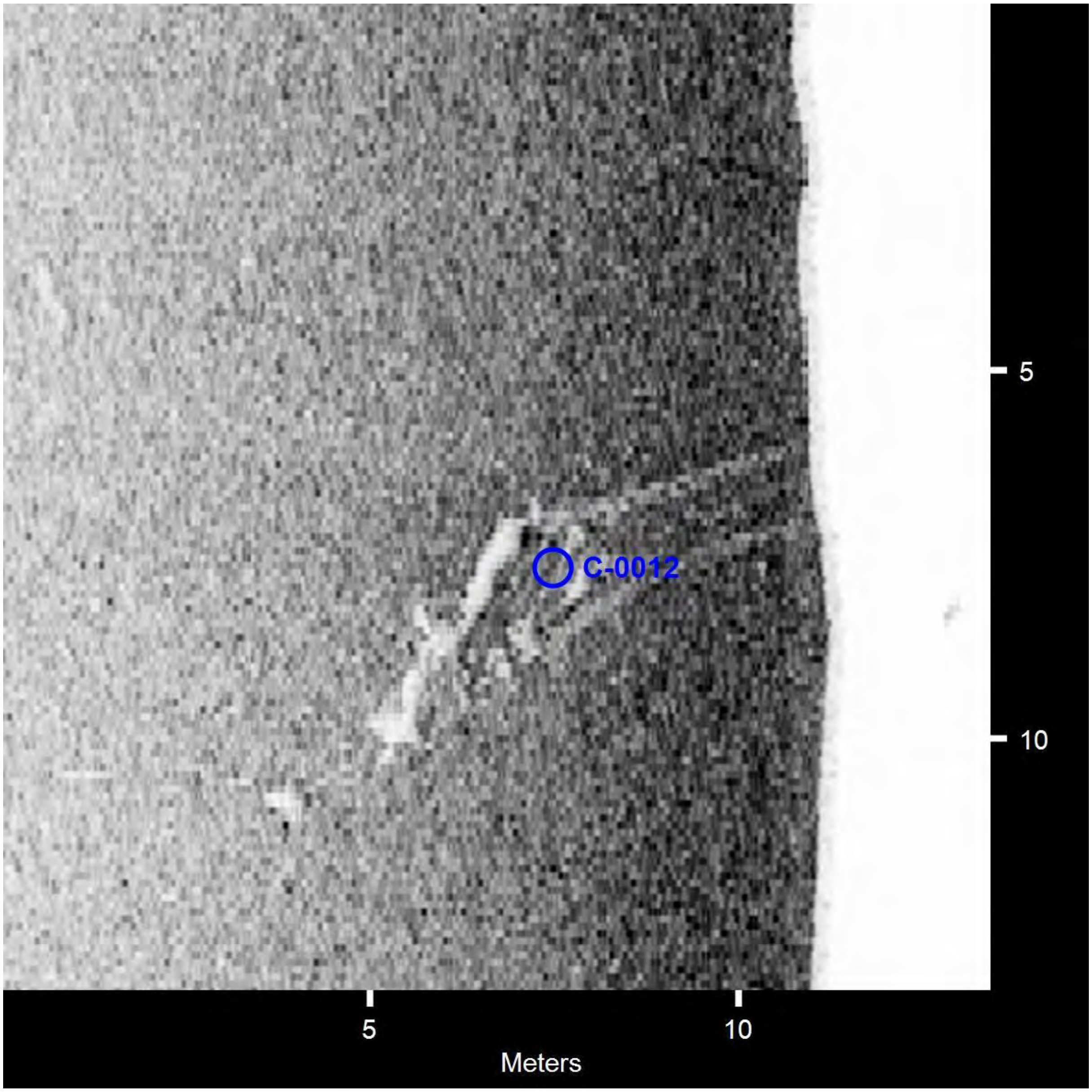


C-0011

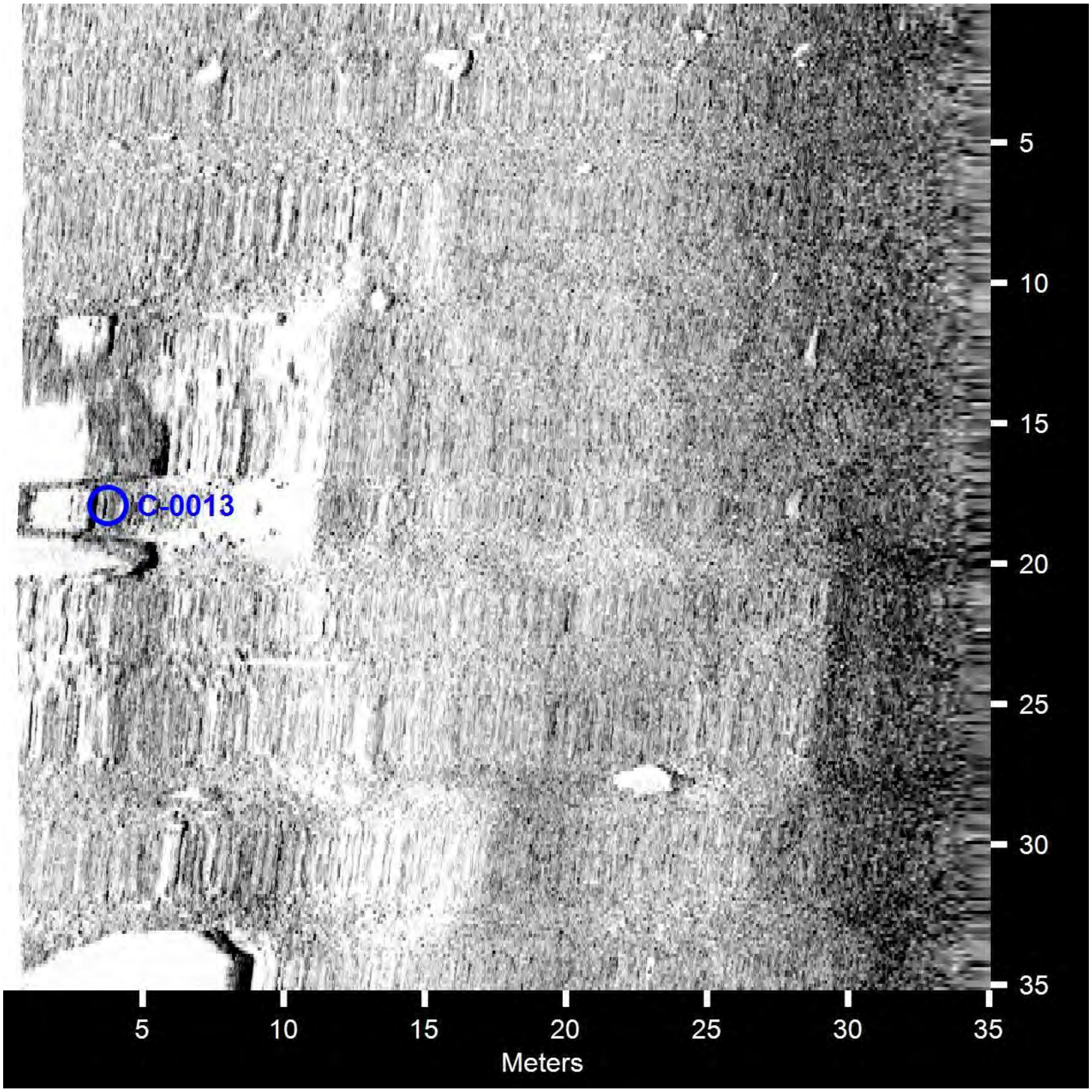
- Click Position
  41.5108317825 -70.6106988187 (WGS84)
  (X) 365586.83 (Y) 4596719.10 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825192550H.xtf

Dimensions and attributes

- Target Width: 3.5 Meters
- Target Height: 2.1 Meters
- Target Length: 4.3 Meters
- Target Shadow: 5.8 Meters
- Classification1: **Boulder**
- Description:



C-0012	**Dimensions and attributes**
● Click Position 41.5108309240 -70.6122854273 (WGS84) (X) 365454.42 (Y) 4596721.47 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831154258H.xtf	● Target Width: 1.6 Meters ● Target Height: 0.0 Meters ● Target Length: 7.0 Meters ● Target Shadow: 0.2 Meters ● Classification1: **Debris or Wreckage** ● Description:

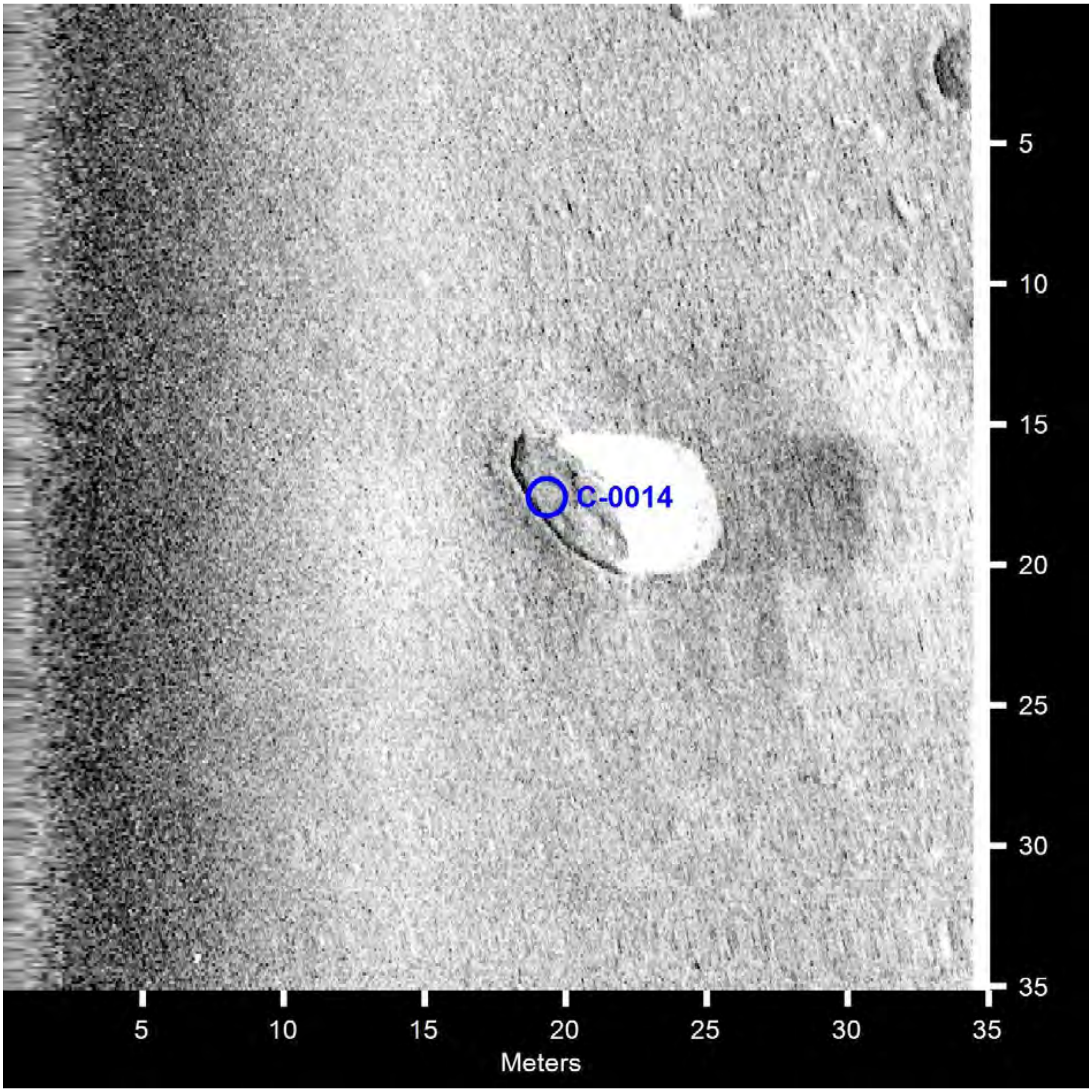


C-0013

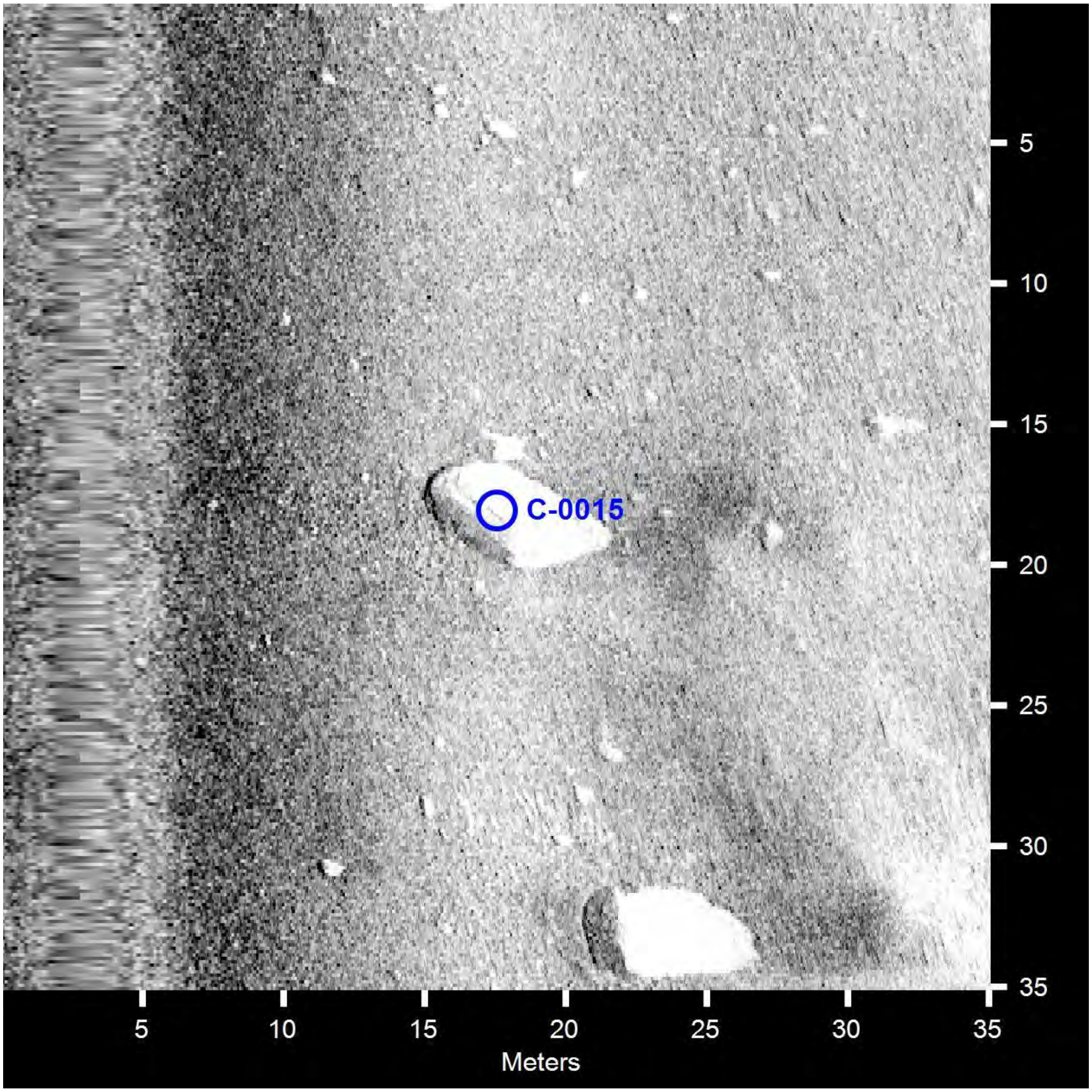
- Click Position
  41.5101830835 -70.6082968444 (WGS84)
  (X) 365785.94 (Y) 4596643.34 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
  ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823175307H.xtf

Dimensions and attributes

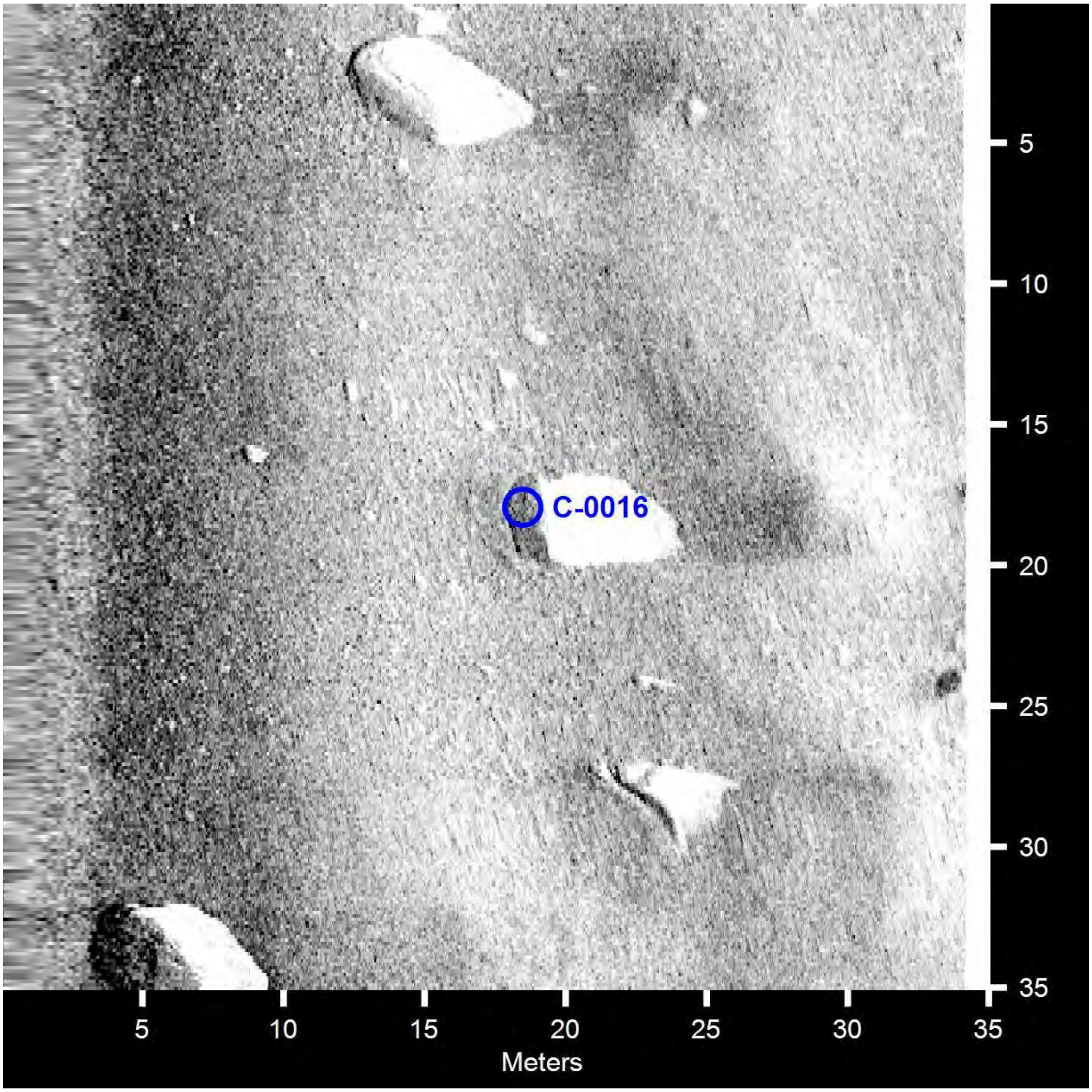
- Target Width: 2.5 Meters
- Target Height: 0.5 Meters
- Target Length: 8.0 Meters
- Target Shadow: 3.1 Meters
- Classification1: **Boulder**
- Description: Possible debris



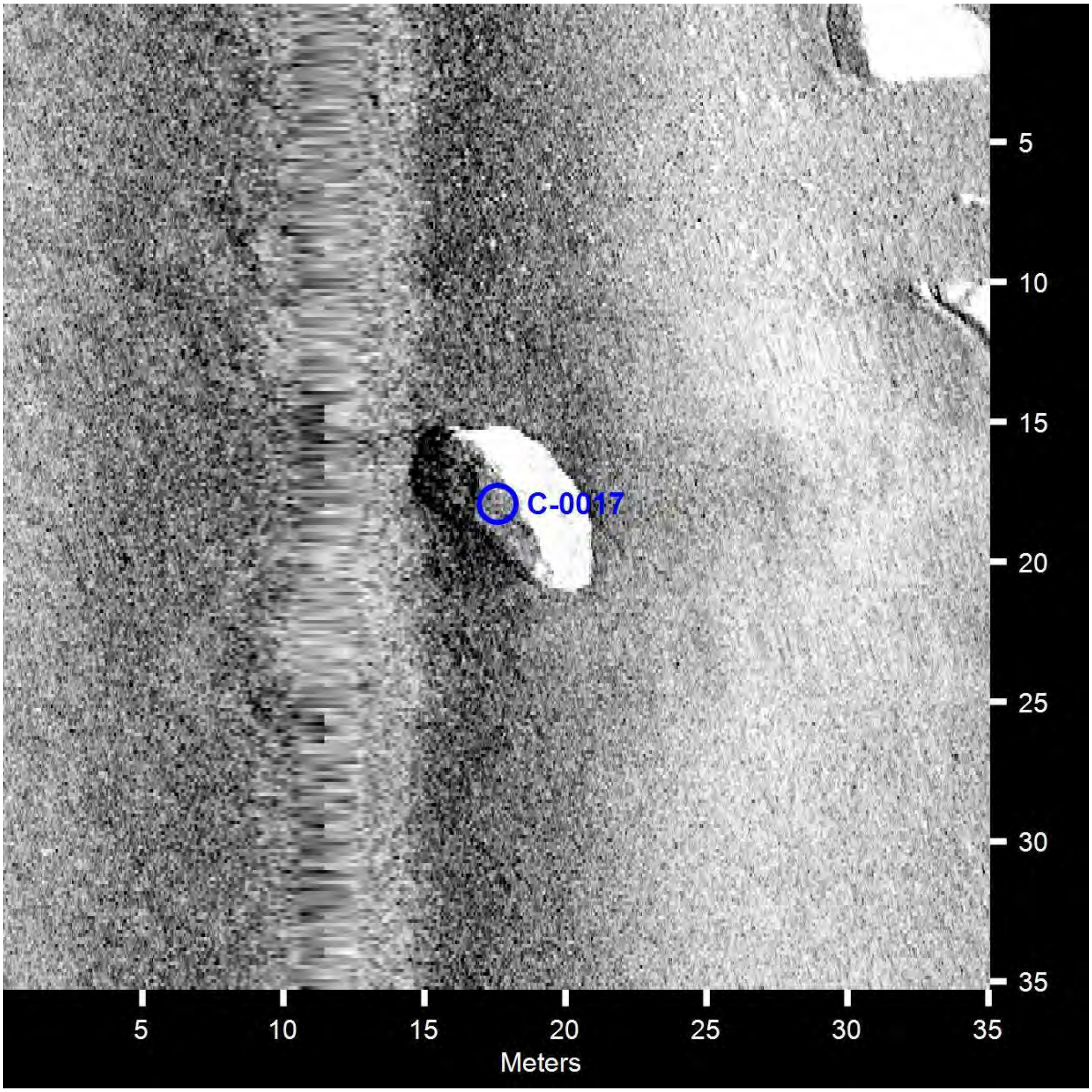
C-0014	Dimensions and attributes
● Click Position 41.5100253235 -70.6082083409 (WGS84) (X) 365793.00 (Y) 4596625.69 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831180429H.xtf	● Target Width: 2.3 Meters ● Target Height: 1.3 Meters ● Target Length: 6.1 Meters ● Target Shadow: 4.7 Meters ● Classification1**: Boulder** ● Description:



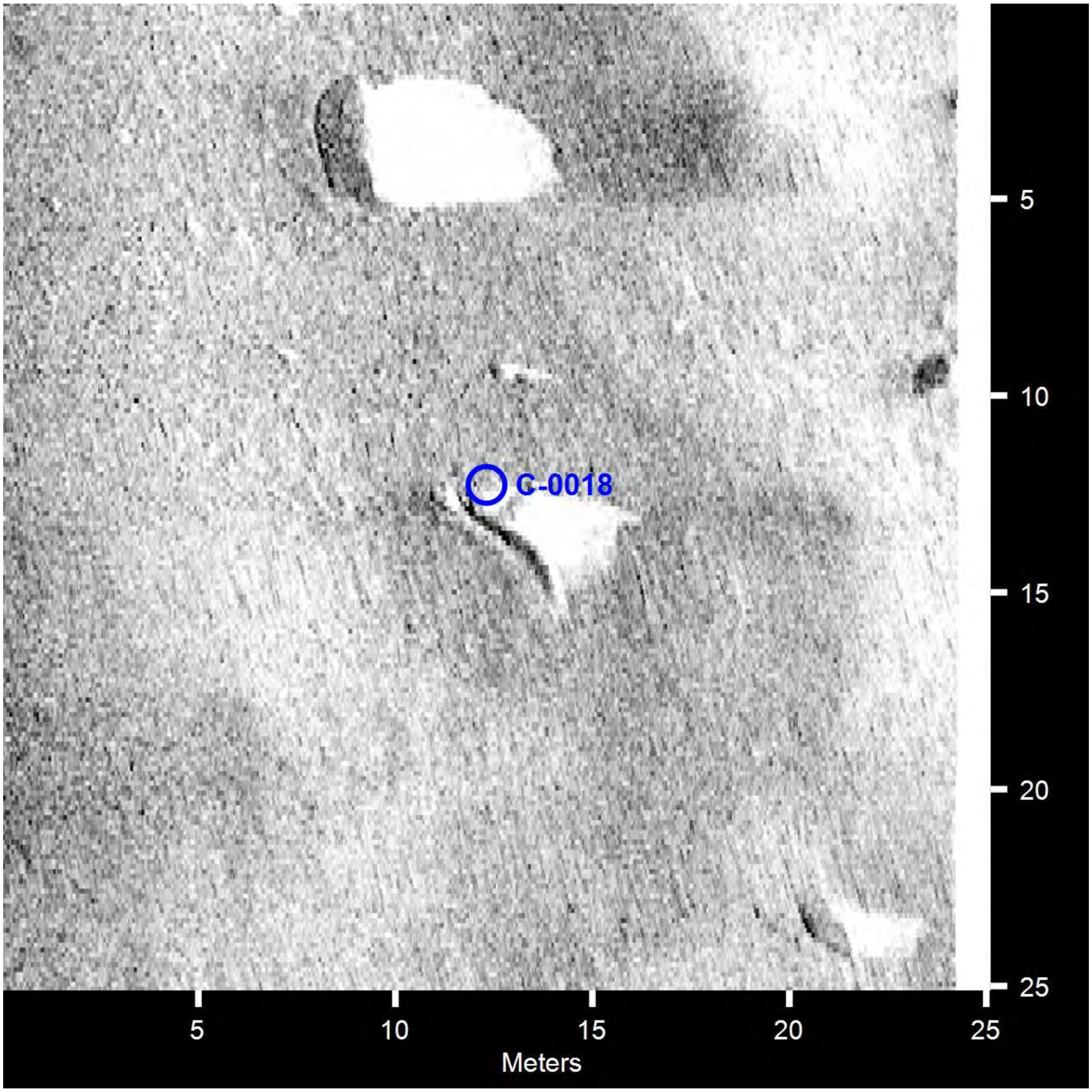
C-0015	Dimensions and attributes
● Click Position 41.5099993416 -70.6084348506 (WGS84) (X) 365774.05 (Y) 4596623.16 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf	● Target Width: 3.1 Meters ● Target Height: 1.7 Meters ● Target Length: 4.2 Meters ● Target Shadow: 4.0 Meters ● Classification1: **Boulder** ● Description:



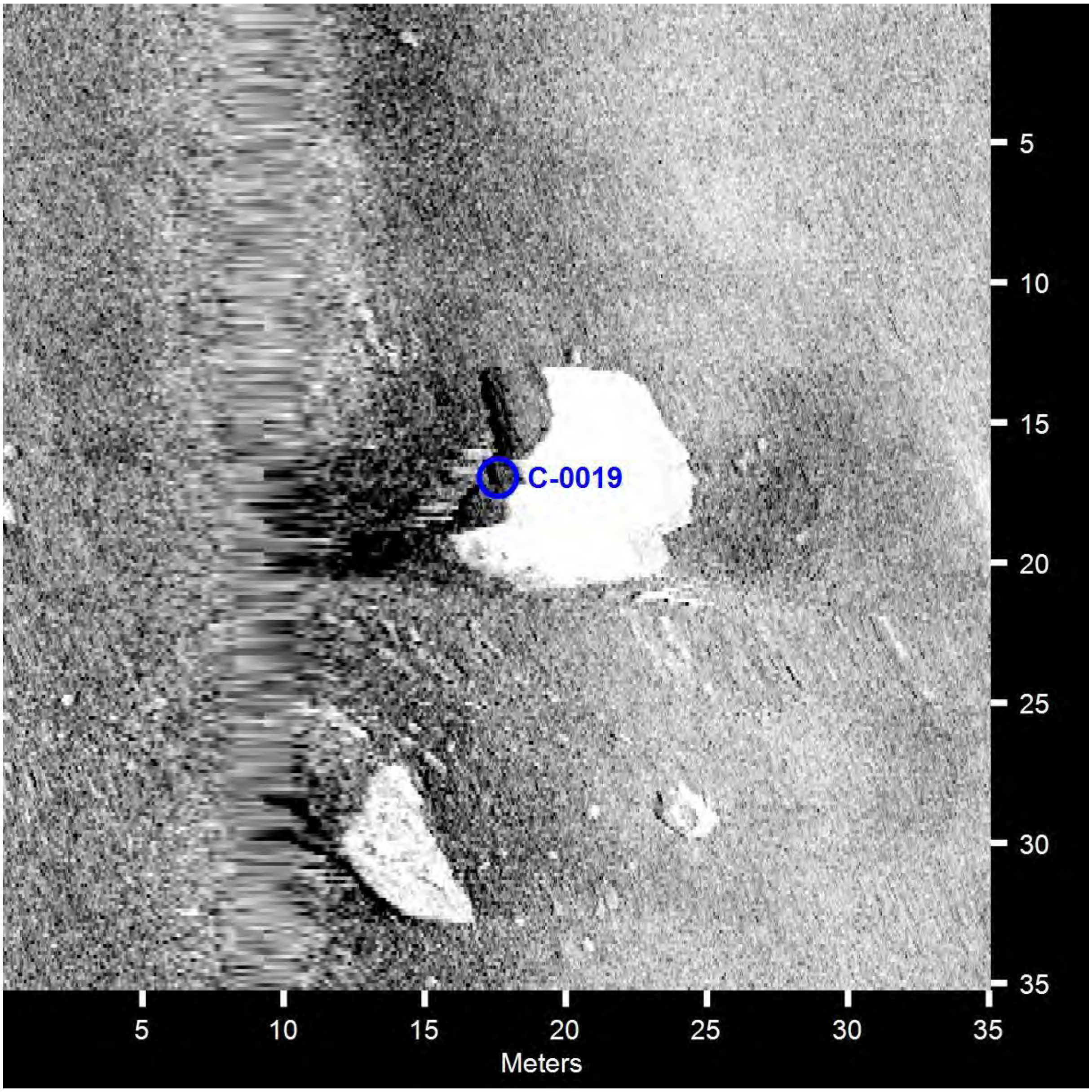
C-0016	Dimensions and attributes
● Click Position 41.5098730742 -70.6083324460 (WGS84) (X) 365782.33 (Y) 4596608.98 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf	● Target Width: 1.3 Meters ● Target Height: 1.6 Meters ● Target Length: 3.5 Meters ● Target Shadow: 4.6 Meters ● Classification1: **Boulder** ● Description:



C-0017	Dimensions and attributes
● Click Position 41.5098494081 -70.6080857562 (WGS84) (X) 365802.87 (Y) 4596605.97 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf	● Target Width: 3.2 Meters ● Target Height: 2.5 Meters ● Target Length: 6.8 Meters ● Target Shadow: 2.8 Meters ● Classification1: **Boulder** ● Description:



C-0018	Dimensions and attributes
● Click Position 41.5097889072 -70.6082771961 (WGS84) (X) 365786.77 (Y) 4596599.55 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf	● Target Width: 1.1 Meters ● Target Height: 1.0 Meters ● Target Length: 4.0 Meters ● Target Shadow: 3.4 Meters ● Classification1**: Boulder or debris** ● Description:

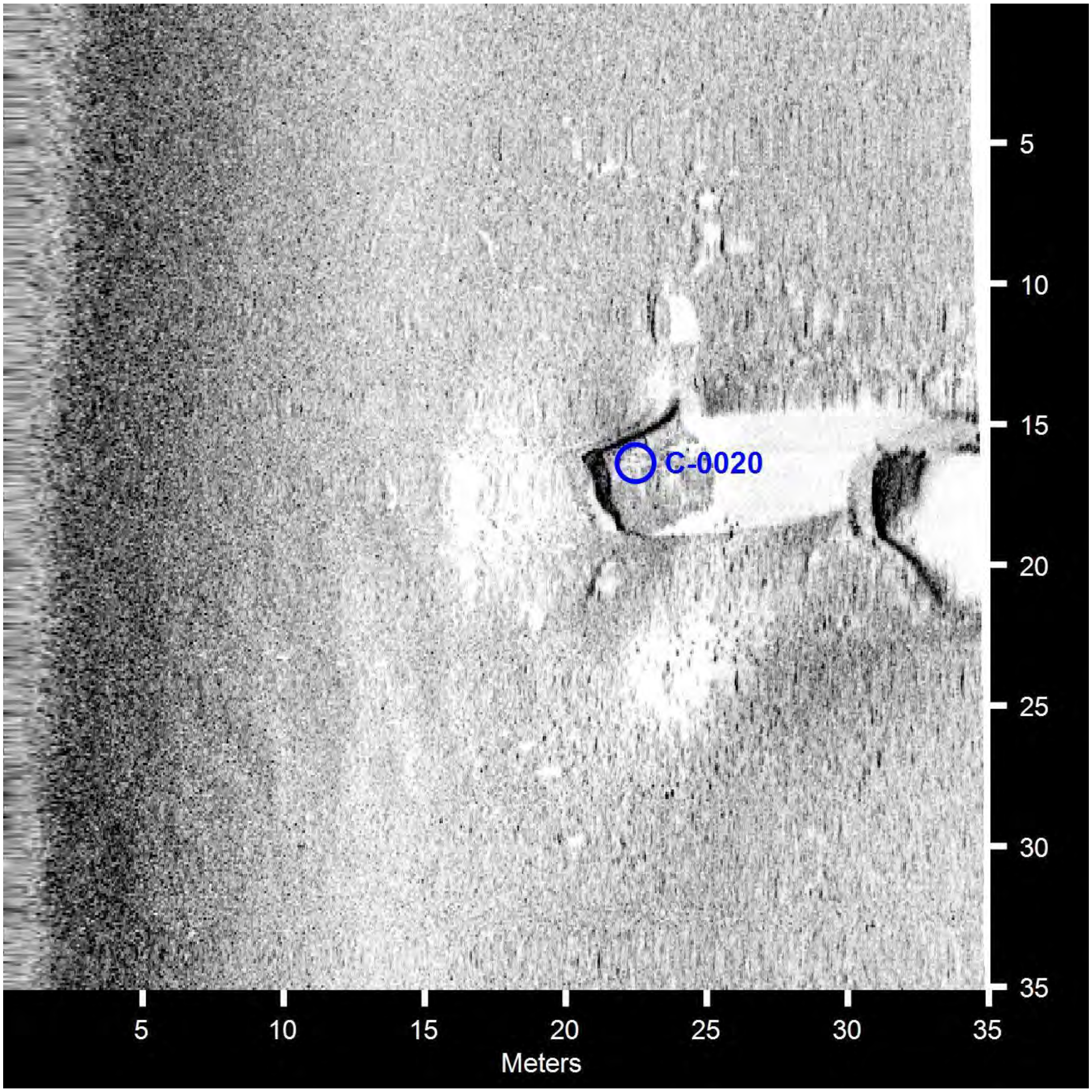


C-0019

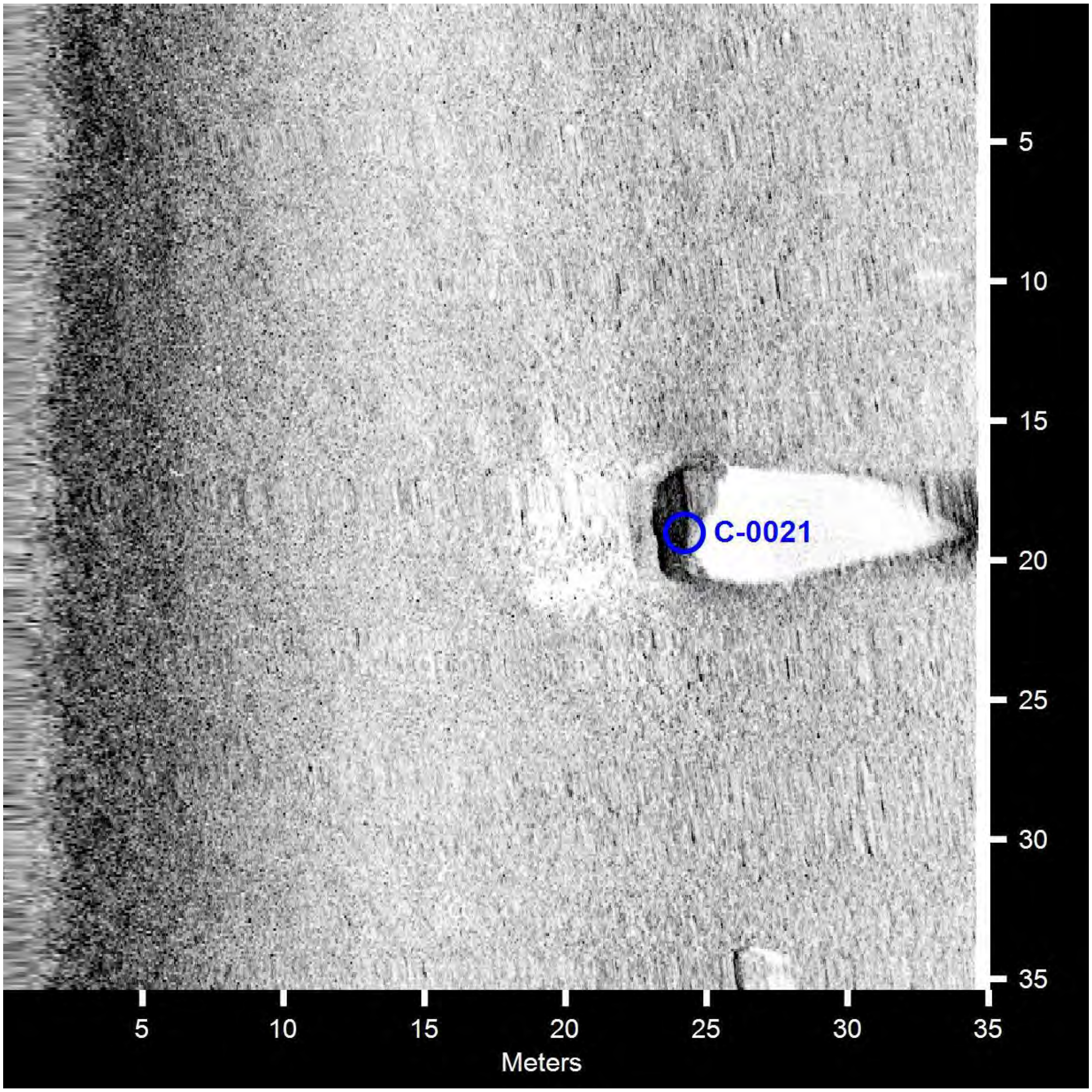
- Click Position
  41.5097289719 -70.6094296312 (WGS84)
  (X) 365690.47 (Y) 4596594.69 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825143650H.xtf

Dimensions and attributes

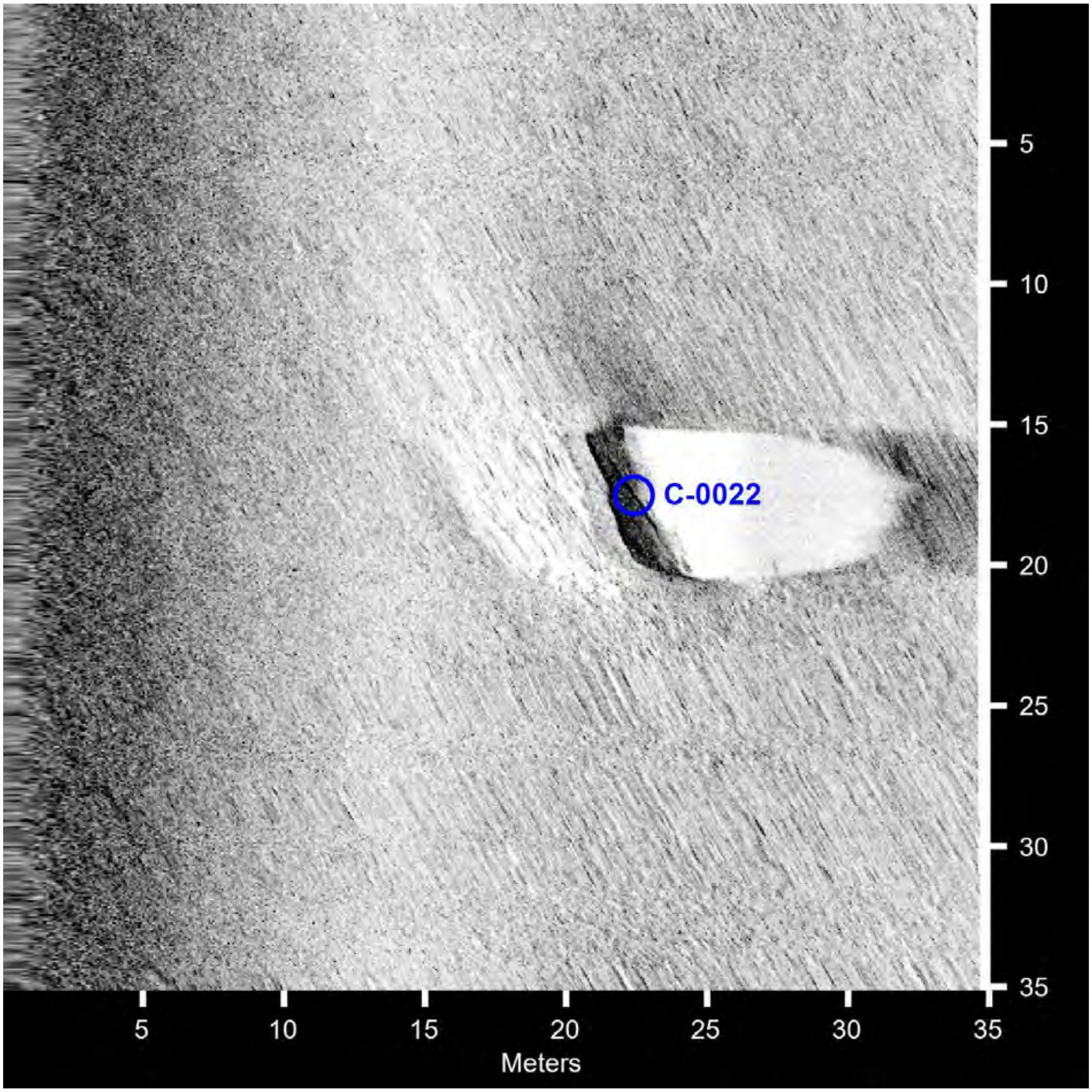
- Target Width: 2.2 Meters
- Target Height: 5.2 Meters
- Target Length: 8.0 Meters
- Target Shadow: 6.1 Meters
- Classification1**: Boulder**
- Description:



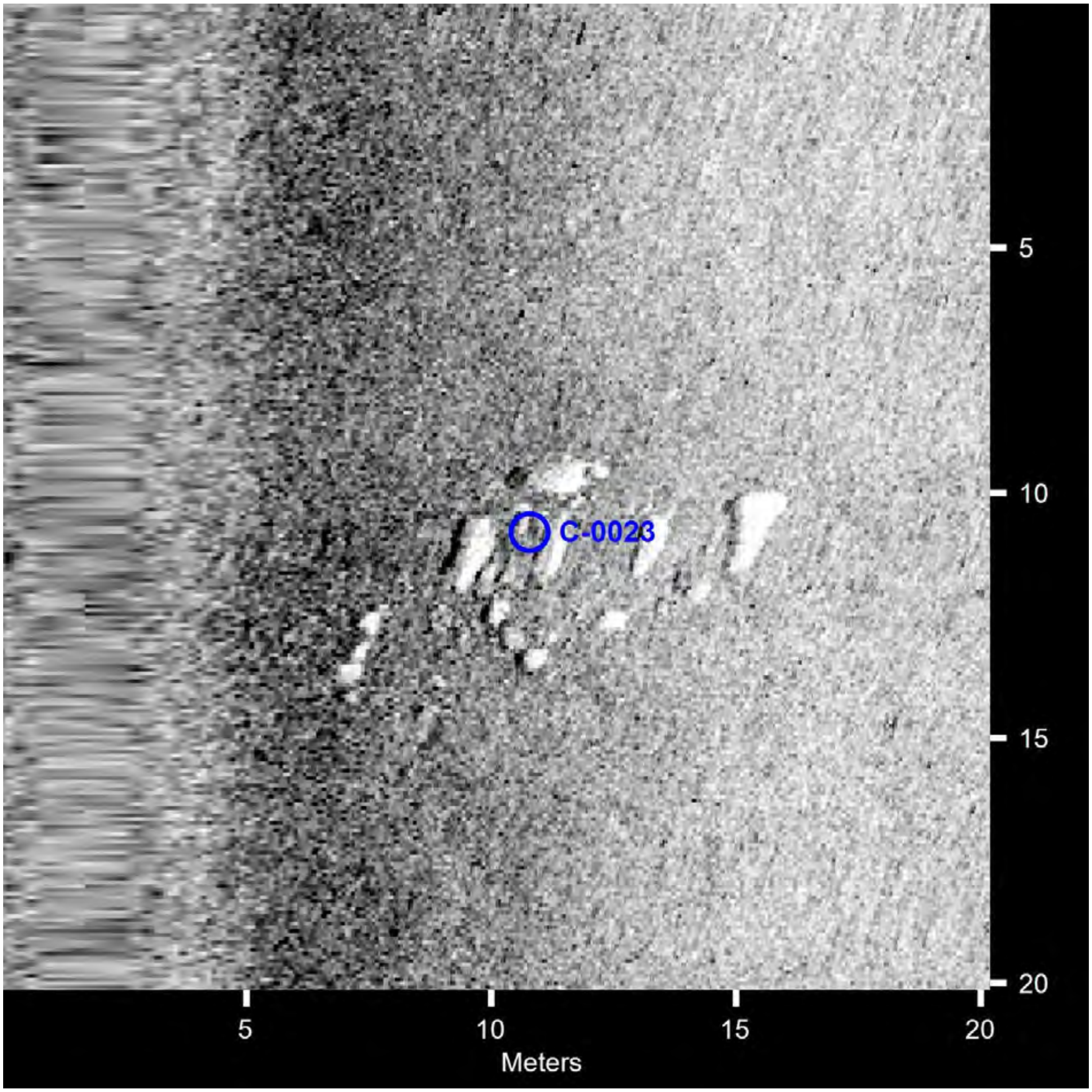
C-0020	Dimensions and attributes
● Click Position 41.5095040664 -70.6099175484 (WGS84) (X) 365649.28 (Y) 4596570.47 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831163900H.xtf	● Target Width: 2.7 Meters ● Target Height: 1.4 Meters ● Target Length: 3.7 Meters ● Target Shadow: 8.0 Meters ● Classification1: **Boulder** ● Description:



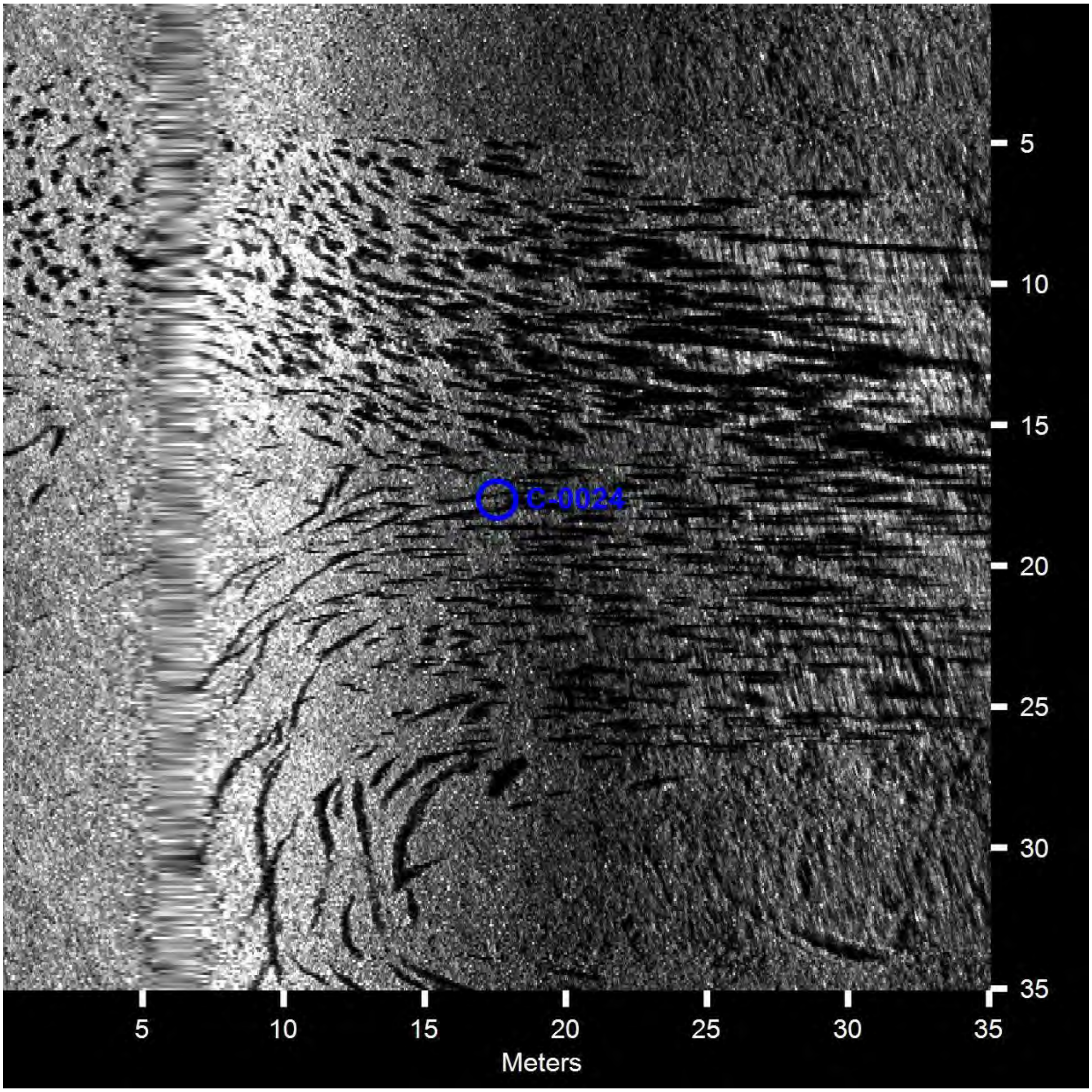
C-0021	Dimensions and attributes
● Click Position 41.5088630921 -70.6088308050 (WGS84) (X) 365738.65 (Y) 4596497.62 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823172732H.xtf	● Target Width: 3.0 Meters ● Target Height: 1.6 Meters ● Target Length: 5.7 Meters ● Target Shadow: 9.1 Meters ● Classification1: **Boulder** ● Description:



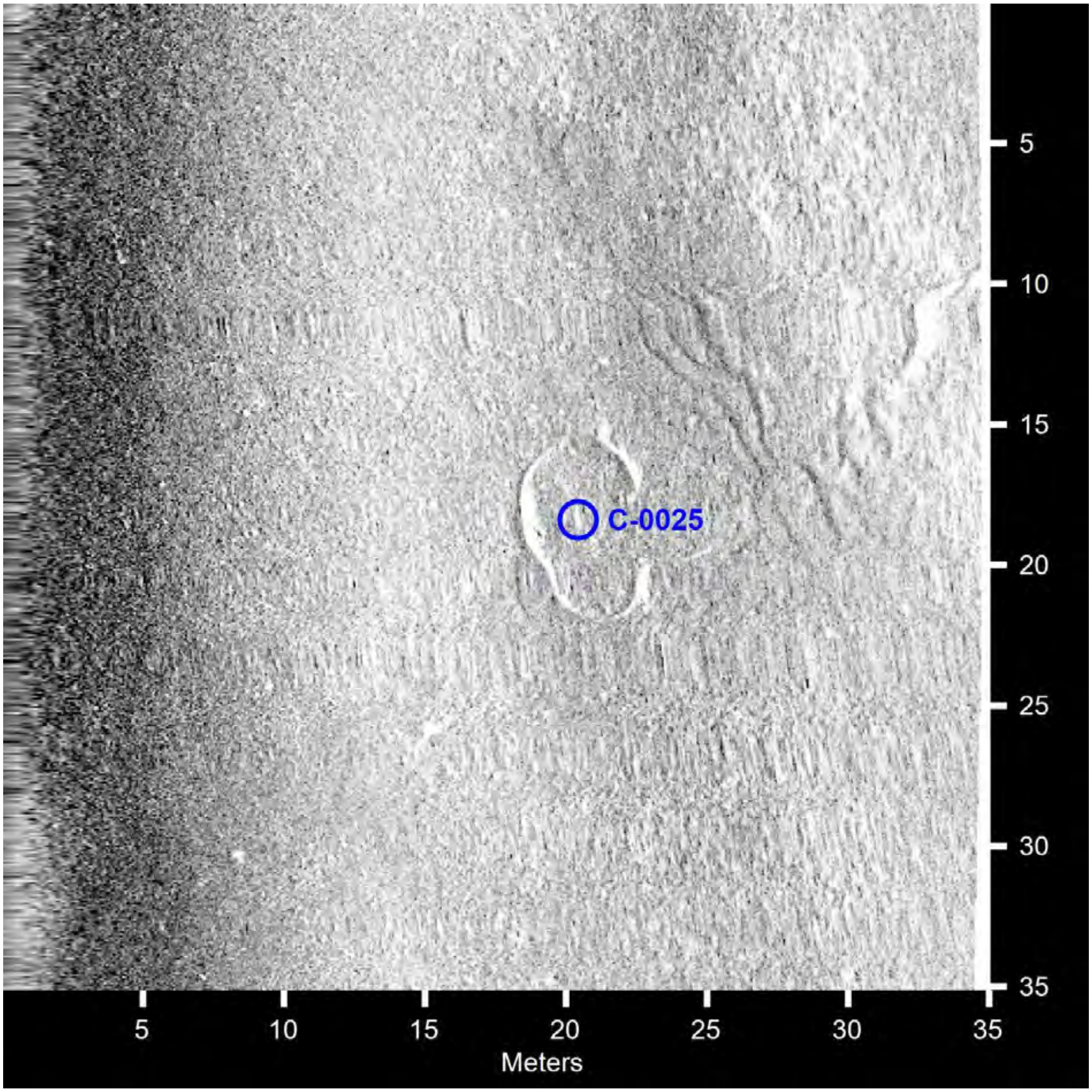
C-0022	Dimensions and attributes
● Click Position 41.5088180891 -70.6086501676 (WGS84) (X) 365753.64 (Y) 4596492.34 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823185032H.xtf	● Target Width: 2.8 Meters ● Target Height: 1.6 Meters ● Target Length: 5.5 Meters ● Target Shadow: 9.2 Meters ● Classification1: **Boulder** ● Description:



C-0023	Dimensions and attributes
● Click Position 41.5083013009 -70.6061721485 (WGS84) (X) 365959.37 (Y) 4596431.12 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831200614H.xtf	● Target Width: 9.7 Meters ● Target Height: 1.1 Meters ● Target Length: 5.2 Meters ● Target Shadow: 1.3 Meters ● Classification1: **Boulder field** ● Description: Anomalous cluster of rocks



C-0024	Dimensions and attributes
● Click Position 41.4992888126 -70.5983853310 (WGS84) (X) 366590.73 (Y) 4595418.47 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831144539H.xtf	● Target Width: 0.0 Meters ● Target Height: 0.0 Meters ● Target Length: 0.0 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Fish shoal (typical)** Likely False albacore ● Description: Inverted image

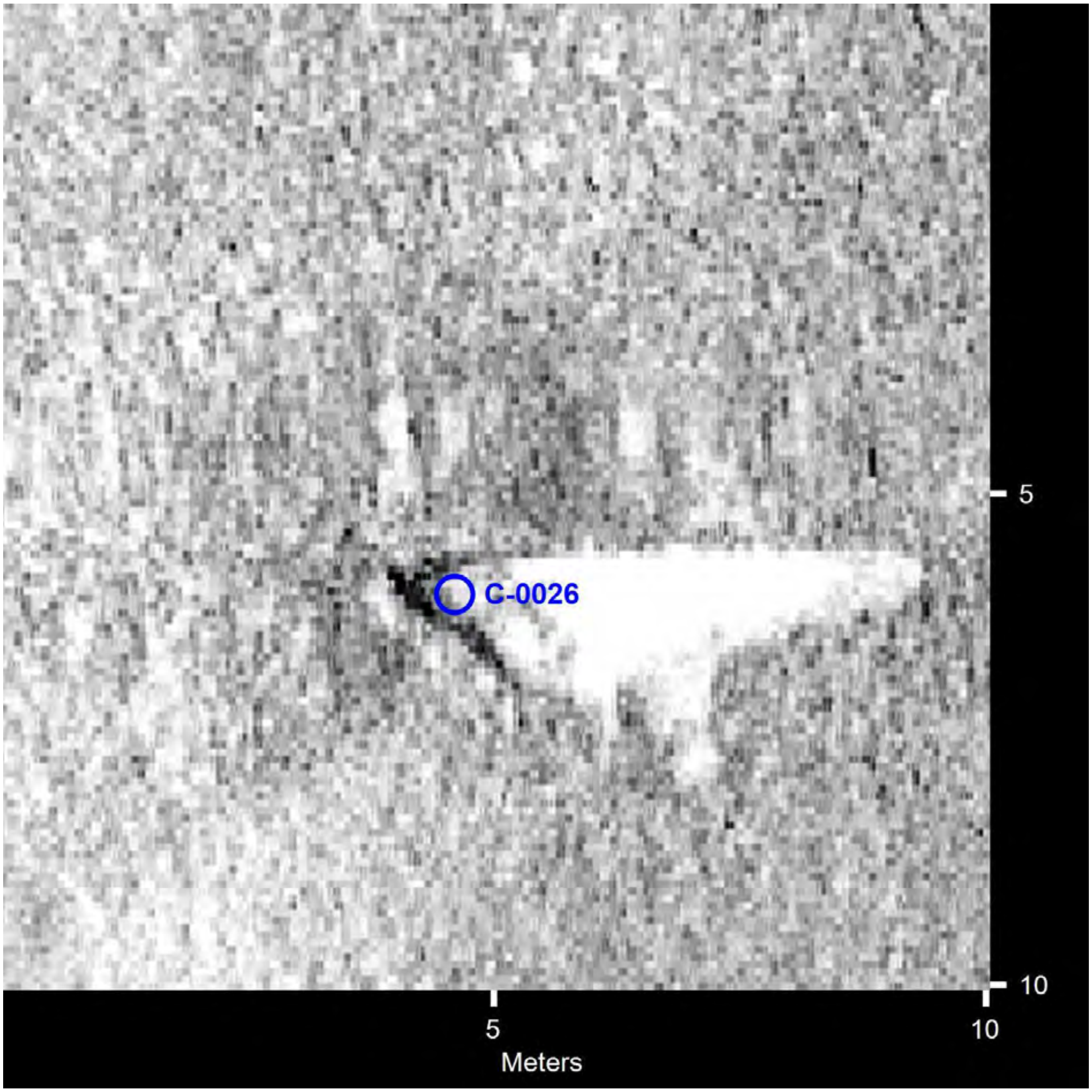


C-0025

- Click Position
  41.4970761789 -70.5925056244 (WGS84)
  (X) 367076.97 (Y) 4595163.75 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831170623H.xtf

Dimensions and attributes

- Target Width: 3.6 Meters
- Target Height: 0.2 Meters
- Target Length: 5.1 Meters
- Target Shadow: 0.8 Meters
- Classification1: **Sand**
- Description: **Anomalous sand formation. Possible buried object**.

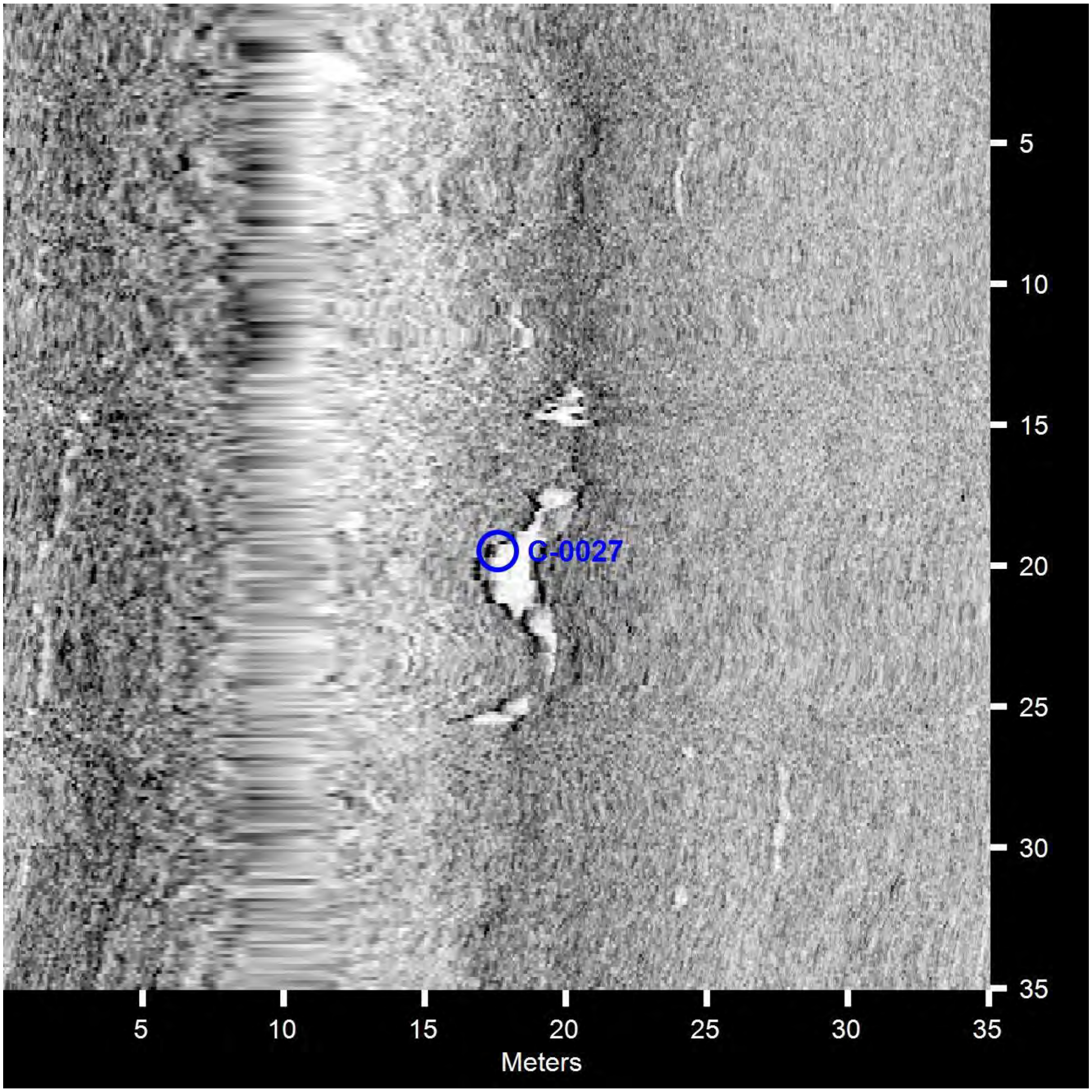


C-0026

- Click Position
  41.4966533297 -70.5943280316 (WGS84)
  (X) 366923.99 (Y) 4595119.61 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
  ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823172732H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 1.2 Meters
- Target Length: 1.3 Meters
- Target Shadow: 3.5 Meters
- Classification1: Fishing gear
- Description: **Likely conch trap**

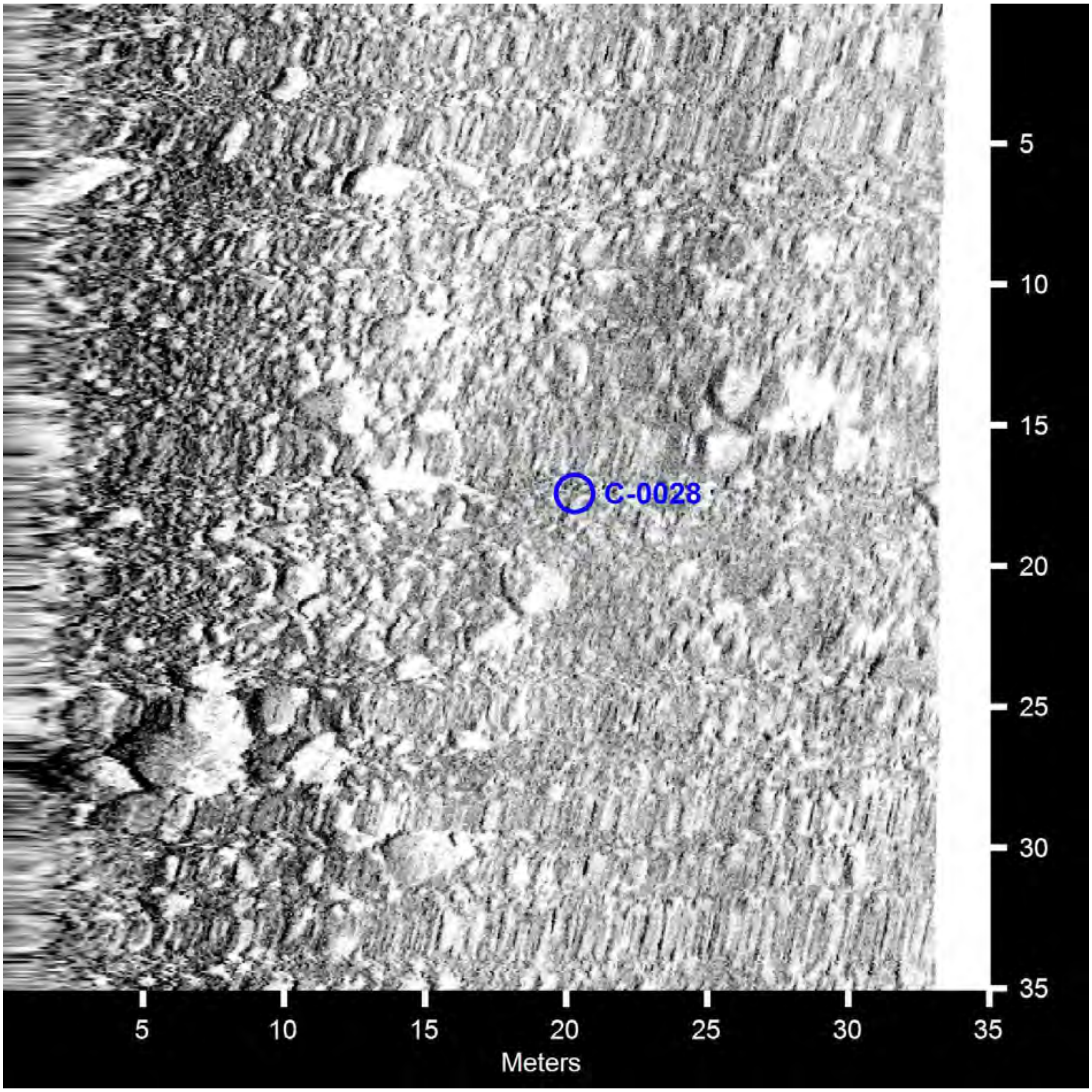


C-0027

- Click Position
  41.4963296647 -70.5914420811 (WGS84)
  (X) 367164.22 (Y) 4595079.24 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf

Dimensions and attributes

- Target Width: 1.9 Meters
- Target Height: 0.0 Meters
- Target Length: 6.2 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Debris**
- Description:

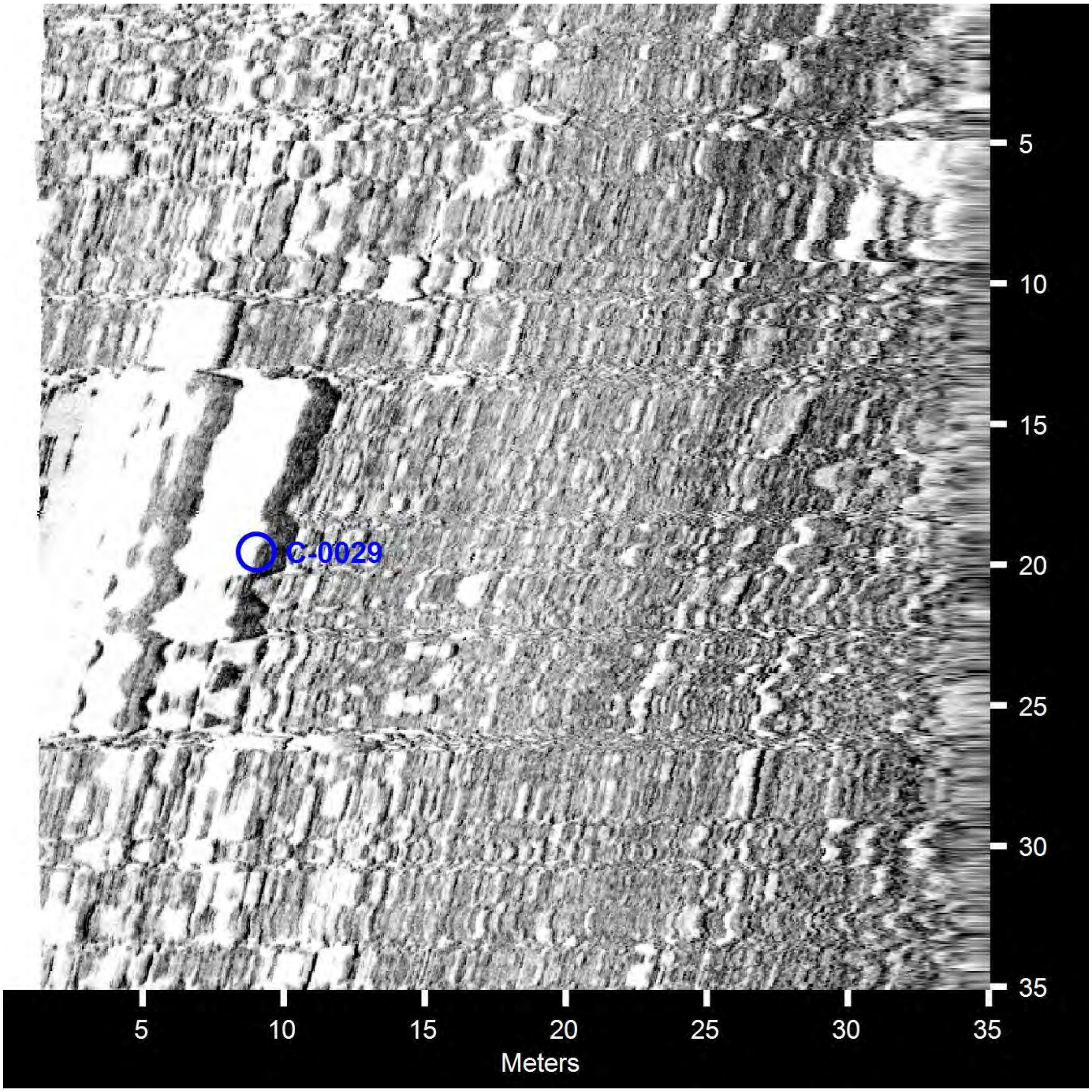


C-0028

- Click Position
  41.4926324776 -70.5866721371 (WGS84)
  (X) 367554.84 (Y) 4594661.44 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf

Dimensions and attributes

- Target Width: 1.6 Meters
- Target Height: 1.1 Meters
- Target Length: 2.3 Meters
- Target Shadow: 2.3 Meters
- Classification1: **Boulder Field**
- Description: **Measurements for typical boulder**

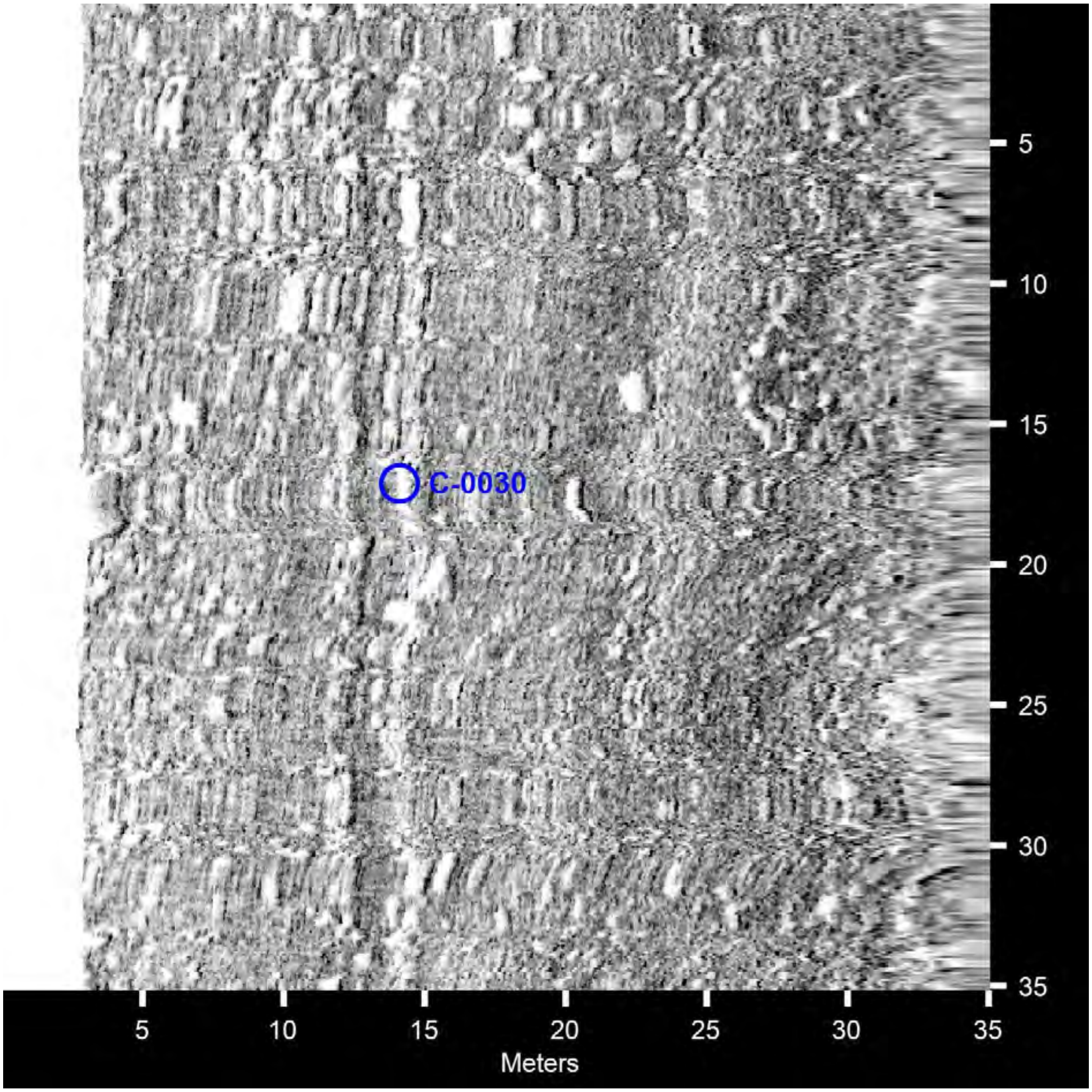


C-0029

- Click Position
  41.4924422269 -70.5862037121 (WGS84)
  (X) 367593.55 (Y) 4594639.60 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf

Dimensions and attributes

- Target Width: 3.1 Meters
- Target Height: 0.8 Meters
- Target Length: 7.2 Meters
- Target Shadow: 2.4 Meters
- Classification1: **Boulder or ledge**
- Description:

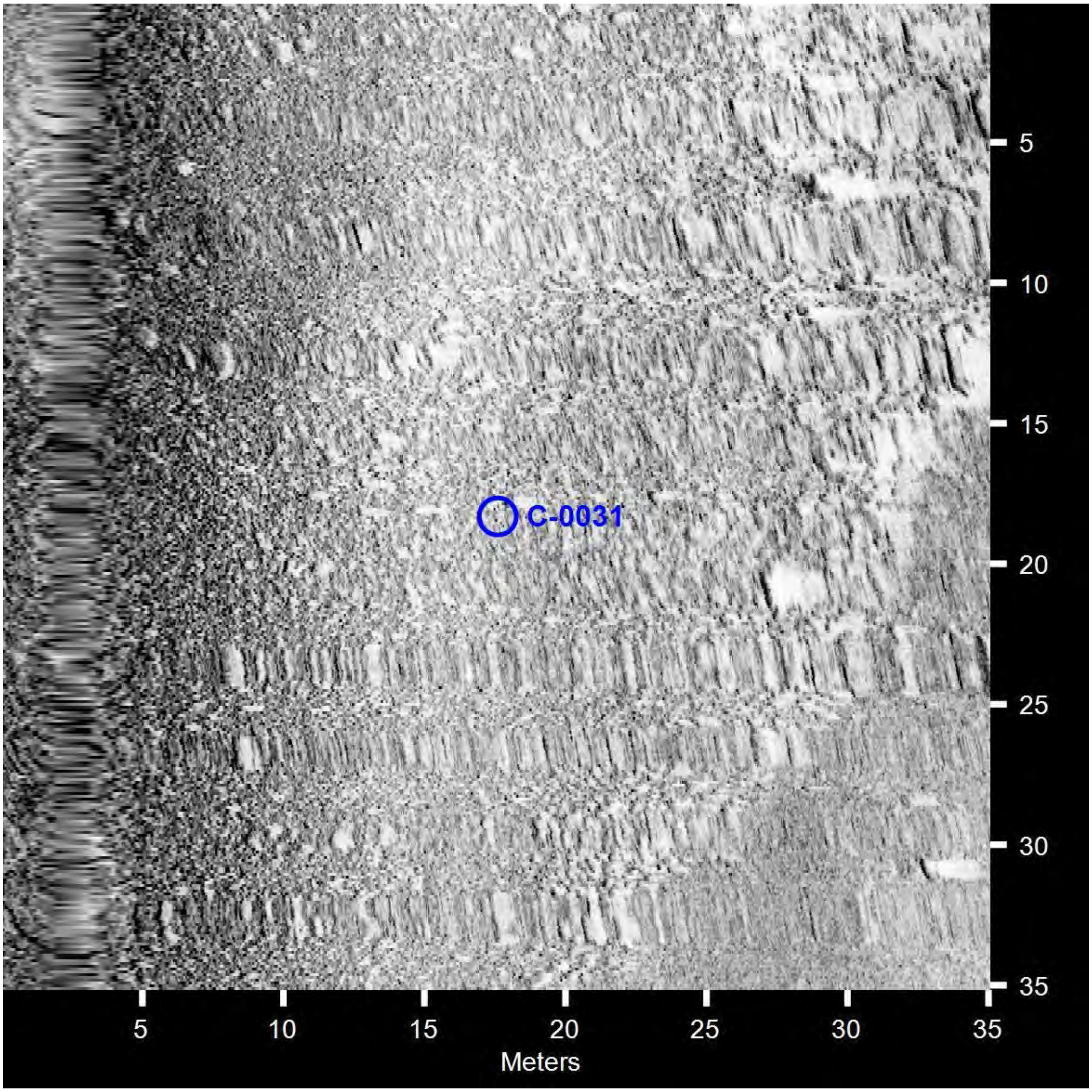


C-0030

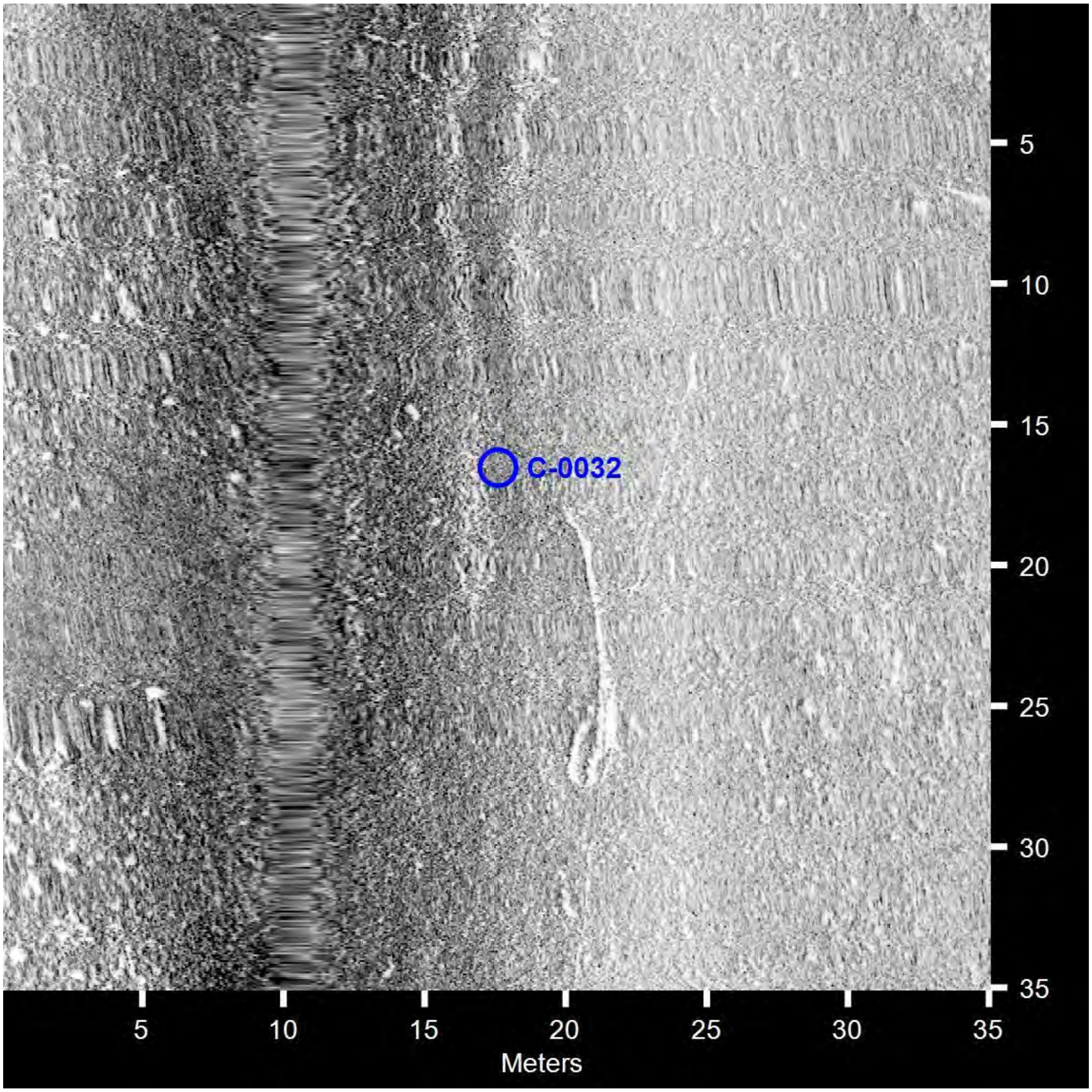
- Click Position
  41.4923911148 -70.5859864309 (WGS84)
  (X) 367611.59 (Y) 4594633.59 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820162534H.xtf

Dimensions and attributes

- Target Width: 2.5 Meters
- Target Height: 0.0 Meters
- Target Length: 20.1 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Trench**
- Description:



C-0031	Dimensions and attributes
● Click Position 41.4921524543 -70.5874889485 (WGS84) (X) 367485.68 (Y) 4594609.40 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820152548H.xtf	● Target Width: 0.0 Meters ● Target Height: 0.0 Meters ● Target Length: 0.0 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Boulder Field** ● Description: **Boulder Ridge**

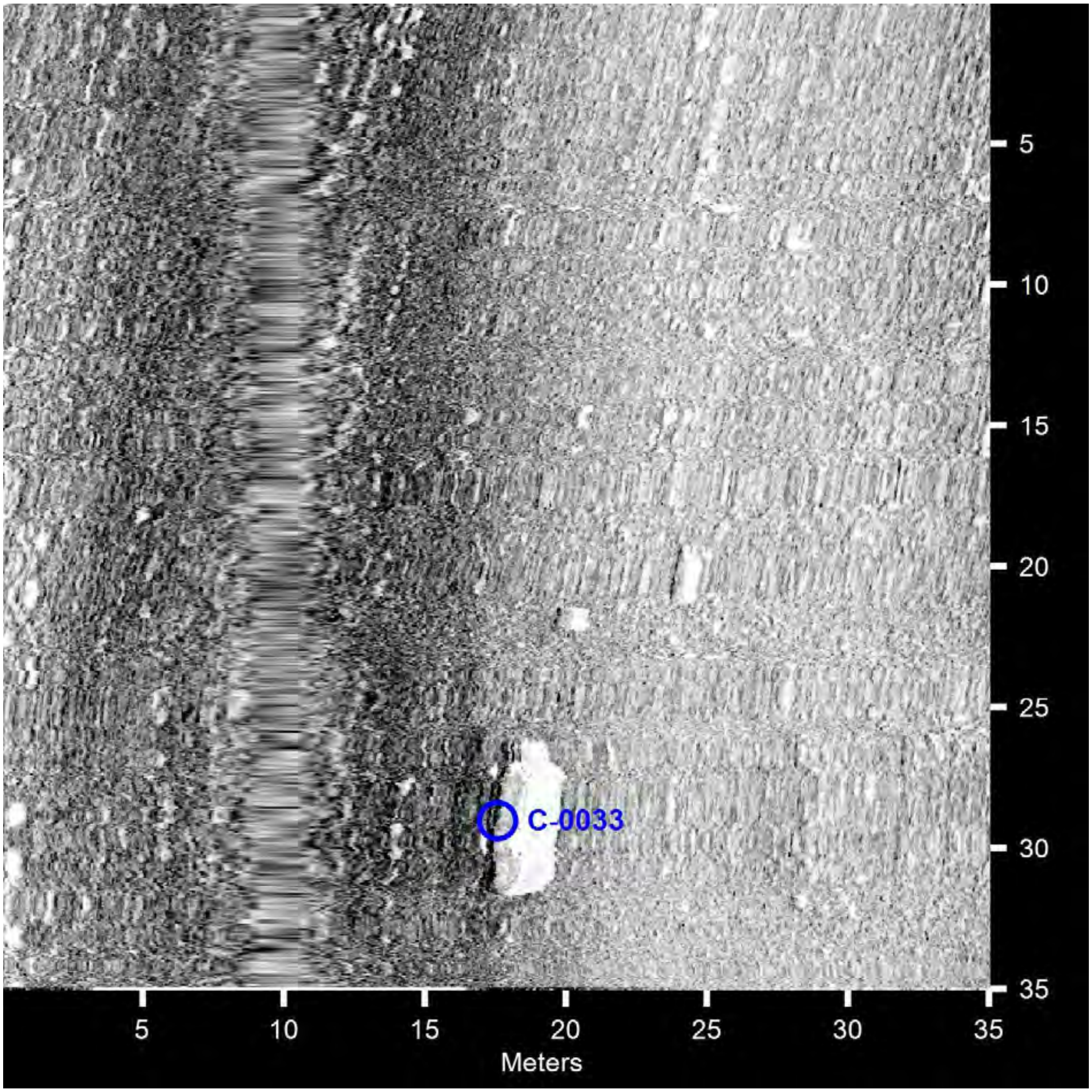


C-0032

● Click Position
41.4912037096 -70.5837658813 (WGS84)
(X) 367794.54 (Y) 4594498.36 (Projected Coordinates)
● Map Projection: UTM83-19
● Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf

Dimensions and attributes

● Target Width: 0.0 Meters
● Target Height: 0.0 Meters
● Target Length: 0.0 Meters
● Target Shadow: 0.0 Meters
● Classification1: **Trench with possible cable segment**
● Description:

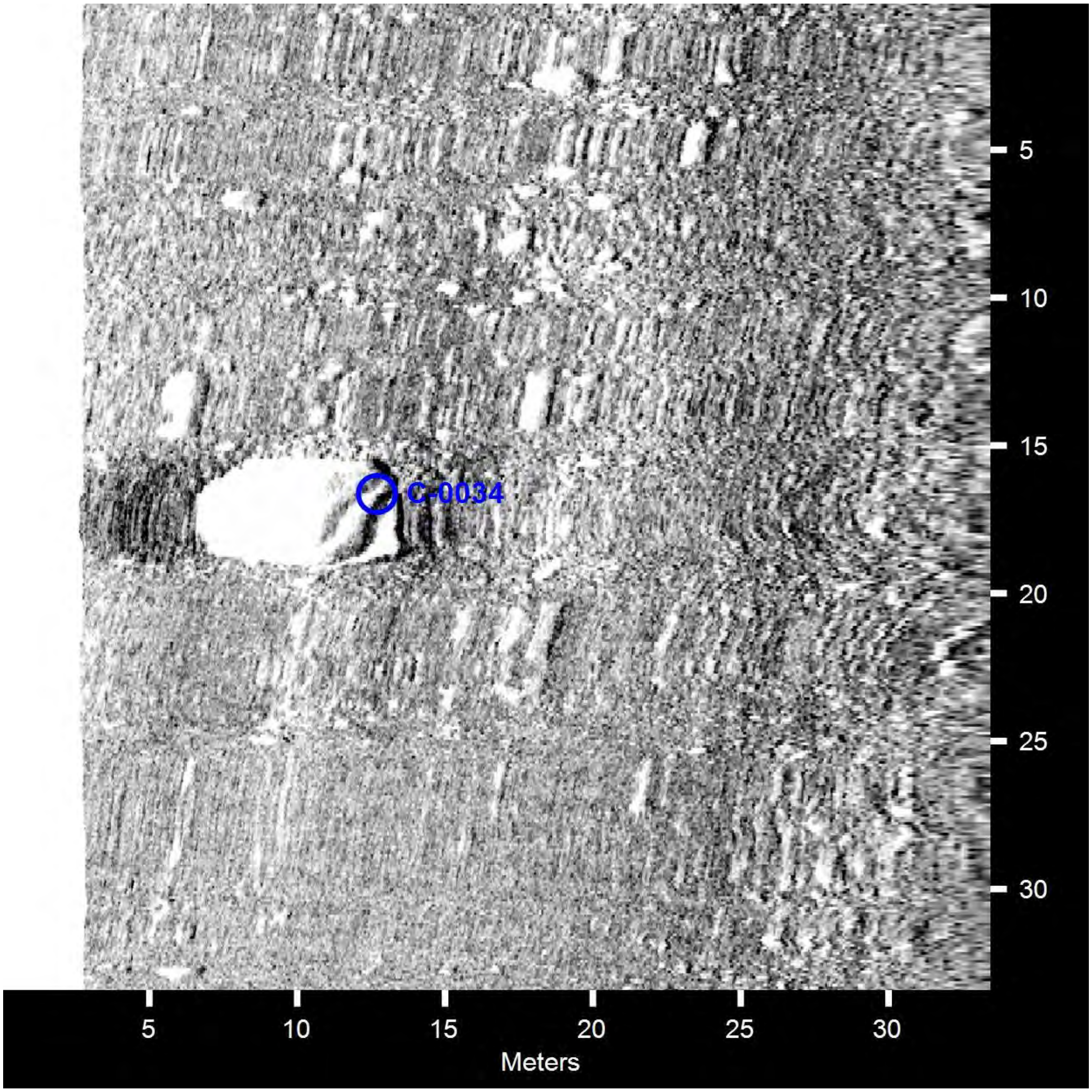


C-0033

- Click Position
  41.4909839855 -70.5850891965 (WGS84)
  (X) 367683.62 (Y) 4594475.99 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf

Dimensions and attributes

- Target Width: 1.7 Meters
- Target Height: 1.3 Meters
- Target Length: 3.0 Meters
- Target Shadow: 1.7 Meters
- Classification1: **Boulder**
- Description:

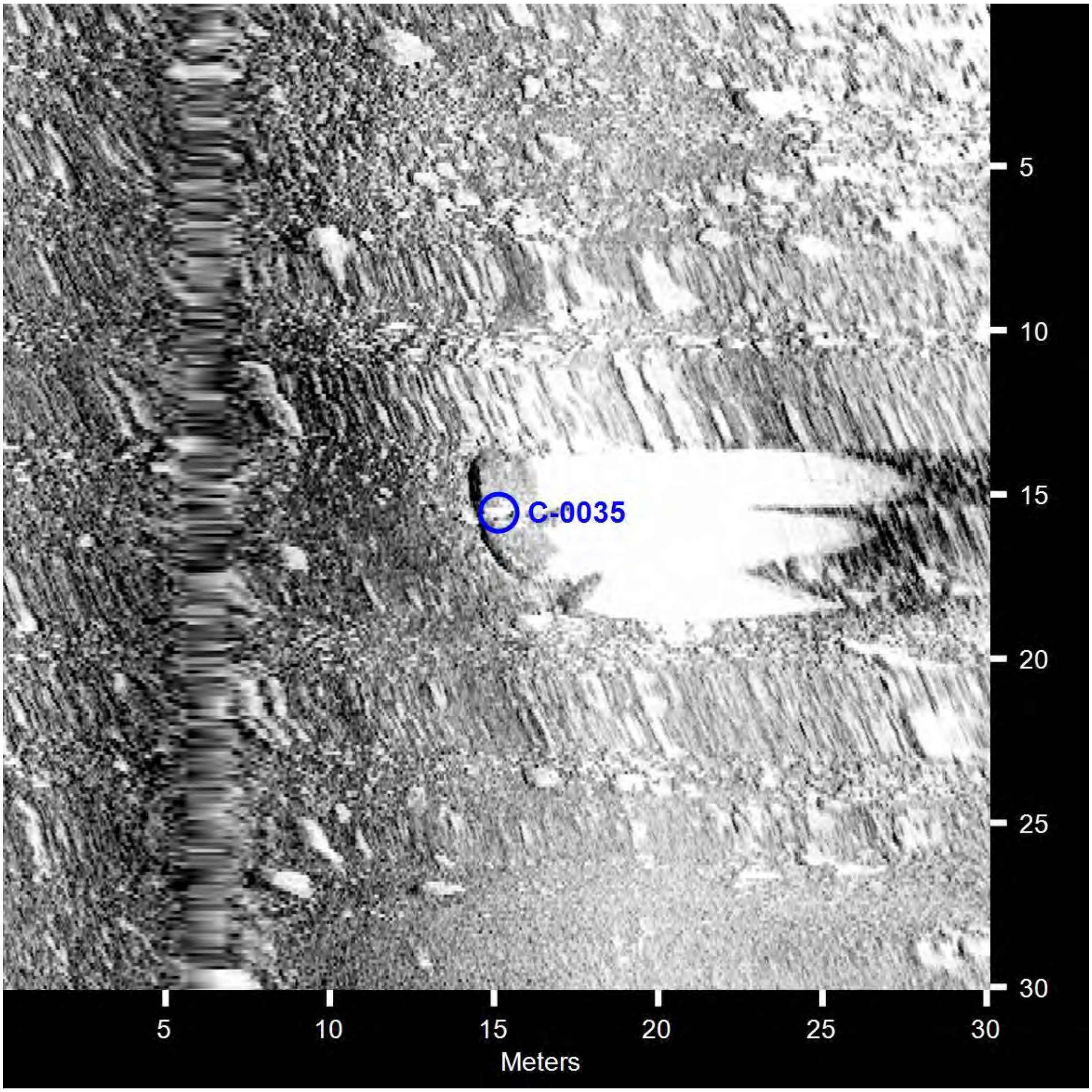


C-0034

- Click Position
  41.4900791619 -70.5875808398 (WGS84)
  (X) 367473.78 (Y) 4594379.35 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823160139H.xtf

Dimensions and attributes

- Target Width: 2.6 Meters
- Target Height: 2.5 Meters
- Target Length: 3.2 Meters
- Target Shadow: 4.9 Meters
- Classification1: **Boulder or debris**
- Description:

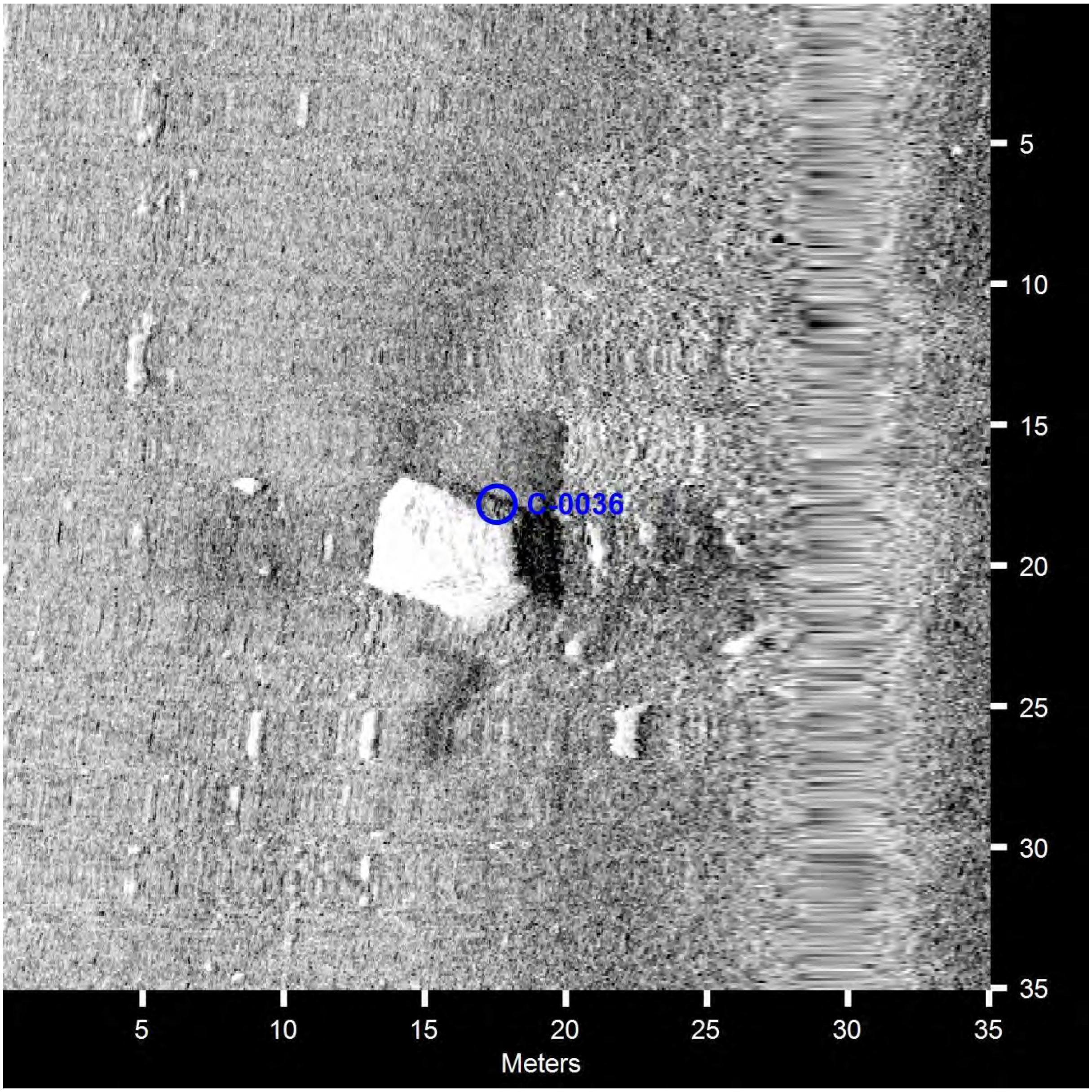


C-0035

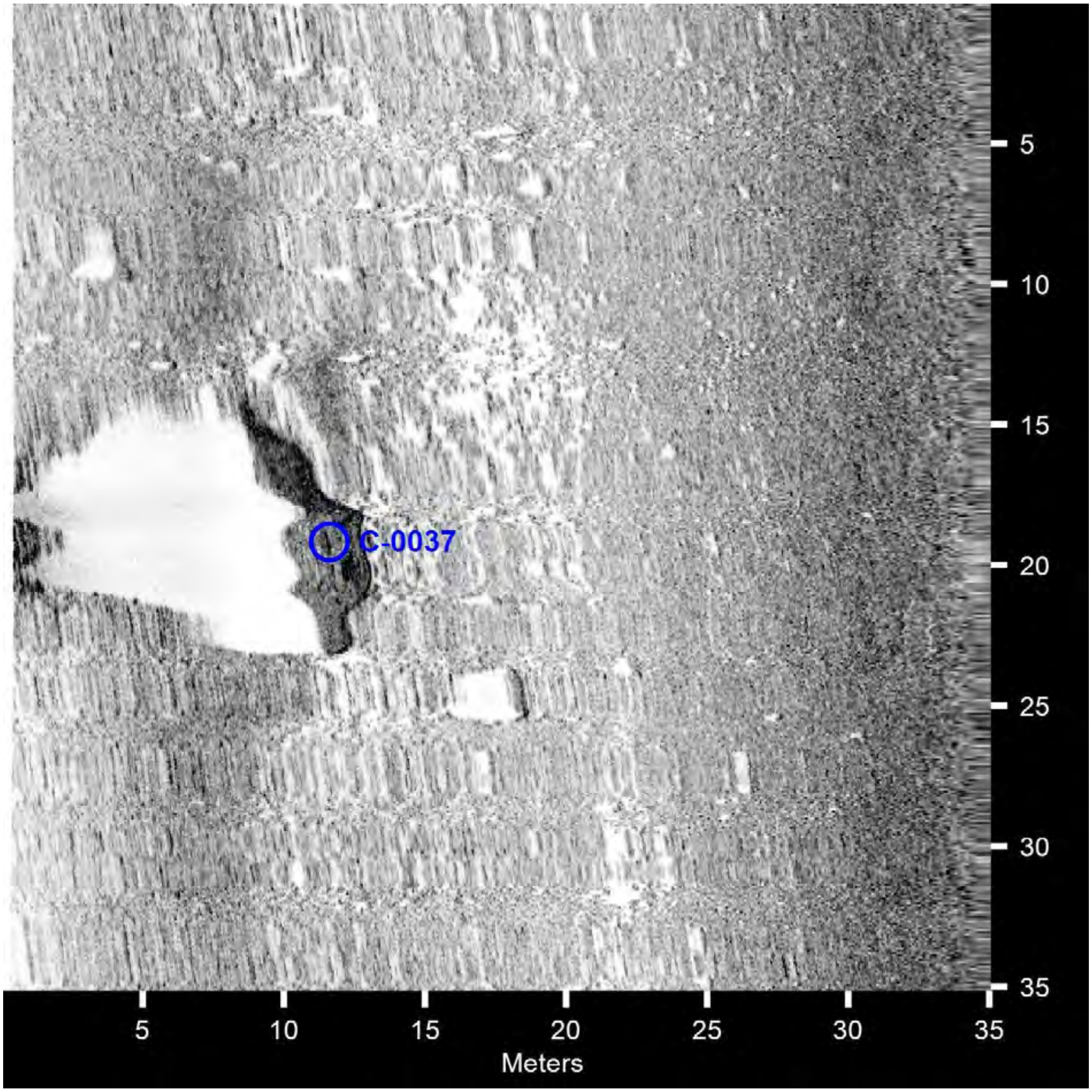
- Click Position
  41.4900723813 -70.5873429792 (WGS84)
  (X) 367493.62 (Y) 4594378.24 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820181740H.xtf

Dimensions and attributes

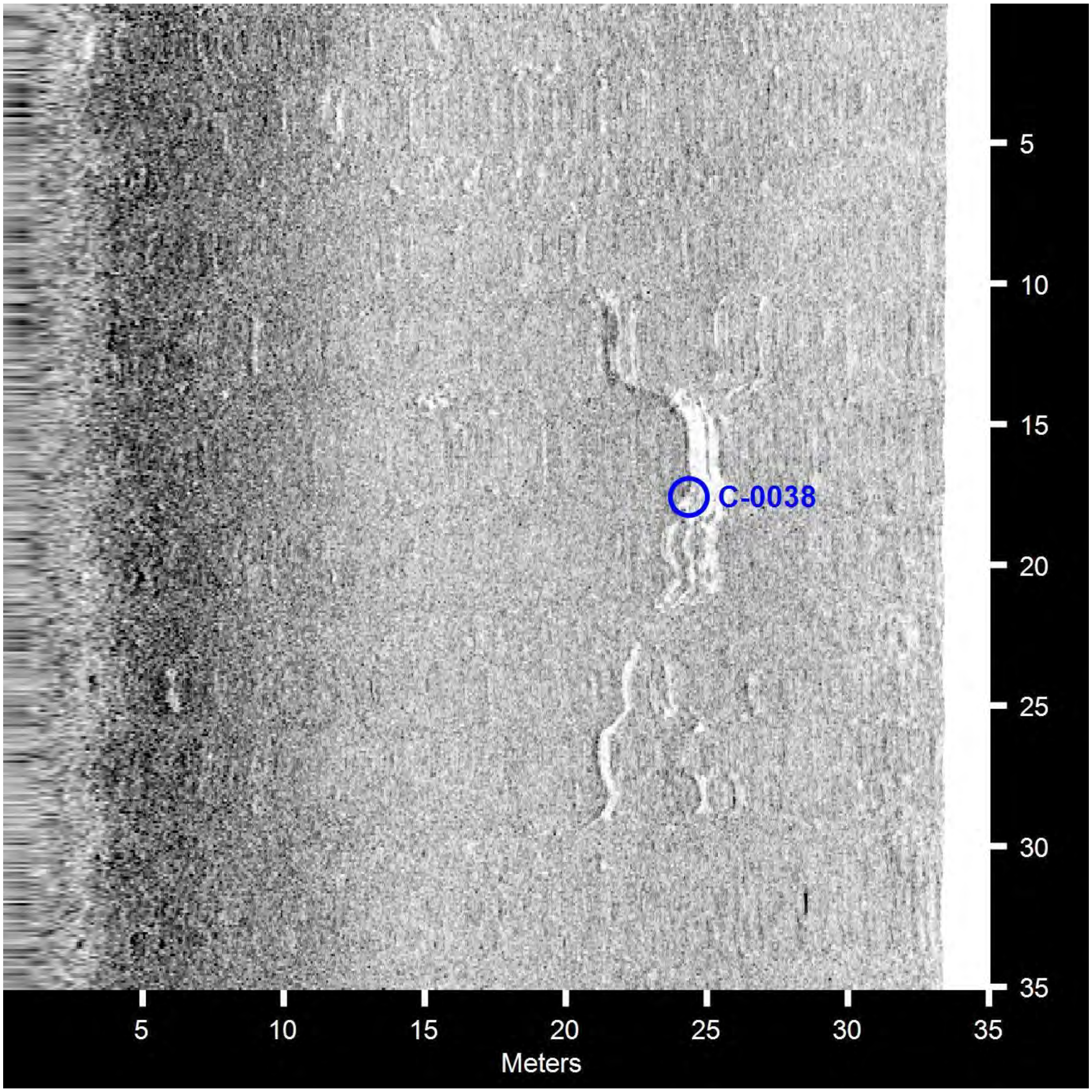
- Target Width: 3.3 Meters
- Target Height: 2.4 Meters
- Target Length: 5.4 Meters
- Target Shadow: 9.3 Meters
- Classification1**: Boulder or debris**
- Description:



C-0036	Dimensions and attributes
● Click Position 41.4872811490 -70.5797578888 (WGS84) (X) 368121.16 (Y) 4594056.74 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf	● Target Width: 3.4 Meters ● Target Height: 3.8 Meters ● Target Length: 6.1 Meters ● Target Shadow: 5.2 Meters ● Classification1: **Boulder or debris** ● Description:



C-0037	Dimensions and attributes
● Click Position 41.4872400762 -70.5797998076 (WGS84) (X) 368117.58 (Y) 4594052.25 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf	● Target Width: 3.1 Meters ● Target Height: 1.5 Meters ● Target Length: 9.2 Meters ● Target Shadow: 10.0 Meters ● Classification1: **Boulder or debris** ● Description:

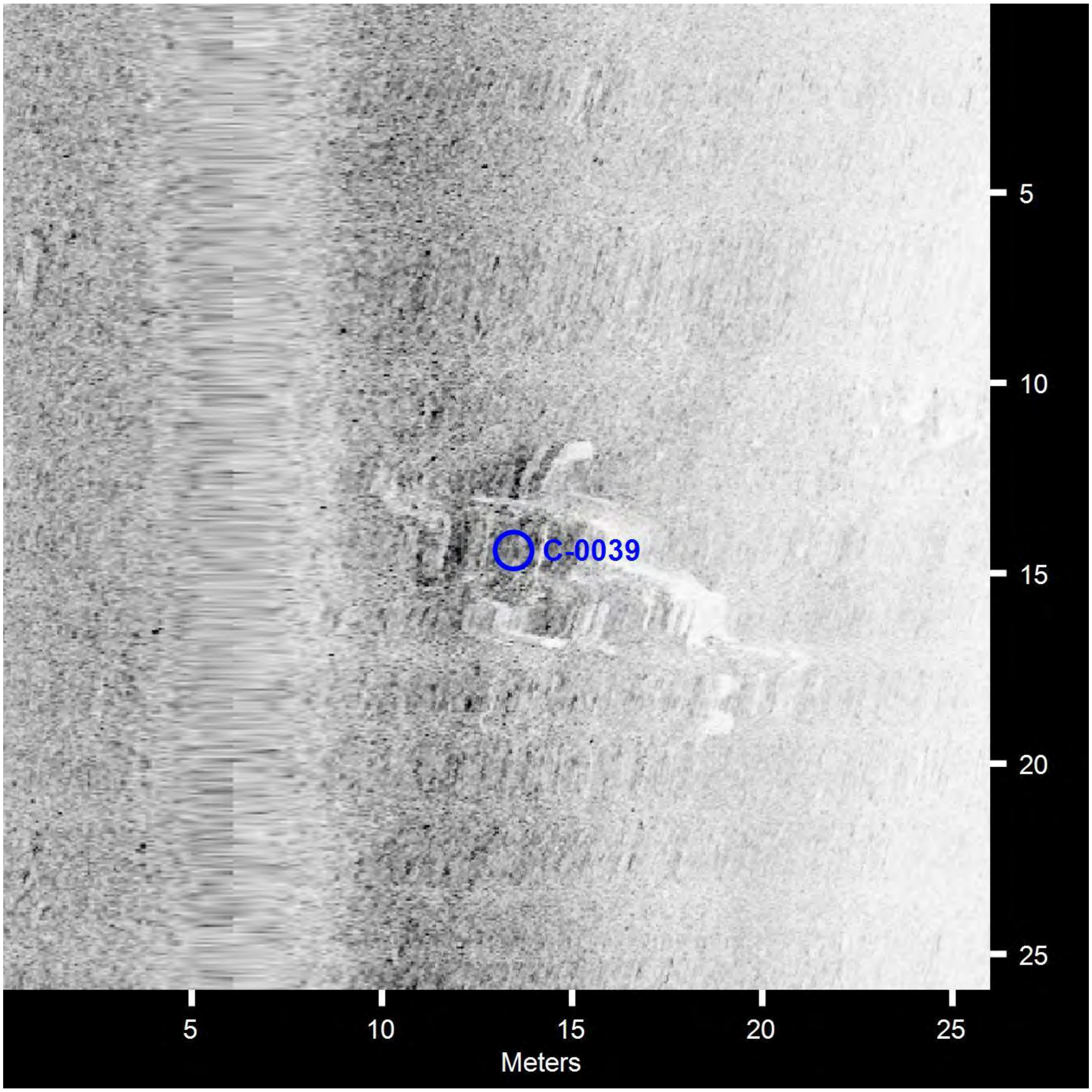


C-0038

- Click Position
  41.4870963519 -70.5811232381 (WGS84)
  (X) 368006.80 (Y) 4594038.31 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823161907H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.6 Meters
- Target Length: 17.4 Meters
- Target Shadow: 1.5 Meters
- Classification1: **Possible cable segment**
- Description:

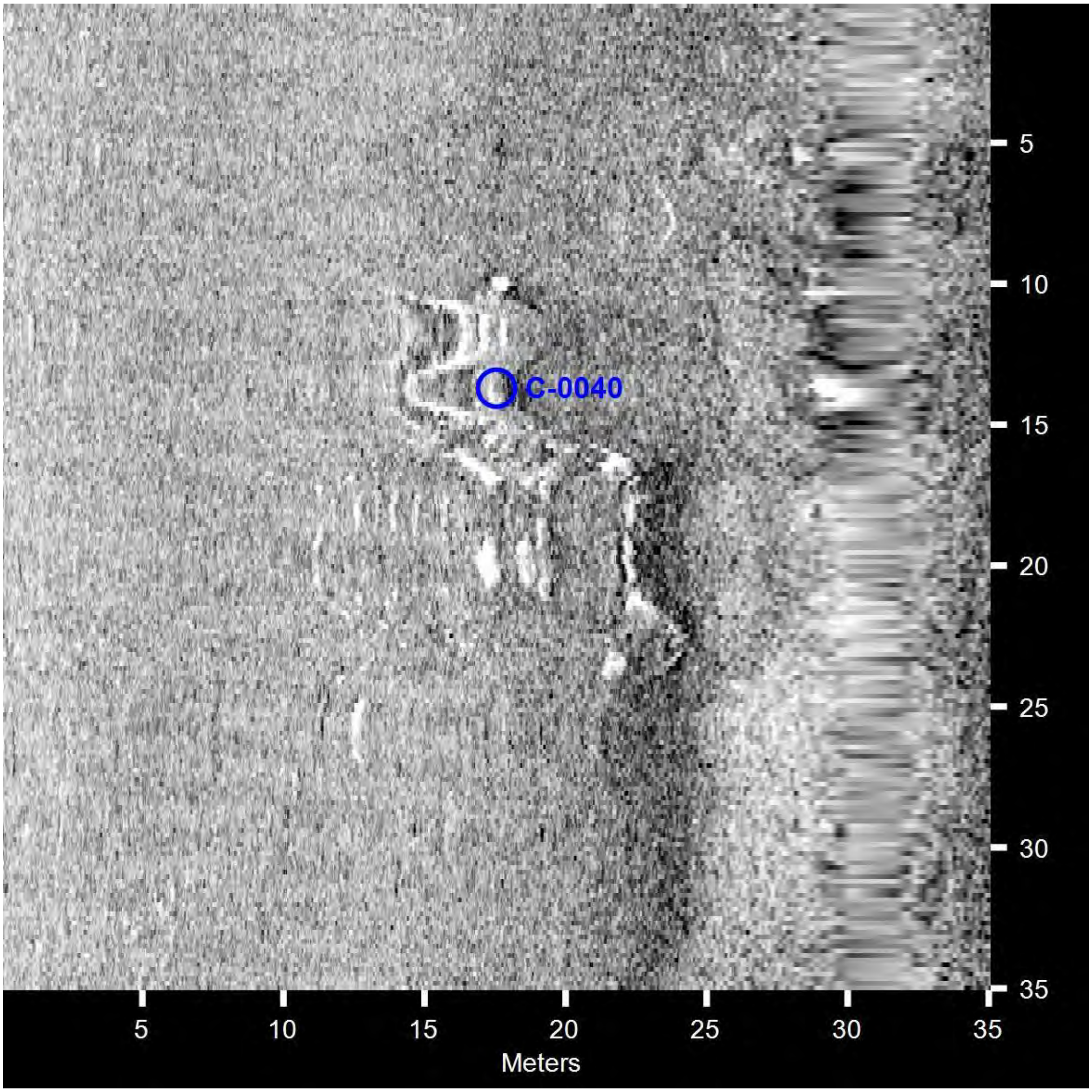


C-0039

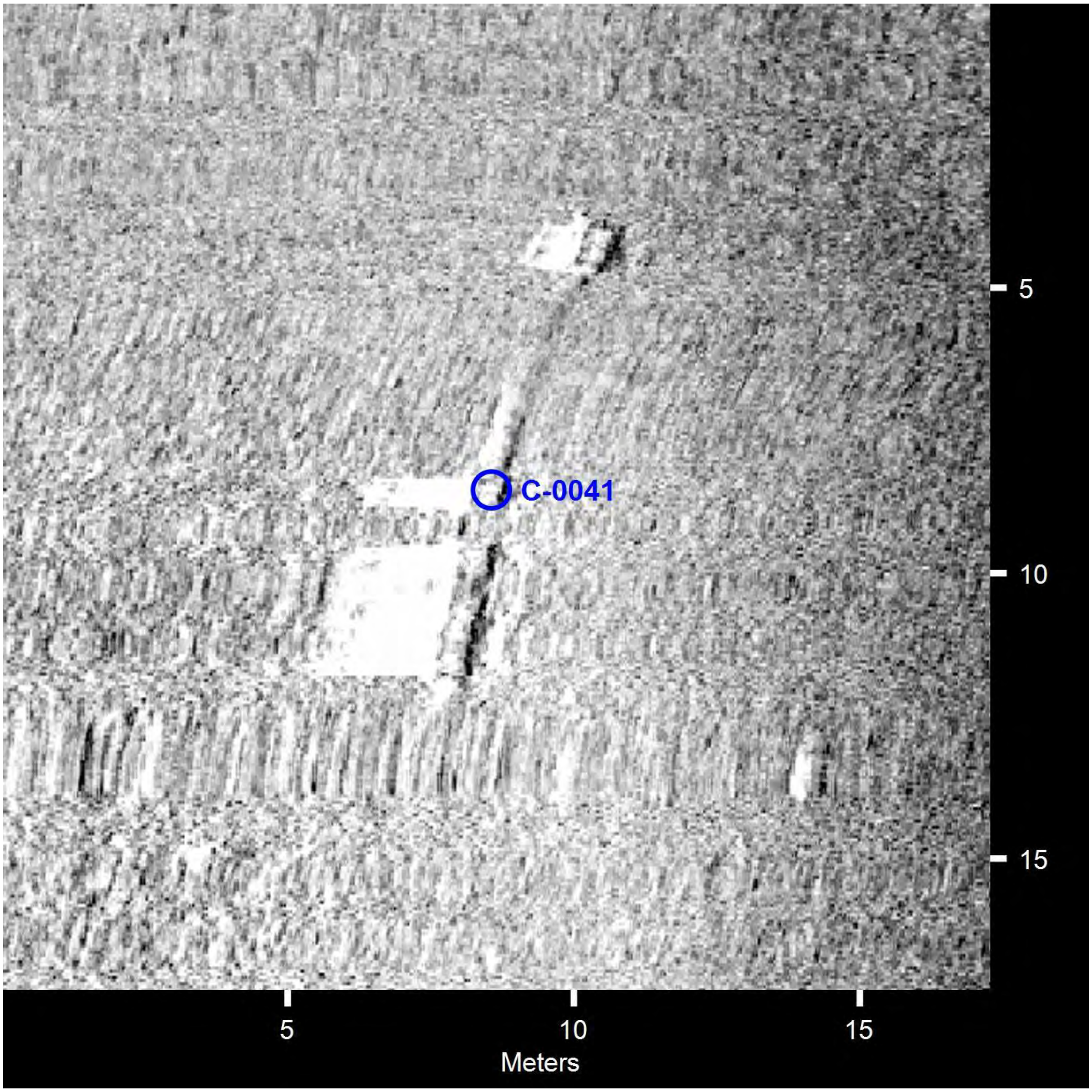
- Click Position
  41.4867884055 -70.5802290501 (WGS84)
  (X) 368080.82 (Y) 4594002.76 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820191625H.xtf

Dimensions and attributes

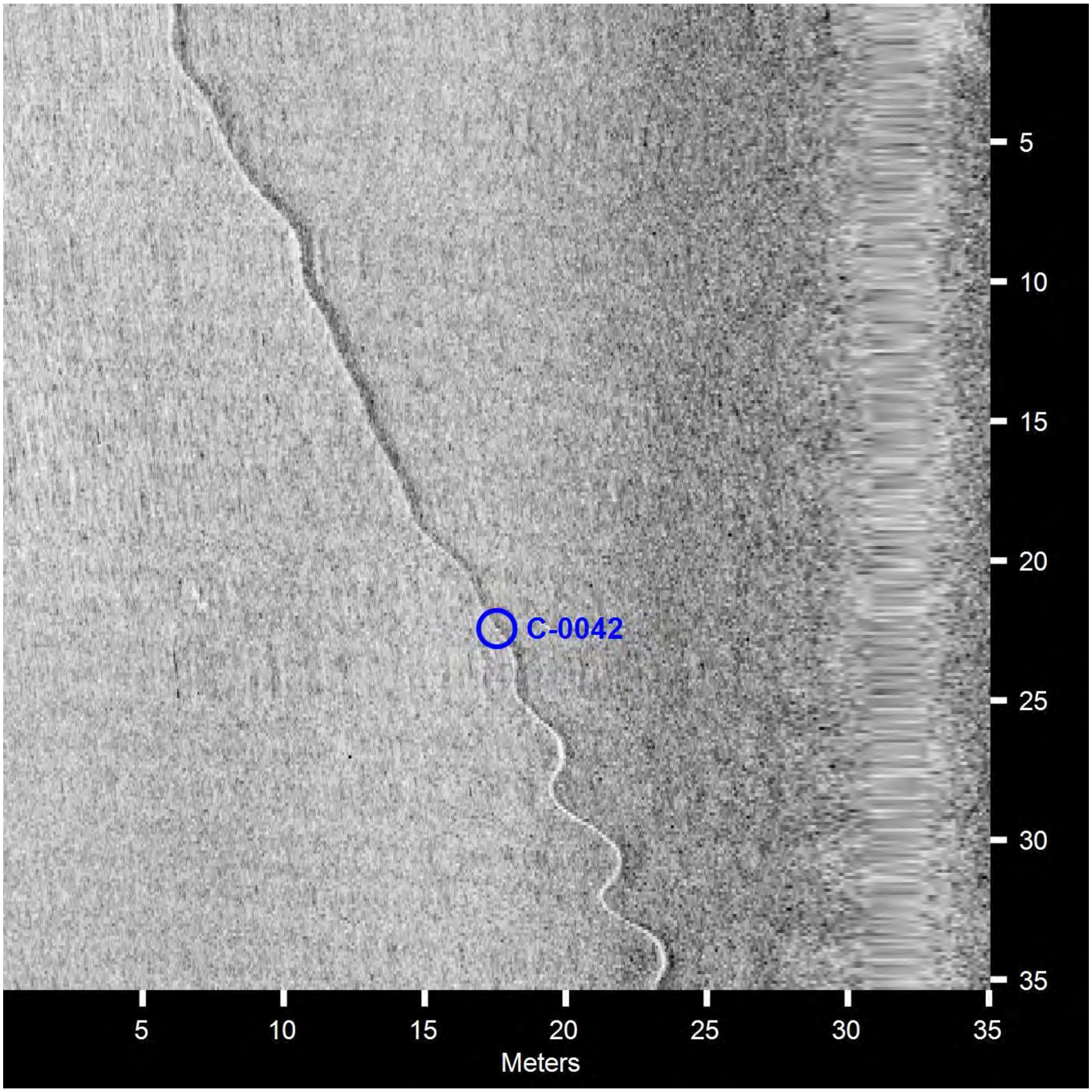
- Target Width: 3.9 Meters
- Target Height: 1.6 Meters
- Target Length: 6.7 Meters
- Target Shadow: 1.9 Meters
- Classification1: Debris
- Description: **Possible debris field**



C-0040	Dimensions and attributes
● Click Position 41.4866767009 -70.5802348852 (WGS84) (X) 368080.11 (Y) 4593990.36 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823165225H.xtf	● Target Width: 1.8 Meters ● Target Height: 0.2 Meters ● Target Length: 11.2 Meters ● Target Shadow: 0.3 Meters ● Classification1: **Possible cable segment** ● Description:



C-0041	Dimensions and attributes
● Click Position 41.4851867174 -70.5787615252 (WGS84) (X) 368200.09 (Y) 4593822.69 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823182903H.xtf	● Target Width: 0.7 Meters ● Target Height: 0.5 Meters ● Target Length: 6.5 Meters ● Target Shadow: 2.3 Meters ● Classification1: **Debris** ● Description:

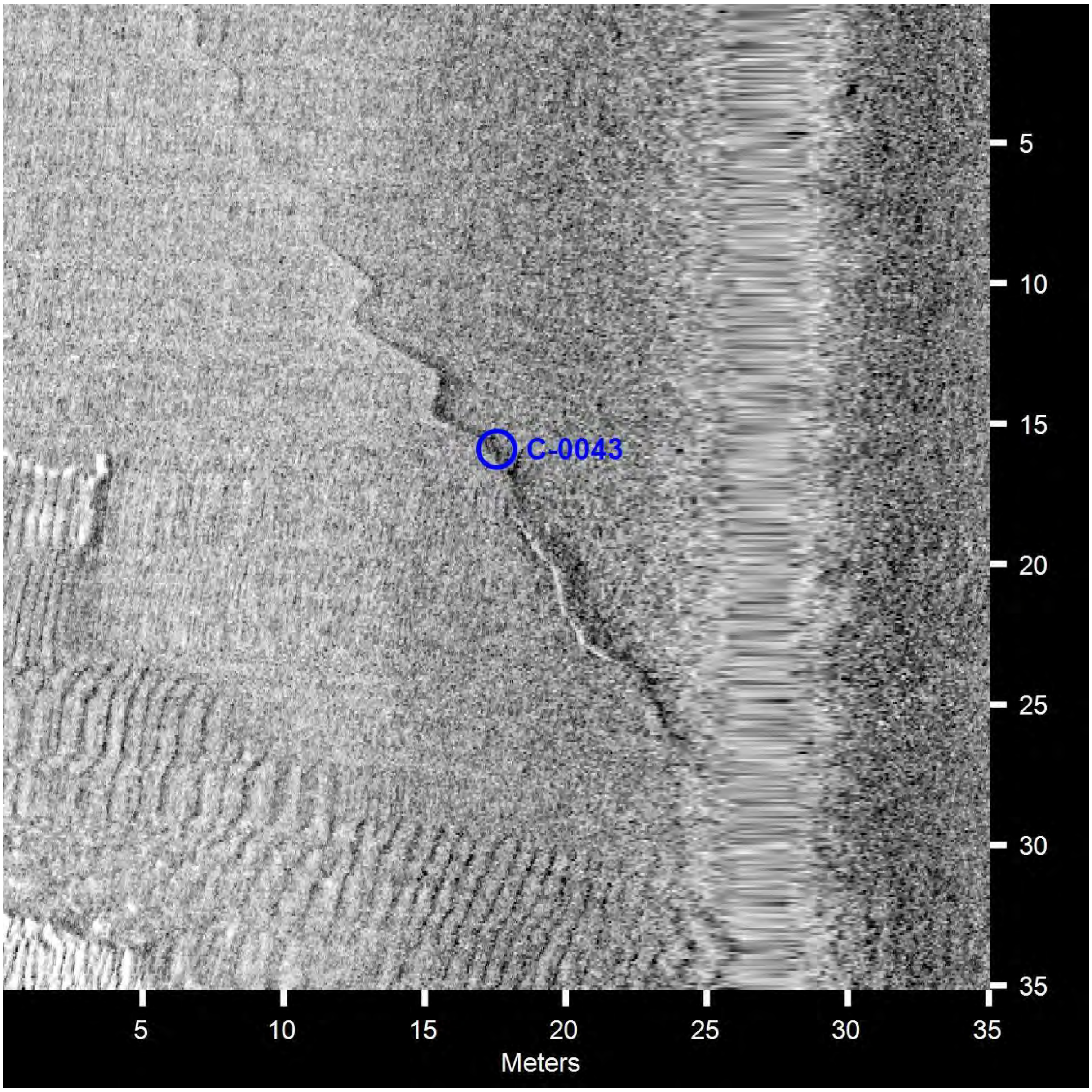


C-0042

- Click Position
  41.4849665490 -70.5768132015 (WGS84)
  (X) 368362.30 (Y) 4593795.28 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf

Dimensions and attributes

- Target Width: 0.2 Meters
- Target Height: 0.0 Meters
- Target Length: 35.1 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Cable**
- Description:

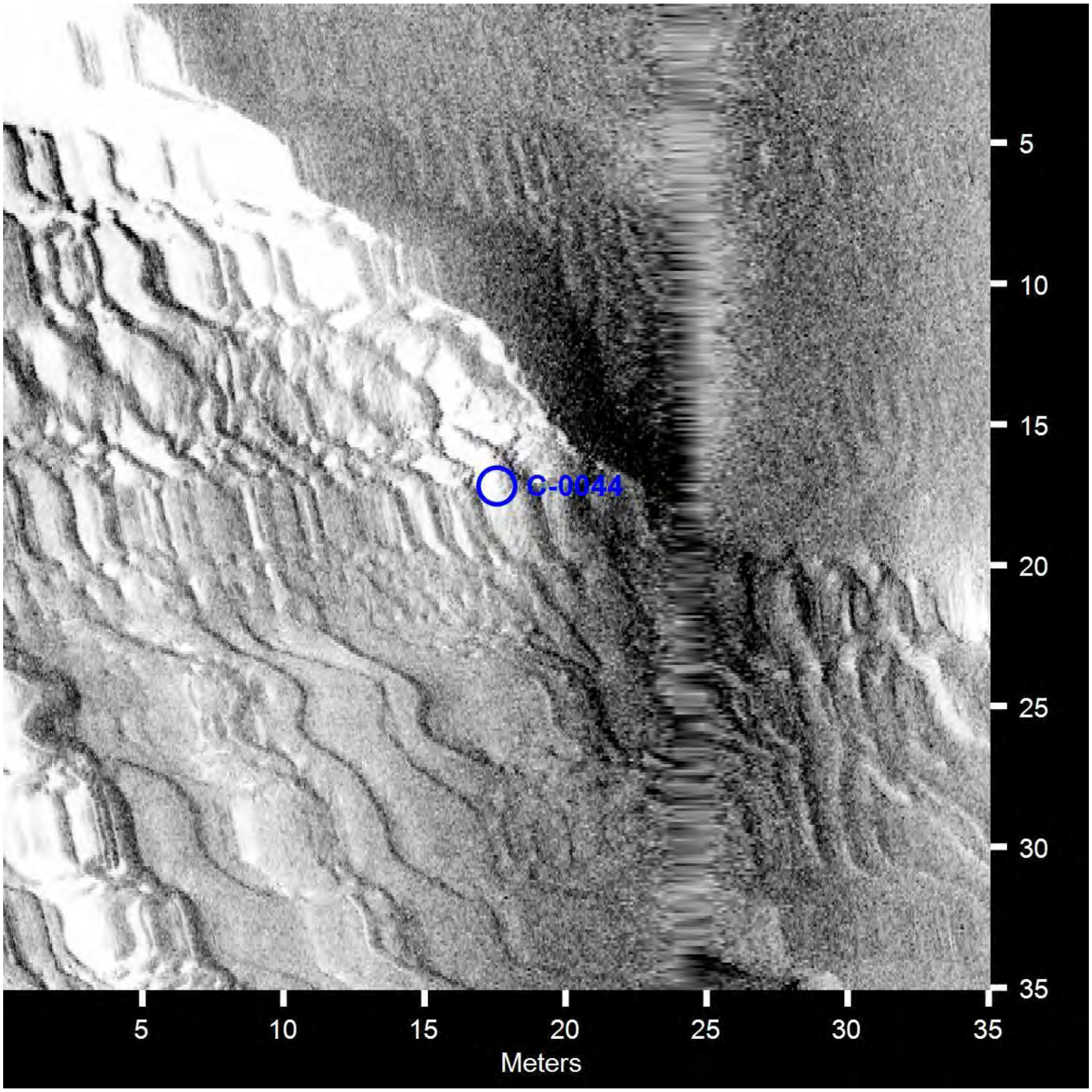


C-0043

- Click Position
  41.4846264744 -70.5766804560 (WGS84)
  (X) 368372.70 (Y) 4593757.32 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf

Dimensions and attributes

- Target Width: 0.0 Meters
- Target Height: 0.0 Meters
- Target Length: 27.6 Meters
- Target Shadow: 0.0 Meters
- Classification1**: Cable**
- Description:

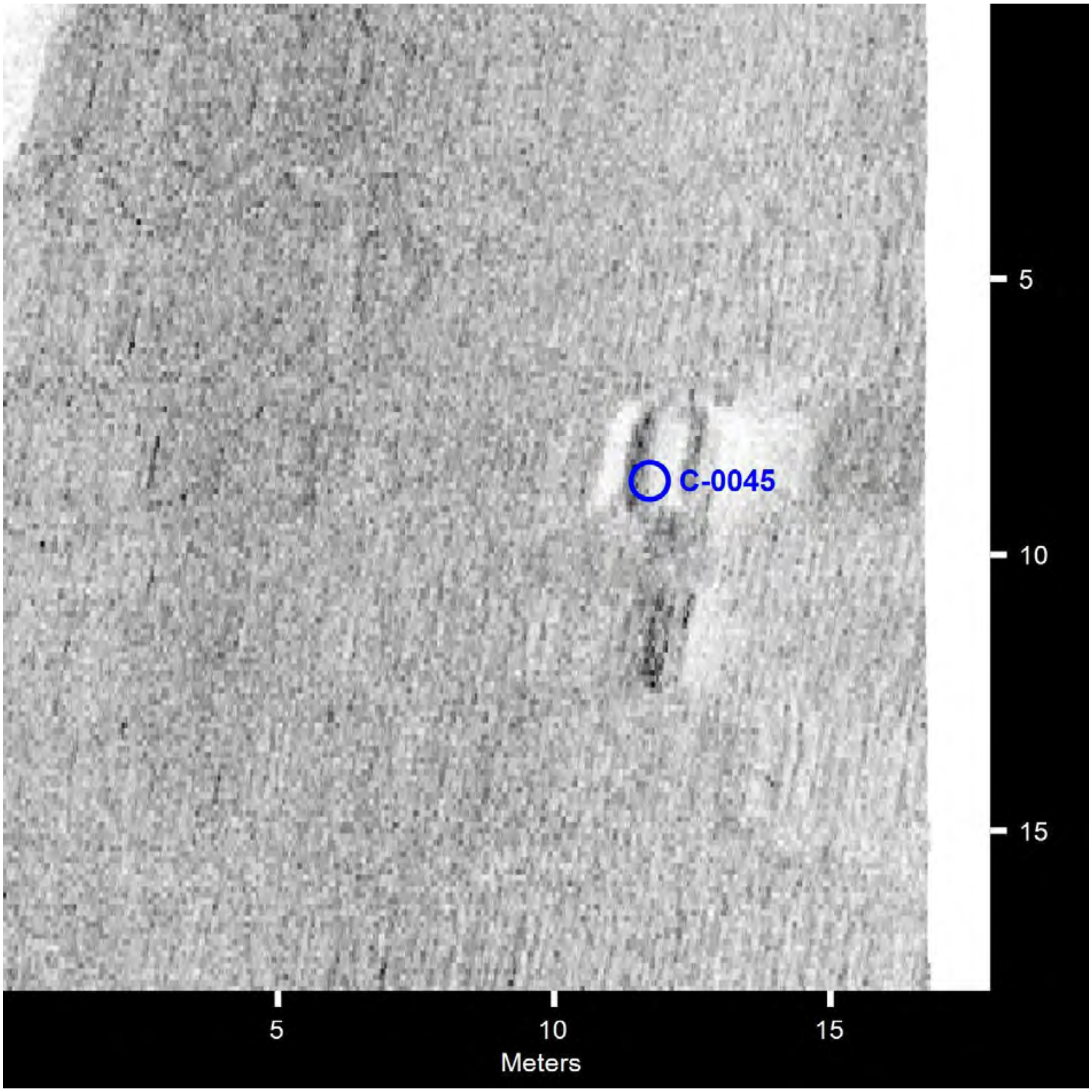


C-0044

- Click Position
  41.4845196836 -70.5787199972 (WGS84)
  (X) 368202.21 (Y) 4593748.57 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820152548H.xtf

Dimensions and attributes

- Target Width: 1.7 Meters
- Target Height: 0.0 Meters
- Target Length: 0.0 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Sand waves**
- Description: Width = approximate wavelength (peak to peak)

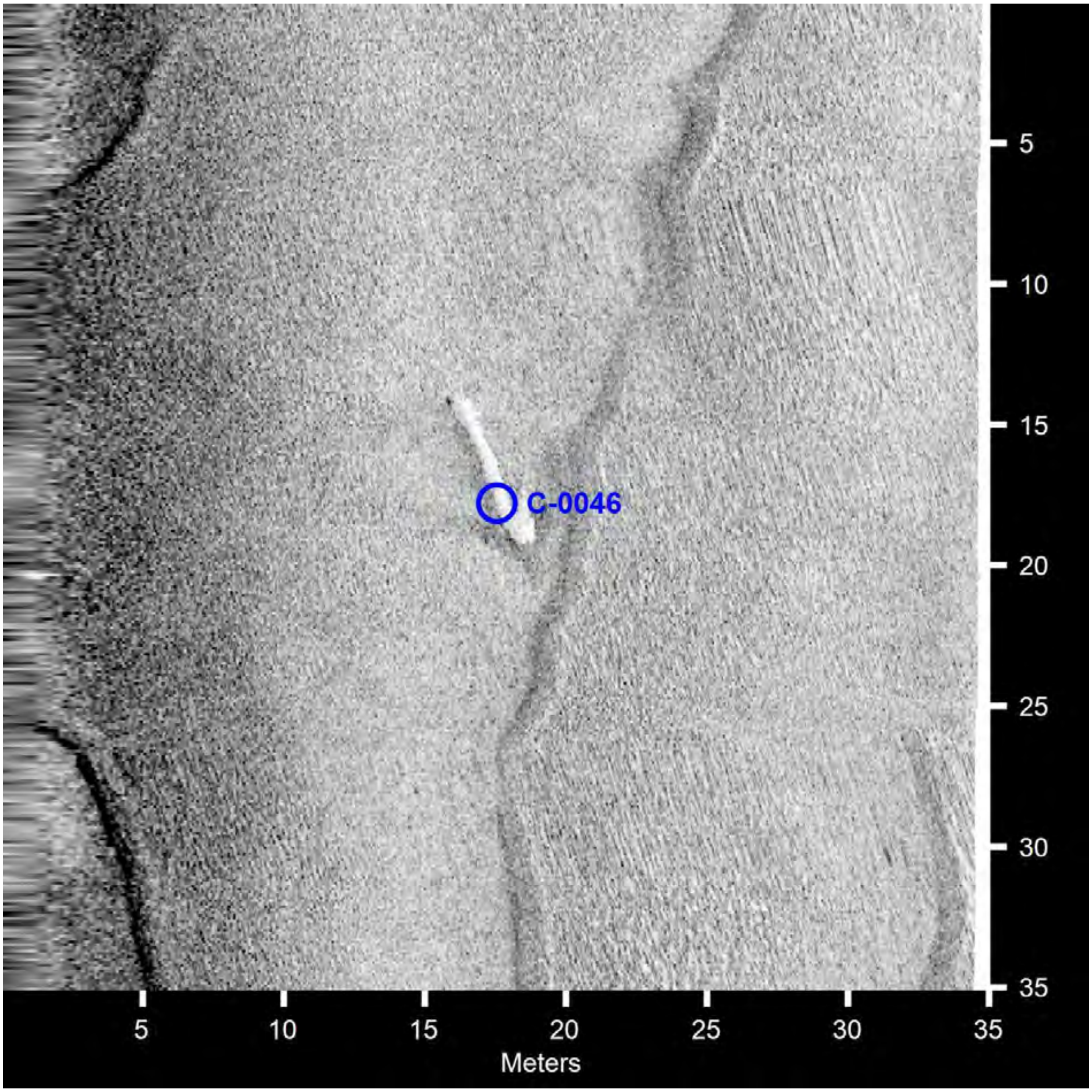


C-0045

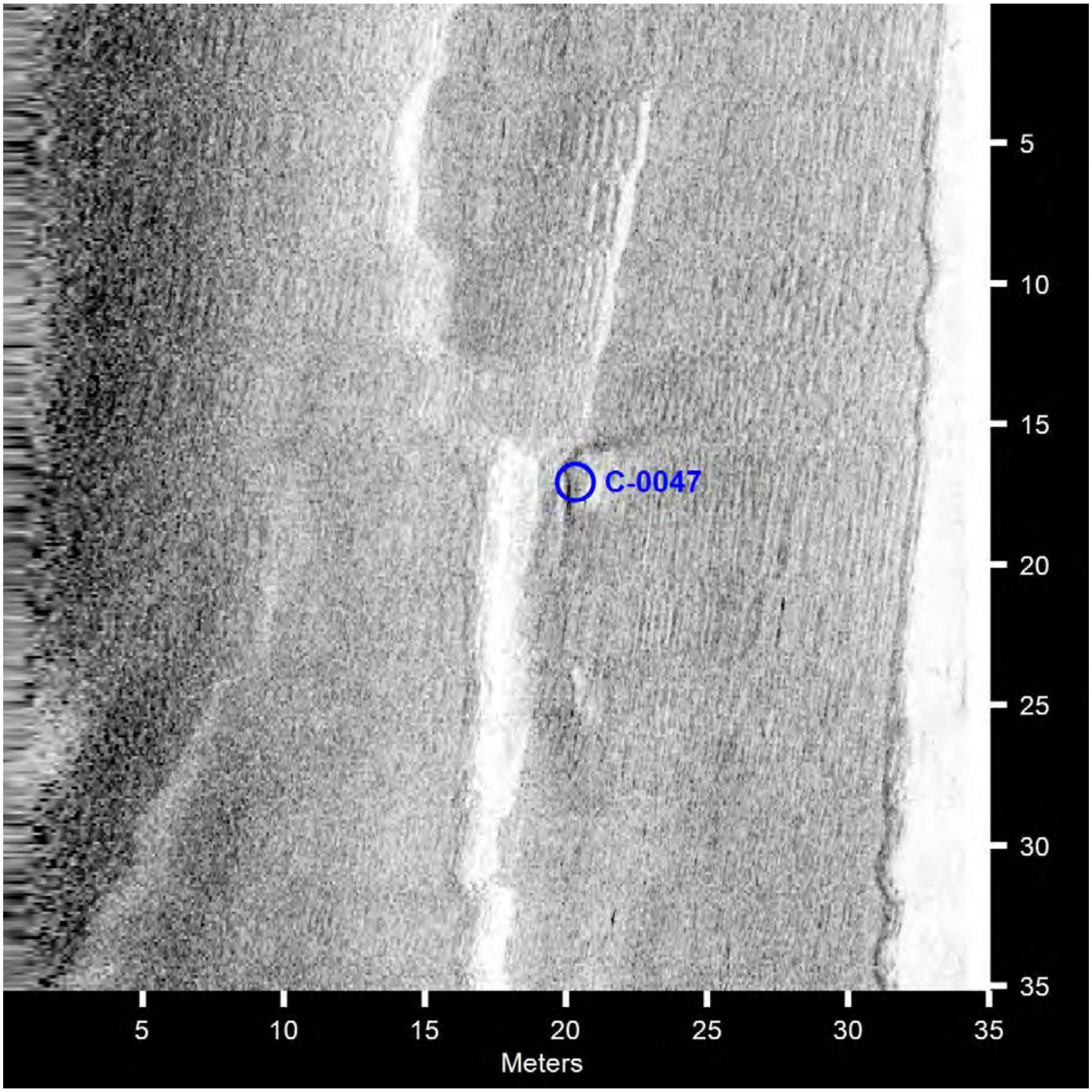
- Click Position
  41.4787268264 -70.5787780936 (WGS84)
  (X) 368185.62 (Y) 4593105.52 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908165942H.xtf

Dimensions and attributes

- Target Width: 1.3 Meters
- Target Height: 0.6 Meters
- Target Length: 3.2 Meters
- Target Shadow: 1.9 Meters
- Classification1: **Debris**
- Description:



C-0046	Dimensions and attributes
● Click Position 41.4782460911 -70.5804772272 (WGS84) (X) 368042.77 (Y) 4593054.73 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908173709H.xtf	● Target Width: 0.4 Meters ● Target Height: 0.4 Meters ● Target Length: 6.4 Meters ● Target Shadow: 0.9 Meters ● Classification1: Debris ● Description: **Debris in sand waves**

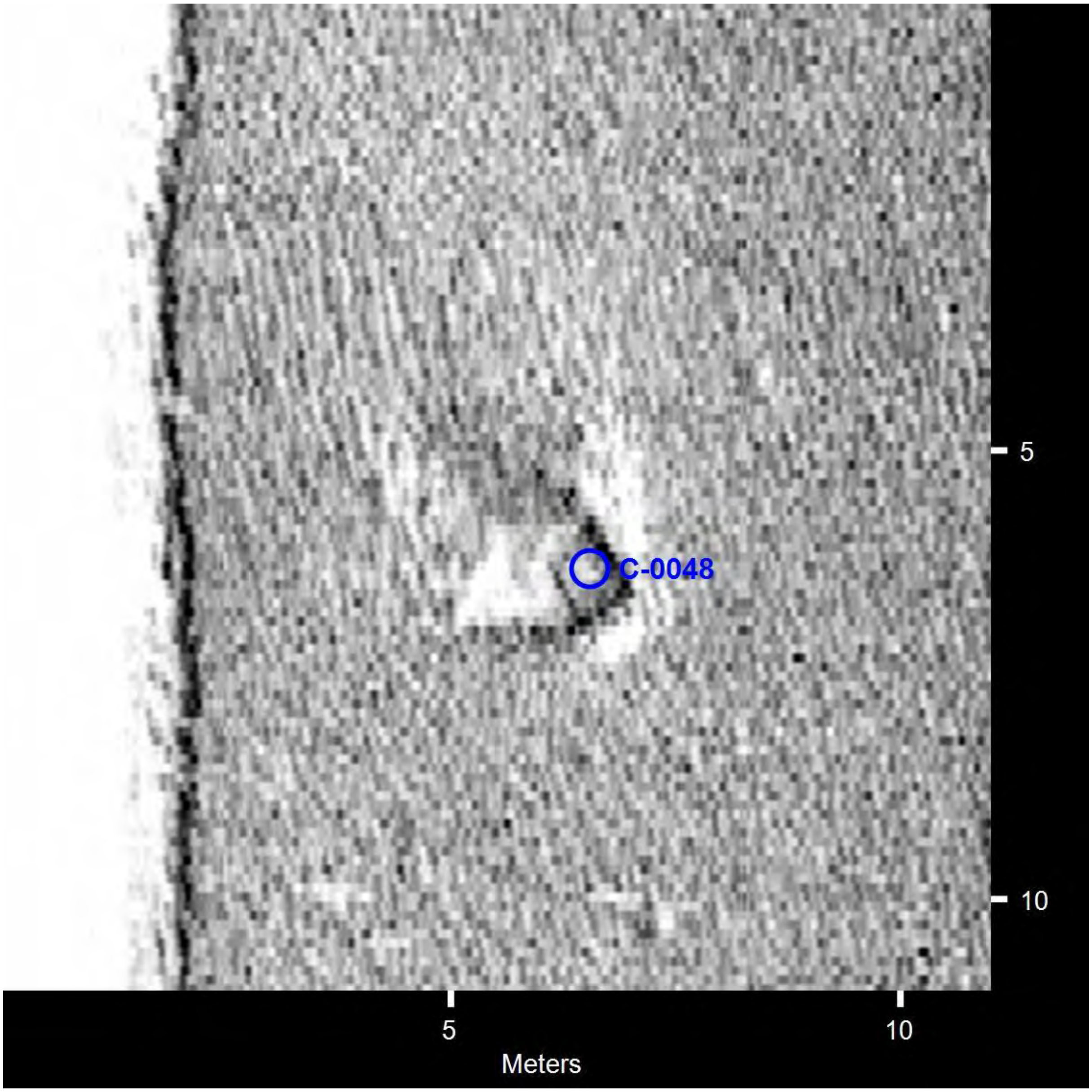


C-0047

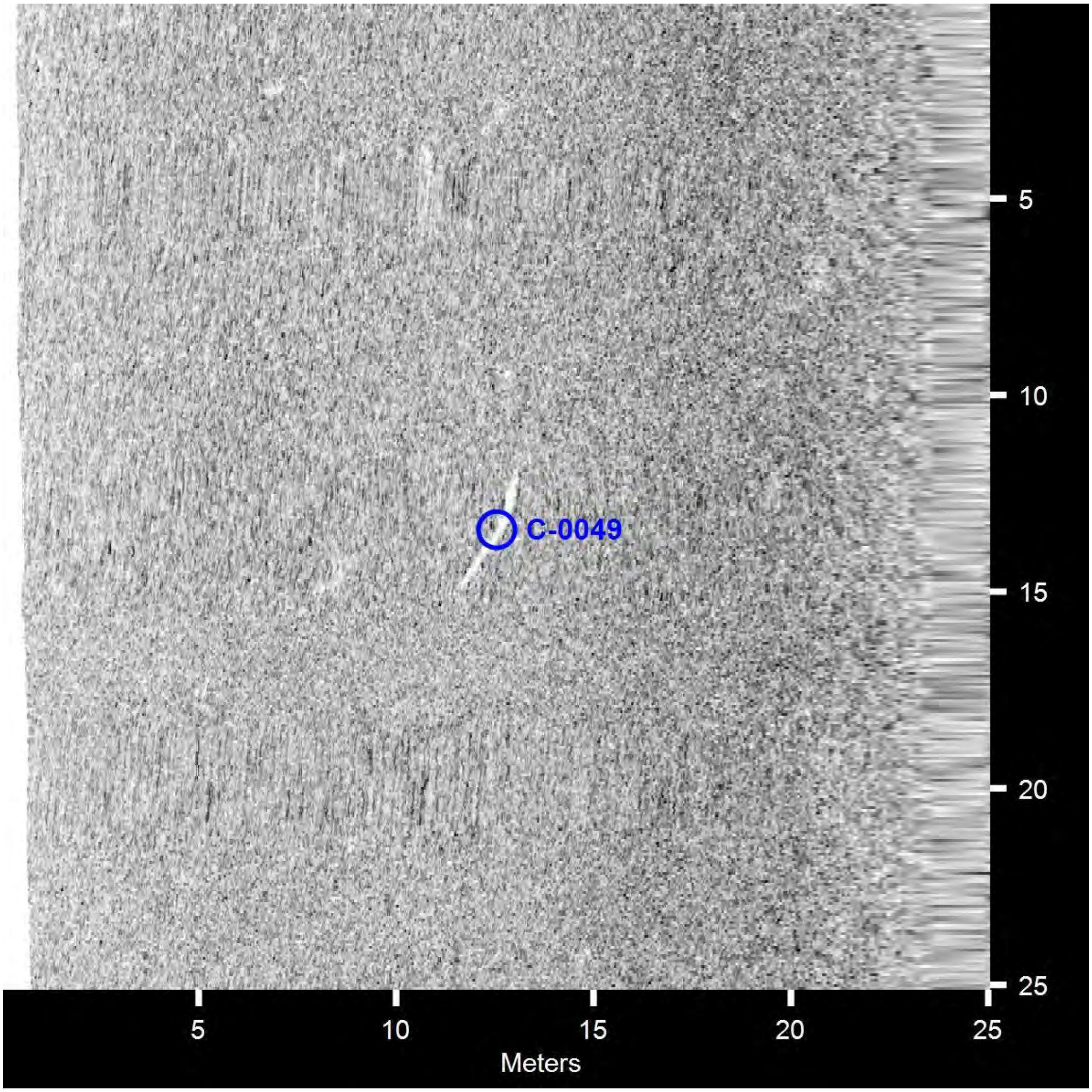
- Click Position
  41.4782018305 -70.5787392673 (WGS84)
  (X) 368187.79 (Y) 4593047.17 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908165942H.xtf

Dimensions and attributes

- Target Width: 2.5 Meters
- Target Height: 0.2 Meters
- Target Length: 1.6 Meters
- Target Shadow: 0.7 Meters
- Classification1: Debris
- Description: **Debris in sand waves**



C-0048	Dimensions and attributes
● Click Position 41.4760532880 -70.5793263909 (WGS84) (X) 368134.42 (Y) 4592809.52 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908134150H.xtf	● Target Width: 0.8 Meters ● Target Height: 0.3 Meters ● Target Length: 1.3 Meters ● Target Shadow: 1.0 Meters ● Classification1: Fishing gear ● Description: **Likely conch trap near sand ridge**

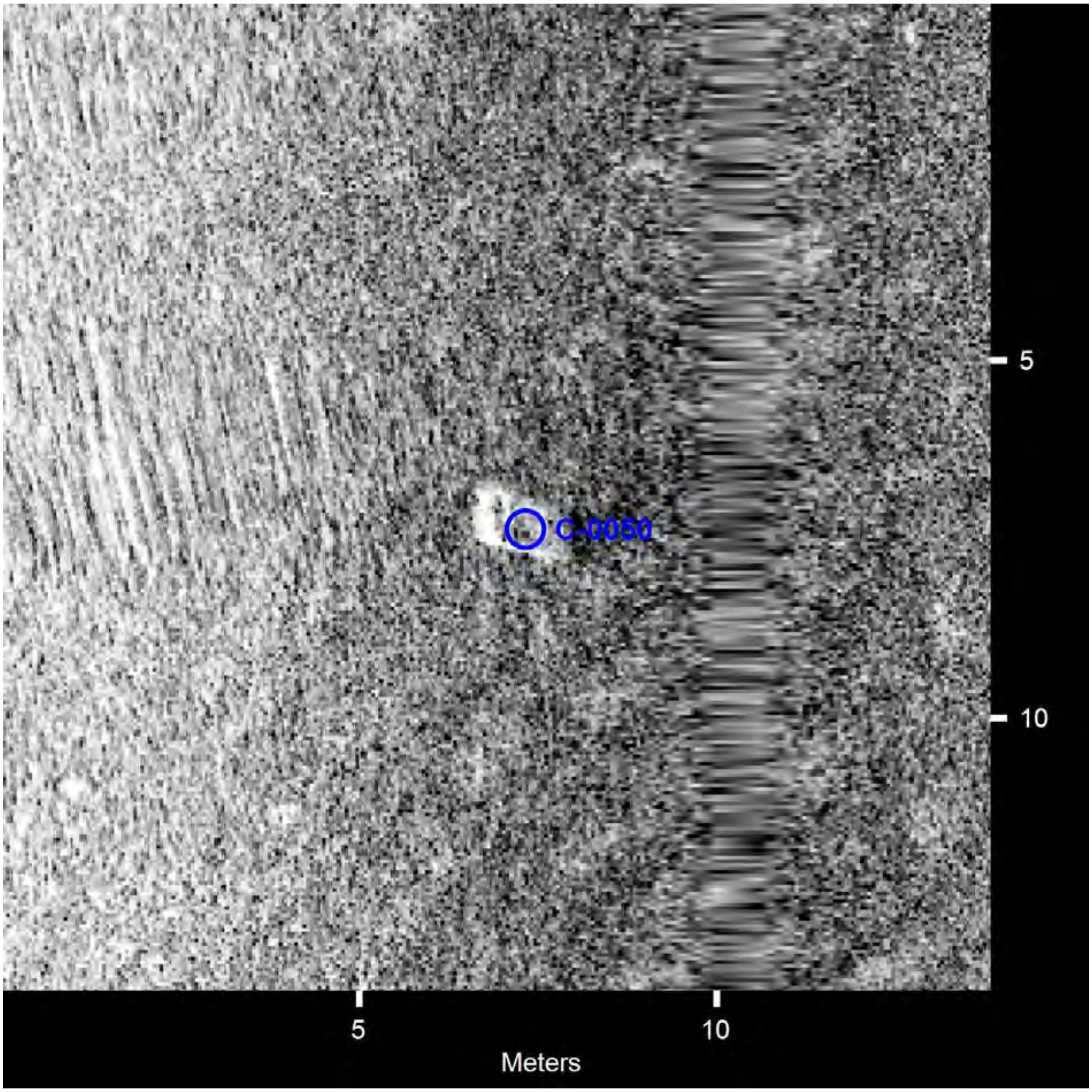


C-0049

- Click Position
  41.4734926455 -70.5787582907 (WGS84)
  (X) 368176.66 (Y) 4592524.37 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819195304H.xtf

Dimensions and attributes

- Target Width: 0.1 Meters
- Target Height: 0.1 Meters
- Target Length: 3.1 Meters
- Target Shadow: 0.2 Meters
- Classification1: **Debris**
- Description:

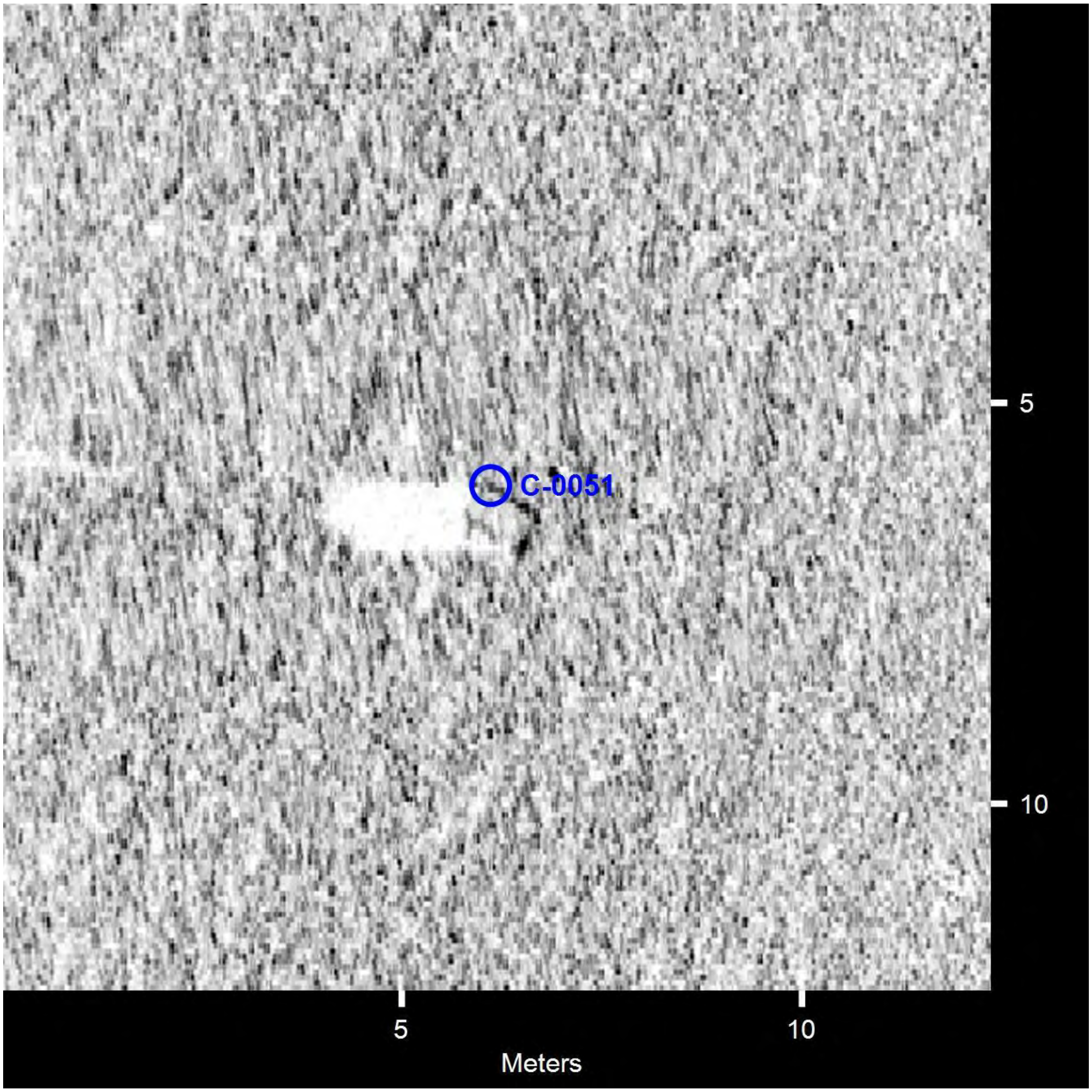


C-0050

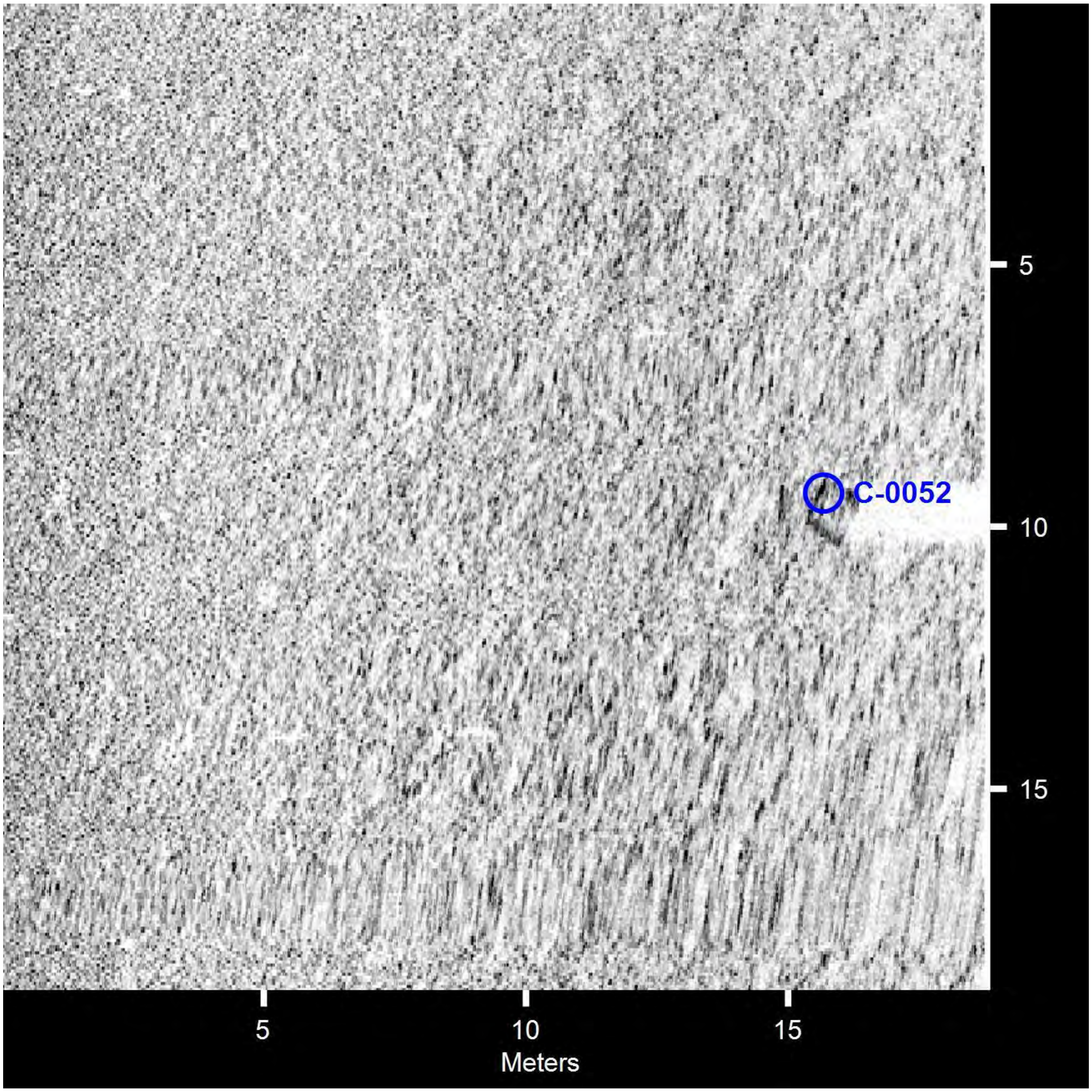
- Click Position
  41.4705608239 -70.5786399239 (WGS84)
  (X) 368180.60 (Y) 4592198.68 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

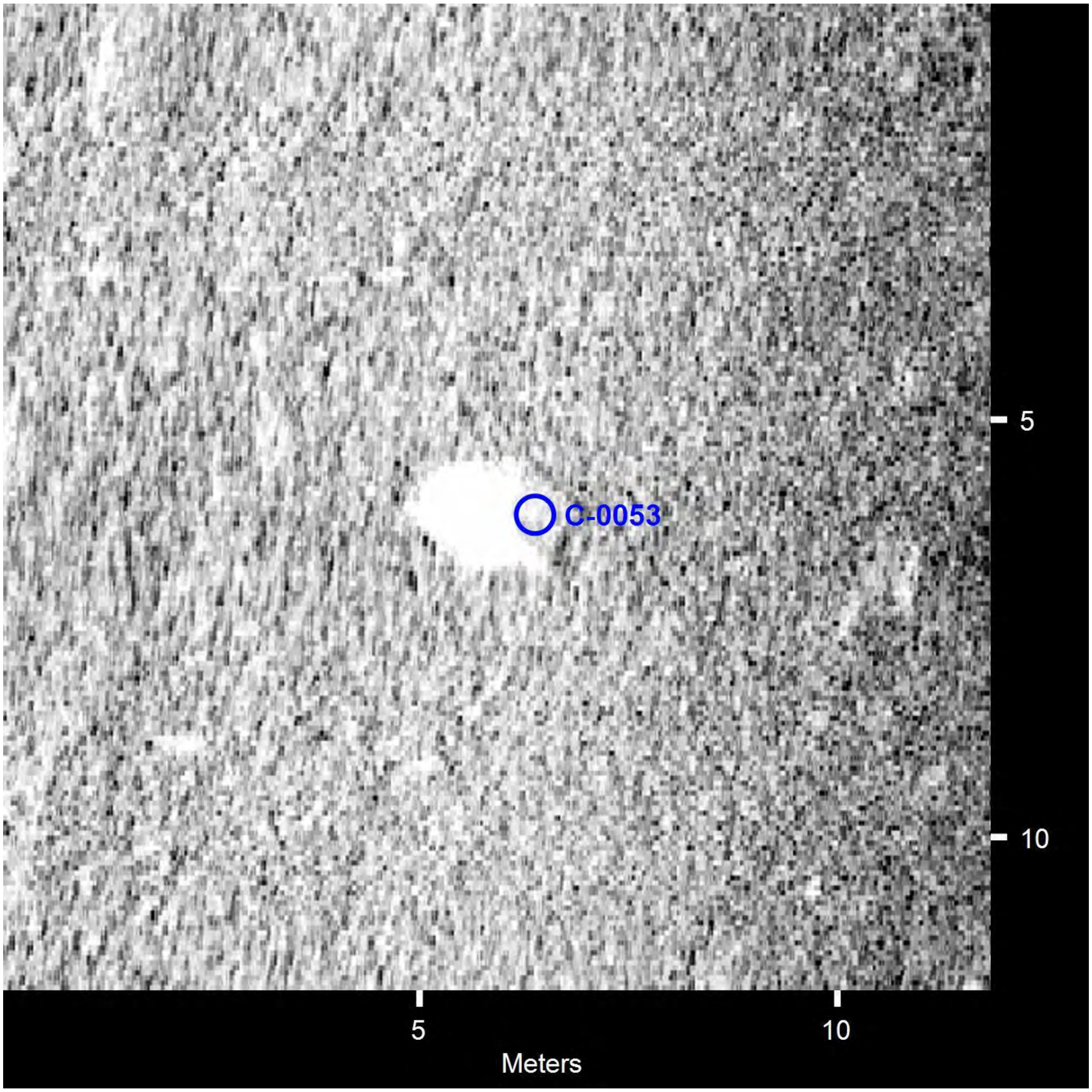
- Target Width: 0.7 Meters
- Target Height: 0.2 Meters
- Target Length: 1.5 Meters
- Target Shadow: 0.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



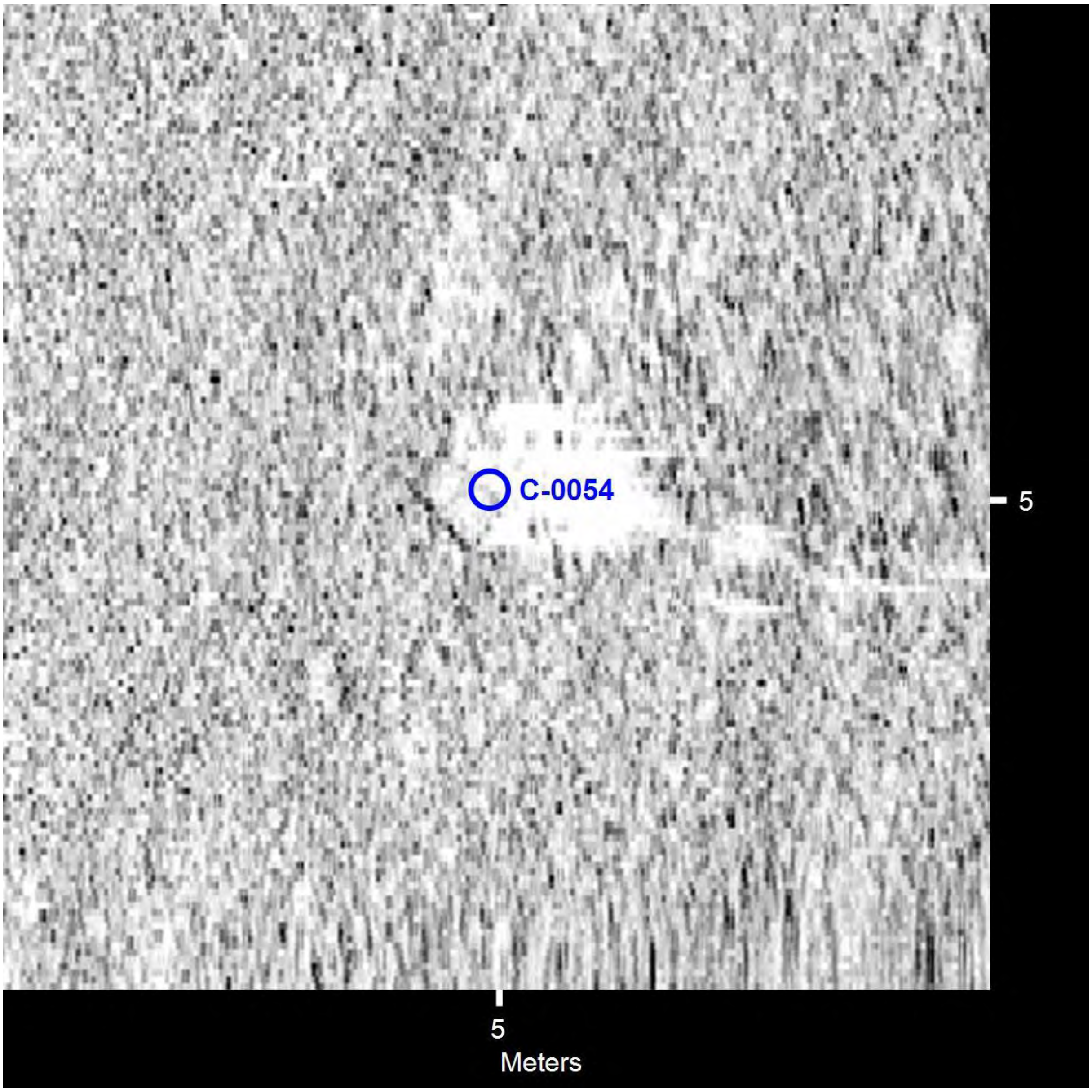
C-0051	Dimensions and attributes
● Click Position 41.4704669793 -70.5790566508 (WGS84) (X) 368145.62 (Y) 4592188.90 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819193952H.xtf	● Target Width: 0.9 Meters ● Target Height: 0.3 Meters ● Target Length: 1.0 Meters ● Target Shadow: 1.8 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



C-0052	Dimensions and attributes
● Click Position 41.4703899029 -70.5791416143 (WGS84) (X) 368138.36 (Y) 4592180.47 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf	● Target Width: 0.6 Meters ● Target Height: 0.2 Meters ● Target Length: 1.0 Meters ● Target Shadow: 2.3 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



C-0053	Dimensions and attributes
● Click Position 41.4703383557 -70.5795095104 (WGS84) (X) 368107.54 (Y) 4592175.31 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf	● Target Width: 0.5 Meters ● Target Height: 0.3 Meters ● Target Length: 1.1 Meters ● Target Shadow: 1.3 Meters ● Classification1: Fishing Gear ● Description**: Likely conch trap**

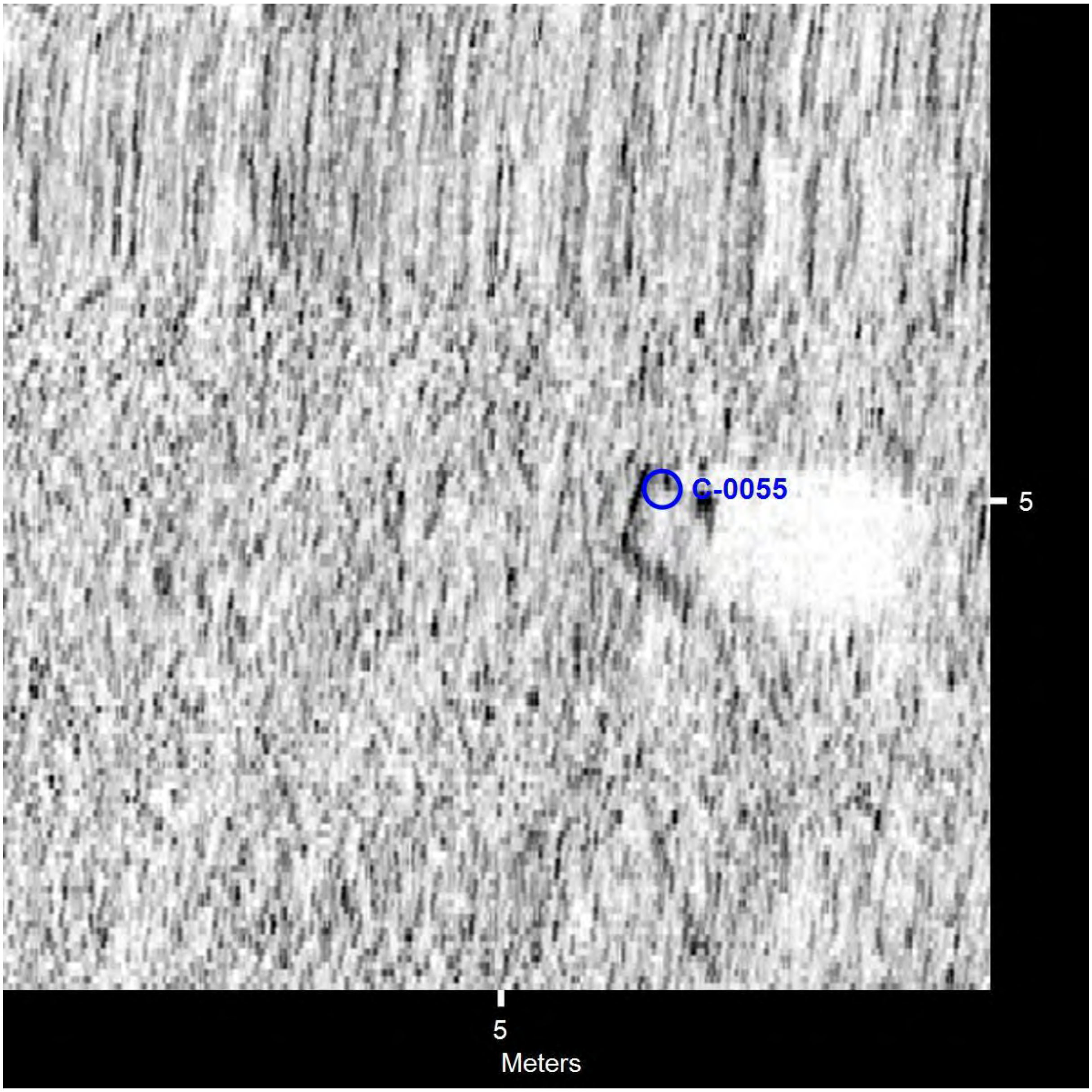


C-0054

- Click Position
  41.4702584092 -70.5797829710 (WGS84)
  (X) 368084.54 (Y) 4592166.85 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819183719H.xtf

Dimensions and attributes

- Target Width: 0.5 Meters
- Target Height: 0.3 Meters
- Target Length: 0.8 Meters
- Target Shadow: 1.9 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

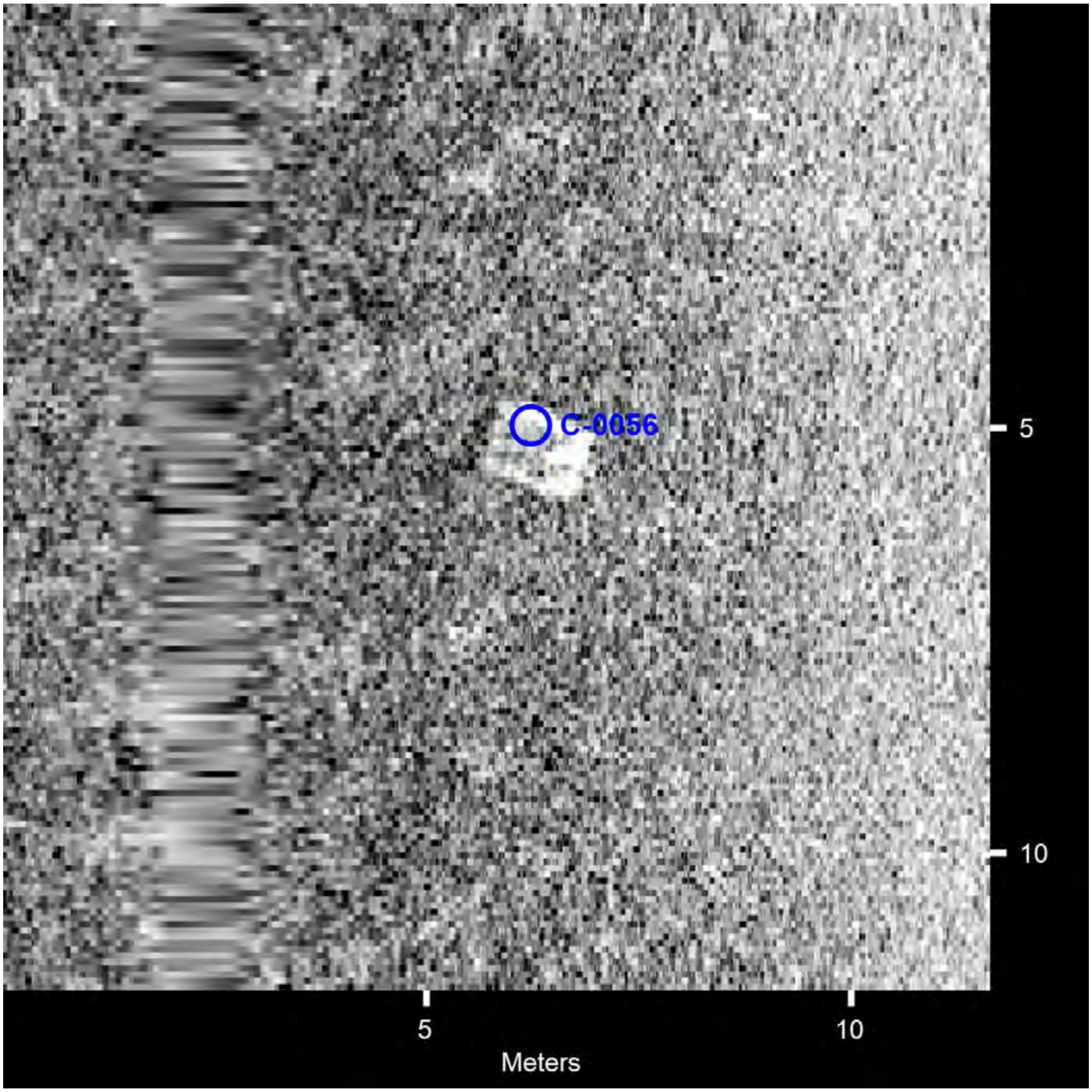


C-0055

- Click Position
  41.4700972913 -70.5807205320 (WGS84)
  (X) 368005.92 (Y) 4592150.39 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819171858H.xtf

Dimensions and attributes

- Target Width: 0.8 Meters
- Target Height: 0.3 Meters
- Target Length: 0.9 Meters
- Target Shadow: 2.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

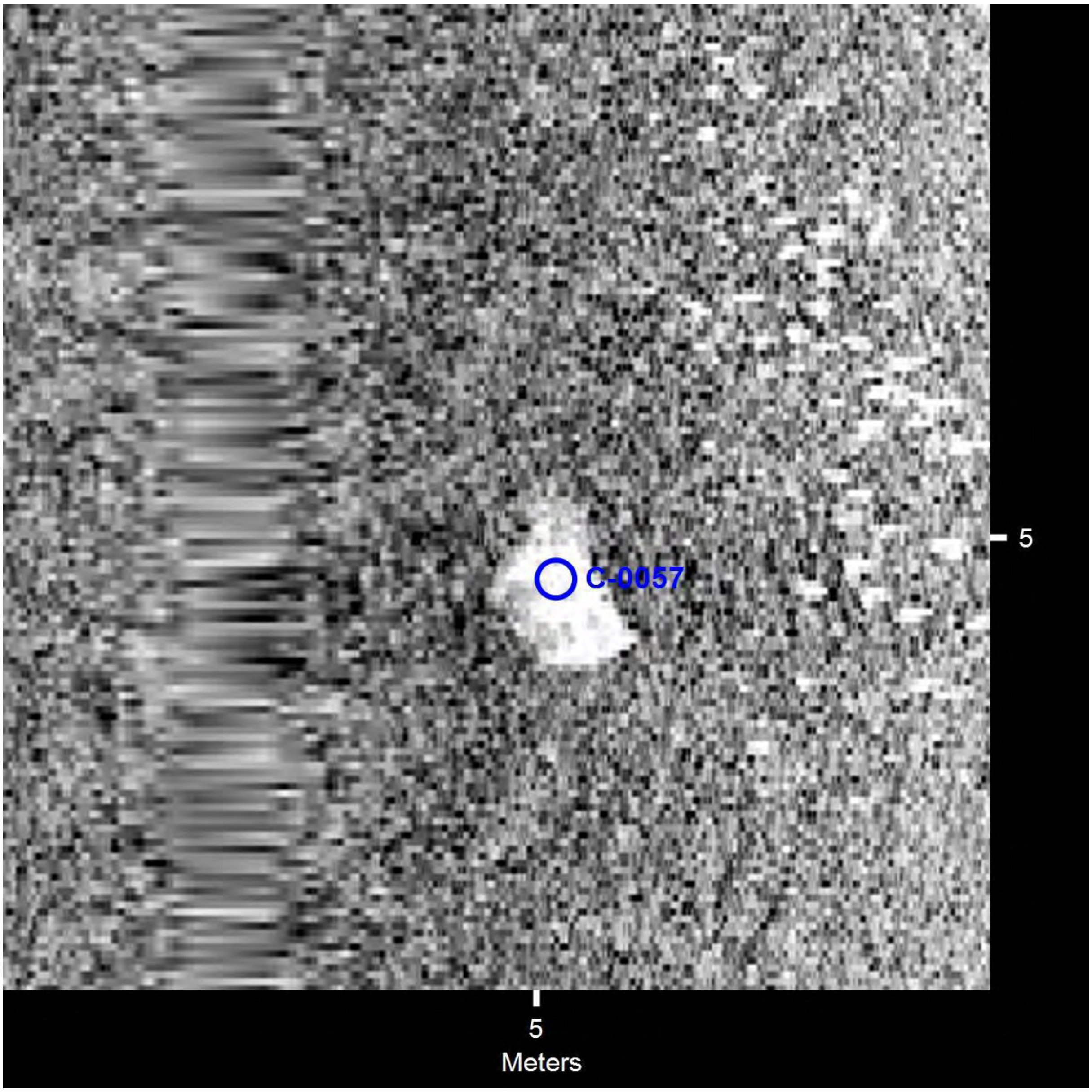


C-0056

- Click Position
  41.4698999264 -70.5818536770 (WGS84)
  (X) 367910.90 (Y) 4592130.21 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819155101H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.1 Meters
- Target Length: 1.3 Meters
- Target Shadow: 0.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

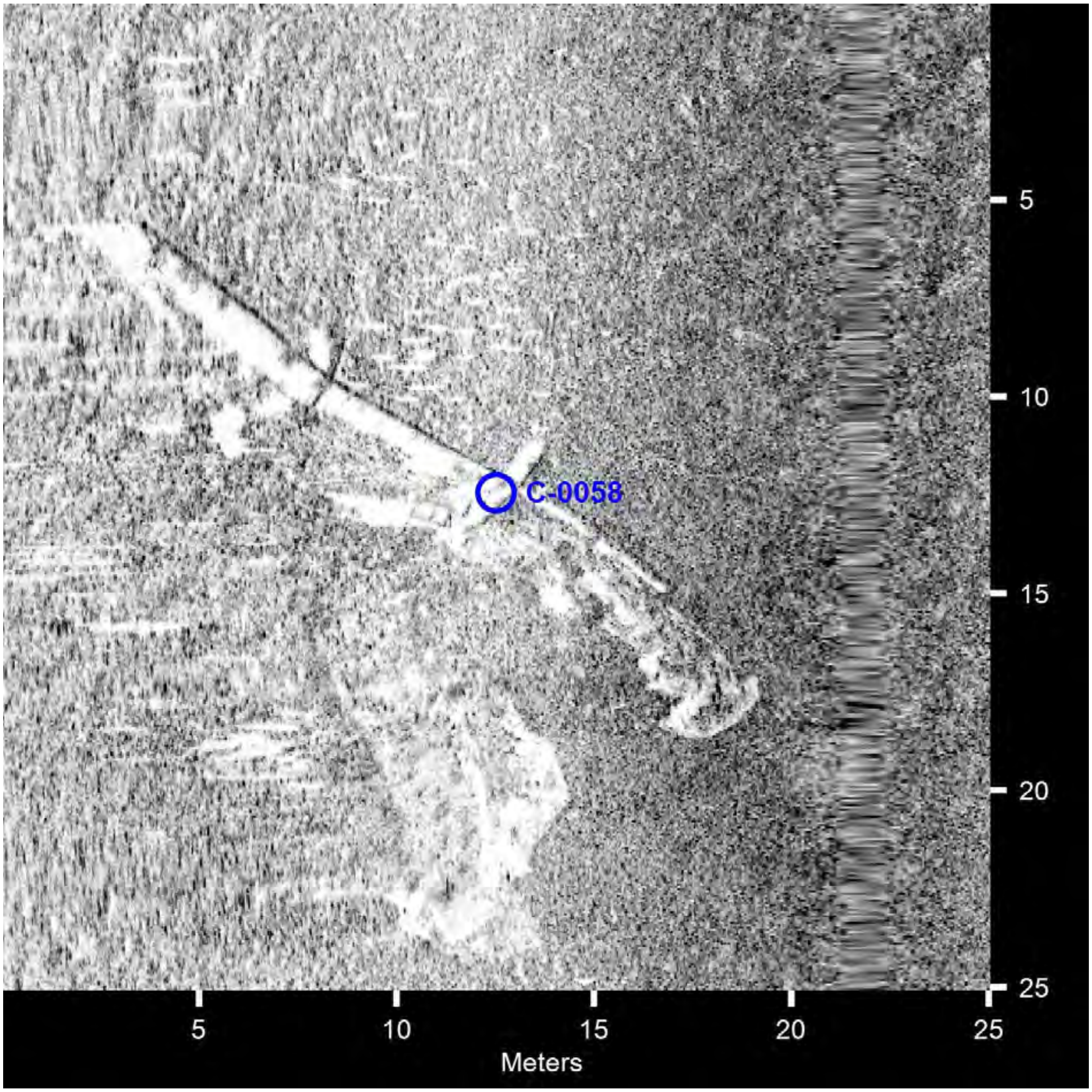


C-0057

- Click Position
  41.4688784018 -70.5795060570 (WGS84)
  (X) 368104.87 (Y) 4592013.21 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819193952H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.6 Meters
- Target Length: 1.2 Meters
- Target Shadow: 0.8 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

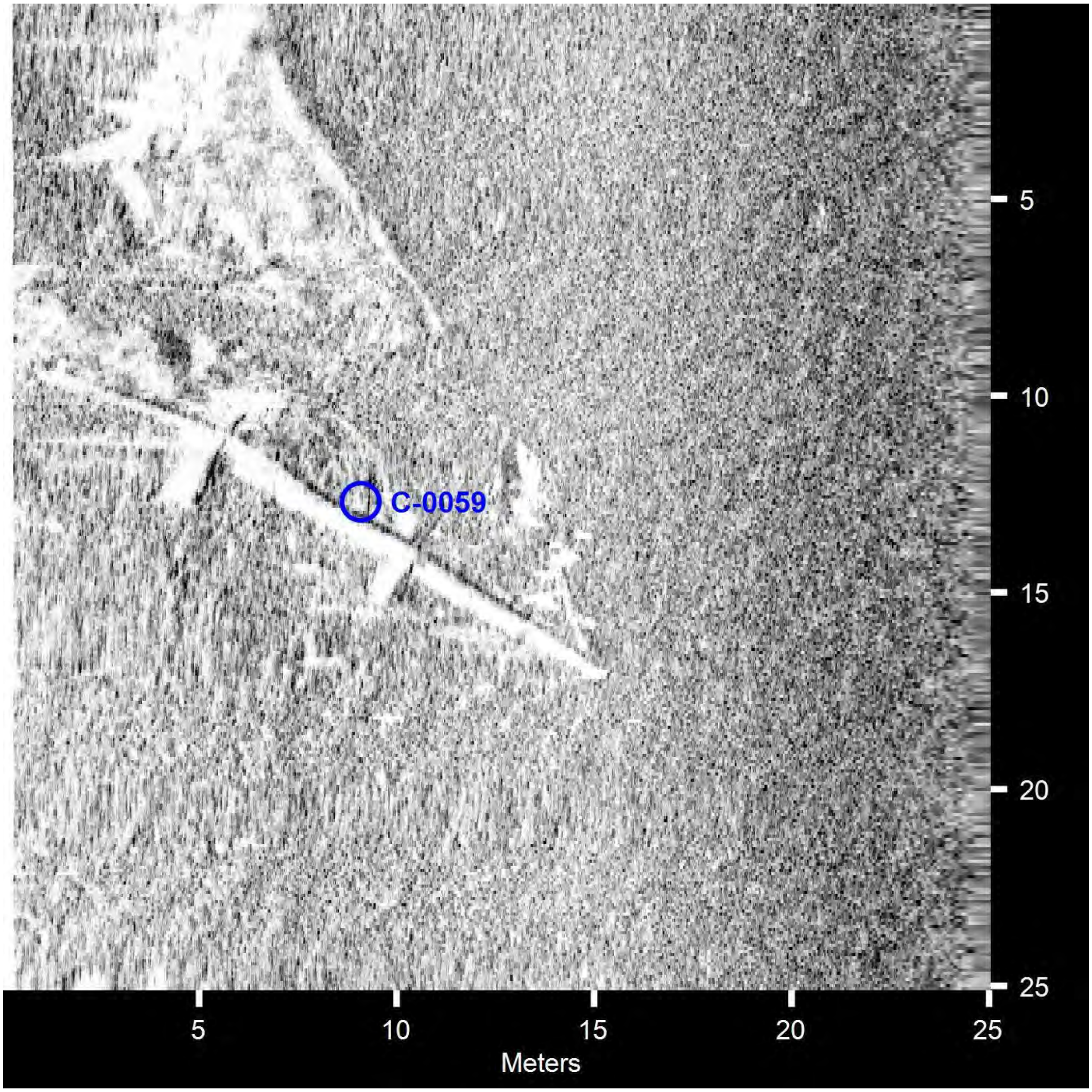


C-0058

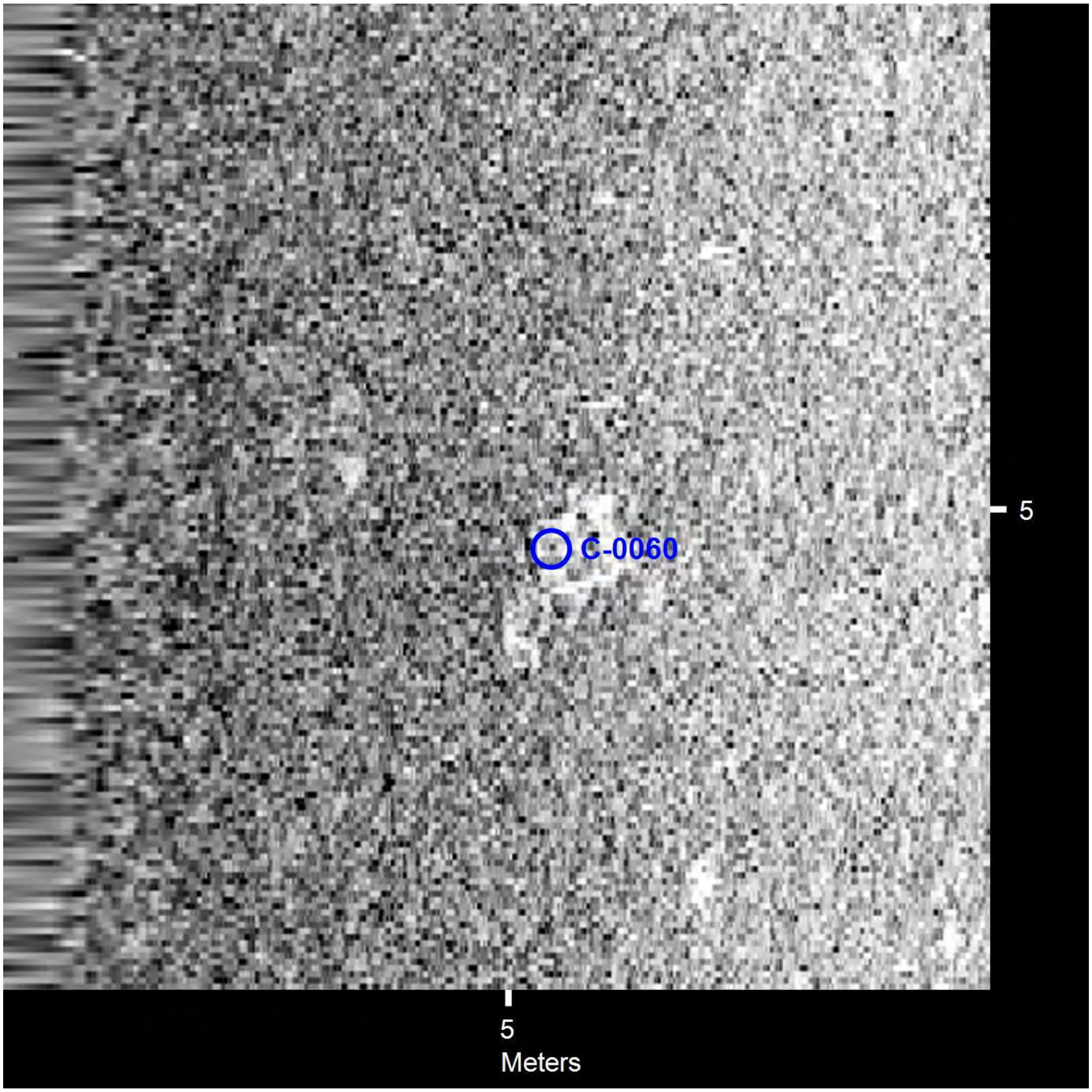
- Click Position
  41.4681286119 -70.5814828018 (WGS84)
  (X) 367938.27 (Y) 4591932.99 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819160212H.xtf

Dimensions and attributes

- Target Width: 3.5 Meters
- Target Height: 0.8 Meters
- Target Length: 19.3 Meters
- Target Shadow: 3.6 Meters
- Classification1: **Wreck**
- Description**: Northern portion**



C-0059	Dimensions and attributes
● Click Position 41.4681240780 -70.5815470599 (WGS84) (X) 367932.90 (Y) 4591932.58 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819165802H.xtf	● Target Width: 3.0 Meters ● Target Height: 0.2 Meters ● Target Length: 15.8 Meters ● Target Shadow: 0.9 Meters ● Classification1: **Wreck** ● Description:

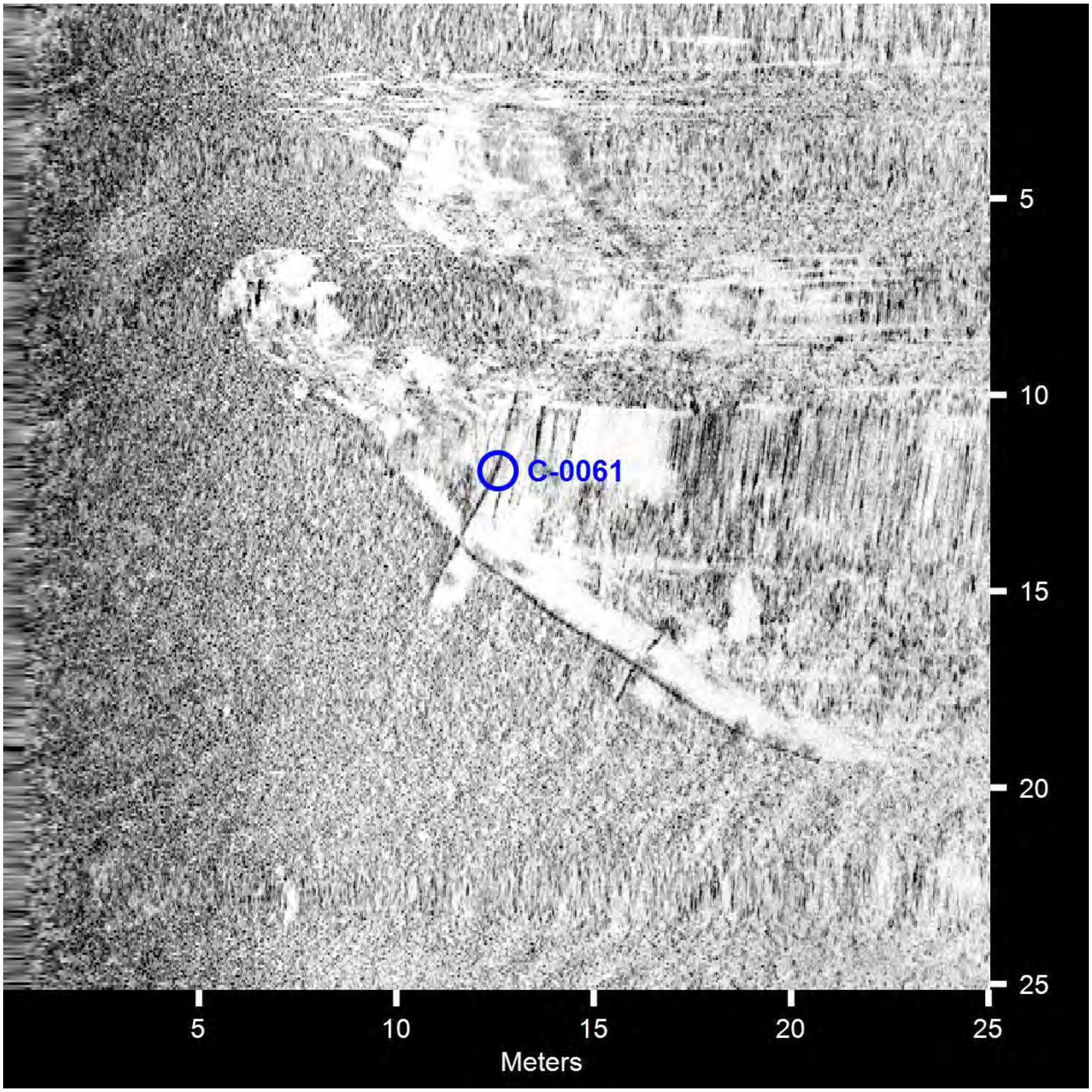


C-0060

- Click Position
  41.4681200216 -70.5796945996 (WGS84)
  (X) 368087.58 (Y) 4591929.30 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.0 Meters
- Target Length: 1.1 Meters
- Target Shadow: 0.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

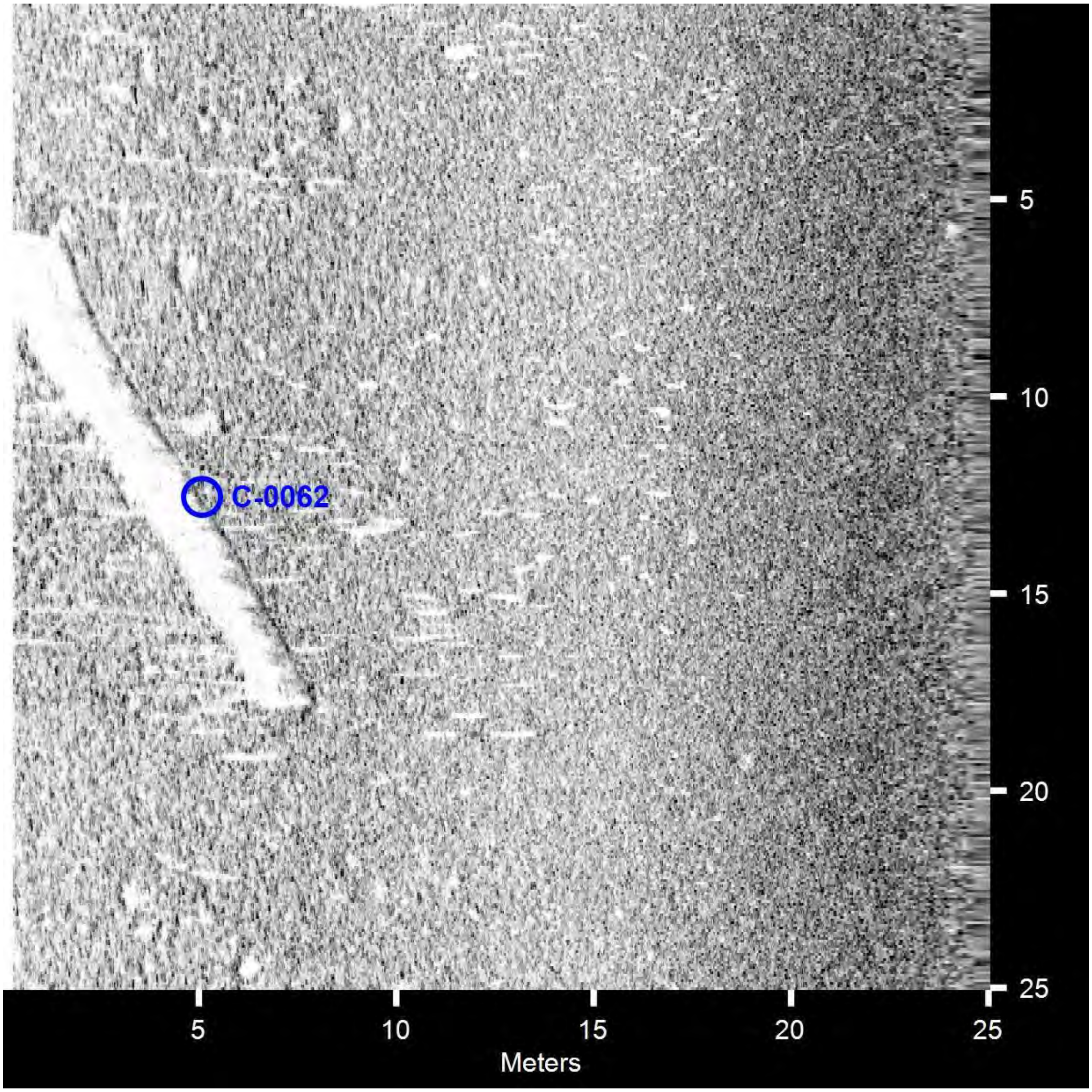


C-0061

- Click Position
  41.4680979383 -70.5815842049 (WGS84)
  (X) 367929.74 (Y) 4591929.74 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819163714H.xtf

Dimensions and attributes

- Target Width: 8.0 Meters
- Target Height: 0.5 Meters
- Target Length: 18.8 Meters
- Target Shadow: 2.9 Meters
- Classification1: **Wreck**
- Description:

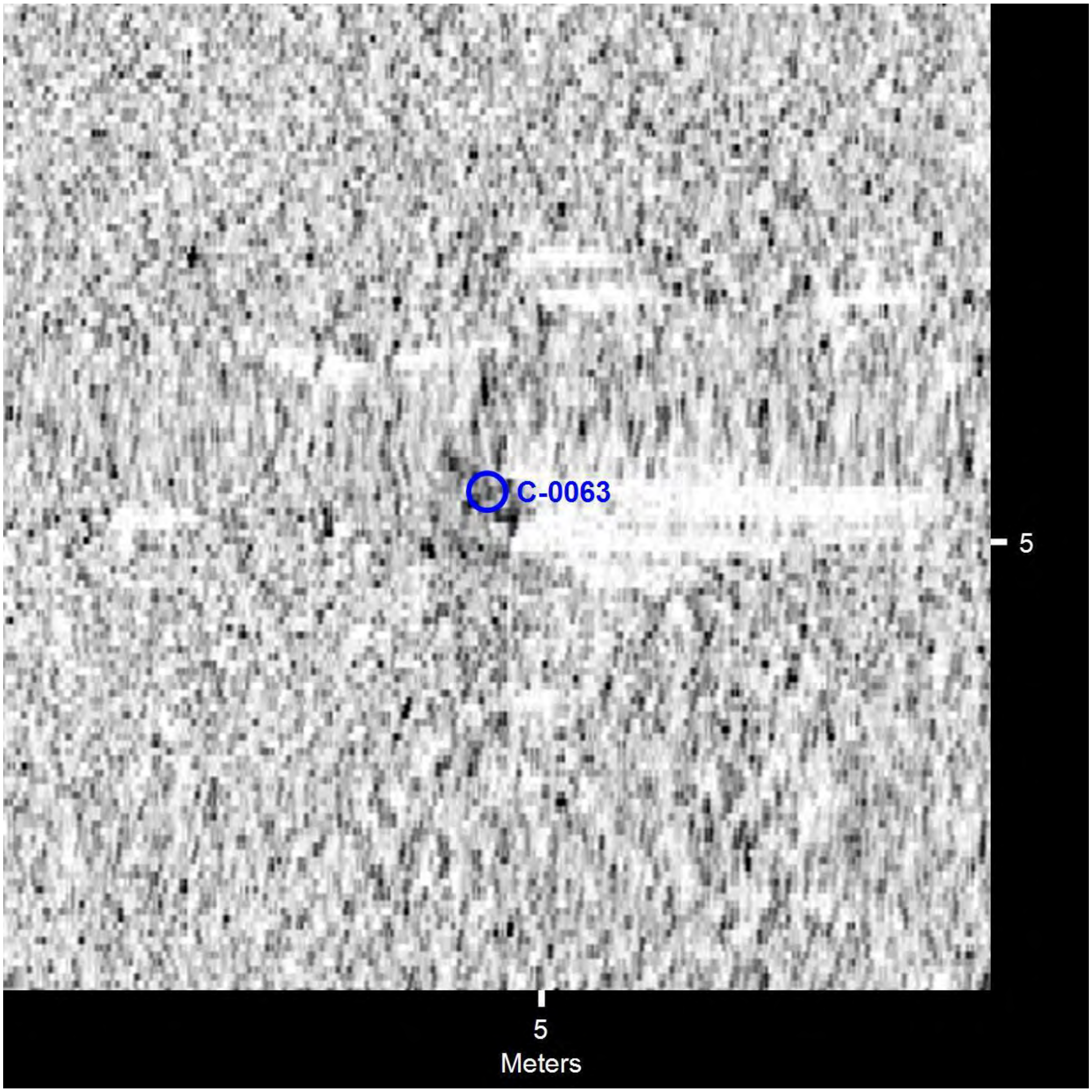


C-0062

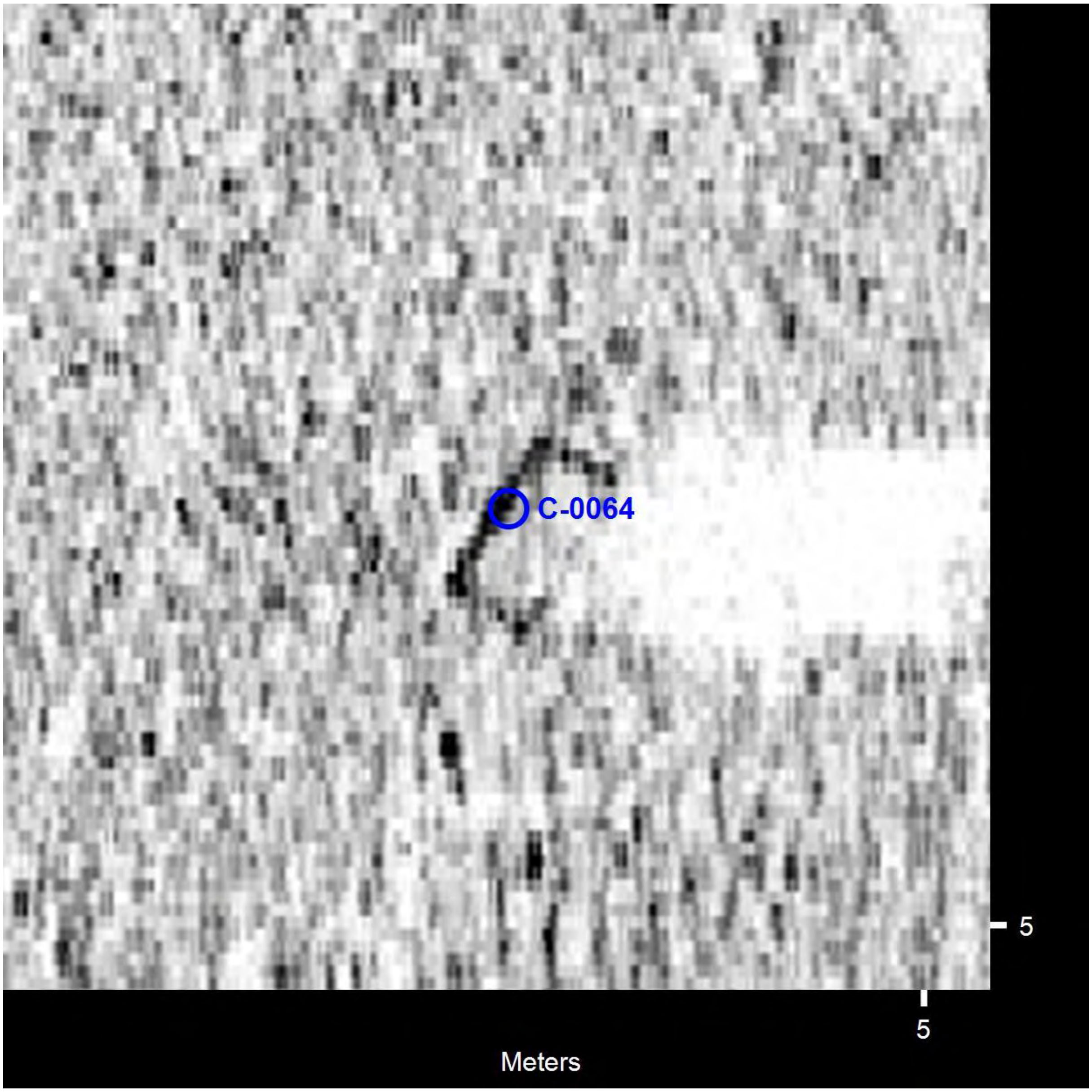
- Click Position
  41.4677814427 -70.5782931308 (WGS84)
  (X) 368203.93 (Y) 4591889.58 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819191839H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 0.3 Meters
- Target Length: 15.0 Meters
- Target Shadow: 2.0 Meters
- Classification1: Debris
- Description: **Debris likely associated with wreckage to the west**



C-0063	Dimensions and attributes
● Click Position 41.4672841615 -70.5807724029 (WGS84) (X) 367995.88 (Y) 4591838.15 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf	● Target Width: 0.9 Meters ● Target Height: 0.5 Meters ● Target Length: 1.2 Meters ● Target Shadow: 3.5 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

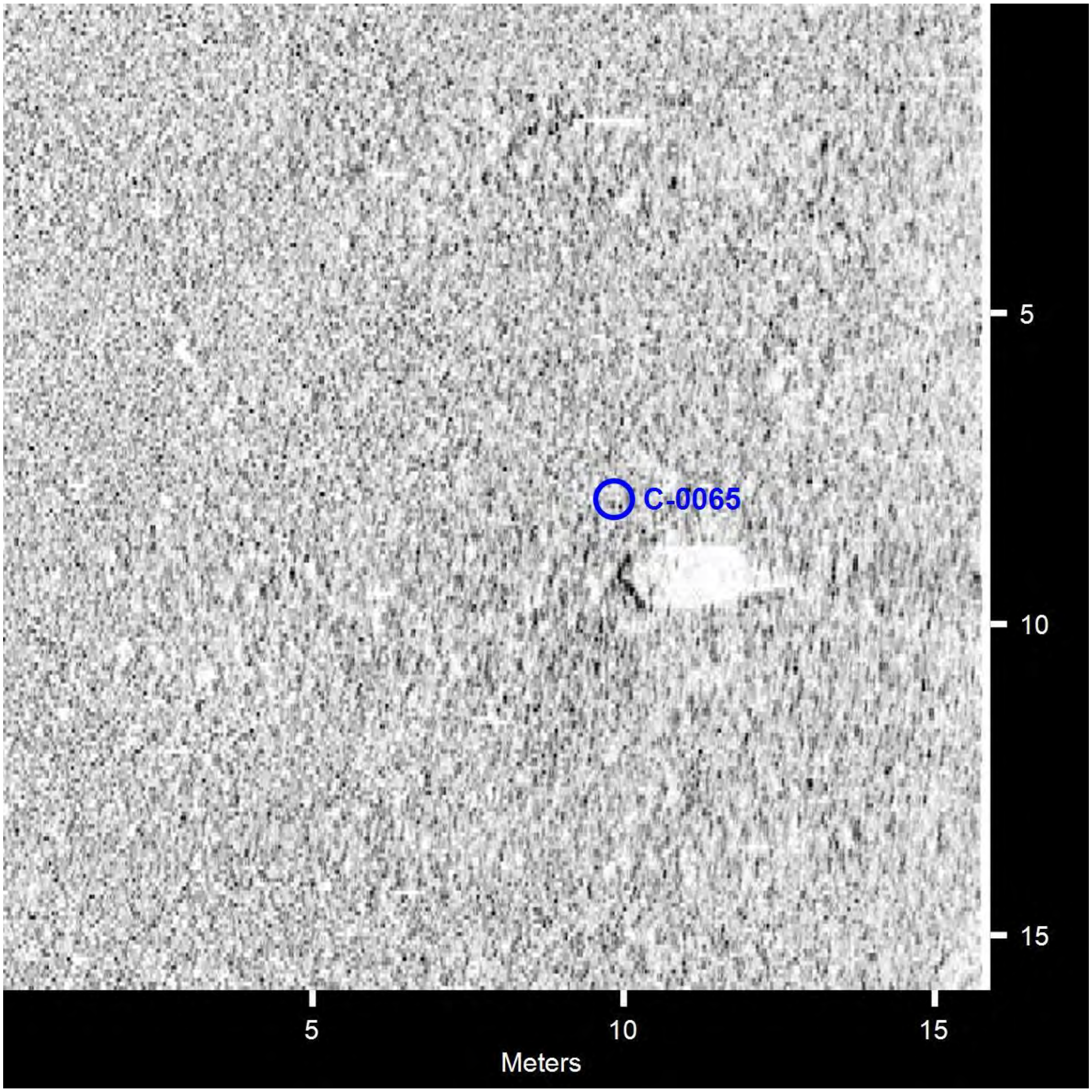


C-0064

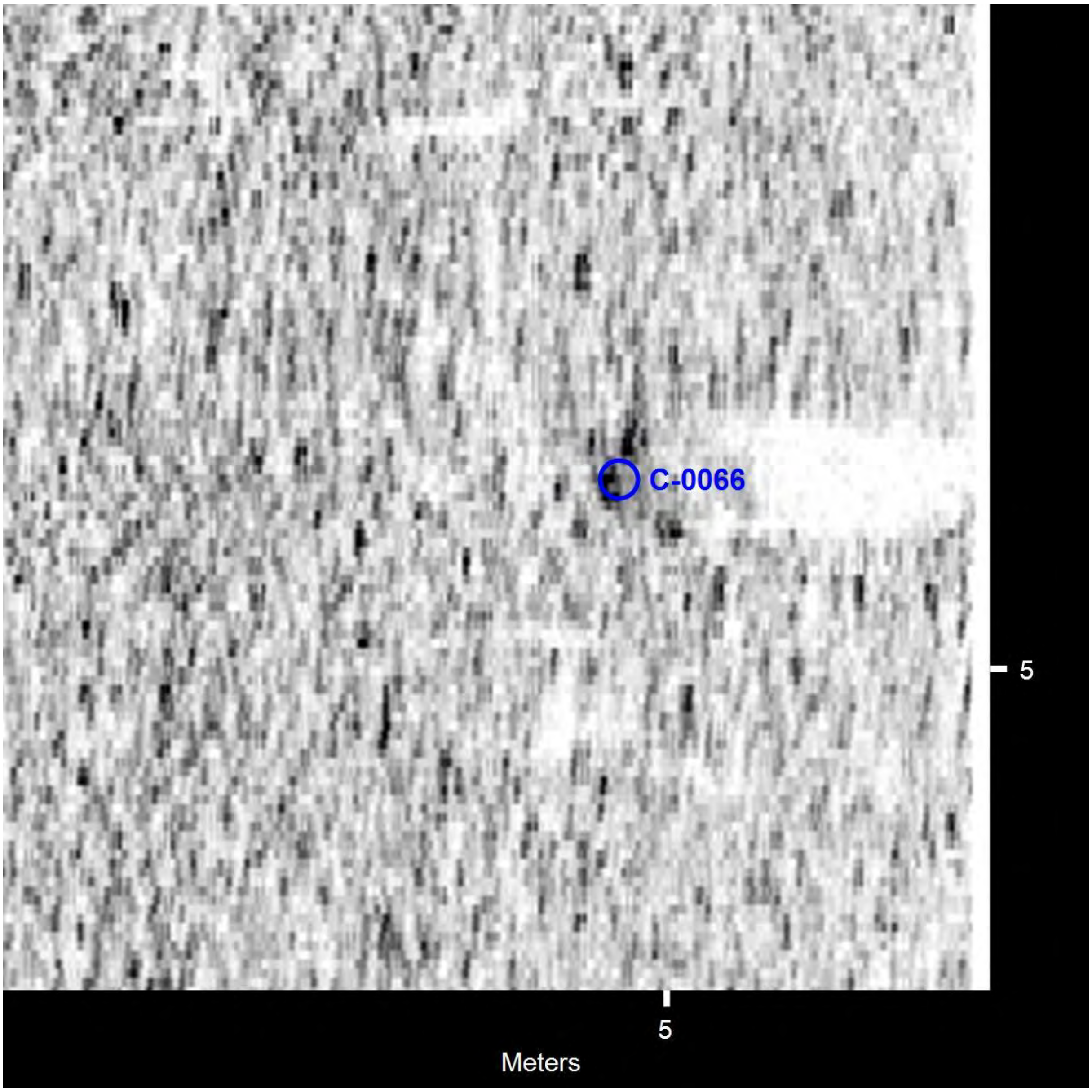
- Click Position
  41.4670948819 -70.5793998556 (WGS84)
  (X) 368110.12 (Y) 4591815.04 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

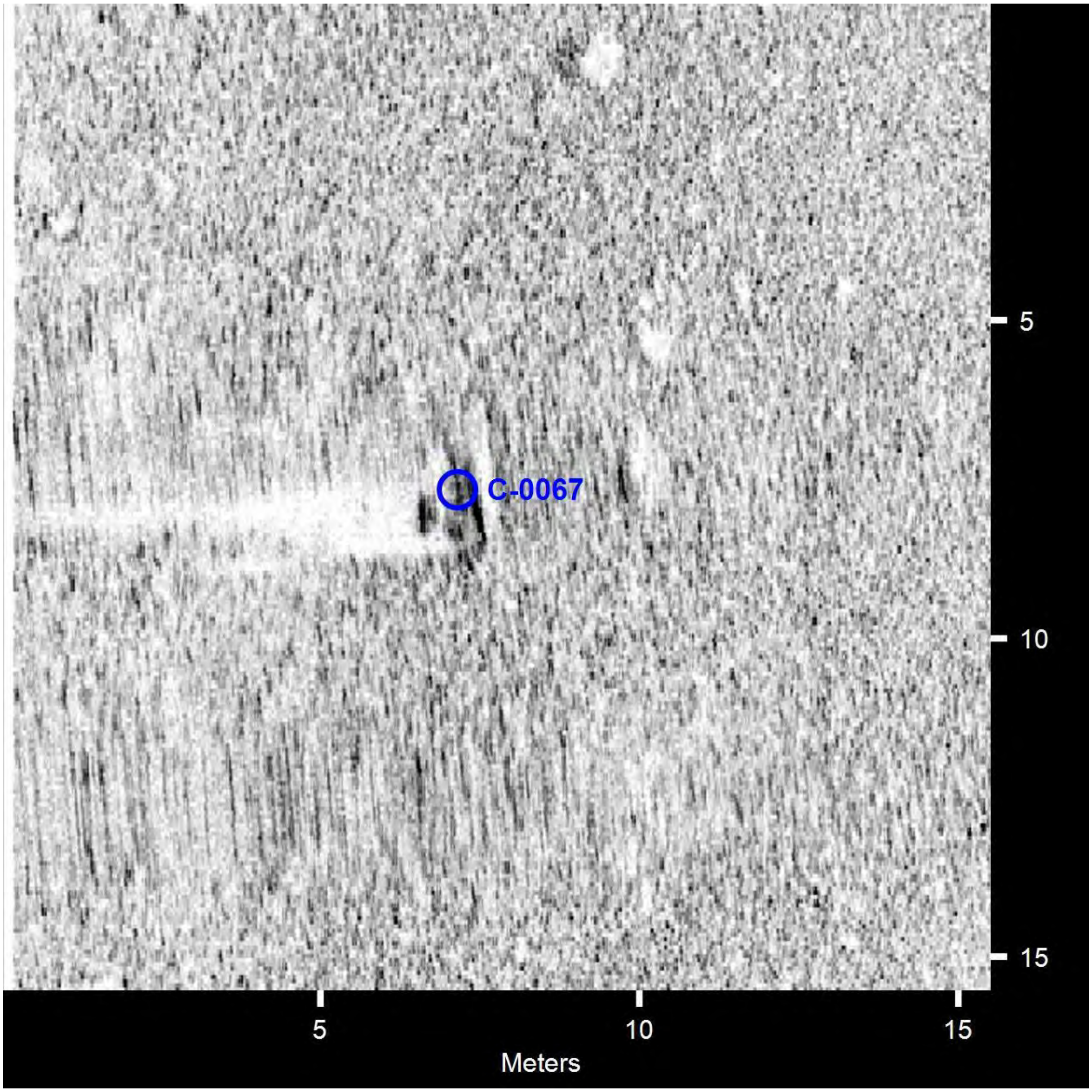
- Target Width: 0.4 Meters
- Target Height: 0.3 Meters
- Target Length: 1.2 Meters
- Target Shadow: 2.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0065	Dimensions and attributes
● Click Position 41.4668685821 -70.5808190029 (WGS84) (X) 367991.15 (Y) 4591792.08 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf	● Target Width: 0.5 Meters ● Target Height: 0.3 Meters ● Target Length: 1.2 Meters ● Target Shadow: 2.6 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



C-0066	Dimensions and attributes
● Click Position 41.4667154553 -70.5808591280 (WGS84) (X) 367987.49 (Y) 4591775.14 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf	● Target Width: 0.5 Meters ● Target Height: 0.2 Meters ● Target Length: 0.9 Meters ● Target Shadow: 2.0 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

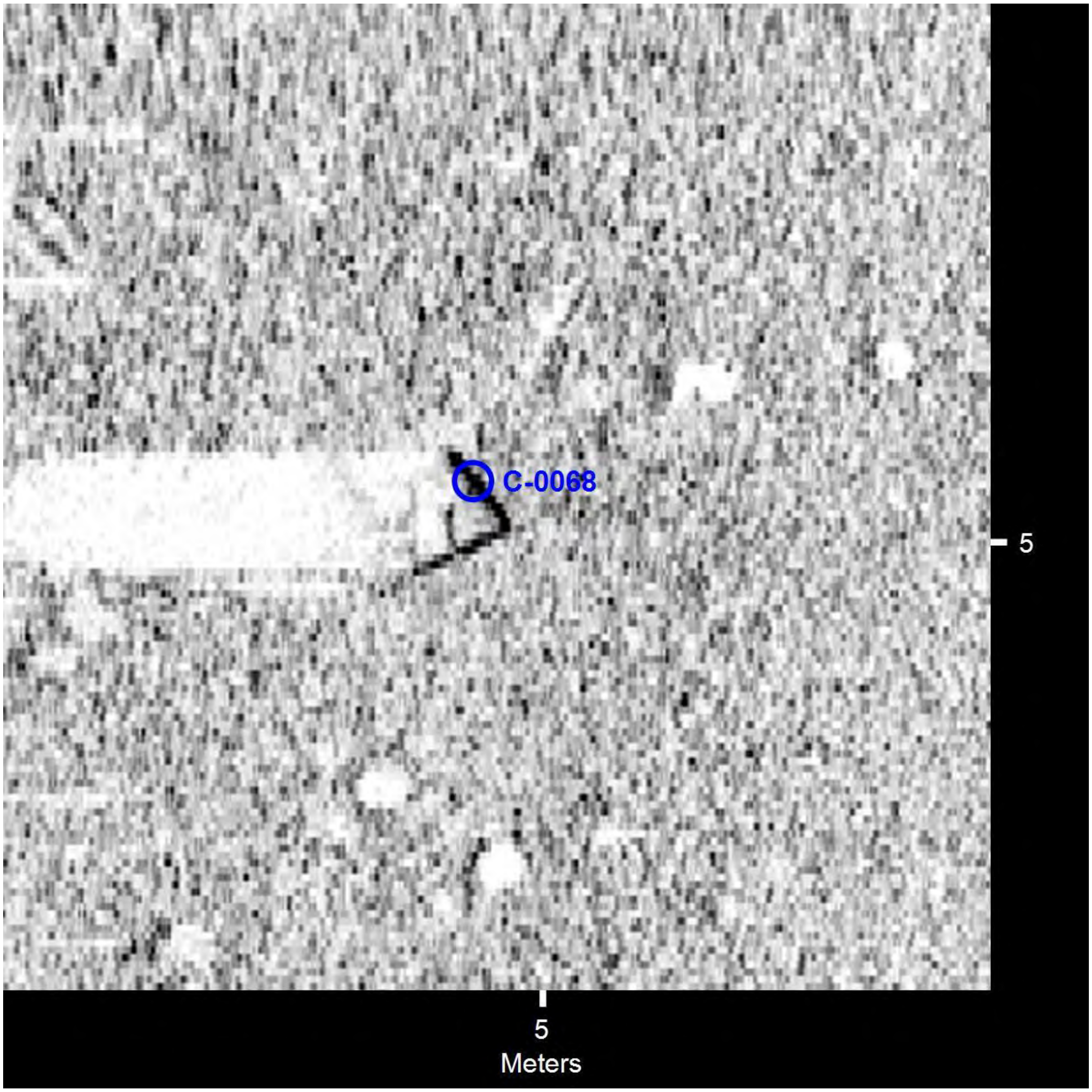


C-0067

- Click Position
  41.4662185689 -70.5791383567 (WGS84)
  (X) 368130.18 (Y) 4591717.35 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.6 Meters
- Target Length: 1.7 Meters
- Target Shadow: 4.8 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

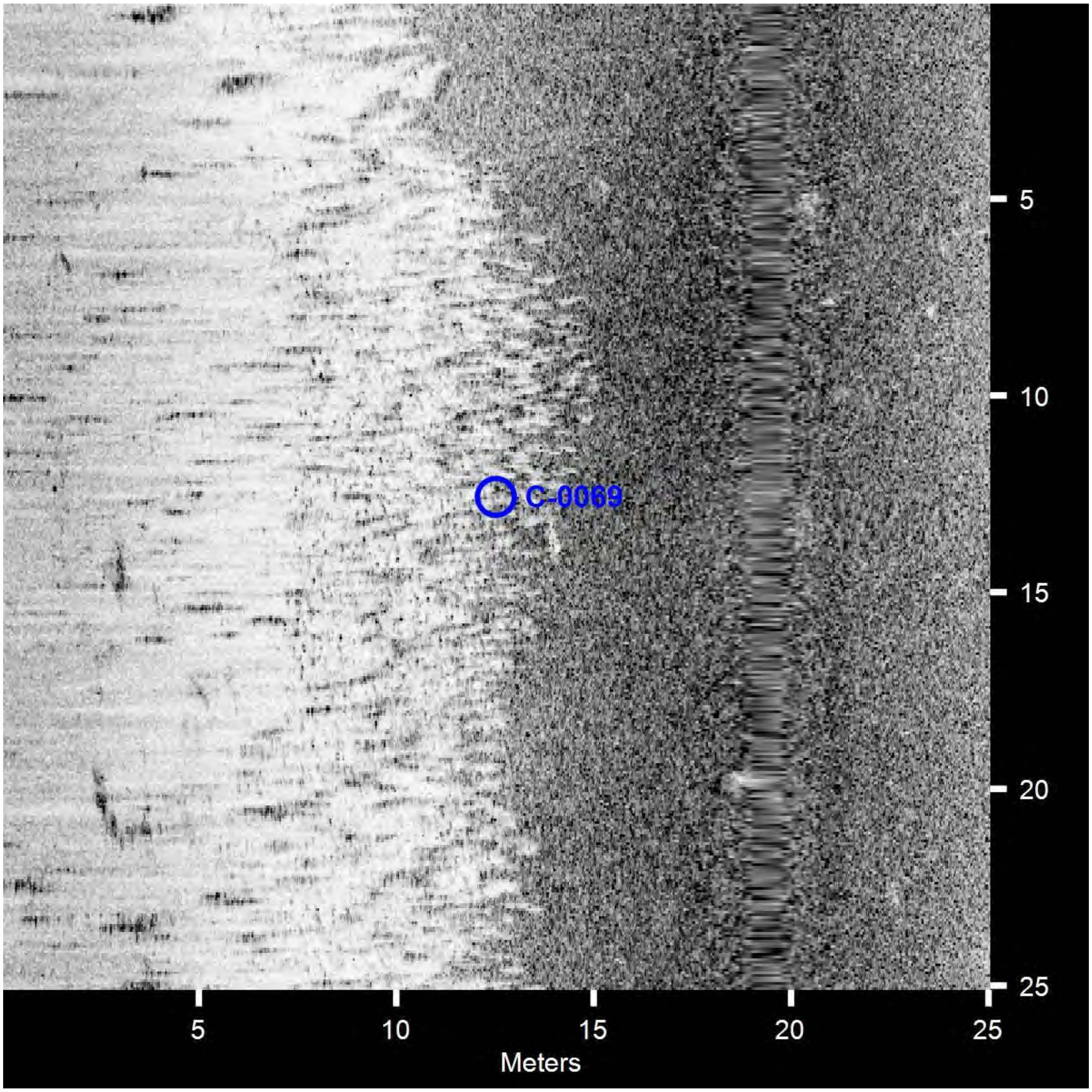


C-0068

- Click Position
  41.4660262569 -70.5791620656 (WGS84)
  (X) 368127.81 (Y) 4591696.03 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 0.5 Meters
- Target Length: 1.4 Meters
- Target Shadow: 4.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

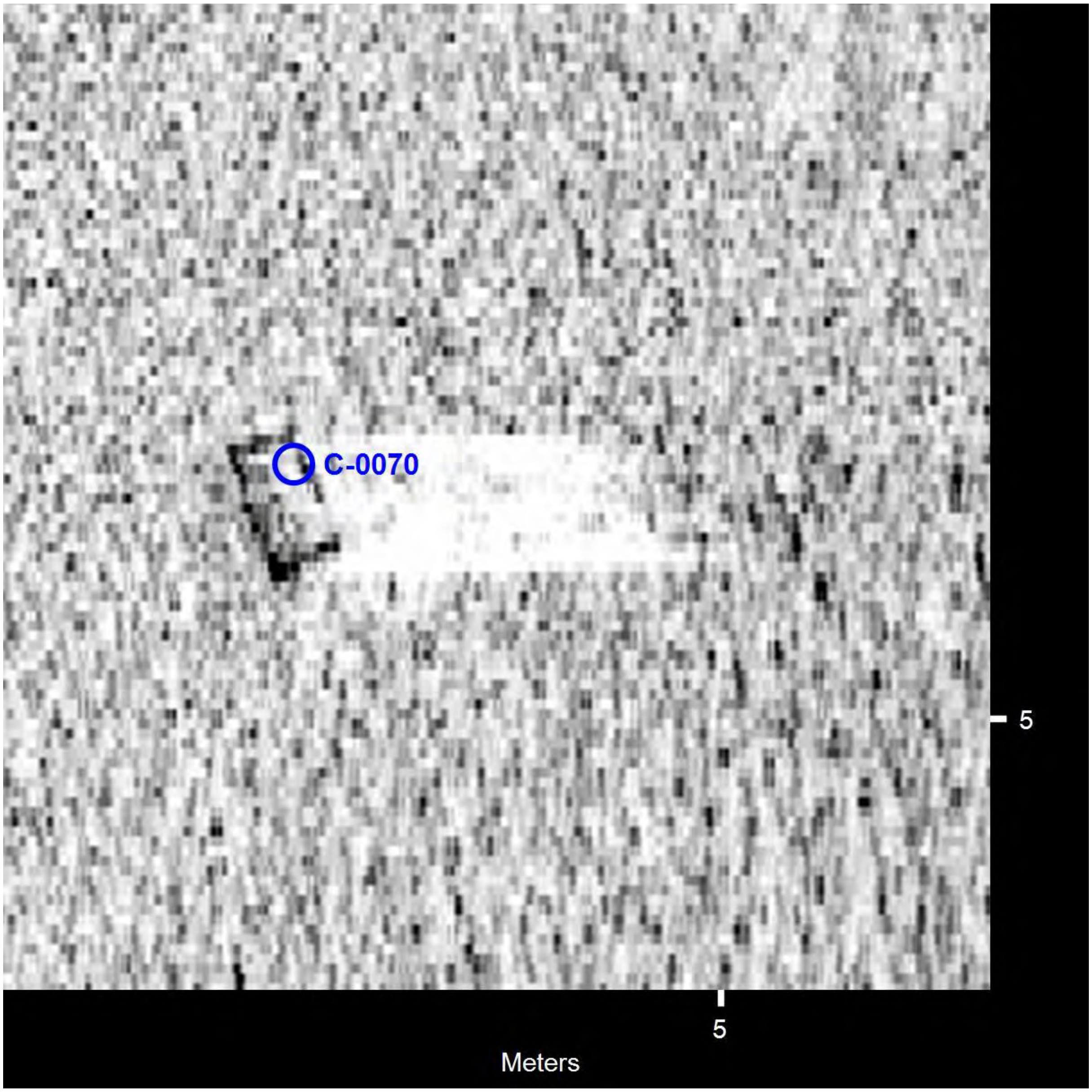


C-0069

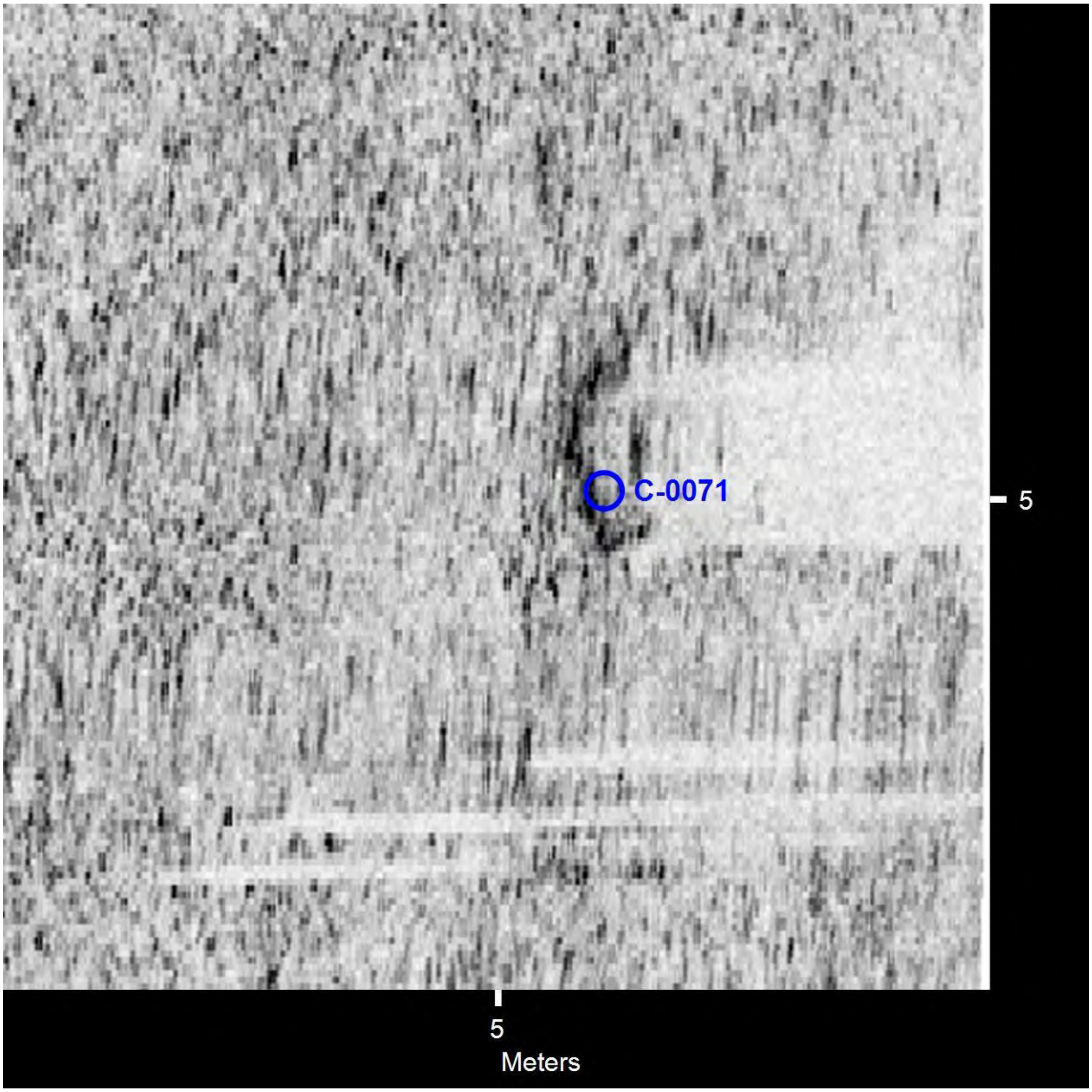
- Click Position
  41.4660129541 -70.5814213950 (WGS84)
  (X) 367939.11 (Y) 4591698.00 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819180311H.xtf

Dimensions and attributes

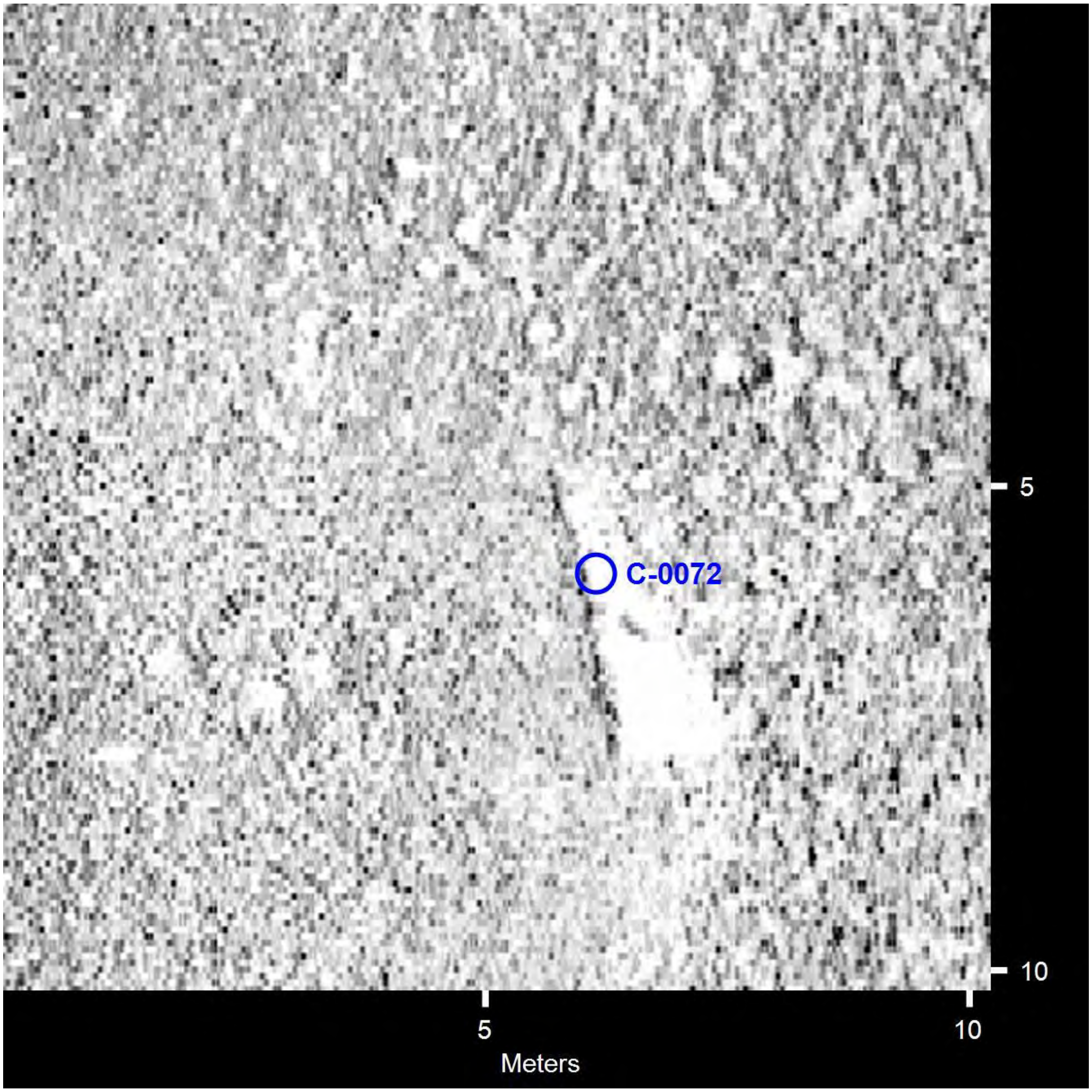
- Target Width: 0.0 Meters
- Target Height: 0.0 Meters
- Target Length: 0.0 Meters
- Target Shadow: 0.0 Meters
- Classification1**: Fish shoal (typical)** Likely False albacore
- Description:



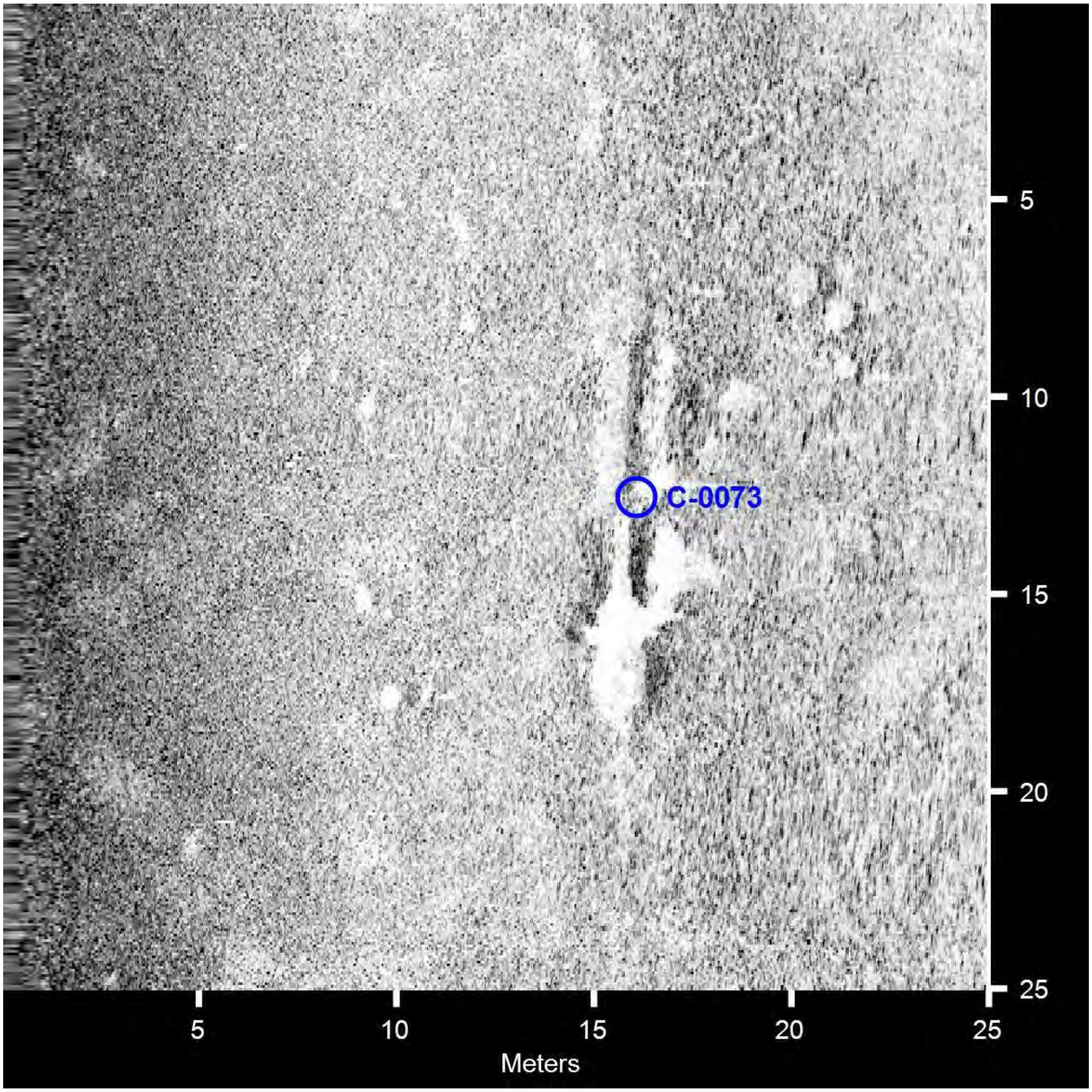
C-0070	Dimensions and attributes
● Click Position 41.4658535738 -70.5795433837 (WGS84) (X) 368095.62 (Y) 4591677.44 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf	● Target Width: 0.6 Meters ● Target Height: 0.3 Meters ● Target Length: 1.0 Meters ● Target Shadow: 2.2 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



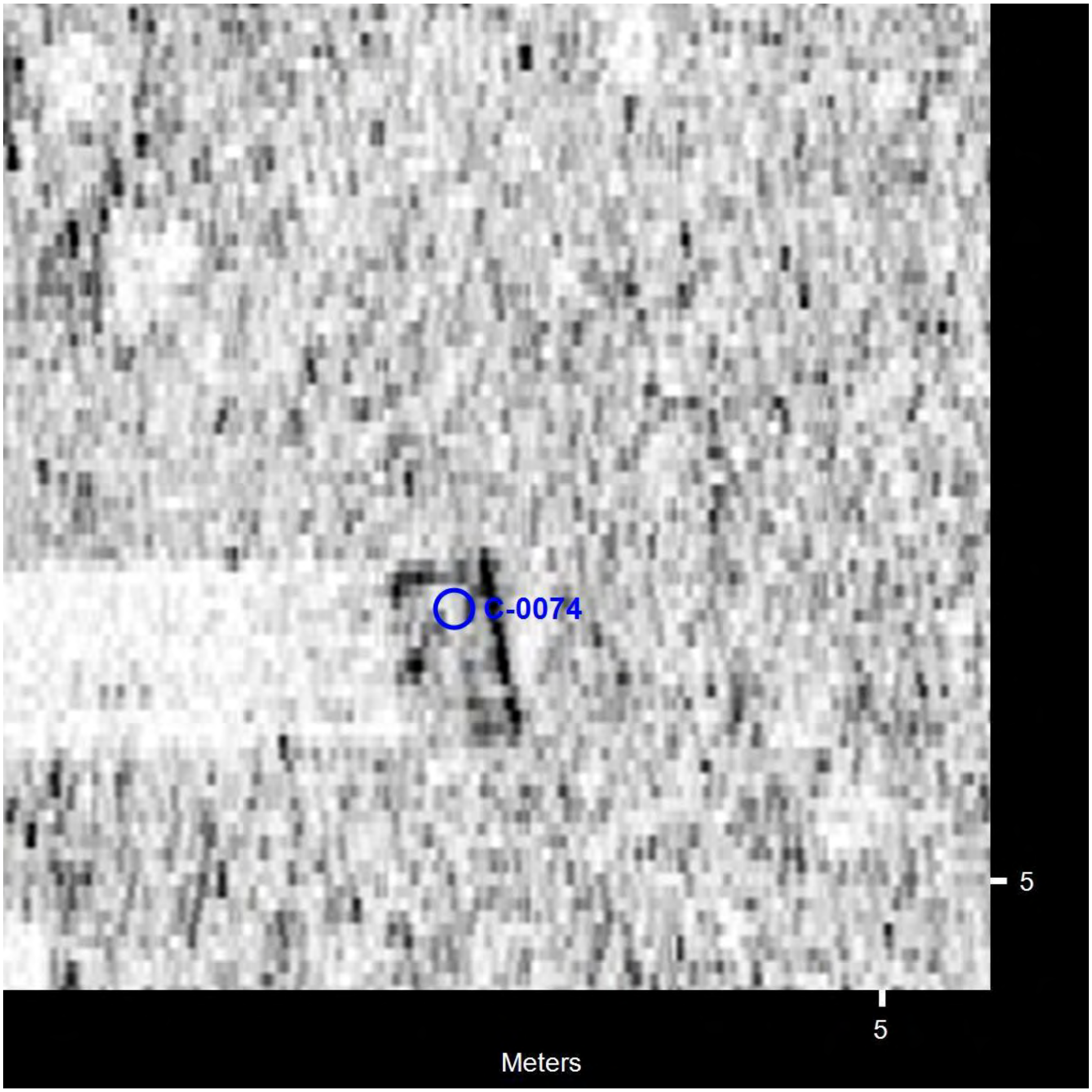
C-0071	Dimensions and attributes
● Click Position 41.4655569425 -70.5811618046 (WGS84) (X) 367959.86 (Y) 4591646.98 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819180311H.xtf	● Target Width: 0.8 Meters ● Target Height: 0.3 Meters ● Target Length: 1.6 Meters ● Target Shadow: 2.9 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



C-0072	Dimensions and attributes
● Click Position 41.4654899177 -70.5796009636 (WGS84) (X) 368090.07 (Y) 4591637.16 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819195304H.xtf	● Target Width: 0.3 Meters ● Target Height: 0.2 Meters ● Target Length: 3.0 Meters ● Target Shadow: 1.2 Meters ● Classification1: **Debris** ● Description:



C-0073	Dimensions and attributes
● Click Position 41.4653001367 -70.5819732187 (WGS84) (X) 367891.58 (Y) 4591619.71 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819163714H.xtf	● Target Width: 1.1 Meters ● Target Height: 0.0 Meters ● Target Length: 9.4 Meters ● Target Shadow: 0.0 Meters ● Classification1**: Trench** ● Description:



C-0074	Dimensions and attributes
● Click Position 41.4650620872 -70.5802790628 (WGS84) (X) 368032.58 (Y) 4591590.69 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819183719H.xtf	● Target Width: 0.5 Meters ● Target Height: 0.3 Meters ● Target Length: 1.3 Meters ● Target Shadow: 2.1 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

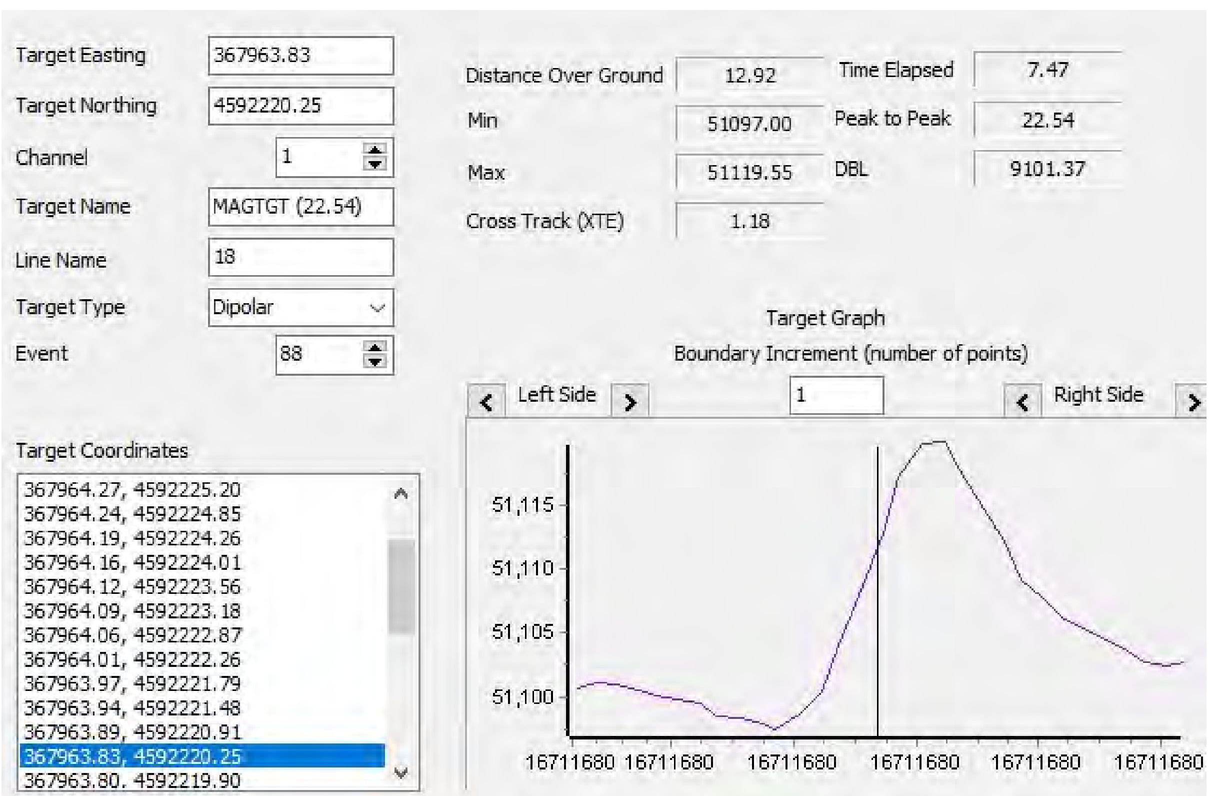
APPENDIX B

Digitized Magnetic Anomalies

APPENDIX B

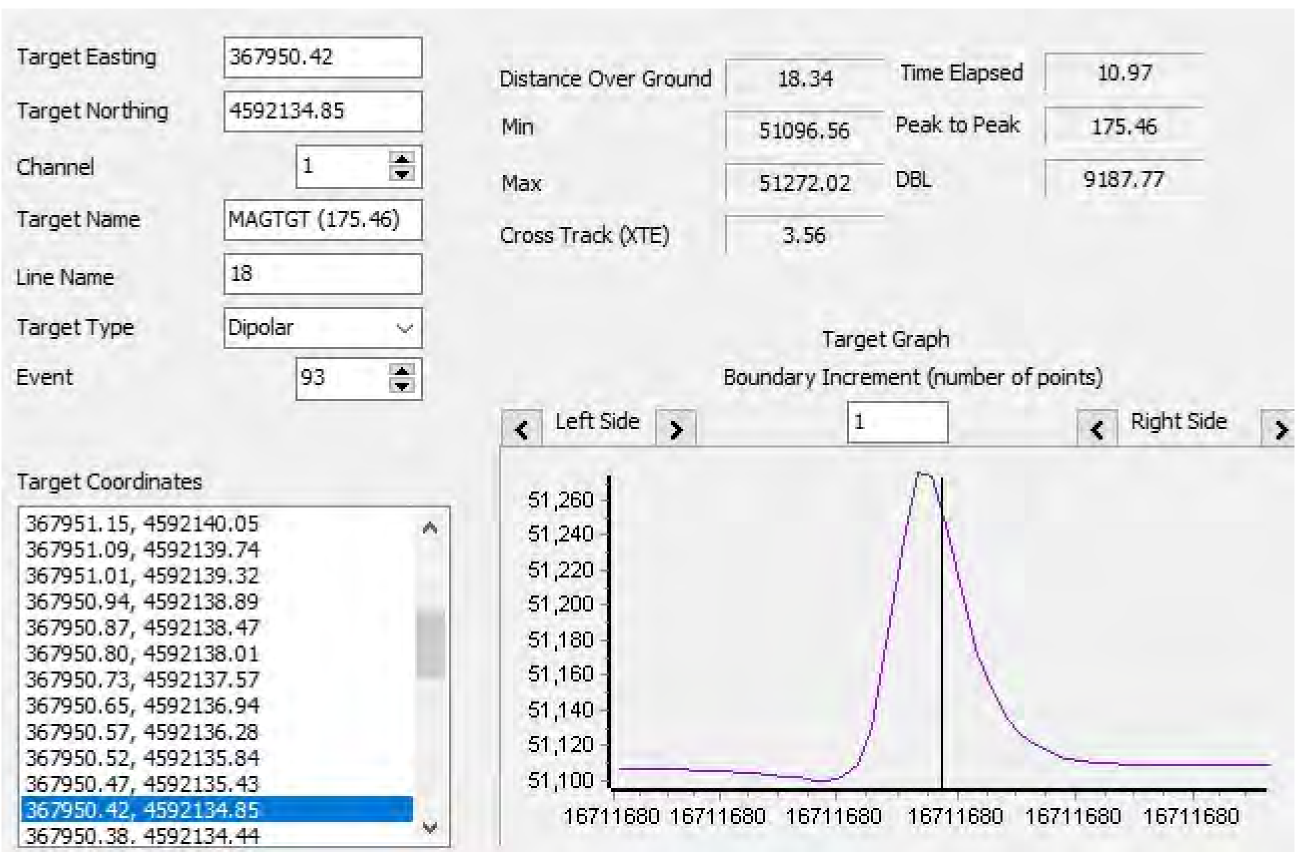
Digitized Magnetic Anomalies
Eversource 5th Cable Survey Corridor
Vineyard Sound, MA

Name	Date	10/05/2021
MAGTGT (22.54)	Time	10:54:08
Survey File	Event	88
18	X	367963.0
Capture File	Y	4592220.0
367963.83.4592220.25.22.54.51112.31.1.jpg	WGS84 Latitude	41 28 14.5811 N
	WGS84 Longitude	070 34 52.4986 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0



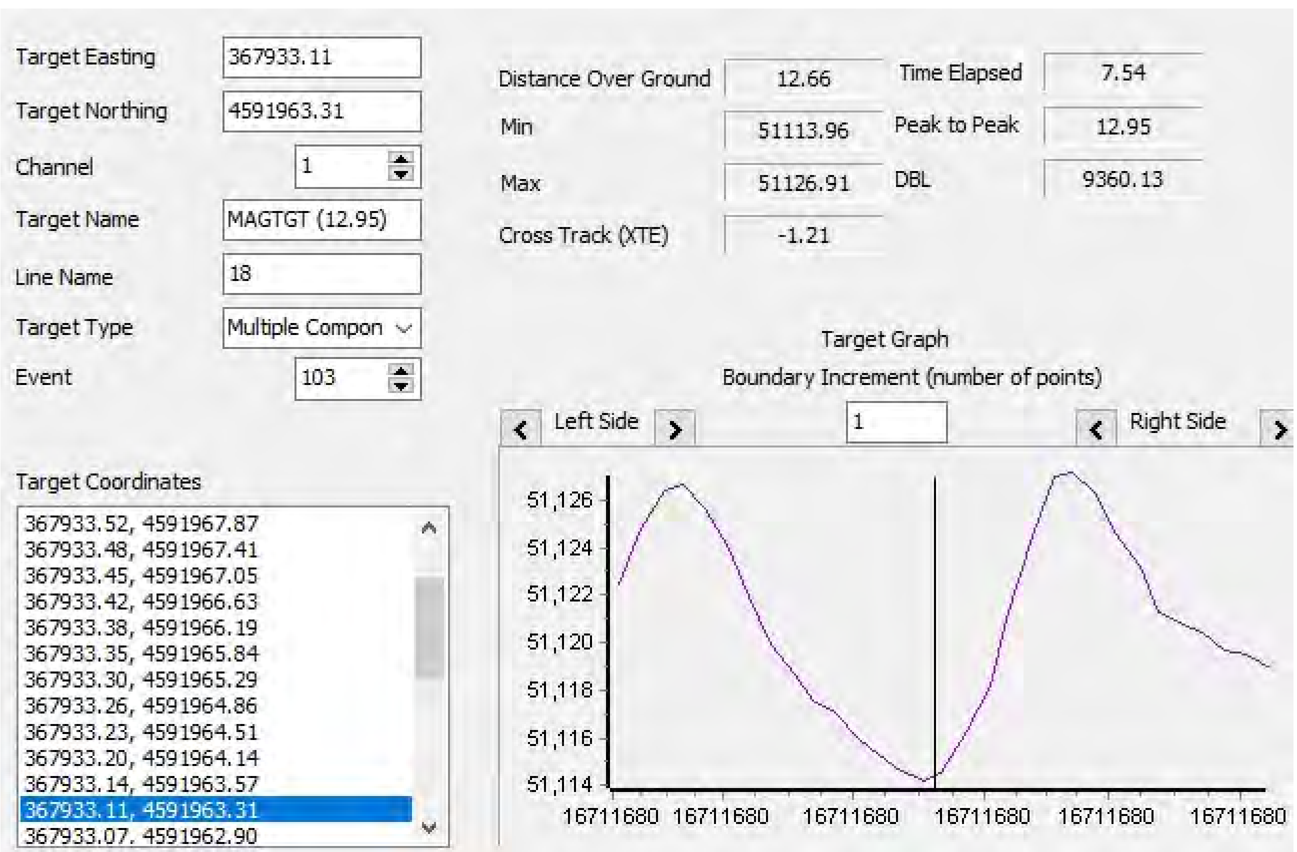
Name	Date	10/05/2021
MAGTGT (175.46)	Time	10:54:25
Survey File	Event	93
18	X	367950.0
Capture File	Y	4592134.0
367950.42.4592134.85.175.46 .51237.78.1.jpg	WGS84 Latitude	41 28 11.7857 N
	WGS84 Longitude	070 34 53 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



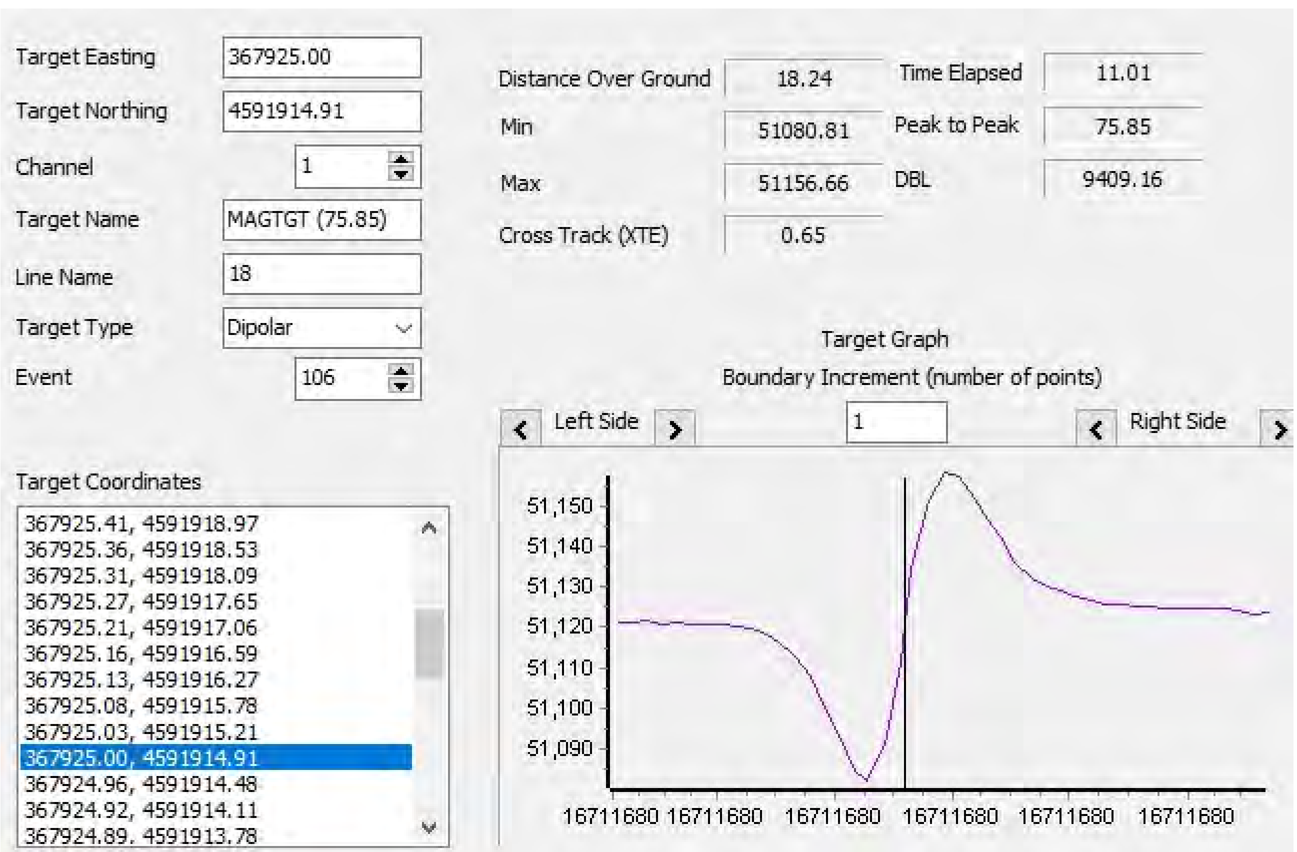
Name	Date	10/05/2021
MAGTGT (12.95)	Time	10:54:39
Survey File	Event	103
18	X	367933.0
Capture File	Y	4591963.0
367933.11.4591963.31.12.95.51114.29.1.jpg	WGS84 Latitude	41 28 6.2328 N
	WGS84 Longitude	070 34 53.589 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



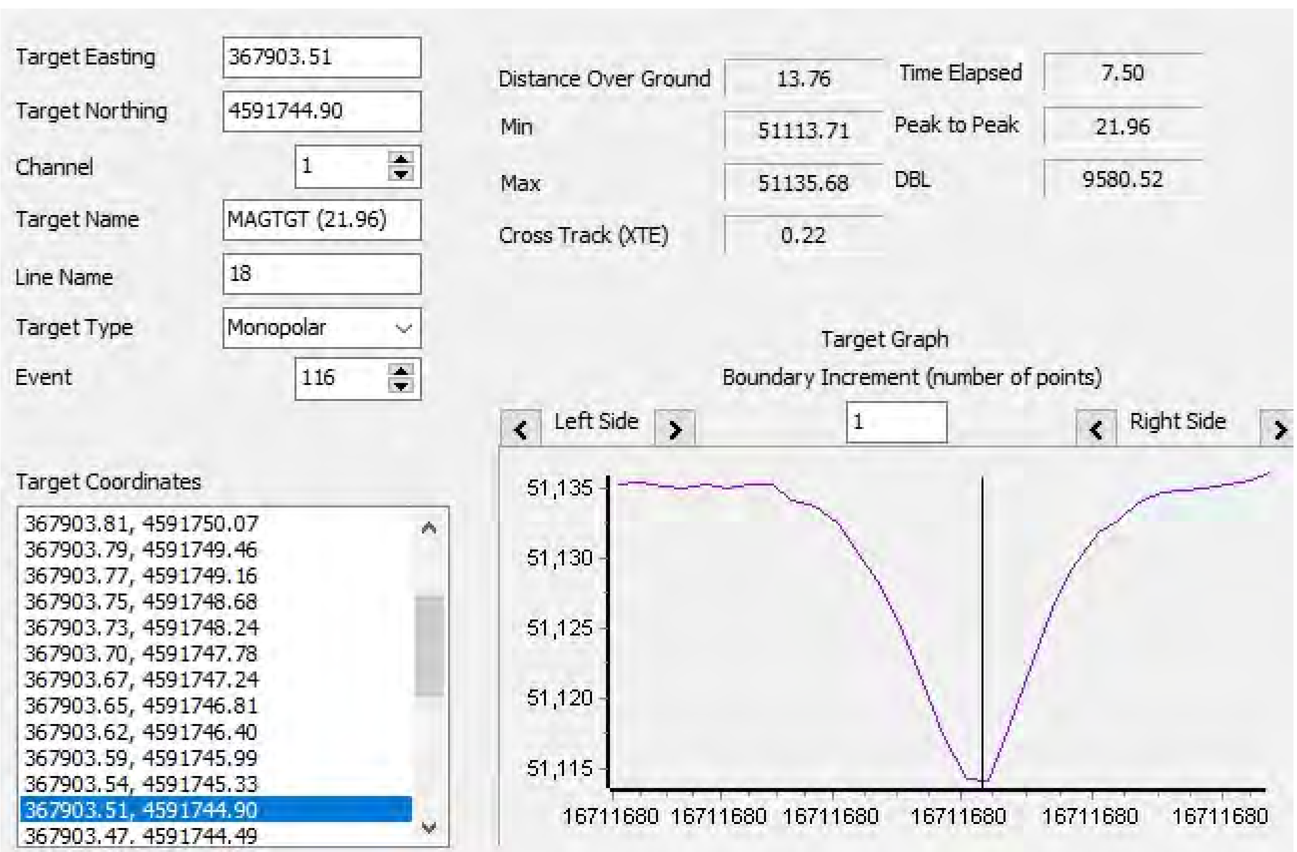
Name	Date	10/05/2021
MAGTGT (75.85)	Time	10:55:02
Survey File	Event	106
18	X	367924.0
Capture File	Y	4591914.0
367925.00.4591914.91.75.85.51156.66.1.jpg	WGS84 Latitude	41 28 4.6391 N
	WGS84 Longitude	070 34 53.9383 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



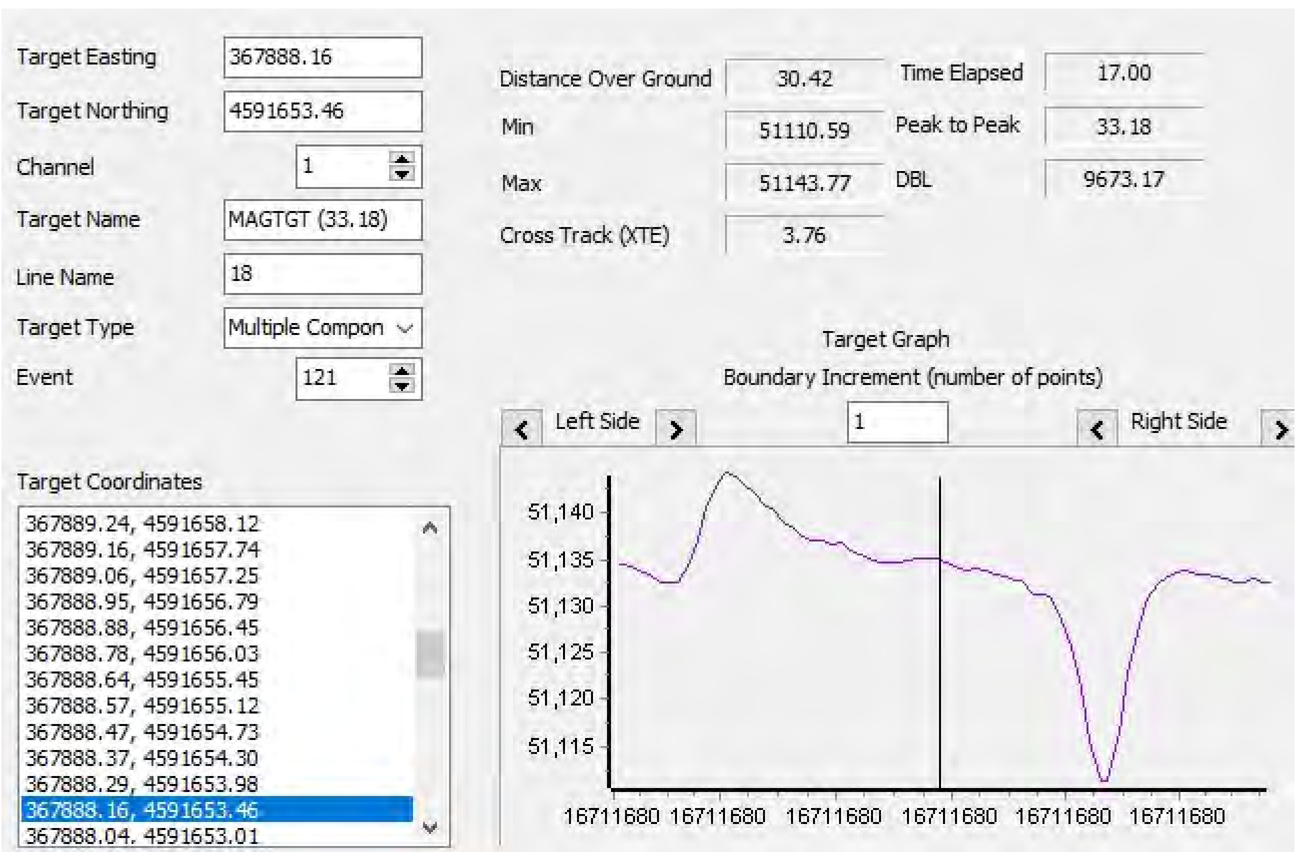
Name	Date	10/05/2021
MAGTGT (21.96)	Time	10:55:19
Survey File	Event	116
18	X	367903.0
Capture File	Y	4591744.0
367903.51.4591744.90.21.96.51116.96.1.jpg	WGS84 Latitude	41 27 59.1162 N
	WGS84 Longitude	070 34 54.7093 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



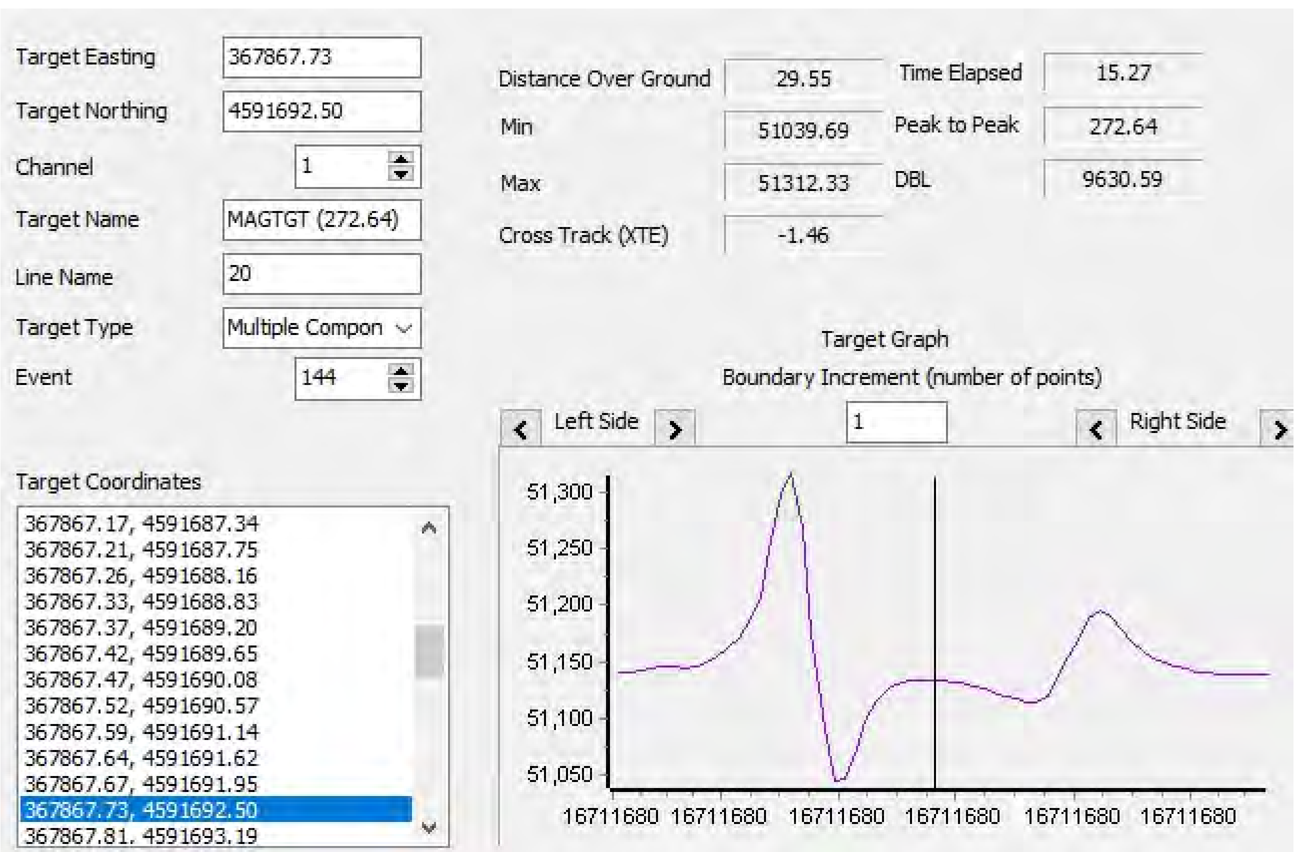
Name	Date	10/05/2021
MAGTGT (33.18)	Time	10:55:36
Survey File	Event	121
18	X	367888.0
Capture File	Y	4591653.0
367888.16.4591653.46.33.18.51134.11.1.jpg	WGS84 Latitude	41 27 56.1576 N
	WGS84 Longitude	070 34 55.284 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



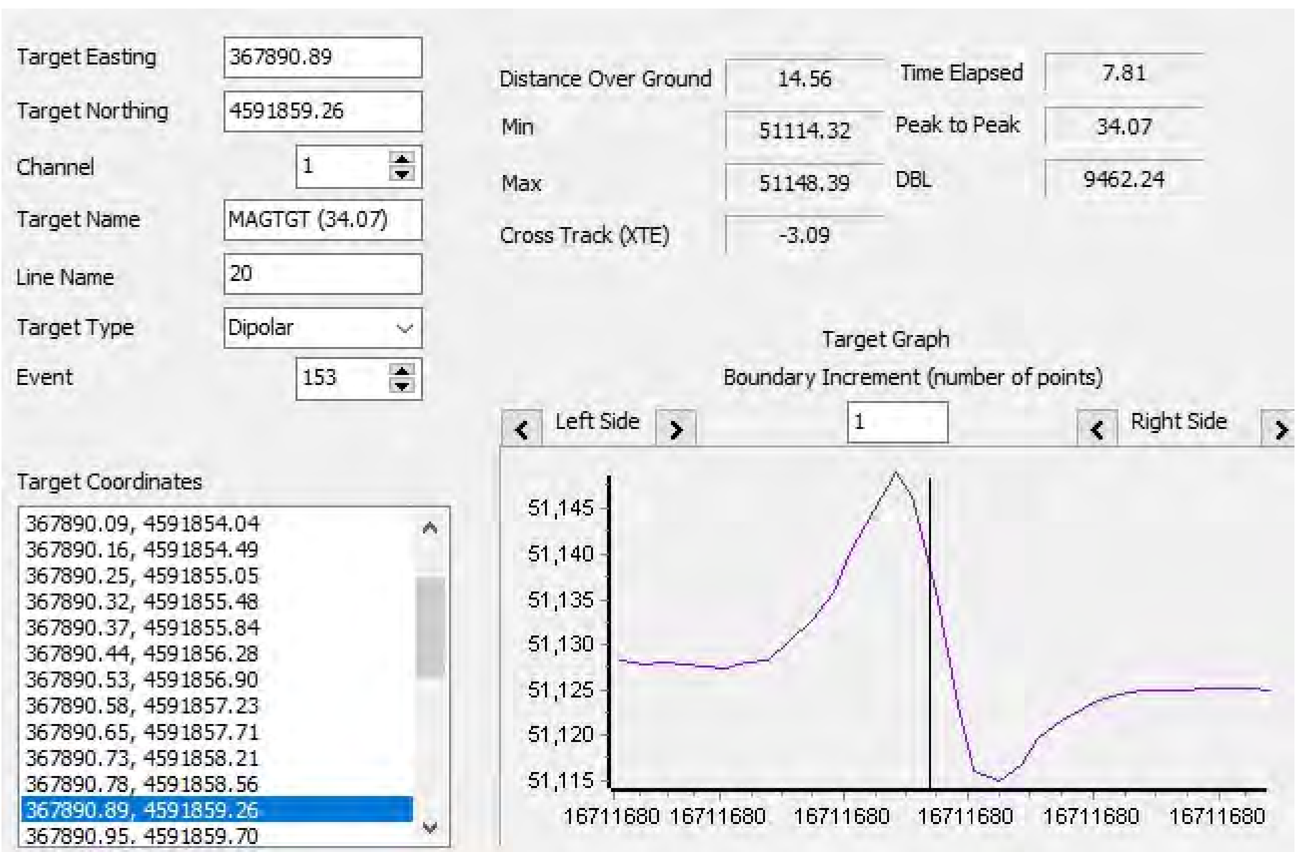
Name	Date	10/05/2021
MAGTGT (272.64)	Time	10:55:55
Survey File	Event	144
20	X	367867.0
Capture File	Y	4591692.0
367867.73.4591692.50.272.64.51127.52.2.jpg	WGS84 Latitude	41 27 57.4093 N
	WGS84 Longitude	070 34 56.2197 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



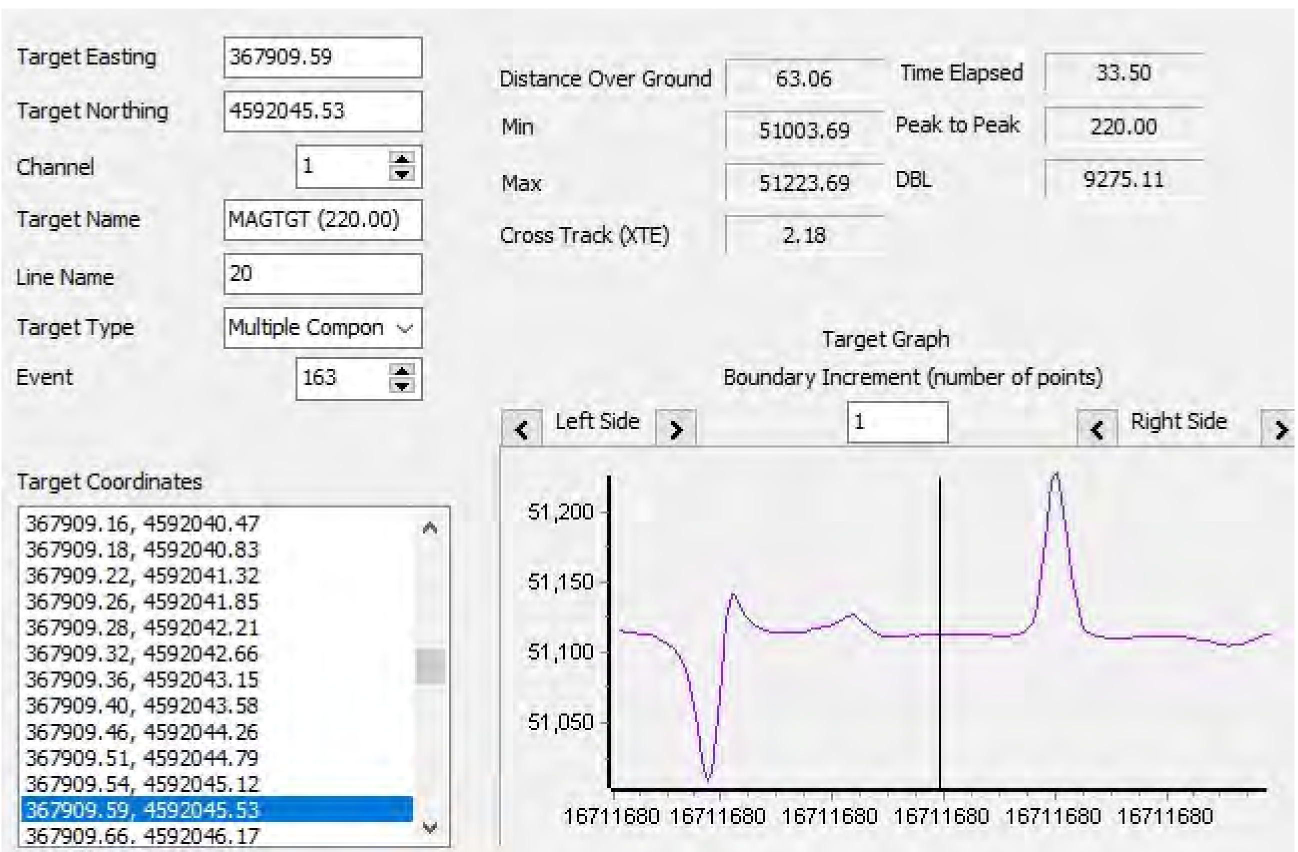
Name	Date	10/05/2021
MAGTGT (34.07)	Time	10:56:35
Survey File	Event	153
20	X	367890.0
Capture File	Y	4591859.0
367890.89.4591859.26.34.07. 51135.30.2.jpg	WGS84 Latitude	41 28 2.8362 N
	WGS84 Longitude	070 34 55.3602 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



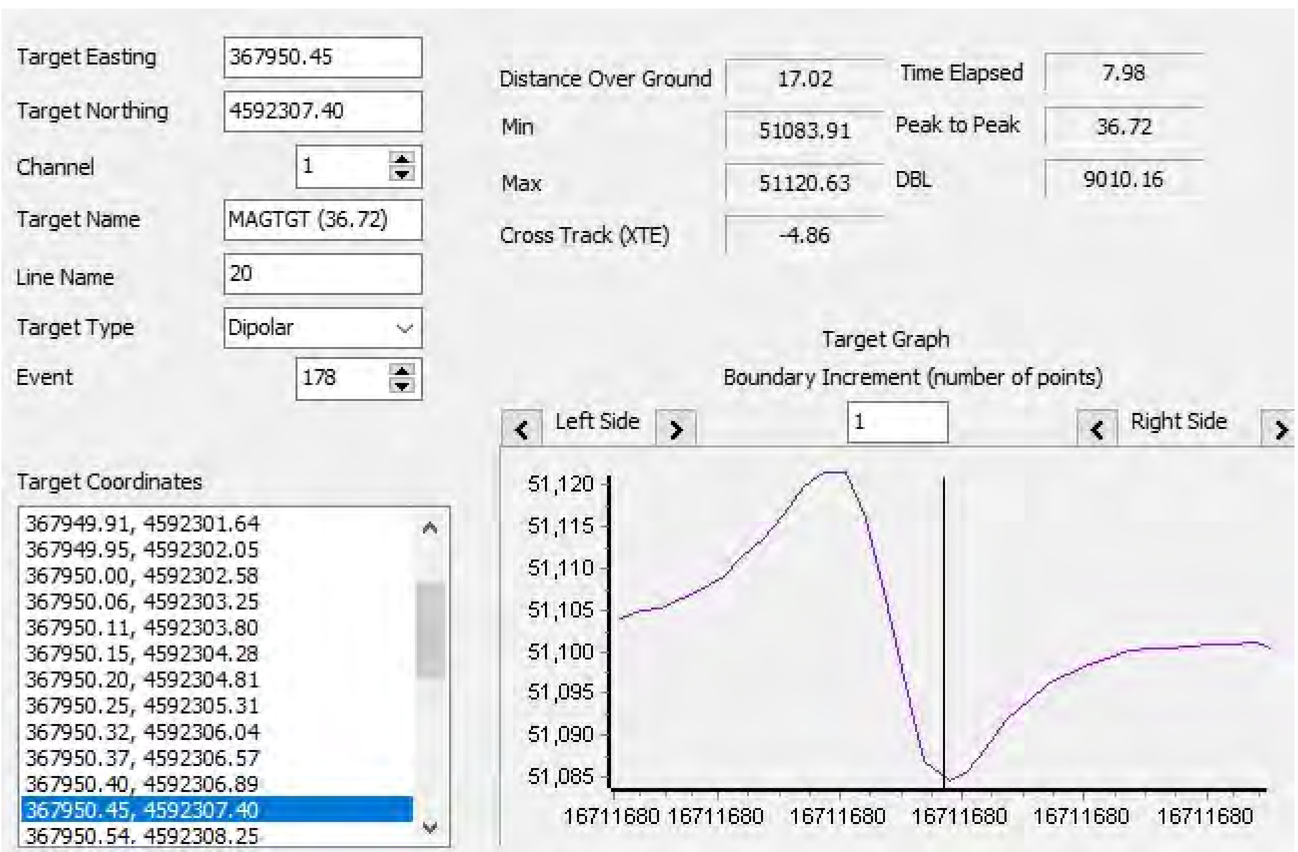
Name	Date	10/05/2021
MAGTGT (220.00)	Time	10:56:50
Survey File	Event	163
20	X	367909.0
Capture File	Y	4592045.0
367909.59.4592045.53.220.00 .51108.08.2.jpg	WGS84 Latitude	41 28 8.8765 N
	WGS84 Longitude	070 34 54.6879 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



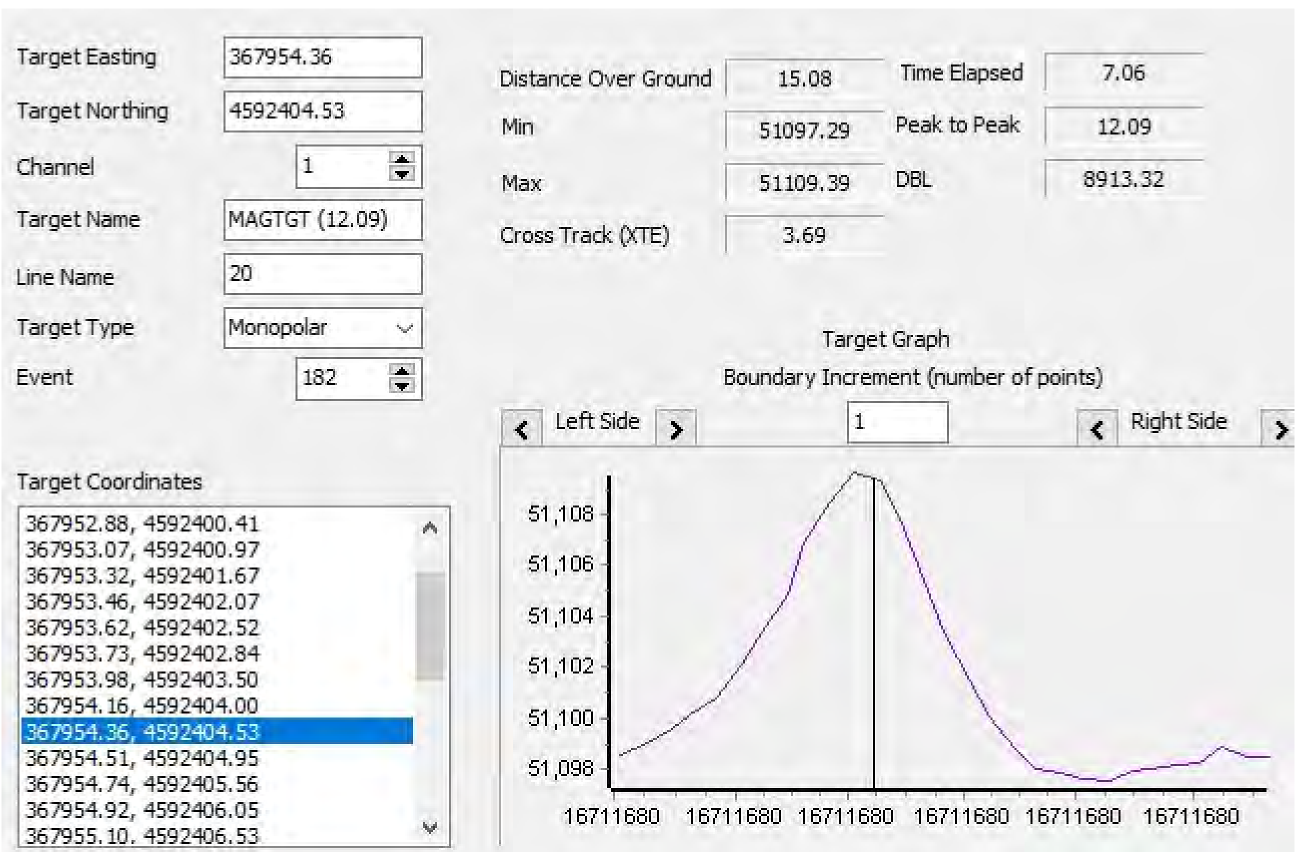
Name	Date	10/05/2021
MAGTGT (36.72)	Time	10:57:07
Survey File	Event	178
20	X	367950.0
Capture File	Y	4592307.0
367950.45.4592307.40.36.72. 51083.91.2.jpg	WGS84 Latitude	41 28 17.3935 N
	WGS84 Longitude	070 34 53.1274 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (12.09)	Time	10:57:29
Survey File	Event	182
20	X	367954.0
Capture File	Y	4592404.0
367954.36.4592404.53.12.09.51103.14.2.jpg	WGS84 Latitude	41 28 20.5401 N
	WGS84 Longitude	070 34 53.0315 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

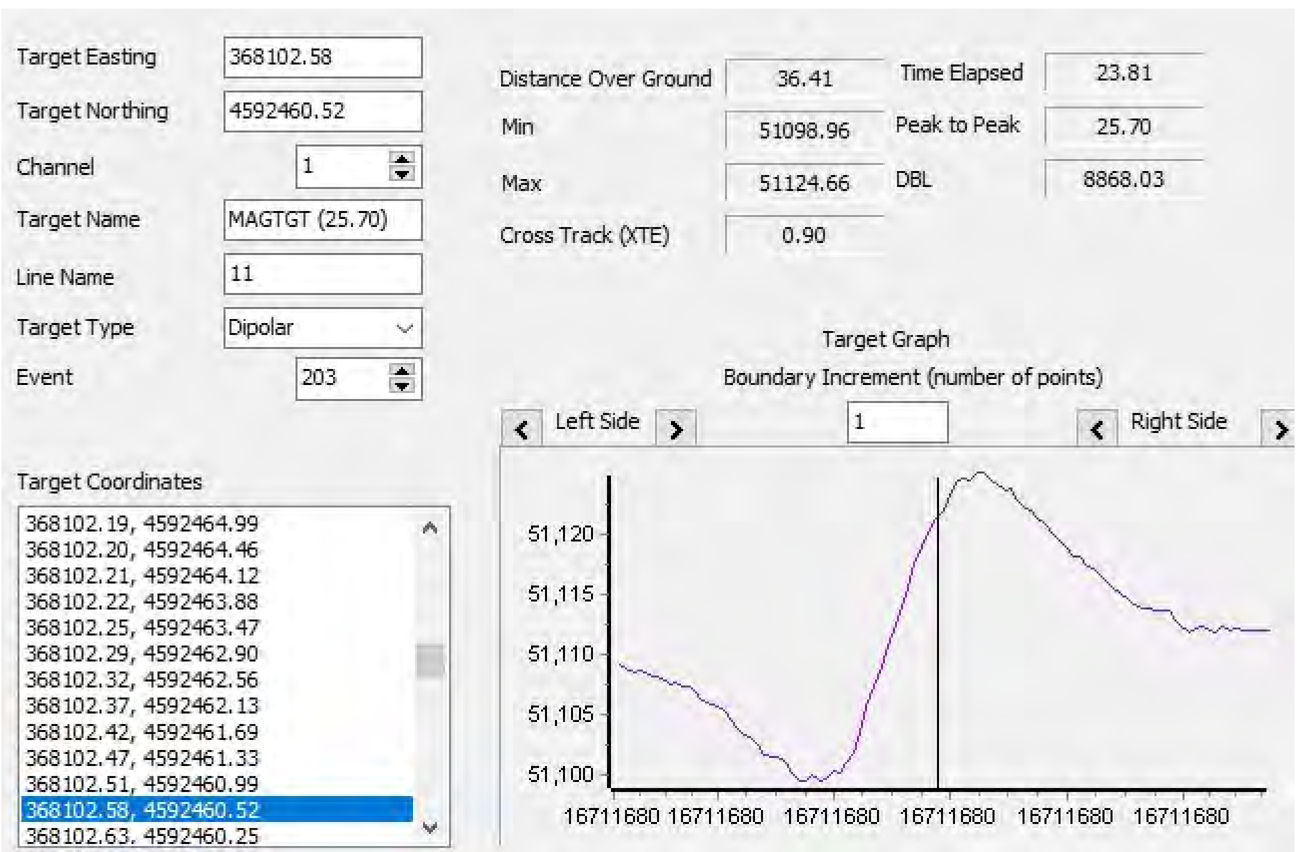


Name	Date	10/05/2021
MAGTGT (25.70)	Time	10:59:59
Survey File	Event	203
11	X	368102.0
Capture File	Y	4592460.0
	WGS84 Latitude	41 28 22.4429 N
	WGS84 Longitude	070 34 46.697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

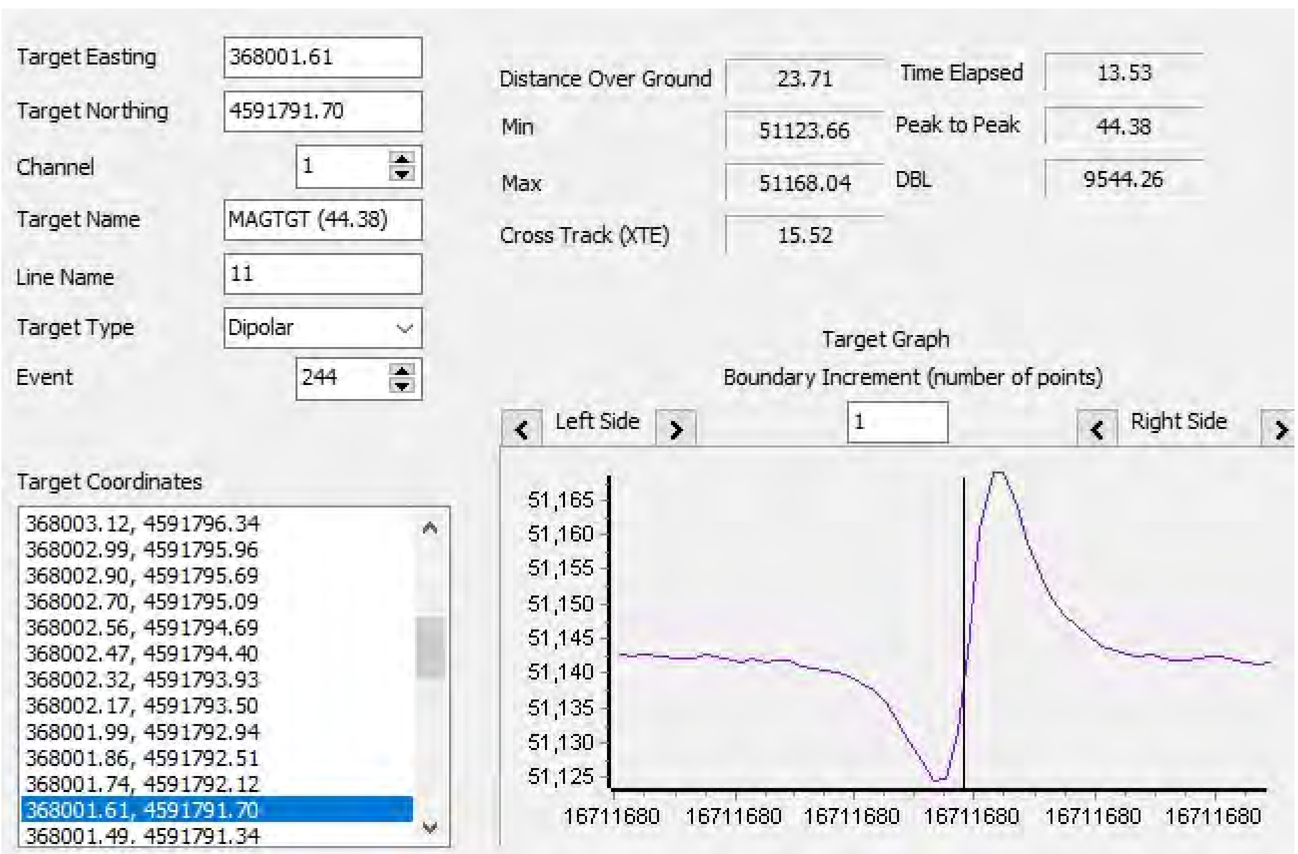
Name	Date	10/05/2021
MAGTGT (25.70)	Time	11:00:04
Survey File	Event	203
11	X	368102.0
Capture File	Y	4592460.0
368102.58.4592460.52.25.70.51121.48.0.jpg	WGS84 Latitude	41 28 22.4429 N
	WGS84 Longitude	070 34 46.697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



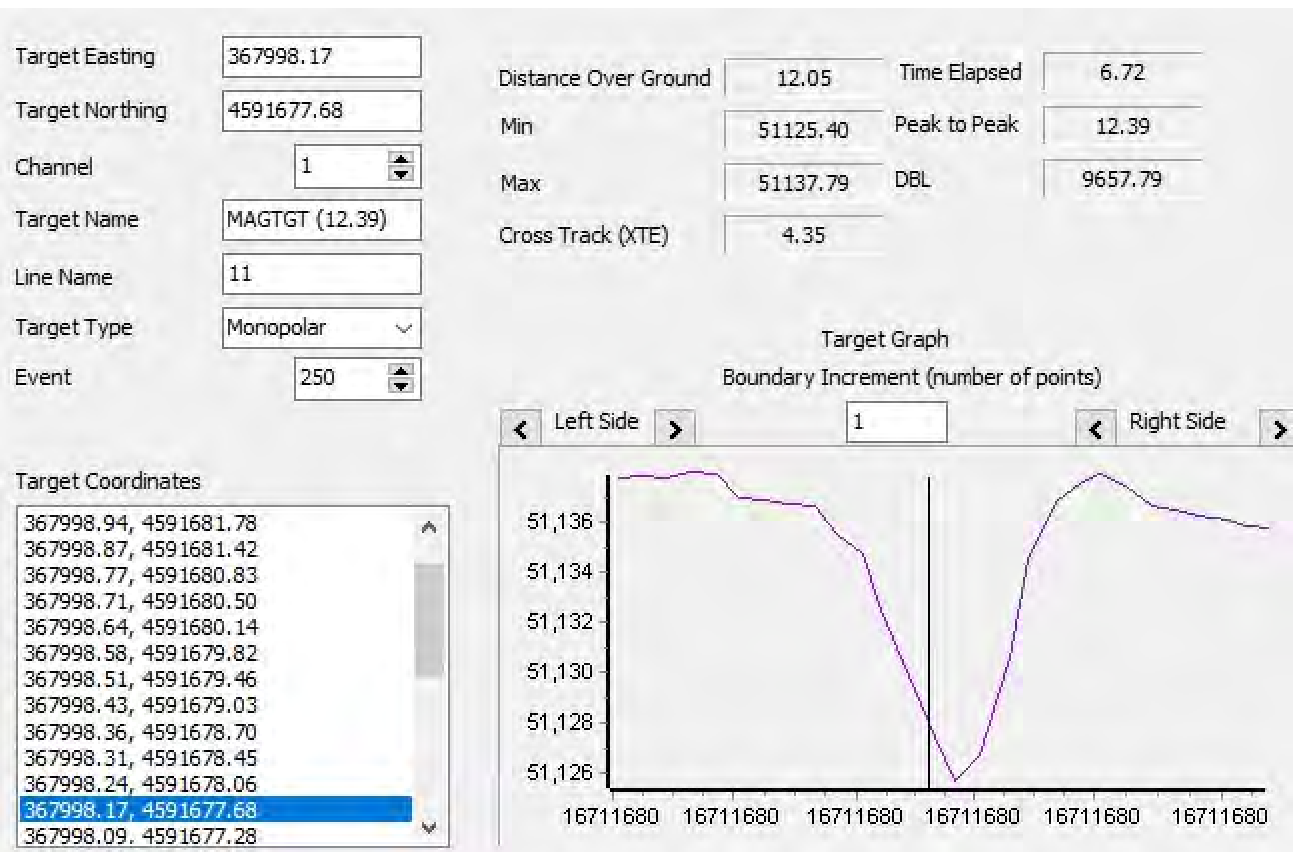
Name	Date	10/05/2021
MAGTGT (44.38)	Time	11:00:44
Survey File	Event	244
11	X	368001.0
Capture File	Y	4591791.0
368001.61.4591791.70.44.38. 51144.57.0.jpg	WGS84 Latitude	41 28 0.6977 N
	WGS84 Longitude	070 34 50.5231 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



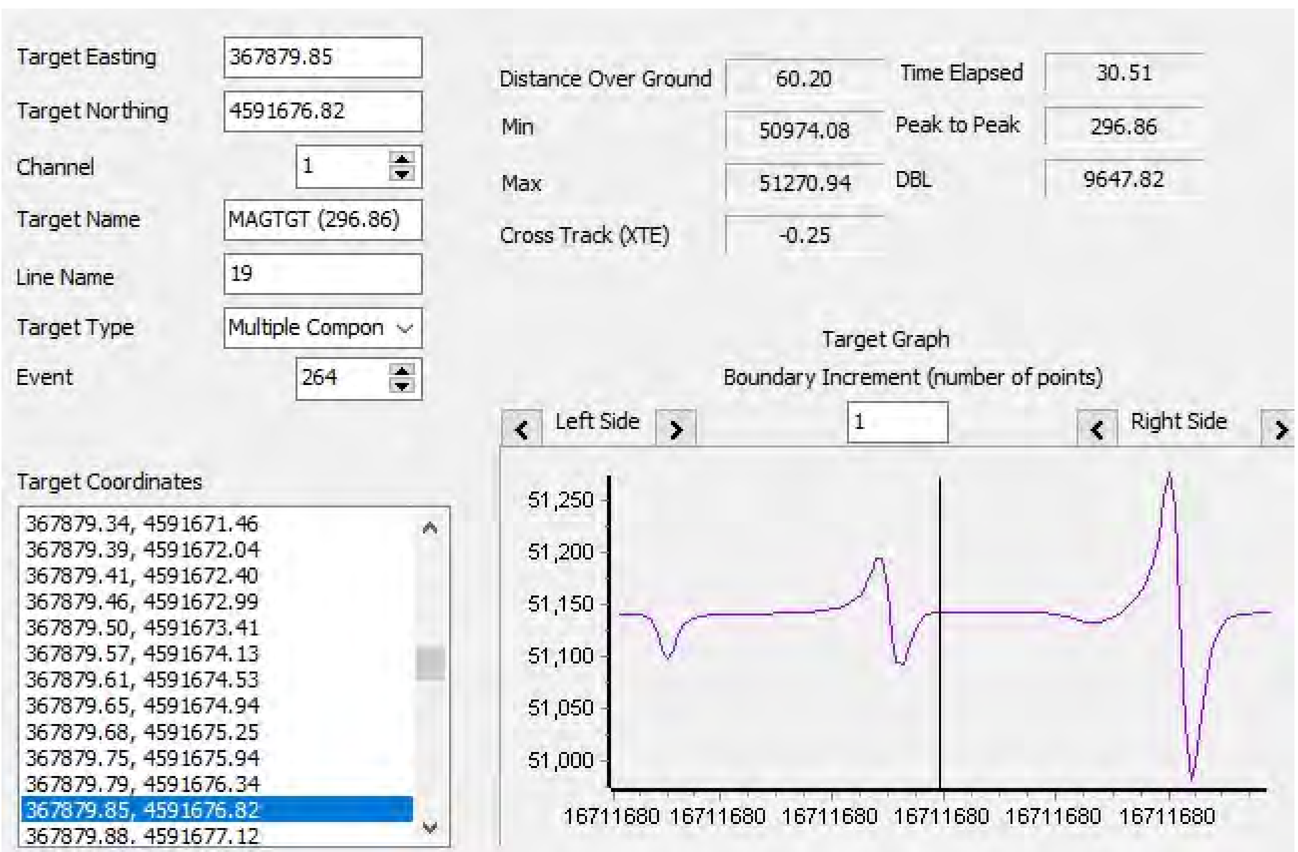
Name	Date	10/05/2021
MAGTGT (12.39)	Time	11:01:08
Survey File	Event	250
11	X	367998.0
Capture File	Y	4591677.0
367998.17.4591677.68.12.39.51127.19.0.jpg	WGS84 Latitude	41 27 57 N
	WGS84 Longitude	070 34 50.5626 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



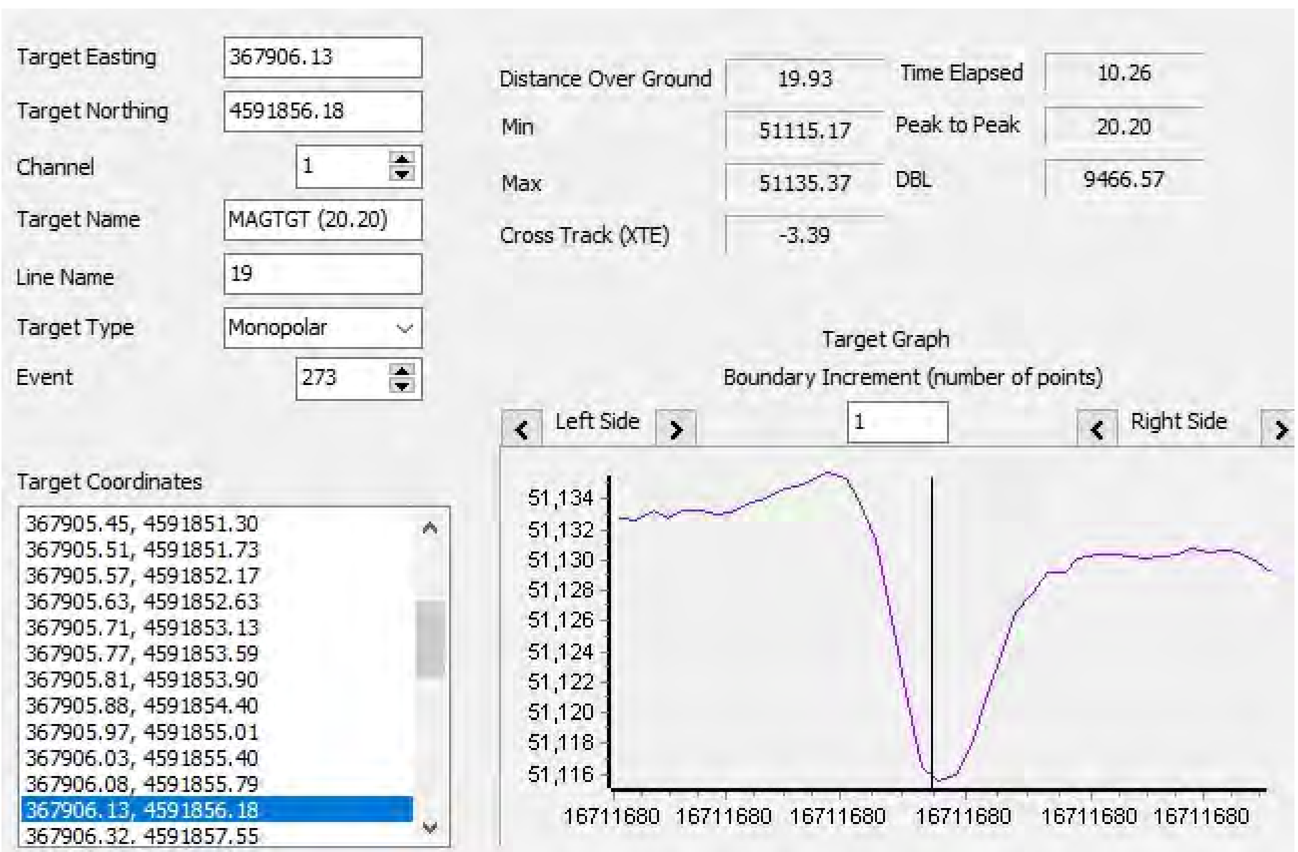
Name	Date	10/05/2021
MAGTGT (296.86)	Time	11:01:32
Survey File	Event	264
19	X	367879.0
Capture File	Y	4591676.0
367879.85.4591676.82.296.86 .51135.55.1.jpg	WGS84 Latitude	41 27 56.8978 N
	WGS84 Longitude	070 34 55.69 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



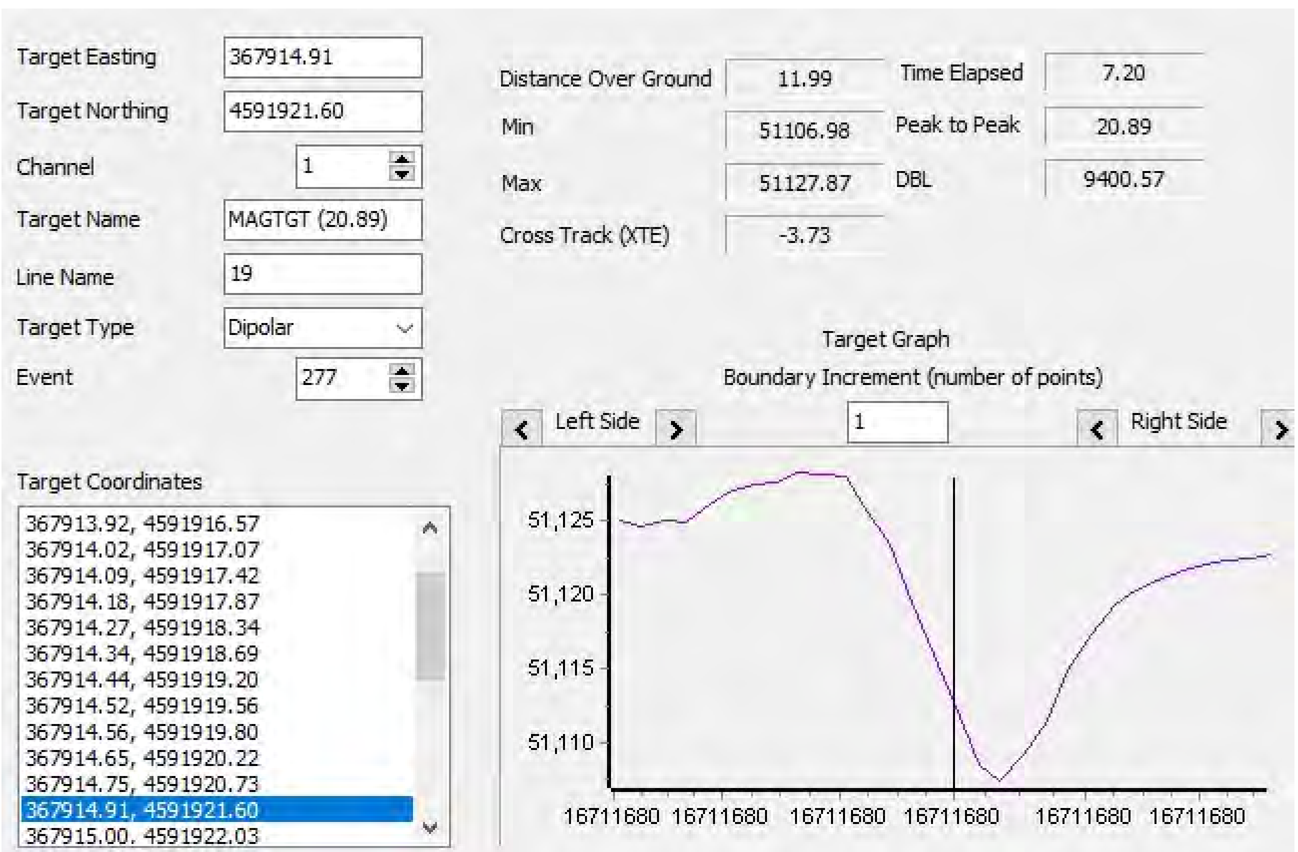
Name	Date	10/05/2021
MAGTGT (20.20)	Time	11:01:57
Survey File	Event	273
19	X	367906.0
Capture File	Y	4591856.0
367906.13.4591856.18.20.20.51115.17.1.jpg	WGS84 Latitude	41 28 2.7484 N
	WGS84 Longitude	070 34 54.6683 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



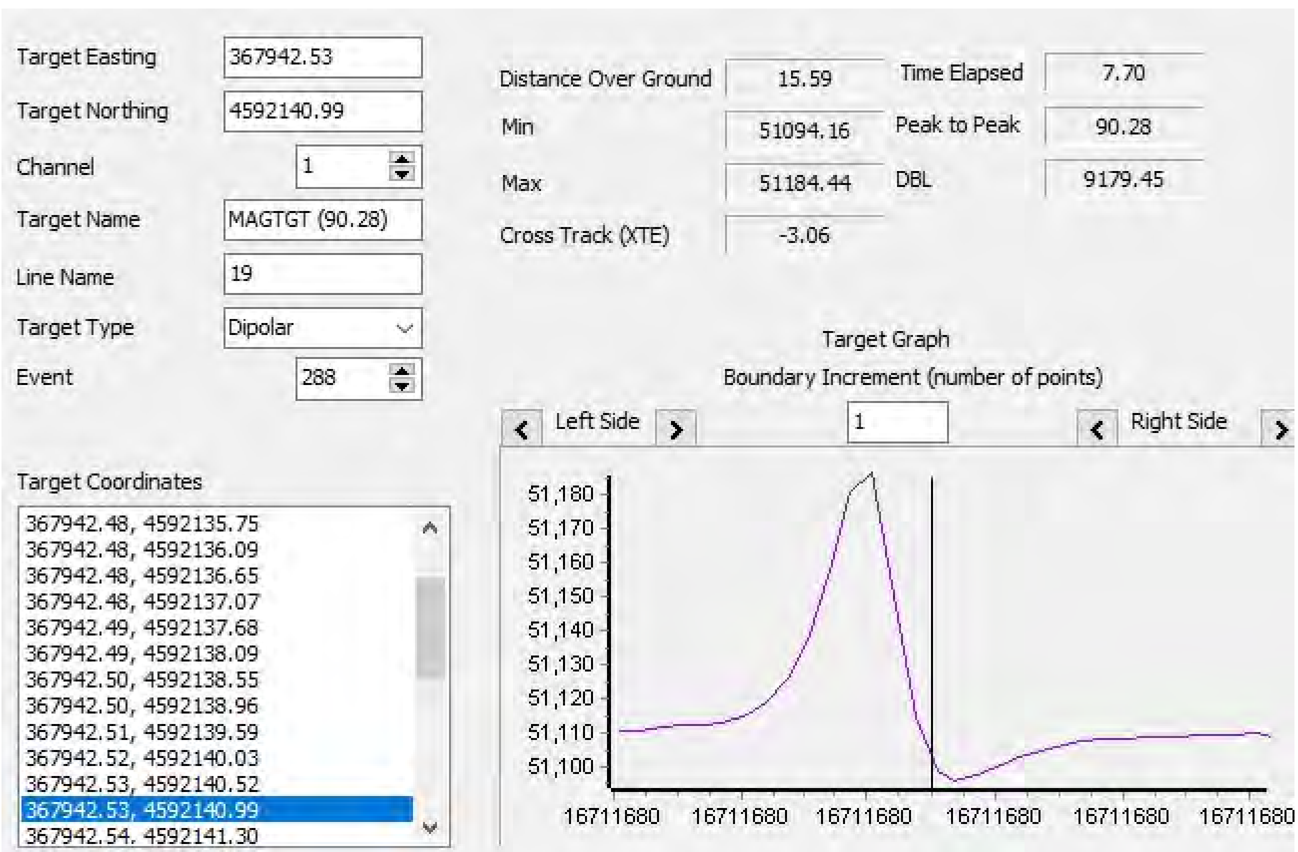
Name	Date	10/05/2021
MAGTGT (20.89)	Time	11:02:11
Survey File	Event	277
19	X	367914.0
Capture File	Y	4591921.0
367914.91.4591921.60.20.89. 51111.26.1.jpg	WGS84 Latitude	41 28 4.8601 N
	WGS84 Longitude	070 34 54.3747 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



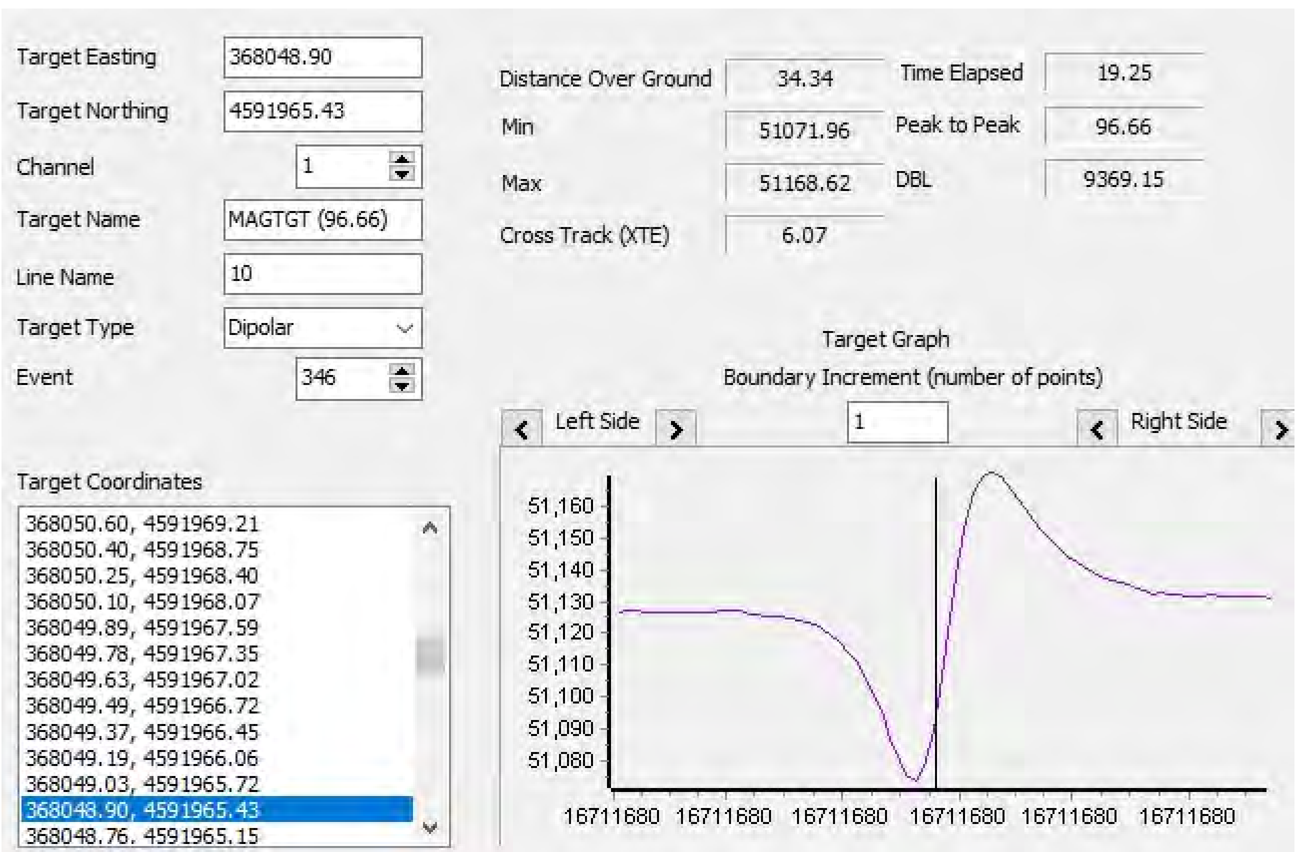
Name	Date	10/05/2021
MAGTGT (90.28)	Time	11:02:27
Survey File	Event	288
19	X	367942.0
Capture File	Y	4592140.0
367942.53.4592140.99.90.28.51096.88.1.jpg	WGS84 Latitude	41 28 11.9755 N
	WGS84 Longitude	070 34 53.3406 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



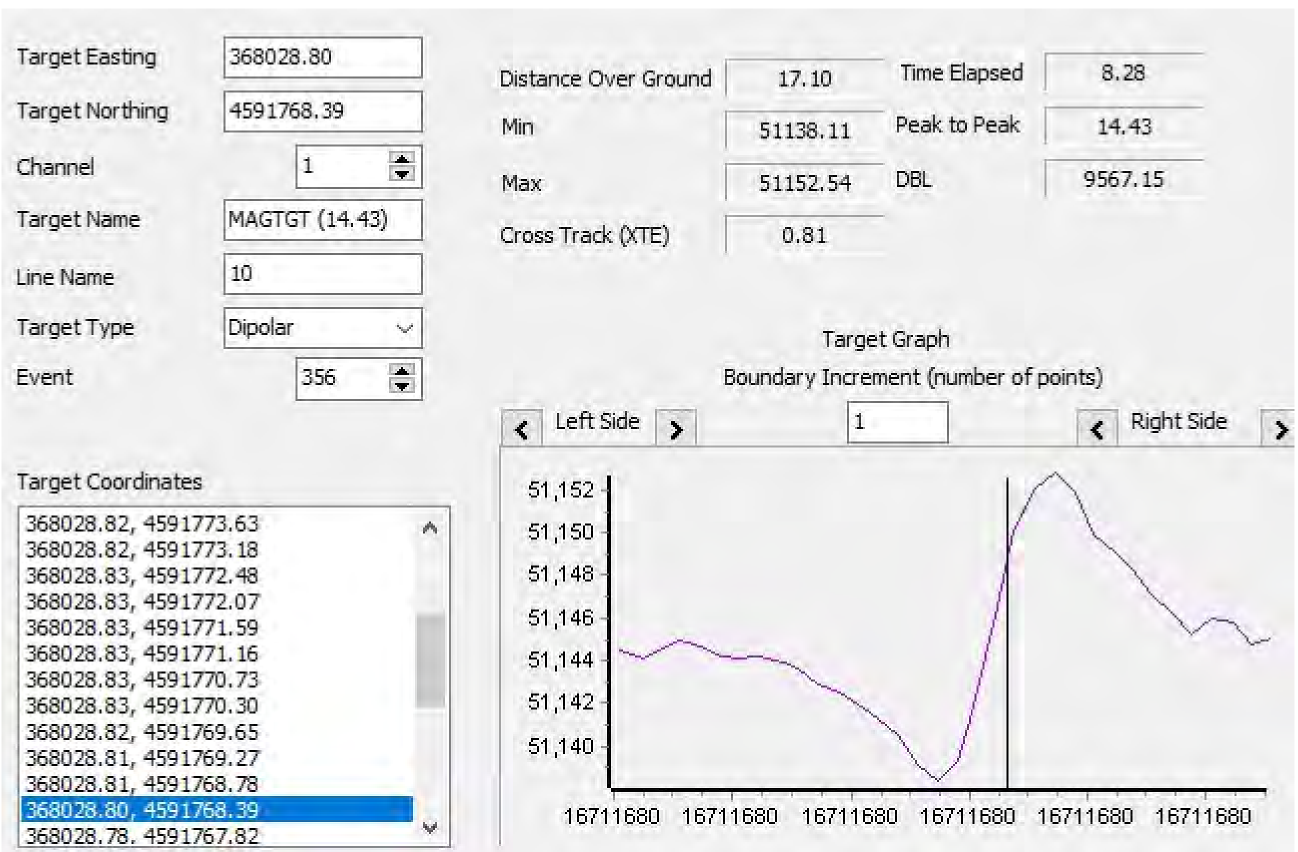
Name	Date	10/05/2021
MAGTGT (96.66)	Time	11:02:50
Survey File	Event	346
10	X	368048.0
Capture File	Y	4591965.0
368048.90.4591965.43.96.66.51104.48.2.jpg	WGS84 Latitude	41 28 6.3657 N
	WGS84 Longitude	070 34 48.6346 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



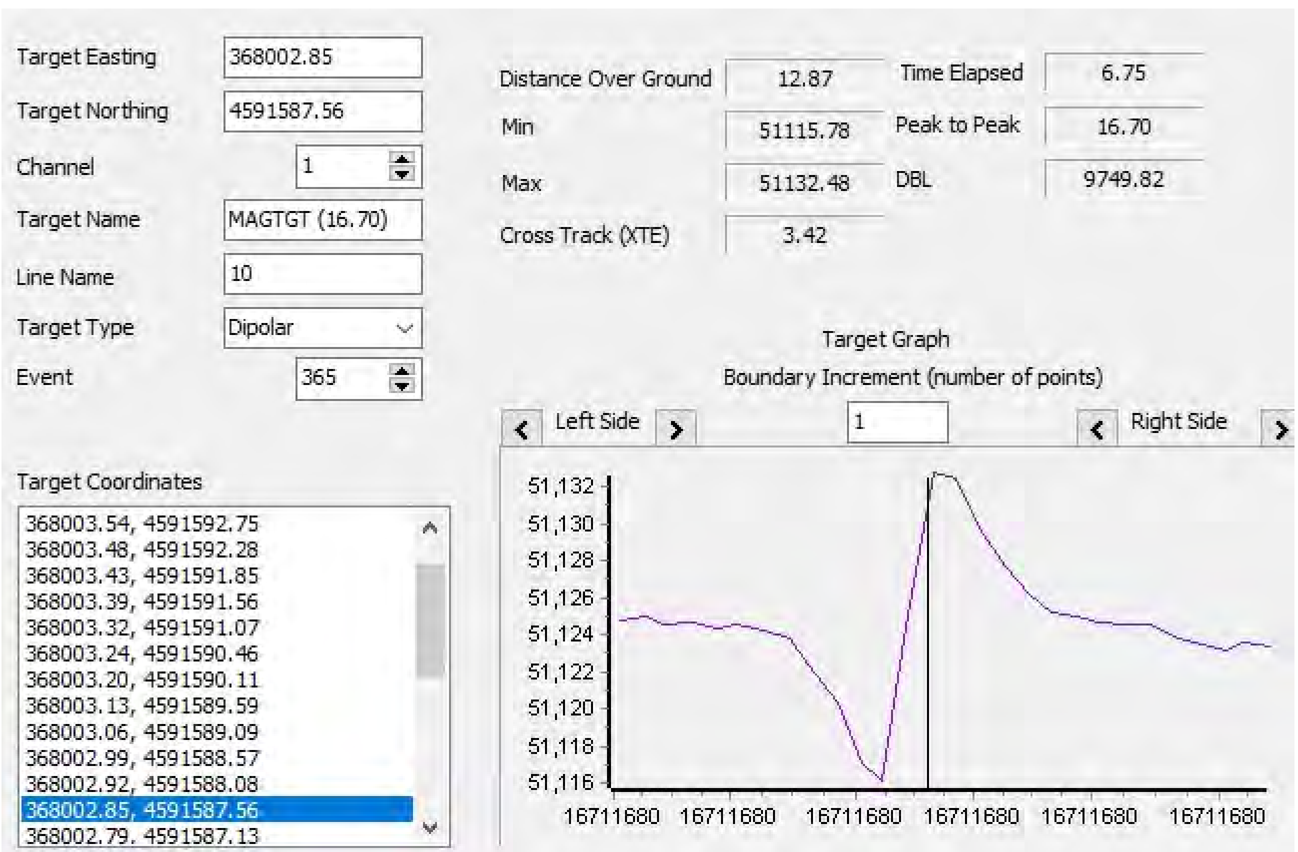
Name	Date	10/05/2021
MAGTGT (14.43)	Time	11:03:07
Survey File	Event	356
10	X	368028.0
Capture File	Y	4591768.0
368028.80.4591768.39.14.43.51138.11.2.jpg	WGS84 Latitude	41 27 59.9682 N
	WGS84 Longitude	070 34 49.3414 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



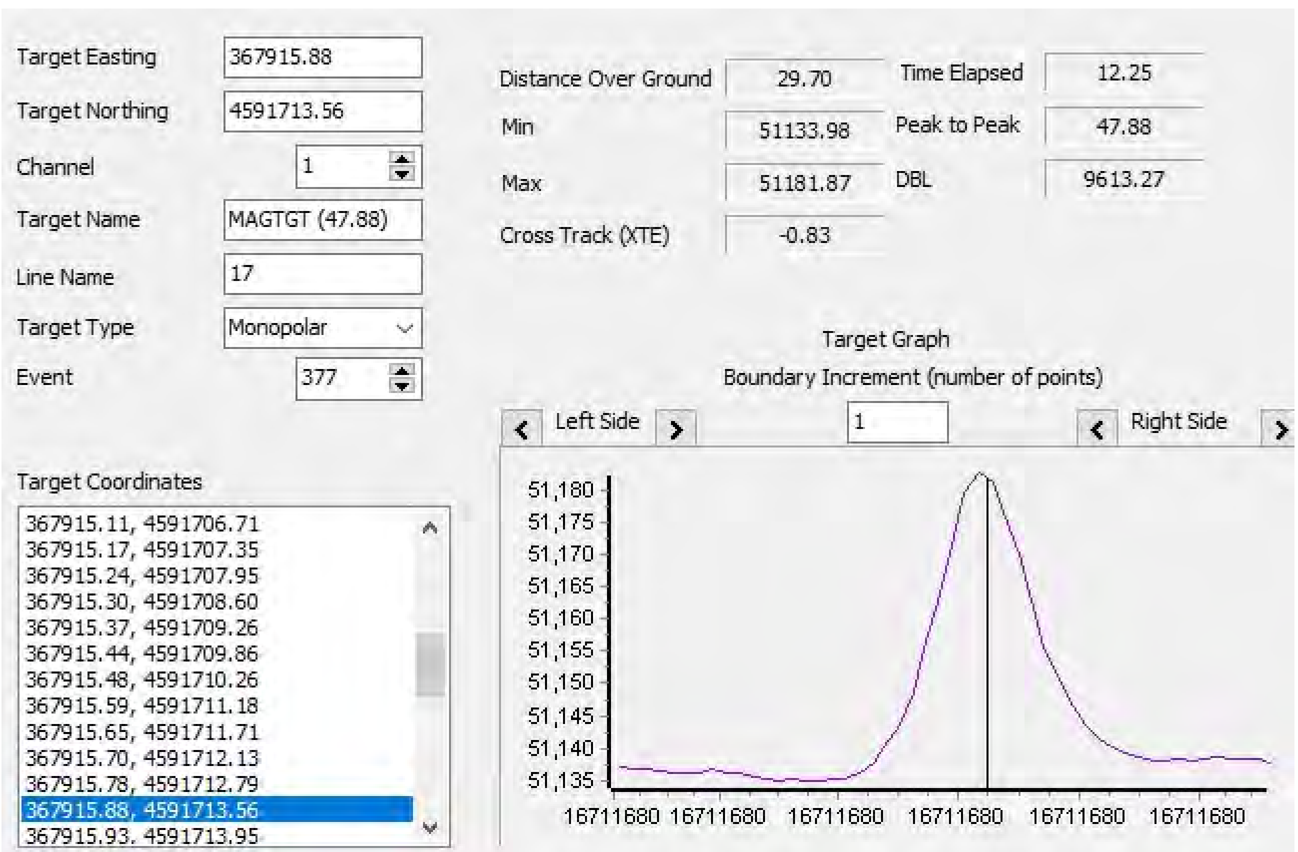
Name	Date	10/05/2021
MAGTGT (16.70)	Time	11:03:18
Survey File	Event	365
10	X	368002.0
Capture File	Y	4591587.0
368002.85.4591587.56.16.70.51132.48.2.jpg	WGS84 Latitude	41 27 54.0857 N
	WGS84 Longitude	070 34 50.3193 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



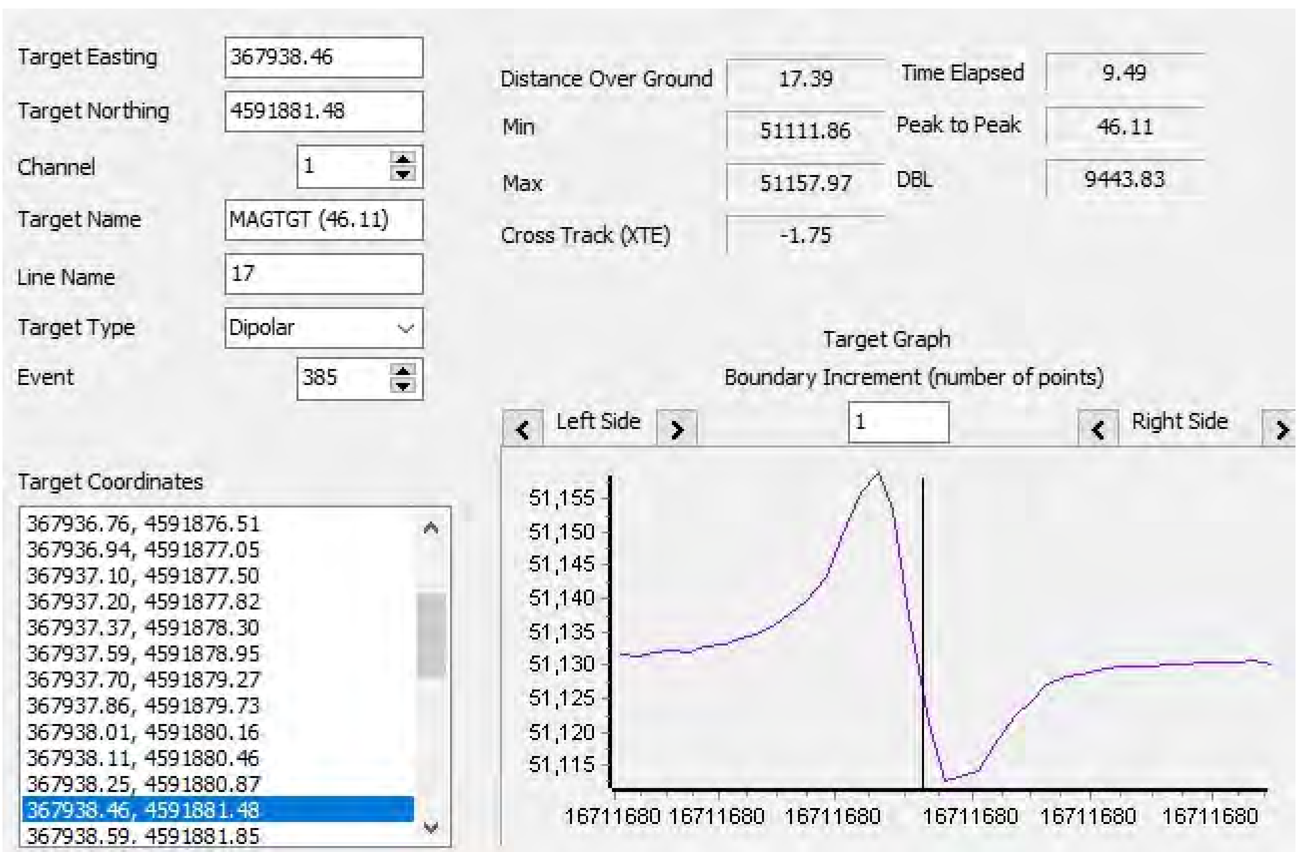
Name	Date	10/05/2021
MAGTGT (47.88)	Time	11:03:42
Survey File	Event	377
17	X	367915.0
Capture File	Y	4591713.0
367915.88.4591713.56.47.88.51162.89.3.jpg	WGS84 Latitude	41 27 58.1184 N
	WGS84 Longitude	070 34 54.1677 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



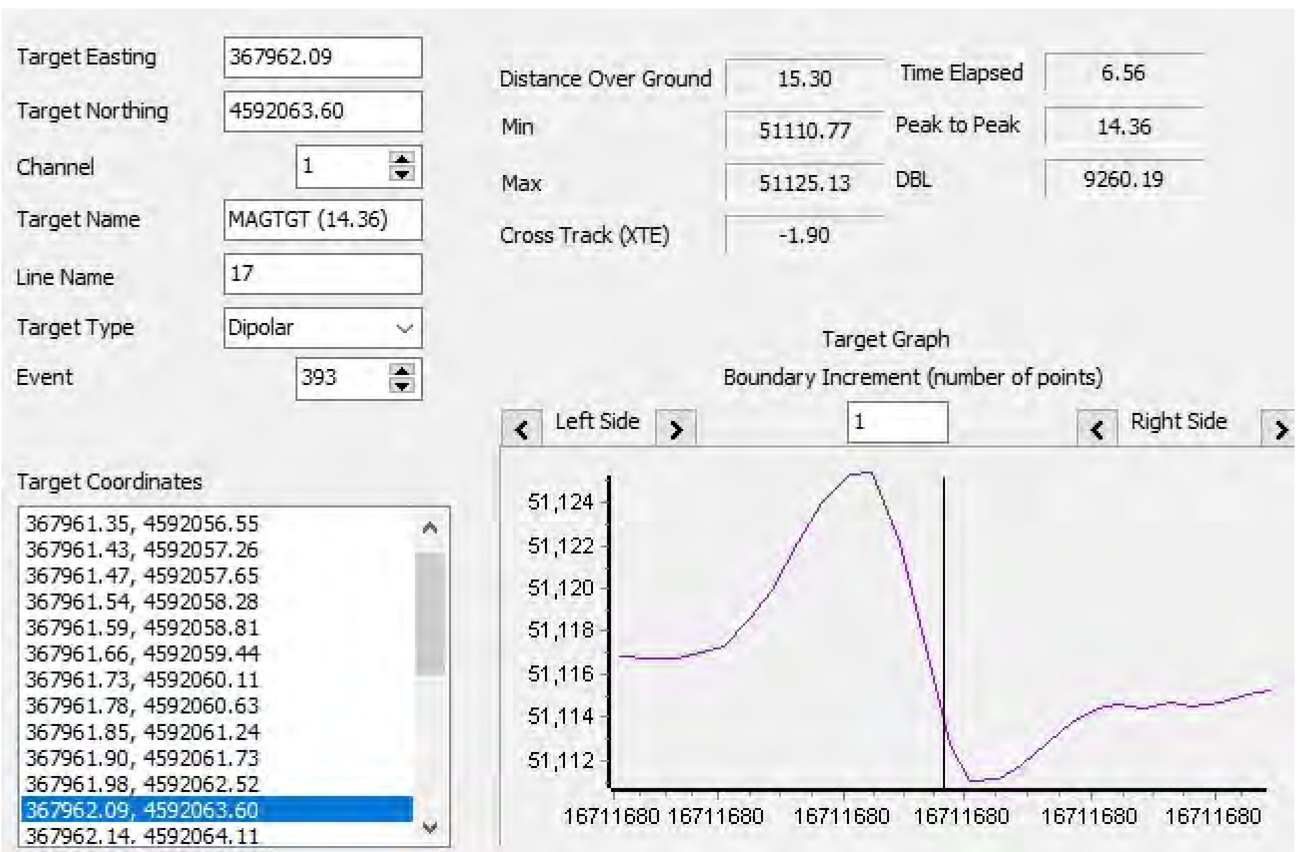
Name	Date	10/05/2021
MAGTGT (46.11)	Time	11:04:00
Survey File	Event	385
17	X	367938.0
Capture File	Y	4591881.0
367938.46.4591881.48.46.11.51120.42.3.jpg	WGS84 Latitude	41 28 3.5777 N
	WGS84 Longitude	070 34 53.3089 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



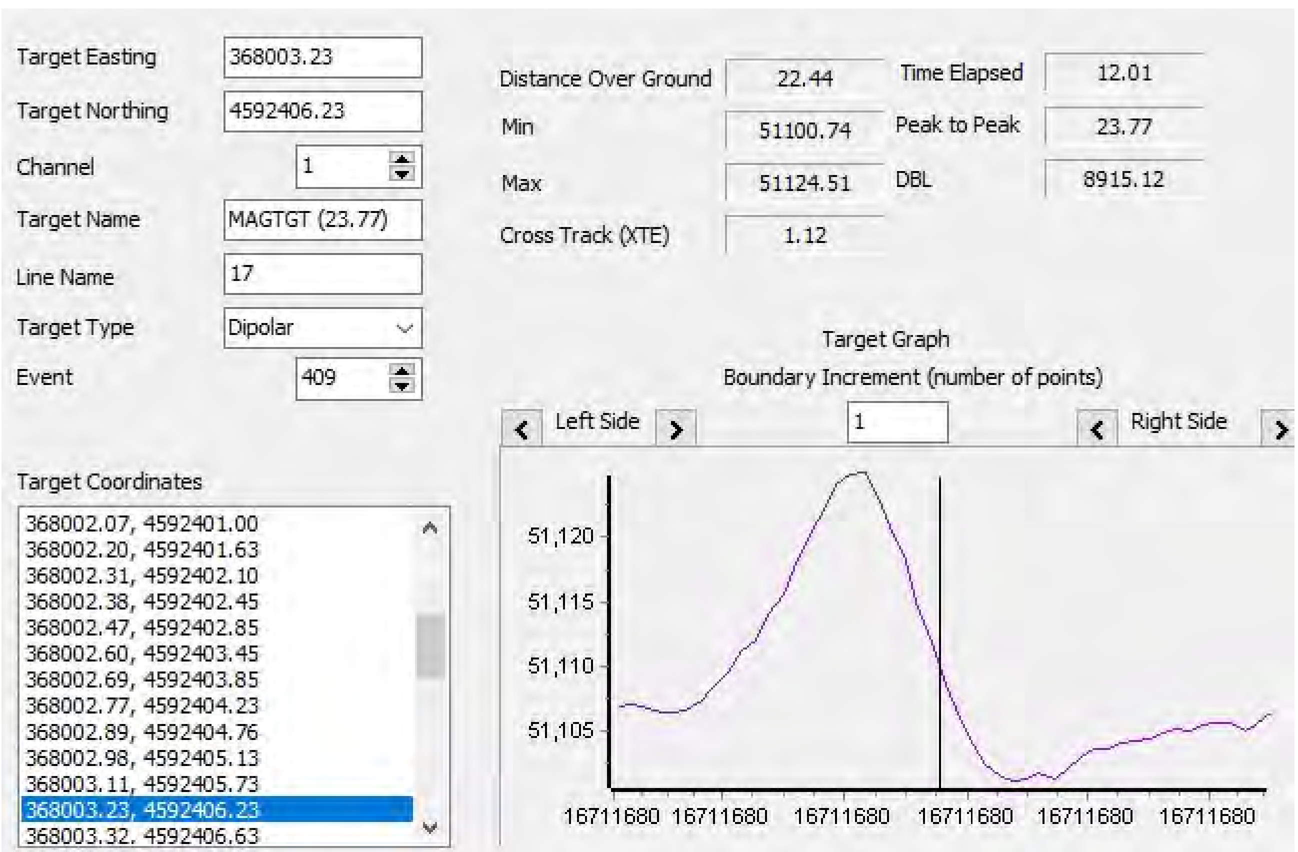
Name	Date	10/05/2021
MAGTGT (14.36)	Time	11:04:15
Survey File	Event	393
17	X	367962.0
Capture File	Y	4592063.0
367962.09.4592063.60.14.36.51112.45.3.jpg	WGS84 Latitude	41 28 9.4914 N
	WGS84 Longitude	070 34 52.418 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



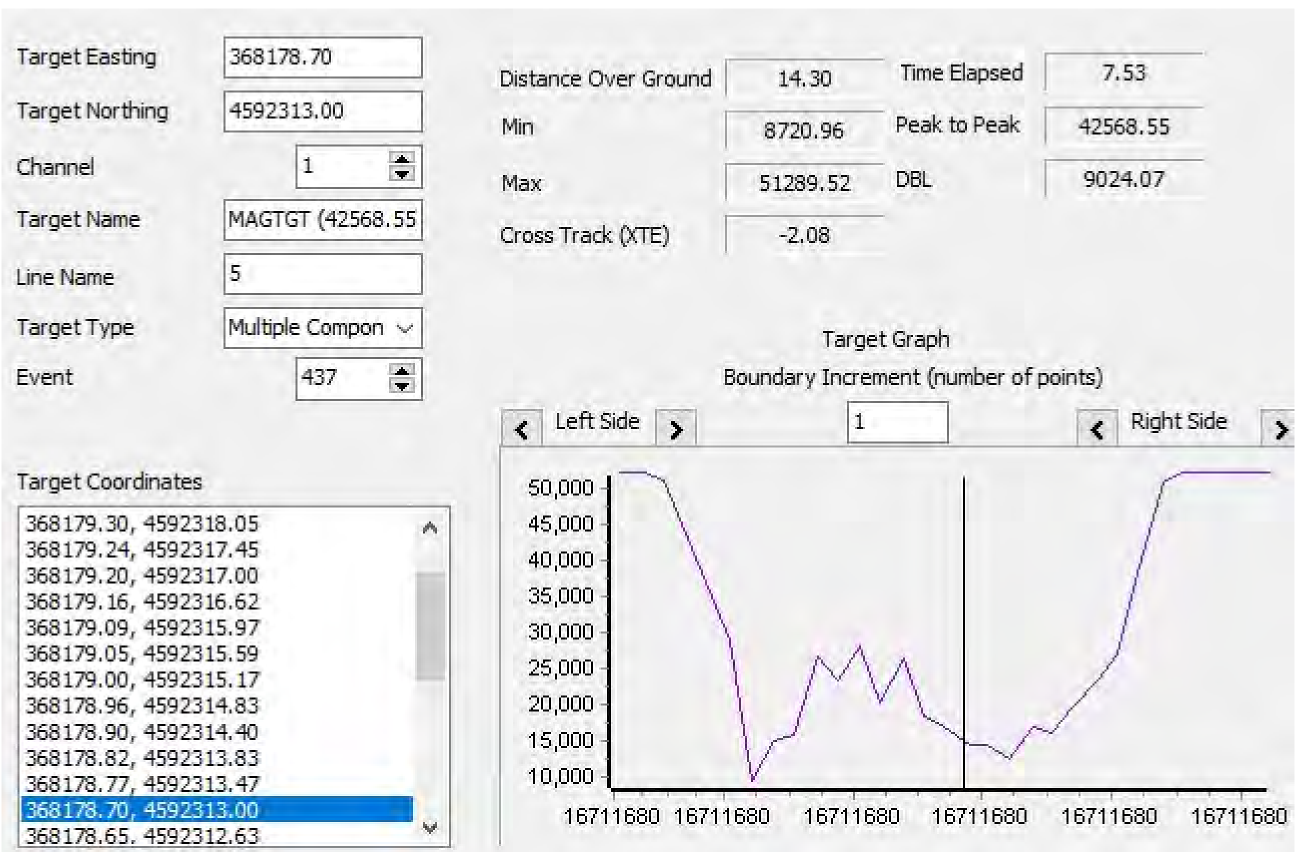
Name	Date	10/05/2021
MAGTGT (23.77)	Time	11:04:30
Survey File	Event	409
17	X	368003.0
Capture File	Y	4592406.0
368003.23.4592406.23.23.77.51108.20.3.jpg	WGS84 Latitude	41 28 20.6339 N
	WGS84 Longitude	070 34 50.9212 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



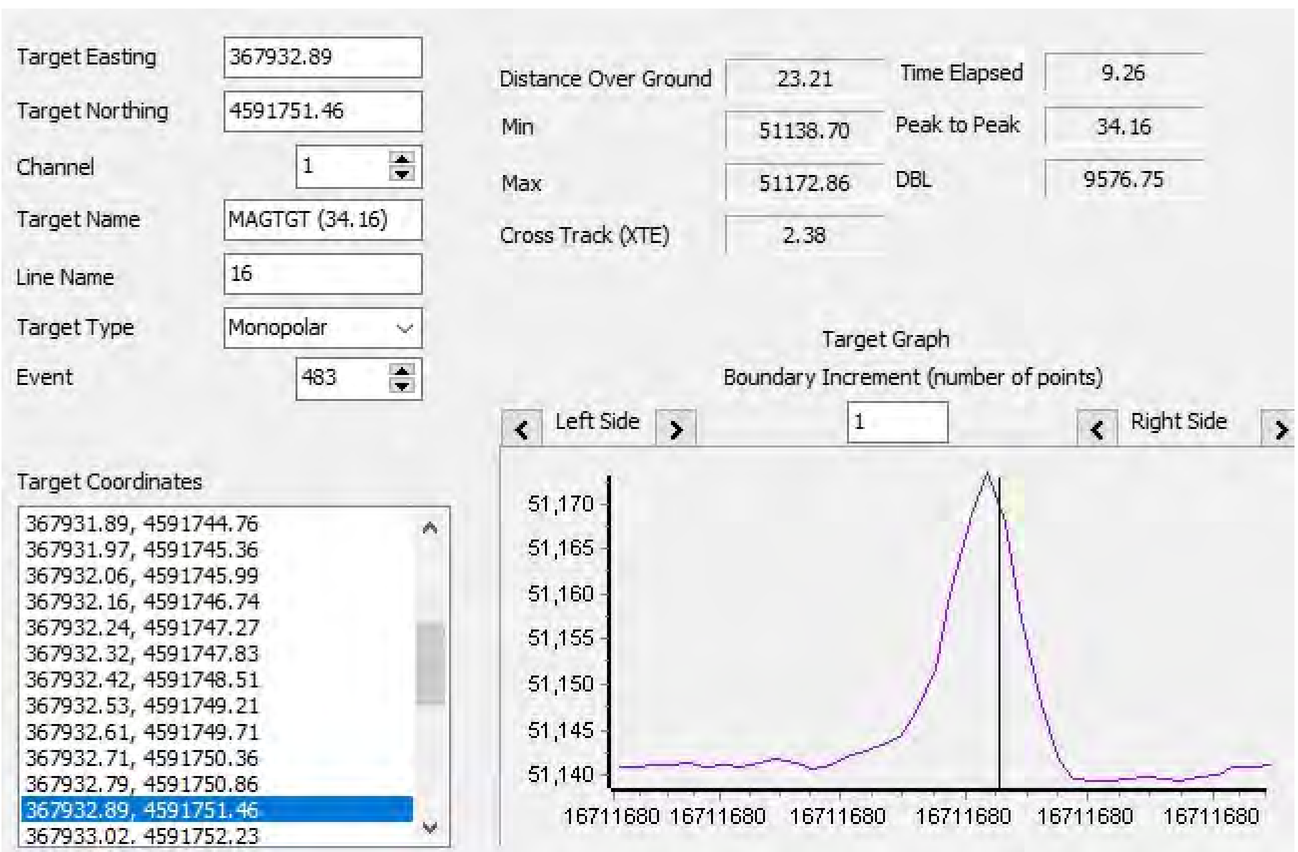
Name	Date	10/05/2021
MAGTGT (42568.55)	Time	11:05:38
Survey File	Event	437
5	X	368178.0
Capture File	Y	4592312.0
368178.70.4592313.00.42568.55.13758.72.4.jpg	WGS84 Latitude	41 28 17.6906 N
	WGS84 Longitude	070 34 43.3051 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



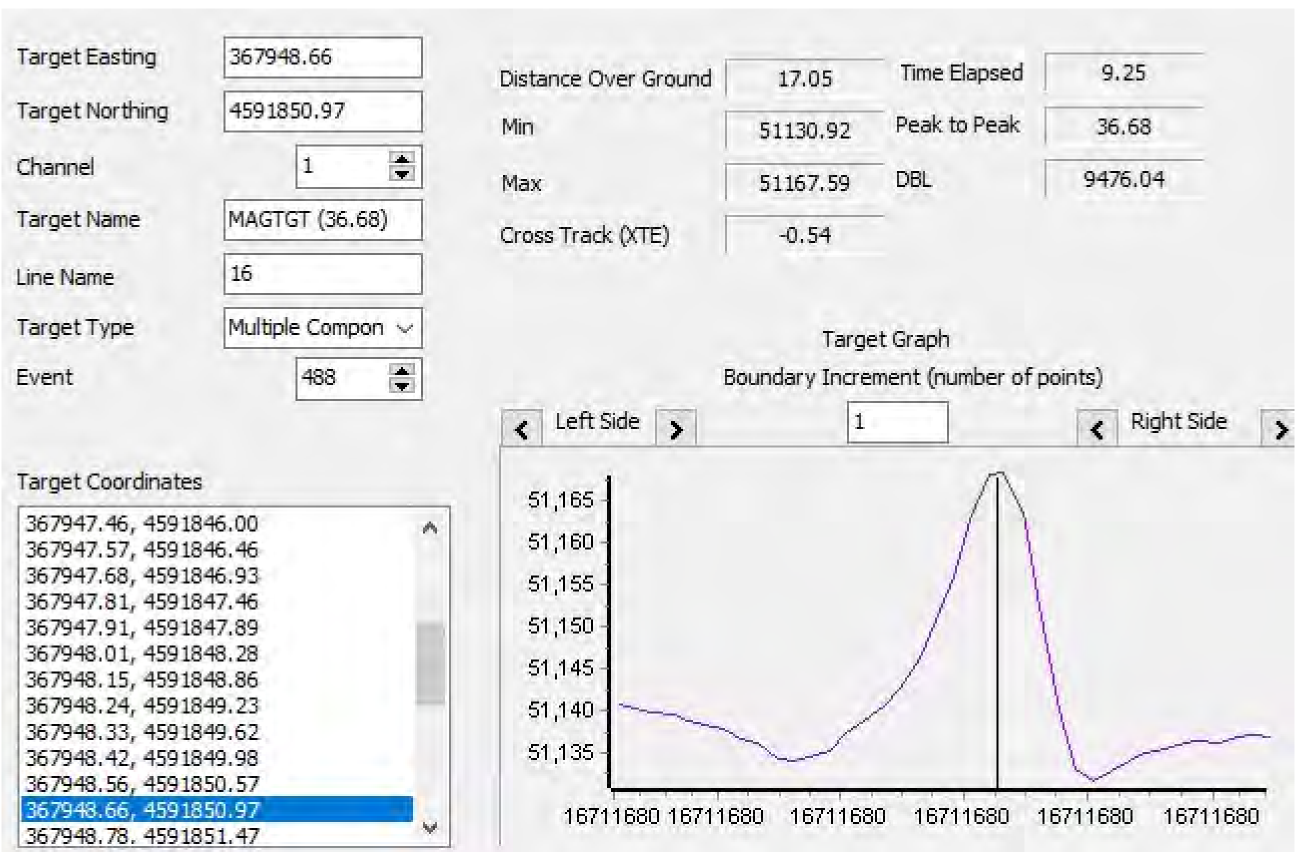
Name	Date	10/05/2021
MAGTGT (34.16)	Time	11:06:26
Survey File	Event	483
16	X	367932.0
Capture File	Y	4591751.0
367932.89.4591751.46.34.16.51151.09.5.jpg	WGS84 Latitude	41 27 59.3603 N
	WGS84 Longitude	070 34 53.4651 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



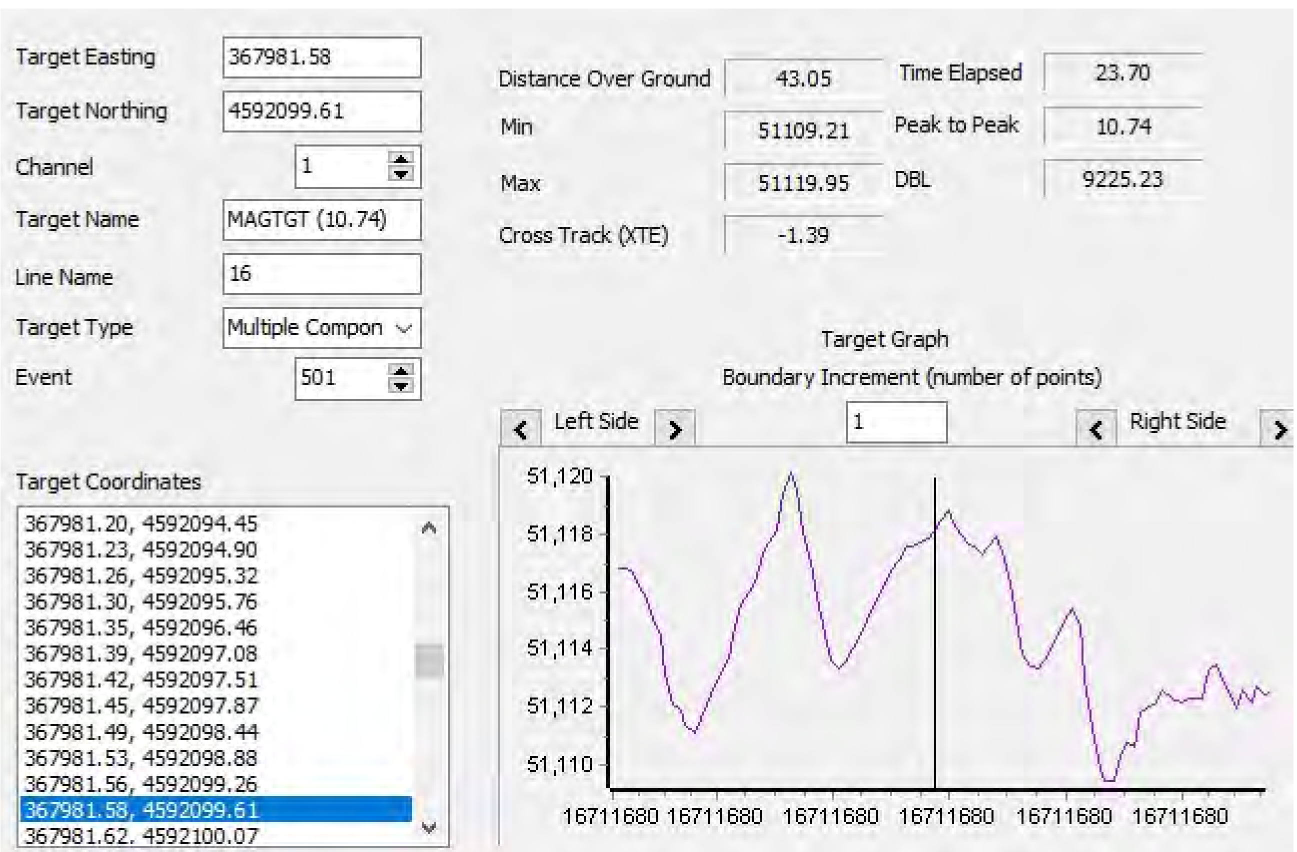
Name	Date	10/05/2021
MAGTGT (36.68)	Time	11:06:40
Survey File	Event	488
16	X	367948.0
Capture File	Y	4591850.0
367948.66.4591850.97.36.68. 51149.96.5.jpg	WGS84 Latitude	41 28 2.5788 N
	WGS84 Longitude	070 34 52.8536 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



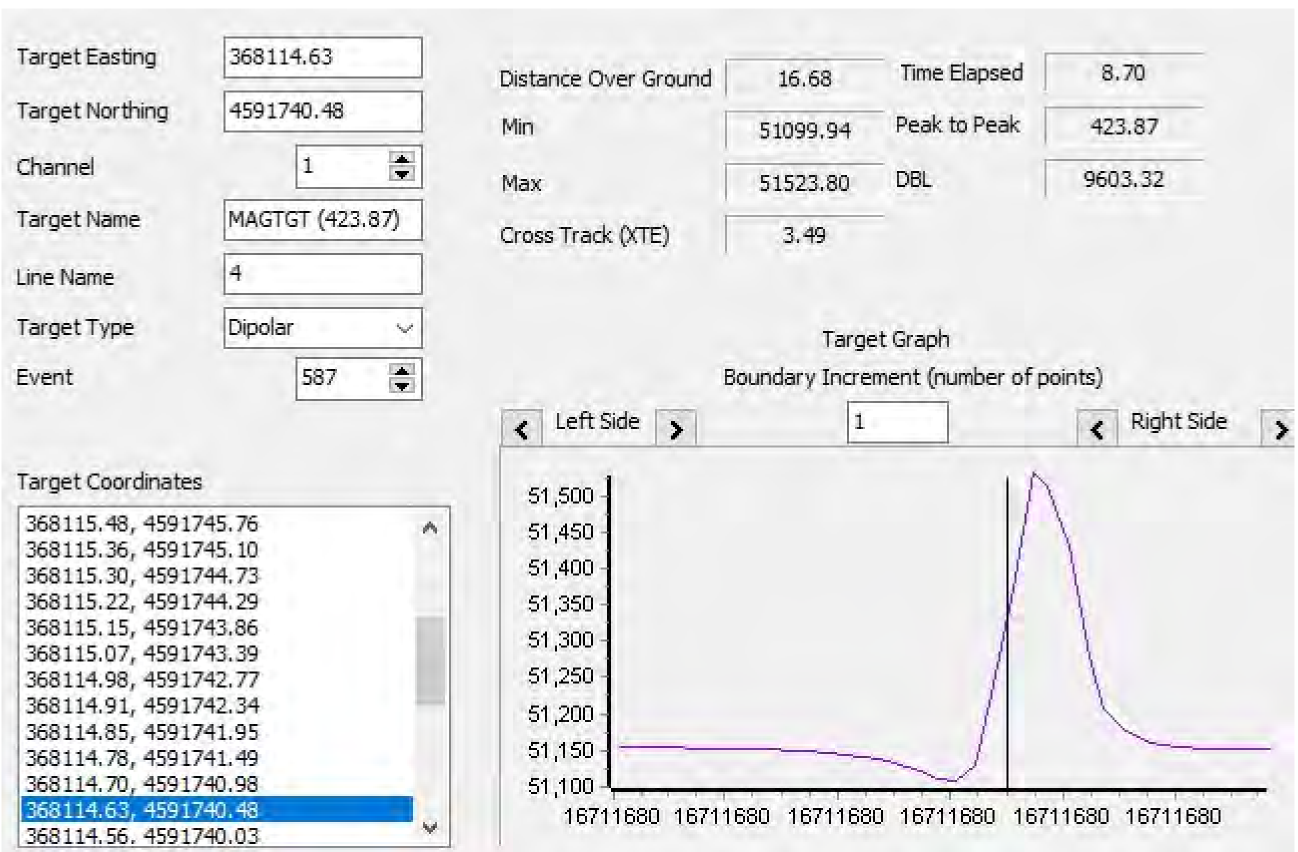
Name	Date	10/05/2021
MAGTGT (10.74)	Time	11:06:51
Survey File	Event	501
16	X	367981.0
Capture File	Y	4592099.0
367981.58.4592099.61.10.74.51118.27.5.jpg	WGS84 Latitude	41 28 10.6696 N
	WGS84 Longitude	070 34 51.6275 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



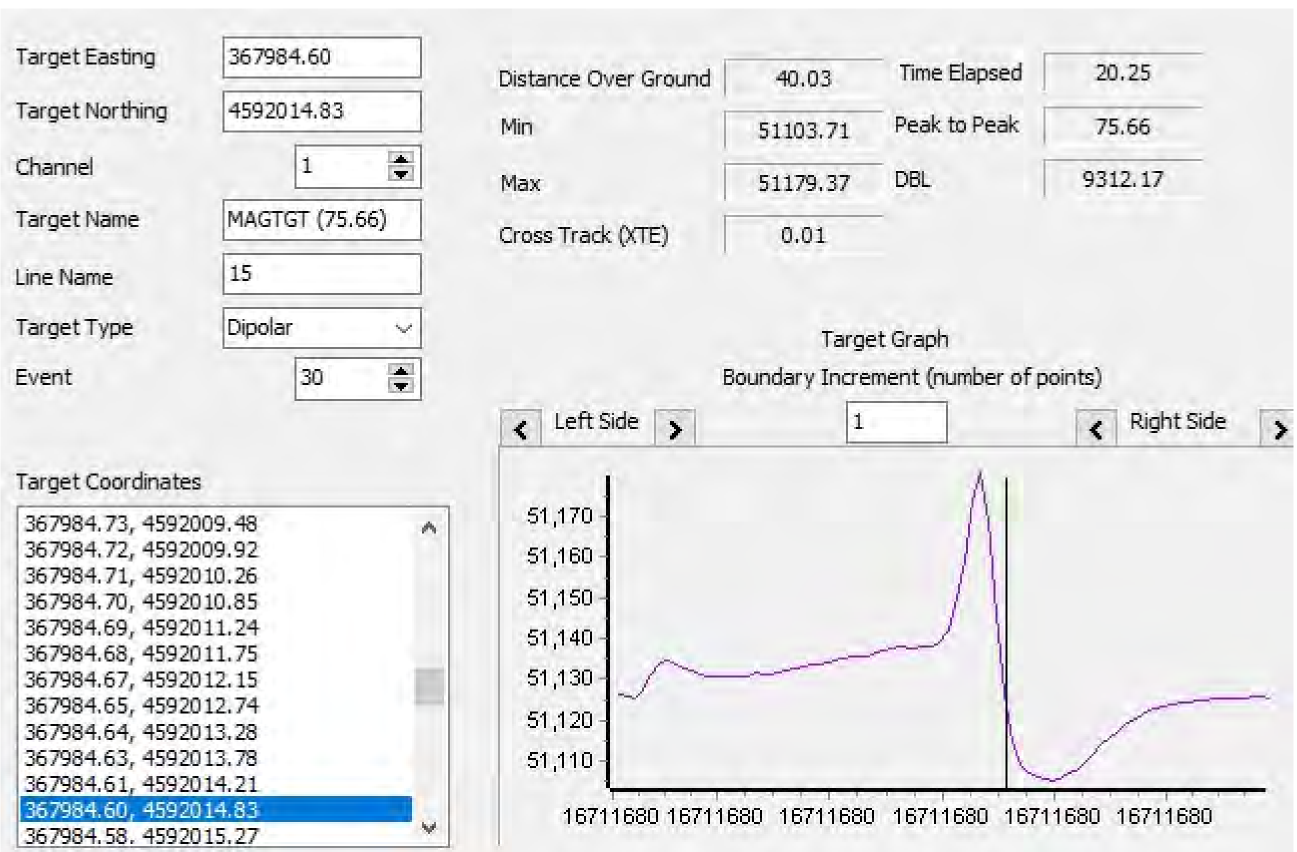
Name	Date	10/05/2021
MAGTGT (423.87)	Time	11:07:43
Survey File	Event	587
4	X	368114.0
Capture File	Y	4591740.0
368114.63.4591740.48.423.87.51103.35.6.jpg	WGS84 Latitude	41 27 59.1115 N
	WGS84 Longitude	070 34 45.6132 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



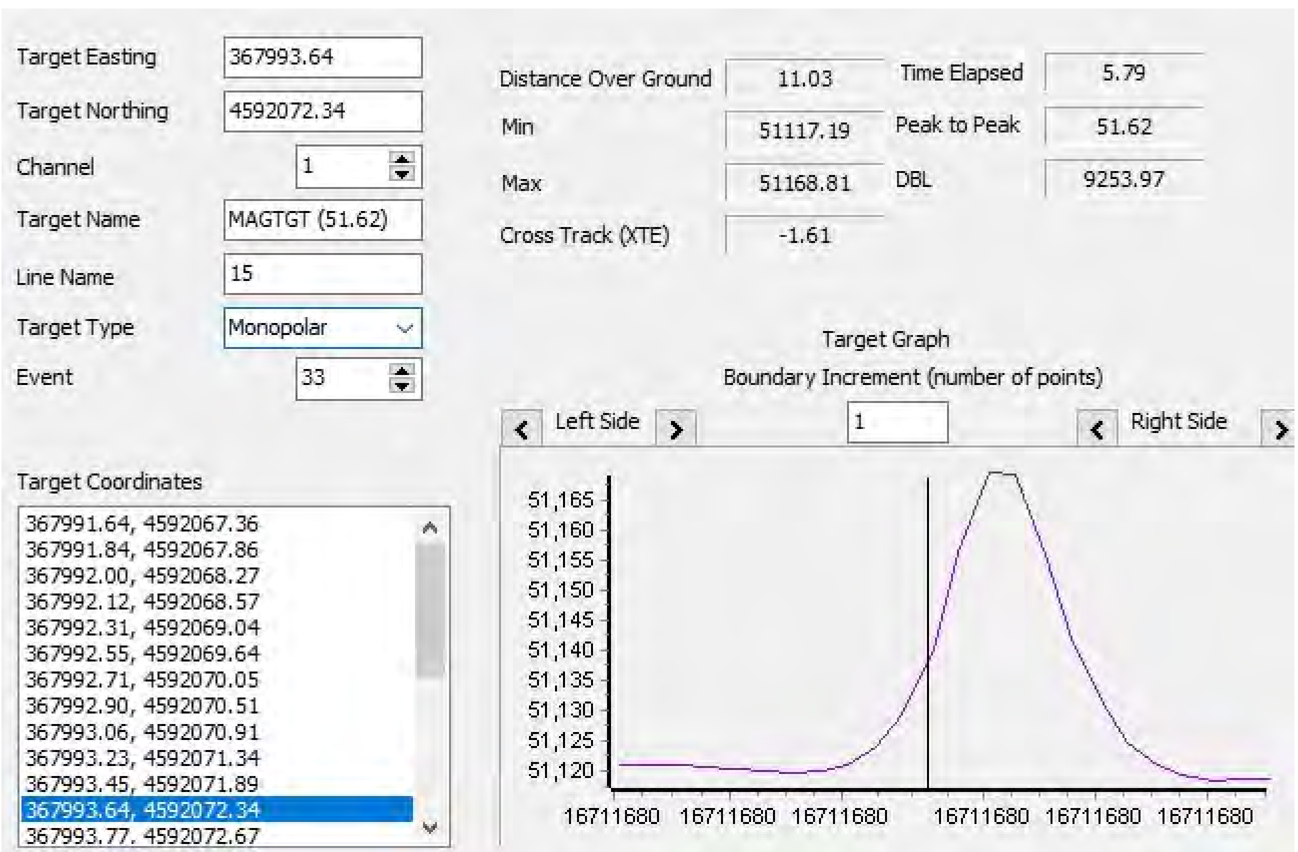
Name	Date	10/05/2021
MAGTGT (75.66)	Time	11:08:02
Survey File	Event	30
15	X	367984.0
Capture File	Y	4592014.0
367984.60.4592014.83.75.66.51137.66.7.jpg	WGS84 Latitude	41 28 7.9161 N
	WGS84 Longitude	070 34 51.4313 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



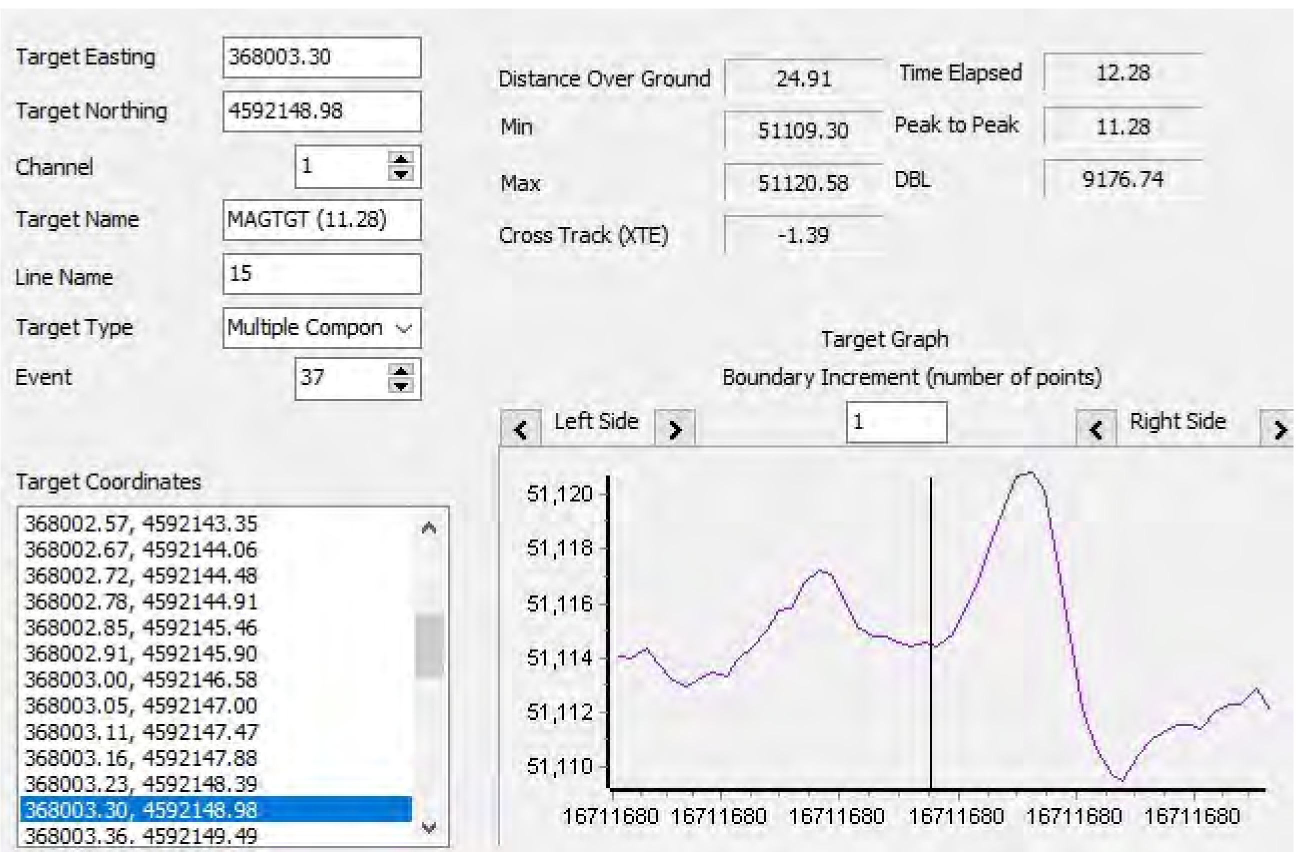
Name	Date	10/05/2021
MAGTGT (51.62)	Time	11:08:14
Survey File	Event	33
15	X	367993.0
Capture File	Y	4592072.0
367993.64.4592072.34.51.62. 51139.05.7.jpg	WGS84 Latitude	41 28 9.8015 N
	WGS84 Longitude	070 34 51.0891 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



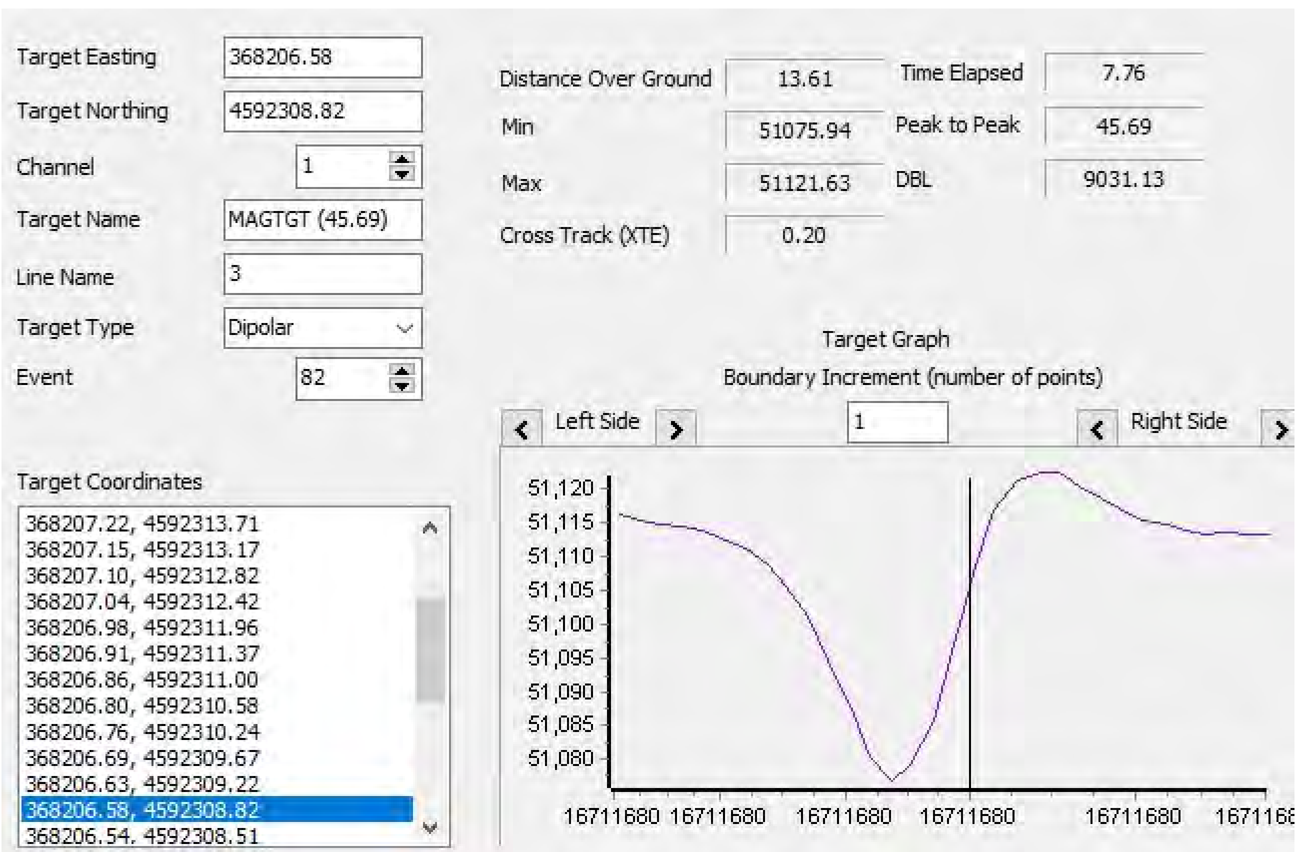
Name	Date	10/05/2021
MAGTGT (11.28)	Time	11:08:28
Survey File	Event	37
15	X	368003.0
Capture File	Y	4592148.0
368003.30.4592148.98.11.28.51114.23.7.jpg	WGS84 Latitude	41 28 12.271 N
	WGS84 Longitude	070 34 50.718 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



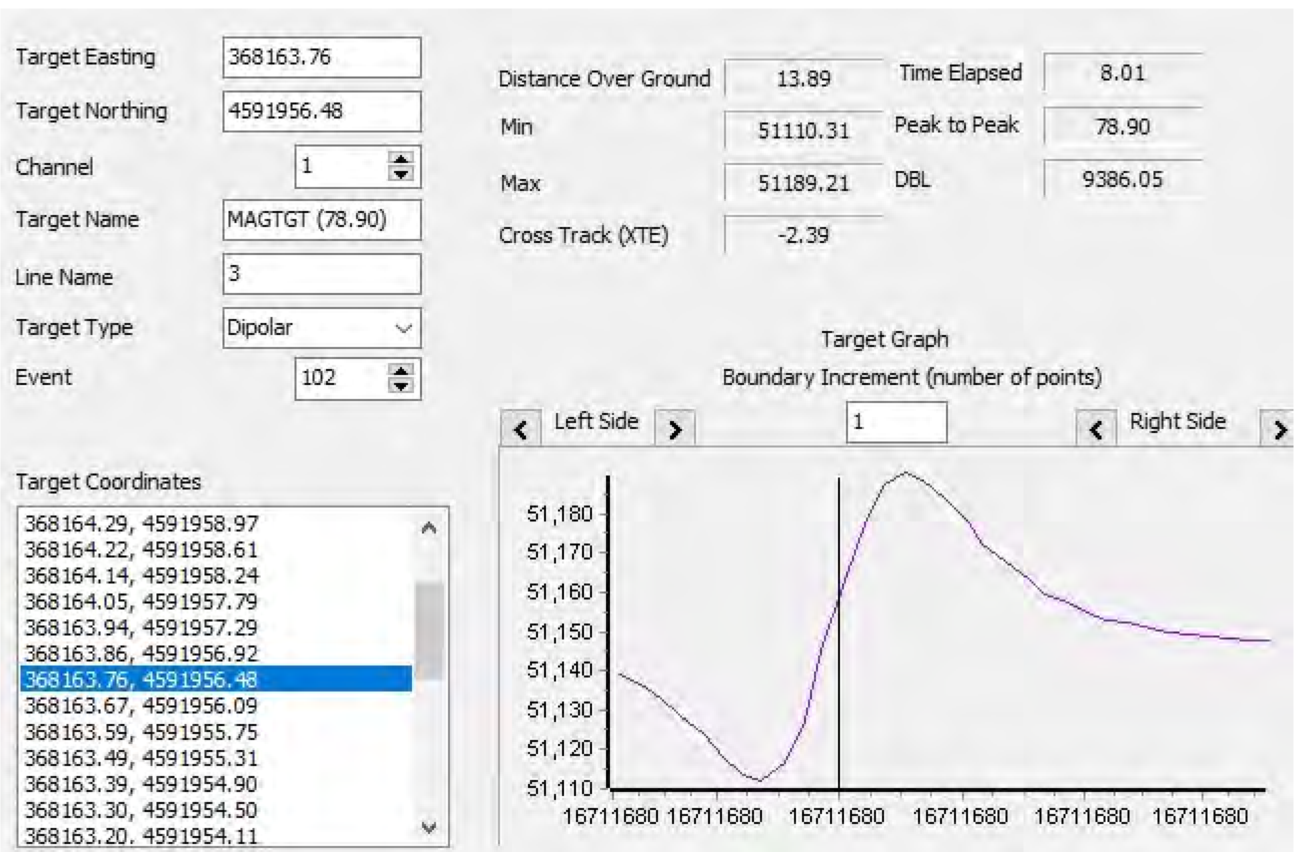
Name	Date	10/05/2021
MAGTGT (45.69)	Time	11:08:50
Survey File	Event	82
3	X	368206.0
Capture File	Y	4592308.0
368206.58.4592308.82.45.69. 51078.33.8.jpg	WGS84 Latitude	41 28 17.5775 N
	WGS84 Longitude	070 34 42.0952 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



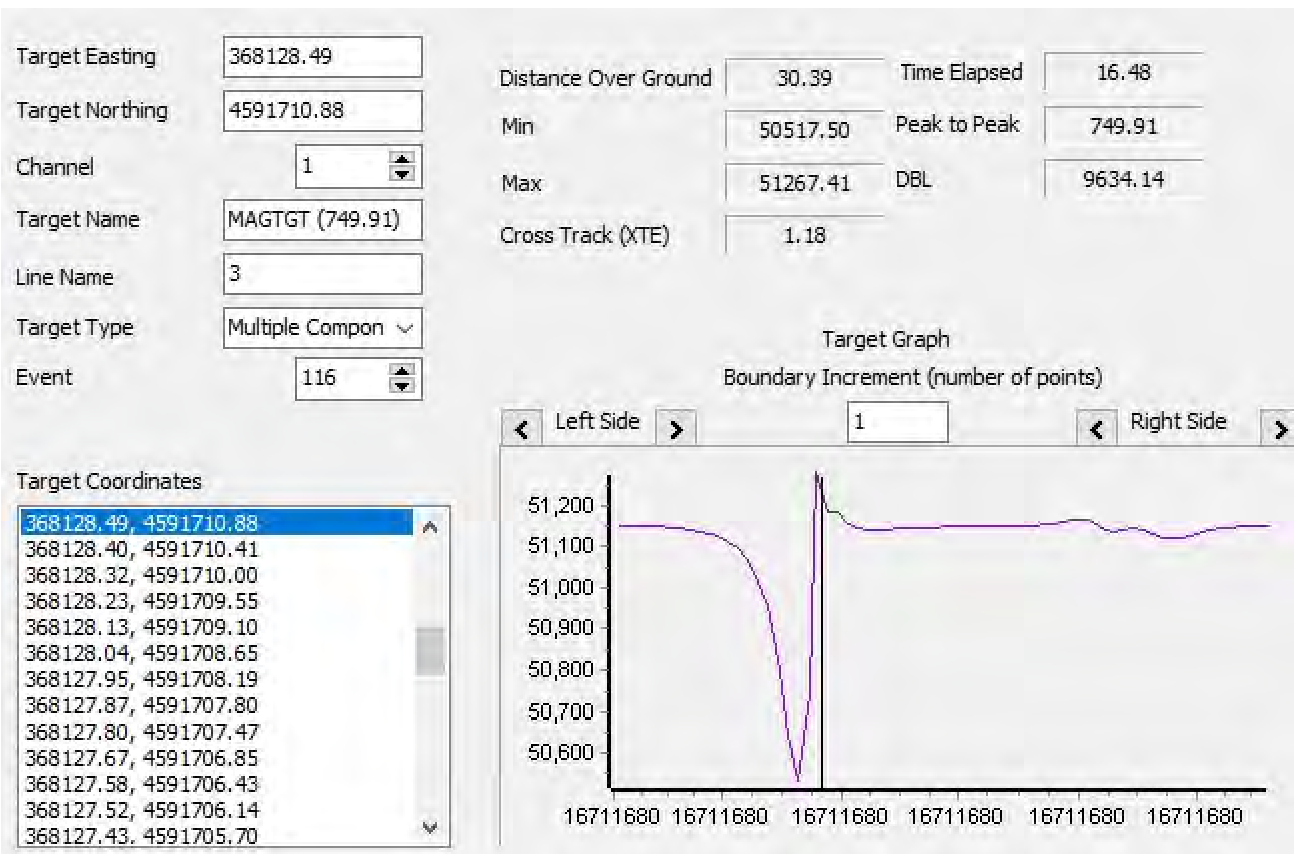
Name	Date	10/05/2021
MAGTGT (78.90)	Time	11:09:04
Survey File	Event	102
3	X	368163.0
Capture File	Y	4591956.0
368163.76.4591956.48.78.90. 51182.10.8.jpg	WGS84 Latitude	41 28 6.1421 N
	WGS84 Longitude	070 34 43.6715 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



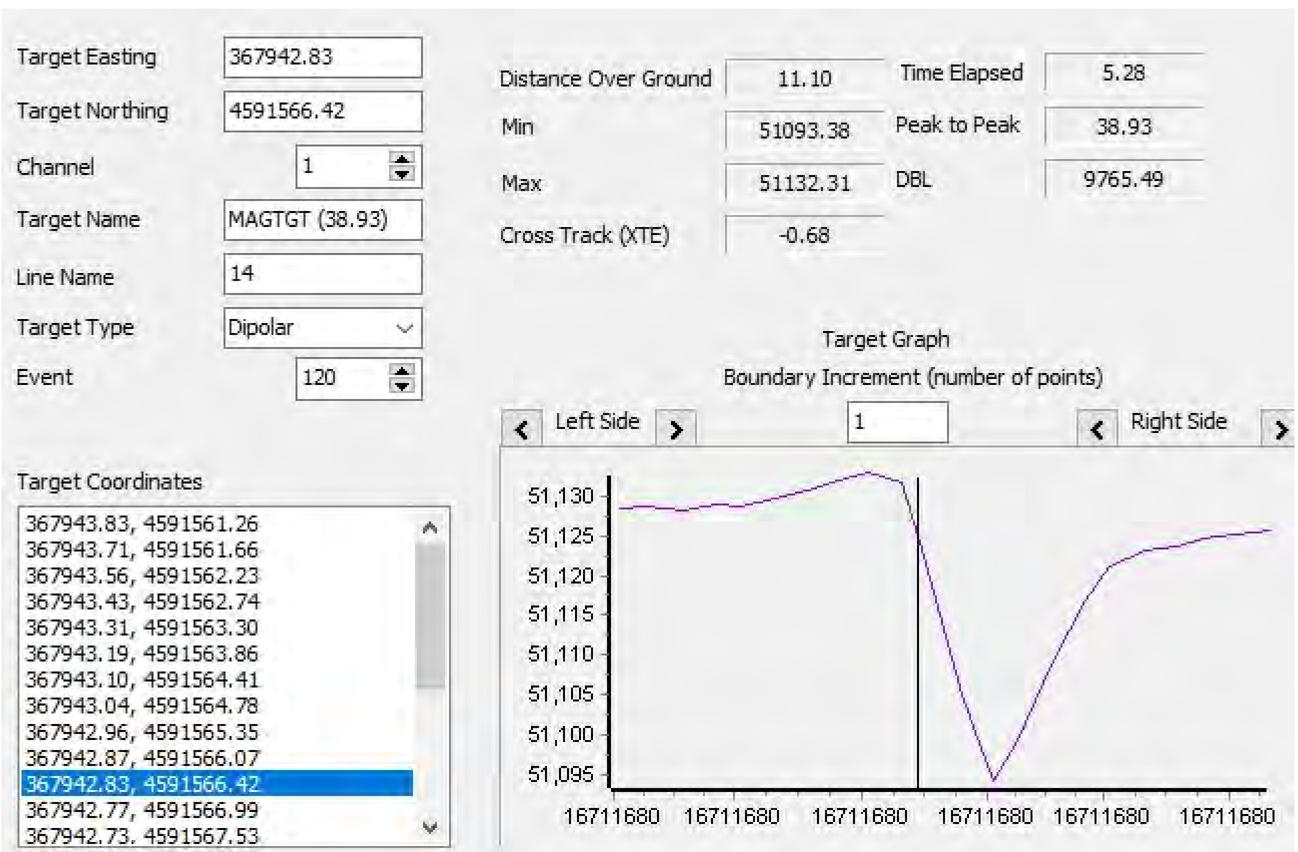
Name	Date	10/05/2021
MAGTGT (749.91)	Time	11:09:22
Survey File	Event	116
3	X	368128.0
Capture File	Y	4591710.0
368128.49.4591710.88.749.91.51134.18.8.jpg	WGS84 Latitude	41 27 58.1473 N
	WGS84 Longitude	070 34 44.9863 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



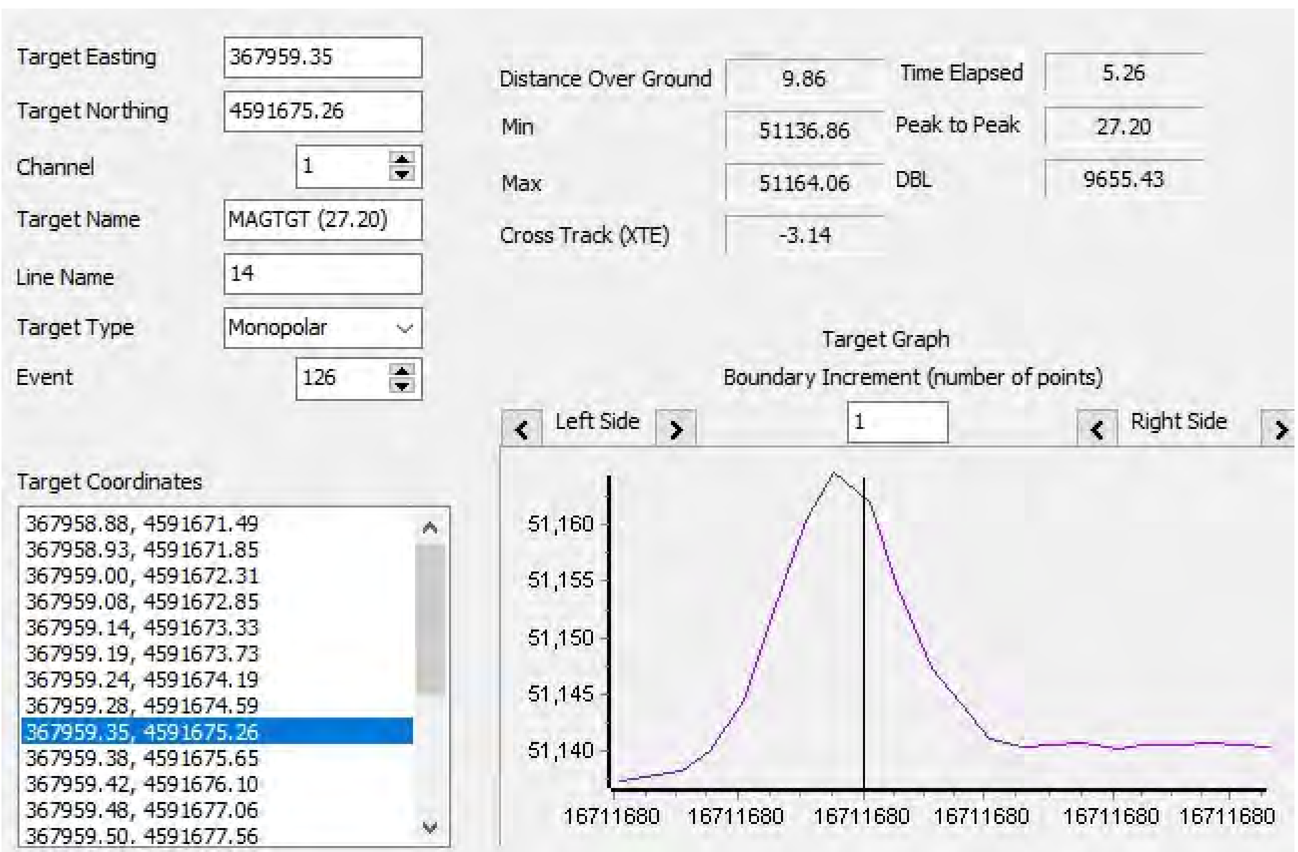
Name	Date	10/05/2021
MAGTGT (38.93)	Time	11:10:00
Survey File	Event	120
14	X	367942.0
Capture File	Y	4591566.0
367942.83.4591566.42.38.93.51121.73.9.jpg	WGS84 Latitude	41 27 53.3695 N
	WGS84 Longitude	070 34 52.8884 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



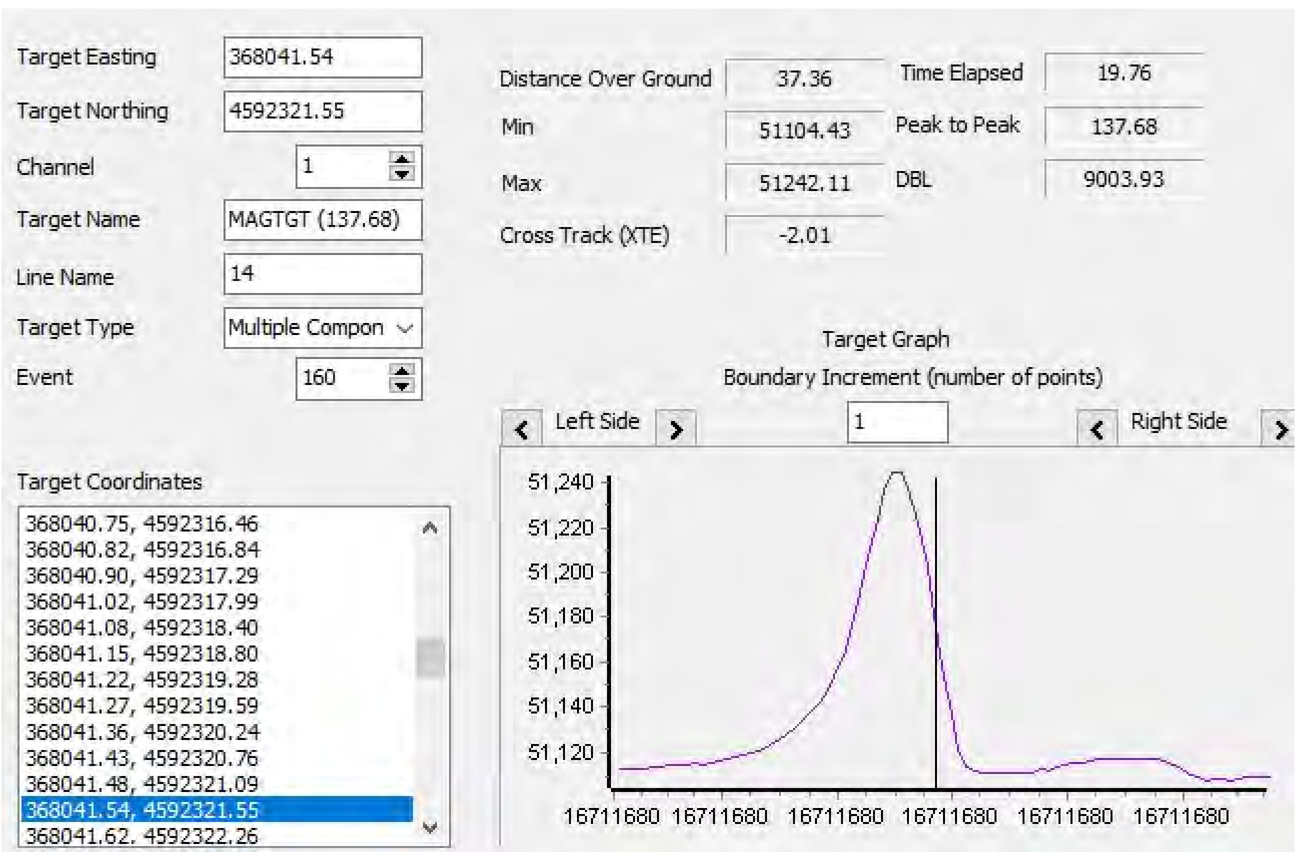
Name	Date	10/05/2021
MAGTGT (27.20)	Time	11:10:13
Survey File	Event	126
14	X	367959.0
Capture File	Y	4591675.0
367959.35.4591675.26.27.20.51146.70.9.jpg	WGS84 Latitude	41 27 56.9128 N
	WGS84 Longitude	070 34 52.2417 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



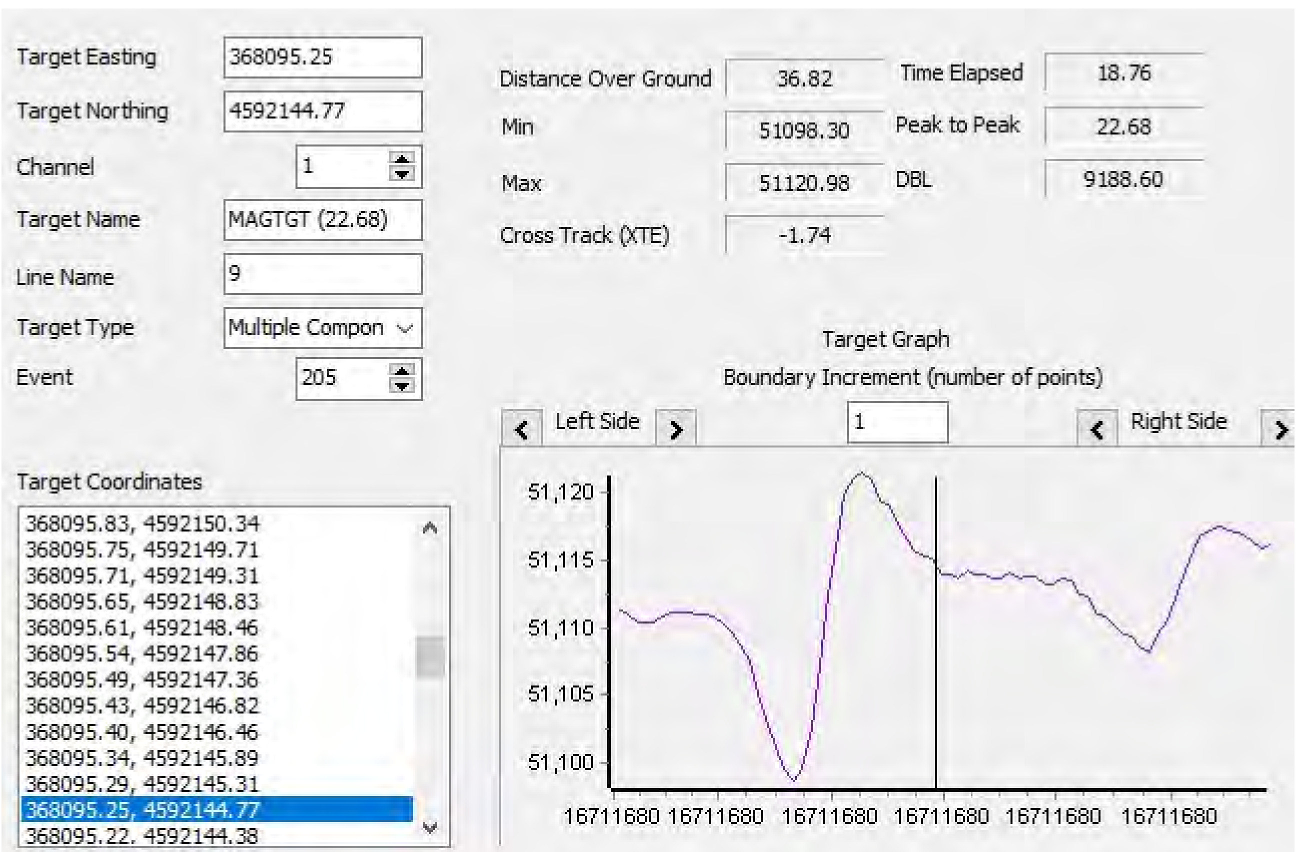
Name	Date	10/05/2021
MAGTGT (137.68)	Time	11:10:32
Survey File	Event	160
14	X	368041.0
Capture File	Y	4592321.0
368041.54.4592321.55.137.68.51155.62.9.jpg	WGS84 Latitude	41 28 17.9012 N
	WGS84 Longitude	070 34 49.2166 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



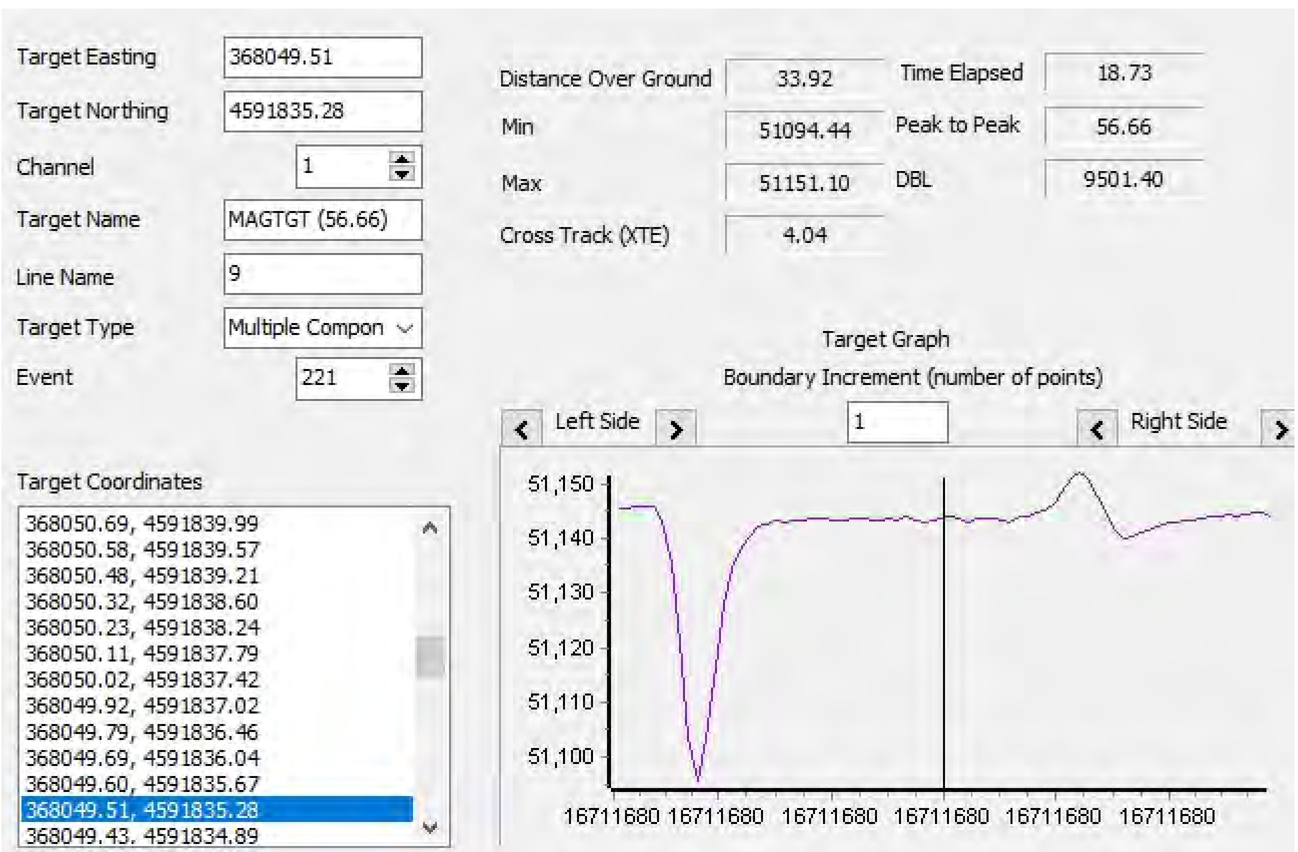
Name	Date	10/05/2021
MAGTGT (22.68)	Time	11:11:01
Survey File	Event	205
9	X	368095.0
Capture File	Y	4592144.0
368095.25.4592144.77.22.68.51113.41.10.jpg	WGS84 Latitude	41 28 12.1958 N
	WGS84 Longitude	070 34 46.75 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



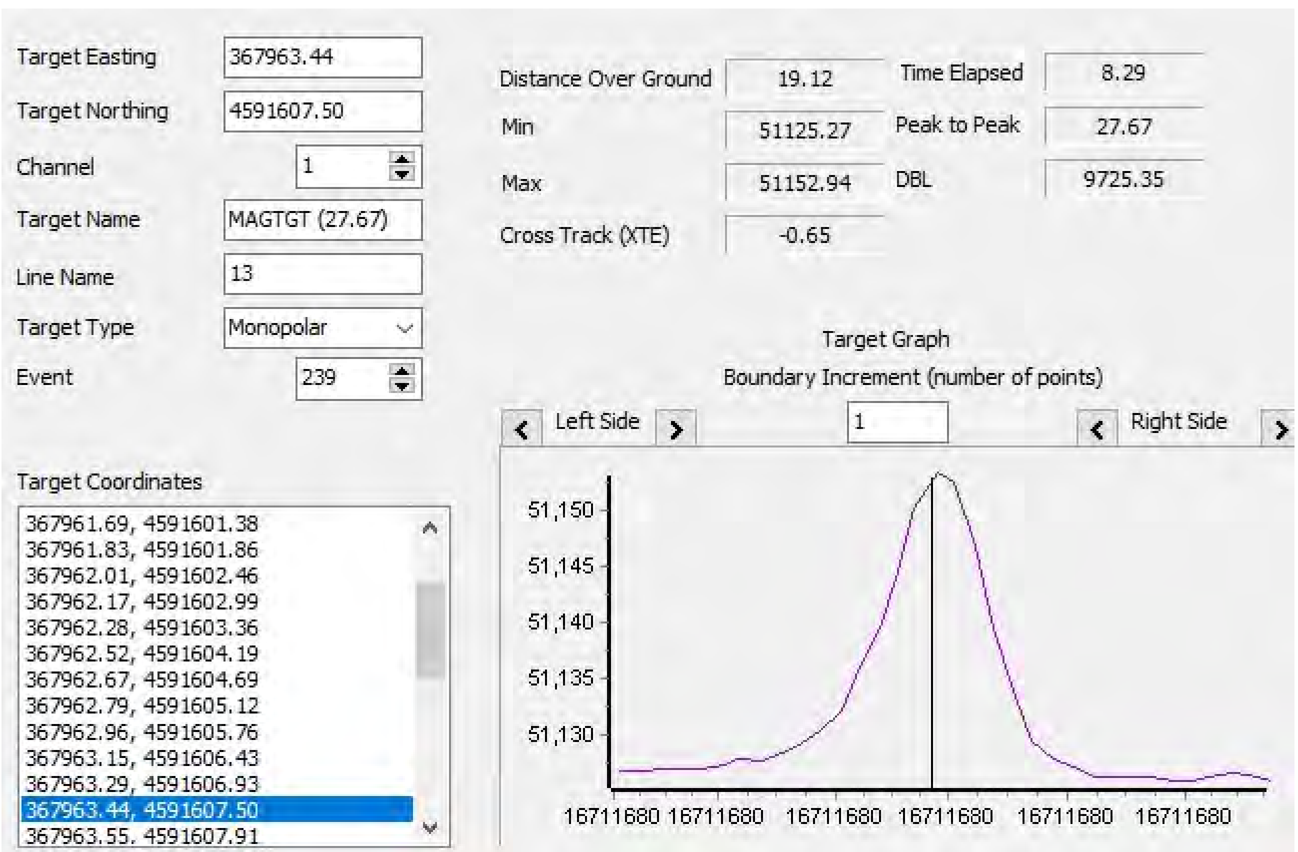
Name	Date	10/05/2021
MAGTGT (56.66)	Time	11:11:12
Survey File	Event	221
9	X	368049.0
Capture File	Y	4591835.0
368049.51.4591835.28.56.66.51142.93.10.jpg	WGS84 Latitude	41 28 2.1524 N
	WGS84 Longitude	070 34 48.4892 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



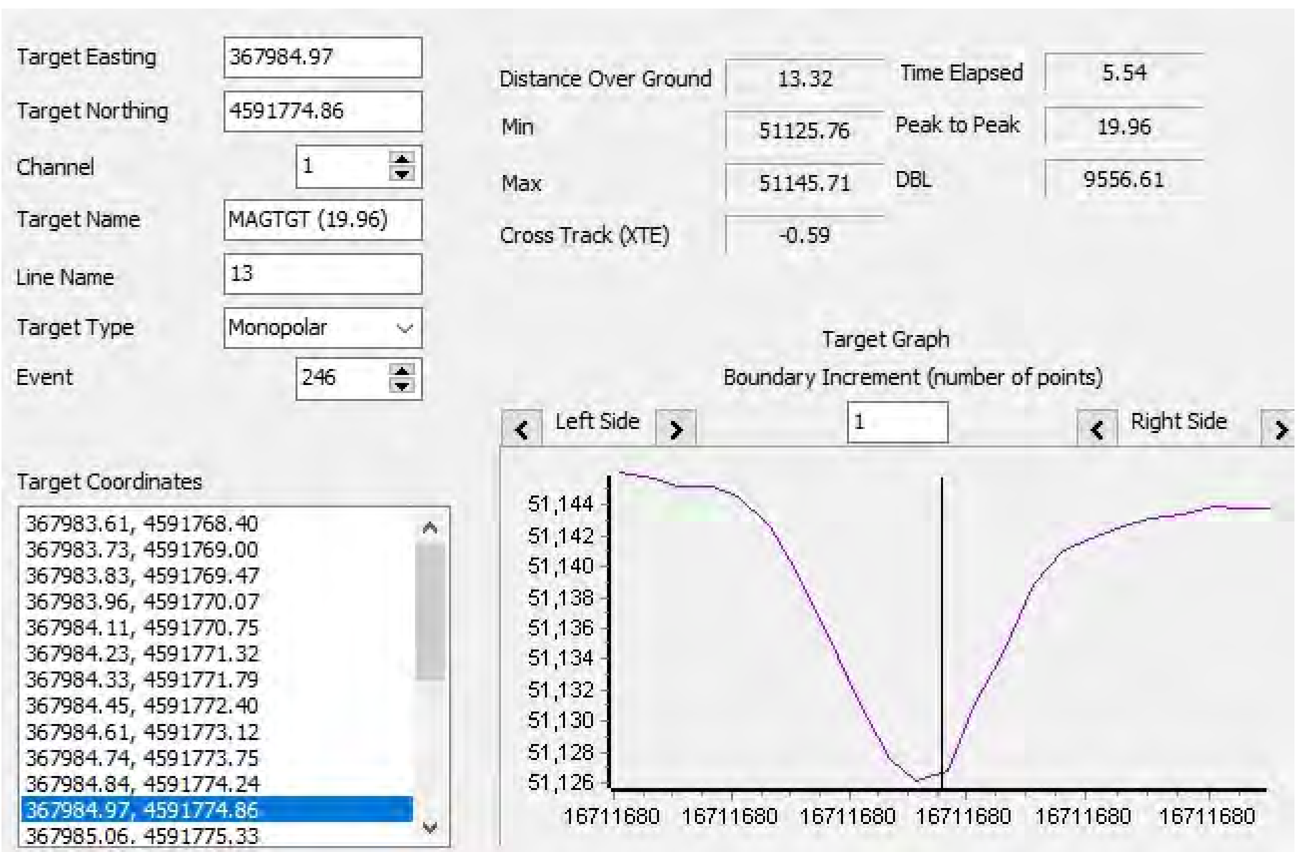
Name	Date	10/05/2021
MAGTGT (27.67)	Time	11:11:33
Survey File	Event	239
13	X	367963.0
Capture File	Y	4591607.0
367963.44.4591607.50.27.67.51152.94.11.jpg	WGS84 Latitude	41 27 54.7109 N
	WGS84 Longitude	070 34 52.0157 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



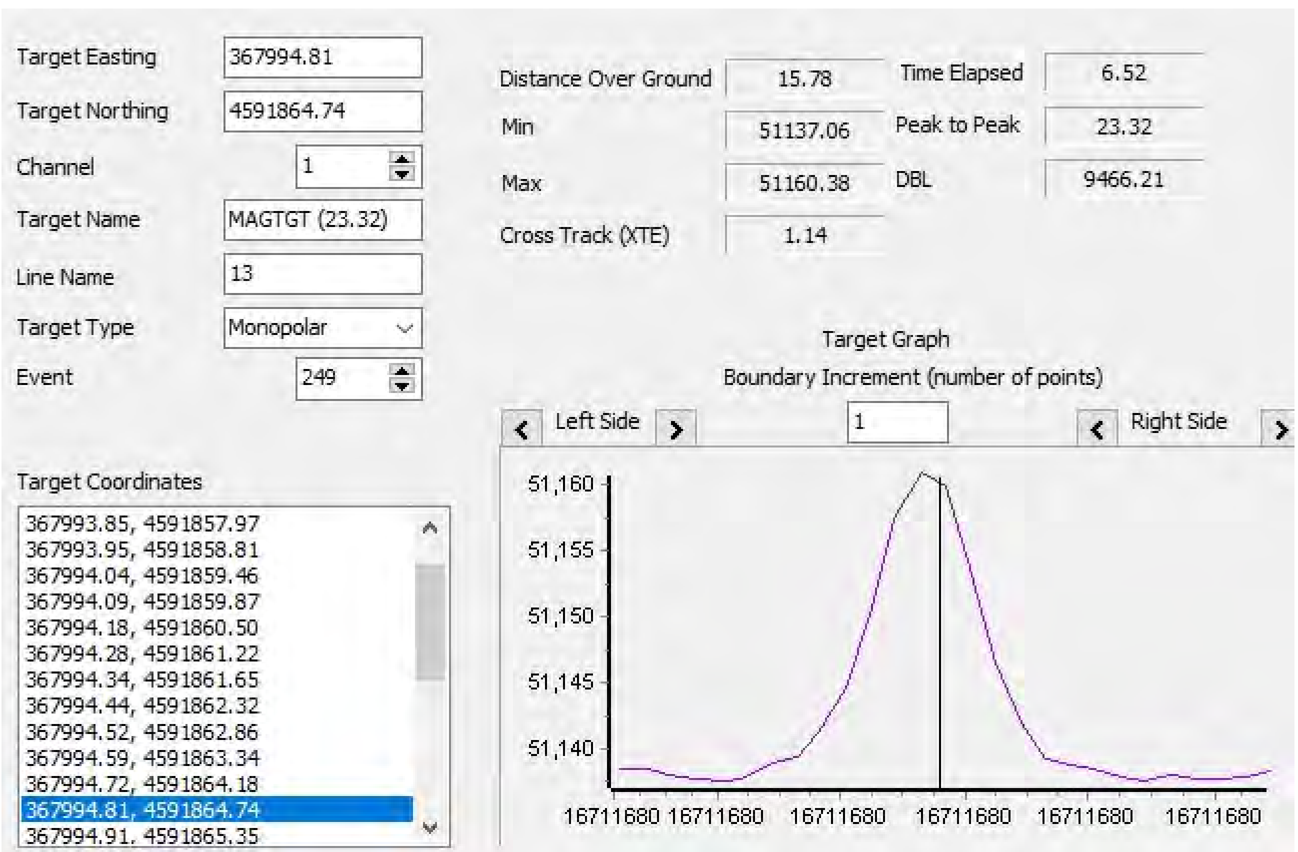
Name	Date	10/05/2021
MAGTGT (19.96)	Time	11:11:44
Survey File	Event	246
13	X	367984.0
Capture File	Y	4591774.0
367984.97.4591774.86.19.96.51126.41.11.jpg	WGS84 Latitude	41 28 0.1366 N
	WGS84 Longitude	070 34 51.2423 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



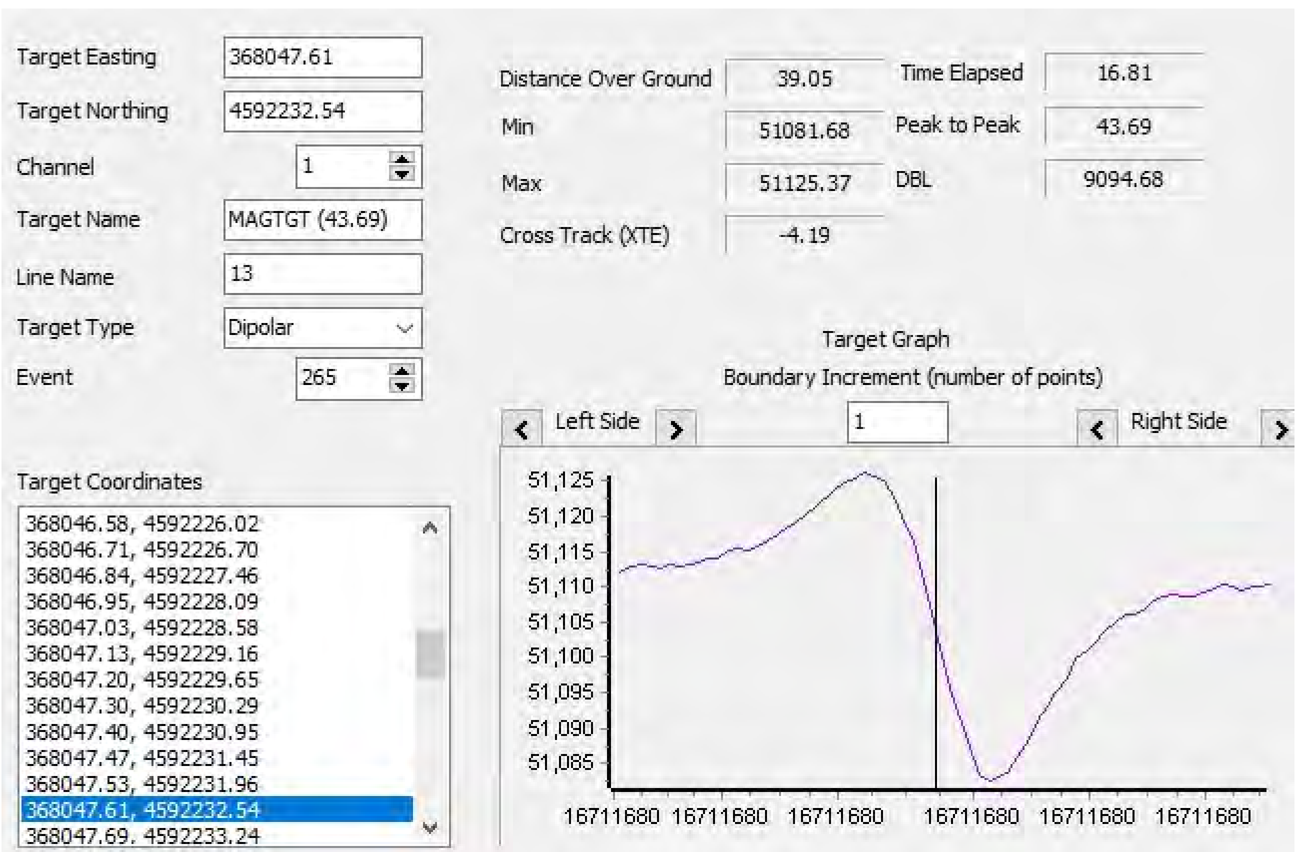
Name	Date	10/05/2021
MAGTGT (23.32)	Time	11:11:54
Survey File	Event	249
13	X	367994.0
Capture File	Y	4591864.0
367994.81.4591864.74.23.32.51159.27.11.jpg	WGS84 Latitude	41 28 3.0599 N
	WGS84 Longitude	070 34 50.8822 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



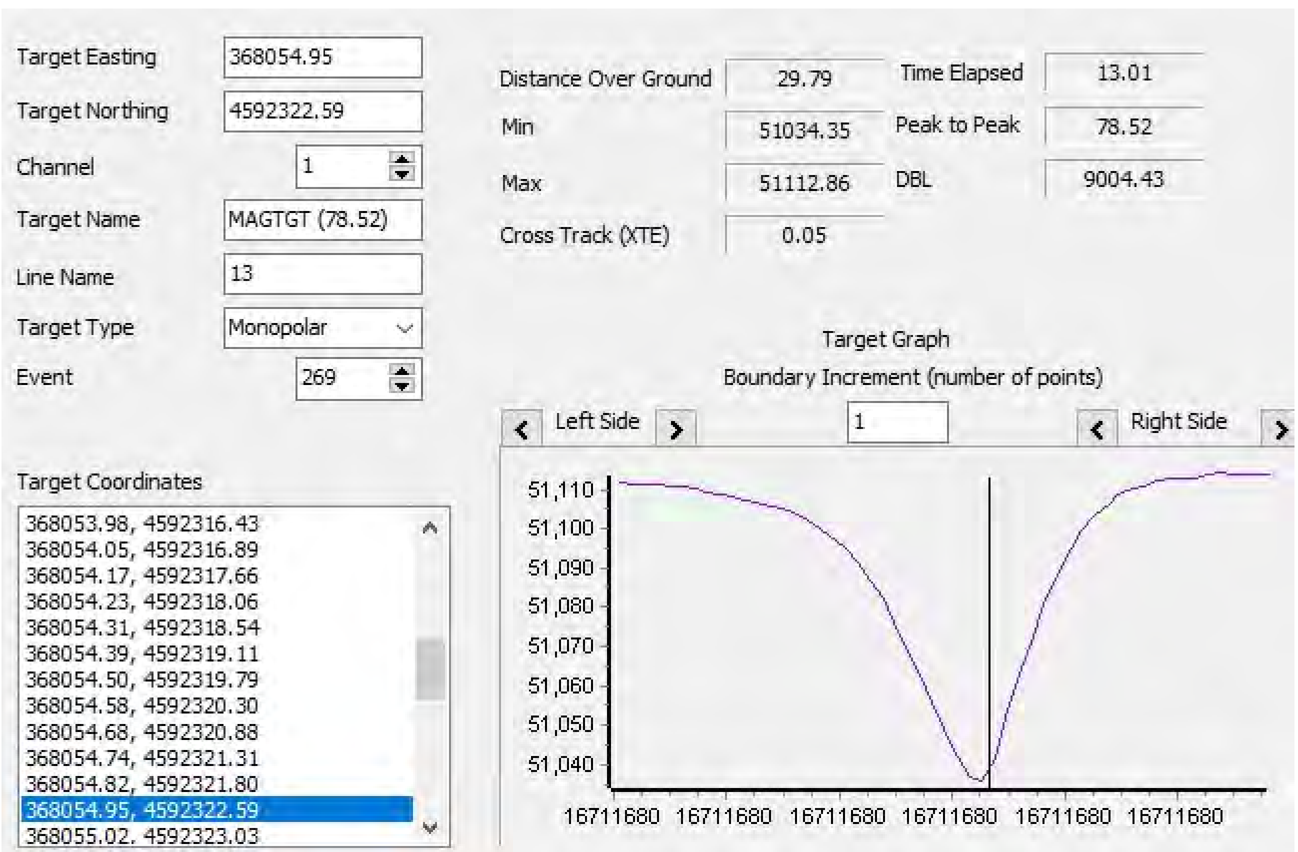
Name	Date	10/05/2021
MAGTGT (43.69)	Time	11:12:09
Survey File	Event	265
13	X	368047.0
Capture File	Y	4592232.0
368047.61.4592232.54.43.69. 51099.29.11.jpg	WGS84 Latitude	41 28 15.0198 N
	WGS84 Longitude	070 34 48.8879 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



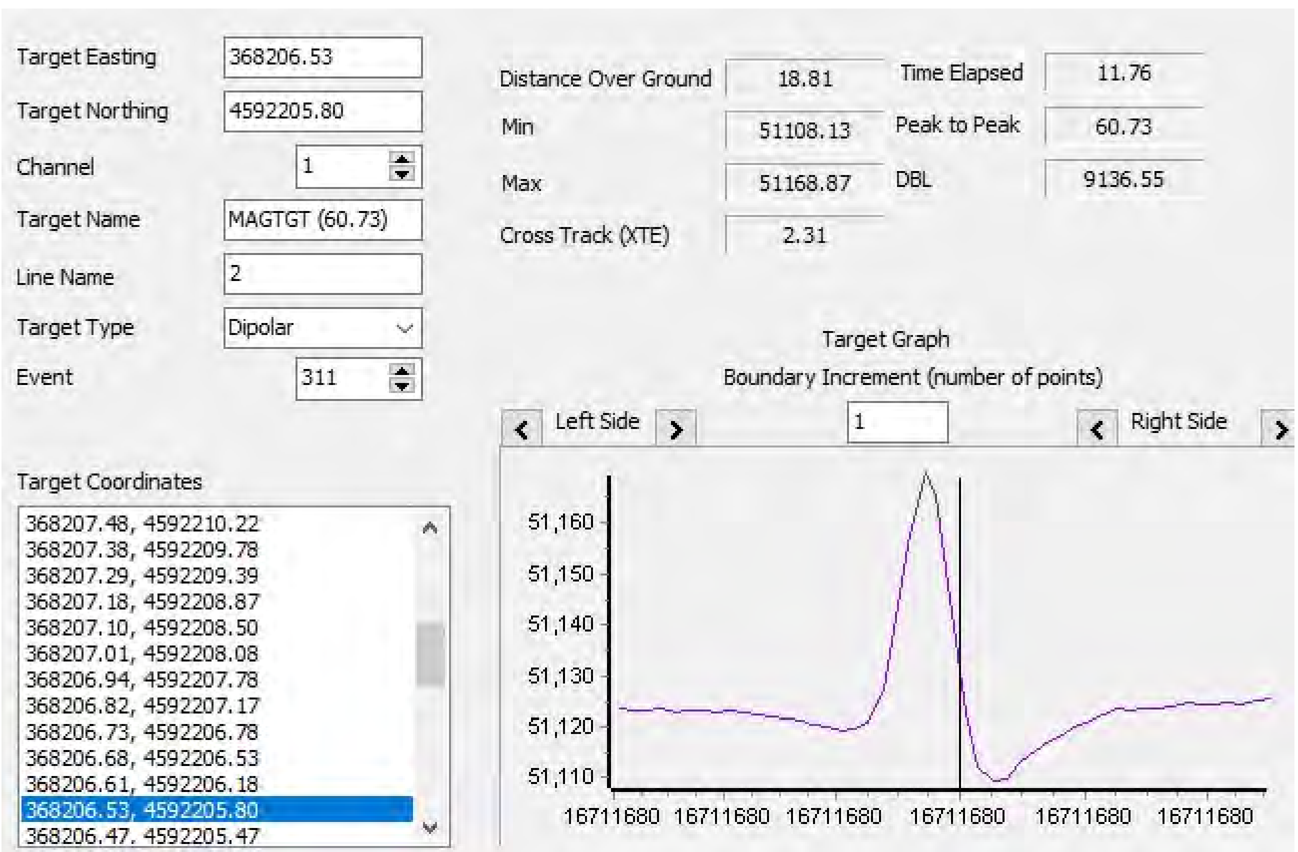
Name	Date	10/05/2021
MAGTGT (78.52)	Time	11:12:24
Survey File	Event	269
13	X	368054.0
Capture File	Y	4592322.0
368054.95.4592322.59.78.52.51047.54.11.jpg	WGS84 Latitude	41 28 17.9413 N
	WGS84 Longitude	070 34 48.6571 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



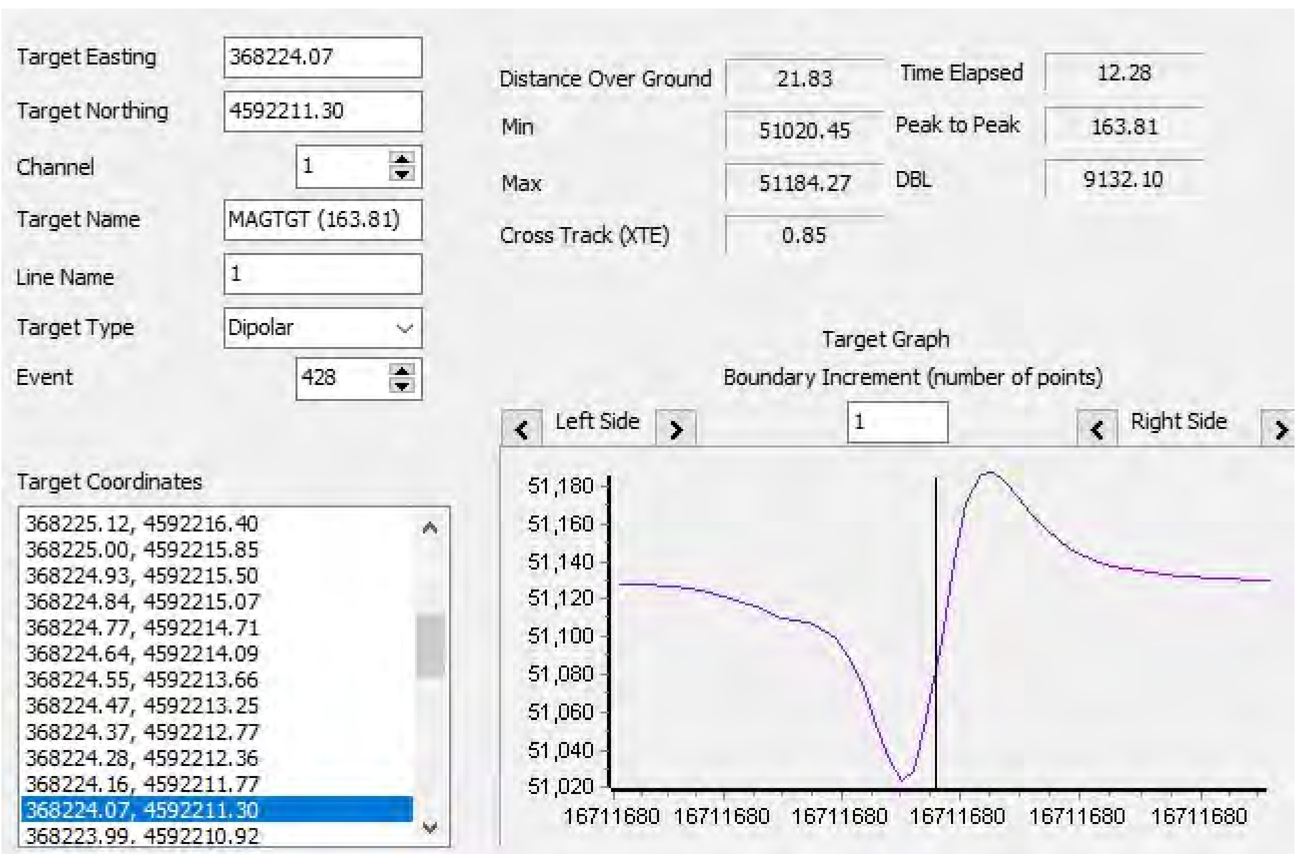
Name	Date	10/05/2021
MAGTGT (60.73)	Time	11:12:50
Survey File	Event	311
2	X	368206.0
Capture File	Y	4592205.0
368206.53.4592205.80.60.73.51164.18.12.jpg	WGS84 Latitude	41 28 14.2388 N
	WGS84 Longitude	070 34 42.0142 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



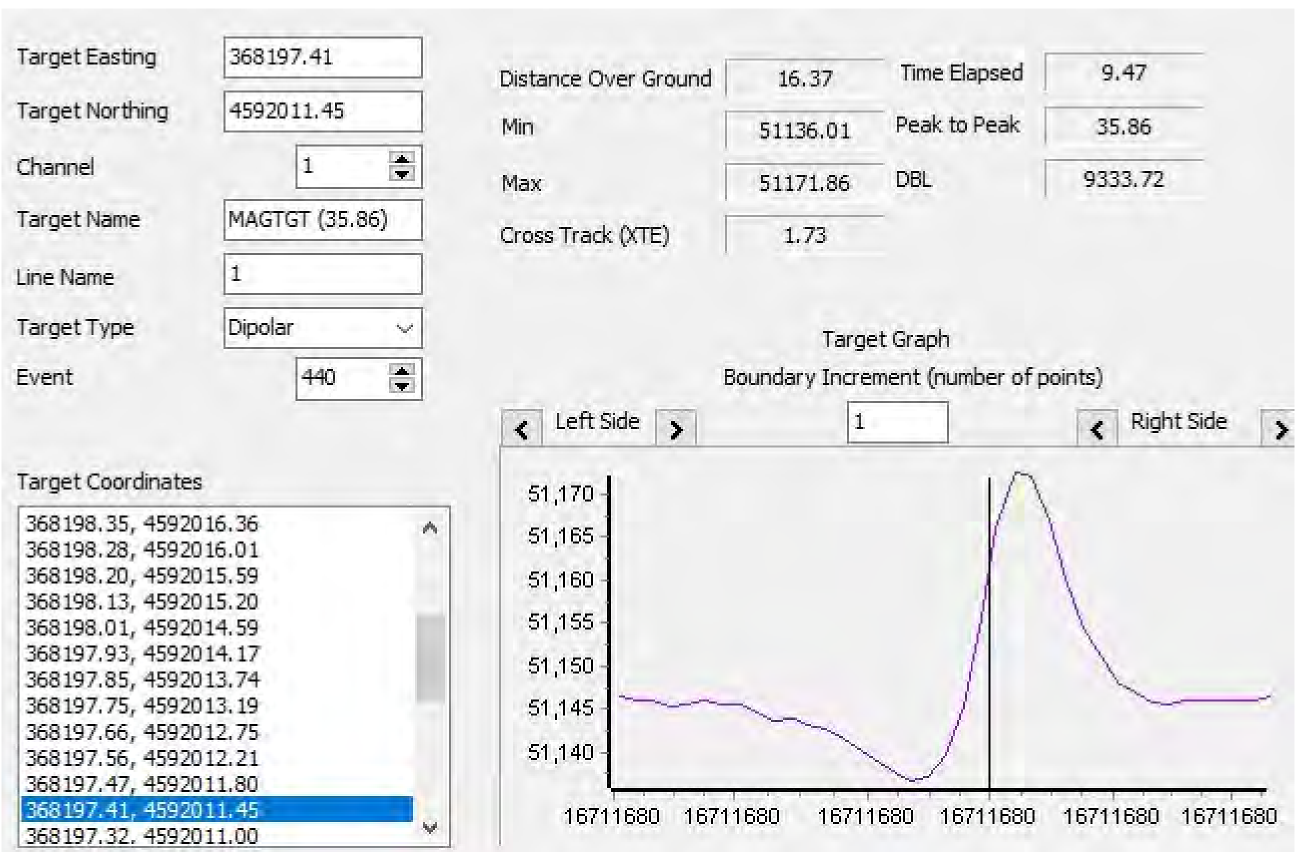
Name	Date	10/05/2021
MAGTGT (163.81)	Time	11:13:12
Survey File	Event	428
1	X	368224.0
Capture File	Y	4592211.0
368224.07.4592211.30.163.81.51094.81.14.jpg	WGS84 Latitude	41 28 14.4439 N
	WGS84 Longitude	070 34 41.2432 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



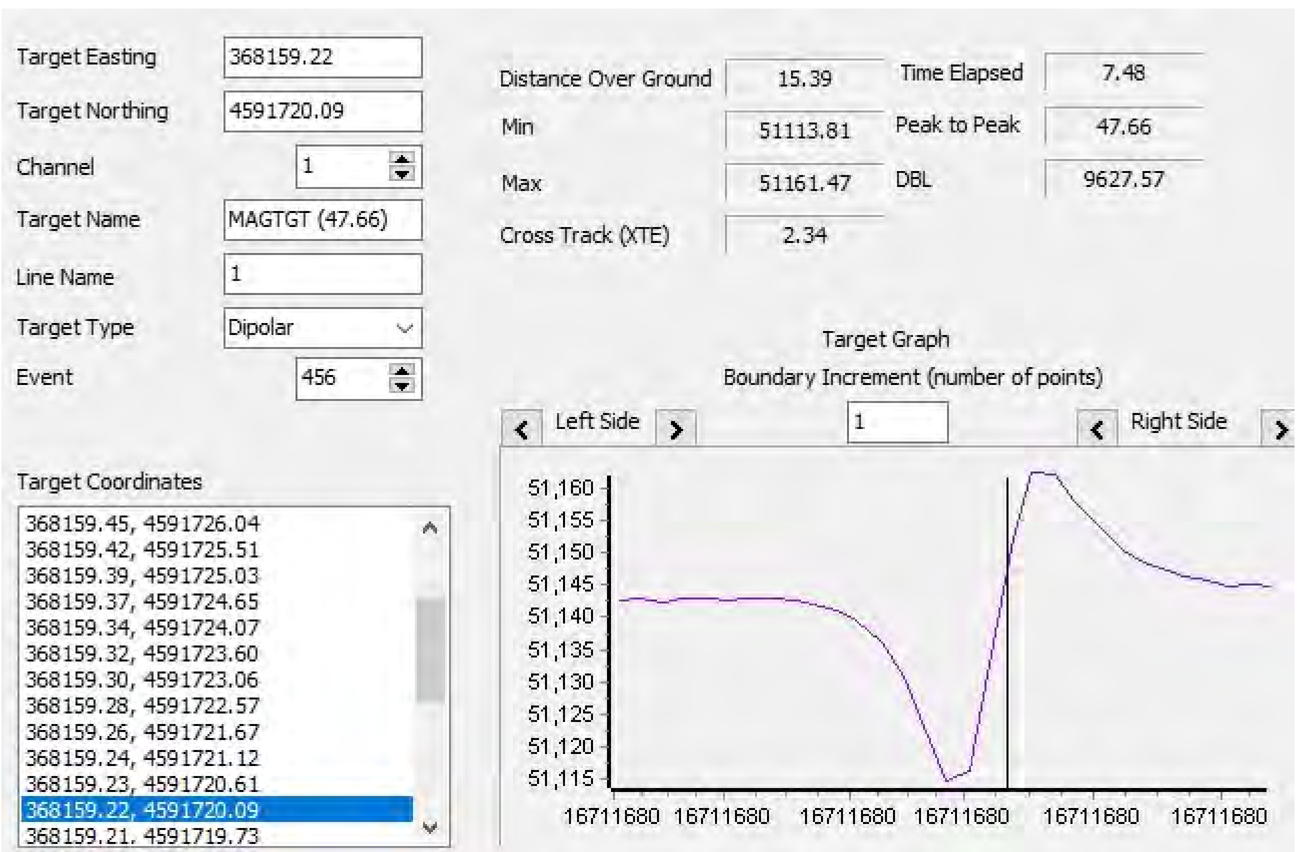
Name	Date	10/05/2021
MAGTGT (35.86)	Time	11:13:23
Survey File	Event	440
1	X	368197.0
Capture File	Y	4592011.0
368197.41.4592011.45.35.86. 51138.96.14.jpg	WGS84 Latitude	41 28 7.945 N
	WGS84 Longitude	070 34 42.2495 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



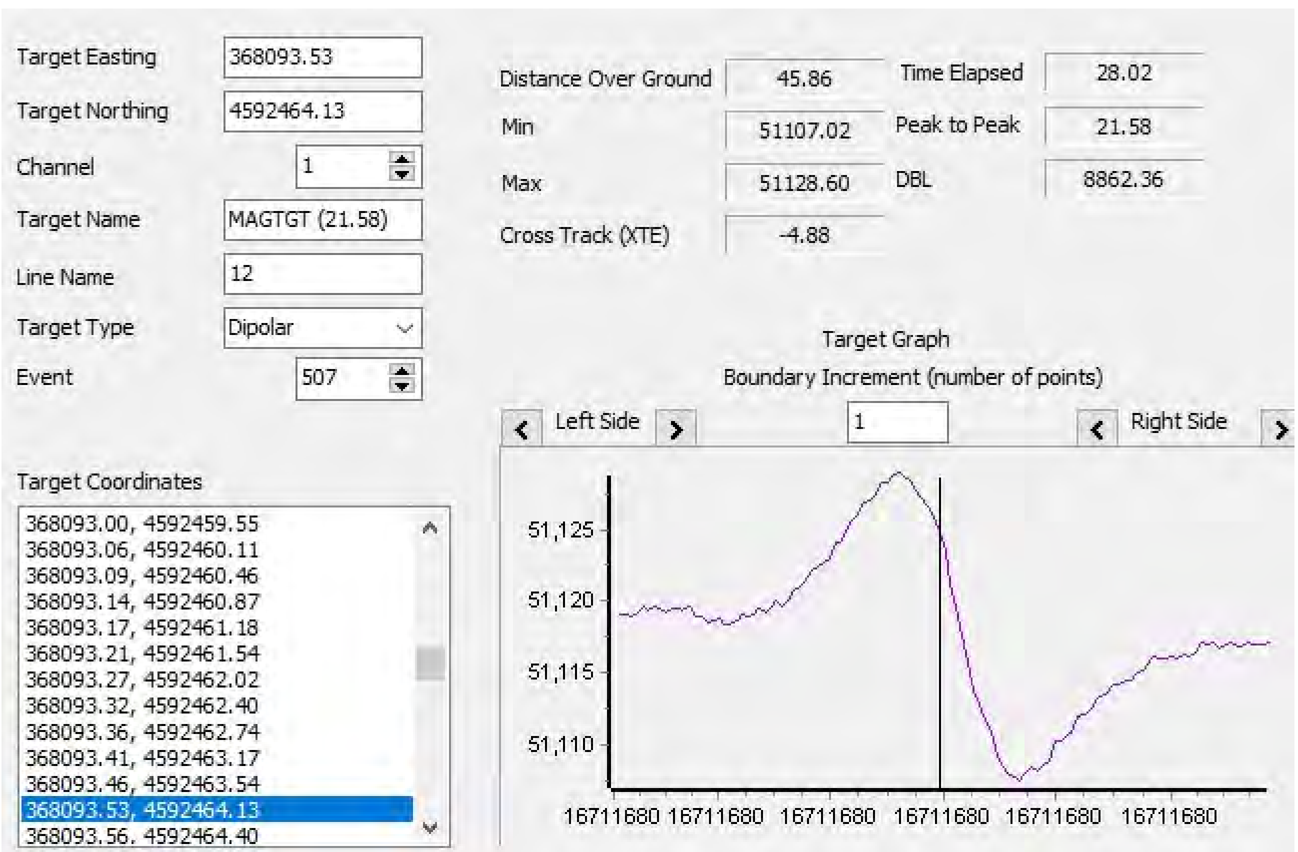
Name	Date	10/05/2021
MAGTGT (47.66)	Time	11:13:38
Survey File	Event	456
1	X	368159.0
Capture File	Y	4591720.0
368159.22.4591720.09.47.66.51113.81.14.jpg	WGS84 Latitude	41 27 58.4898 N
	WGS84 Longitude	070 34 43.6583 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



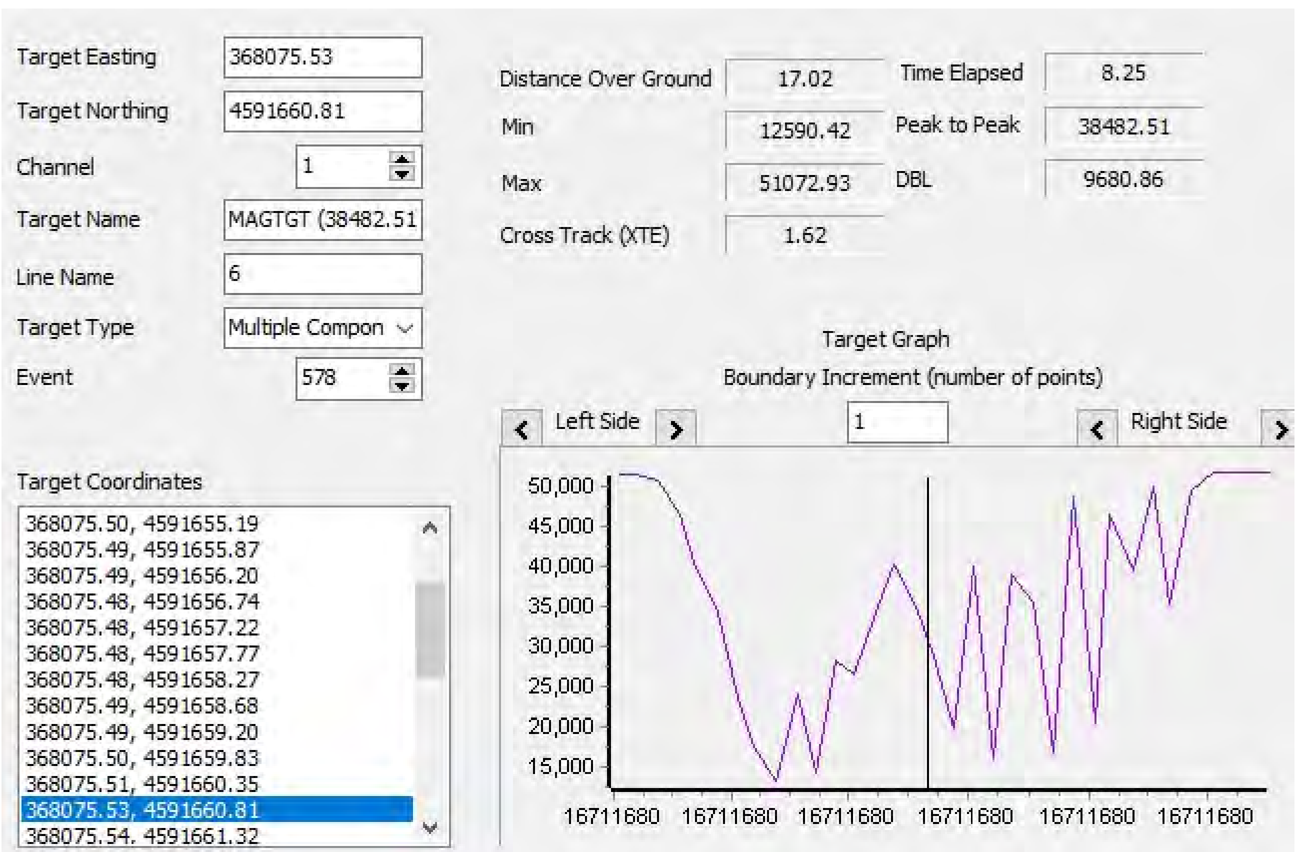
Name	Date	10/05/2021
MAGTGT (21.58)	Time	11:14:02
Survey File	Event	507
12	X	368093.0
Capture File	Y	4592464.0
368093.53.4592464.13.21.58.51123.20.15.jpg	WGS84 Latitude	41 28 22.5673 N
	WGS84 Longitude	070 34 47.088 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



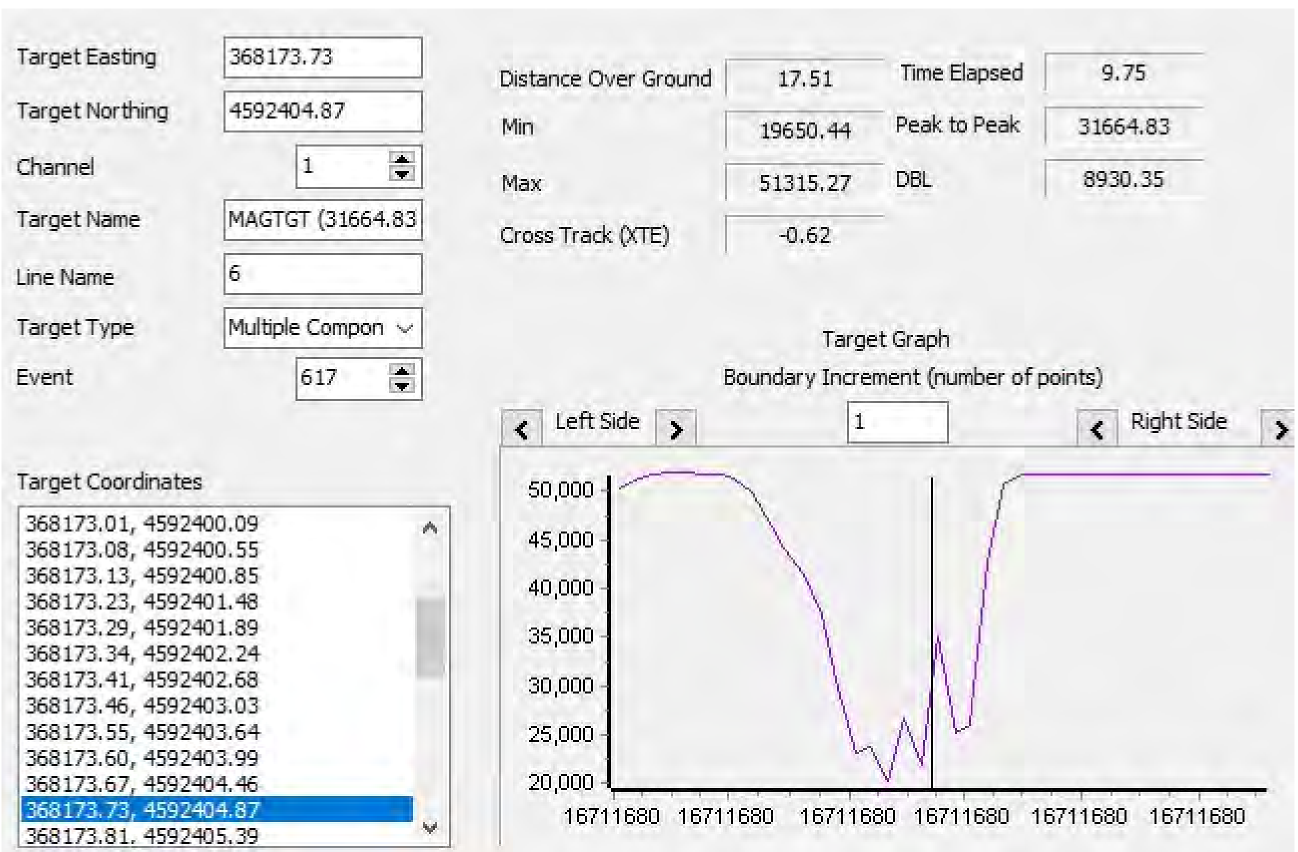
Name	Date	10/05/2021
MAGTGT (38482.51)	Time	11:14:45
Survey File	Event	578
6	X	368075.0
Capture File	Y	4591660.0
368075.53.4591660.81.38482.51.28153.85.17.jpg	WGS84 Latitude	41 27 56.4952 N
	WGS84 Longitude	070 34 47.231 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



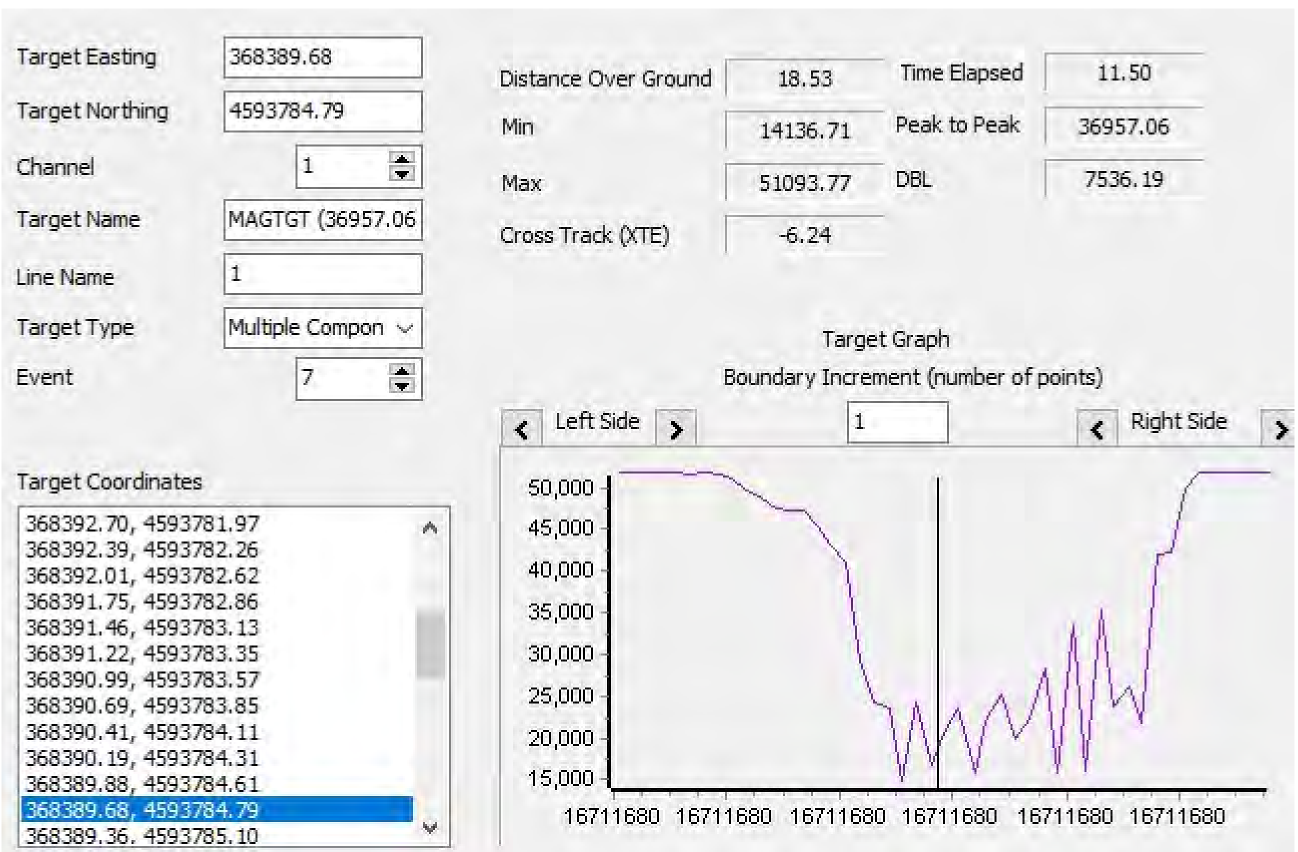
Name	Date	10/05/2021
MAGTGT (31664.83)	Time	11:14:56
Survey File	Event	617
6	X	368173.0
Capture File	Y	4592404.0
368173.73.4592404.87.31664.83.34390.79.17.jpg	WGS84 Latitude	41 28 20.6697 N
	WGS84 Longitude	070 34 43.5929 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



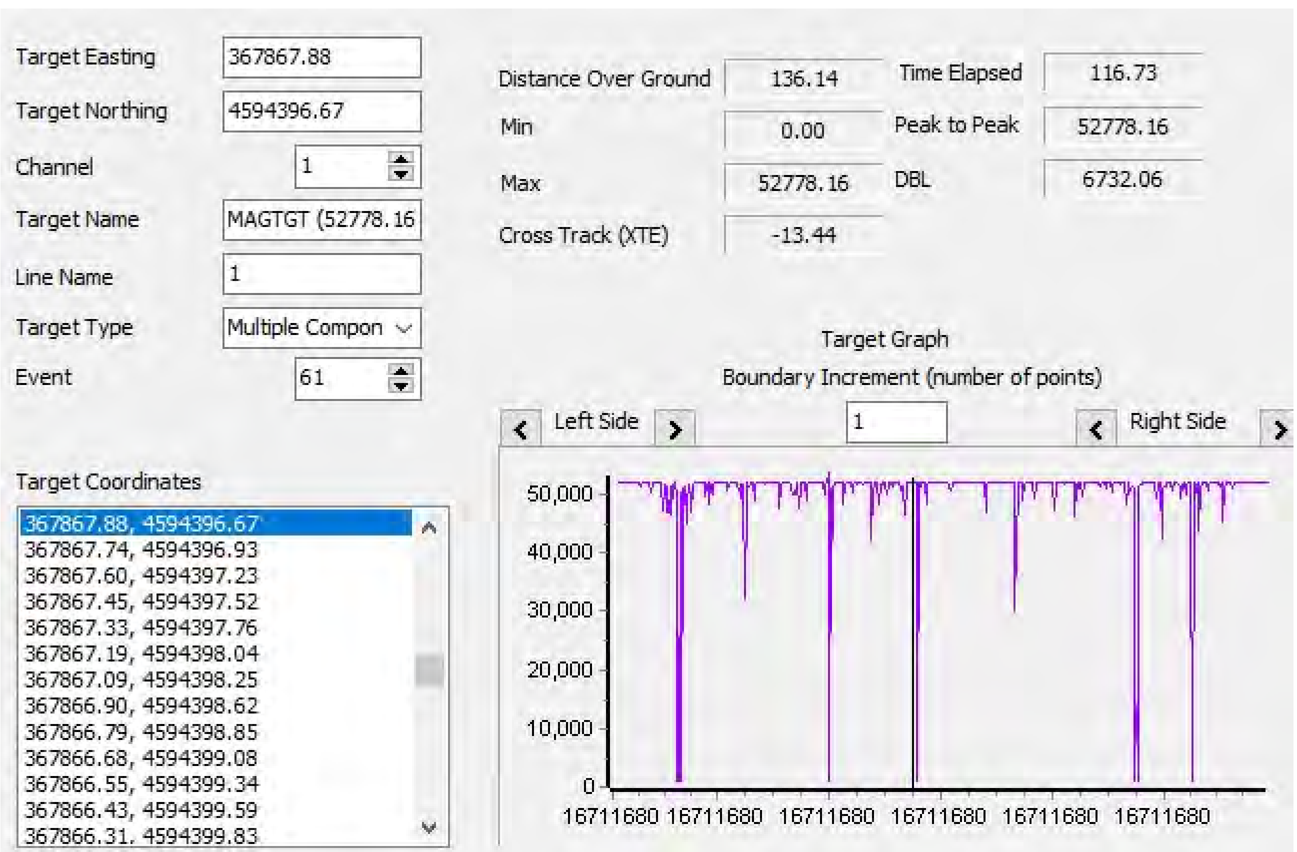
Name	Date	10/05/2021
MAGTGT (36957.06)	Time	11:33:22
Survey File	Event	7
1	X	368389.0
Capture File	Y	4593784.0
368389.68.4593784.79.36957.06.20015.09.0.jpg	WGS84 Latitude	41 29 5.5297 N
	WGS84 Longitude	070 34 35.3679 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



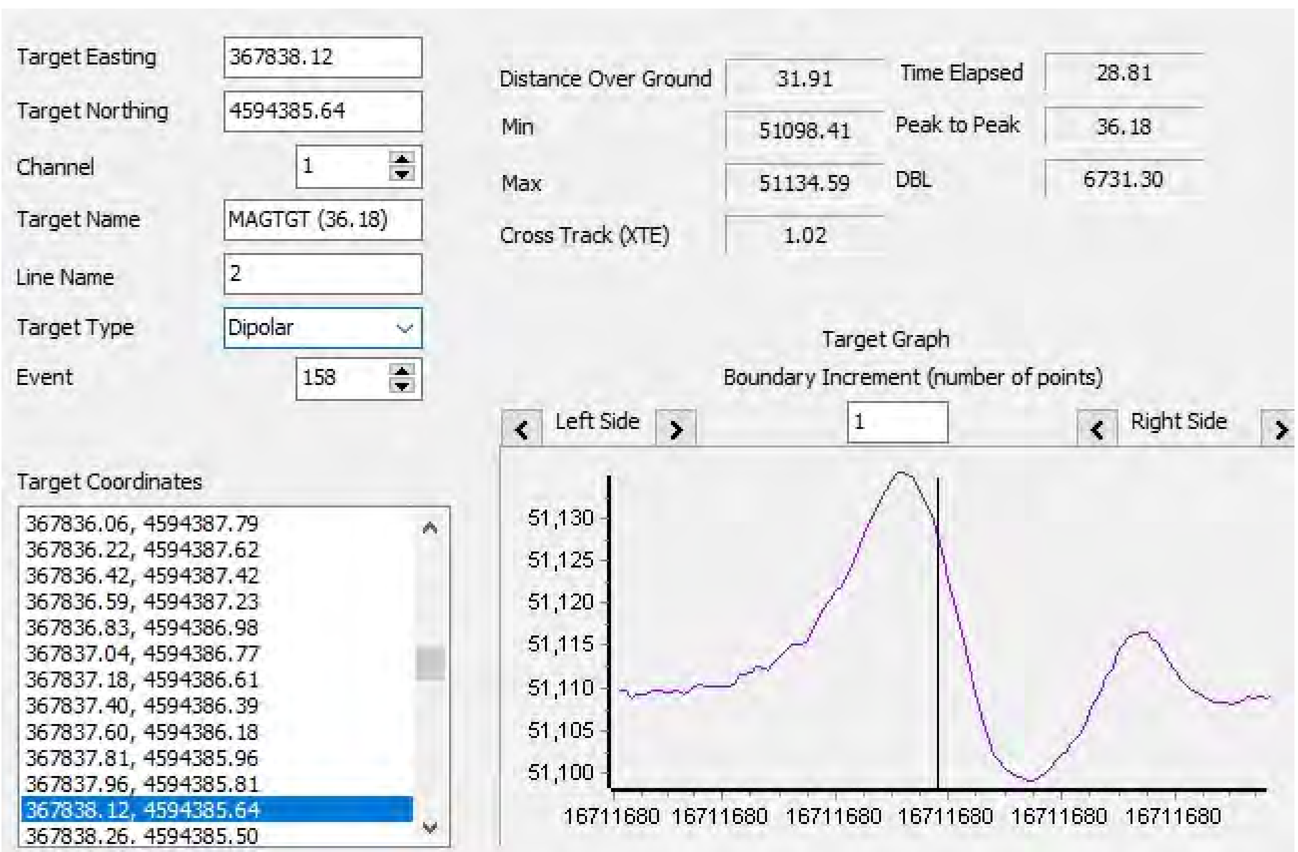
Name	Date	10/05/2021
MAGTGT (52778.16)	Time	11:33:55
Survey File	Event	61
1	X	367867.0
Capture File	Y	4594396.0
367867.88.4594396.67.52778.16.51118.27.0.jpg	WGS84 Latitude	41 29 25.0583 N
	WGS84 Longitude	070 34 58.3524 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



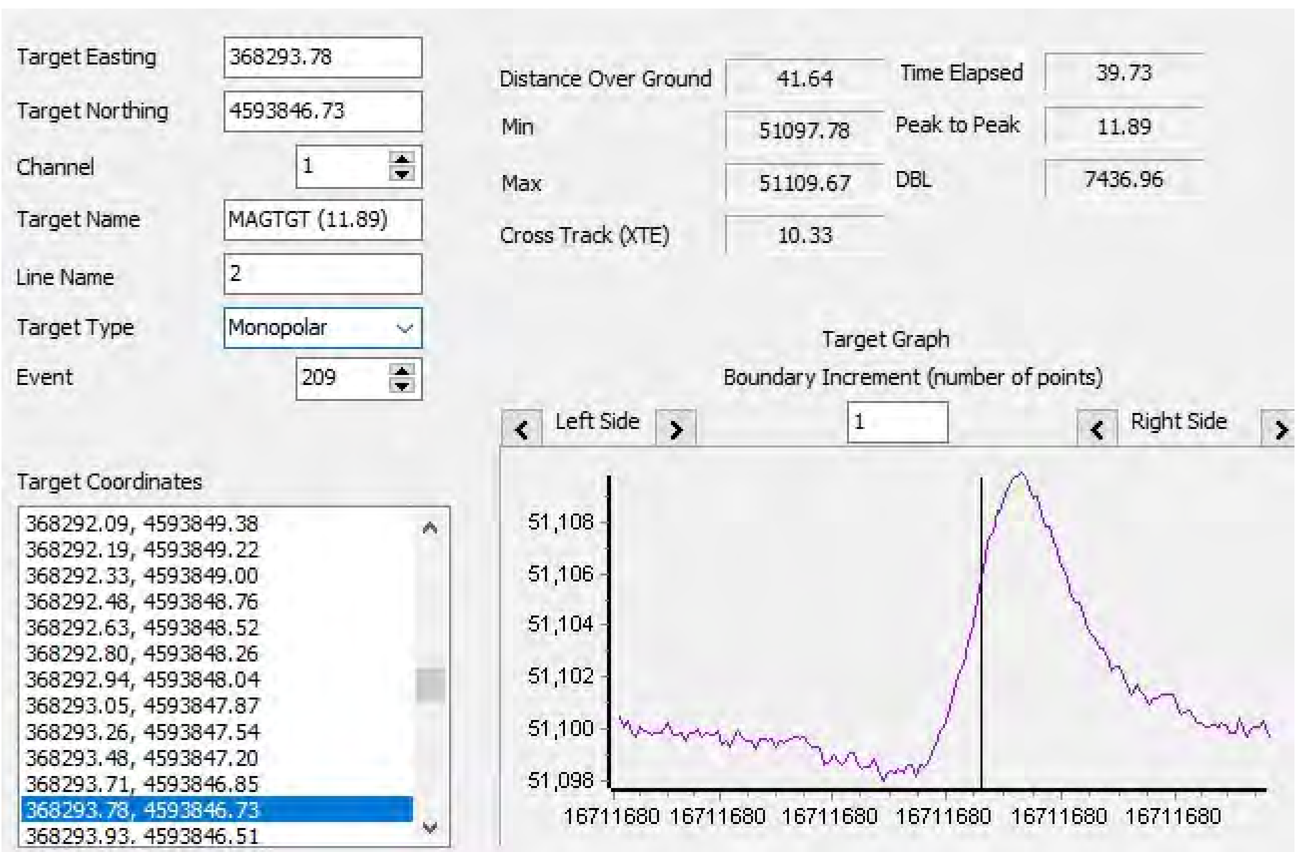
Name	Date	10/05/2021
MAGTGT (36.18)	Time	11:35:38
Survey File	Event	158
2	X	367838.0
Capture File	Y	4594385.0
367838.12.4594385.64.36.18.51124.50.1.jpg	WGS84 Latitude	41 29 24.6845 N
	WGS84 Longitude	070 34 59.5939 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



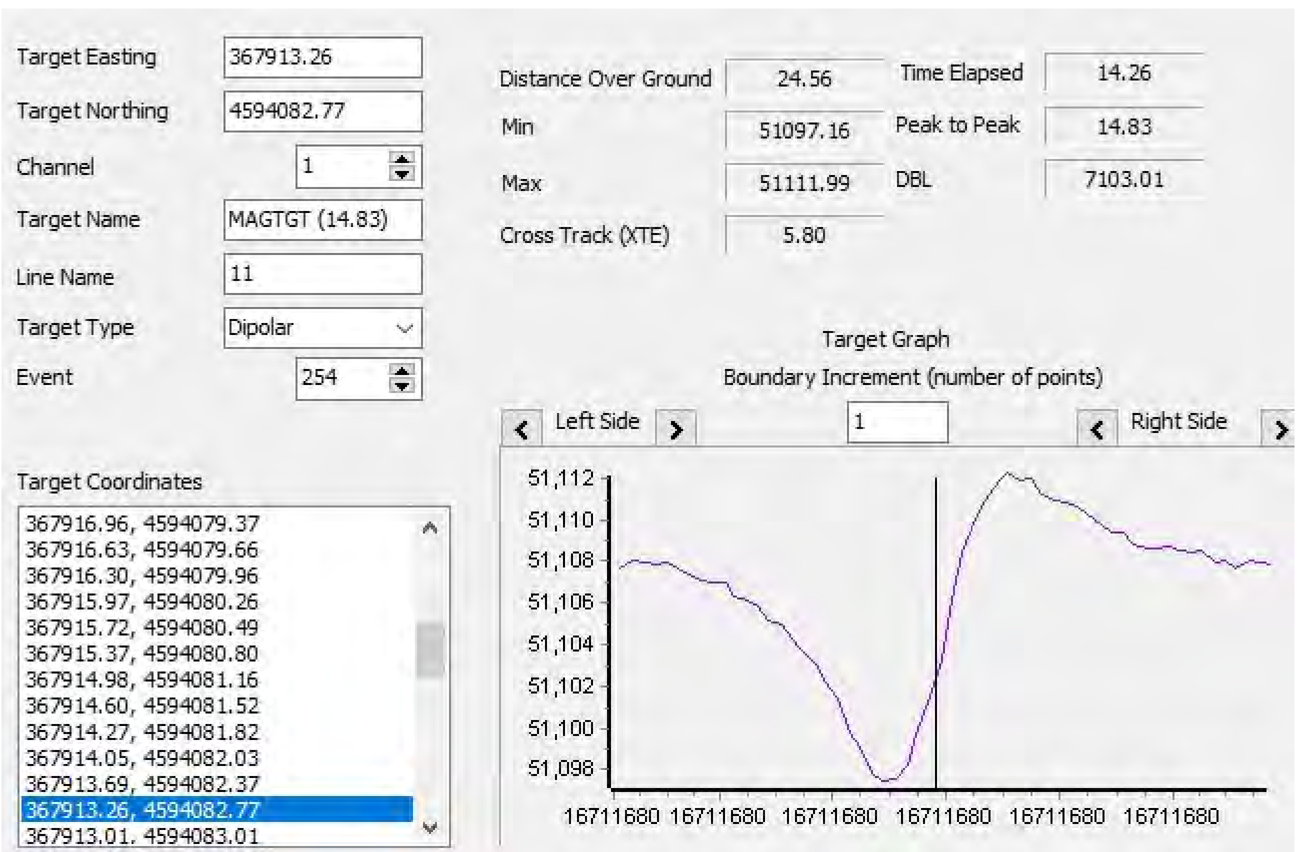
Name	Date	10/05/2021
MAGTGT (11.89)	Time	11:36:05
Survey File	Event	209
2	X	368293.0
Capture File	Y	4593846.0
368293.78.4593846.73.11.89.51099.68.1.jpg	WGS84 Latitude	41 29 7.4826 N
	WGS84 Longitude	070 34 39.5549 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



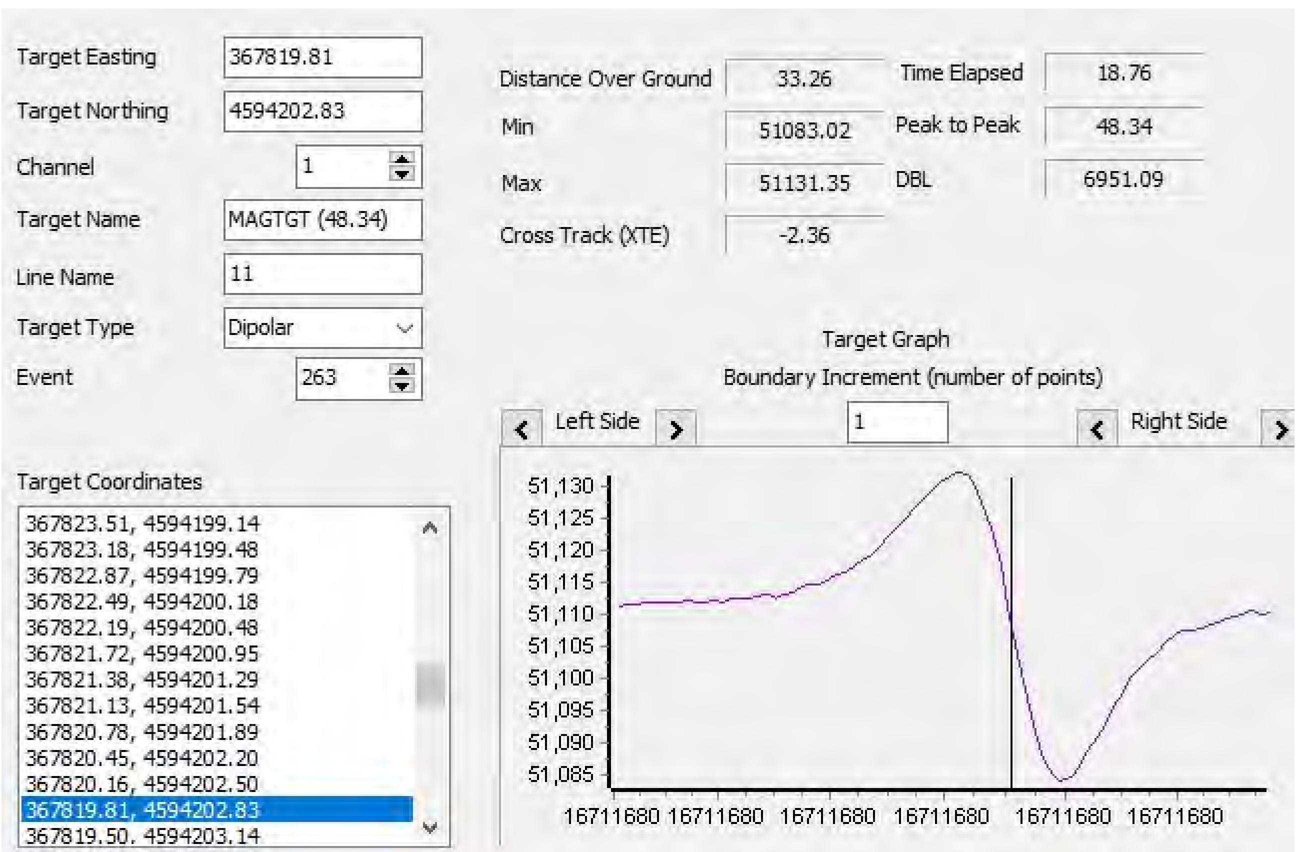
Name	Date	10/05/2021
MAGTGT (14.83)	Time	11:44:09
Survey File	Event	254
11	X	367913.0
Capture File	Y	4594082.0
367913.26.4594082.77.14.83. 51102.91.2.jpg	WGS84 Latitude	41 29 14.9074 N
	WGS84 Longitude	070 34 56.1216 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



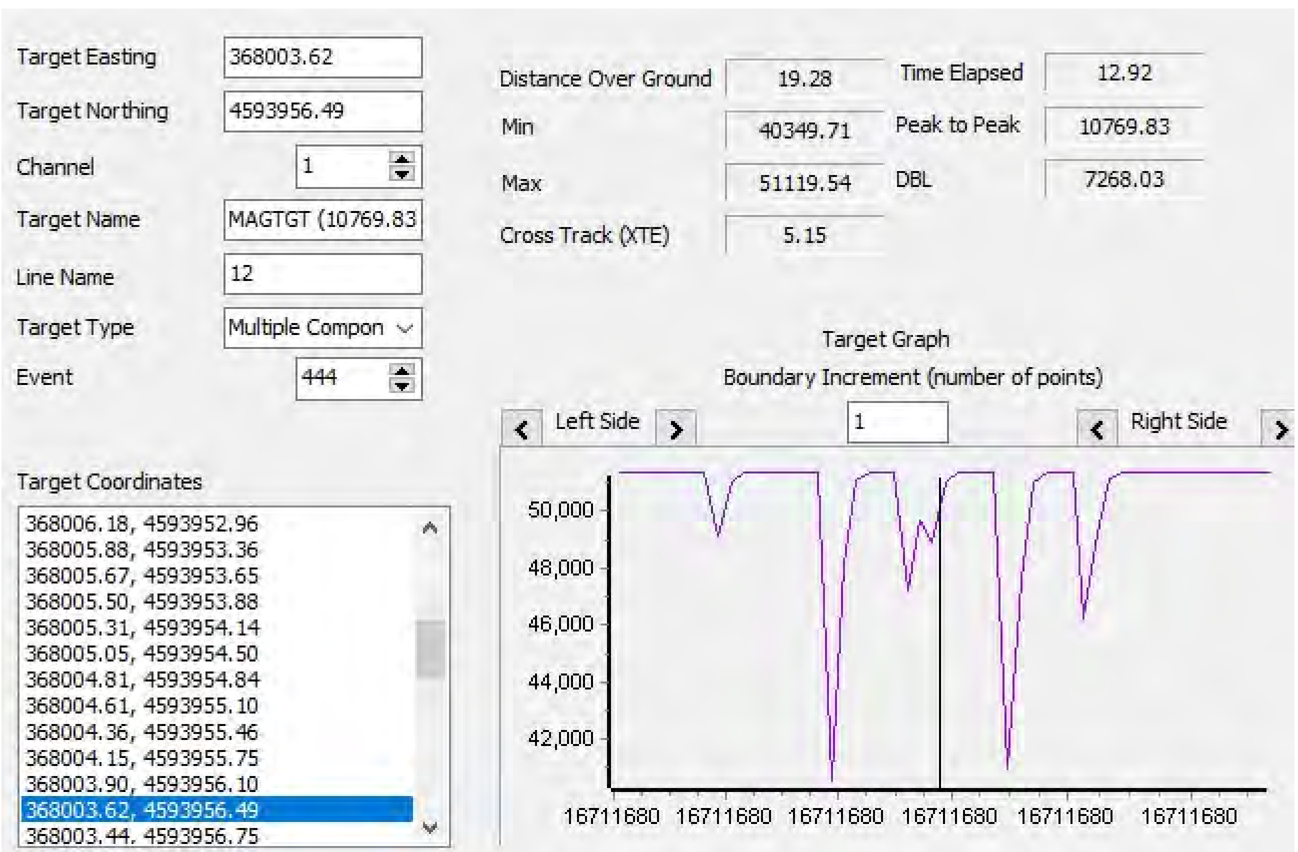
Name	Date	10/05/2021
MAGTGT (48.34)	Time	11:44:25
Survey File	Event	263
11	X	367819.0
Capture File	Y	4594202.0
367819.81.4594202.83.48.34. 51129.65.2.jpg	WGS84 Latitude	41 29 18.7414 N
	WGS84 Longitude	070 35 0.2685 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



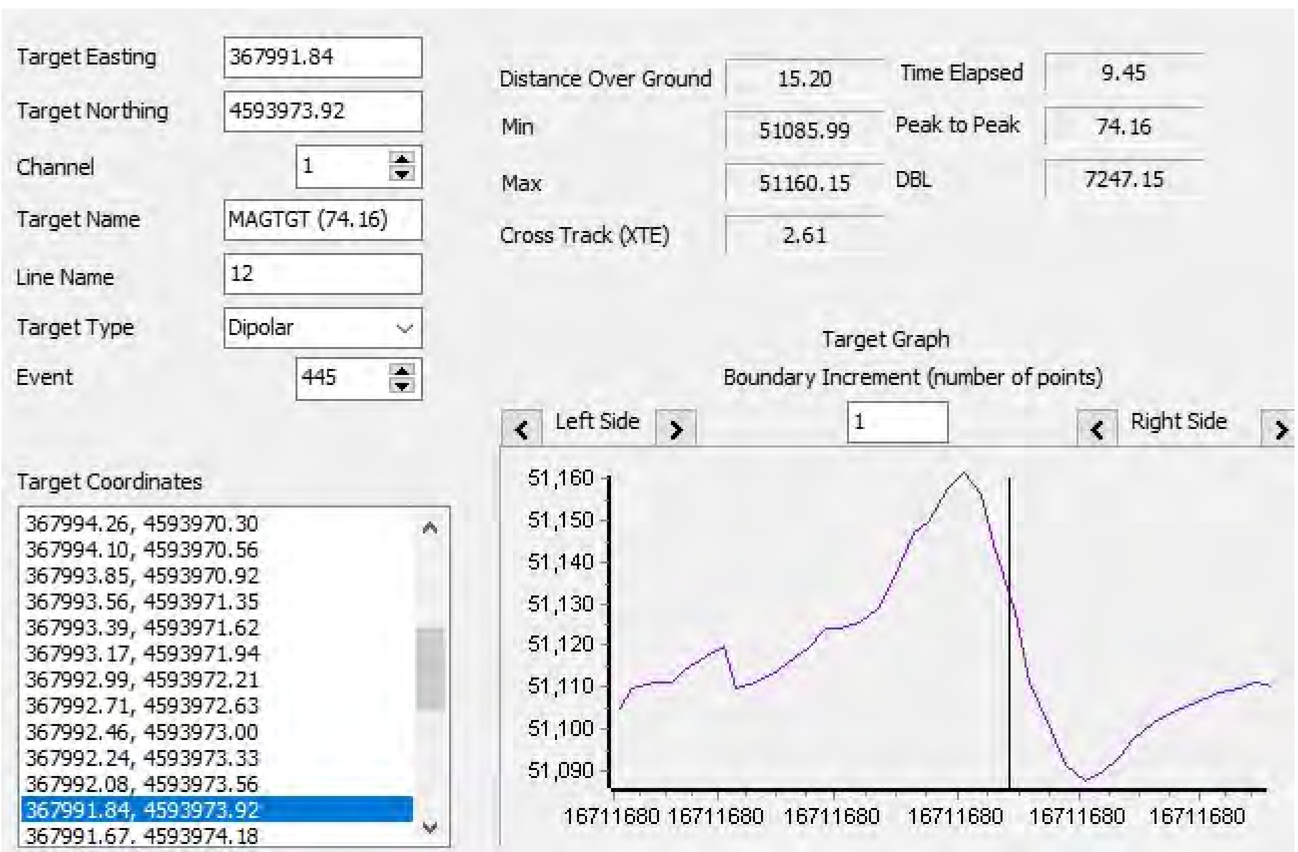
Name	Date	10/05/2021
MAGTGT (10769.83)	Time	11:45:03
Survey File	Event	444
12	X	368003.0
Capture File	Y	4593956.0
368003.62.4593956.49.10769.83.50776.90.5.jpg	WGS84 Latitude	41 29 10.8765 N
	WGS84 Longitude	070 34 52.1426 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



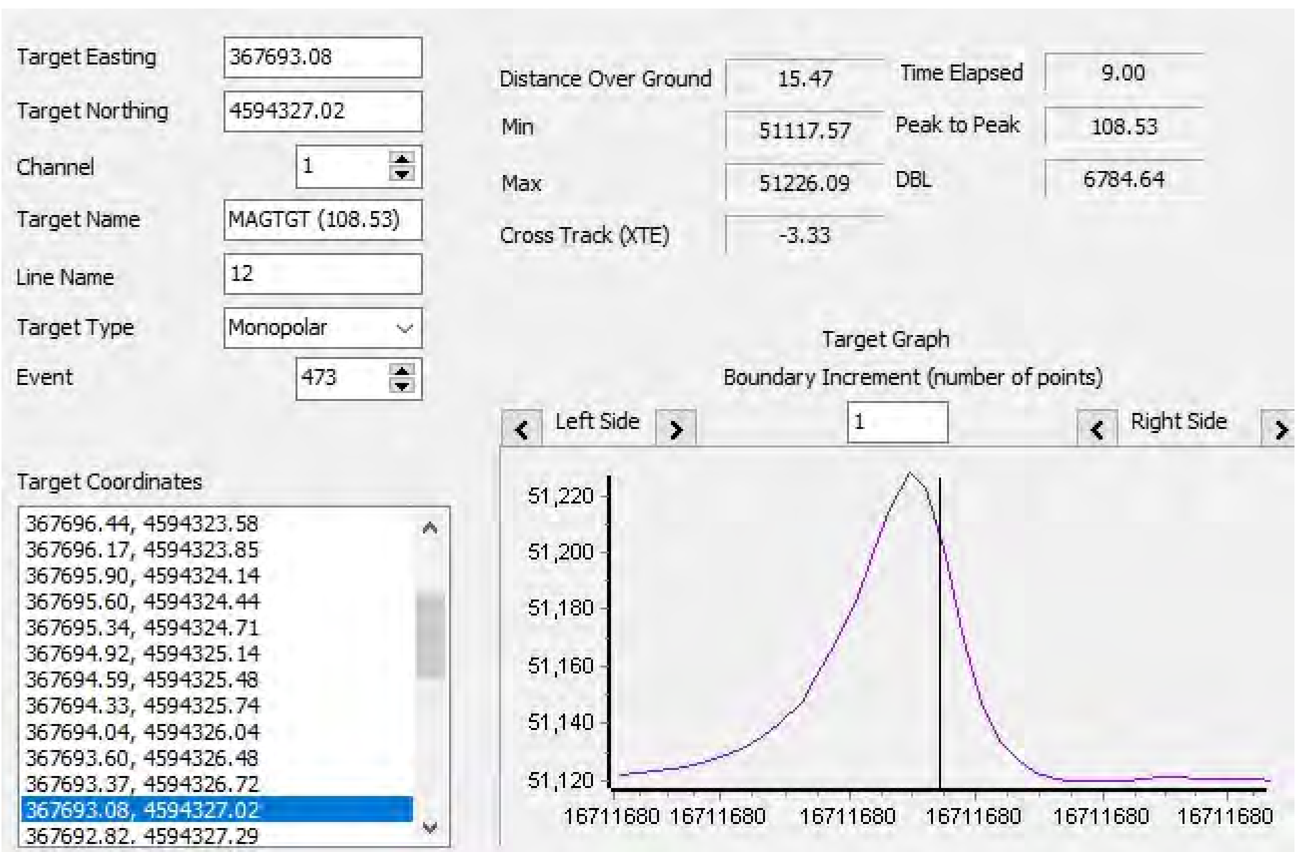
Name	Date	10/05/2021
MAGTGT (74.16)	Time	11:45:39
Survey File	Event	445
12	X	367991.0
Capture File	Y	4593973.0
367991.84.4593973.92.74.16.51147.90.5.jpg	WGS84 Latitude	41 29 11.4205 N
	WGS84 Longitude	070 34 52.6733 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



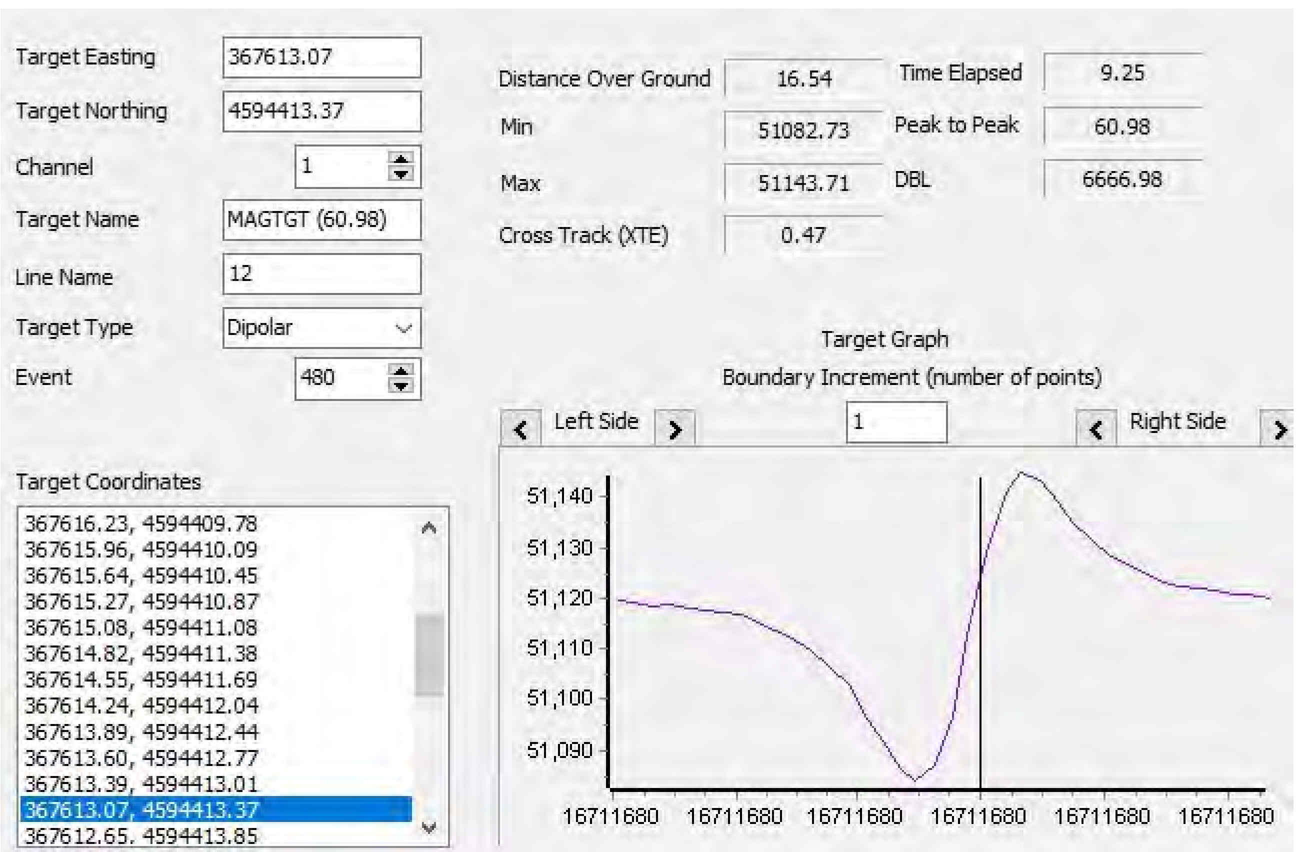
Name	Date	10/05/2021
MAGTGT (108.53)	Time	11:45:56
Survey File	Event	473
12	X	367693.0
Capture File	Y	4594327.0
367693.08.4594327.02.108.53 .51196.80.5.jpg	WGS84 Latitude	41 29 22.7183 N
	WGS84 Longitude	070 35 5.799 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



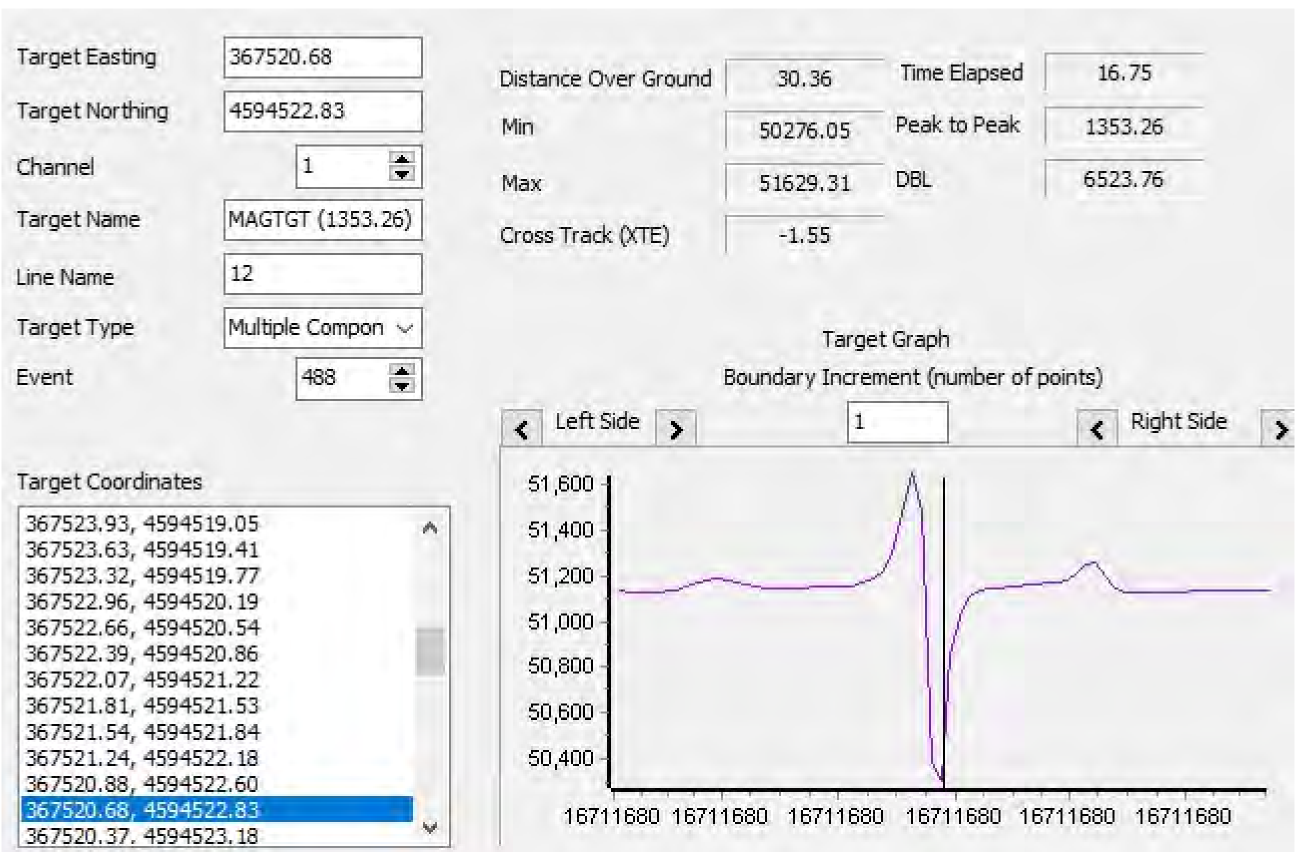
Name	Date	10/05/2021
MAGTGT (60.98)	Time	11:46:12
Survey File	Event	480
12	X	367613.0
Capture File	Y	4594413.0
367613.07.4594413.37.60.98.51086.00.5.jpg	WGS84 Latitude	41 29 25.4584 N
	WGS84 Longitude	070 35 9.3158 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



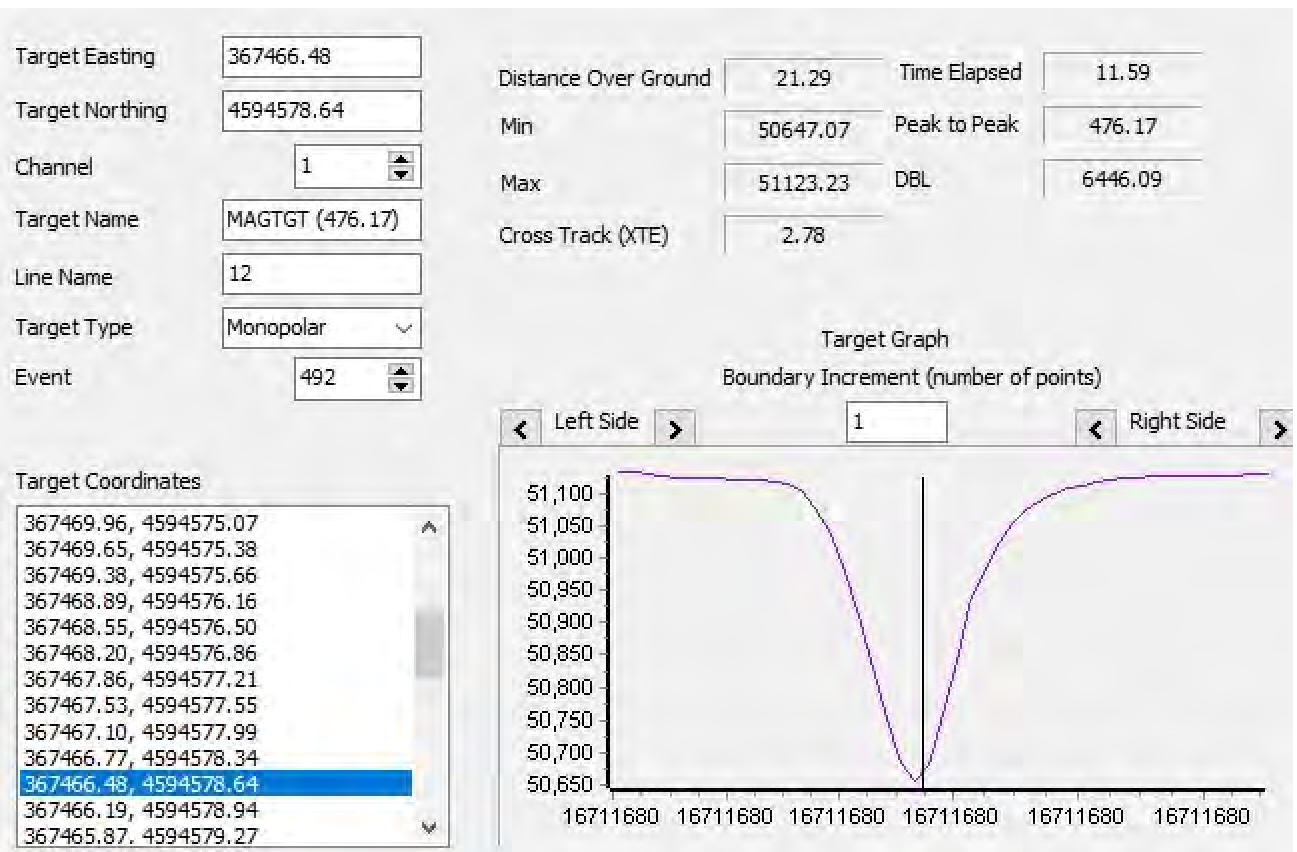
Name	Date	10/05/2021
MAGTGT (1353.26)	Time	11:46:37
Survey File	Event	488
12	X	367520.0
Capture File	Y	4594522.0
367520.68.4594522.83.1353.26.50829.50.5.jpg	WGS84 Latitude	41 29 28.9363 N
	WGS84 Longitude	070 35 13.4113 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



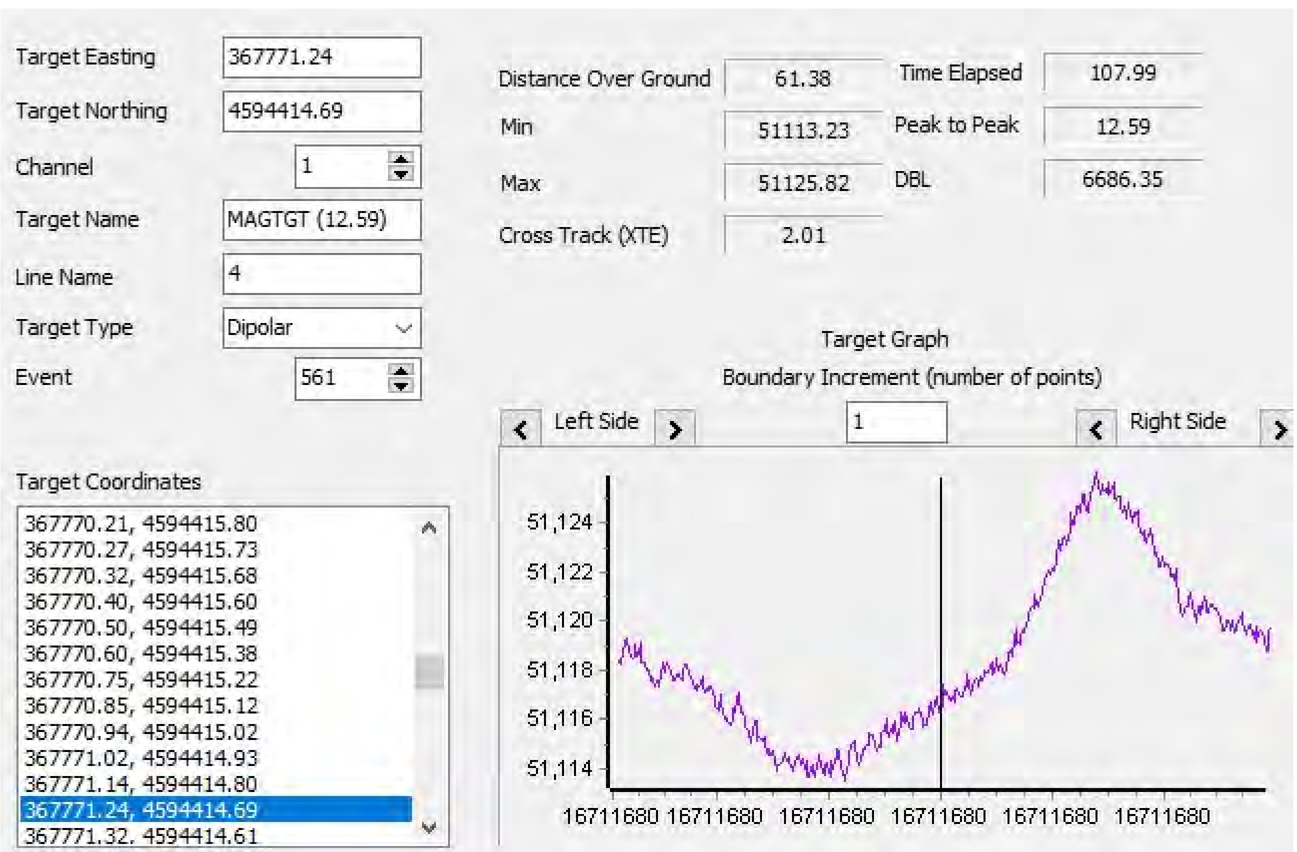
Name	Date	10/05/2021
MAGTGT (476.17)	Time	11:46:57
Survey File	Event	492
12	X	367466.0
Capture File	Y	4594578.0
367466.48.4594578.64.476.17 .50749.29.5.jpg	WGS84 Latitude	41 29 30.7194 N
	WGS84 Longitude	070 35 15.7836 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



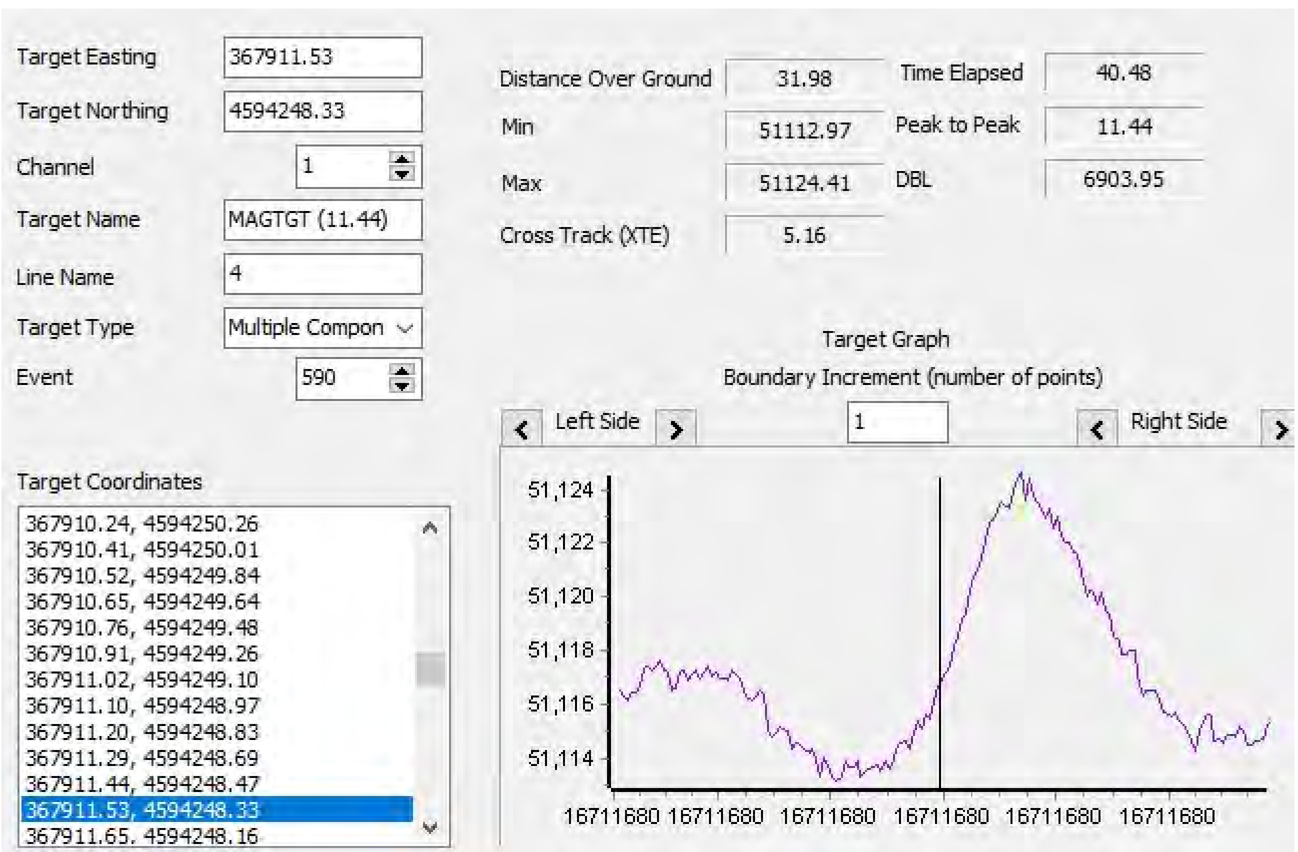
Name	Date	10/05/2021
MAGTGT (12.59)	Time	11:47:30
Survey File	Event	561
4	X	367771.0
Capture File	Y	4594414.0
367771.24.4594414.69.12.59. 51116.80.6.jpg	WGS84 Latitude	41 29 25.5847 N
	WGS84 Longitude	070 35 2.5052 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



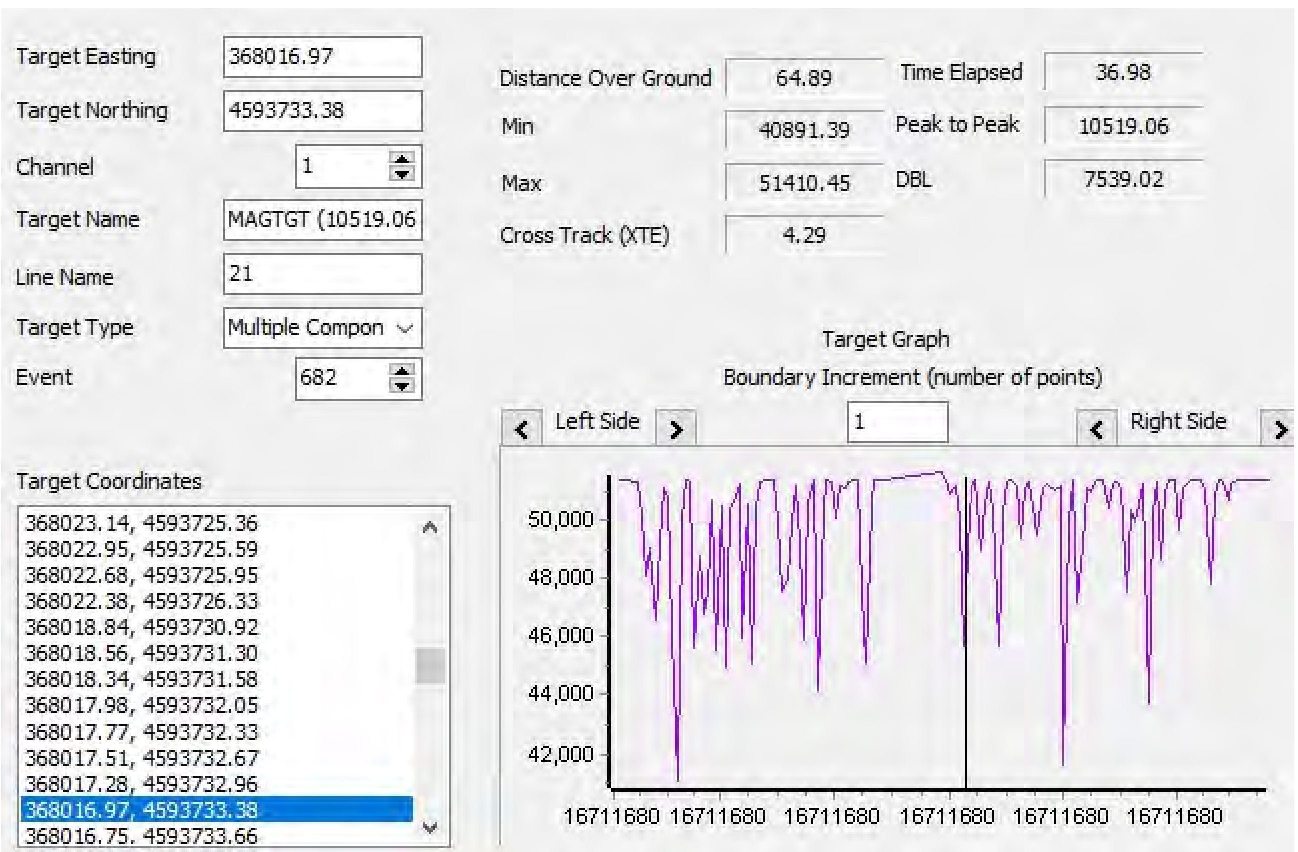
Name	Date	10/05/2021
MAGTGT (11.44)	Time	11:47:43
Survey File	Event	590
4	X	367911.0
Capture File	Y	4594248.0
367911.53.4594248.33.11.44.51116.96.6.jpg	WGS84 Latitude	41 29 20.287 N
	WGS84 Longitude	070 34 56.3388 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



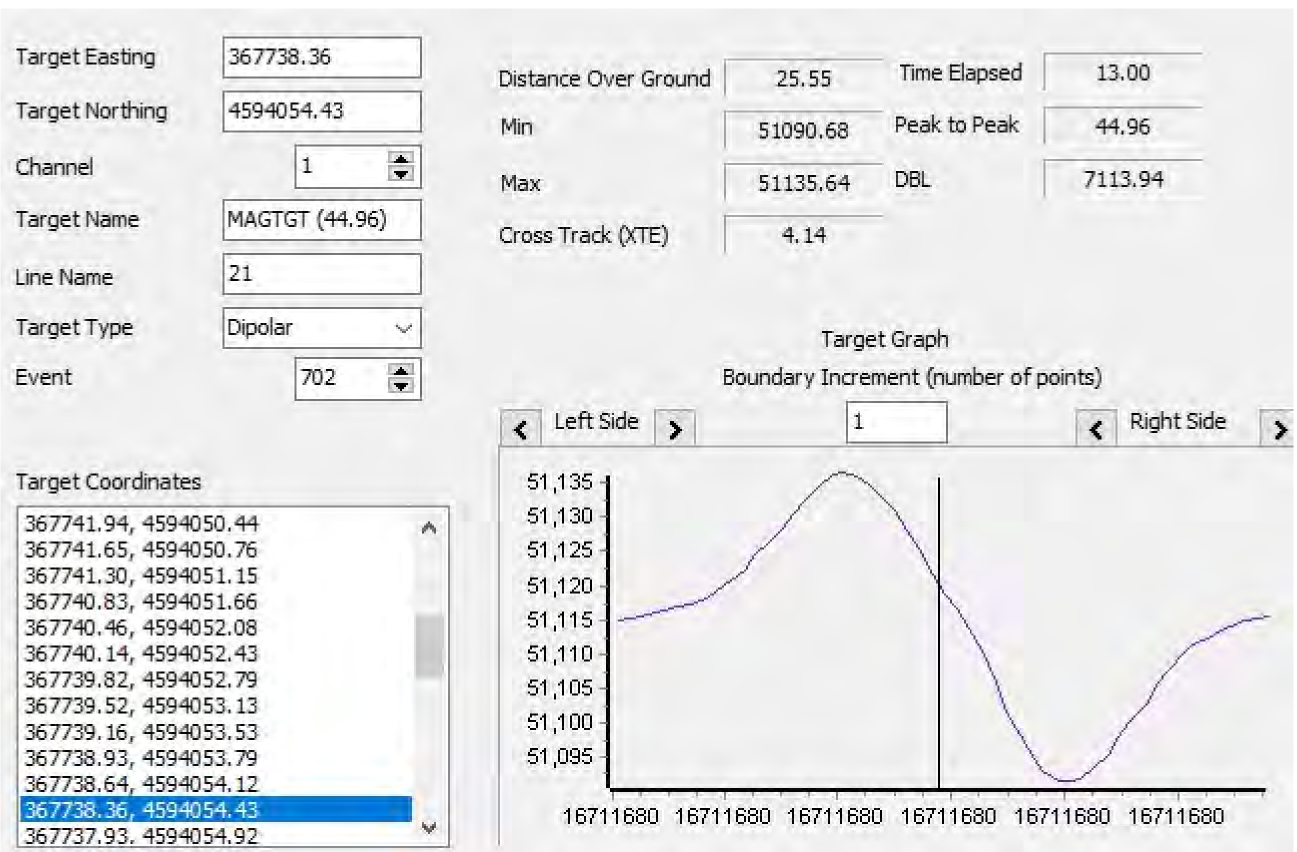
Name	Date	10/05/2021
MAGTGT (10519.06)	Time	11:48:05
Survey File	Event	682
21	X	368016.0
Capture File	Y	4593733.0
368016.97.4593733.38.10519.06.50890.71.7.jpg	WGS84 Latitude	41 29 3.6558 N
	WGS84 Longitude	070 34 51.4064 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



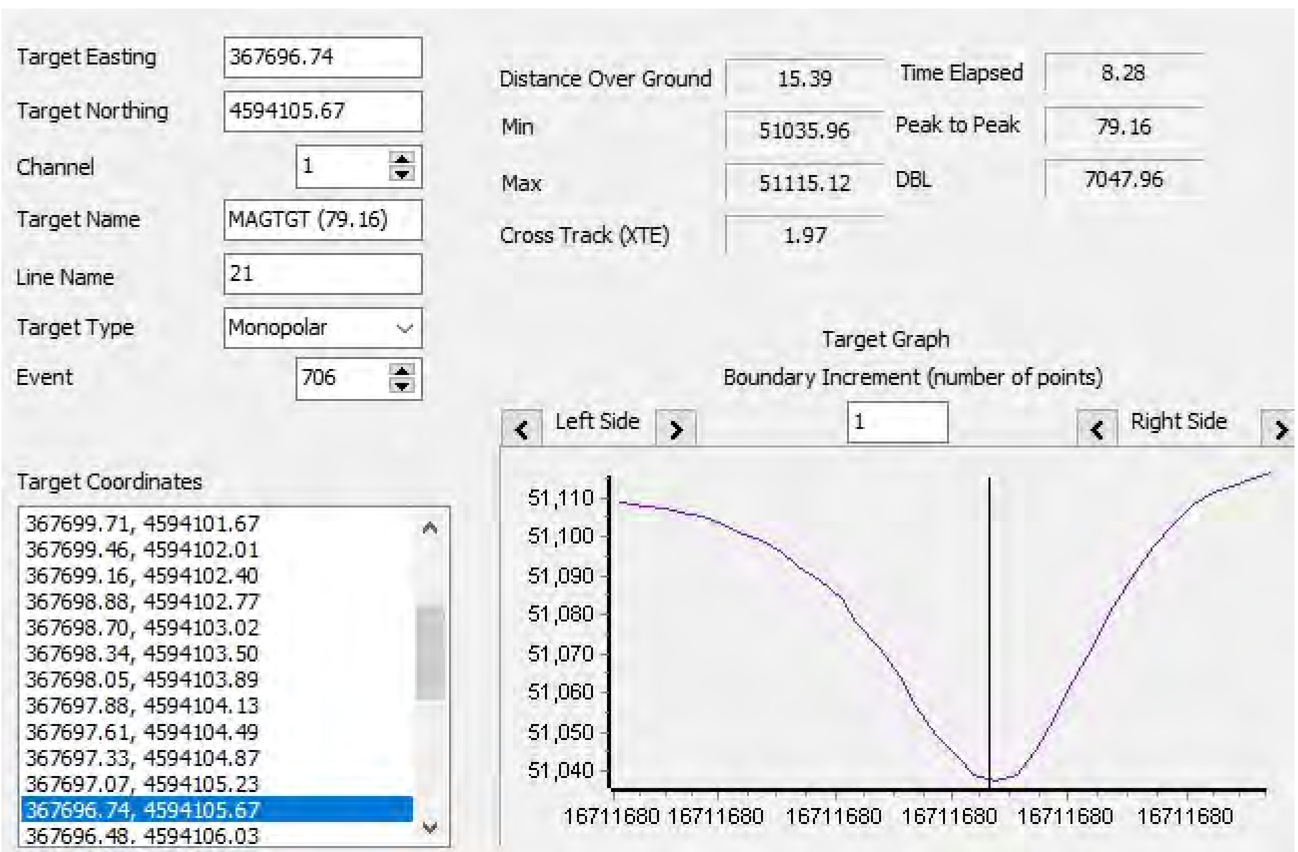
Name	Date	10/05/2021
MAGTGT (44.96)	Time	11:48:32
Survey File	Event	702
21	X	367738.0
Capture File	Y	4594054.0
367738.36.4594054.43.44.96. 51117.82.7.jpg	WGS84 Latitude	41 29 13.8959 N
	WGS84 Longitude	070 35 3.6435 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



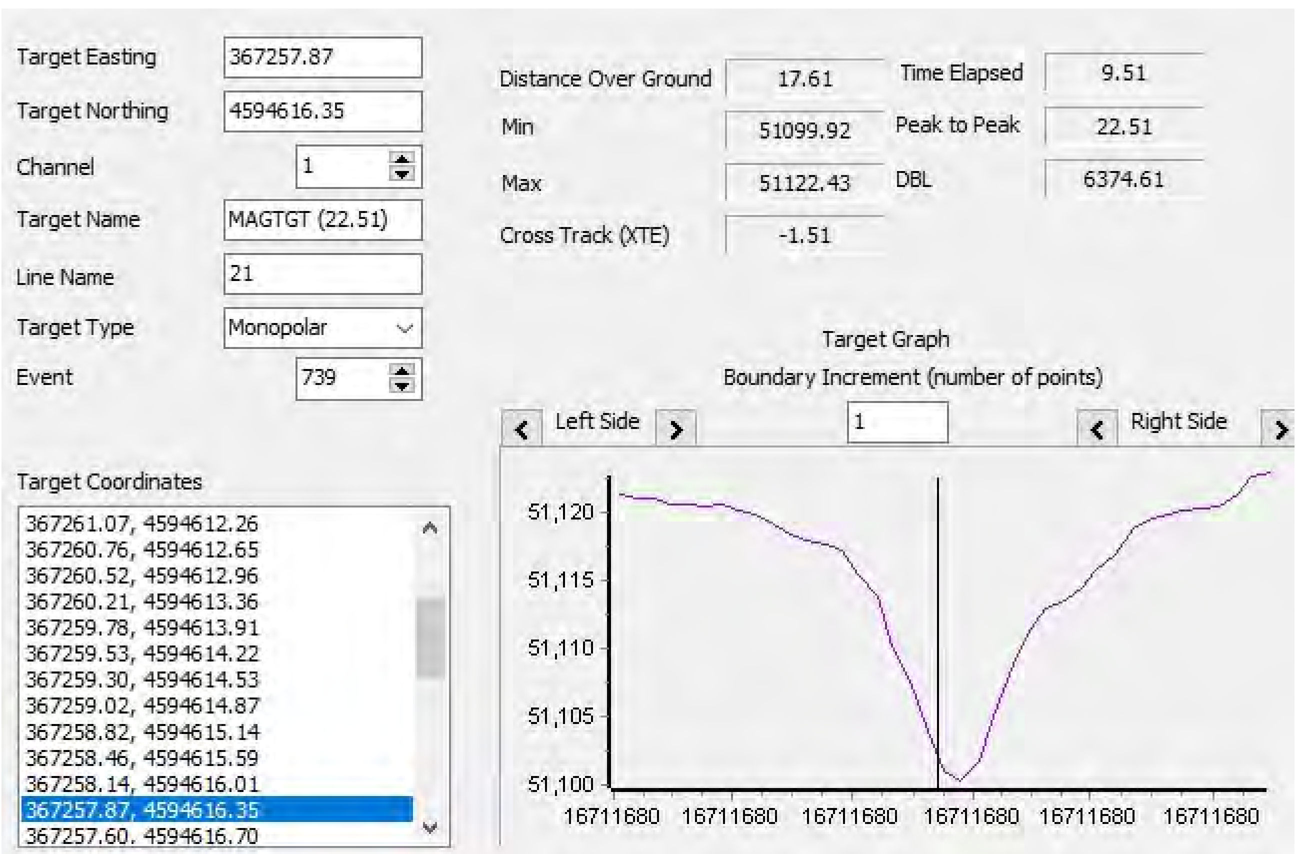
Name	Date	10/05/2021
MAGTGT (79.16)	Time	11:48:50
Survey File	Event	706
21	X	367696.0
Capture File	Y	4594105.0
367696.74.4594105.67.79.16.51047.78.7.jpg	WGS84 Latitude	41 29 15.5241 N
	WGS84 Longitude	070 35 5.4943 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



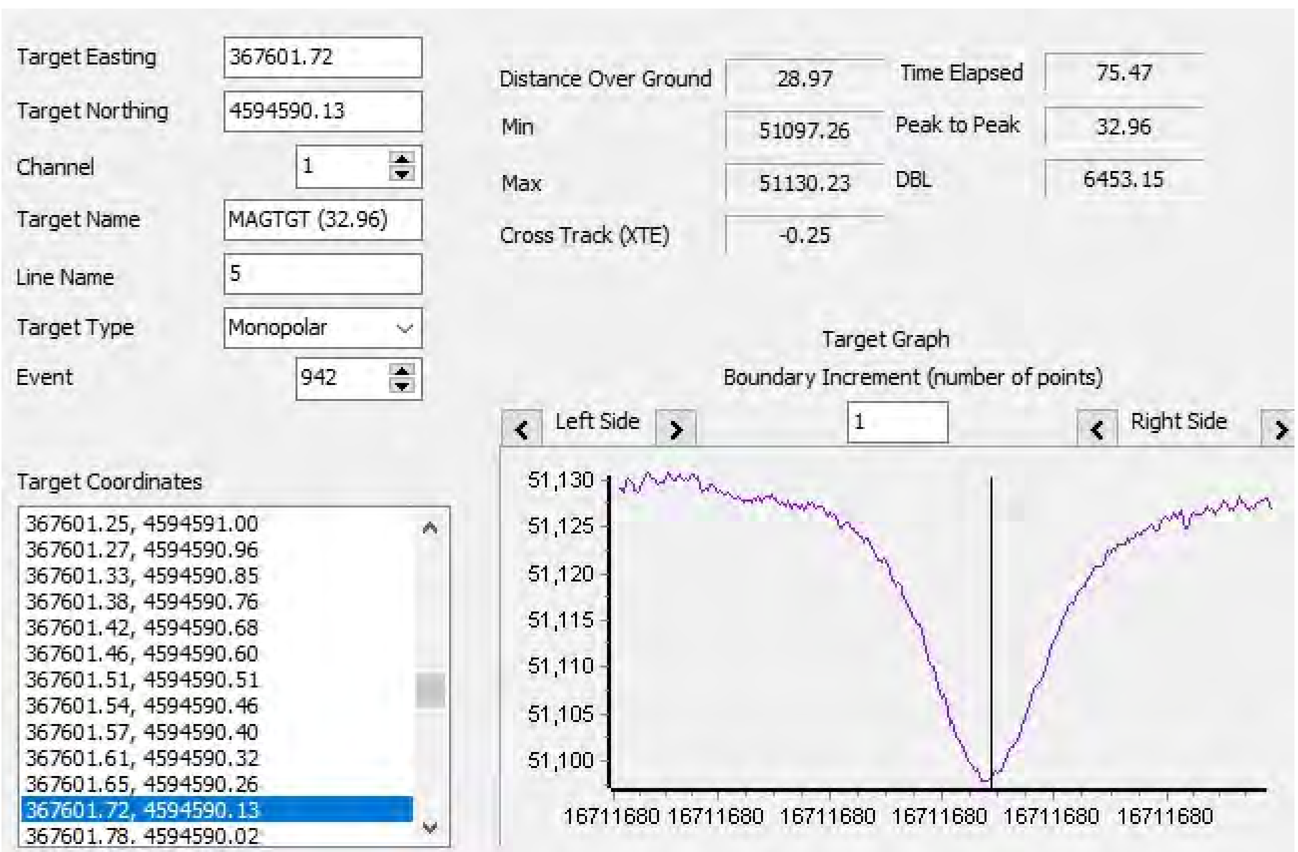
Name	Date	10/05/2021
MAGTGT (22.51)	Time	11:49:10
Survey File	Event	739
21	X	367257.0
Capture File	Y	4594616.0
367257.87.4594616.35.22.51. 51100.66.7.jpg	WGS84 Latitude	41 29 31.8266 N
	WGS84 Longitude	070 35 24.8239 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



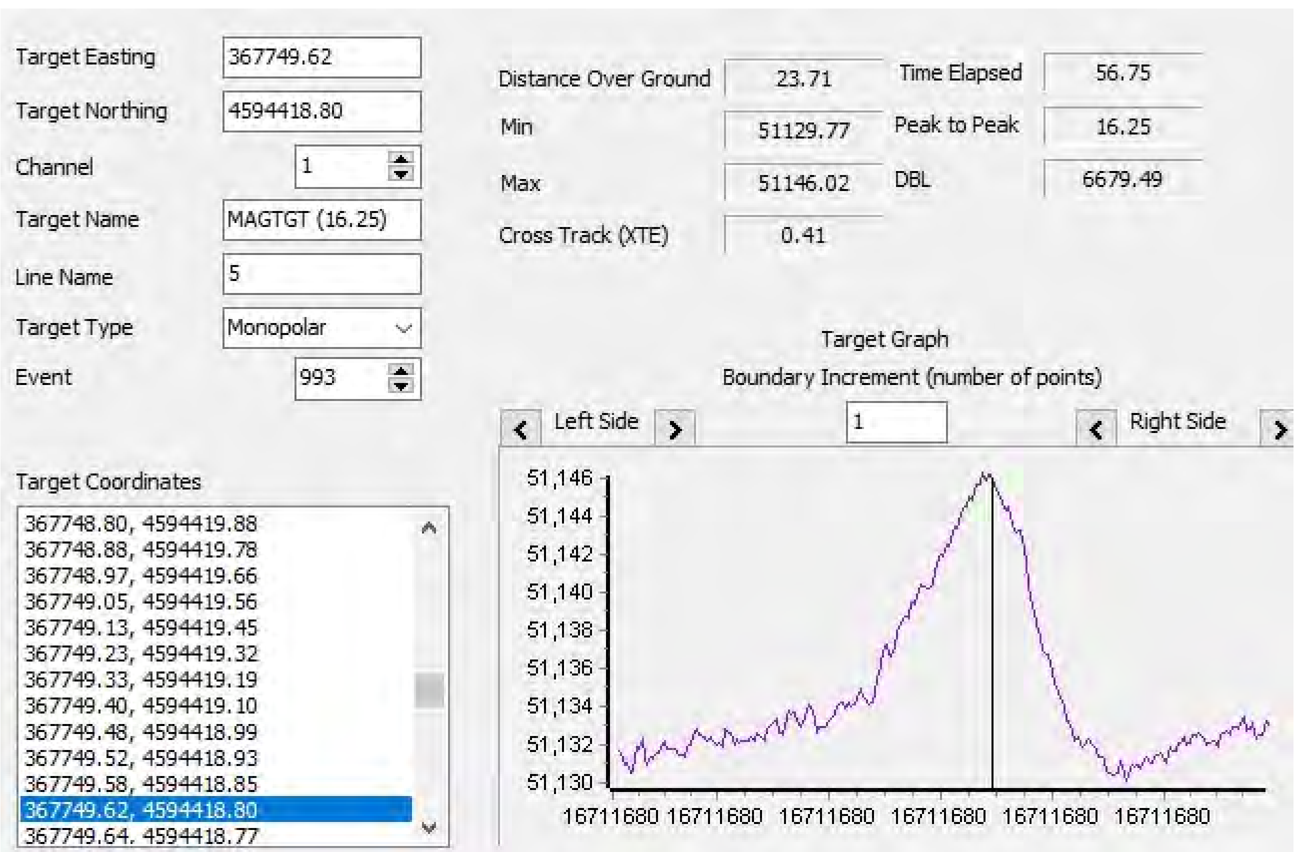
Name	Date	10/05/2021
MAGTGT (32.96)	Time	11:49:33
Survey File	Event	942
5	X	367601.0
Capture File	Y	4594590.0
367601.72.4594590.13.32.96. 51105.92.8.jpg	WGS84 Latitude	41 29 31.1887 N
	WGS84 Longitude	070 35 9.9731 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



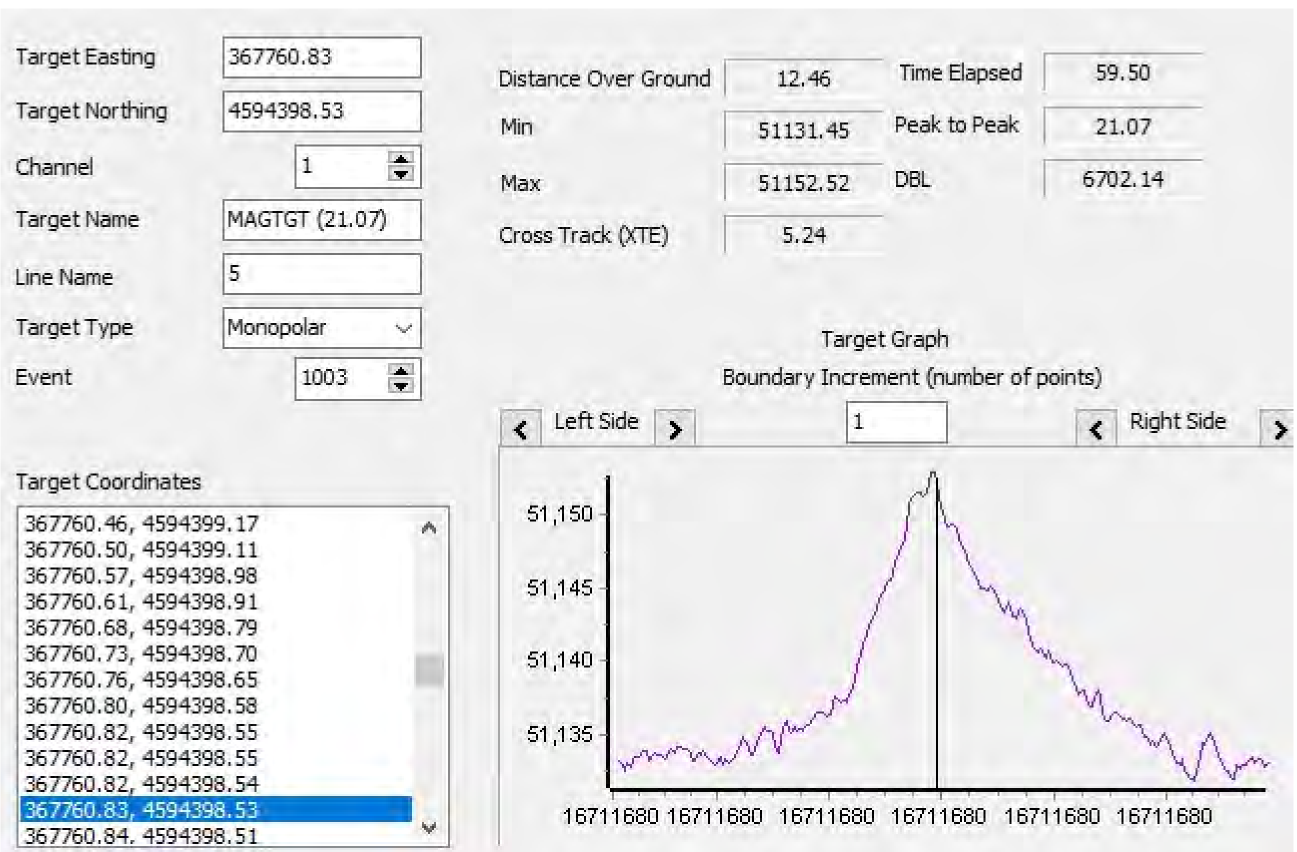
Name	Date	10/05/2021
MAGTGT (16.25)	Time	11:49:47
Survey File	Event	993
5	X	367749.0
Capture File	Y	4594418.0
367749.62.4594418.80.16.25.51141.61.8.jpg	WGS84 Latitude	41 29 25.7013 N
	WGS84 Longitude	070 35 3.4568 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



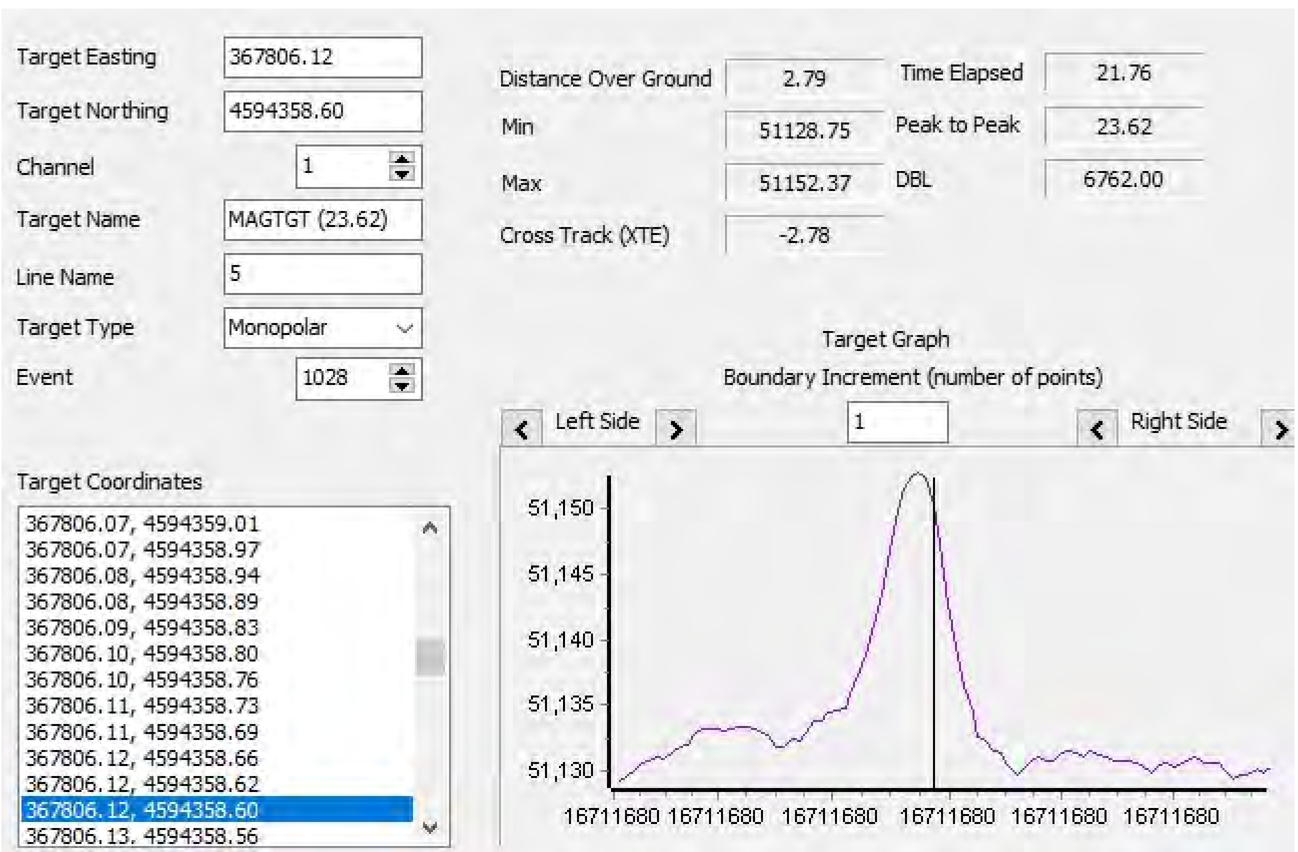
Name	Date	10/05/2021
MAGTGT (21.07)	Time	11:49:58
Survey File	Event	1003
5	X	367760.0
Capture File	Y	4594398.0
367760.83.4594398.53.21.07.51149.74.8.jpg	WGS84 Latitude	41 29 25.0596 N
	WGS84 Longitude	070 35 2.9668 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



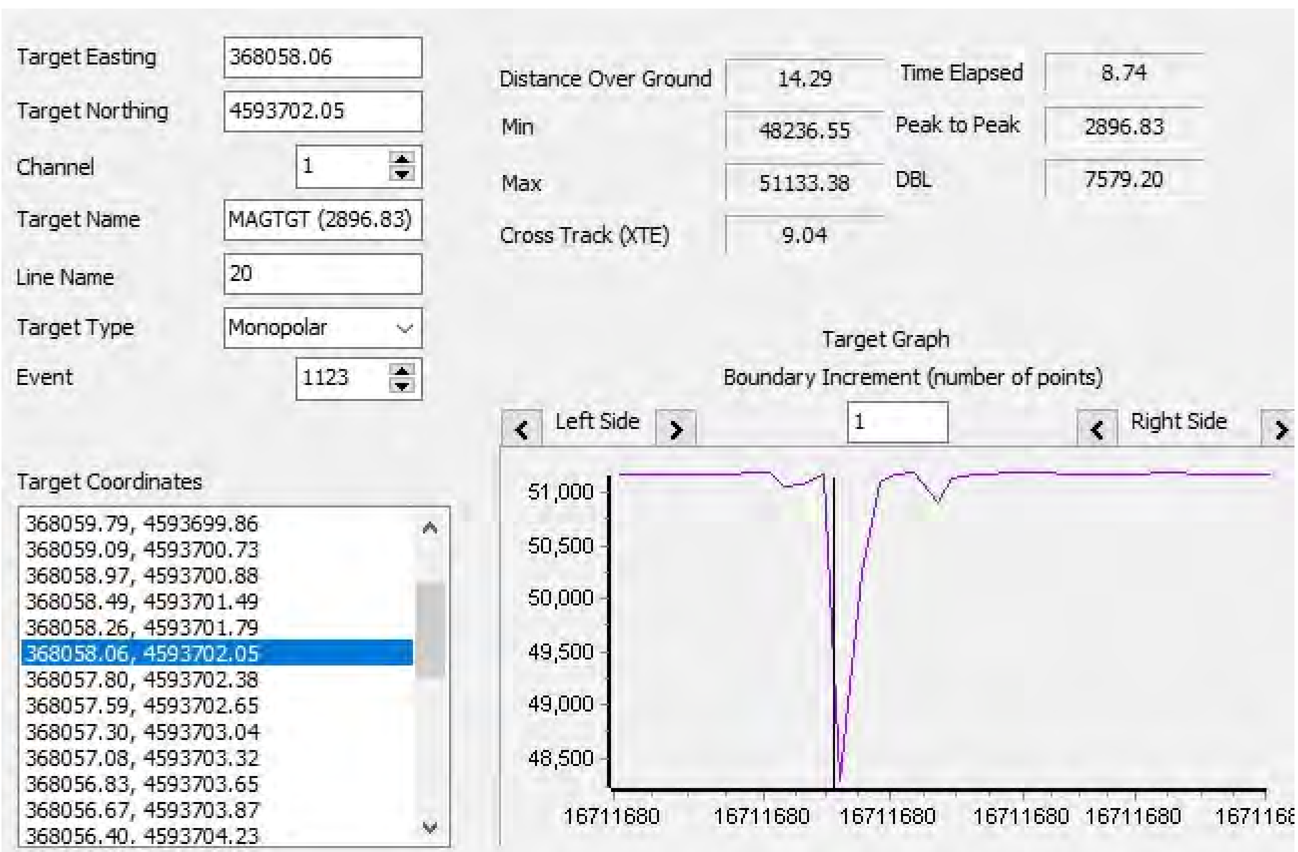
Name	Date	10/05/2021
MAGTGT (23.62)	Time	11:50:14
Survey File	Event	1028
5	X	367806.0
Capture File	Y	4594358.0
367806.12.4594358.60.23.62.51146.89.8.jpg	WGS84 Latitude	41 29 23.7903 N
	WGS84 Longitude	070 35 0.9521 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



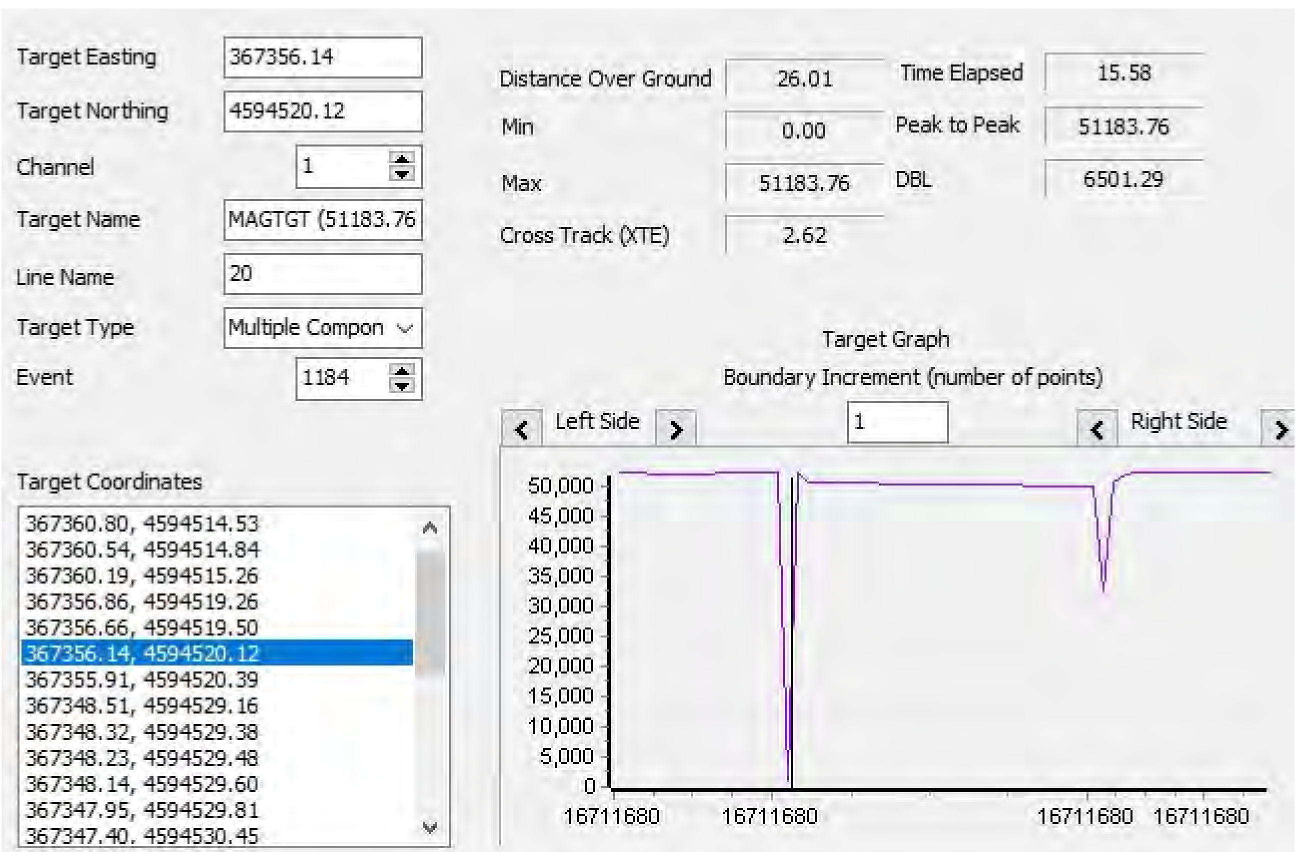
Name	Date	10/05/2021
MAGTGT (2896.83)	Time	11:50:39
Survey File	Event	1123
20	X	368058.0
Capture File	Y	4593702.0
368058.06.4593702.05.2896.83.51078.86.9.jpg	WGS84 Latitude	41 29 2.6758 N
	WGS84 Longitude	070 34 49.5716 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



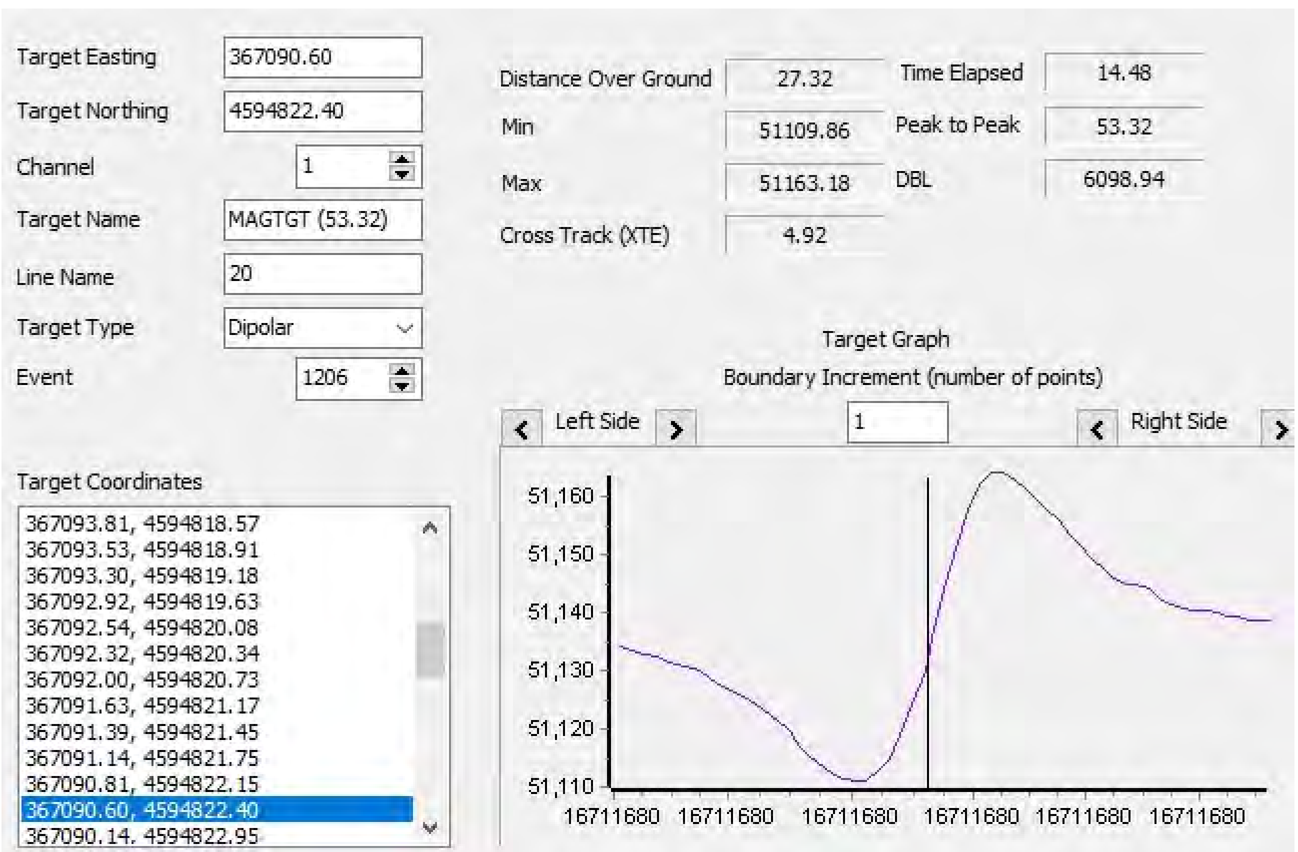
Name	Date	10/05/2021
MAGTGT (51183.76)	Time	11:51:00
Survey File	Event	1184
20	X	367356.0
Capture File	Y	4594520.0
367356.14.4594520.12.51183.76.51183.76.9.jpg	WGS84 Latitude	41 29 28.7738 N
	WGS84 Longitude	070 35 20.4799 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



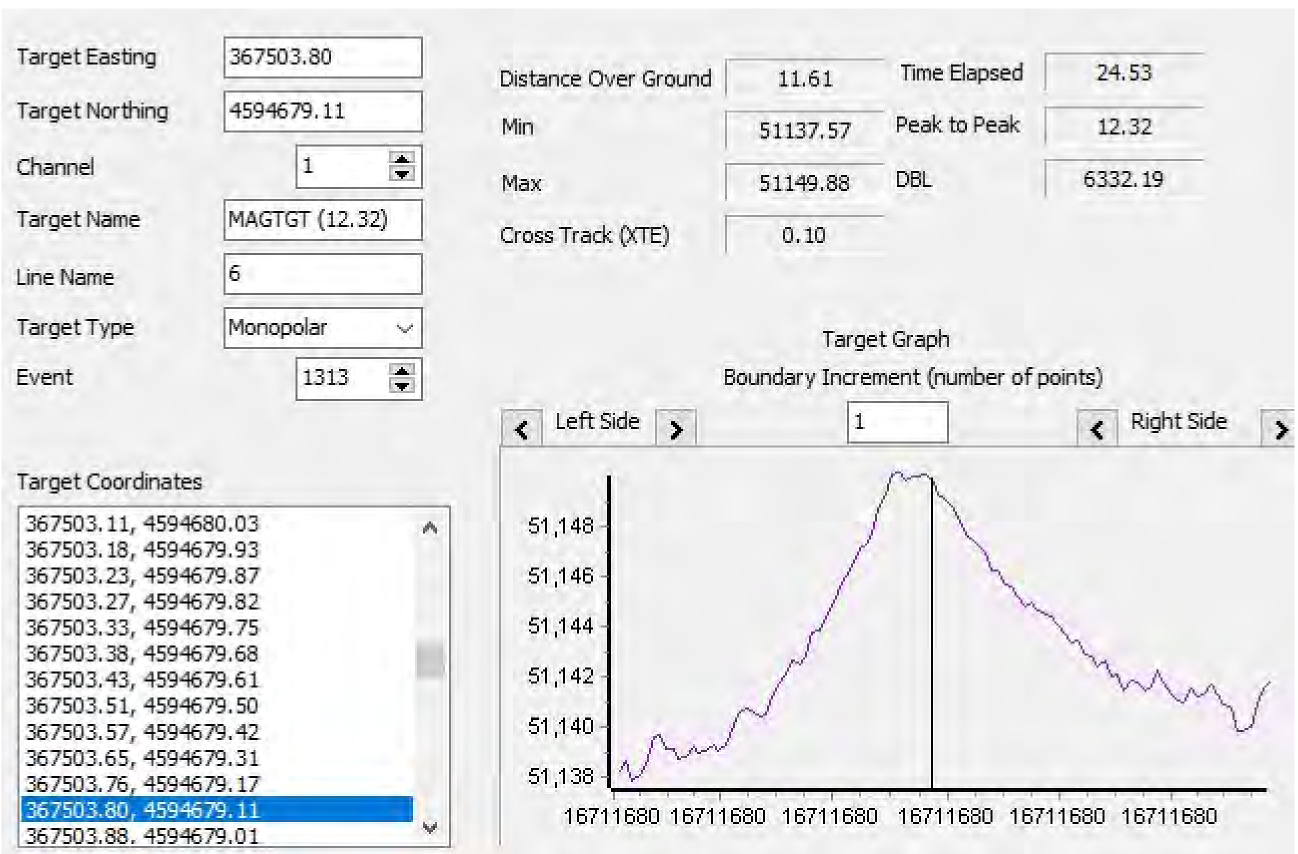
Name	Date	10/05/2021
MAGTGT (53.32)	Time	11:51:26
Survey File	Event	1206
20	X	367090.0
Capture File	Y	4594822.0
367090.60.4594822.40.53.32. 51136.25.9.jpg	WGS84 Latitude	41 29 38.4043 N
	WGS84 Longitude	070 35 32.1871 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



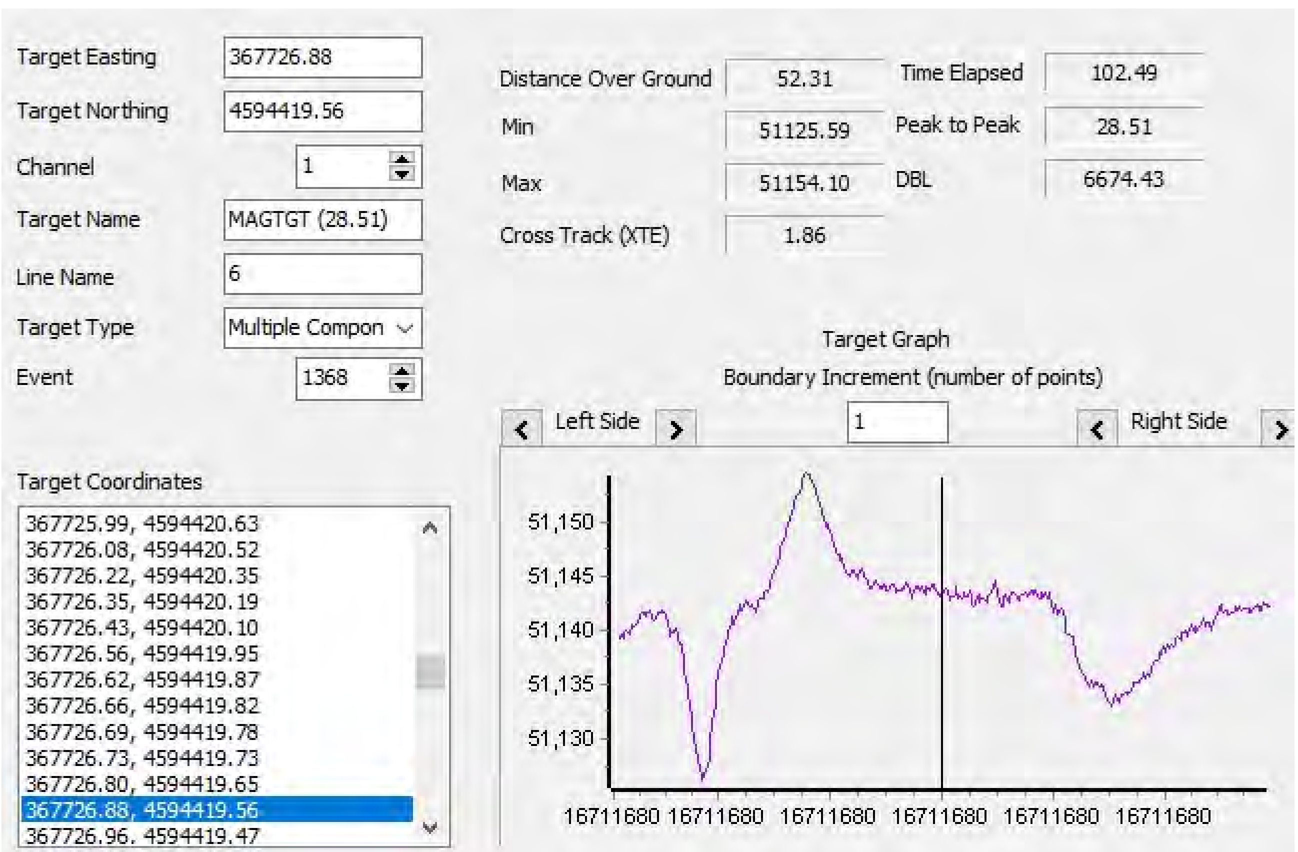
Name	Date	10/05/2021
MAGTGT (12.32)	Time	11:51:52
Survey File	Event	1313
6	X	367503.0
Capture File	Y	4594679.0
367503.80.4594679.11.12.32.51149.04.10.jpg	WGS84 Latitude	41 29 34.0152 N
	WGS84 Longitude	070 35 14.2684 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



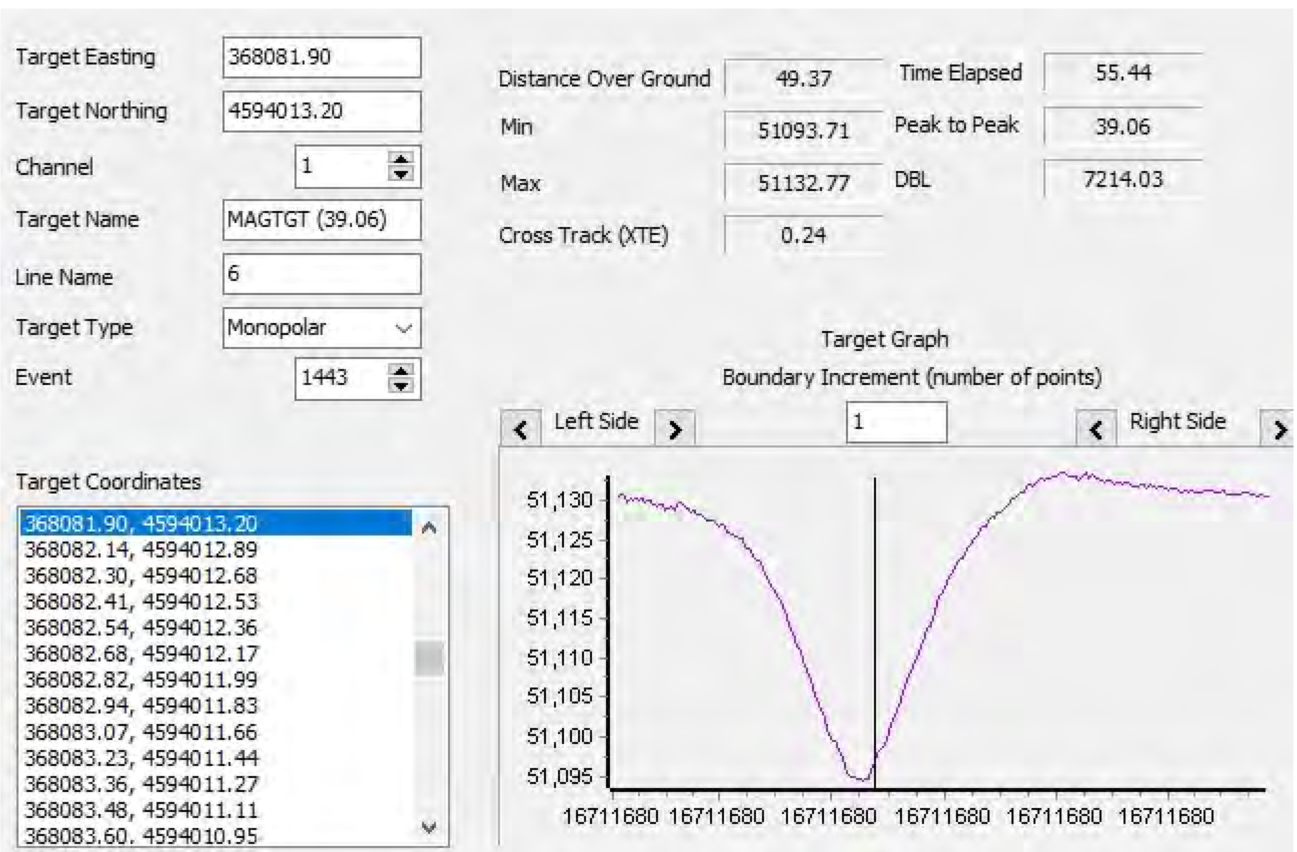
Name	Date	10/05/2021
MAGTGT (28.51)	Time	11:52:08
Survey File	Event	1368
6	X	367726.0
Capture File	Y	4594419.0
367726.88.4594419.56.28.51.51143.23.10.jpg	WGS84 Latitude	41 29 25.7201 N
	WGS84 Longitude	070 35 4.4491 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



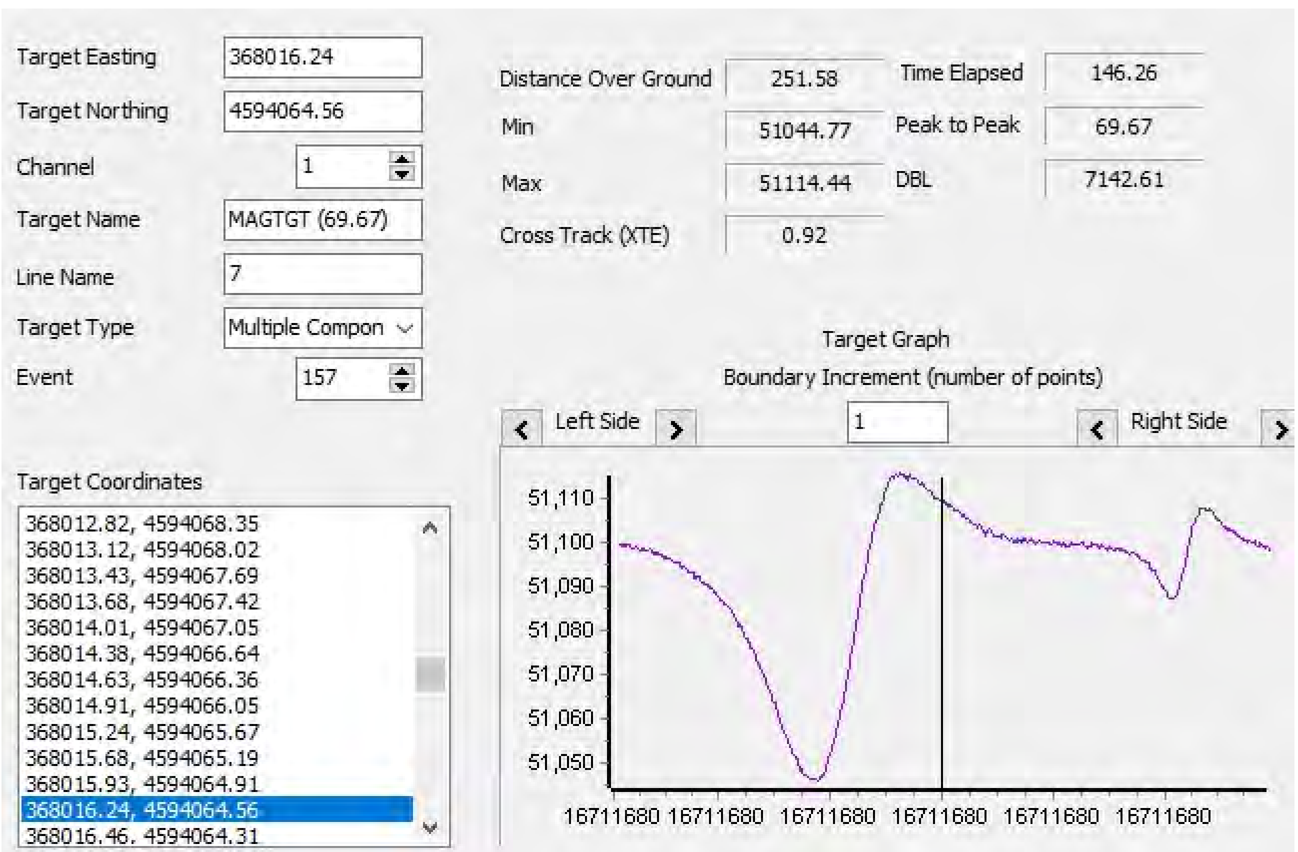
Name	Date	10/05/2021
MAGTGT (39.06)	Time	11:52:24
Survey File	Event	1443
6	X	368081.0
Capture File	Y	4594013.0
368081.90.4594013.20.39.06.51118.91.10.jpg	WGS84 Latitude	41 29 12.7704 N
	WGS84 Longitude	070 34 48.8251 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



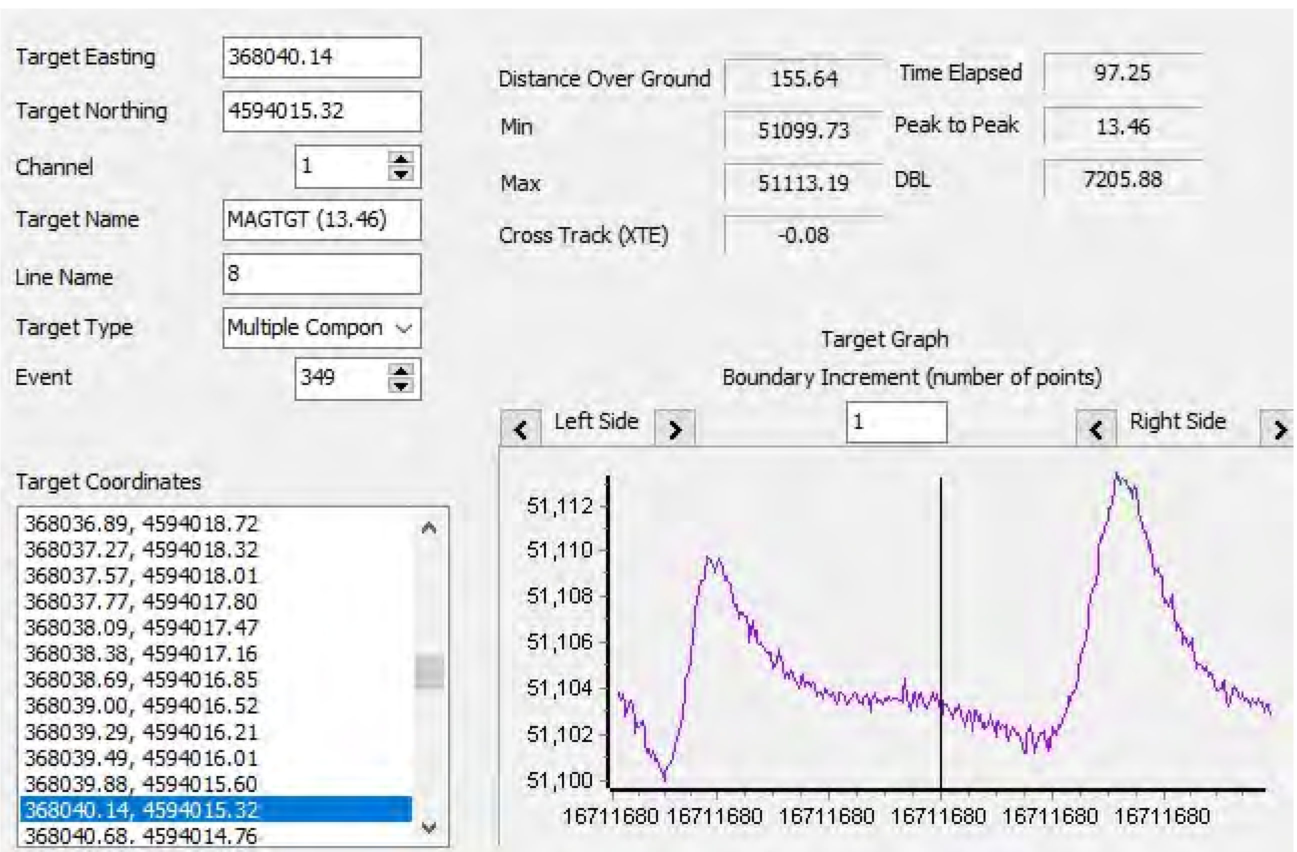
Name	Date	10/05/2021
MAGTGT (69.67)	Time	11:54:58
Survey File	Event	157
7	X	368016.0
Capture File	Y	4594064.0
368016.24.4594064.56.69.67.51106.92.1.jpg	WGS84 Latitude	41 29 14.385 N
	WGS84 Longitude	070 34 51.6673 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



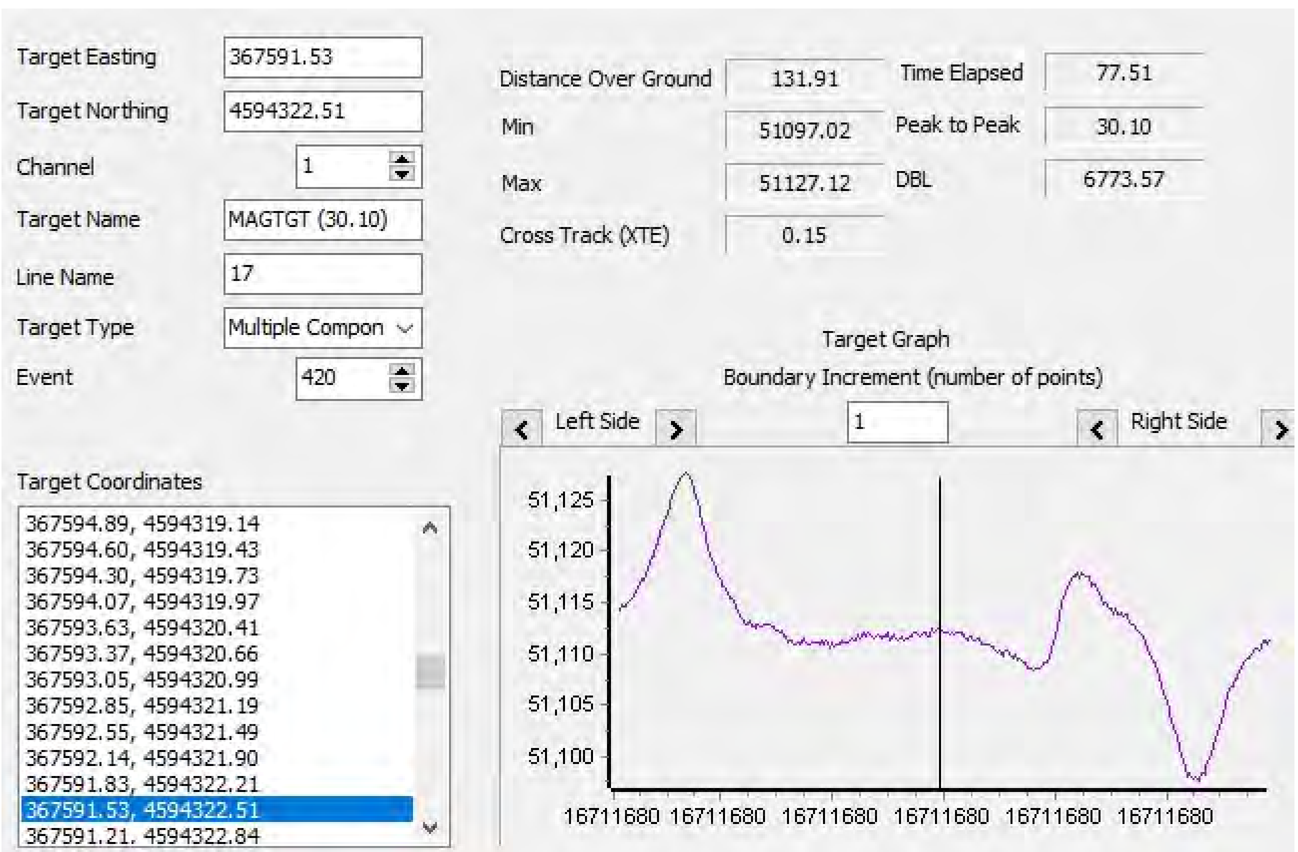
Name	Date	10/05/2021
MAGTGT (13.46)	Time	11:55:20
Survey File	Event	349
8	X	368040.0
Capture File	Y	4594015.0
368040.14.4594015.32.13.46.51103.04.3.jpg	WGS84 Latitude	41 29 12.8109 N
	WGS84 Longitude	070 34 50.5941 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



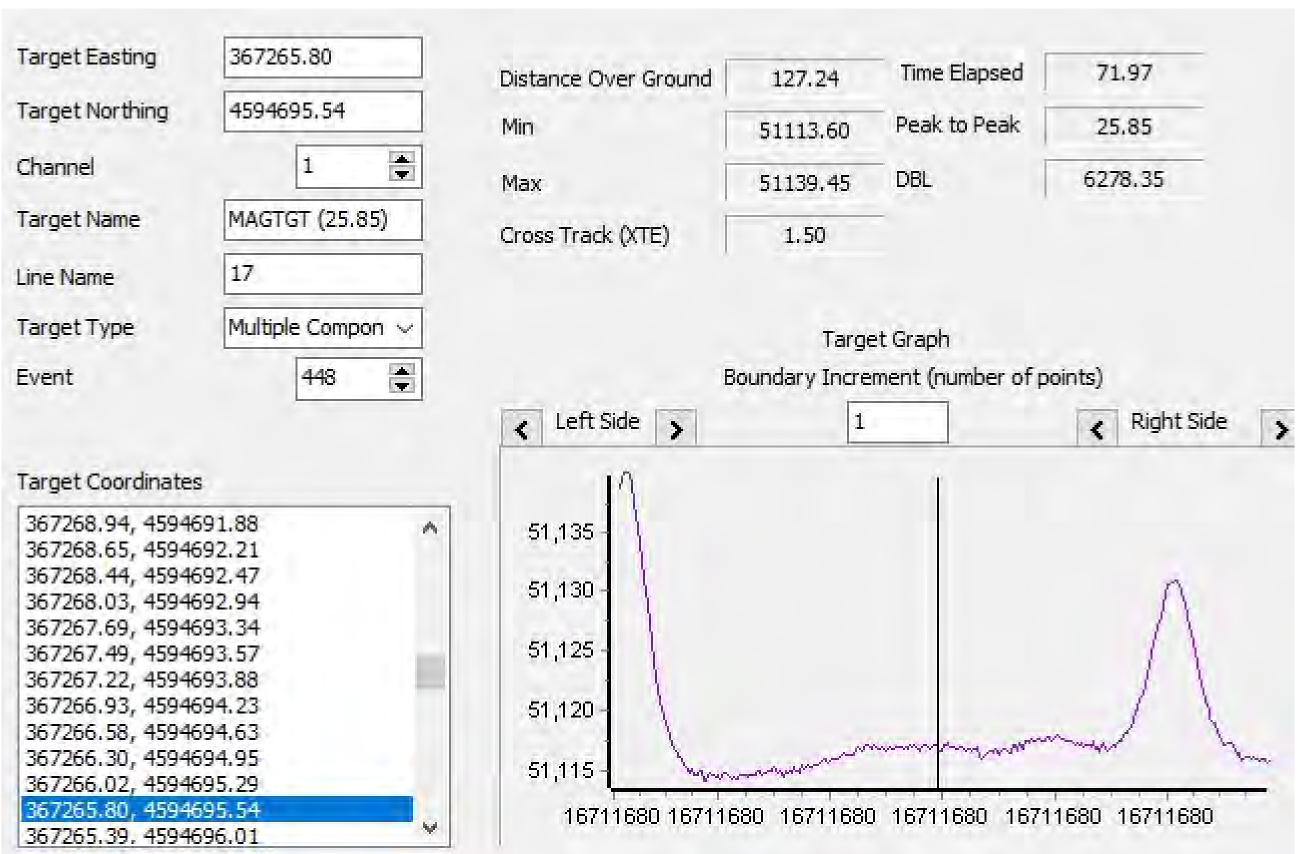
Name	Date	10/05/2021
MAGTGT (30.10)	Time	11:55:40
Survey File	Event	420
17	X	367591.0
Capture File	Y	4594322.0
367591.53.4594322.51.30.10.51111.49.4.jpg	WGS84 Latitude	41 29 22.4956 N
	WGS84 Longitude	070 35 10.1923 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



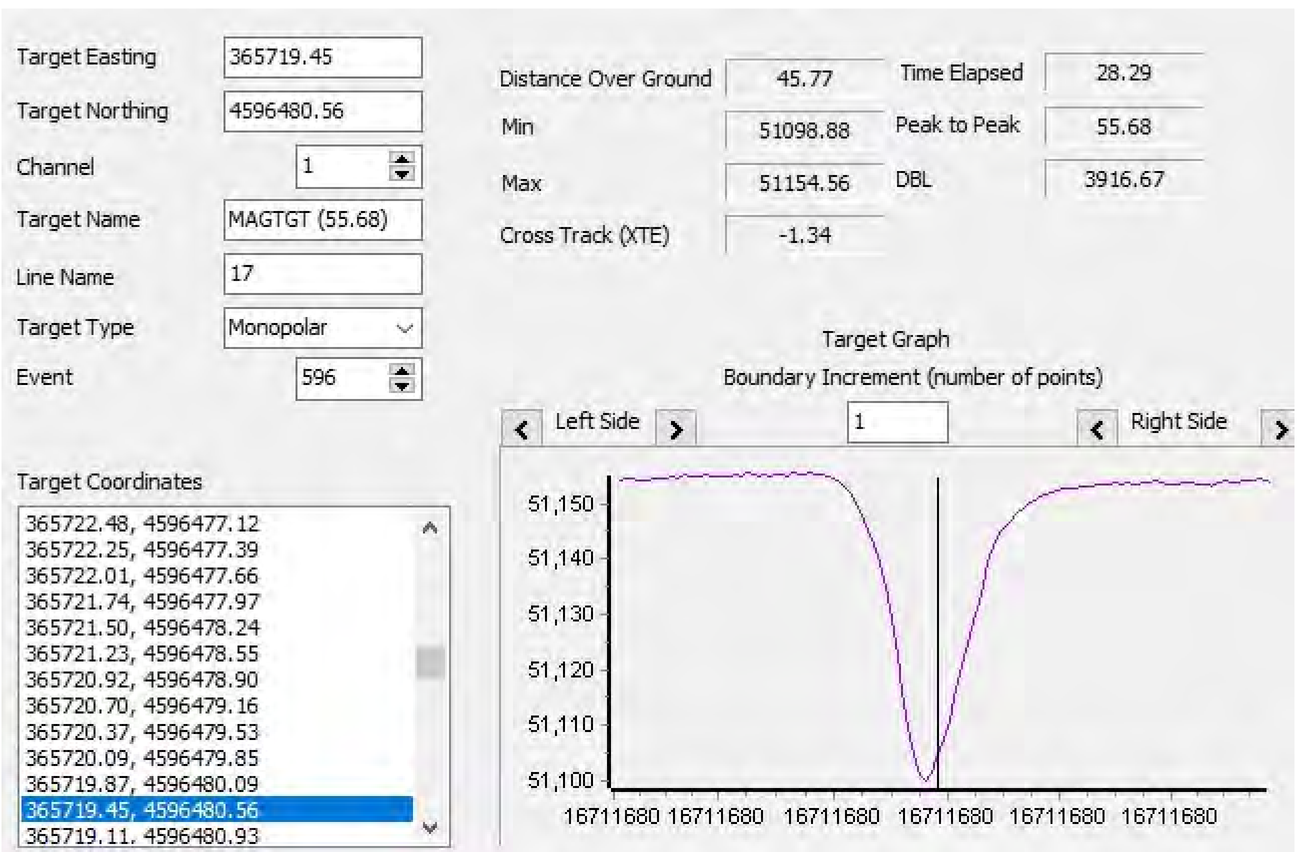
Name	Date	10/05/2021
MAGTGT (25.85)	Time	11:55:52
Survey File	Event	448
17	X	367265.0
Capture File	Y	4594695.0
367265.80.4594695.54.25.85.51116.57.4.jpg	WGS84 Latitude	41 29 34.3921 N
	WGS84 Longitude	070 35 24.5417 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



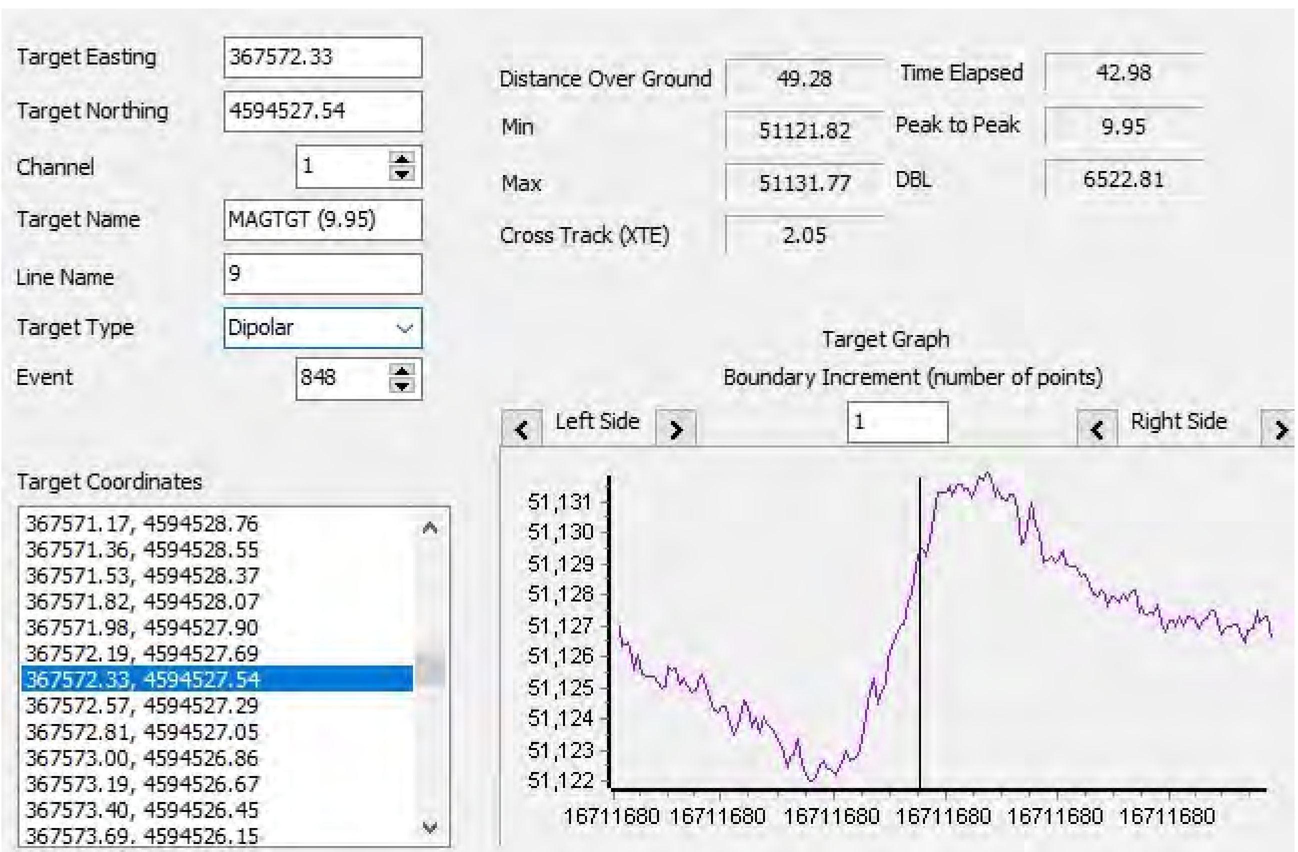
Name	Date	10/05/2021
MAGTGT (55.68)	Time	11:56:06
Survey File	Event	596
17	X	365719.0
Capture File	Y	4596480.0
365719.45.4596480.56.55.68.51106.60.4.jpg	WGS84 Latitude	41 30 31.3241 N
	WGS84 Longitude	070 36 32.6242 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



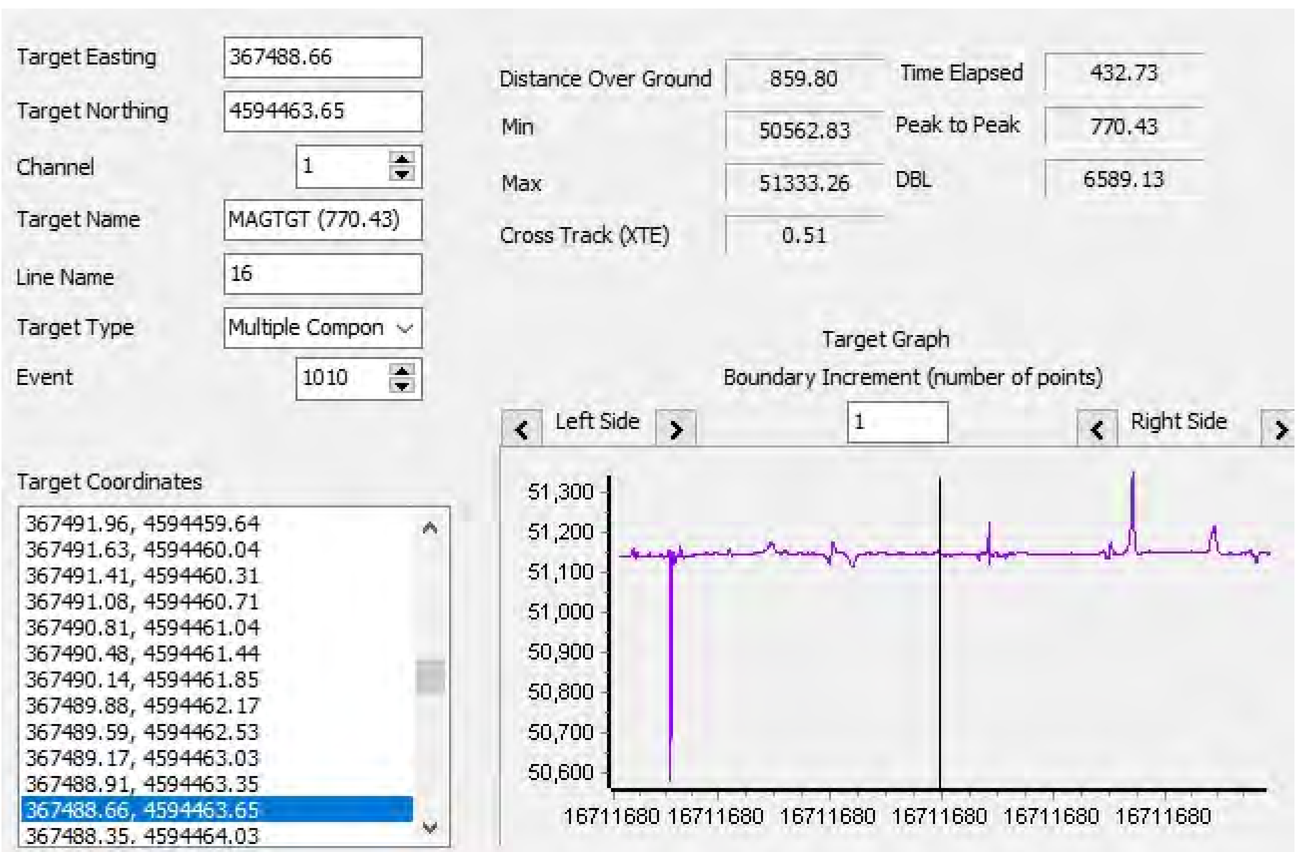
Name	Date	10/05/2021
MAGTGT (9.95)	Time	11:56:23
Survey File	Event	848
9	X	367572.0
Capture File	Y	4594527.0
367572.33.4594527.54.9.95.5 1131.14.5.jpg	WGS84 Latitude	41 29 29.1293 N
	WGS84 Longitude	070 35 11.1735 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



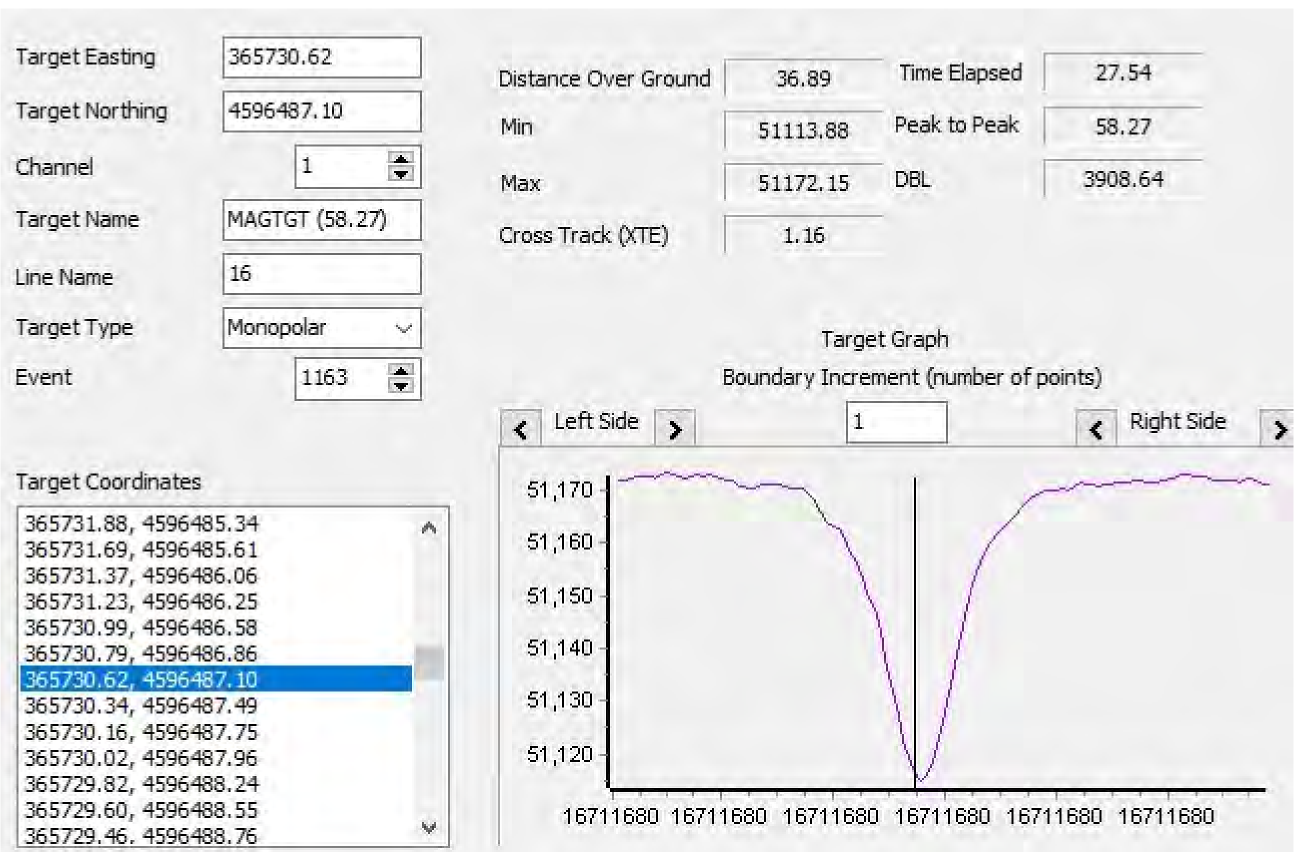
Name	Date	10/05/2021
MAGTGT (770.43)	Time	11:57:06
Survey File	Event	1010
16	X	367488.0
Capture File	Y	4594463.0
367488.66.4594463.65.770.43 .51127.13.6.jpg	WGS84 Latitude	41 29 27 N
	WGS84 Longitude	070 35 14.7441 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



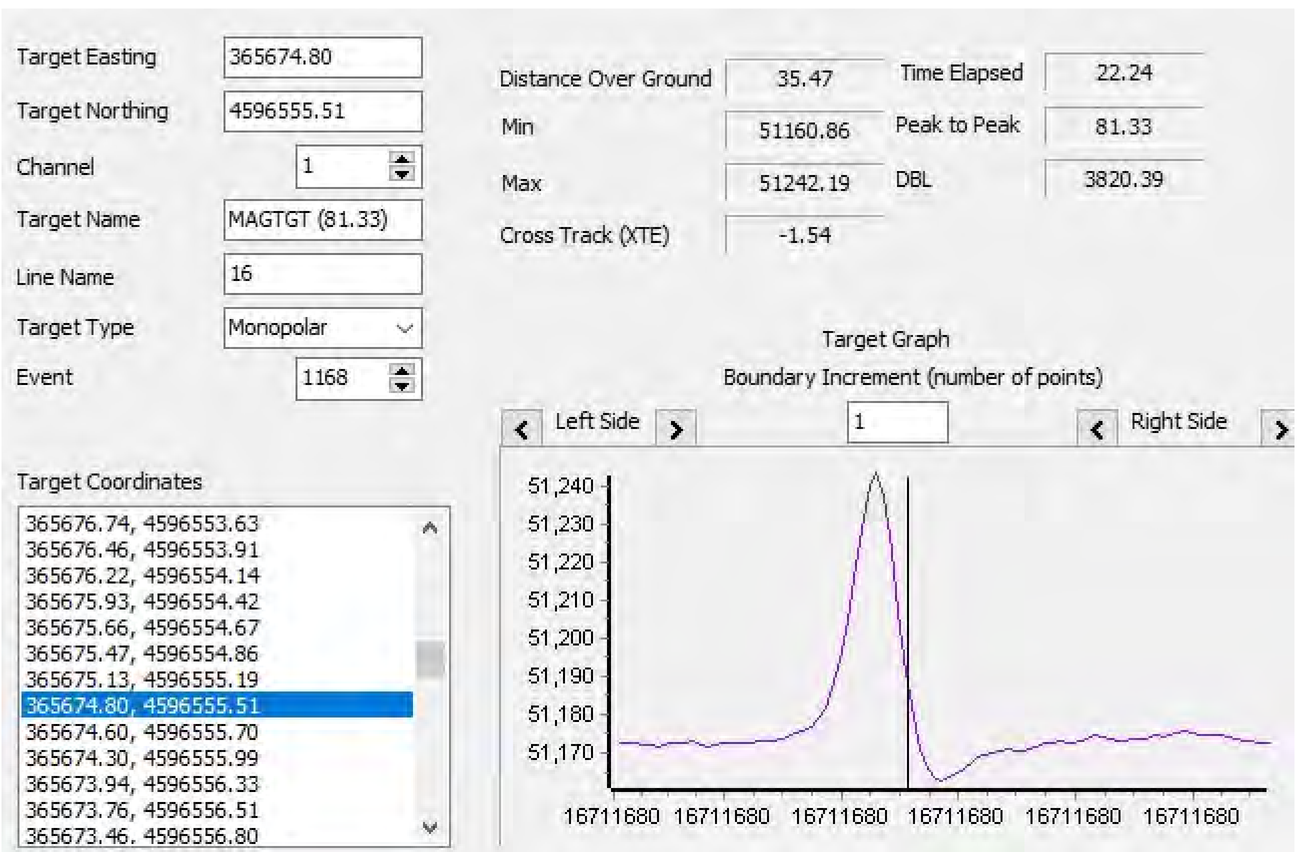
Name	Date	10/05/2021
MAGTGT (58.27)	Time	11:57:25
Survey File	Event	1163
16	X	365730.0
Capture File	Y	4596487.0
365730.62.4596487.10.58.27.51132.09.6.jpg	WGS84 Latitude	41 30 31.5576 N
	WGS84 Longitude	070 36 32.1555 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



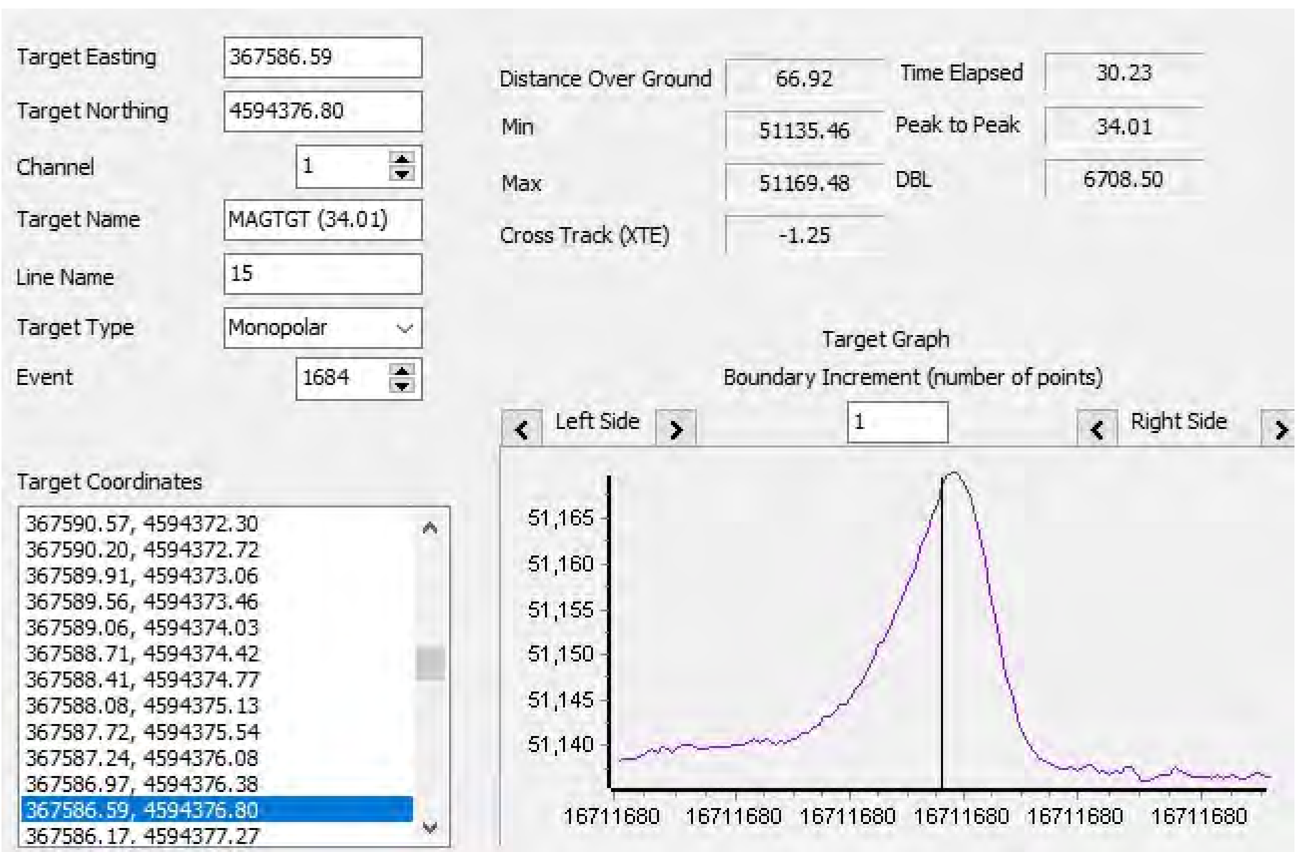
Name	Date	10/05/2021
MAGTGT (81.33)	Time	11:57:44
Survey File	Event	1168
16	X	365674.0
Capture File	Y	4596555.0
365674.80.4596555.51.81.33.51160.86.6.jpg	WGS84 Latitude	41 30 33.728 N
	WGS84 Longitude	070 36 34.625 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



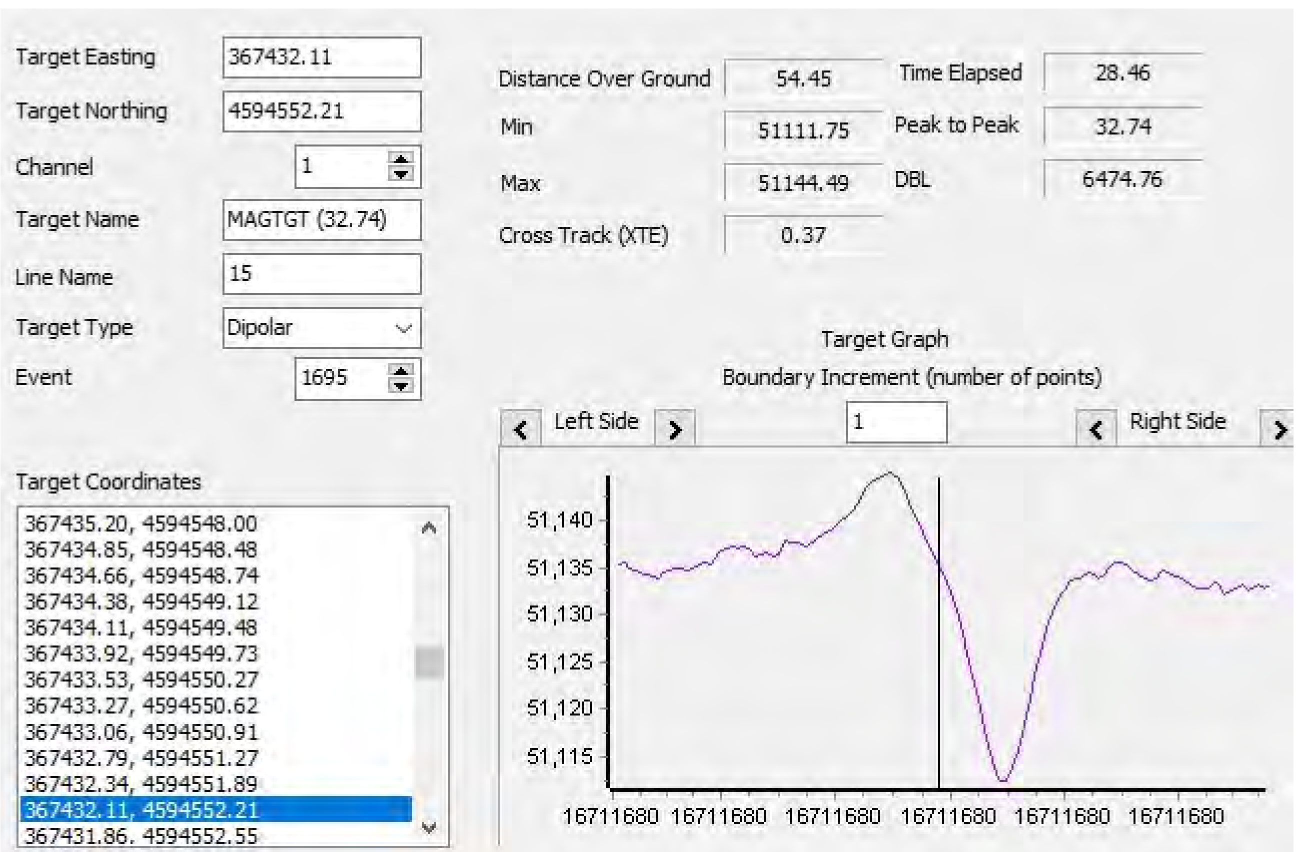
Name	Date	10/05/2021
MAGTGT (34.01)	Time	11:58:08
Survey File	Event	1684
15	X	367586.0
Capture File	Y	4594376.0
367586.59.4594376.80.34.01. 51169.18.9.jpg	WGS84 Latitude	41 29 24.243 N
	WGS84 Longitude	070 35 10.4505 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (32.74)	Time	11:58:20
Survey File	Event	1695
15	X	367432.0
Capture File	Y	4594552.0
367432.11.4594552.21.32.74.51133.40.9.jpg	WGS84 Latitude	41 29 29.8564 N
	WGS84 Longitude	070 35 17.2288 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (19.82)	Time	11:58:42
Survey File	Event	1708
15	X	367260.0
Capture File	Y	4594744.0
	WGS84 Latitude	41 29 35.9774 N
	WGS84 Longitude	070 35 24.7961 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

Name	Date	10/05/2021
MAGTGT (23.18)	Time	11:58:55
Survey File	Event	1756
15	X	366650.0
Capture File	Y	4595447.0
	WGS84 Latitude	41 29 58.4001 N
	WGS84 Longitude	070 35 51.6544 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

Name	Date	10/05/2021
MAGTGT (48.41)	Time	11:59:15
Survey File	Event	1840
15	X	365602.0
Capture File	Y	4596665.0
	WGS84 Latitude	41 30 37.25 N
	WGS84 Longitude	070 36 37.8181 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

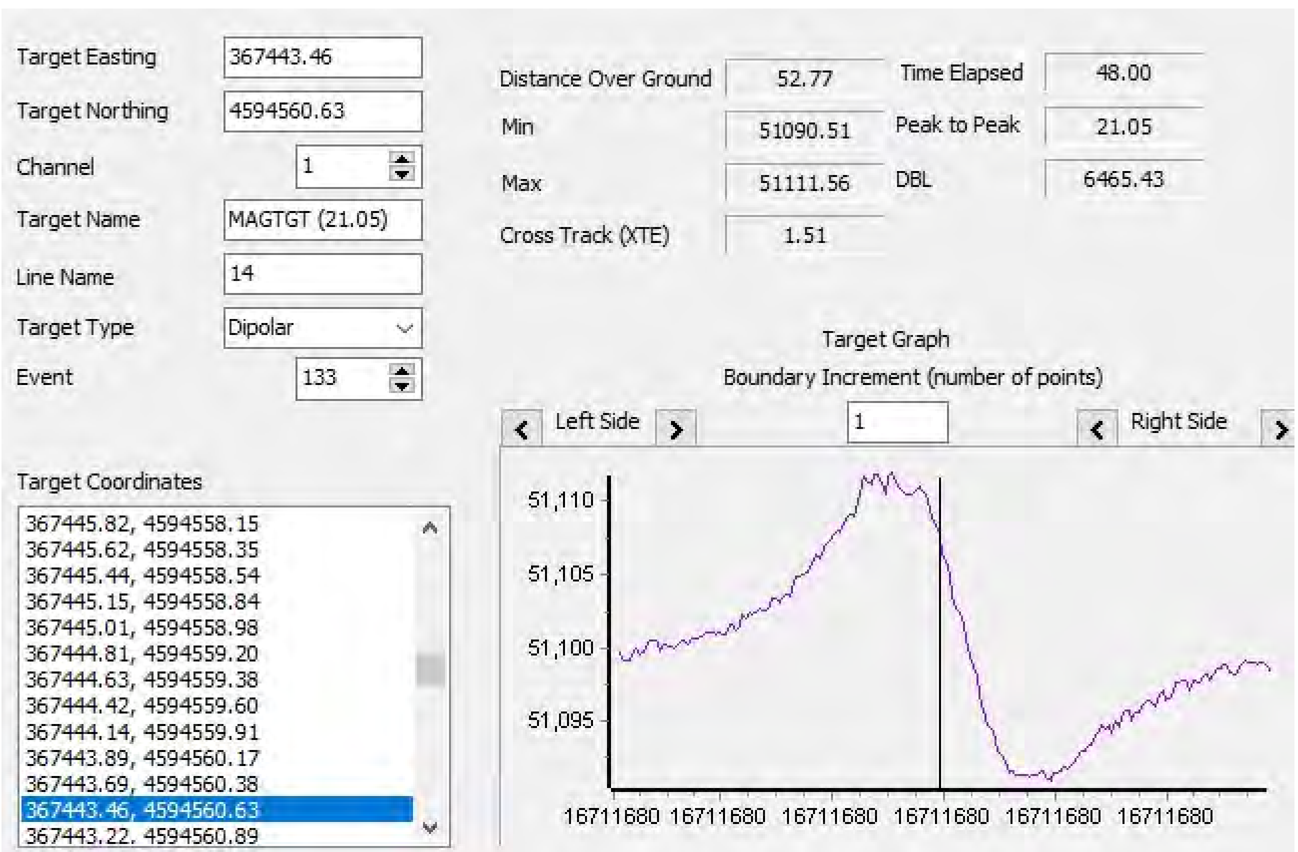
Notes	

Name	Date	10/05/2021
MAGTGT (21.05)	Time	12:01:00
Survey File	Event	133
14	X	367443.0
Capture File	Y	4594560.0
	WGS84 Latitude	41 29 30.1222 N
	WGS84 Longitude	070 35 16.7609 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

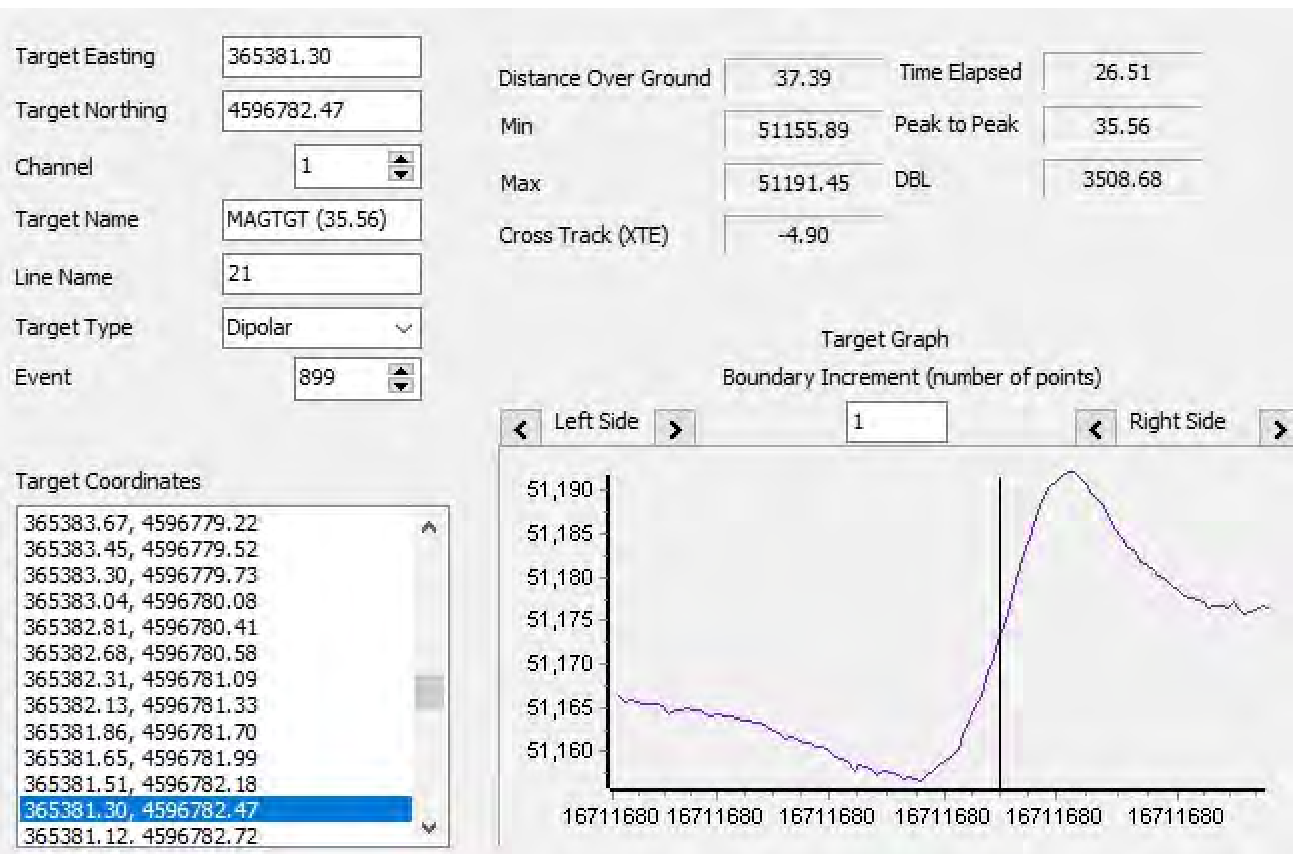
Name	Date	10/05/2021
MAGTGT (21.05)	Time	12:01:04
Survey File	Event	133
14	X	367443.0
Capture File	Y	4594560.0
367443.46.4594560.63.21.05. 51105.48.0.jpg	WGS84 Latitude	41 29 30.1222 N
	WGS84 Longitude	070 35 16.7609 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



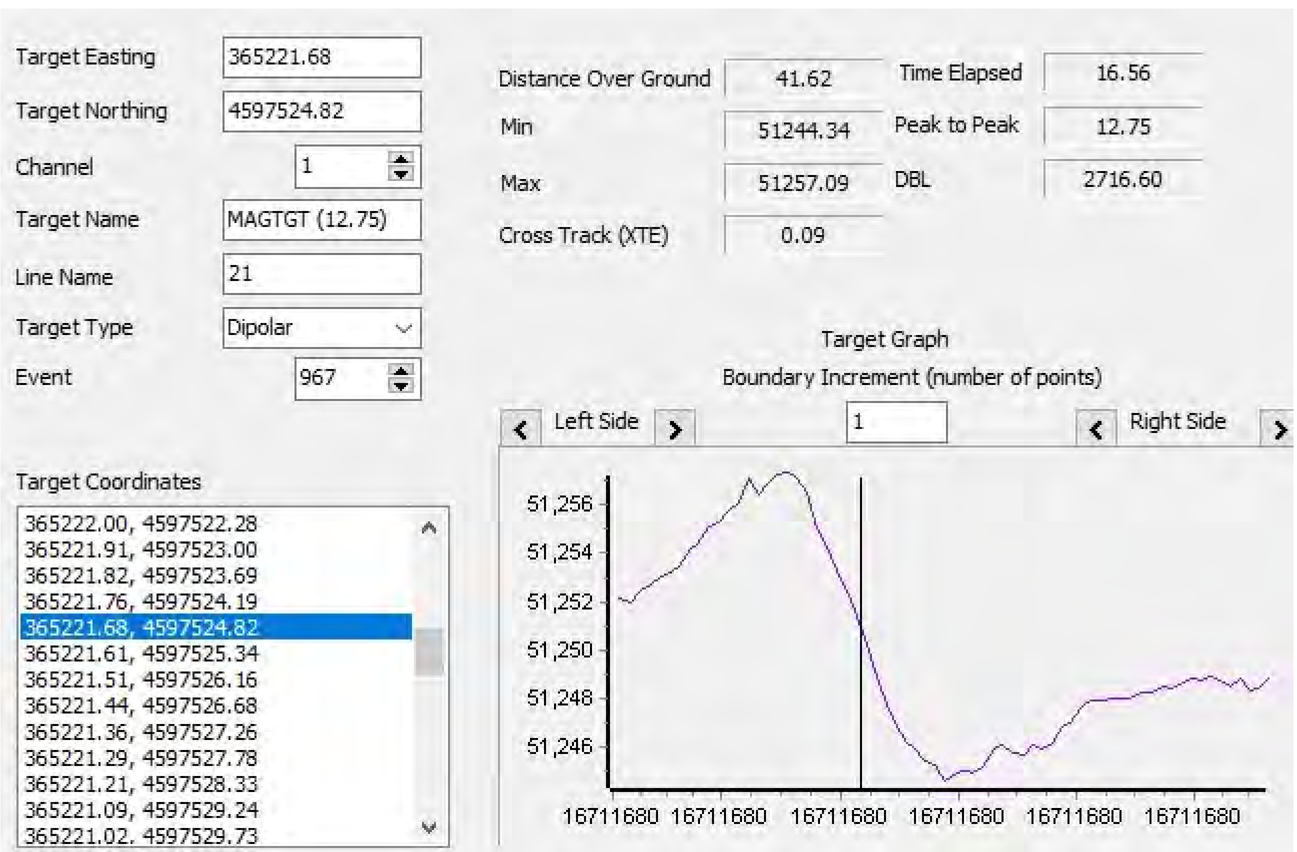
Name	Date	10/05/2021
MAGTGT (35.56)	Time	12:01:24
Survey File	Event	899
21	X	365381.0
Capture File	Y	4596782.0
365381.30.4596782.47.35.56. 51156.65.3.jpg	WGS84 Latitude	41 30 40.9089 N
	WGS84 Longitude	070 36 47.4424 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



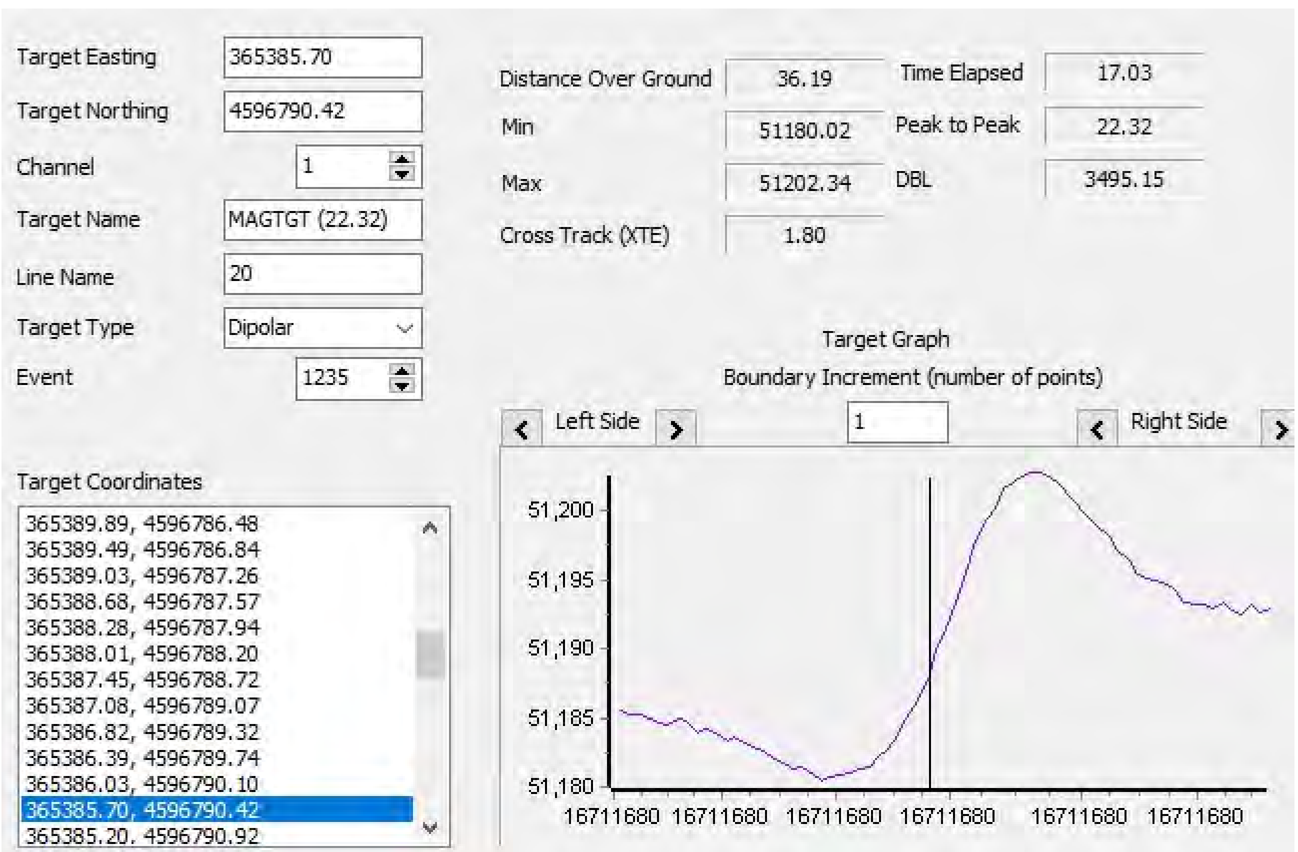
Name	Date	10/05/2021
MAGTGT (12.75)	Time	12:01:39
Survey File	Event	967
21	X	365221.0
Capture File	Y	4597524.0
365221.68.4597524.82.12.75. 51244.99.4.jpg	WGS84 Latitude	41 31 4.8631 N
	WGS84 Longitude	070 36 54.9402 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



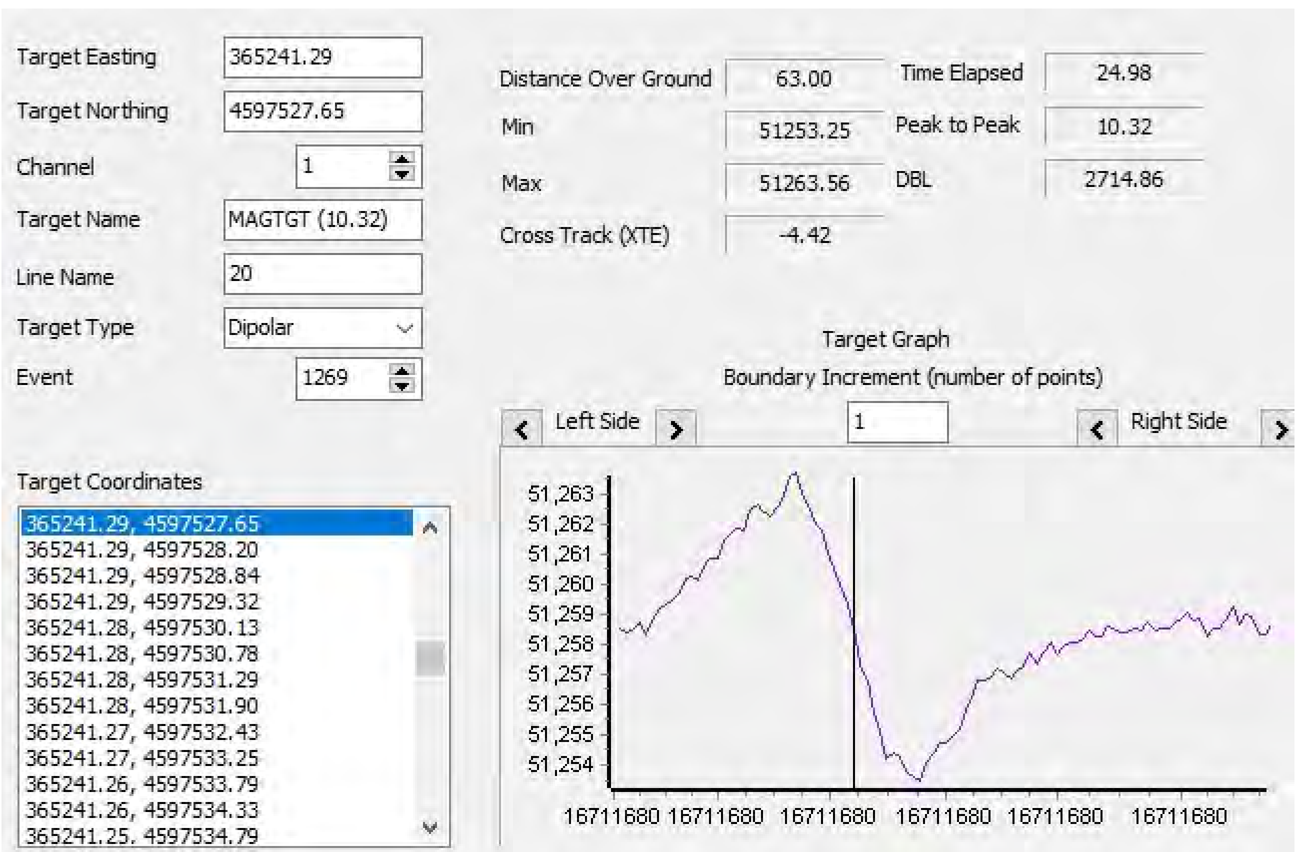
Name	Date	10/05/2021
MAGTGT (22.32)	Time	12:02:14
Survey File	Event	1235
20	X	365385.0
Capture File	Y	4596790.0
365385.70.4596790.42.22.32.51189.38.7.jpg	WGS84 Latitude	41 30 41.1706 N
	WGS84 Longitude	070 36 47.2764 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



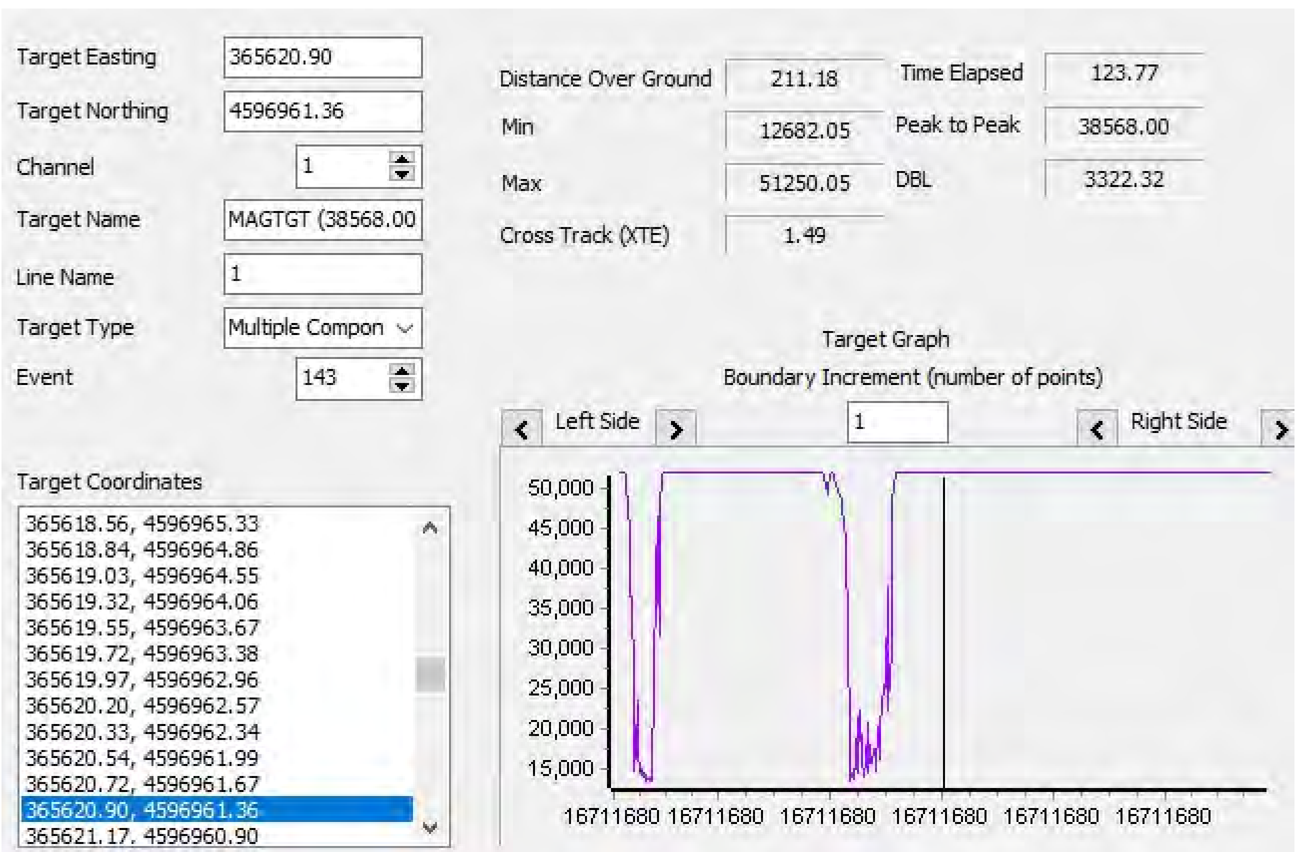
Name	Date	10/05/2021
MAGTGT (10.32)	Time	12:02:27
Survey File	Event	1269
20	X	365241.0
Capture File	Y	4597527.0
365241.29.4597527.65.10.32.51254.54.7.jpg	WGS84 Latitude	41 31 4.9724 N
	WGS84 Longitude	070 36 54.0801 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



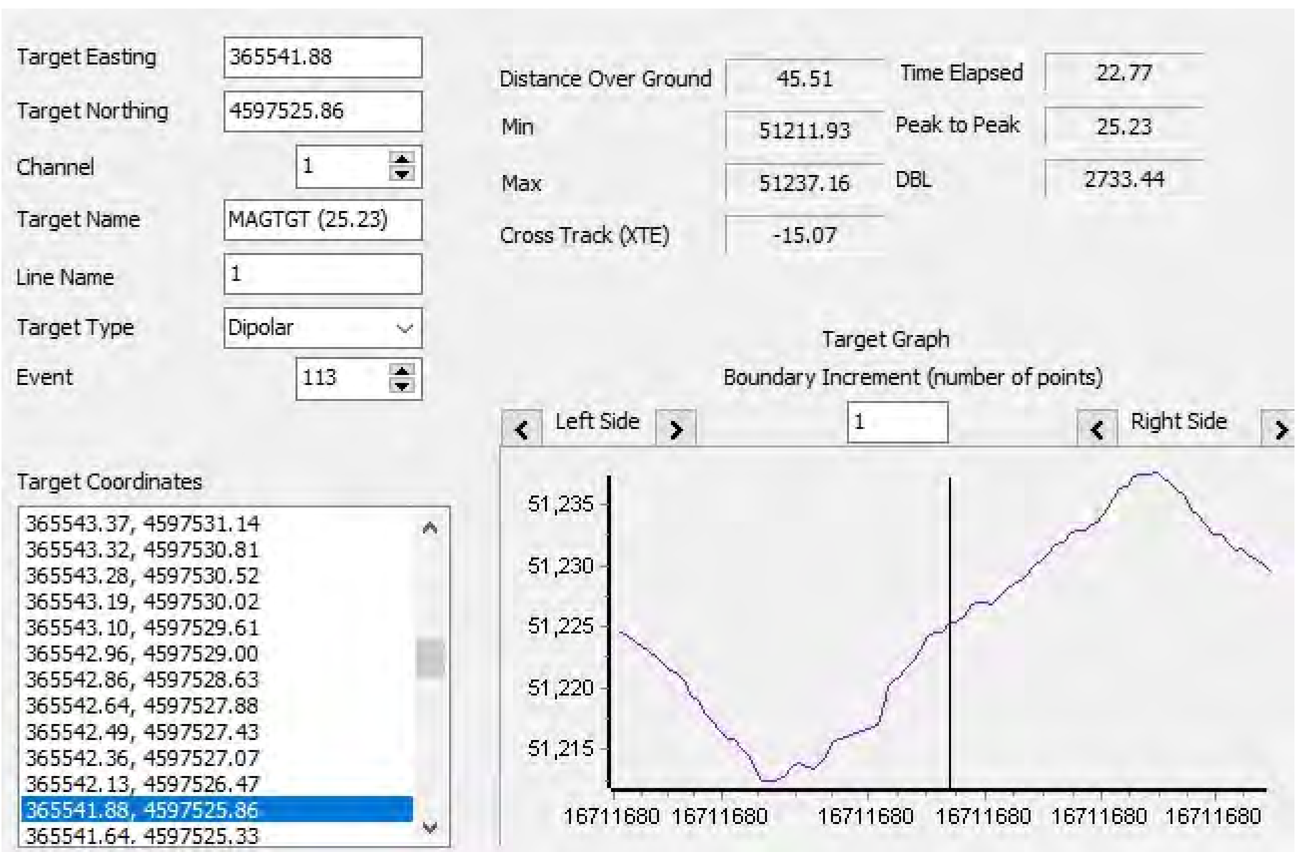
Name	Date	10/05/2021
MAGTGT (38568.00)	Time	12:02:54
Survey File	Event	143
1	X	365620.0
Capture File	Y	4596961.0
365620.90.4596961.36.38568.00.51174.78.8.jpg	WGS84 Latitude	41 30 46.8554 N
	WGS84 Longitude	070 36 37.2798 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



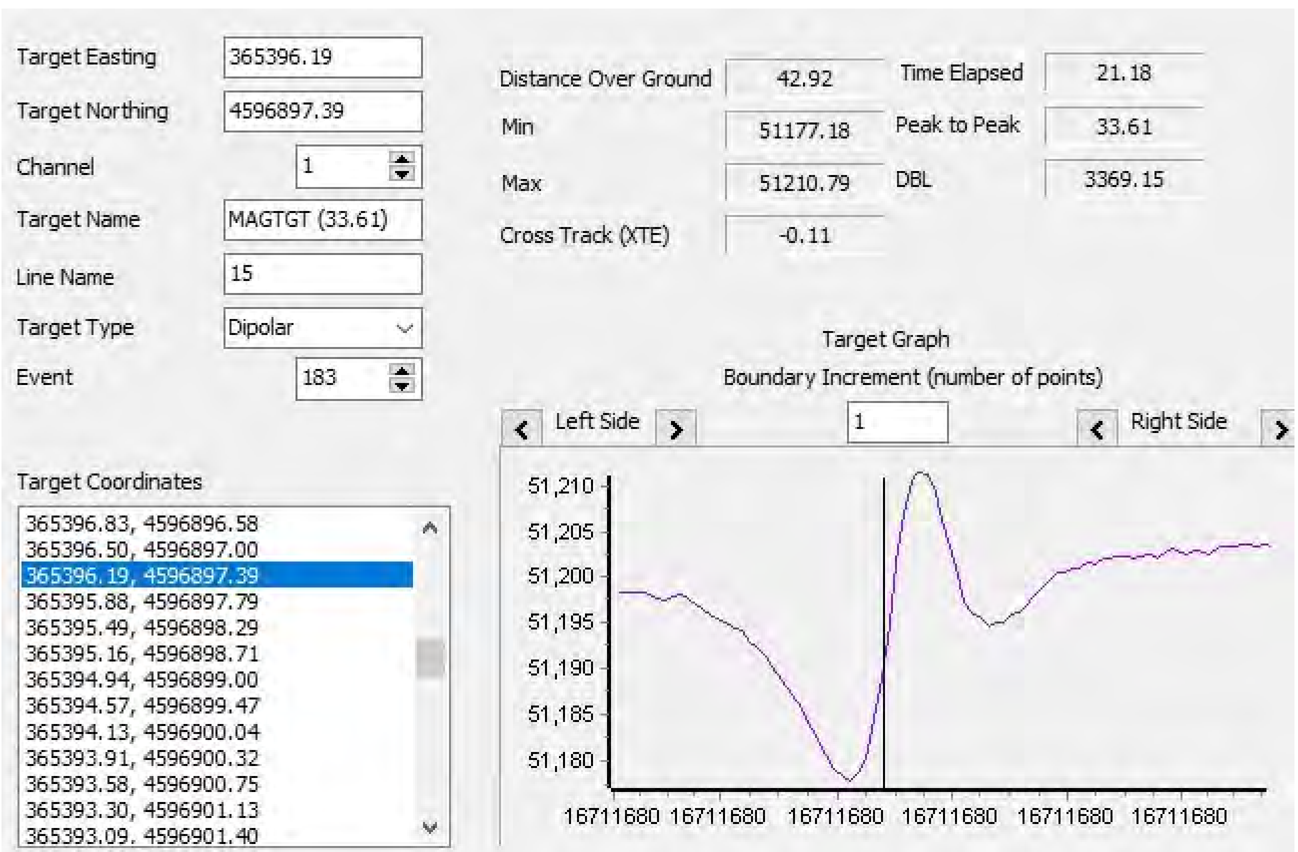
Name	Date	10/05/2021
MAGTGT (25.23)	Time	12:03:10
Survey File	Event	113
1	X	365541.0
Capture File	Y	4597525.0
365541.88.4597525.86.25.23.51224.85.8.jpg	WGS84 Latitude	41 31 5.0892 N
	WGS84 Longitude	070 36 41.1401 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



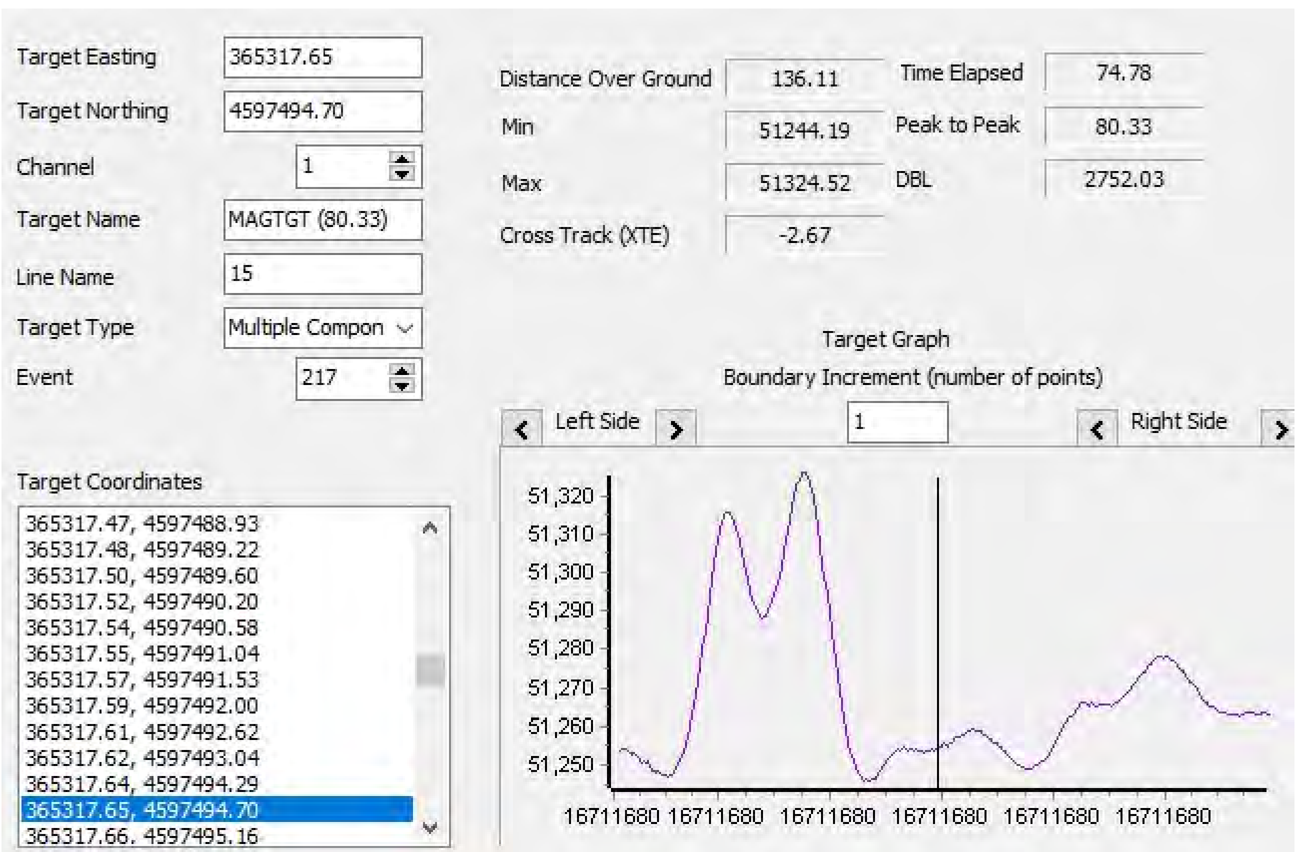
Name	Date	10/05/2021
MAGTGT (33.61)	Time	12:03:36
Survey File	Event	183
15	X	365396.0
Capture File	Y	4596897.0
365396.19.4596897.39.33.61. 51199.63.9.jpg	WGS84 Latitude	41 30 44.6456 N
	WGS84 Longitude	070 36 46.8881 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



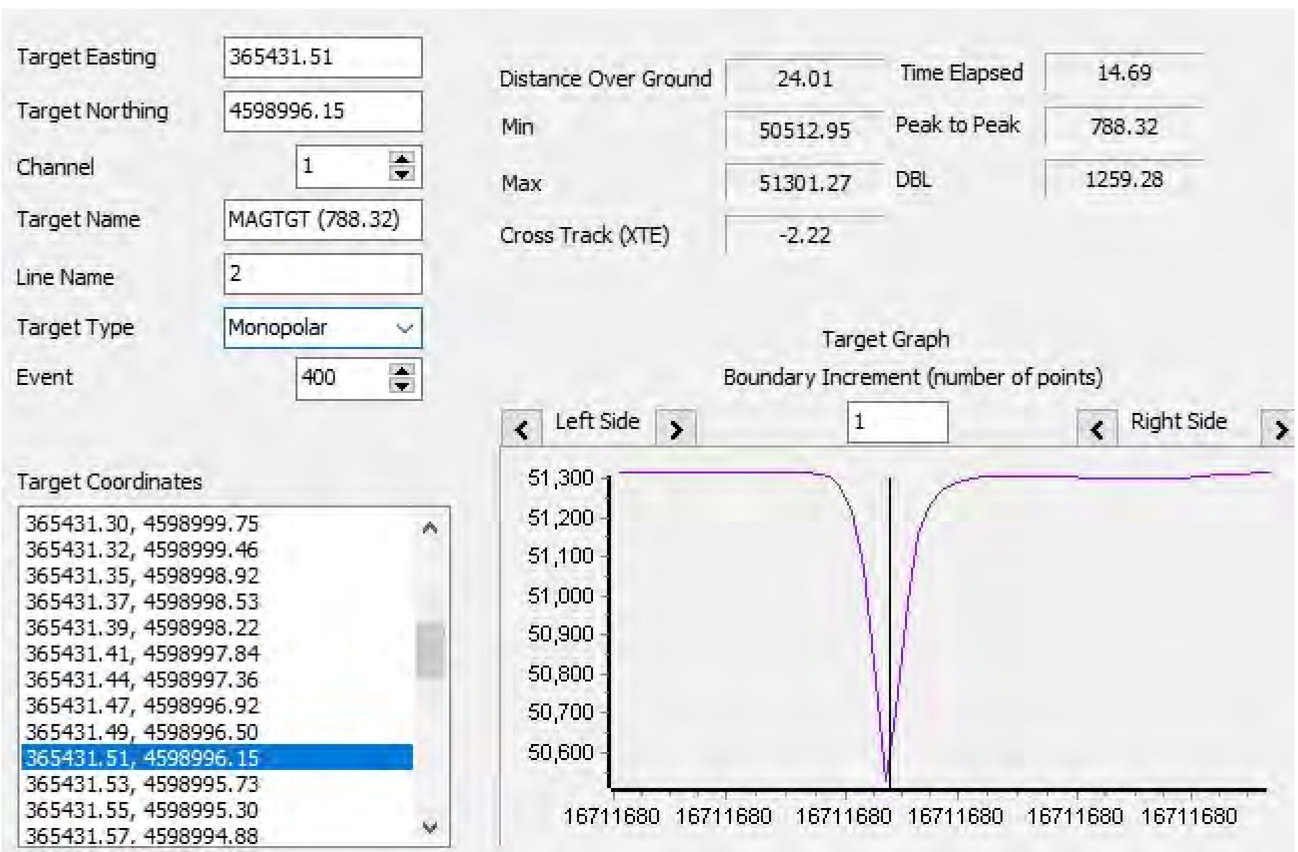
Name	Date	10/05/2021
MAGTGT (80.33)	Time	12:03:50
Survey File	Event	217
15	X	365317.0
Capture File	Y	4597494.0
365317.65.4597494.70.80.33.51253.84.9.jpg	WGS84 Latitude	41 31 3.9488 N
	WGS84 Longitude	070 36 50.7758 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



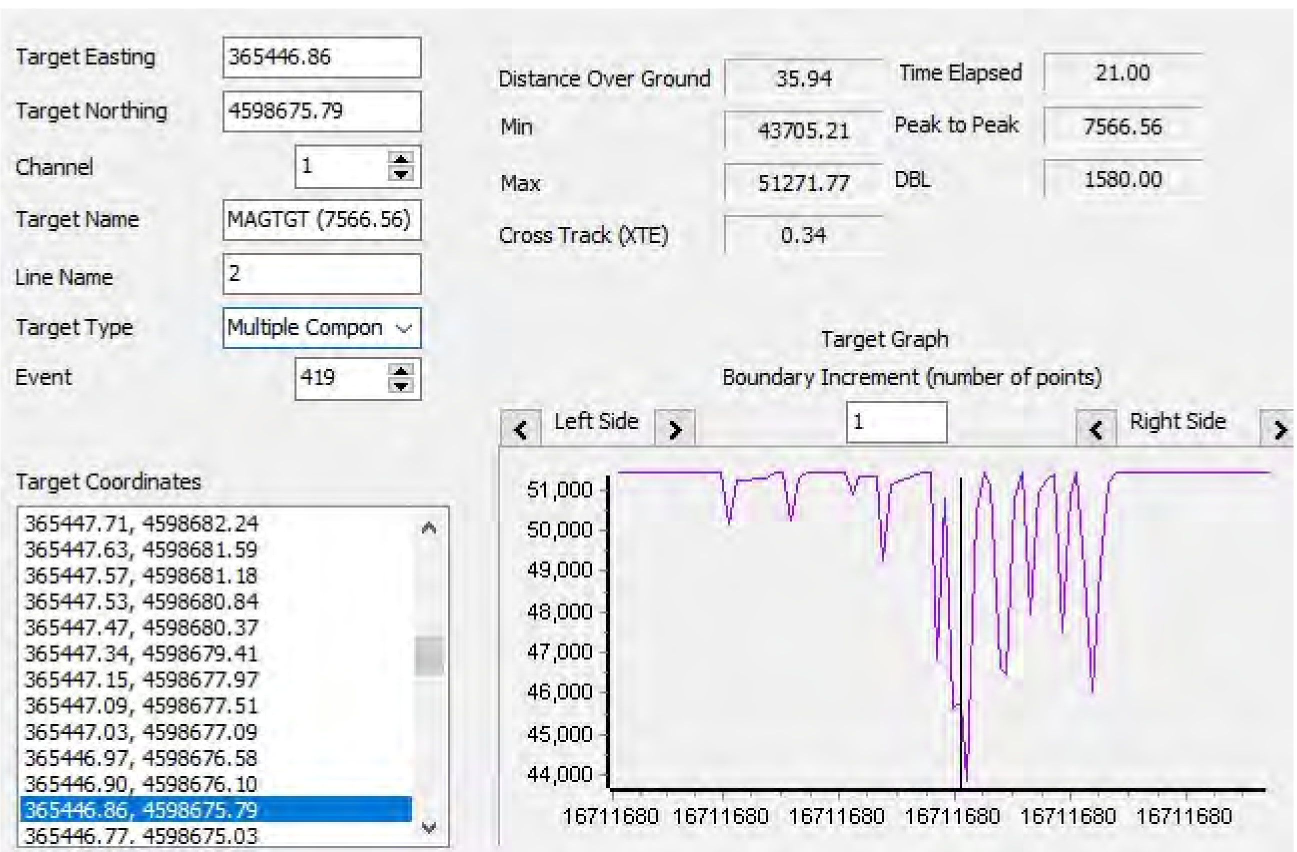
Name	Date	10/05/2021
MAGTGT (788.32)	Time	12:04:29
Survey File	Event	400
2	X	365431.0
Capture File	Y	4598996.0
365431.51.4598996.15.788.32 .51144.60.10.jpg	WGS84 Latitude	41 31 52.7034 N
	WGS84 Longitude	070 36 47.0686 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



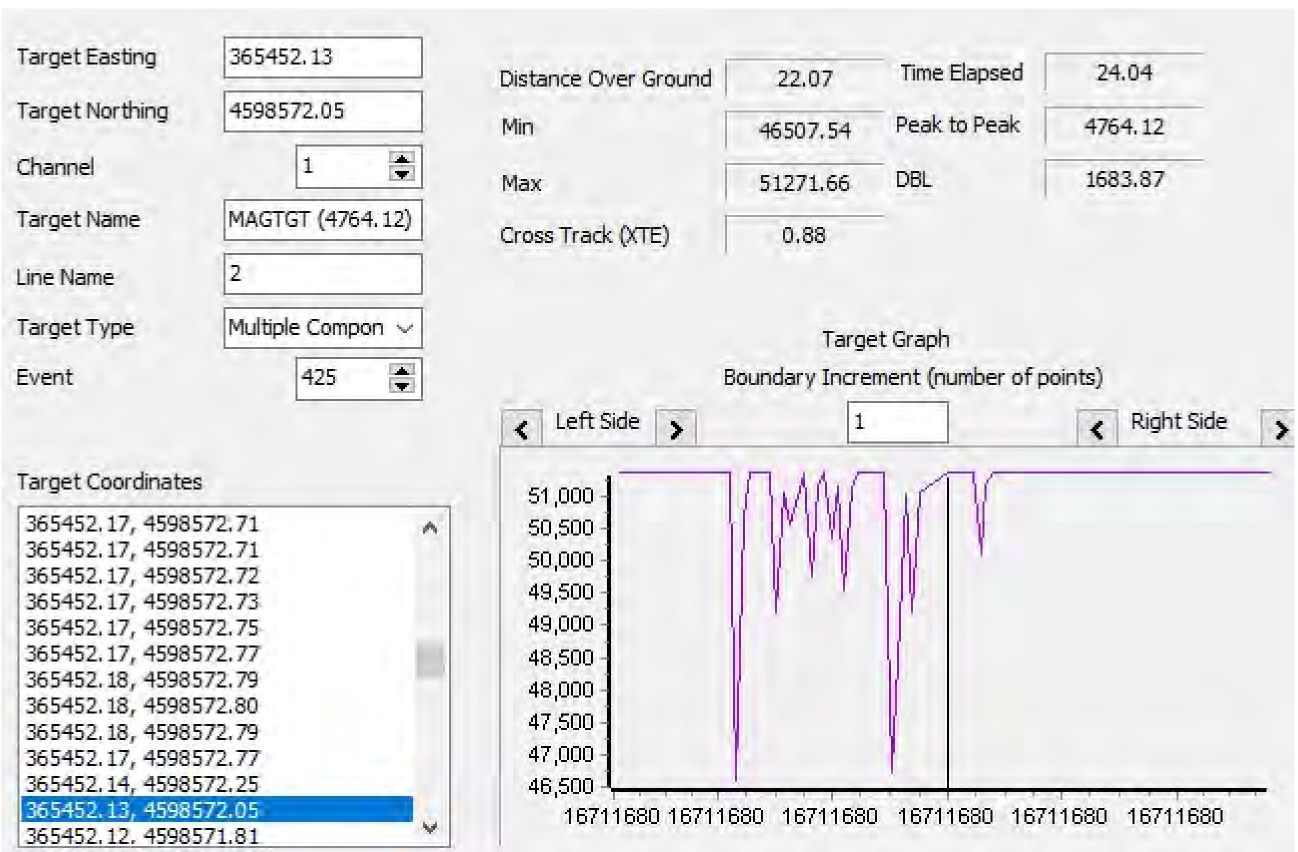
Name	Date	10/05/2021
MAGTGT (7566.56)	Time	12:04:43
Survey File	Event	419
2	X	365446.0
Capture File	Y	4598675.0
365446.86.4598675.79.7566.56.43705.21.10.jpg	WGS84 Latitude	41 31 42.3076 N
	WGS84 Longitude	070 36 46.163 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



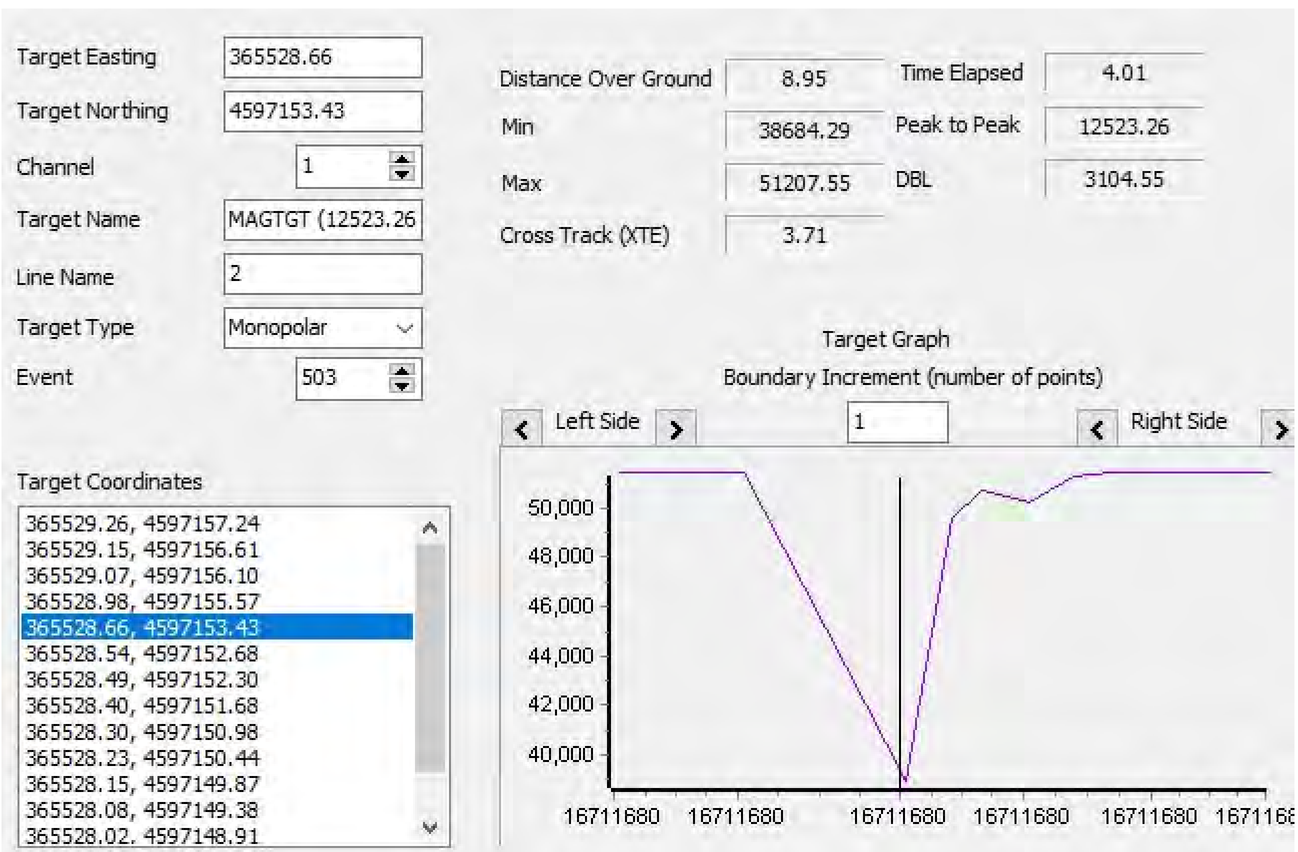
Name	Date	10/05/2021
MAGTGT (4764.12)	Time	12:04:54
Survey File	Event	425
2	X	365452.0
Capture File	Y	4598572.0
365452.13.4598572.05.4764.12.51269.69.10.jpg	WGS84 Latitude	41 31 38.9726 N
	WGS84 Longitude	070 36 45.8213 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



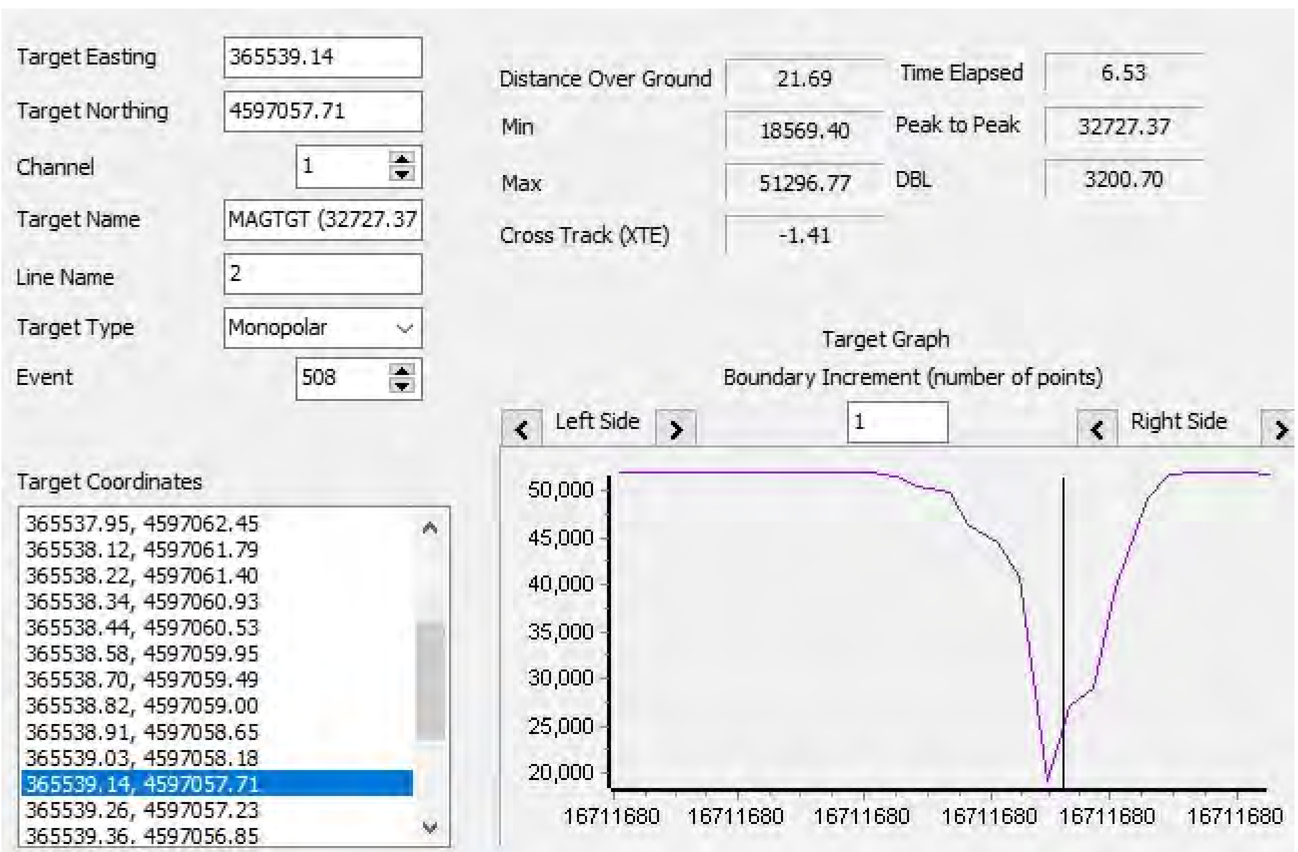
Name	Date	10/05/2021
MAGTGT (12523.26)	Time	12:05:45
Survey File	Event	503
2	X	365528.0
Capture File	Y	4597153.0
365528.66.4597153.43.12523.26.50442.62.10.jpg	WGS84 Latitude	41 30 53.0233 N
	WGS84 Longitude	070 36 41.4016 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



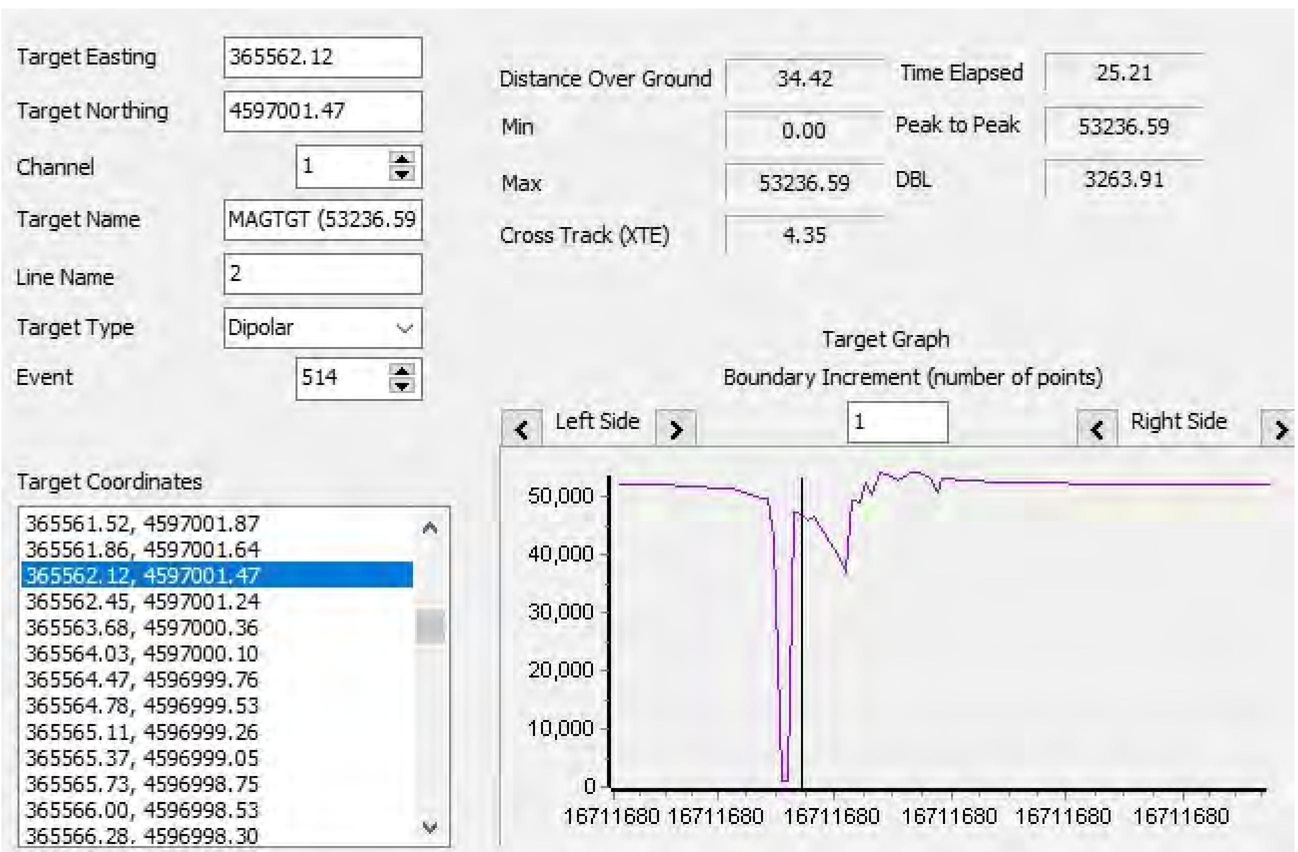
Name	Date	10/05/2021
MAGTGT (32727.37)	Time	12:05:58
Survey File	Event	508
2	X	365539.0
Capture File	Y	4597057.0
365539.14.4597057.71.32727.37.49192.13.10.jpg	WGS84 Latitude	41 30 49.9182 N
	WGS84 Longitude	070 36 40.85 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



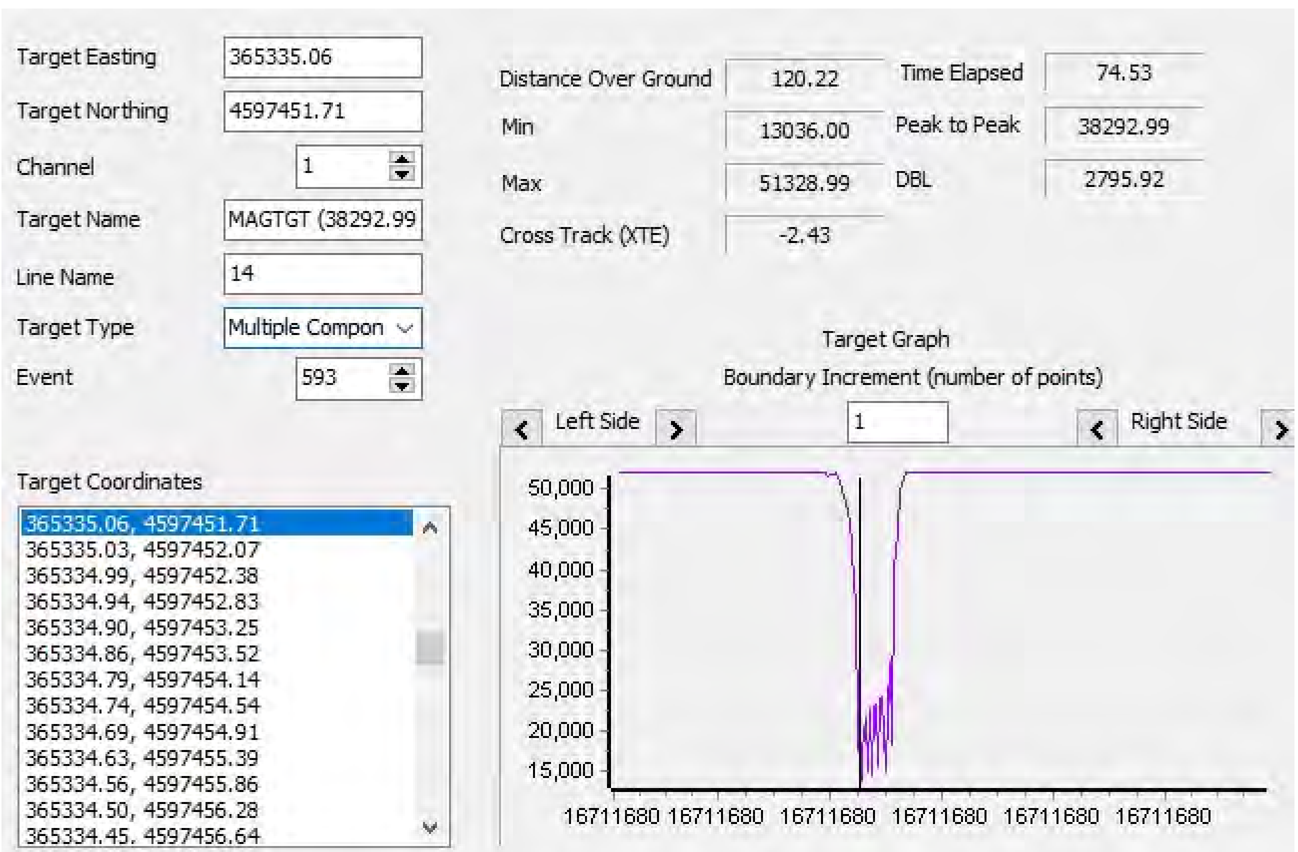
Name	Date	10/05/2021
MAGTGT (53236.59)	Time	12:06:17
Survey File	Event	514
2	X	365562.0
Capture File	Y	4597001.0
365562.12.4597001.47.53236.59.51923.51.10.jpg	WGS84 Latitude	41 30 48.117 N
	WGS84 Longitude	070 36 39.8131 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (38292.99)	Time	12:07:21
Survey File	Event	593
14	X	365335.0
Capture File	Y	4597451.0
365335.06.4597451.71.38292.99.51291.39.11.jpg	WGS84 Latitude	41 31 2.5659 N
	WGS84 Longitude	070 36 49.9649 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (7817.76)	Time	12:13:52
Survey File	Event	40
1	X	367186.0
Capture File	Y	4595171.0
	WGS84 Latitude	41 29 49.7742 N
	WGS84 Longitude	070 35 28.3252 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

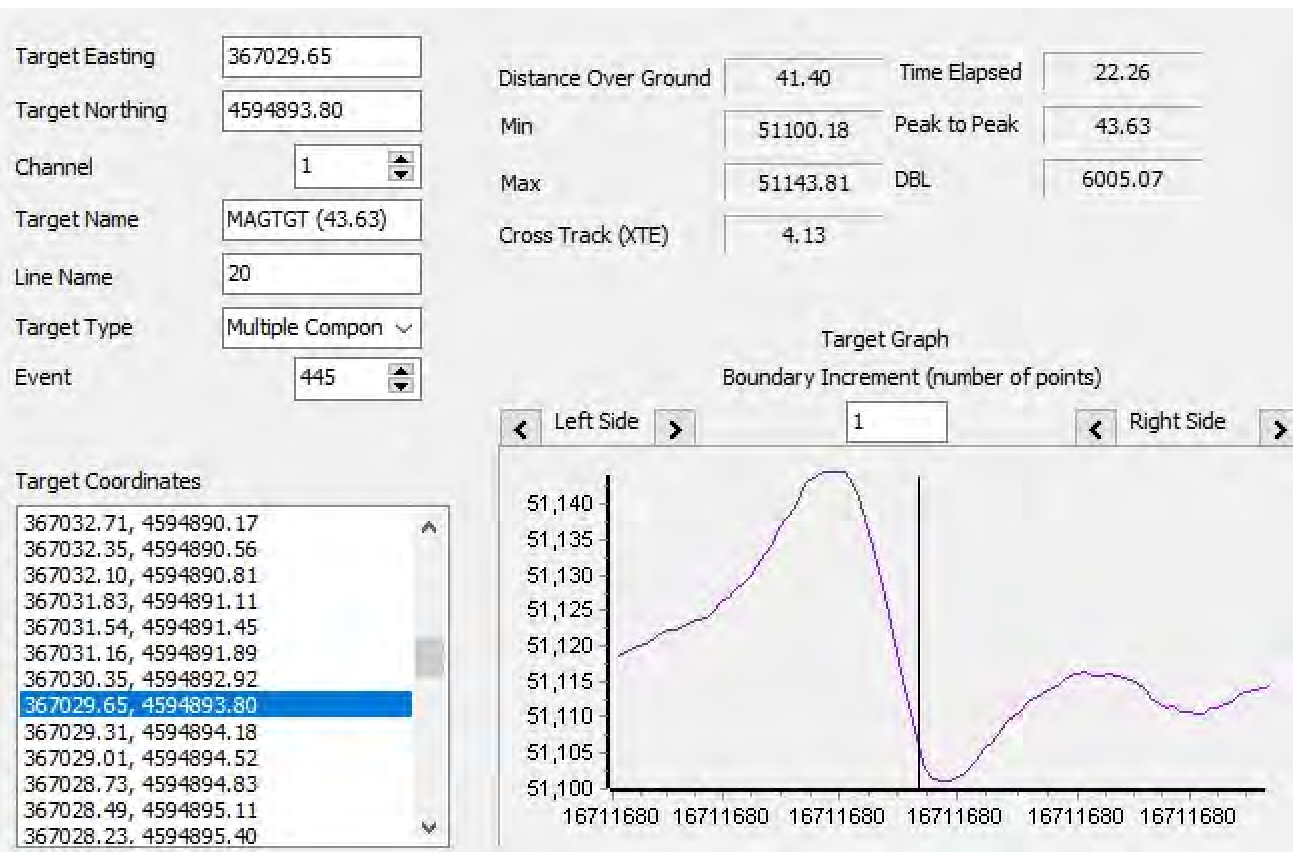
Notes	

Name	Date	10/05/2021
MAGTGT (365.48)	Time	12:14:37
Survey File	Event	164
1	X	365970.0
Capture File	Y	4596566.0
	WGS84 Latitude	41 30 34.263 N
	WGS84 Longitude	070 36 21.8696 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

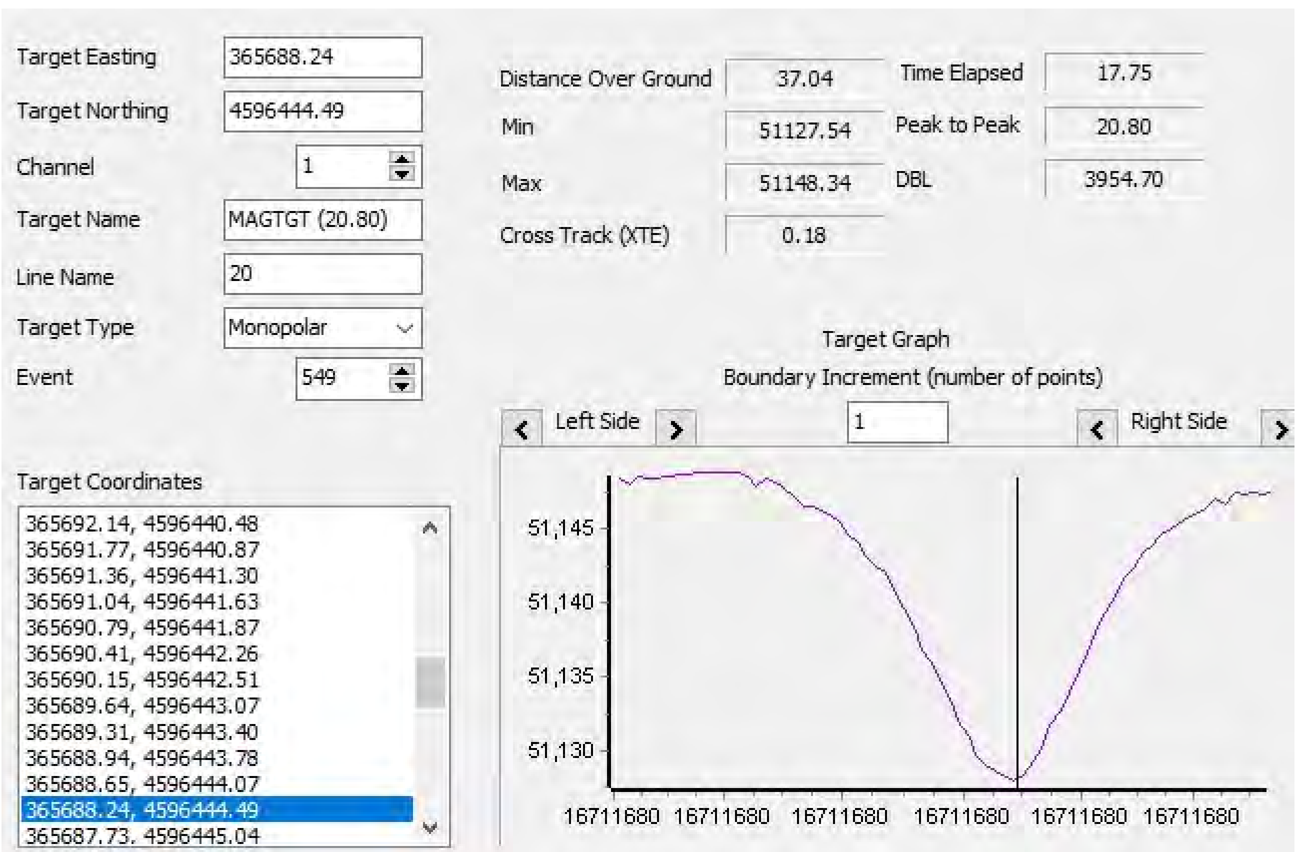
Name	Date	10/05/2021
MAGTGT (43.63)	Time	12:16:27
Survey File	Event	445
20	X	367029.0
Capture File	Y	4594893.0
367029.65.4594893.80.43.63.51100.42.2.jpg	WGS84 Latitude	41 29 40.6693 N
	WGS84 Longitude	070 35 34.8733 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



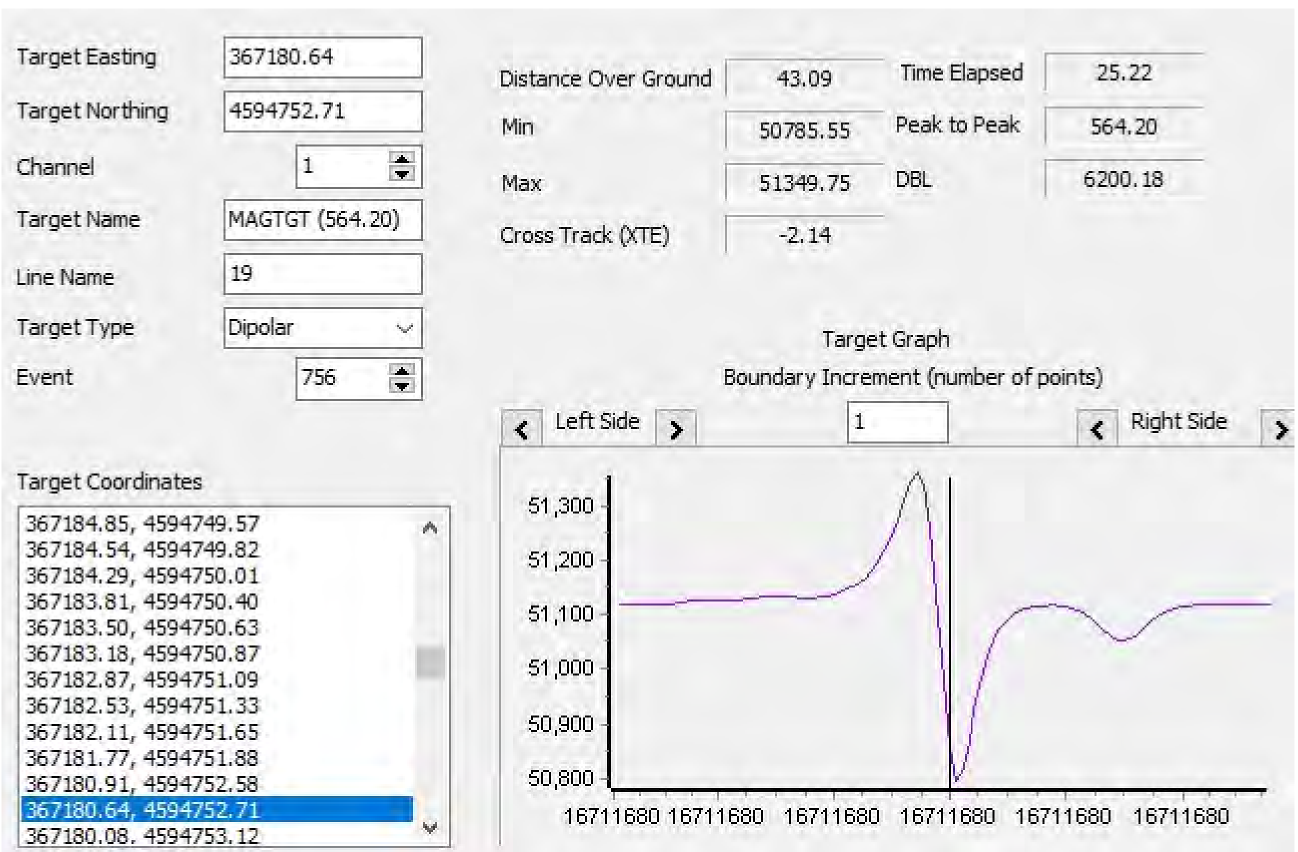
Name	Date	10/05/2021
MAGTGT (20.80)	Time	12:16:42
Survey File	Event	549
20	X	365688.0
Capture File	Y	4596444.0
365688.24.4596444.49.20.80. 51131.58.2.jpg	WGS84 Latitude	41 30 30.1385 N
	WGS84 Longitude	070 36 33.9321 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



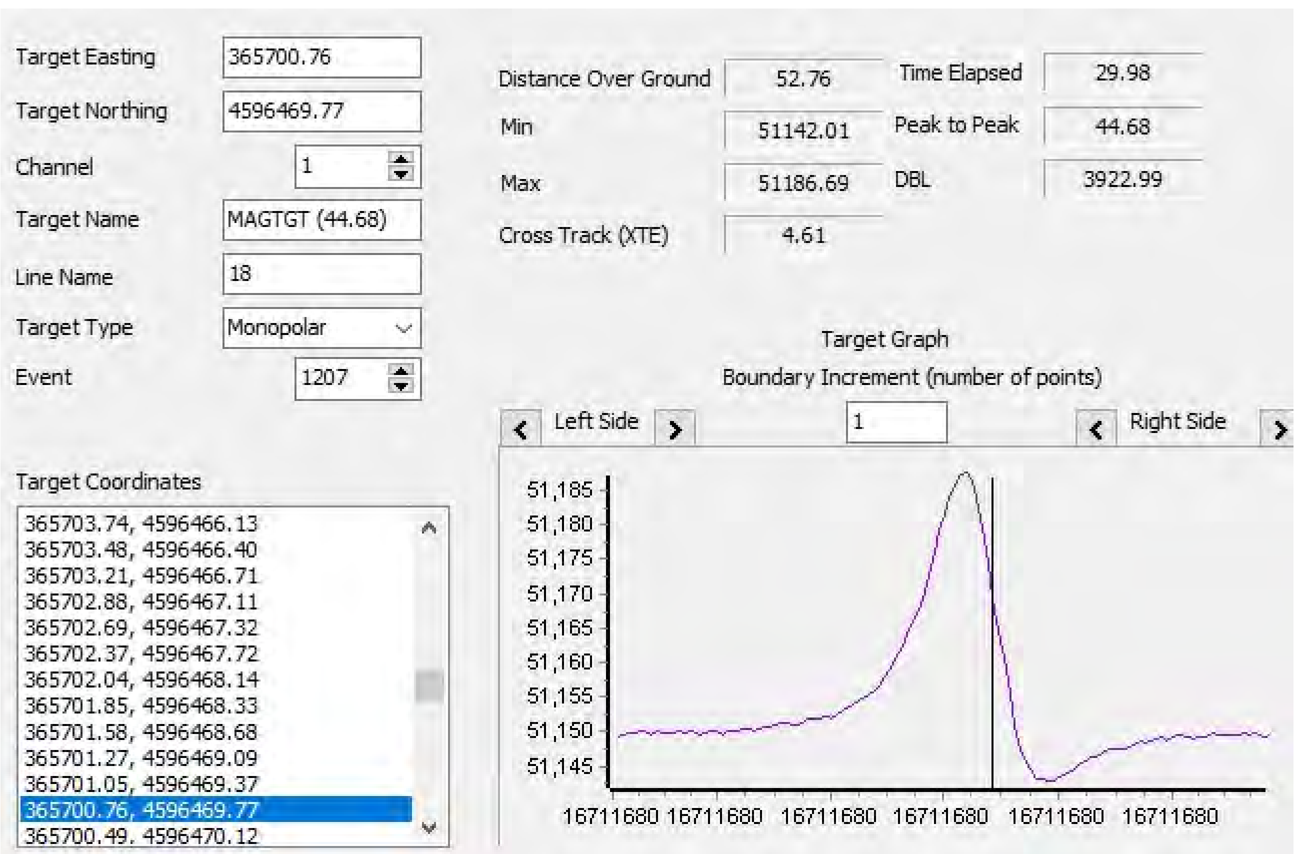
Name	Date	10/05/2021
MAGTGT (564.20)	Time	12:17:00
Survey File	Event	756
19	X	367180.0
Capture File	Y	4594752.0
367180.64.4594752.71.564.20 .50785.55.4.jpg	WGS84 Latitude	41 29 36.189 N
	WGS84 Longitude	070 35 28.2514 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



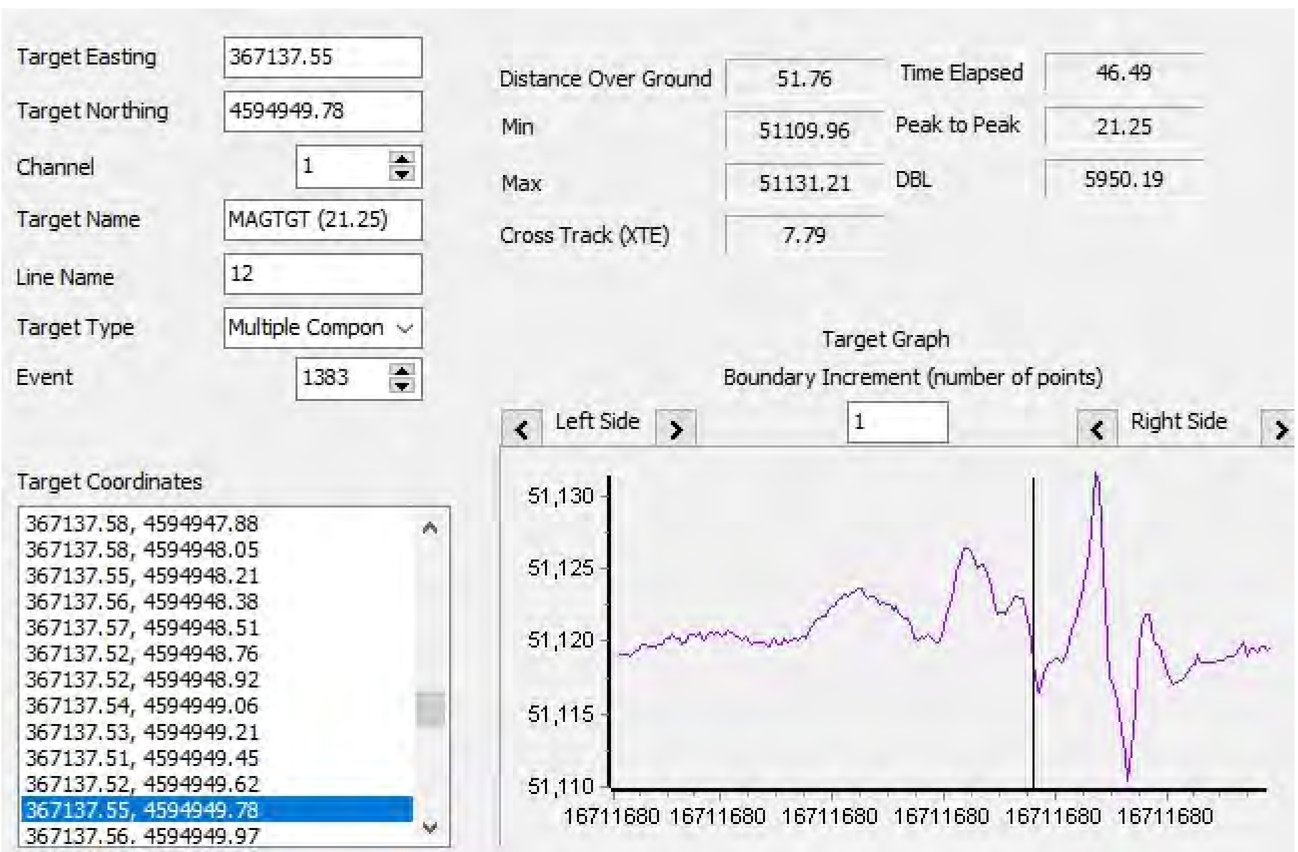
Name	Date	10/05/2021
MAGTGT (44.68)	Time	12:17:19
Survey File	Event	1207
18	X	365700.0
Capture File	Y	4596469.0
365700.76.4596469.77.44.68. 51180.70.6.jpg	WGS84 Latitude	41 30 30.9561 N
	WGS84 Longitude	070 36 33.4347 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



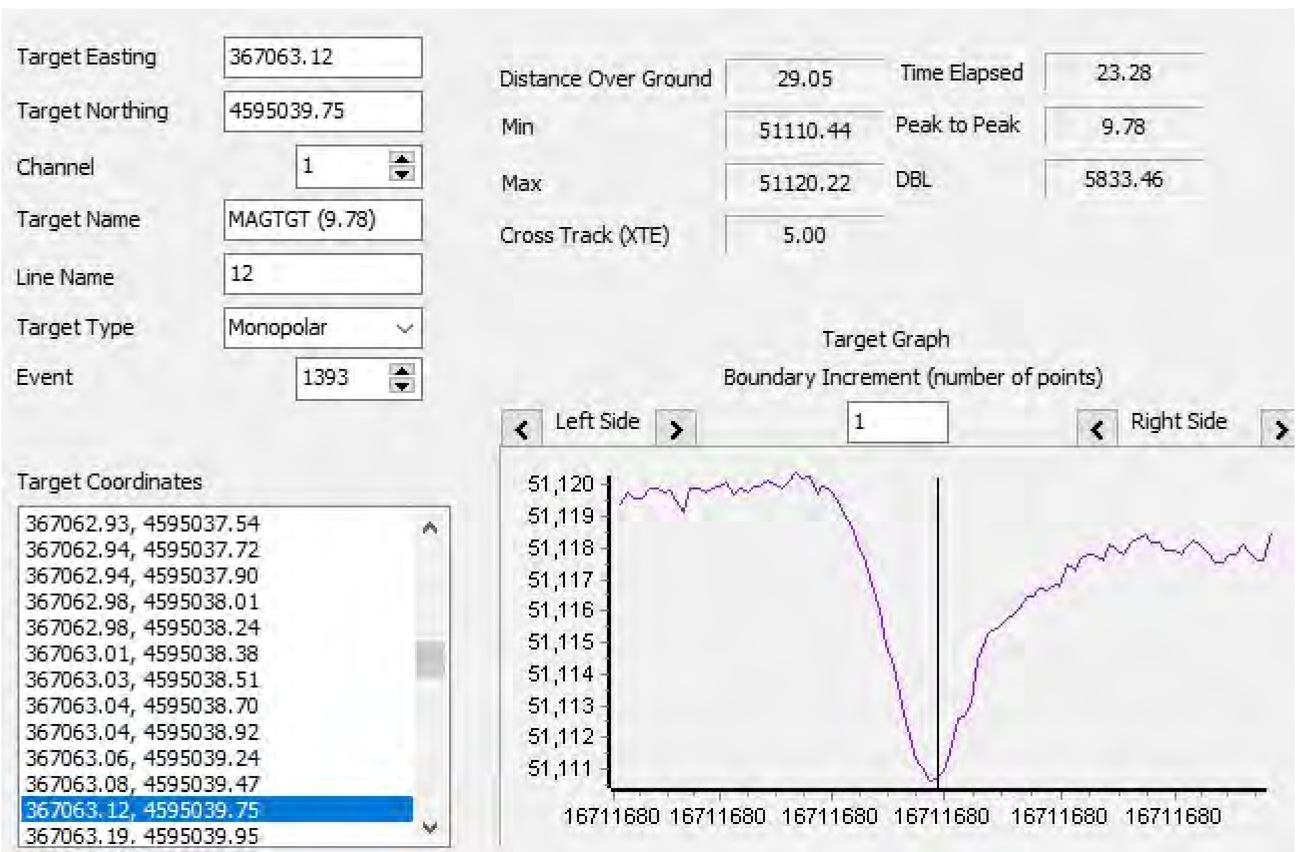
Name	Date	10/05/2021
MAGTGT (21.25)	Time	12:21:49
Survey File	Event	1383
12	X	367137.0
Capture File	Y	4594949.0
367137.55.4594949.78.21.25.51119.48.8.jpg	WGS84 Latitude	41 29 42.549 N
	WGS84 Longitude	070 35 30.2616 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



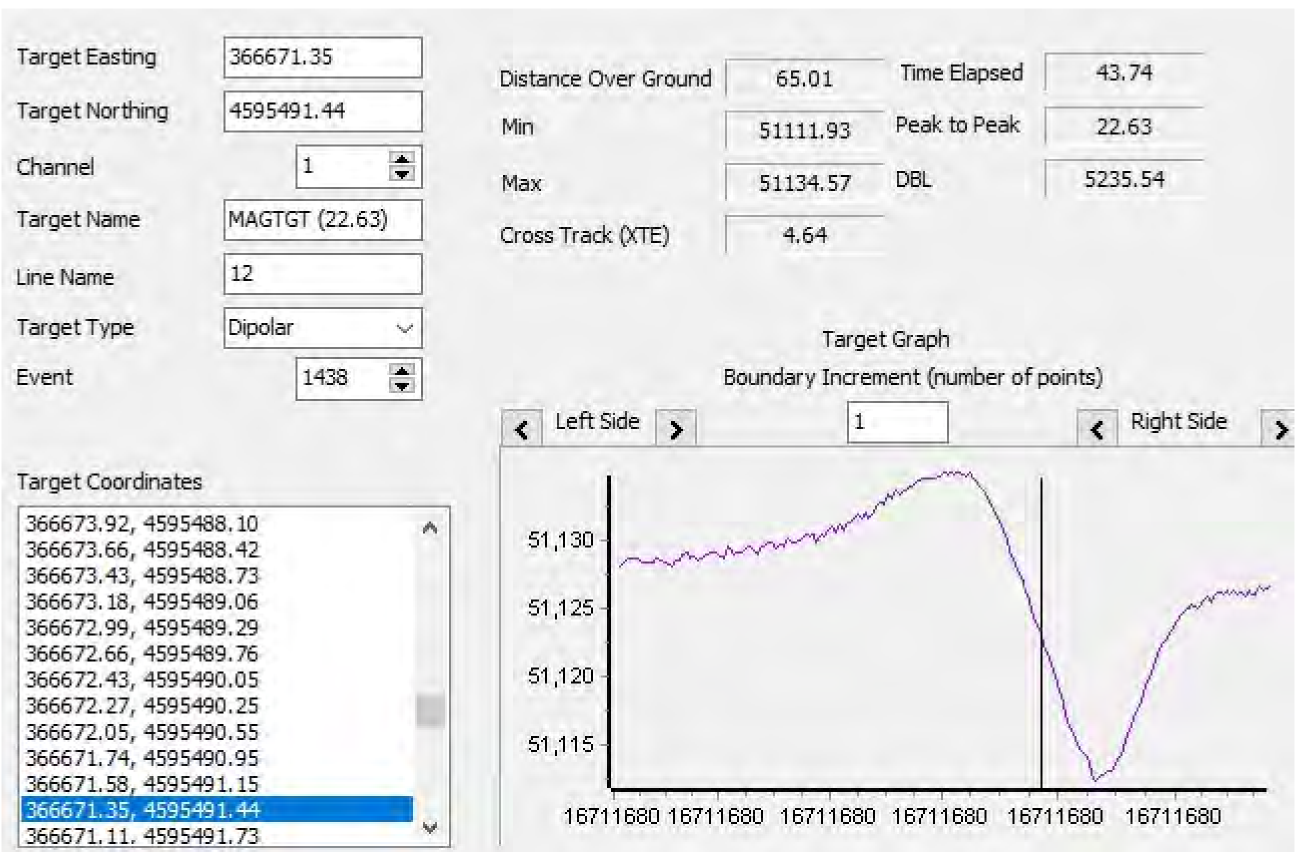
Name	Date	10/05/2021
MAGTGT (9.78)	Time	12:22:06
Survey File	Event	1393
12	X	367063.0
Capture File	Y	4595039.0
367063.12.4595039.75.9.78.5 1110.77.8.jpg	WGS84 Latitude	41 29 45.4221 N
	WGS84 Longitude	070 35 33.5234 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



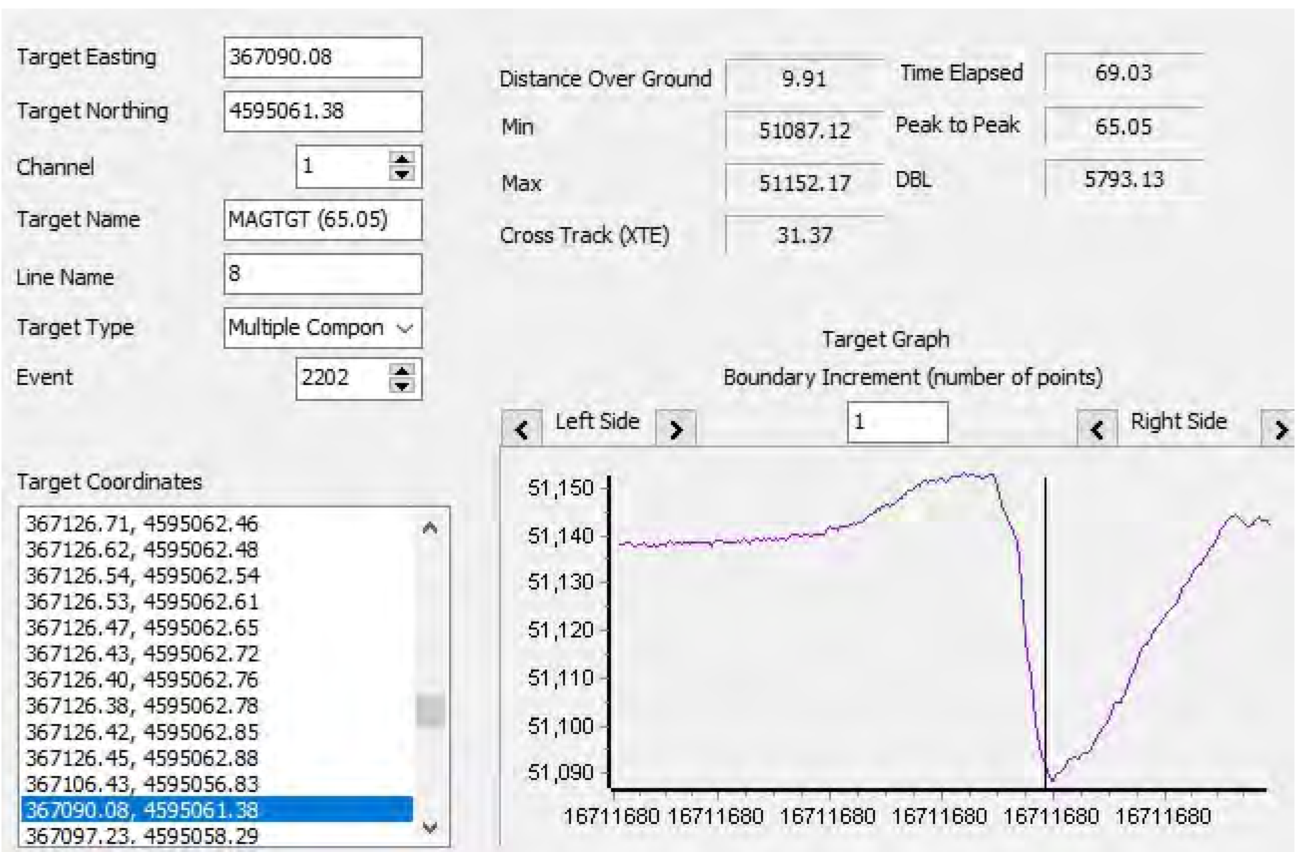
Name	Date	10/05/2021
MAGTGT (22.63)	Time	12:22:23
Survey File	Event	1438
12	X	366671.0
Capture File	Y	4595491.0
366671.35.4595491.44.22.63.51134.52.8.jpg	WGS84 Latitude	41 29 59.8389 N
	WGS84 Longitude	070 35 50.784 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



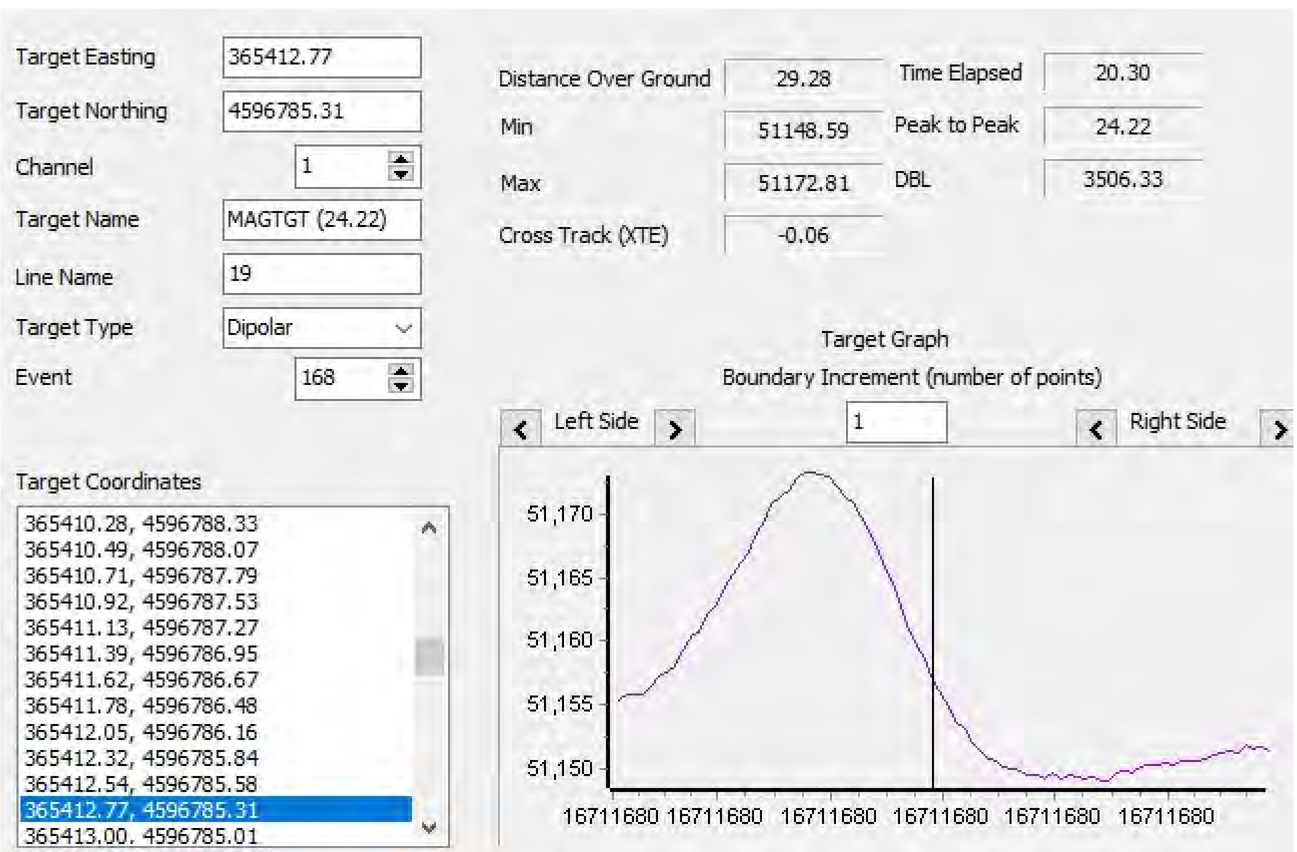
Name	Date	10/05/2021
MAGTGT (65.05)	Time	12:23:05
Survey File	Event	2202
8	X	367090.0
Capture File	Y	4595061.0
367090.08.4595061.38.65.05. 51150.59.12.jpg	WGS84 Latitude	41 29 46.1514 N
	WGS84 Longitude	070 35 32.3768 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



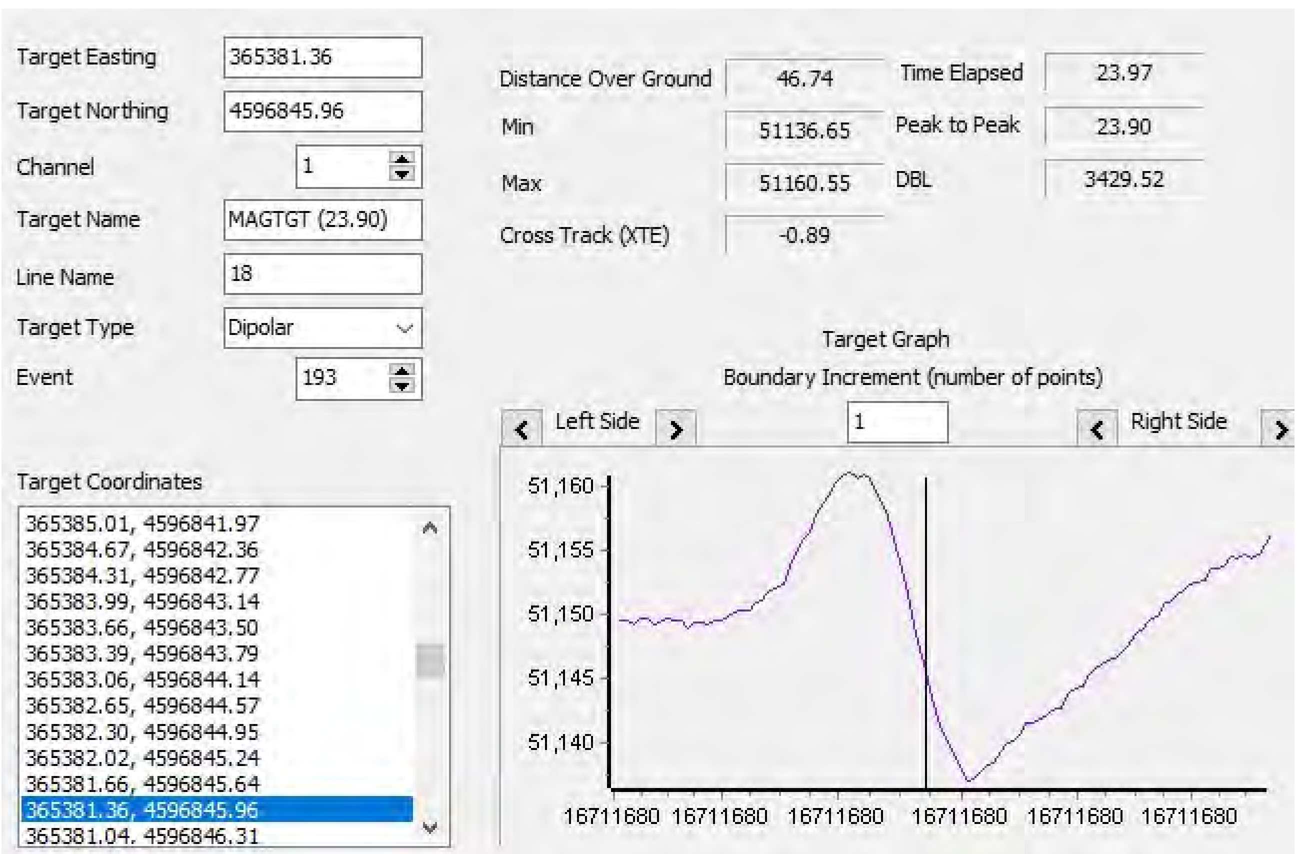
Name	Date	10/05/2021
MAGTGT (24.22)	Time	12:23:52
Survey File	Event	168
19	X	365412.0
Capture File	Y	4596785.0
365412.77.4596785.31.24.22.51155.70.0.jpg	WGS84 Latitude	41 30 41.0249 N
	WGS84 Longitude	070 36 46.108 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



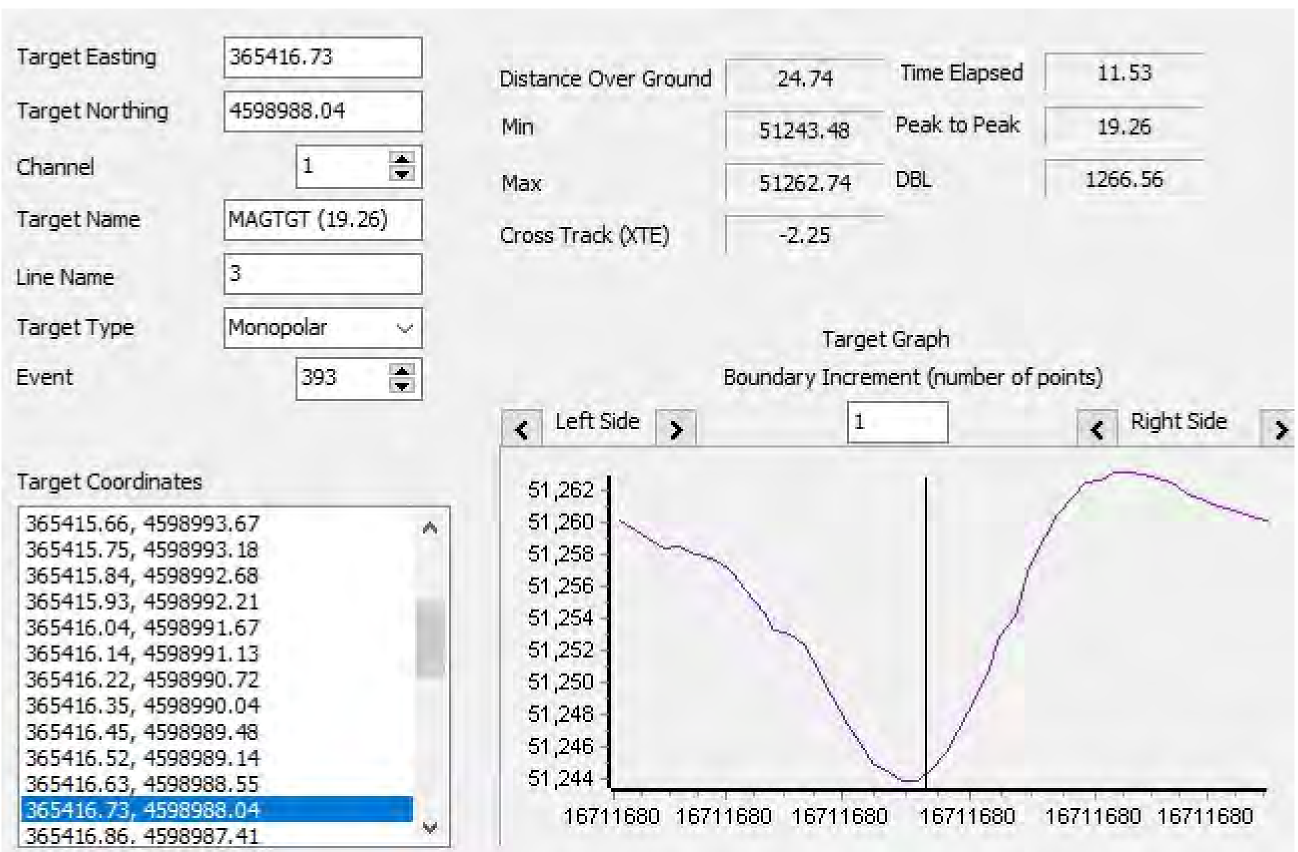
Name	Date	10/05/2021
MAGTGT (23.90)	Time	12:24:06
Survey File	Event	193
18	X	365381.0
Capture File	Y	4596845.0
365381.36.4596845.96.23.90. 51142.95.1.jpg	WGS84 Latitude	41 30 42.951 N
	WGS84 Longitude	070 36 47.4931 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



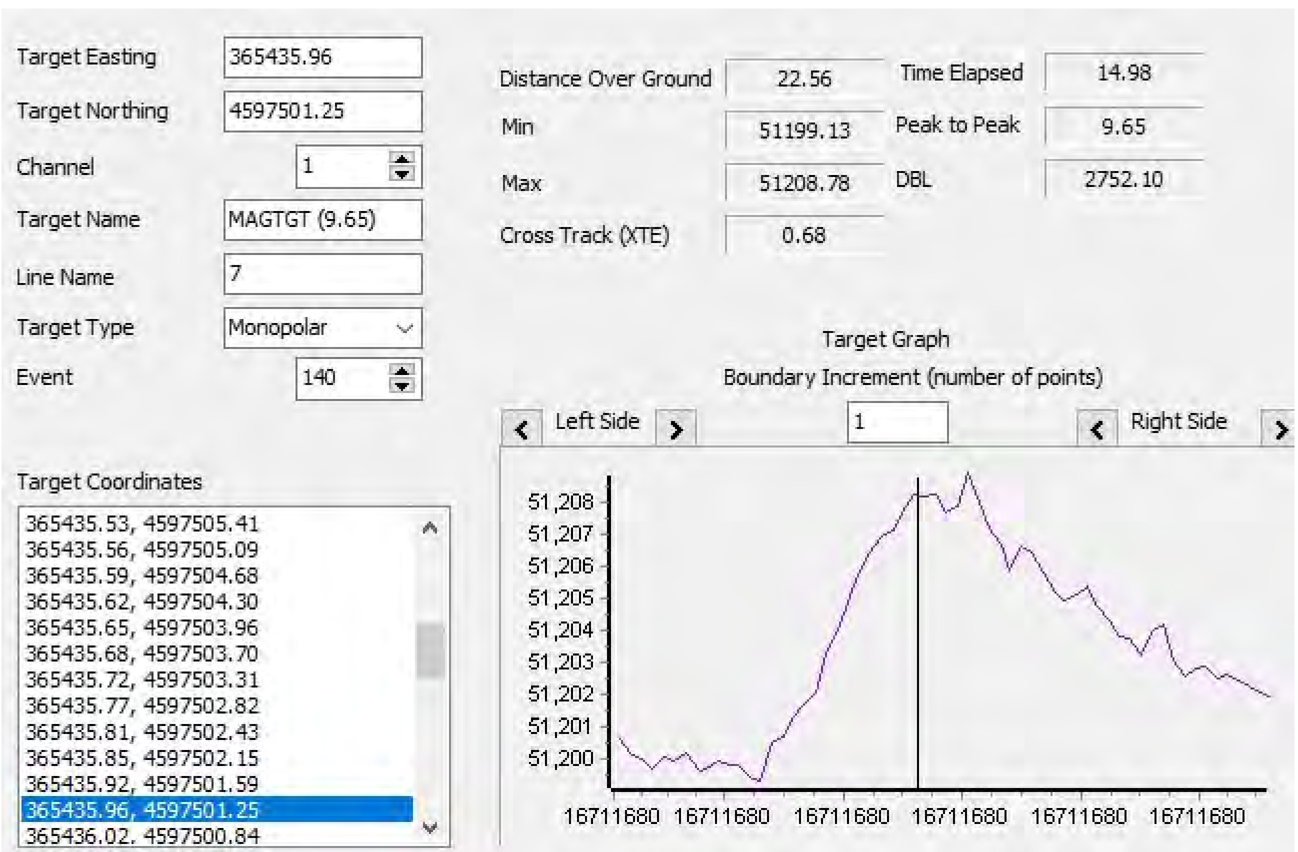
Name	Date	10/05/2021
MAGTGT (19.26)	Time	12:24:22
Survey File	Event	393
3	X	365416.0
Capture File	Y	4598988.0
365416.73.4598988.04.19.26. 51244.24.2.jpg	WGS84 Latitude	41 31 52.435 N
	WGS84 Longitude	070 36 47.7092 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



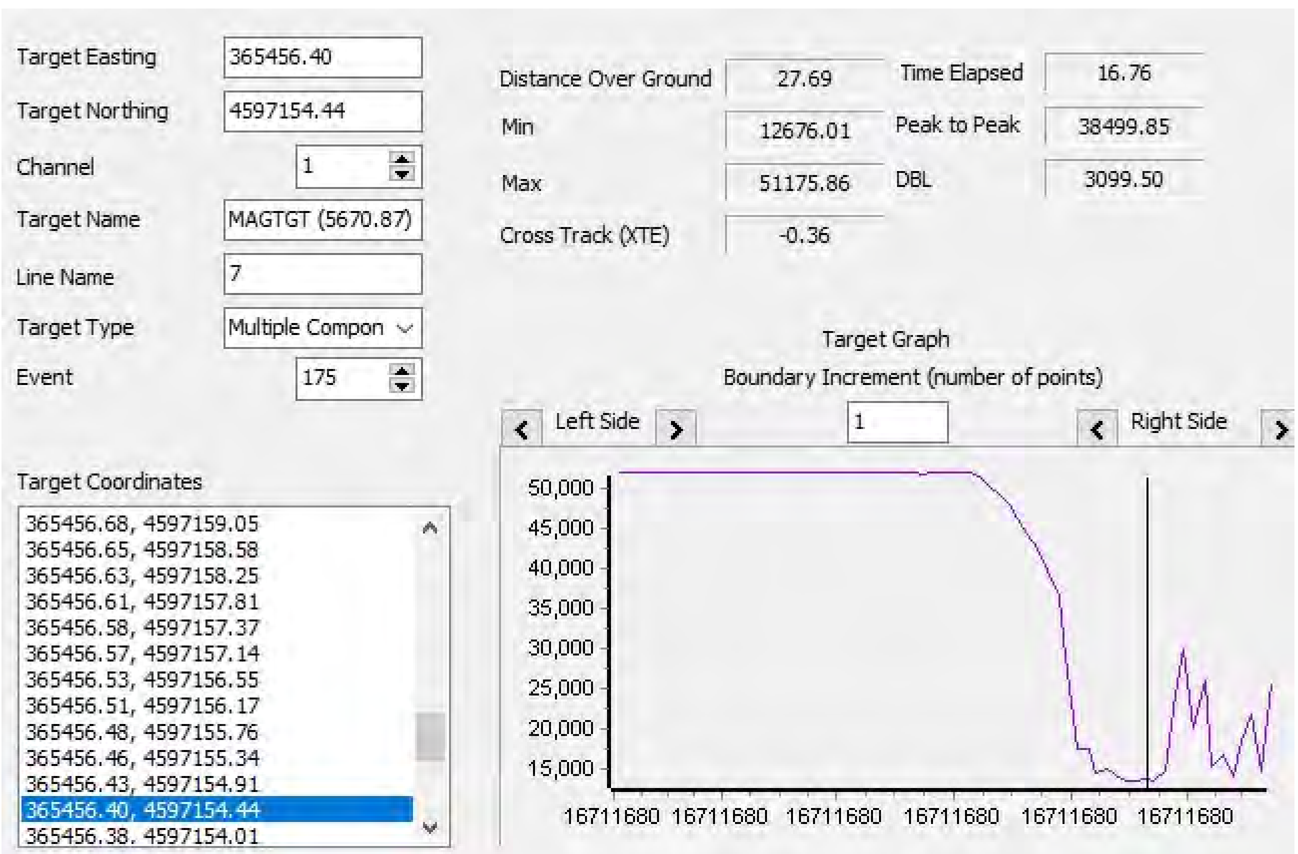
Name	Date	10/05/2021
MAGTGT (9.65)	Time	12:25:11
Survey File	Event	140
7	X	365435.0
Capture File	Y	4597501.0
365435.96.4597501.25.9.65.5 1208.05.0.jpg	WGS84 Latitude	41 31 4.2471 N
	WGS84 Longitude	070 36 45.6924 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



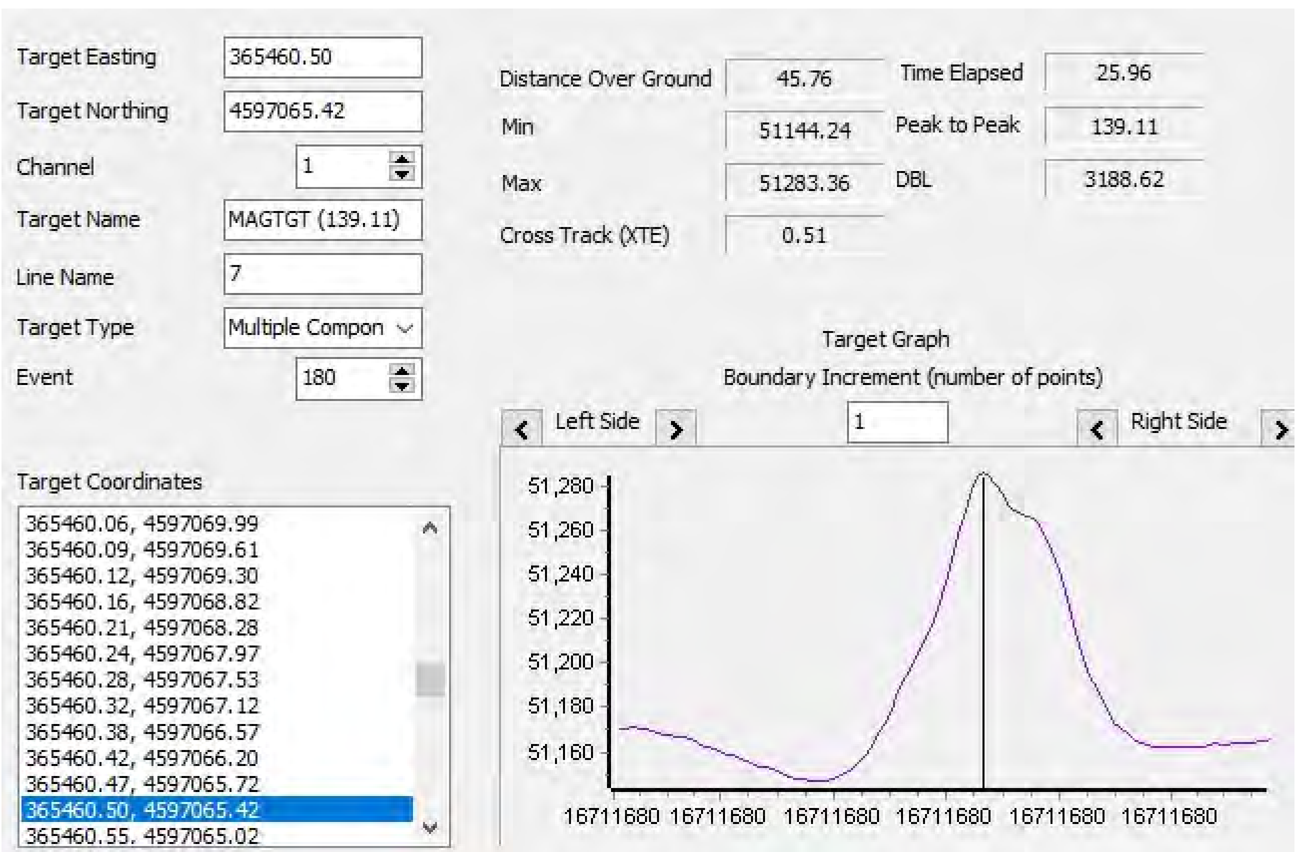
Name	Date	10/05/2021
MAGTGT (5670.87)	Time	12:25:47
Survey File	Event	175
7	X	365456.0
Capture File	Y	4597154.0
365456.40.4597154.44.38499.85.51151.96.1.jpg	WGS84 Latitude	41 30 53.0122 N
	WGS84 Longitude	070 36 44.5075 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



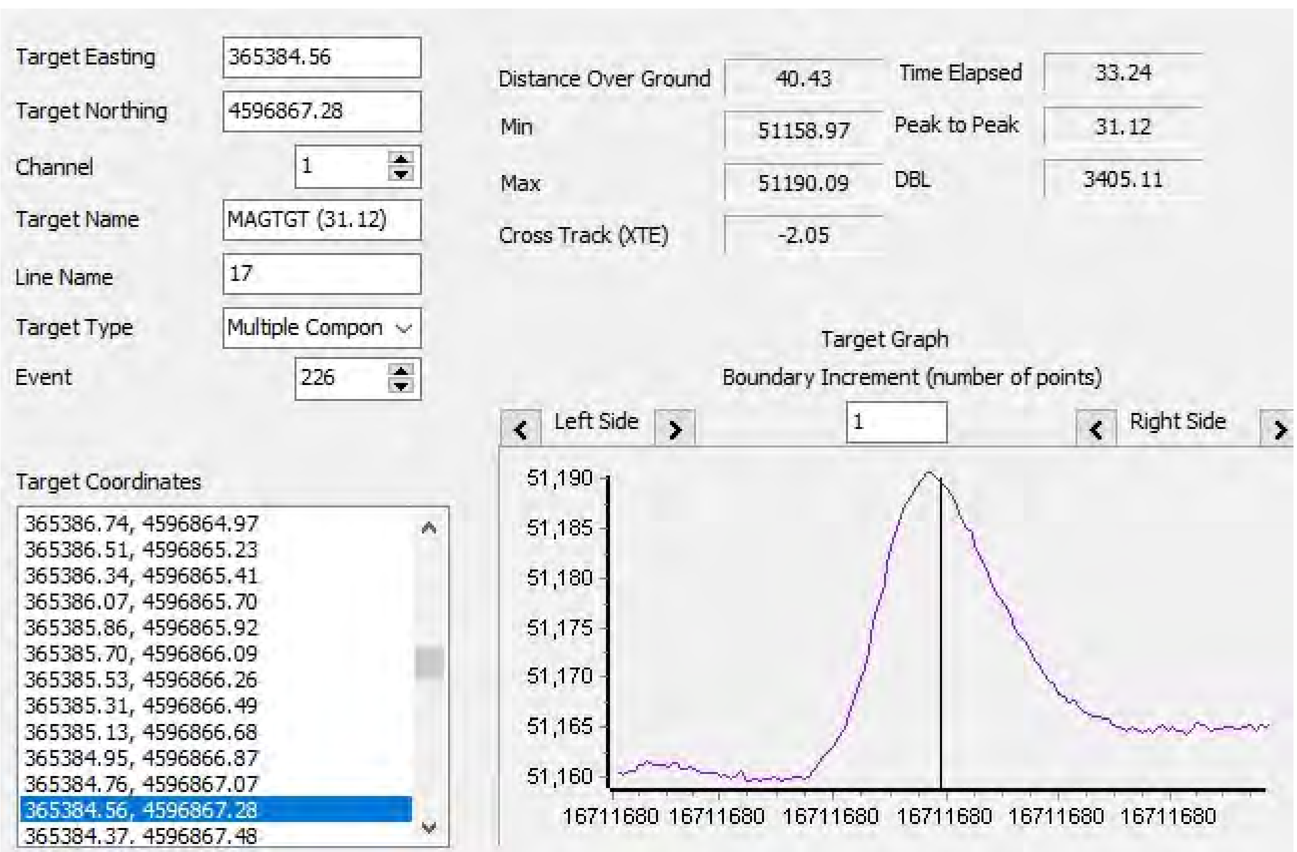
Name	Date	10/05/2021
MAGTGT (139.11)	Time	12:26:01
Survey File	Event	180
7	X	365460.0
Capture File	Y	4597065.0
365460.50.4597065.42.139.11.51233.82.1.jpg	WGS84 Latitude	41 30 50.1298 N
	WGS84 Longitude	070 36 44.2634 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



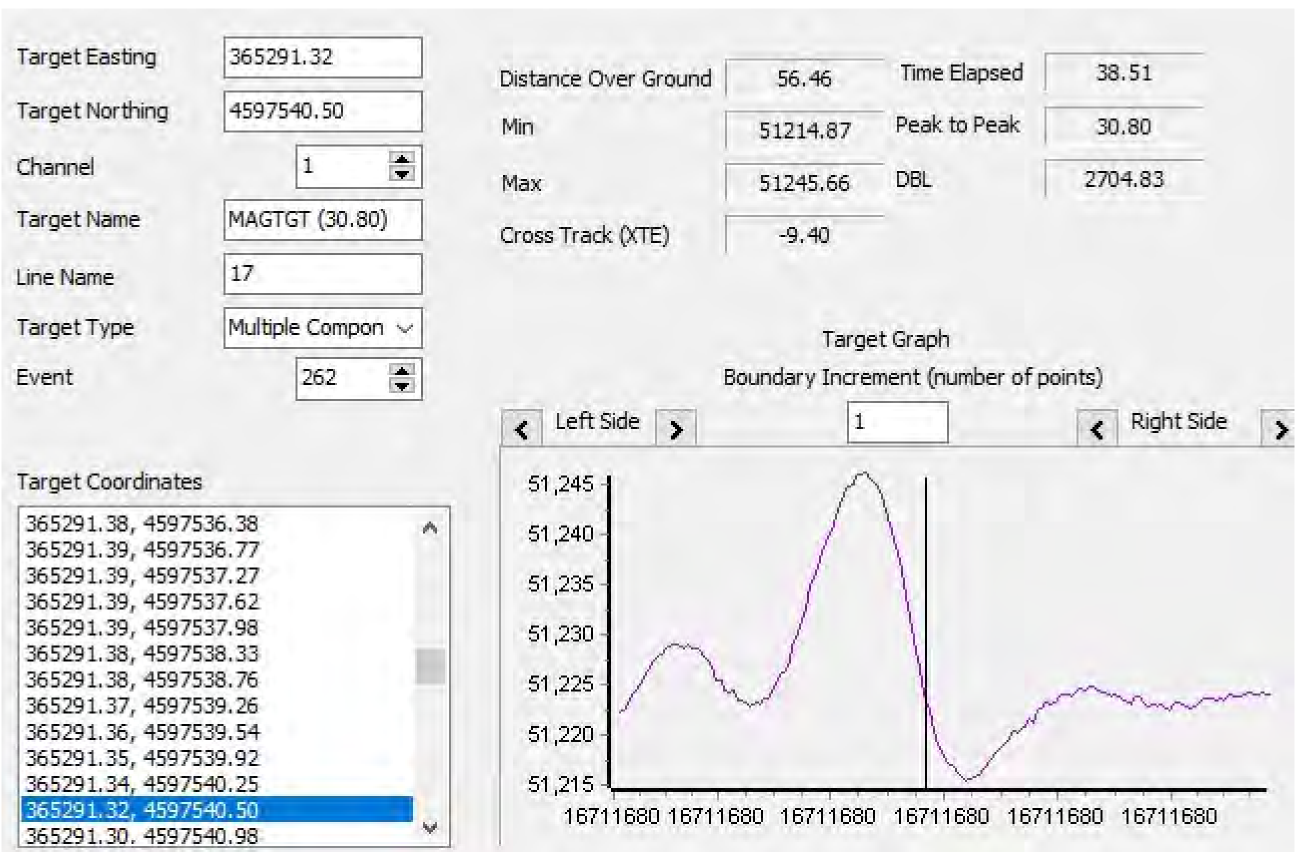
Name	Date	10/05/2021
MAGTGT (31.12)	Time	12:26:13
Survey File	Event	226
17	X	365384.0
Capture File	Y	4596867.0
365384.56.4596867.28.31.12.51188.44.2.jpg	WGS84 Latitude	41 30 43.6659 N
	WGS84 Longitude	070 36 47.3815 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



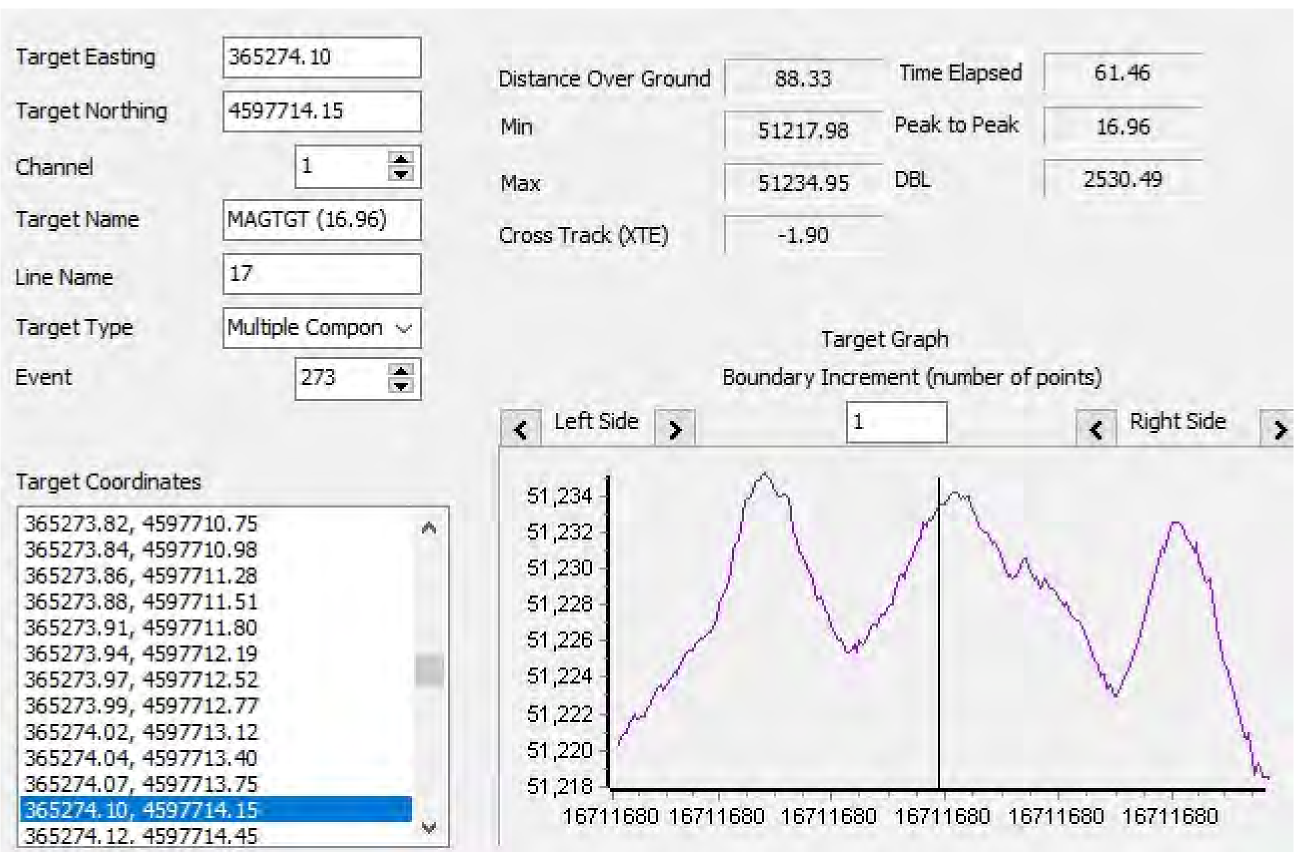
Name	Date	10/05/2021
MAGTGT (30.80)	Time	12:26:23
Survey File	Event	262
17	X	365291.0
Capture File	Y	4597540.0
365291.32.4597540.50.30.80. 51220.80.2.jpg	WGS84 Latitude	41 31 5.4241 N
	WGS84 Longitude	070 36 51.9342 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



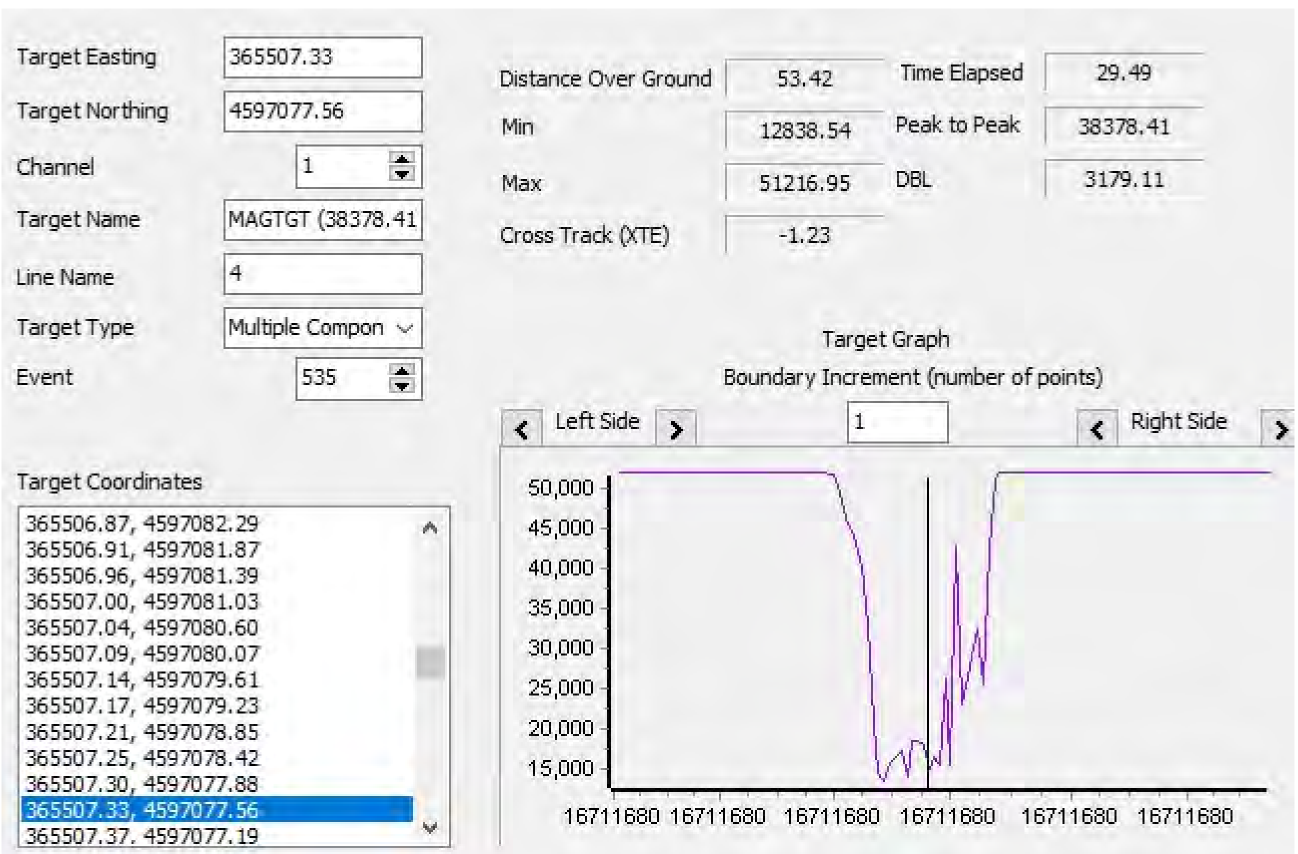
Name	Date	10/05/2021
MAGTGT (16.96)	Time	12:26:33
Survey File	Event	273
17	X	365274.0
Capture File	Y	4597714.0
365274.10.4597714.15.16.96. 51233.22.2.jpg	WGS84 Latitude	41 31 11.0538 N
	WGS84 Longitude	070 36 52.8076 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



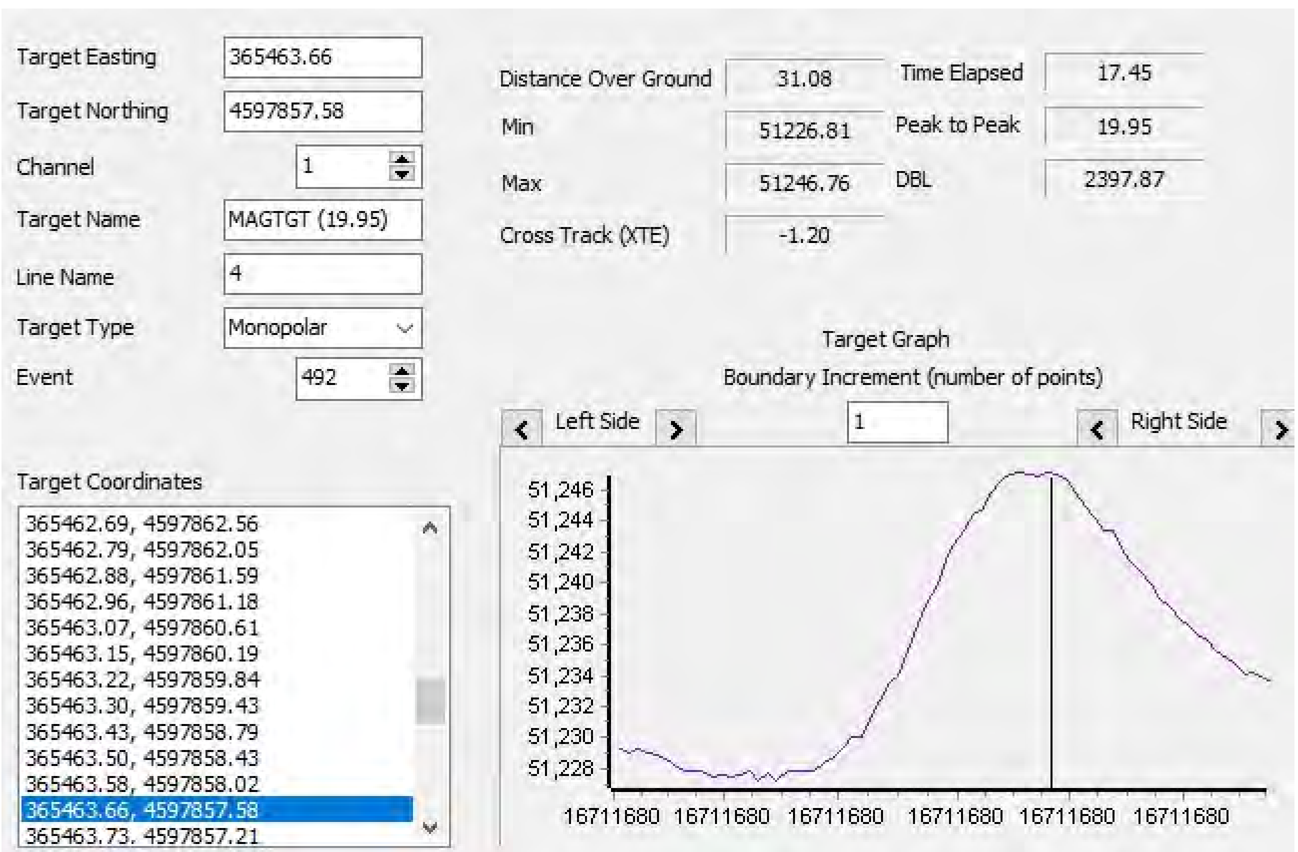
Name	Date	10/05/2021
MAGTGT (38378.41)	Time	12:26:50
Survey File	Event	535
4	X	365507.0
Capture File	Y	4597077.0
365507.33.4597077.56.38378.41.15948.32.3.jpg	WGS84 Latitude	41 30 50.5472 N
	WGS84 Longitude	070 36 42.2461 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



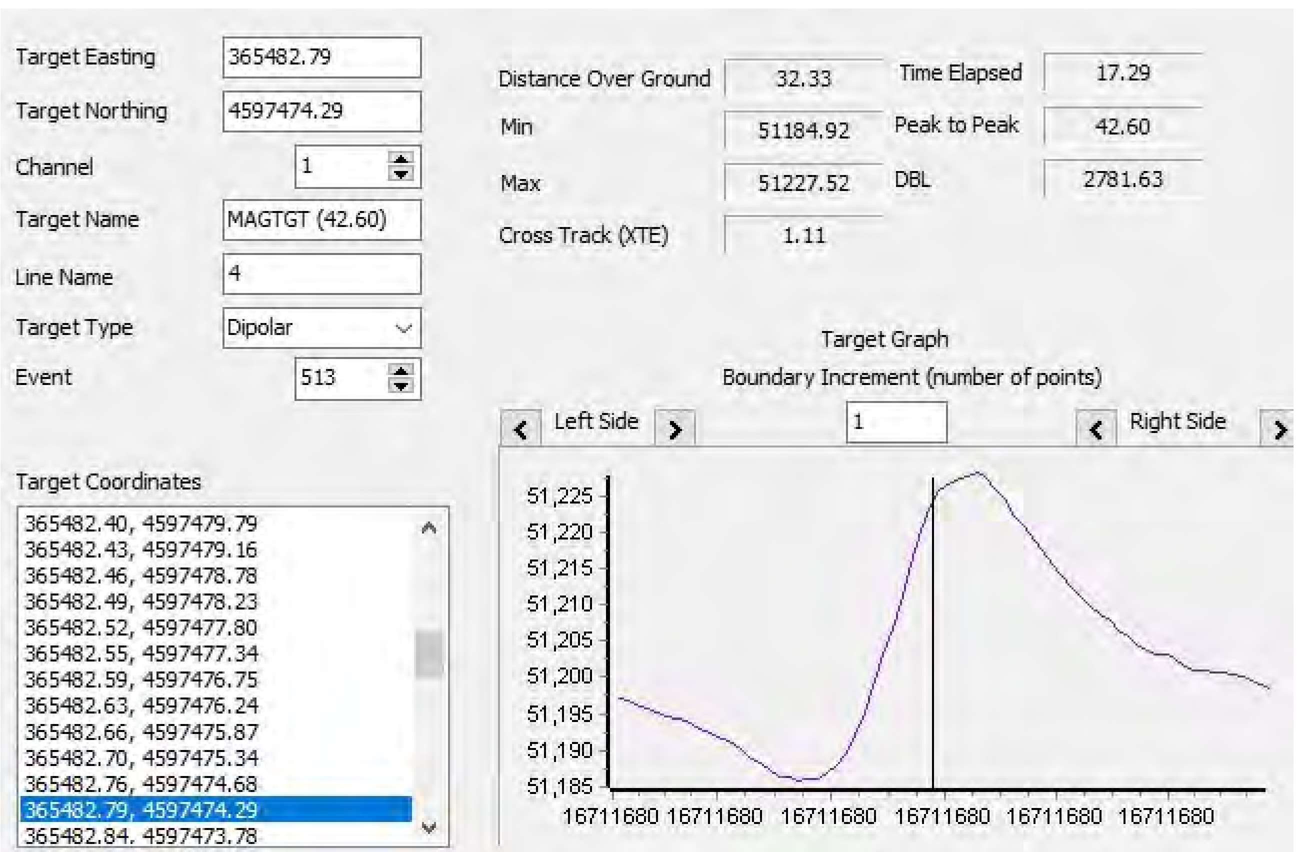
Name	Date	10/05/2021
MAGTGT (19.95)	Time	12:27:13
Survey File	Event	492
4	X	365463.0
Capture File	Y	4597857.0
365463.66.4597857.58.19.95. 51241.07.3.jpg	WGS84 Latitude	41 31 15.8034 N
	WGS84 Longitude	070 36 44.7713 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



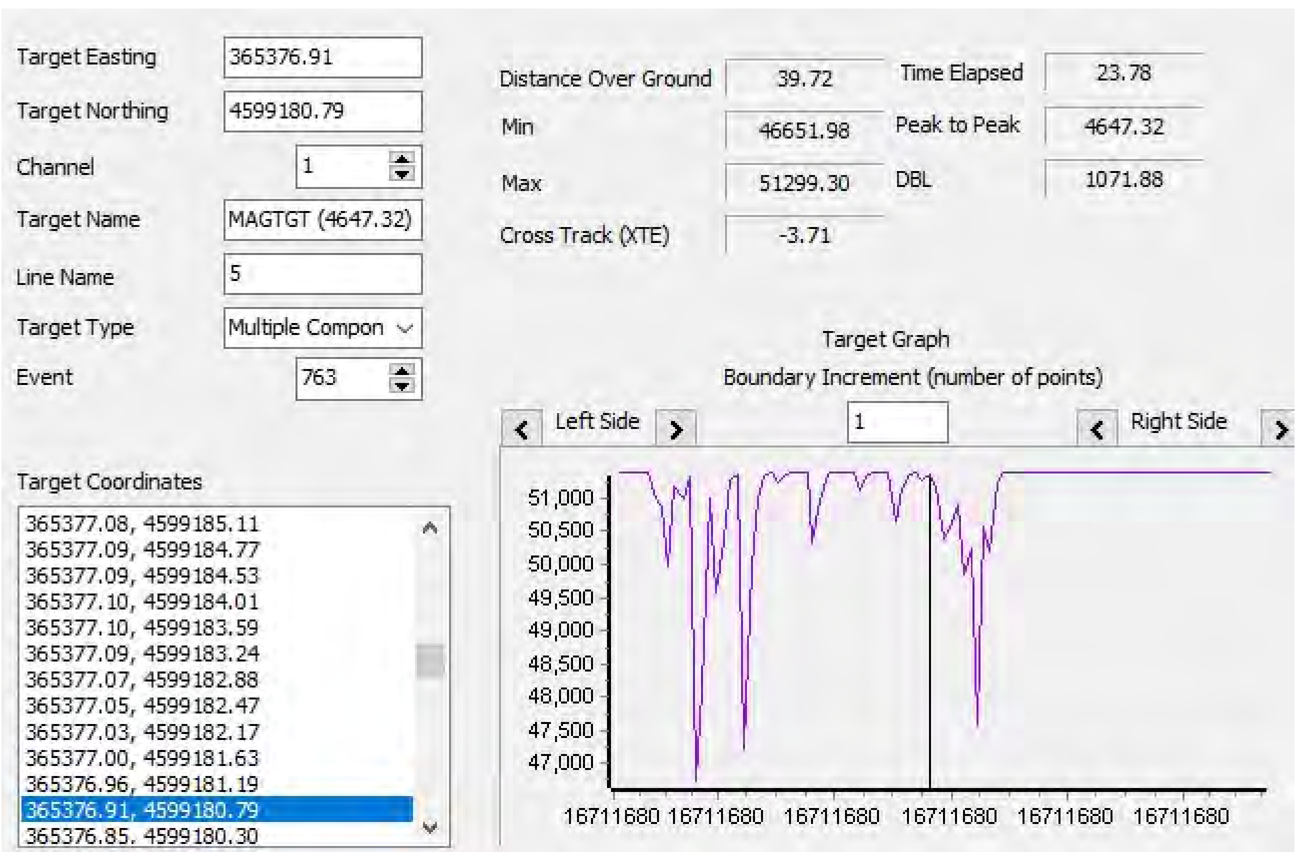
Name	Date	10/05/2021
MAGTGT (42.60)	Time	12:27:25
Survey File	Event	513
4	X	365482.0
Capture File	Y	4597474.0
365482.79.4597474.29.42.60.51225.16.3.jpg	WGS84 Latitude	41 31 3.4004 N
	WGS84 Longitude	070 36 43.6436 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



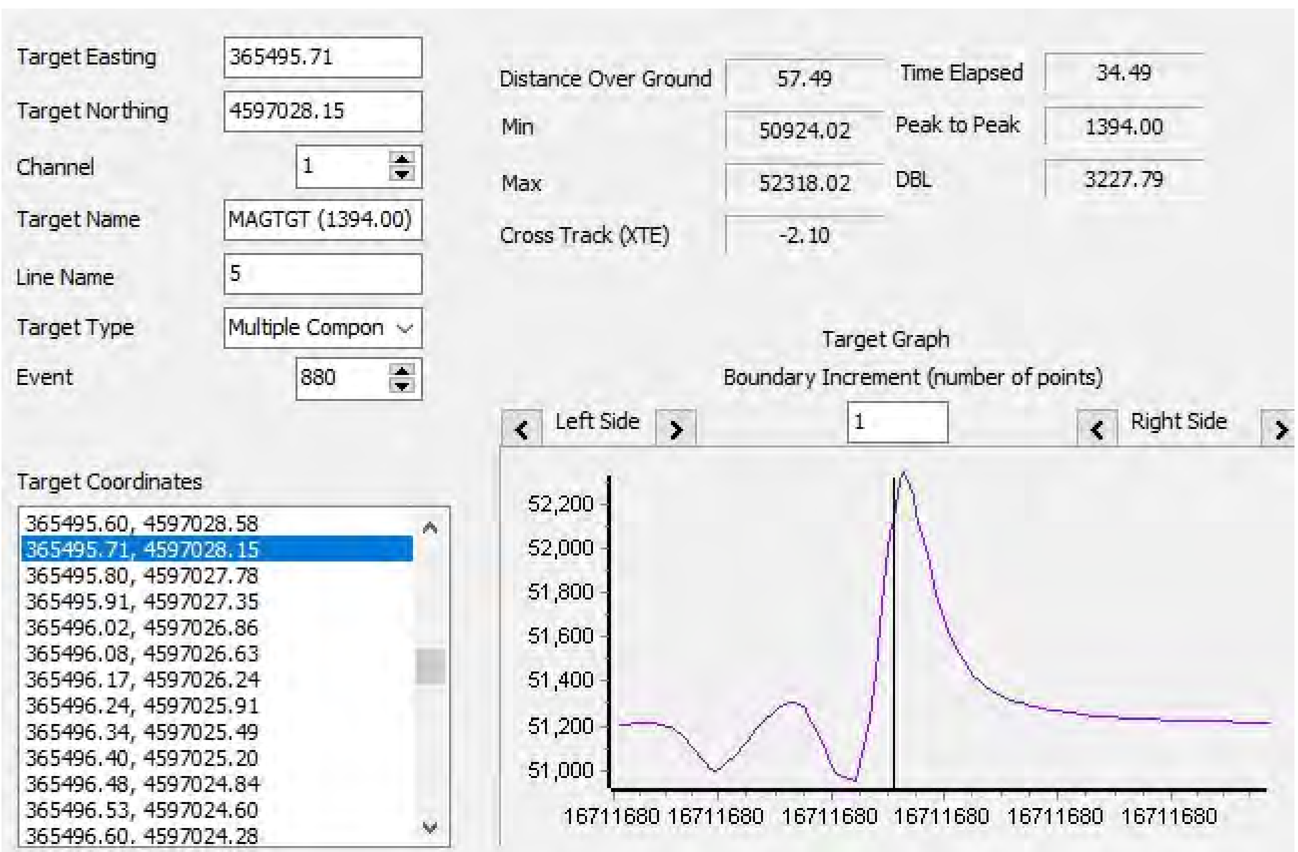
Name	Date	10/05/2021
MAGTGT (4647.32)	Time	12:28:37
Survey File	Event	763
5	X	365376.0
Capture File	Y	4599180.0
365376.91.4599180.79.4647.32.51078.74.5.jpg	WGS84 Latitude	41 31 58.6342 N
	WGS84 Longitude	070 36 49.5894 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



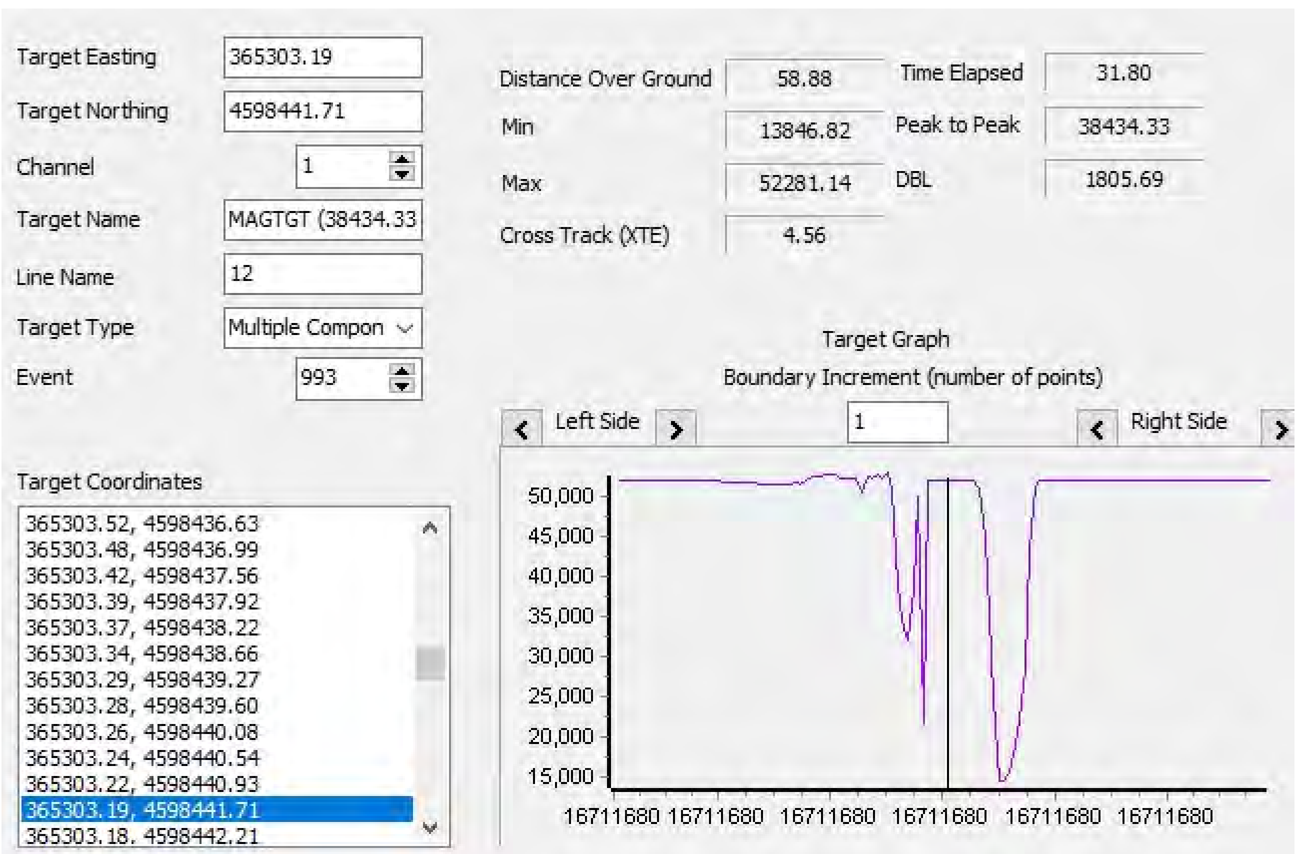
Name	Date	10/05/2021
MAGTGT (1394.00)	Time	12:28:55
Survey File	Event	880
5	X	365495.0
Capture File	Y	4597028.0
365495.71.4597028.15.1394.0 0.51626.82.5.jpg	WGS84 Latitude	41 30 48.9516 N
	WGS84 Longitude	070 36 42.7242 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



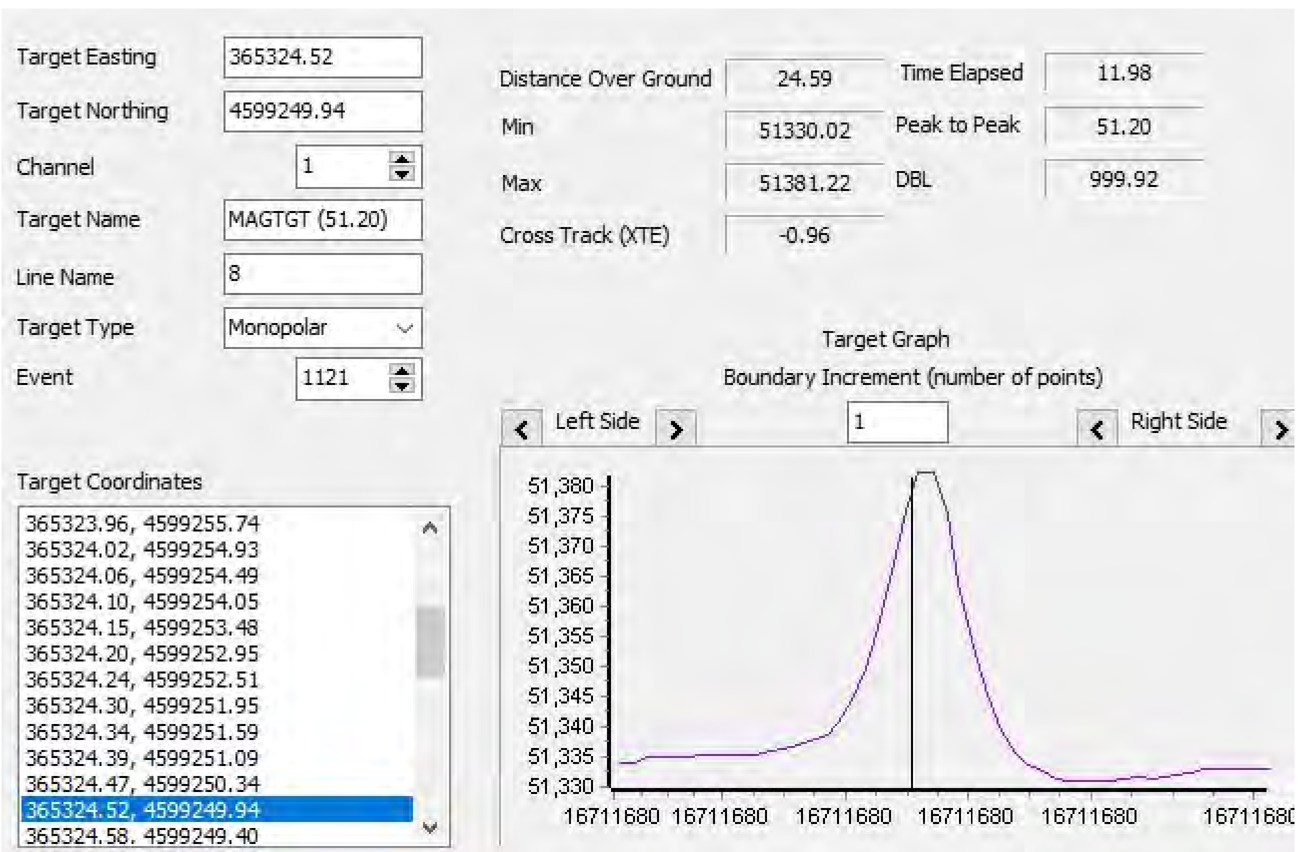
Name	Date	10/05/2021
MAGTGT (38434.33)	Time	12:29:21
Survey File	Event	993
12	X	365303.0
Capture File	Y	4598441.0
365303.19.4598441.71.38434.33.51244.21.6.jpg	WGS84 Latitude	41 31 34.6362 N
	WGS84 Longitude	070 36 52.1427 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



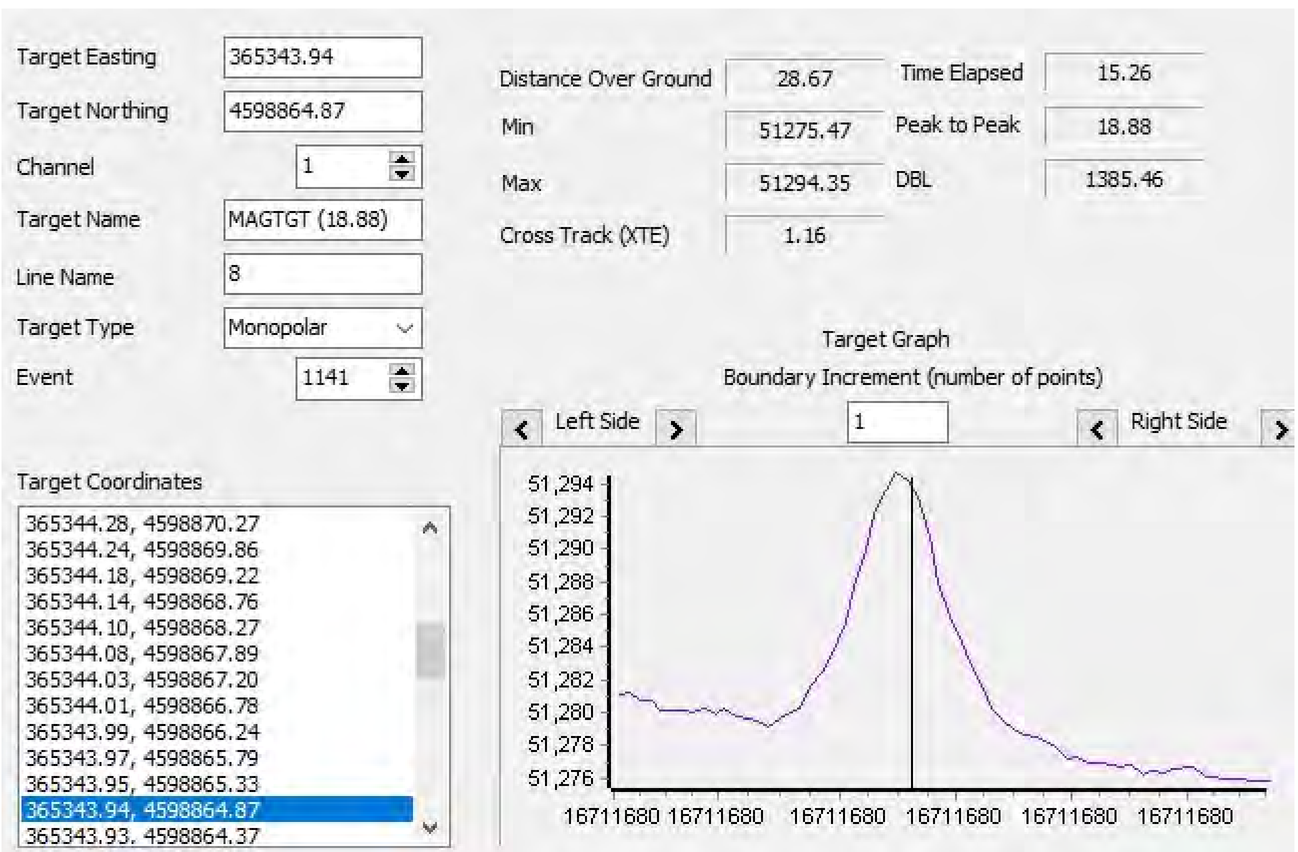
Name	Date	10/05/2021
MAGTGT (51.20)	Time	12:30:50
Survey File	Event	1121
8	X	365324.0
Capture File	Y	4599249.0
365324.52.4599249.94.51.20. 51381.22.8.jpg	WGS84 Latitude	41 32 0.8393 N
	WGS84 Longitude	070 36 51.8882 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



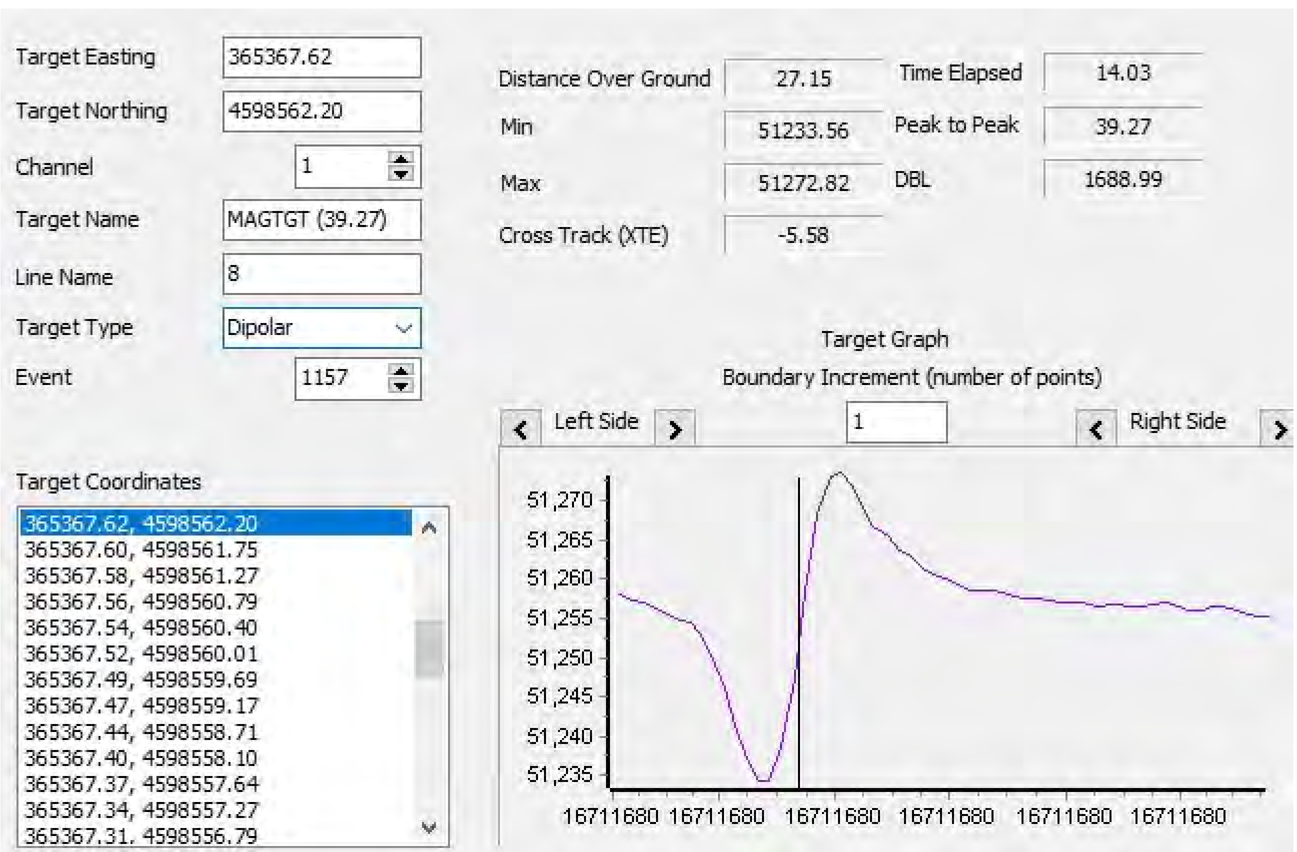
Name	Date	10/05/2021
MAGTGT (18.88)	Time	12:31:01
Survey File	Event	1141
8	X	365343.0
Capture File	Y	4598864.0
365343.94.4598864.87.18.88.51292.84.8.jpg	WGS84 Latitude	41 31 48.3715 N
	WGS84 Longitude	070 36 50.7582 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



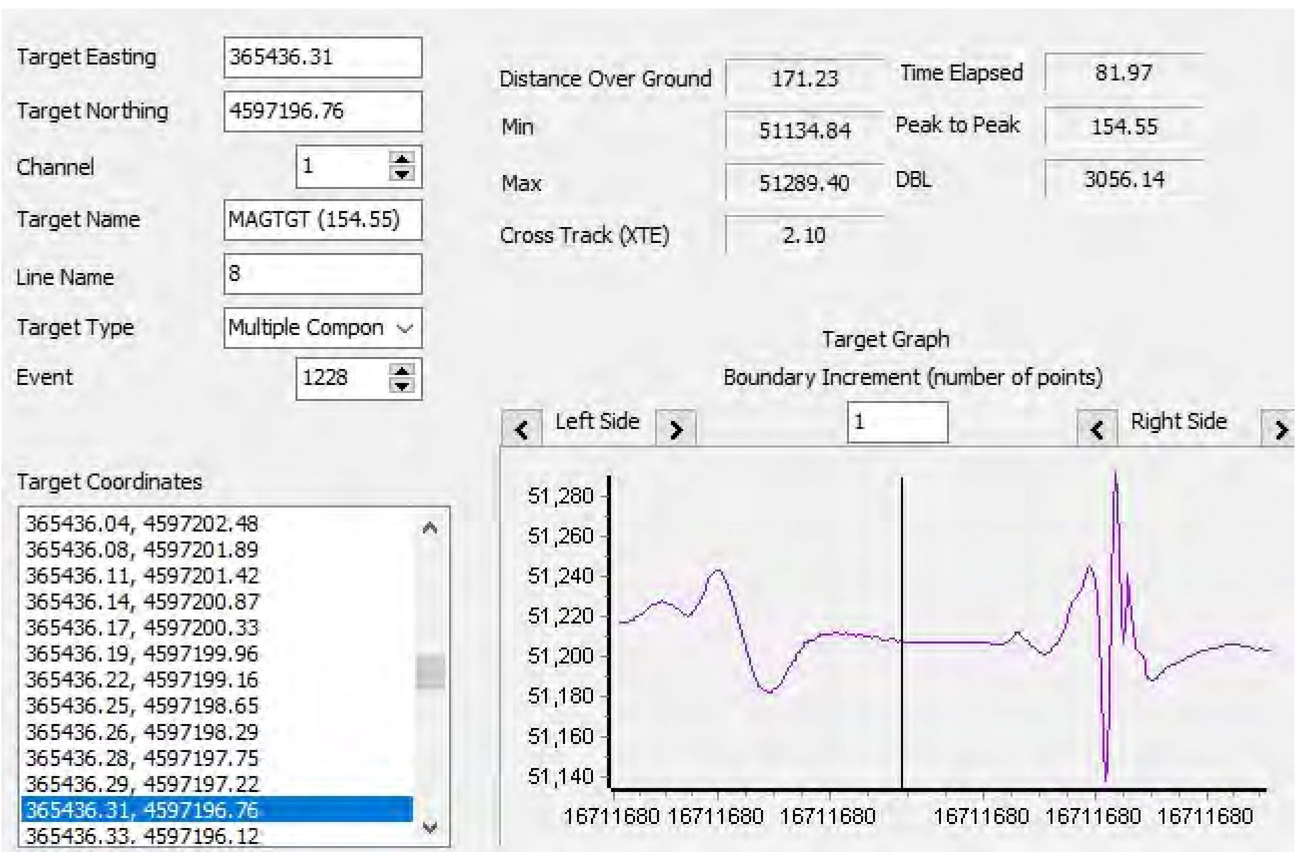
Name	Date	10/05/2021
MAGTGT (39.27)	Time	12:31:14
Survey File	Event	1157
8	X	365367.0
Capture File	Y	4598562.0
365367.62.4598562.20.39.27.51259.90.8.jpg	WGS84 Latitude	41 31 38.597 N
	WGS84 Longitude	070 36 49.4796 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



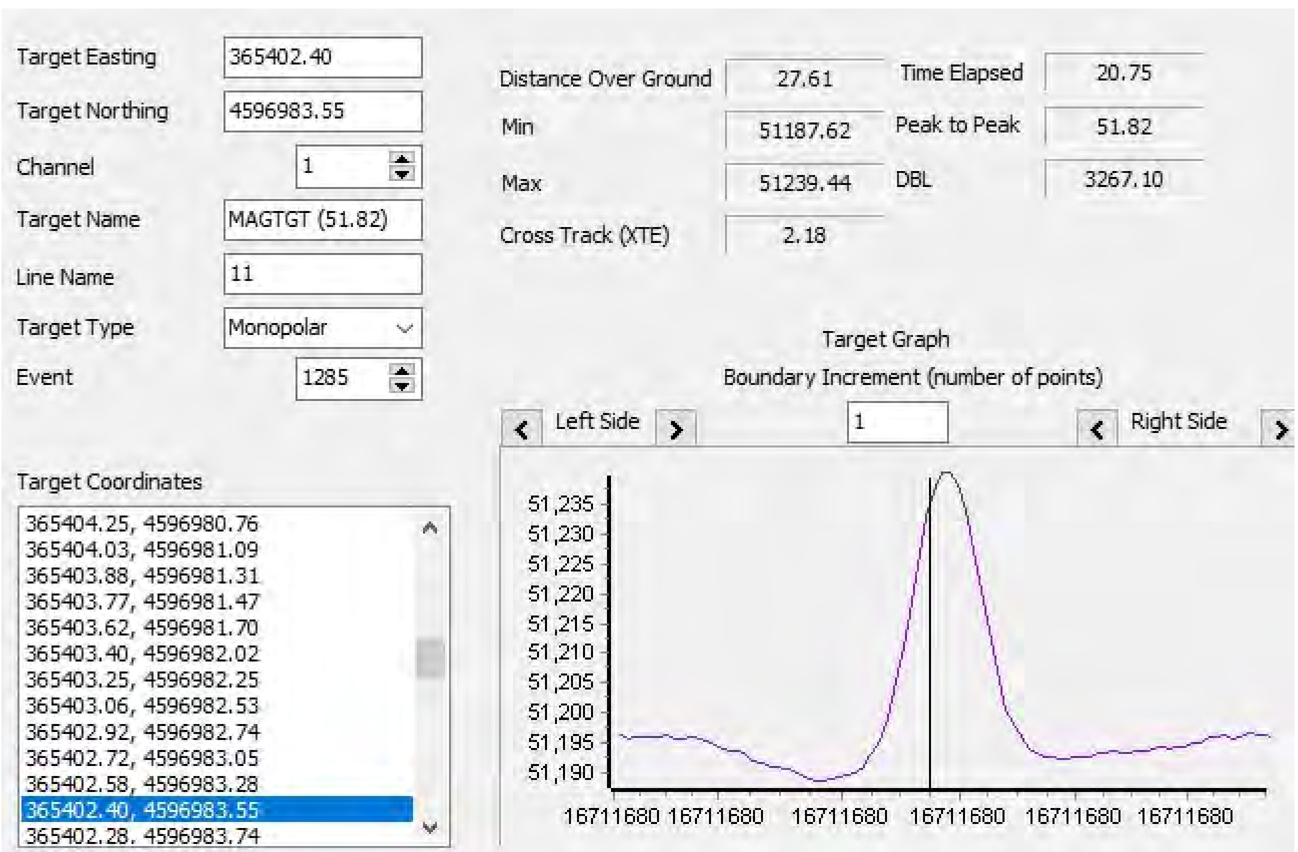
Name	Date	10/05/2021
MAGTGT (154.55)	Time	12:31:30
Survey File	Event	1228
8	X	365436.0
Capture File	Y	4597196.0
365436.31.4597196.76.154.55 .51204.33.8.jpg	WGS84 Latitude	41 30 54.3615 N
	WGS84 Longitude	070 36 45.4038 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



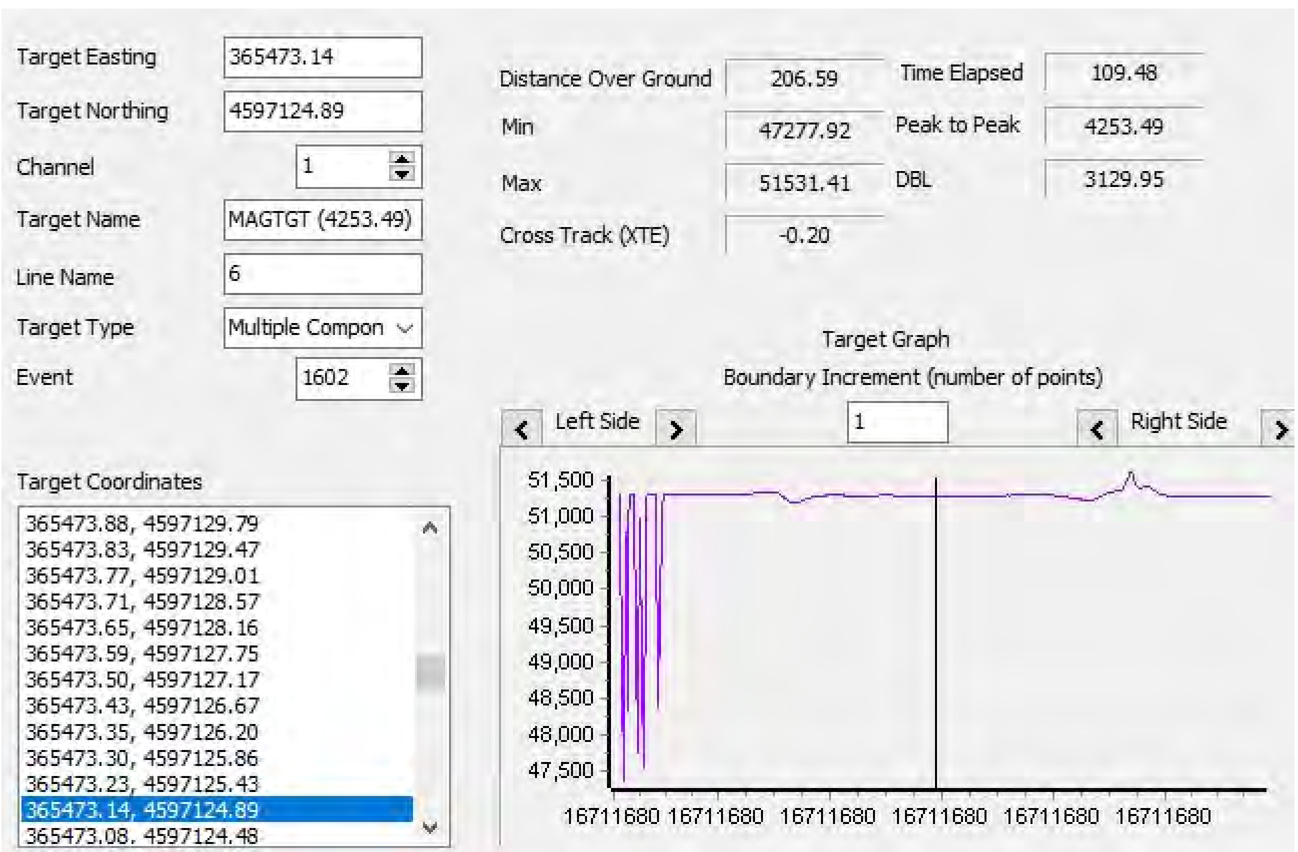
Name	Date	10/05/2021
MAGTGT (51.82)	Time	12:32:09
Survey File	Event	1285
11	X	365402.0
Capture File	Y	4596983.0
365402.40.4596983.55.51.82. 51237.16.9.jpg	WGS84 Latitude	41 30 47.4368 N
	WGS84 Longitude	070 36 46.6986 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



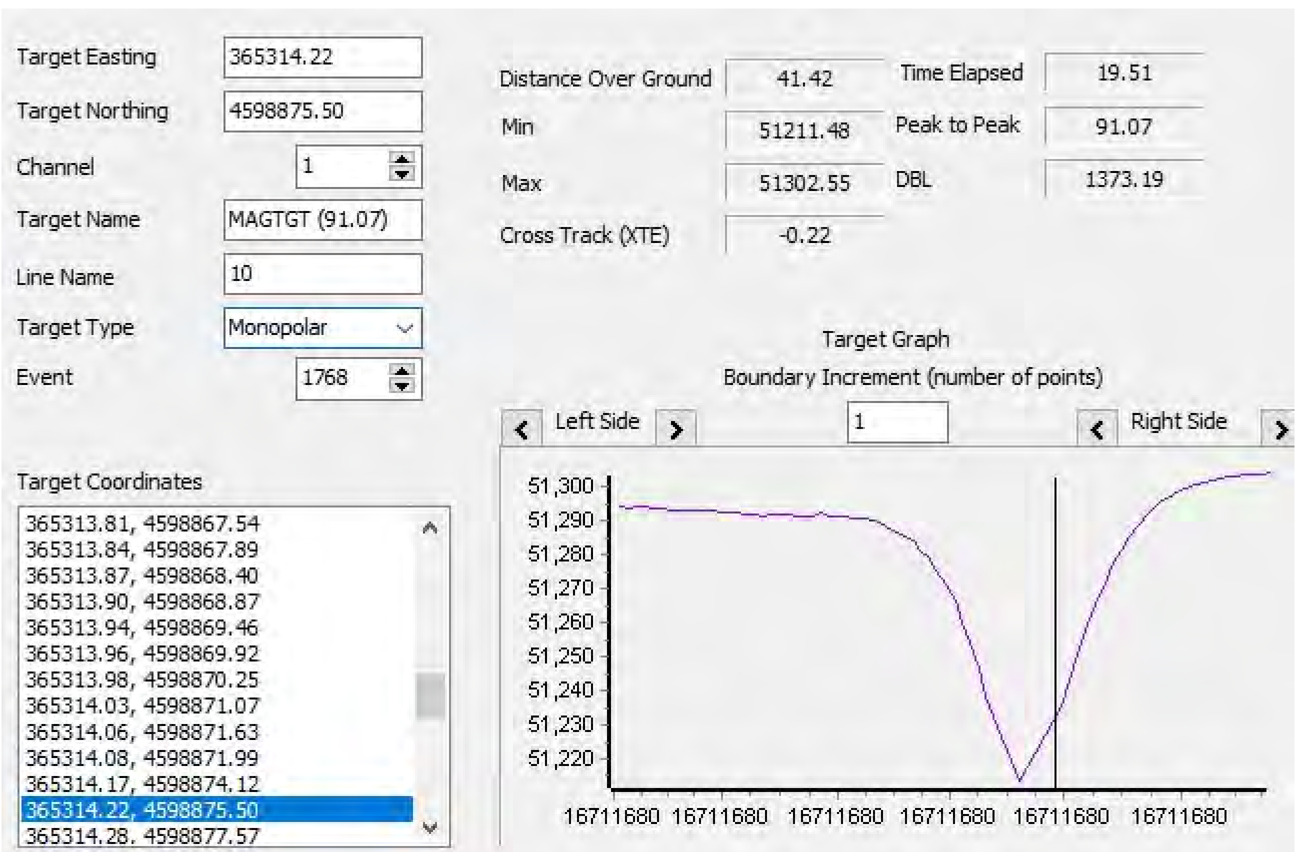
Name	Date	10/05/2021
MAGTGT (4253.49)	Time	12:32:48
Survey File	Event	1602
6	X	365473.0
Capture File	Y	4597124.0
365473.14.4597124.89.4253.49.51209.65.11.jpg	WGS84 Latitude	41 30 52.0501 N
	WGS84 Longitude	070 36 43.7502 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



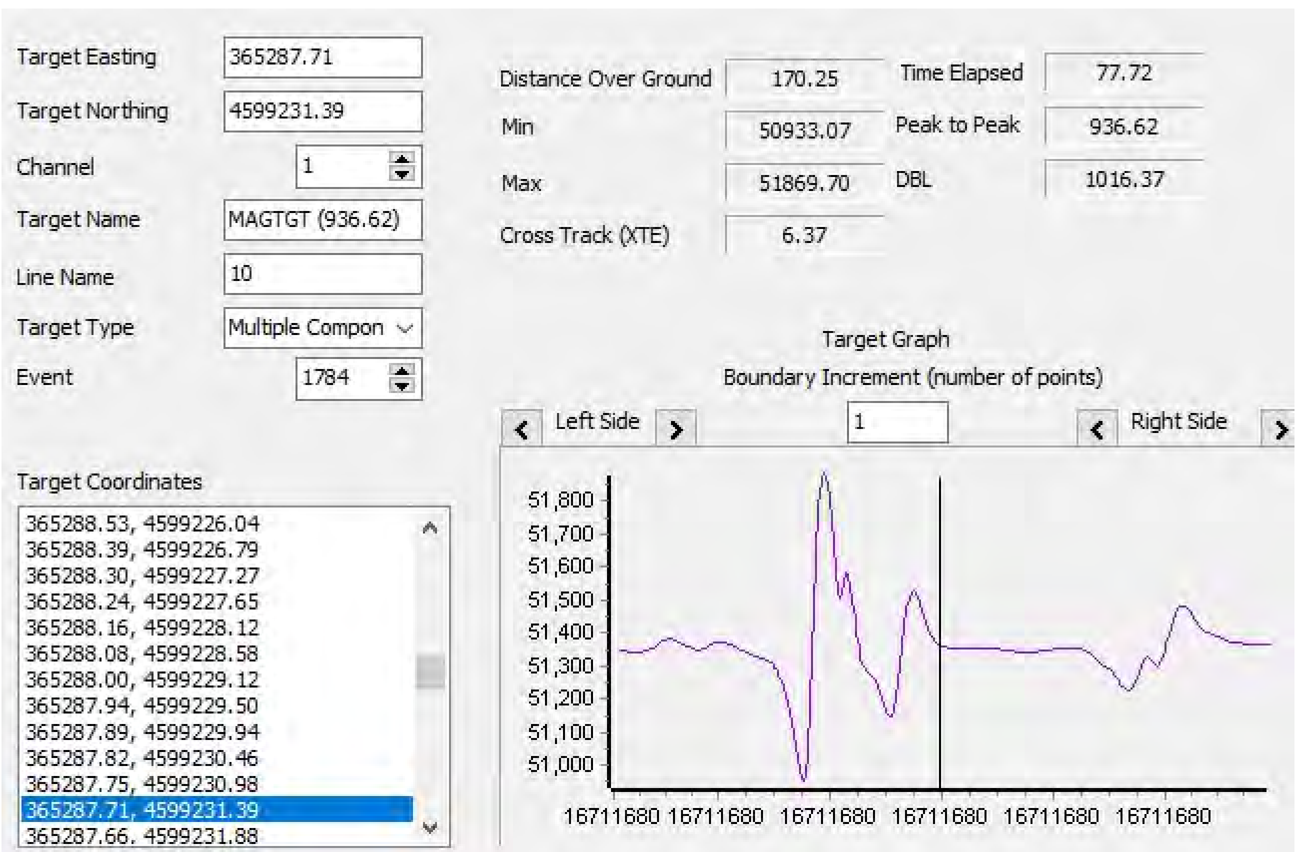
Name	Date	10/05/2021
MAGTGT (91.07)	Time	12:33:06
Survey File	Event	1768
10	X	365314.0
Capture File	Y	4598875.0
365314.22.4598875.50.91.07.51282.21.12.jpg	WGS84 Latitude	41 31 48.7105 N
	WGS84 Longitude	070 36 52.018 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



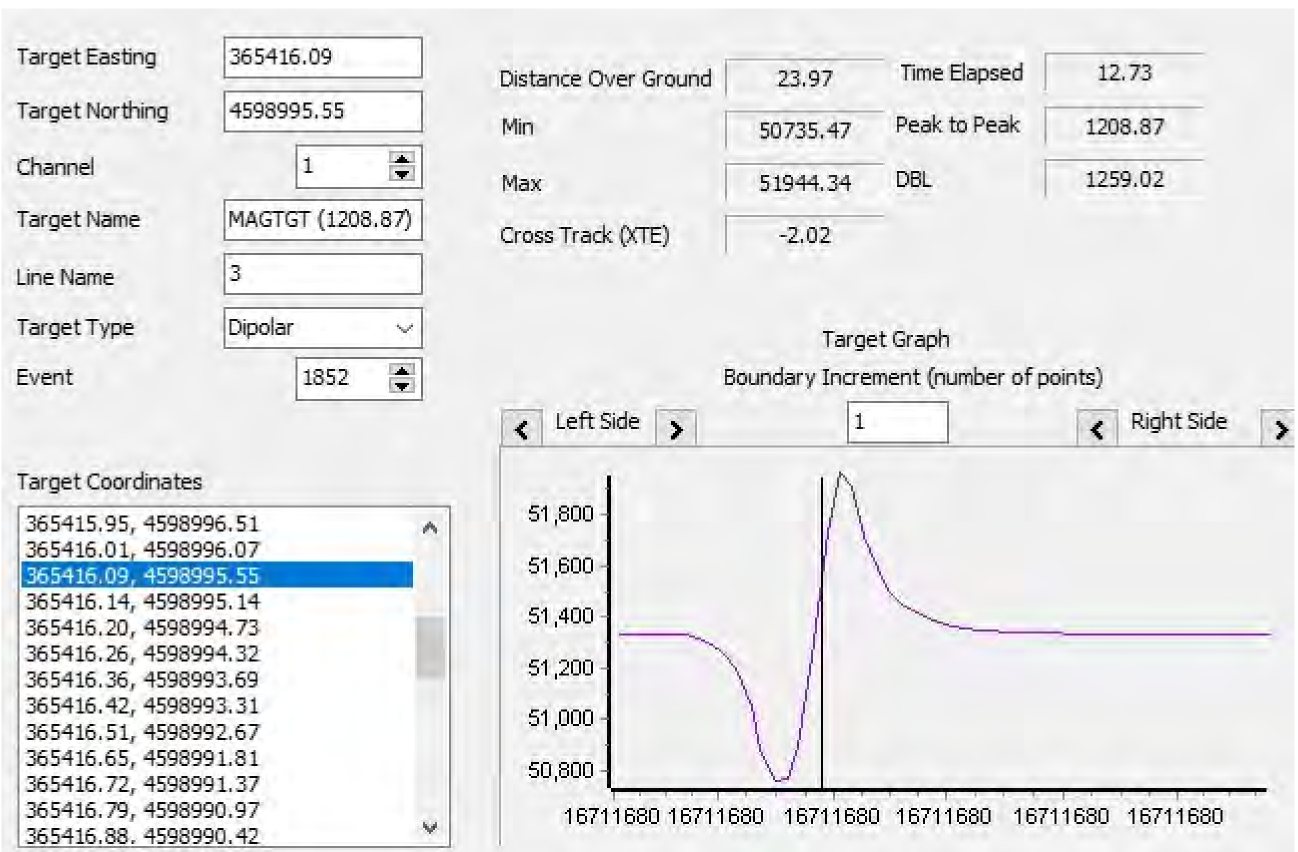
Name	Date	10/05/2021
MAGTGT (936.62)	Time	12:33:17
Survey File	Event	1784
10	X	365287.0
Capture File	Y	4599231.0
365287.71.4599231.39.936.62.51337.70.12.jpg	WGS84 Latitude	41 32 0.2334 N
	WGS84 Longitude	070 36 53.4697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



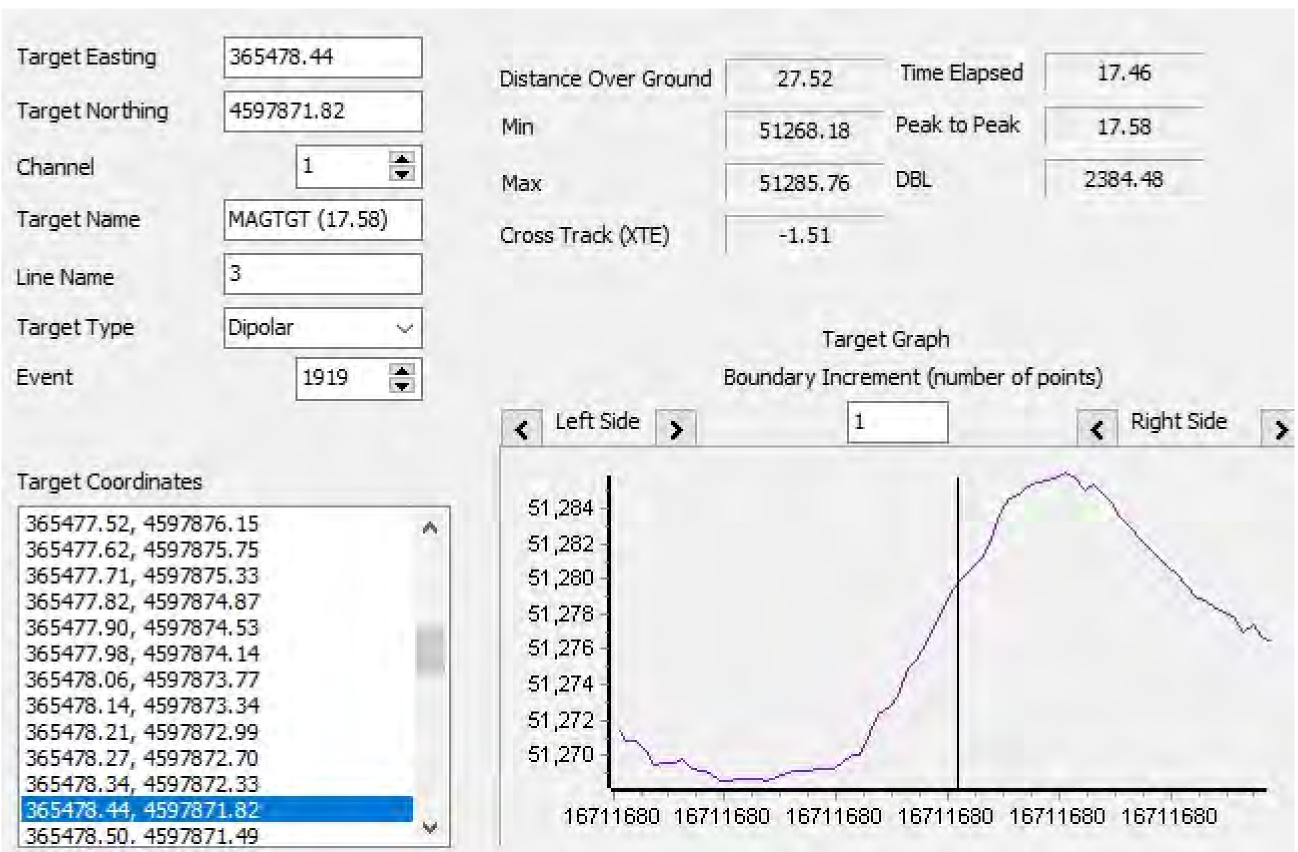
Name	Date	10/05/2021
MAGTGT (1208.87)	Time	12:33:37
Survey File	Event	1852
3	X	365416.0
Capture File	Y	4598995.0
365416.09.4598995.55.1208.87.51339.68.13.jpg	WGS84 Latitude	41 31 52.6619 N
	WGS84 Longitude	070 36 47.7148 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



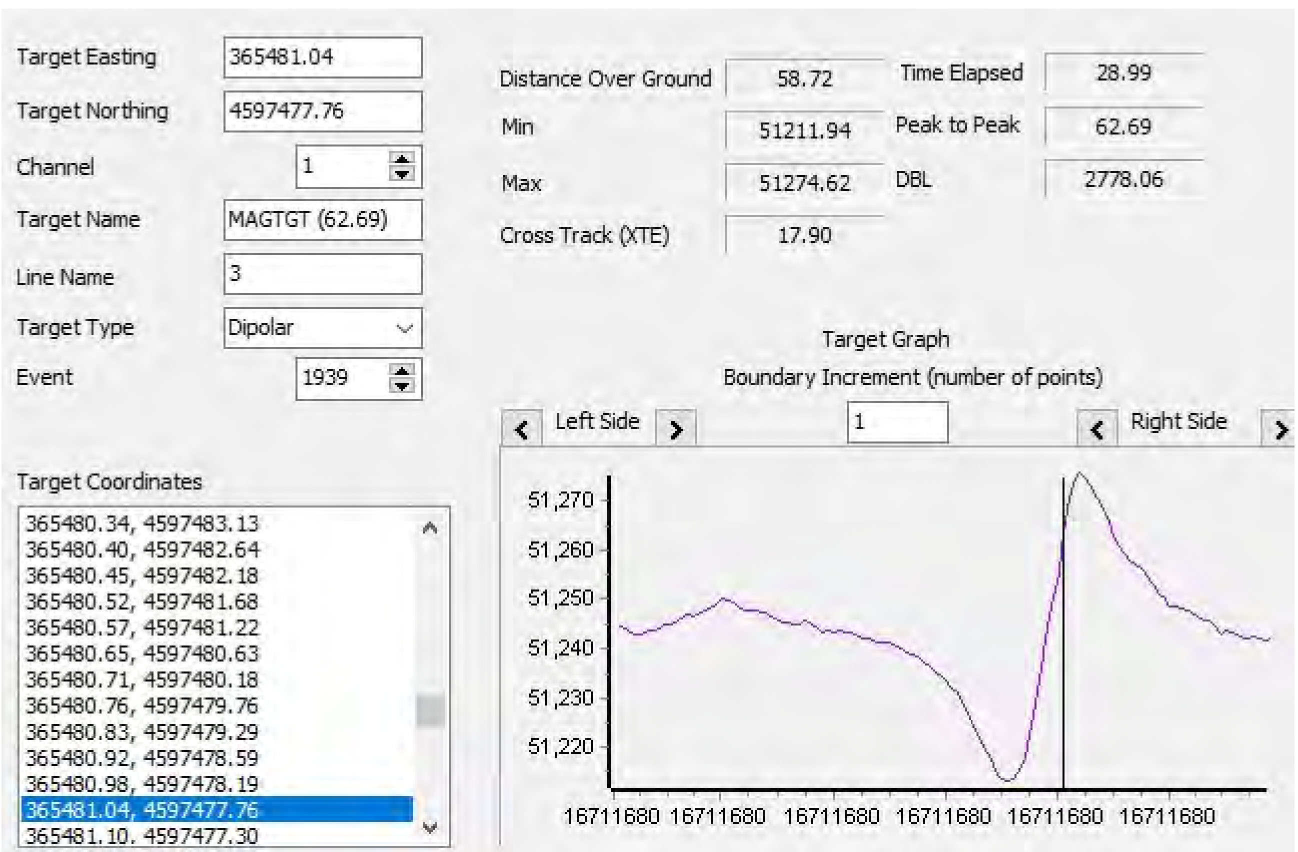
Name	Date	10/05/2021
MAGTGT (17.58)	Time	12:34:02
Survey File	Event	1919
3	X	365478.0
Capture File	Y	4597871.0
365478.44.4597871.82.17.58.51279.77.13.jpg	WGS84 Latitude	41 31 16.2663 N
	WGS84 Longitude	070 36 44.1356 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



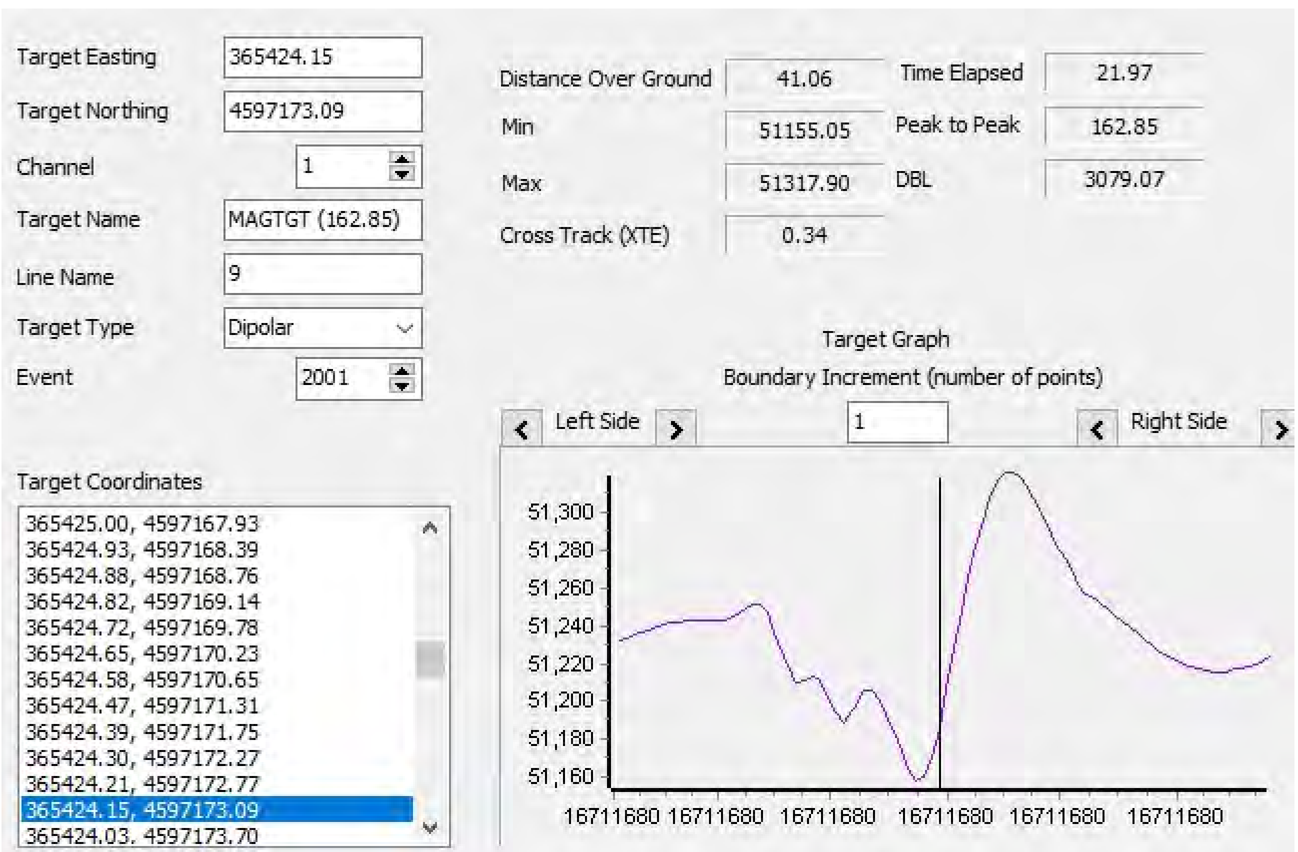
Name	Date	10/05/2021
MAGTGT (62.69)	Time	12:34:11
Survey File	Event	1939
3	X	365481.0
Capture File	Y	4597477.0
365481.04.4597477.76.62.69.51229.88.13.jpg	WGS84 Latitude	41 31 3.497 N
	WGS84 Longitude	070 36 43.6892 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



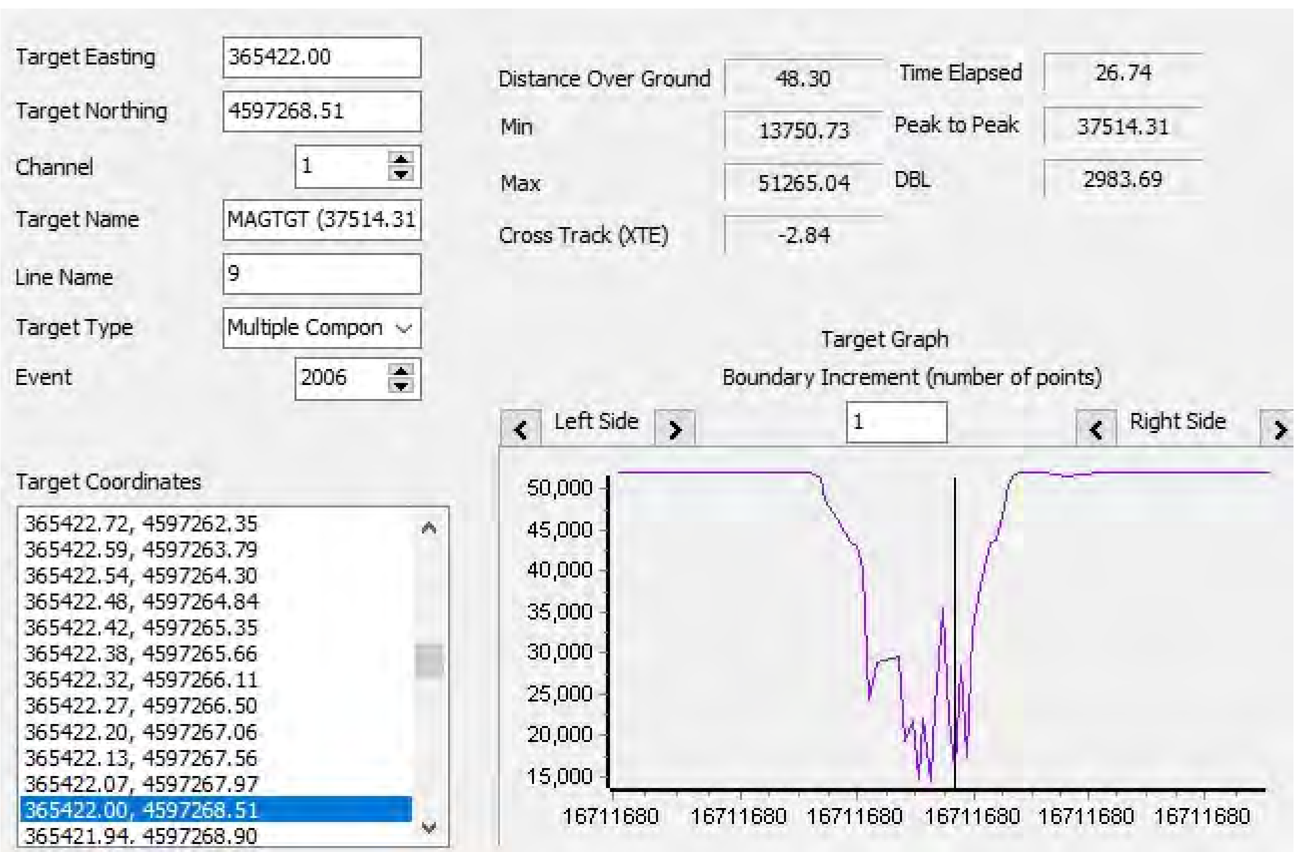
Name	Date	10/05/2021
MAGTGT (162.85)	Time	12:34:37
Survey File	Event	2001
9	X	365424.0
Capture File	Y	4597173.0
365424.15.4597173.09.162.85.51203.40.14.jpg	WGS84 Latitude	41 30 53.6087 N
	WGS84 Longitude	070 36 45.9028 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



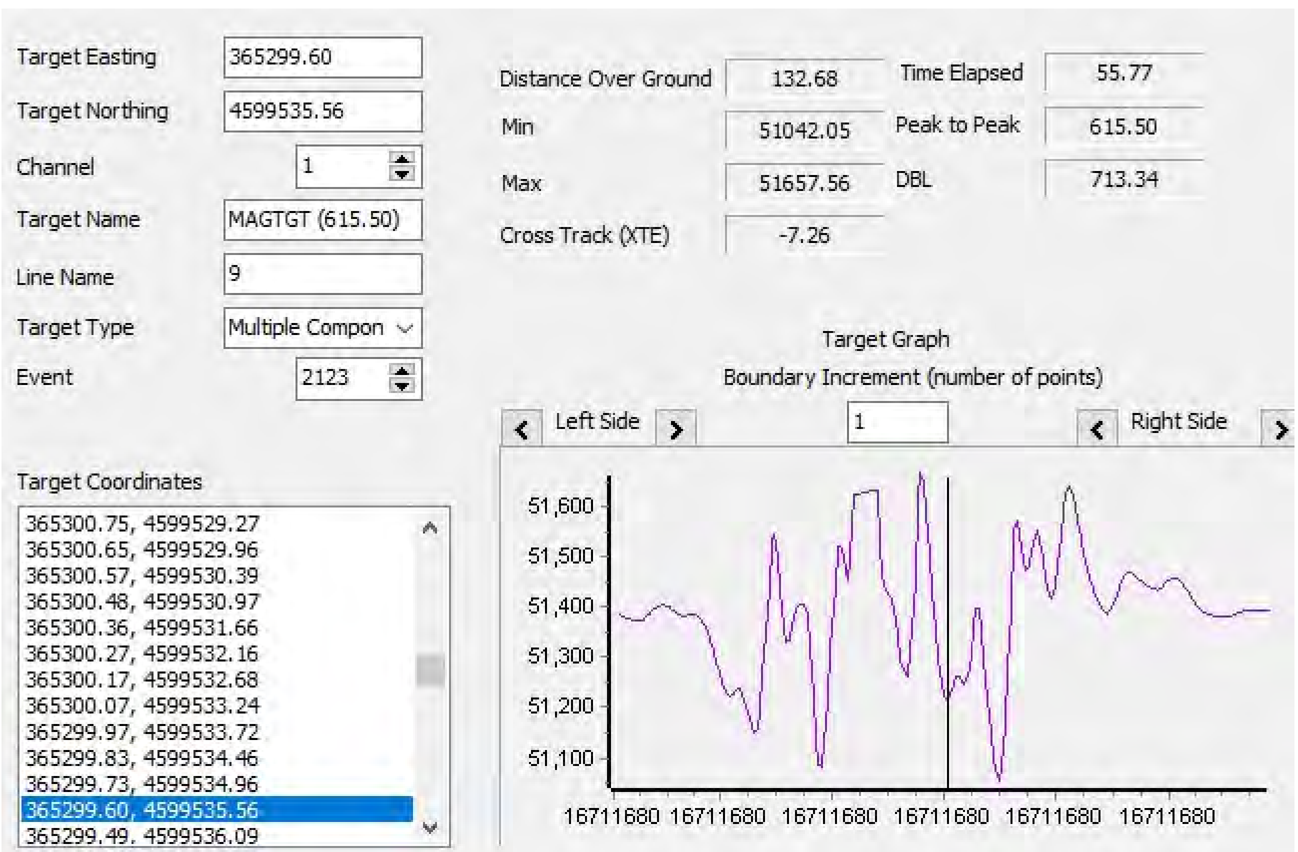
Name	Date	10/05/2021
MAGTGT (37514.31)	Time	12:34:51
Survey File	Event	2006
9	X	365421.0
Capture File	Y	4597268.0
365422.00.4597268.51.37514.31.27646.19.14.jpg	WGS84 Latitude	41 30 56.6862 N
	WGS84 Longitude	070 36 46.1086 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



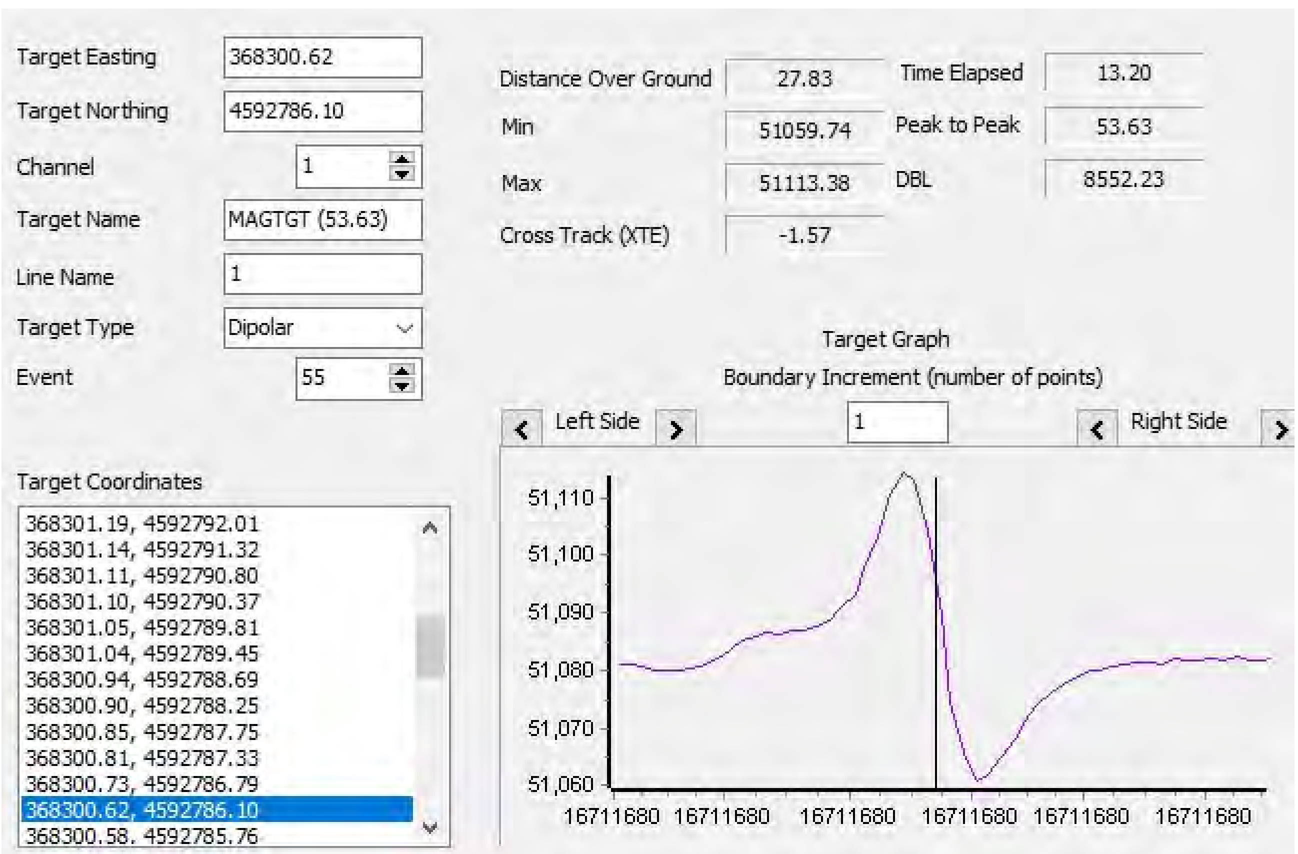
Name	Date	10/05/2021
MAGTGT (615.50)	Time	12:35:09
Survey File	Event	2123
9	X	365299.0
Capture File	Y	4599535.0
365299.60.4599535.56.615.50.51235.32.14.jpg	WGS84 Latitude	41 32 10.0944 N
	WGS84 Longitude	070 36 53.1972 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



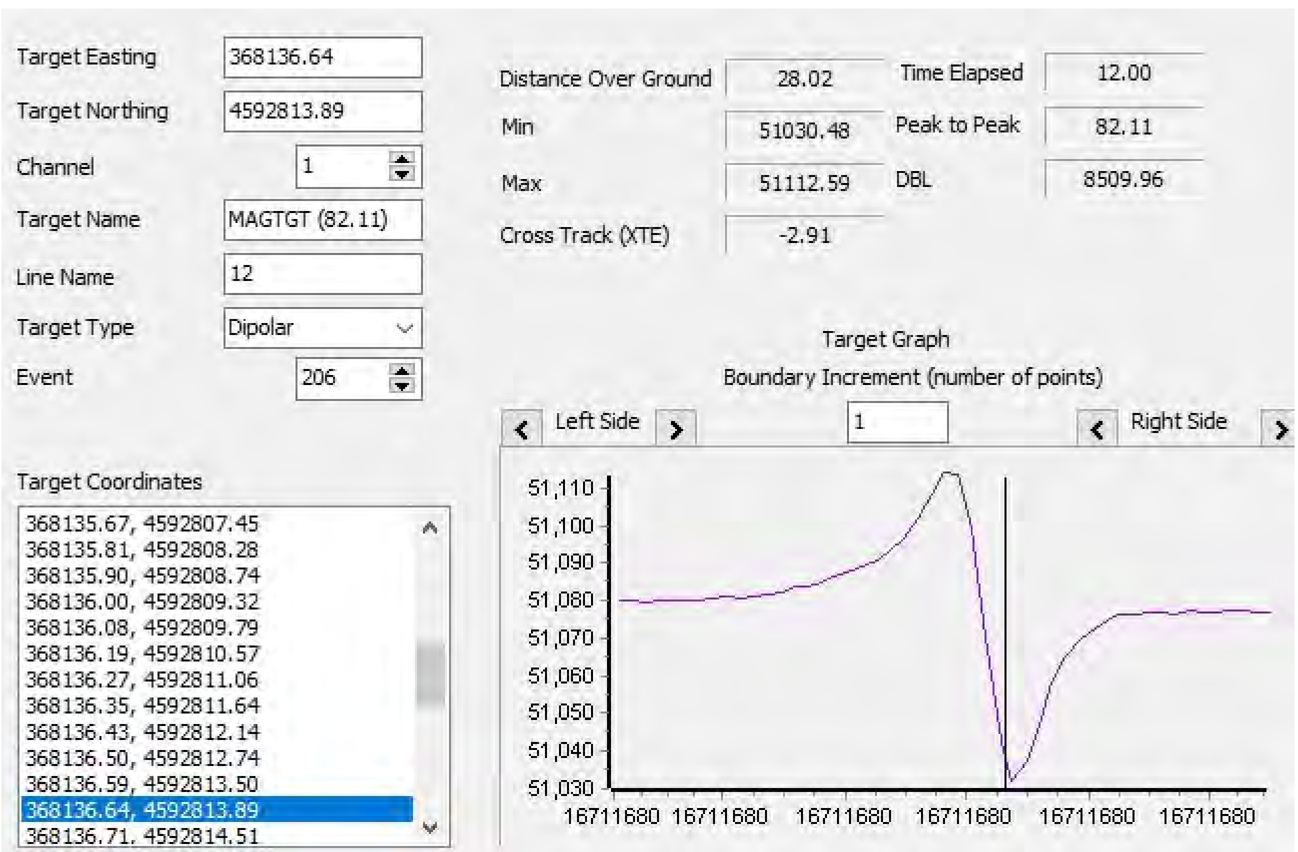
Name	Date	10/05/2021
MAGTGT (53.63)	Time	12:46:01
Survey File	Event	55
1	X	368300.0
Capture File	Y	4592786.0
368300.62.4592786.10.53.63. 51088.51.0.jpg	WGS84 Latitude	41 28 33.1273 N
	WGS84 Longitude	070 34 38.4197 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



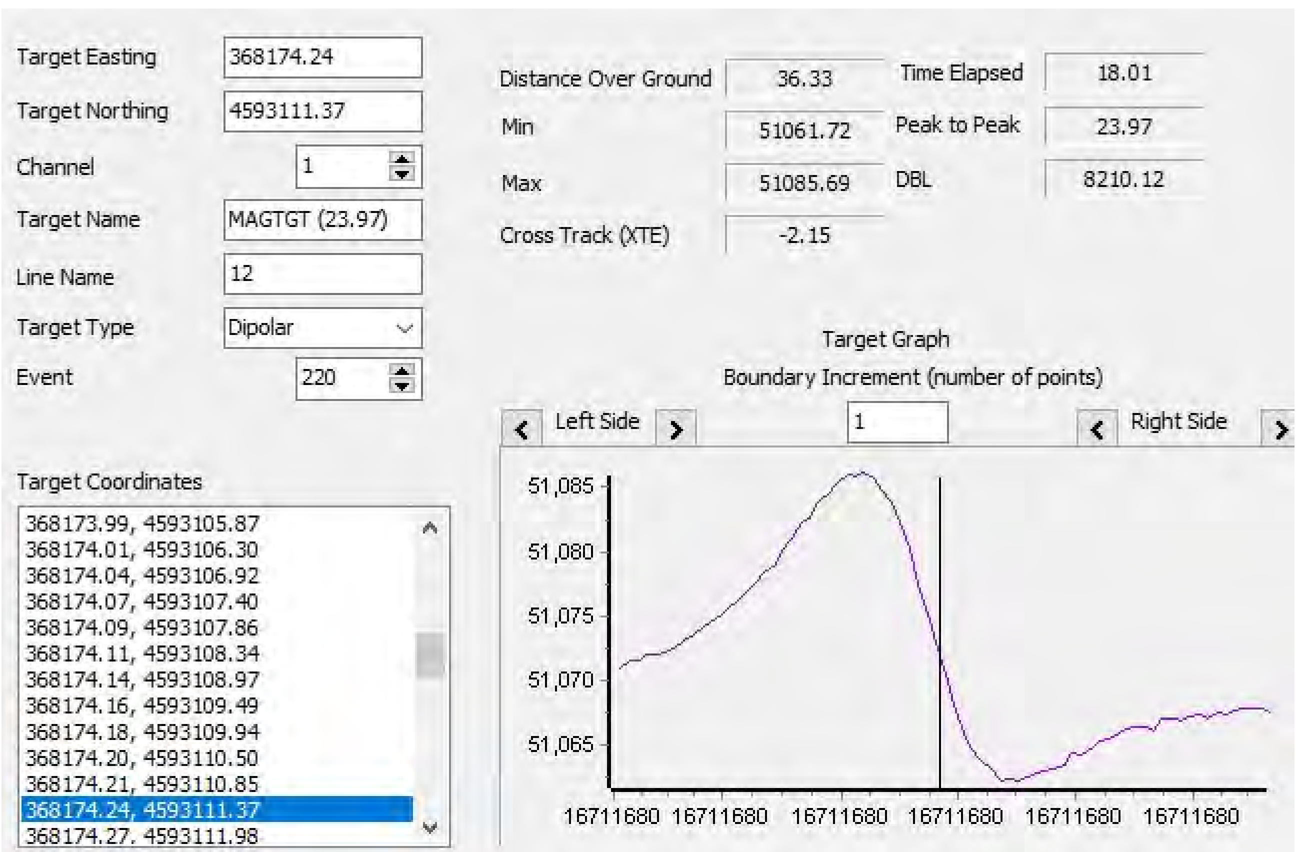
Name	Date	10/05/2021
MAGTGT (82.11)	Time	12:46:21
Survey File	Event	206
12	X	368136.0
Capture File	Y	4592813.0
368136.64.4592813.89.82.11.51112.59.3.jpg	WGS84 Latitude	41 28 33.9054 N
	WGS84 Longitude	070 34 45.5095 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



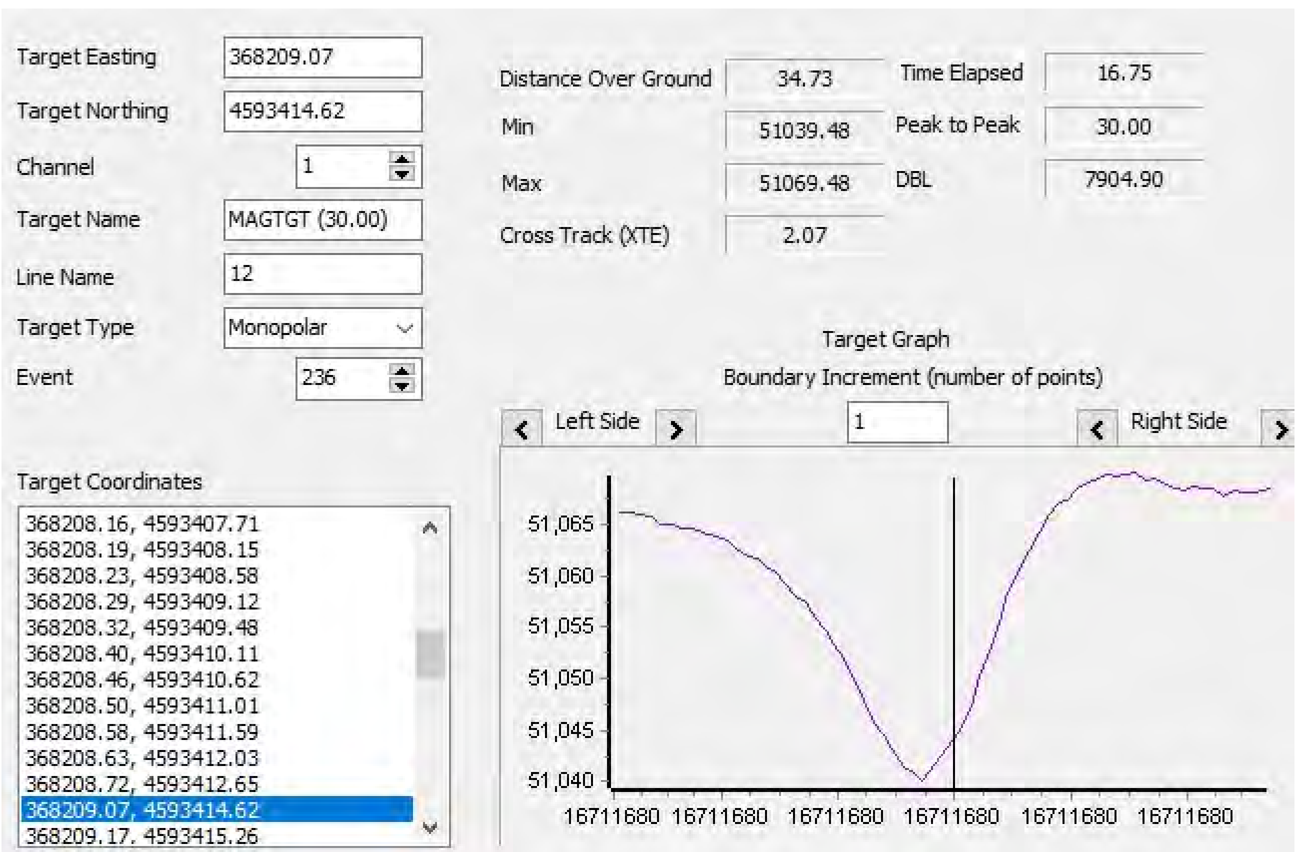
Name	Date	10/05/2021
MAGTGT (23.97)	Time	12:46:29
Survey File	Event	220
12	X	368174.0
Capture File	Y	4593111.0
368174.24.4593111.37.23.97.51069.93.3.jpg	WGS84 Latitude	41 28 43.5875 N
	WGS84 Longitude	070 34 44.1061 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



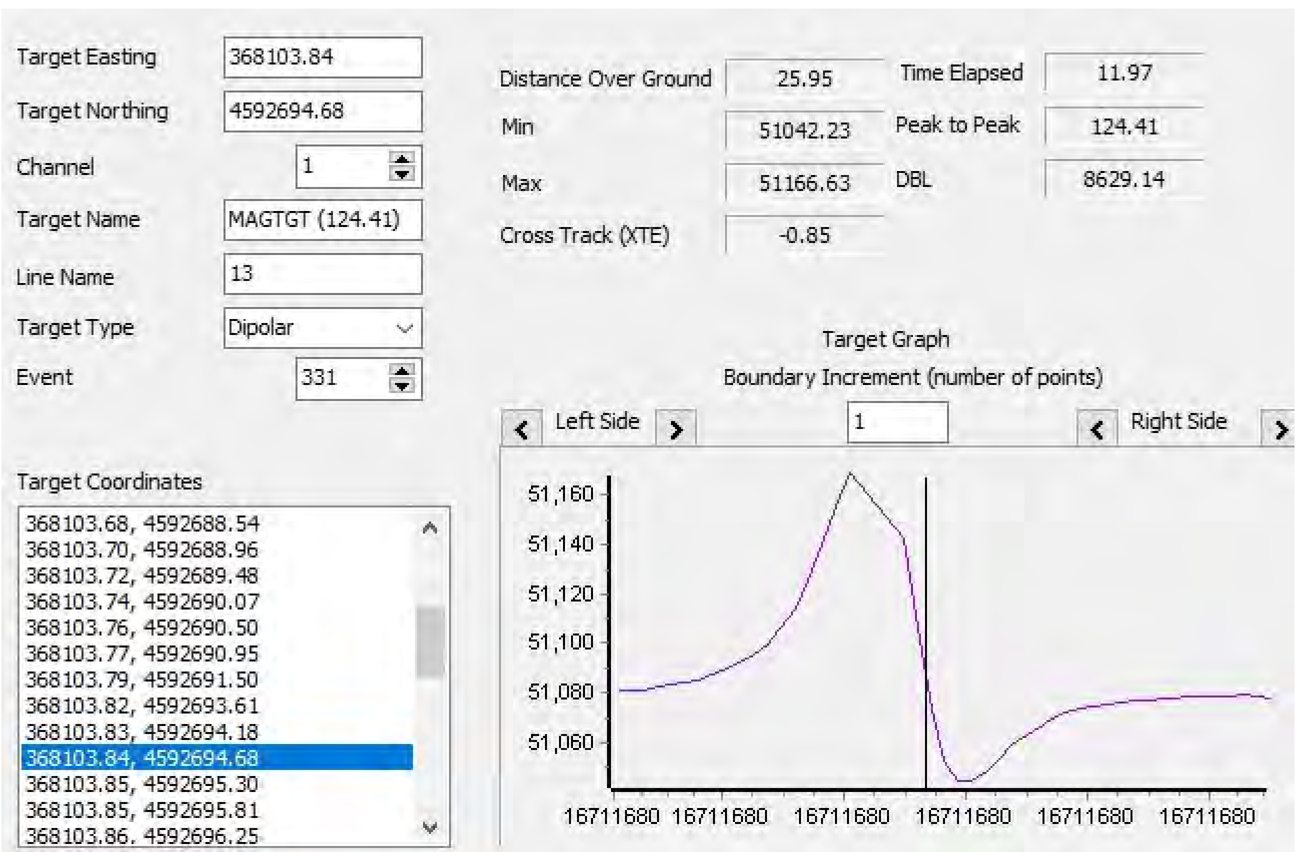
Name	Date	10/05/2021
MAGTGT (30.00)	Time	12:46:39
Survey File	Event	236
12	X	368209.0
Capture File	Y	4593414.0
368209.07.4593414.62.30.00.51044.27.3.jpg	WGS84 Latitude	41 28 53.4298 N
	WGS84 Longitude	070 34 42.8359 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



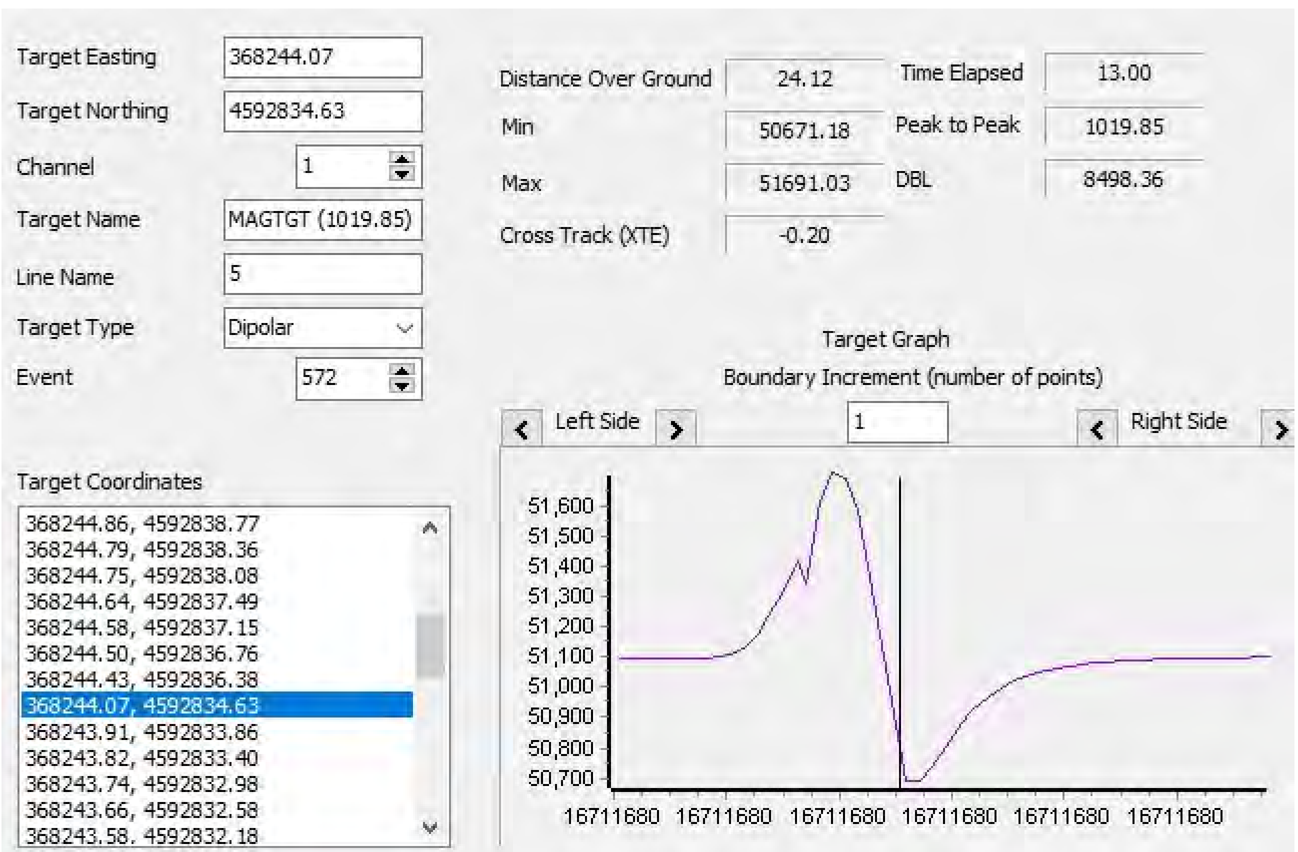
Name	Date	10/05/2021
MAGTGT (124.41)	Time	12:46:55
Survey File	Event	331
13	X	368103.0
Capture File	Y	4592694.0
368103.84.4592694.68.124.41 .51042.50.5.jpg	WGS84 Latitude	41 28 30.0286 N
	WGS84 Longitude	070 34 46.8381 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



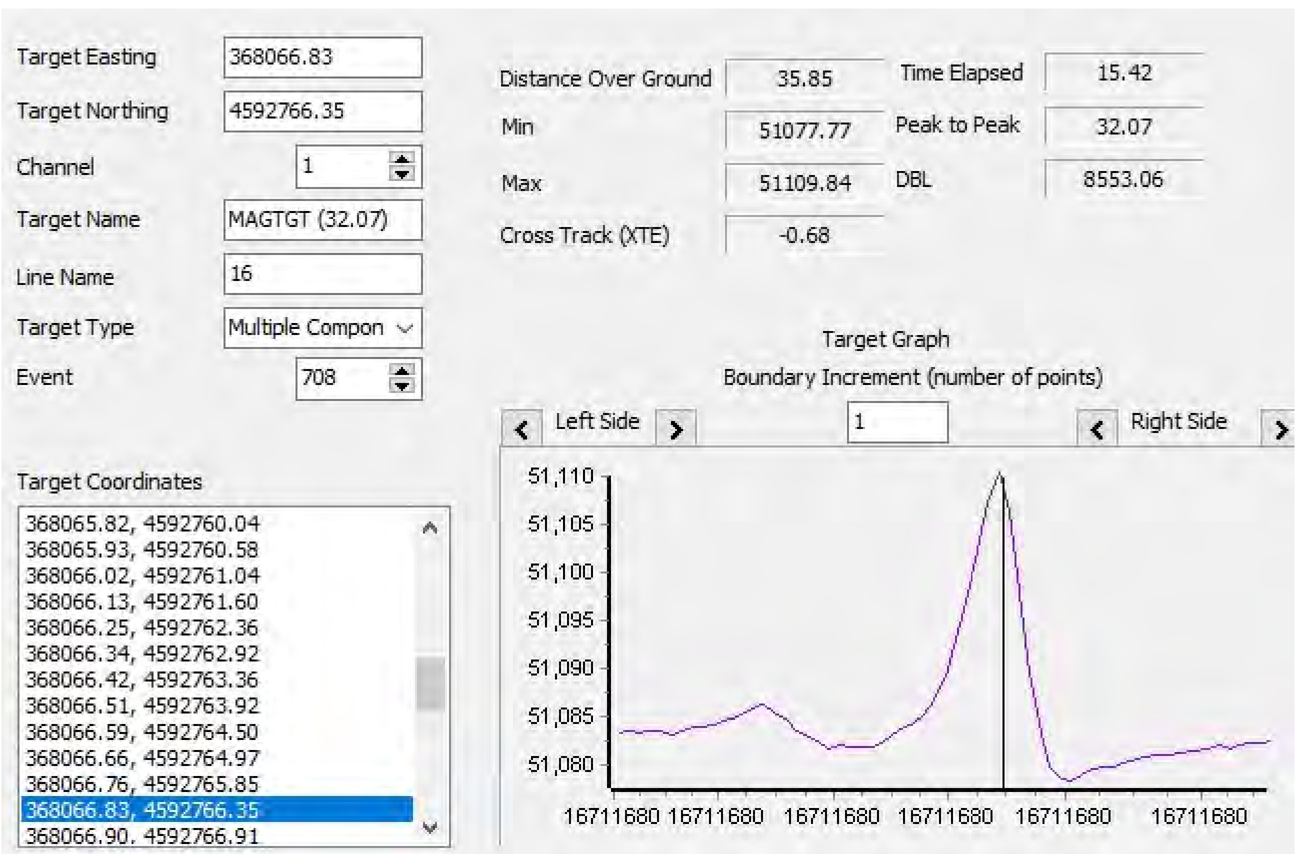
Name	Date	10/05/2021
MAGTGT (1019.85)	Time	12:47:28
Survey File	Event	572
5	X	368244.0
Capture File	Y	4592834.0
368244.07.4592834.63.1019.85.50842.88.8.jpg	WGS84 Latitude	41 28 34.65 N
	WGS84 Longitude	070 34 40.8711 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



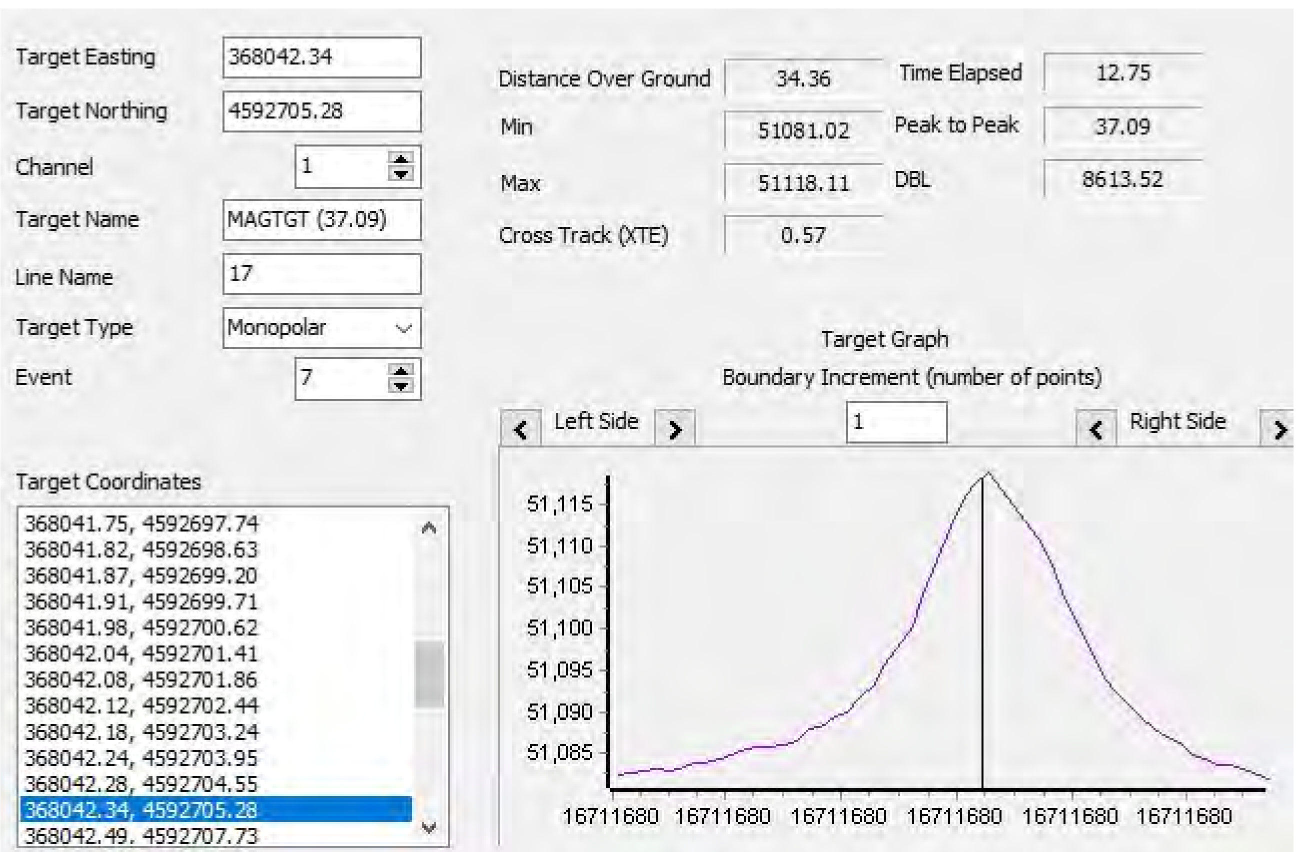
Name	Date	10/05/2021
MAGTGT (32.07)	Time	12:47:48
Survey File	Event	708
16	X	368066.0
Capture File	Y	4592766.0
368066.83.4592766.35.32.07.51084.55.11.jpg	WGS84 Latitude	41 28 32.3405 N
	WGS84 Longitude	070 34 48.4895 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



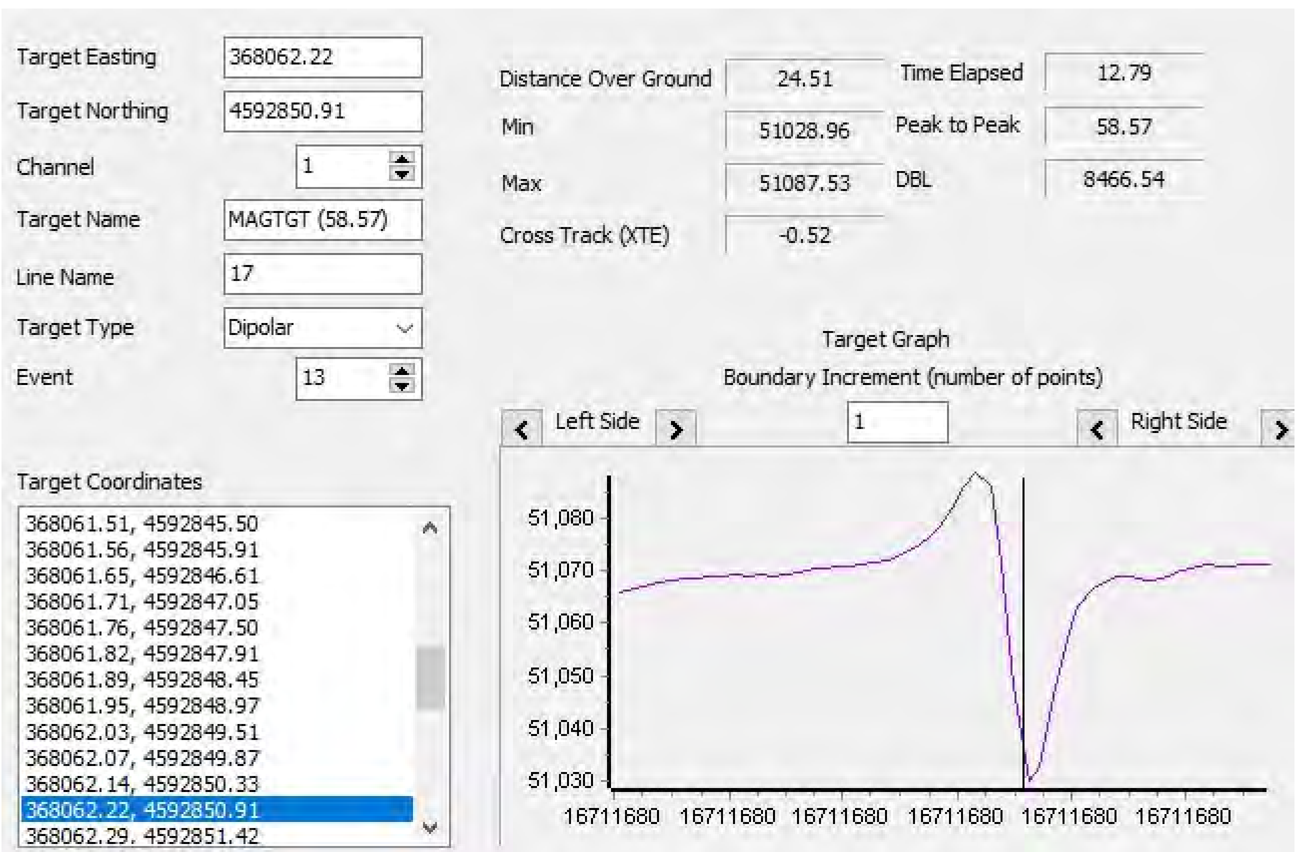
Name	Date	10/05/2021
MAGTGT (37.09)	Time	12:48:15
Survey File	Event	7
17	X	368042.0
Capture File	Y	4592705.0
368042.34.4592705.28.37.09. 51103.40.12.jpg	WGS84 Latitude	41 28 30.349 N
	WGS84 Longitude	070 34 49.4759 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



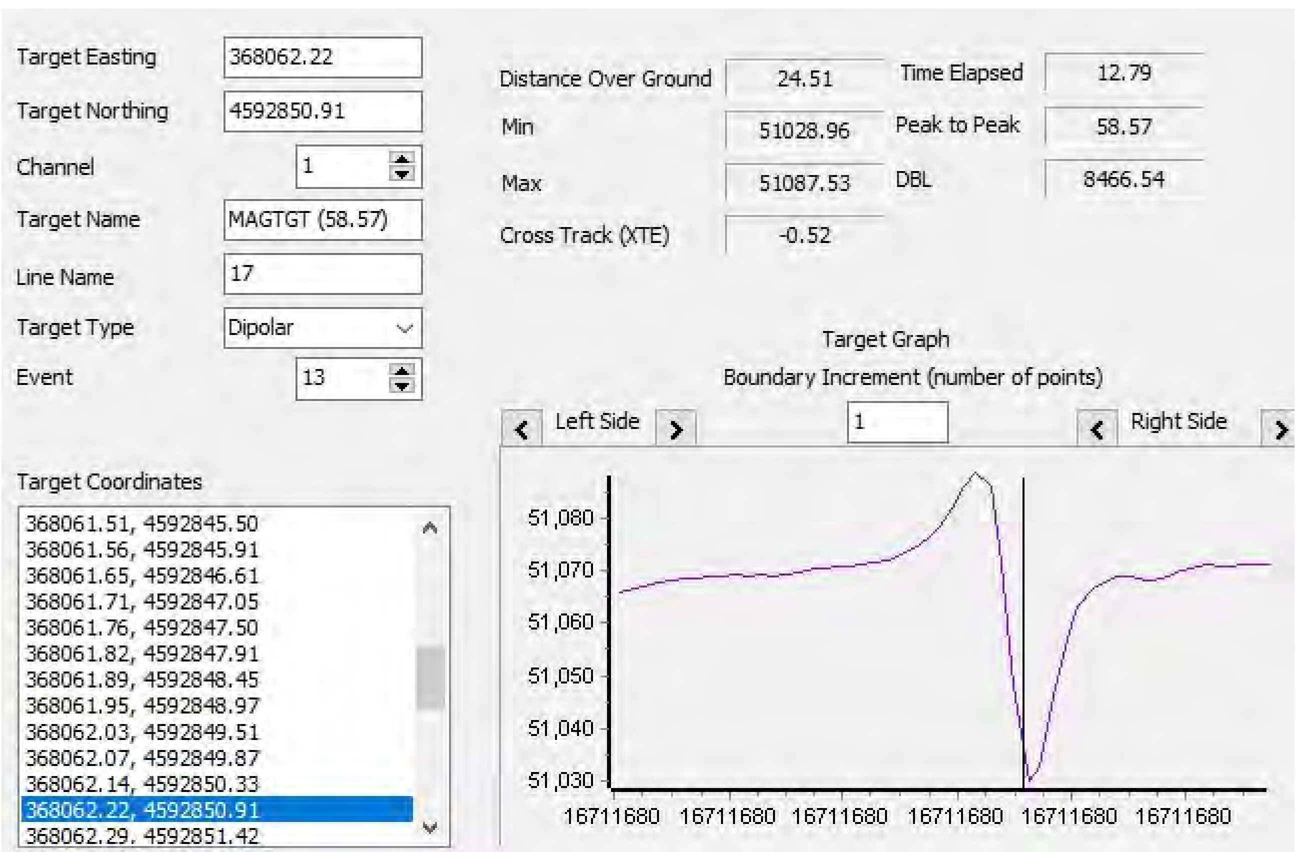
Name	Date	10/05/2021
MAGTGT (58.57)	Time	12:48:28
Survey File	Event	13
17	X	368062.0
Capture File	Y	4592850.0
368062.22.4592850.91.58.57.51080.78.12.jpg	WGS84 Latitude	41 28 35.061 N
	WGS84 Longitude	070 34 48.728 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



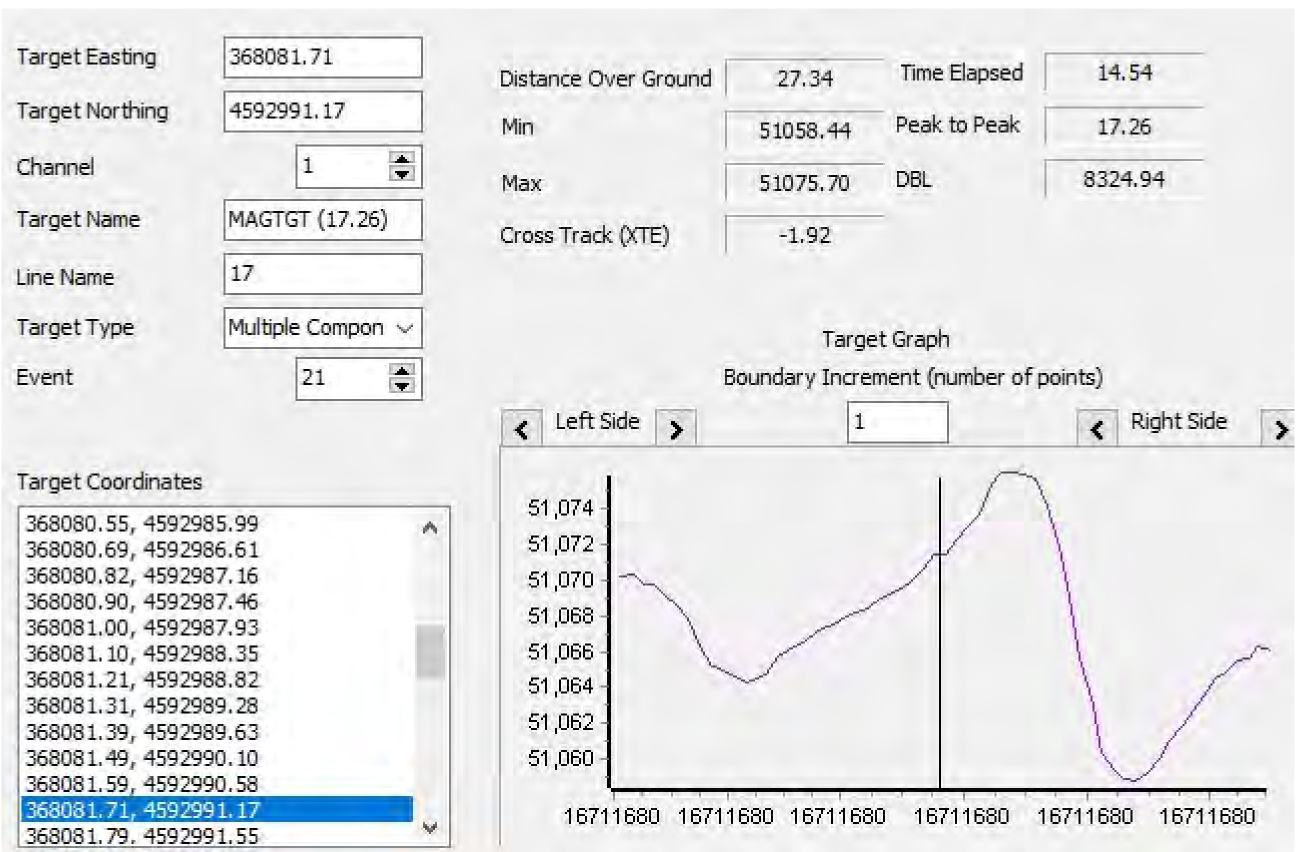
Name	Date	10/05/2021
MAGTGT (58.57)	Time	12:48:29
Survey File	Event	13
17	X	368062.0
Capture File	Y	4592850.0
368062.22.4592850.91.58.57. 51080.78.12.jpg	WGS84 Latitude	41 28 35.061 N
	WGS84 Longitude	070 34 48.728 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



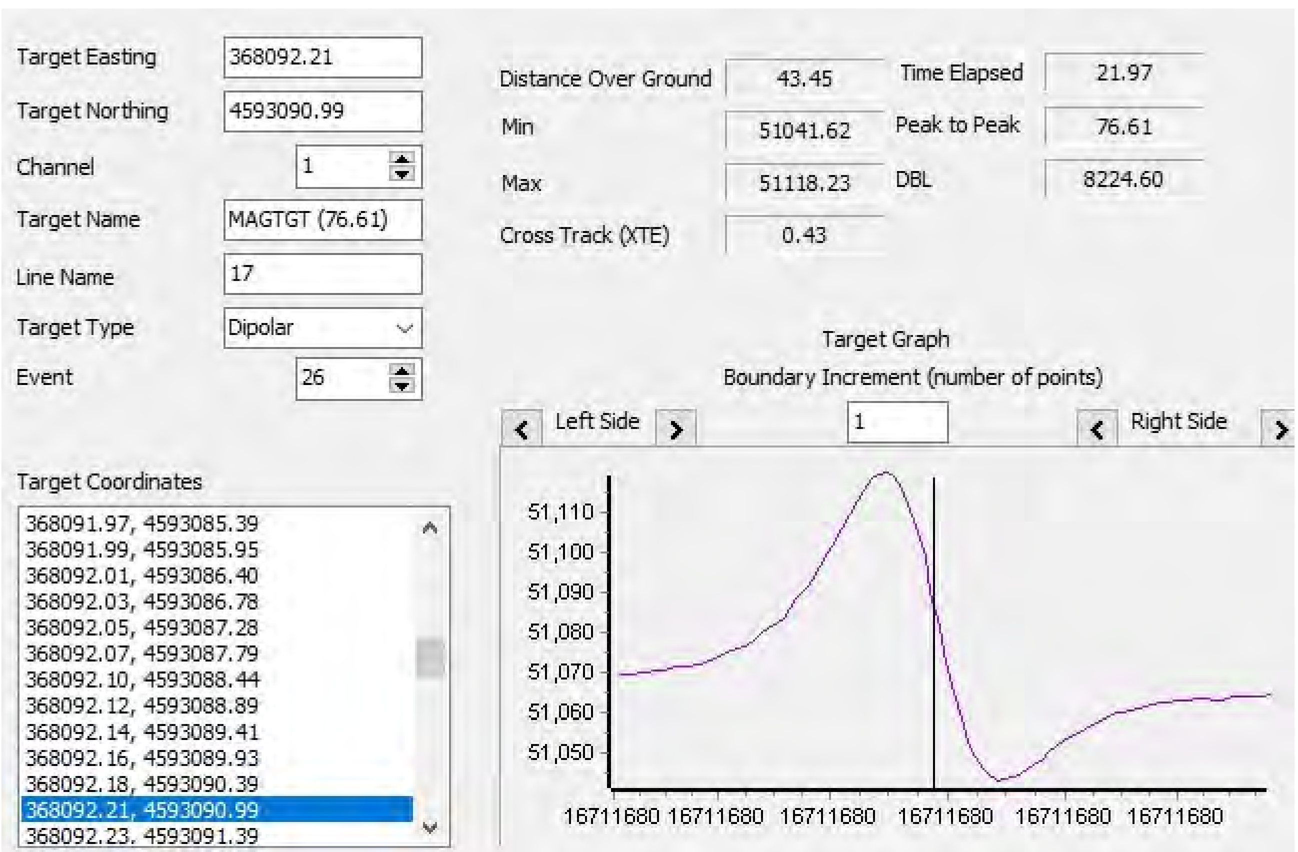
Name	Date	10/05/2021
MAGTGT (17.26)	Time	12:48:42
Survey File	Event	21
17	X	368081.0
Capture File	Y	4592991.0
368081.71.4592991.17.17.26.51071.07.12.jpg	WGS84 Latitude	41 28 39.6427 N
	WGS84 Longitude	070 34 48.0202 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



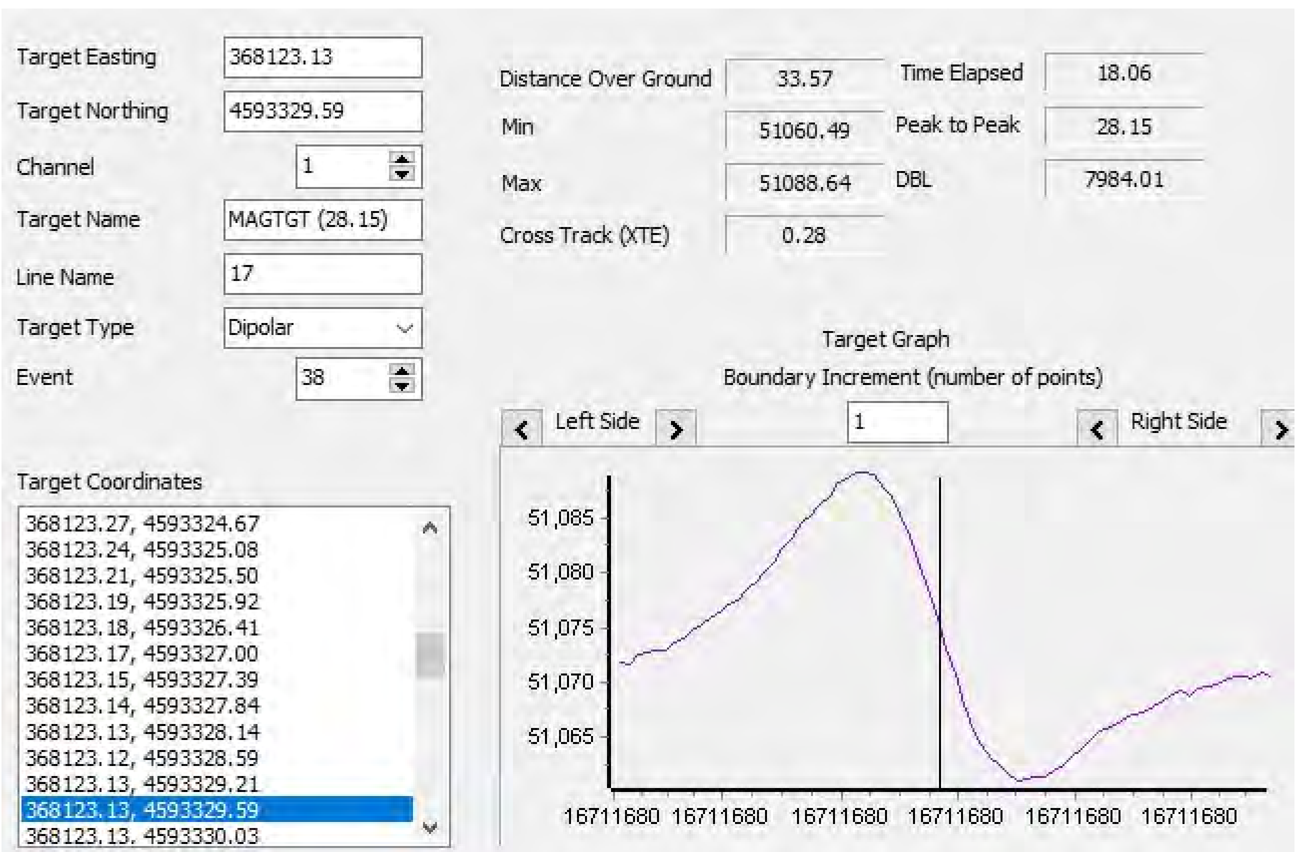
Name	Date	10/05/2021
MAGTGT (76.61)	Time	12:48:54
Survey File	Event	26
17	X	368092.0
Capture File	Y	4593090.0
368092.21.4593090.99.76.61. 51079.89.12.jpg	WGS84 Latitude	41 28 42.8582 N
	WGS84 Longitude	070 34 47.624 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



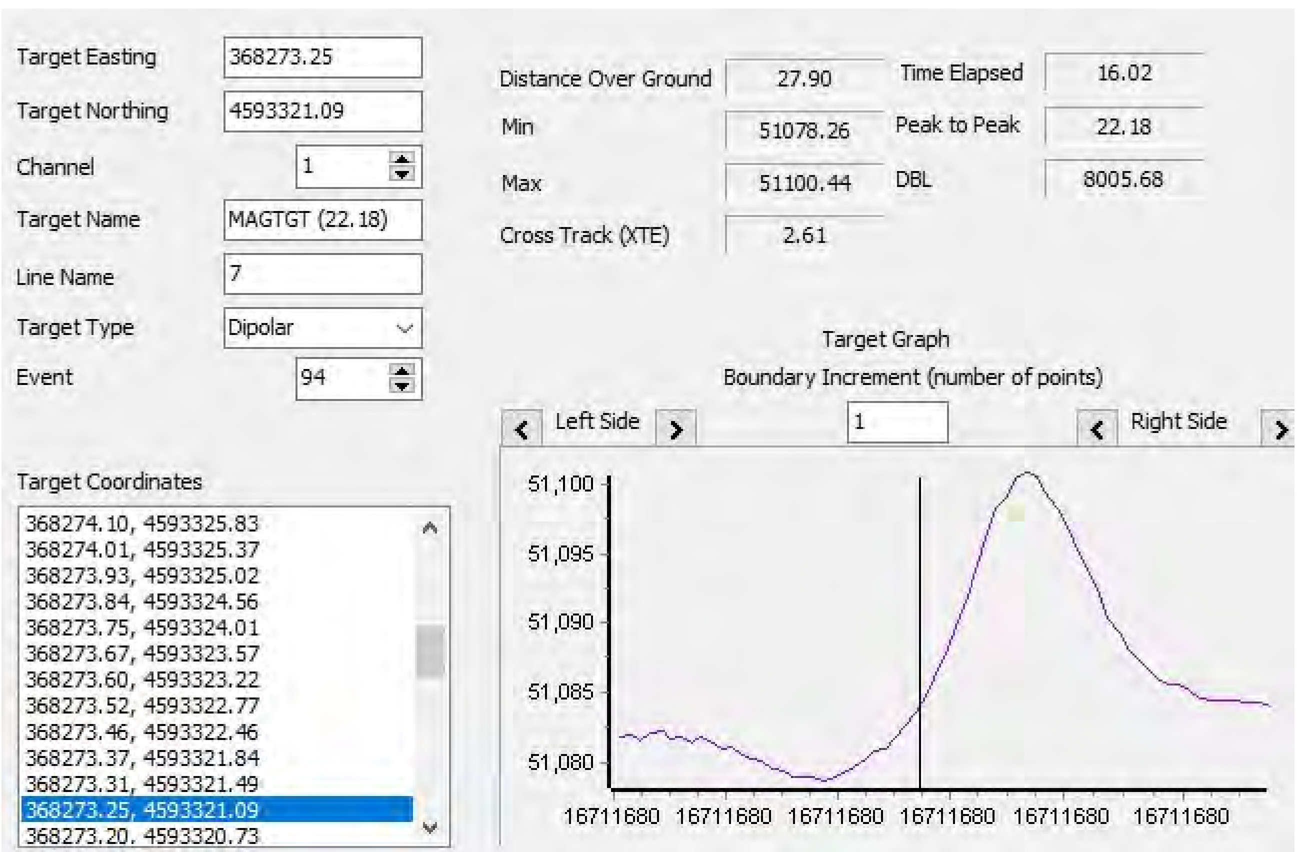
Name	Date	10/05/2021
MAGTGT (28.15)	Time	12:49:04
Survey File	Event	38
17	X	368123.0
Capture File	Y	4593329.0
368123.13.4593329.59.28.15.51072.50.12.jpg	WGS84 Latitude	41 28 50.6237 N
	WGS84 Longitude	070 34 46.476 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



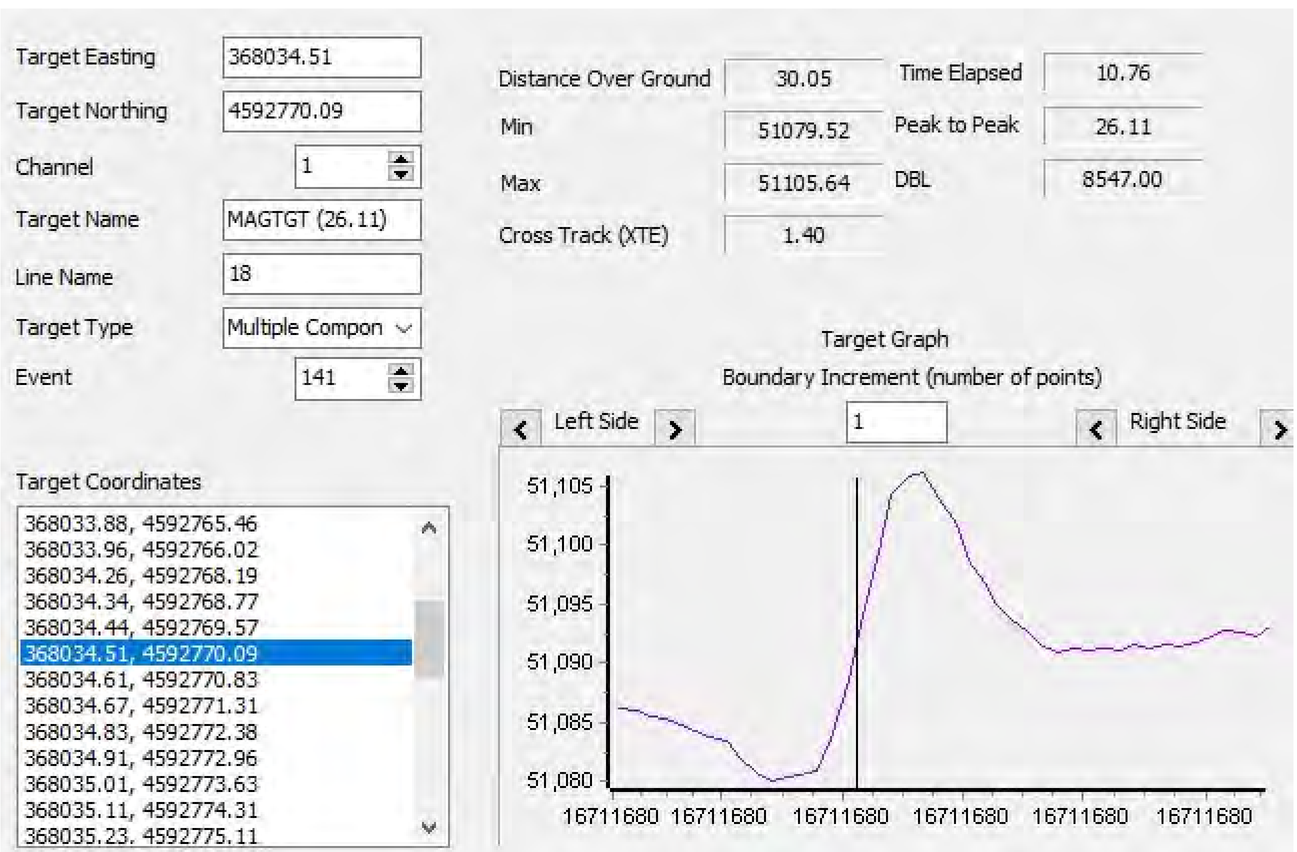
Name	Date	10/05/2021
MAGTGT (22.18)	Time	12:49:19
Survey File	Event	94
7	X	368273.0
Capture File	Y	4593321.0
368273.25.4593321.09.22.18.51084.31.13.jpg	WGS84 Latitude	41 28 50.4531 N
	WGS84 Longitude	070 34 40 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (26.11)	Time	12:49:46
Survey File	Event	141
18	X	368034.0
Capture File	Y	4592770.0
368034.51.4592770.09.26.11.51101.16.14.jpg	WGS84 Latitude	41 28 32.4512 N
	WGS84 Longitude	070 34 49.8719 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



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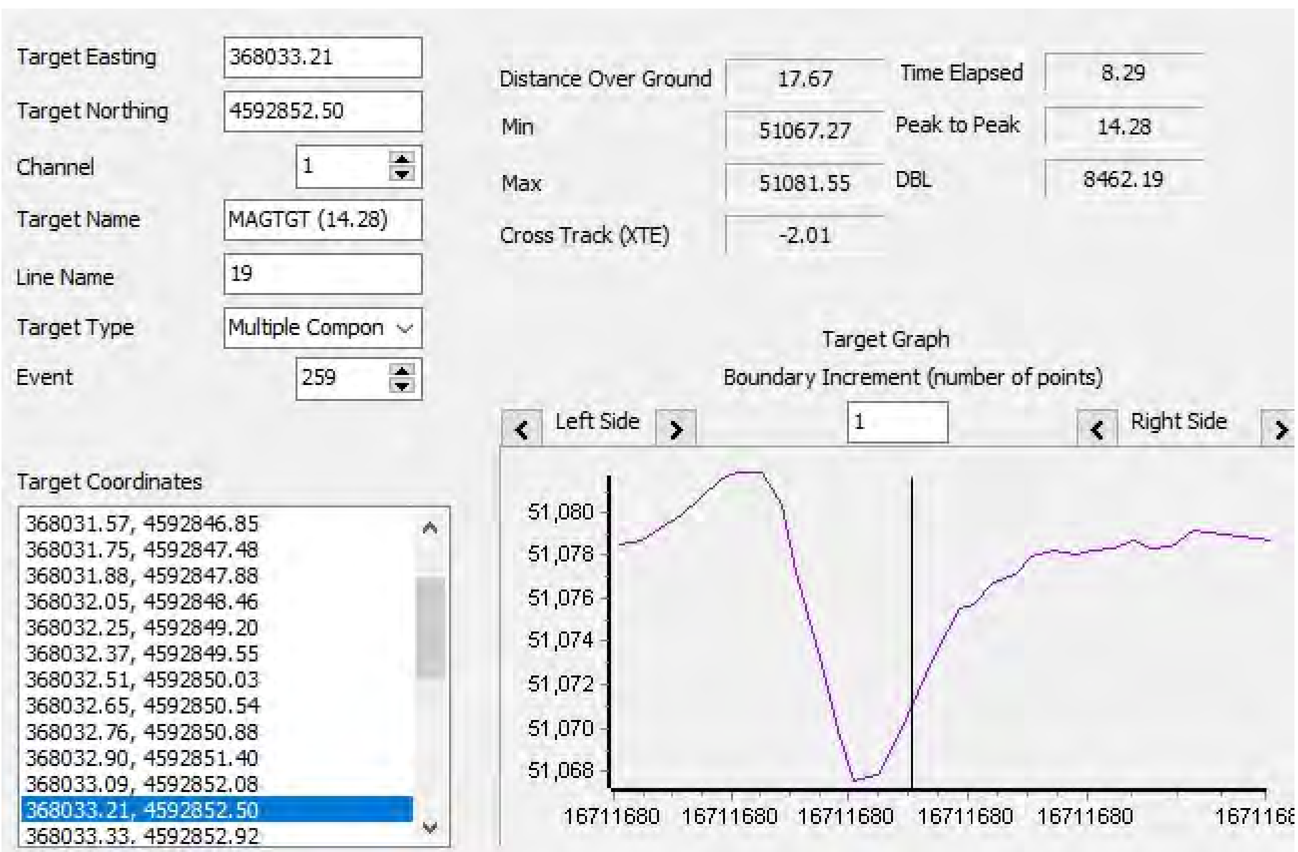
Survey File	Event	259
19	X	368033.0
Capture File	Y	4592852.0
368033.21.4592852.50.14.28. 51071.40.16.jpg	WGS84 Latitude	41 28 35.1086 N
	WGS84 Longitude	070 34 49.9796 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



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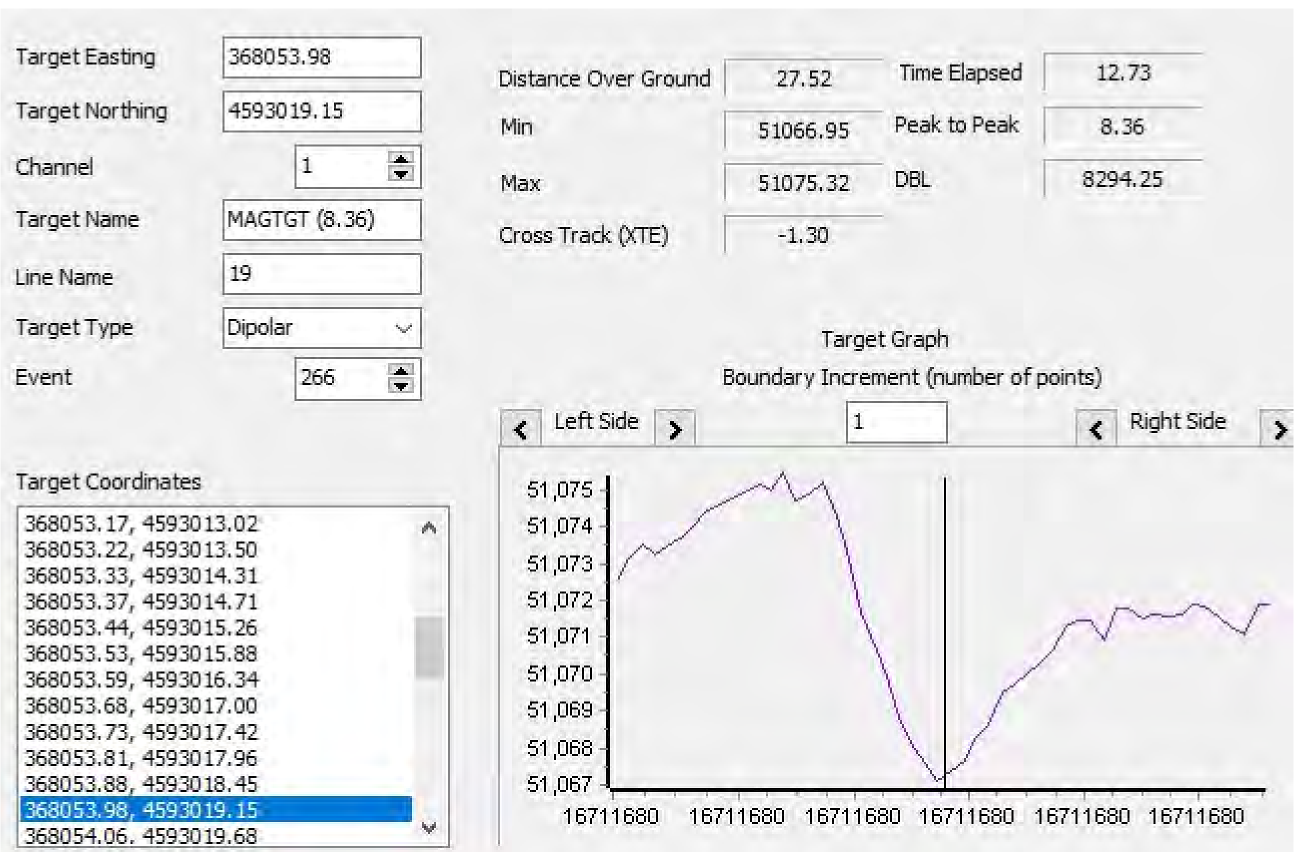
Survey File	Event	266
19	X	368053.0
Capture File	Y	4593019.0
368053.98.4593019.15.8.36.5 1067.25.16.jpg	WGS84 Latitude	41 28 40.5337 N
	WGS84 Longitude	070 34 49.2491 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



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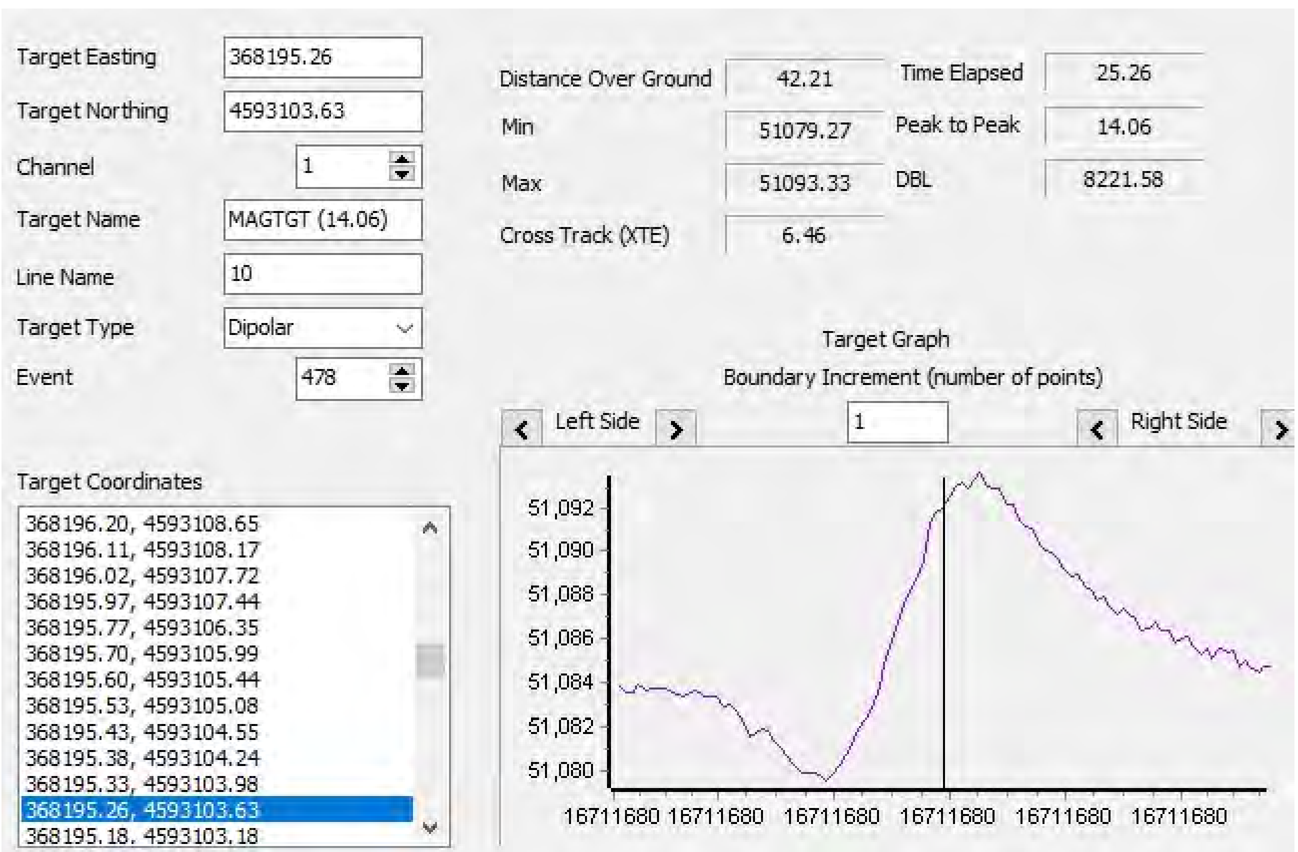
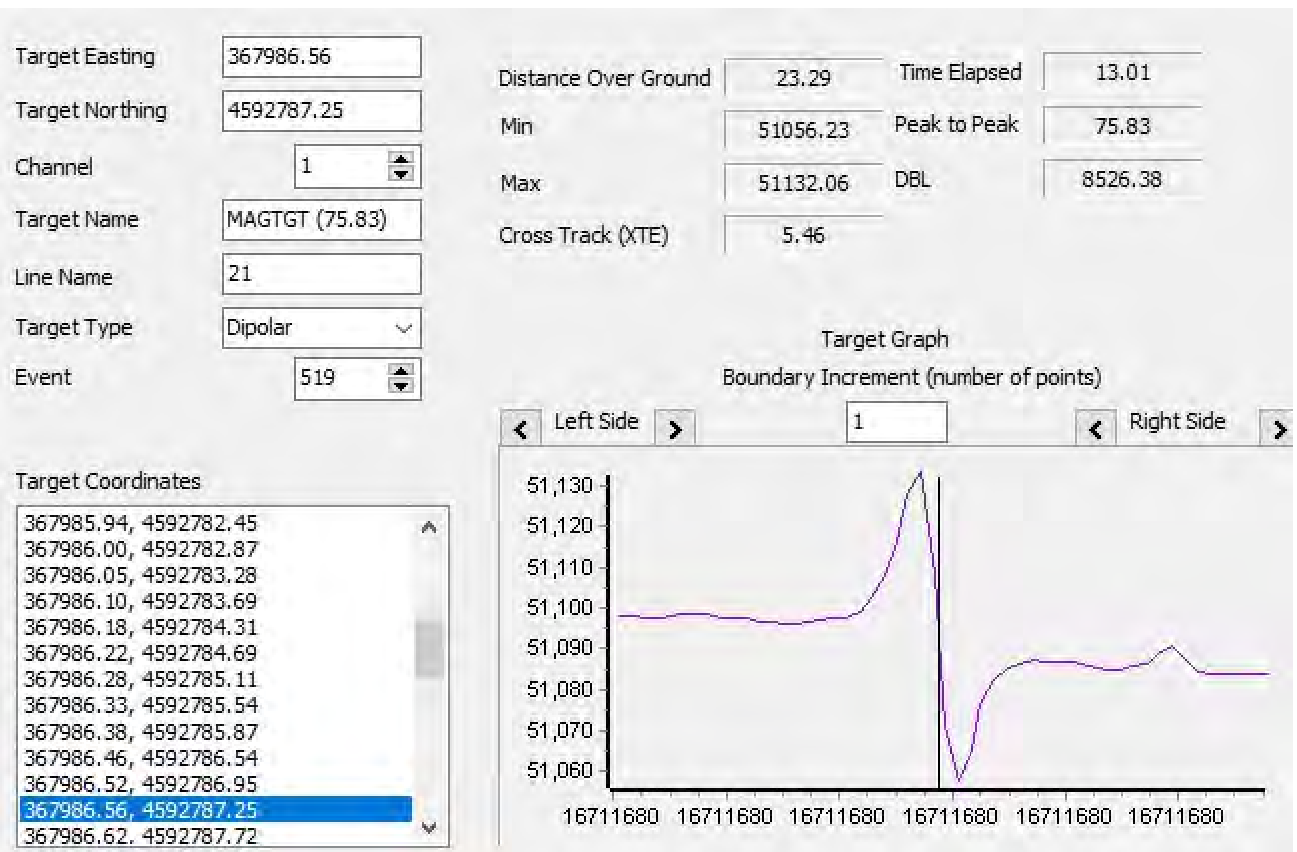
MAGTGT (14.06)	Time	12:50:31
Survey File	Event	478
10	X	368195.0
Capture File	Y	4593103.0
368195.26.4593103.63.14.06.51092.21.19.jpg	WGS84 Latitude	41 28 43.3406 N
	WGS84 Longitude	070 34 43.1947 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



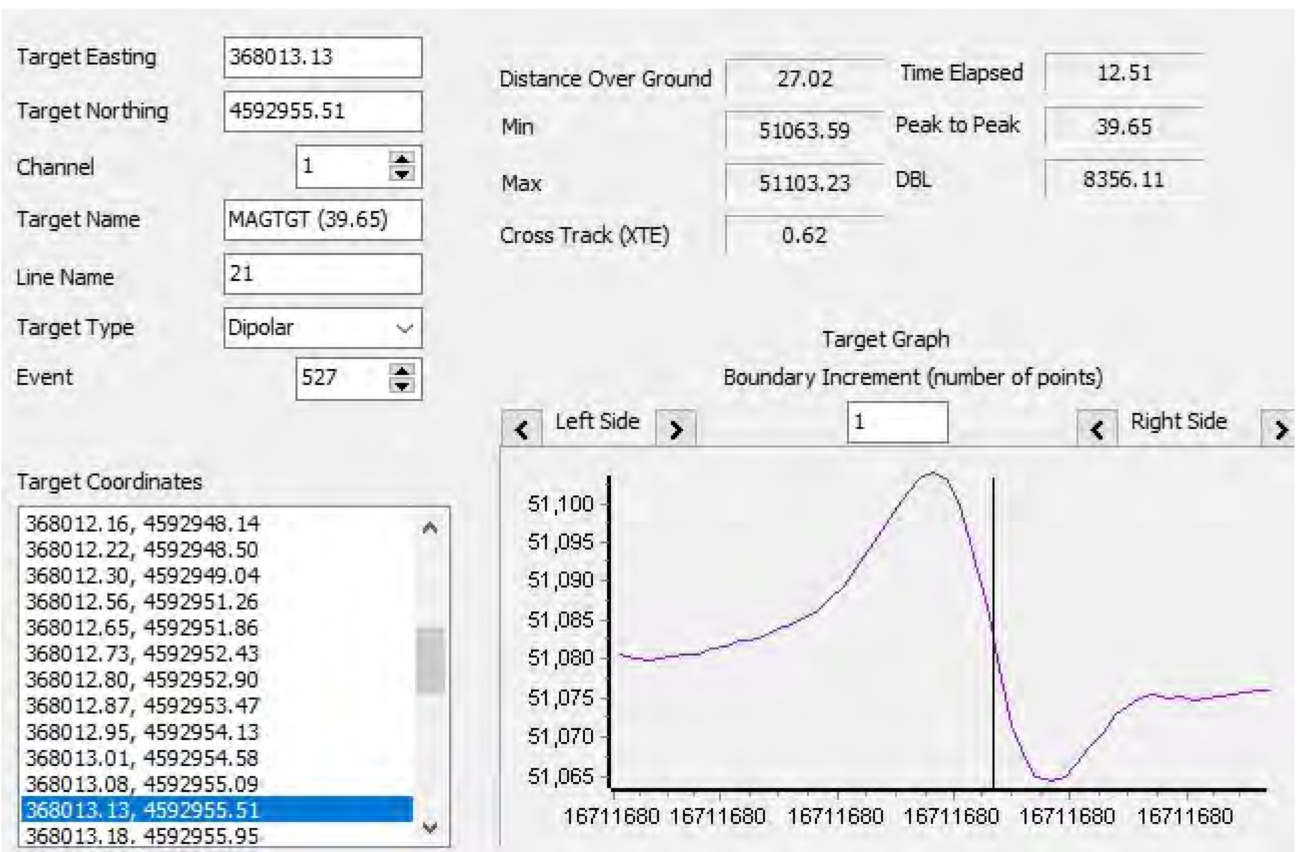
Name	Date	10/05/2021
MAGTGT (75.83)	Time	12:50:51
Survey File	Event	519
21	X	367986.0
Capture File	Y	4592787.0
367986.56.4592787.25.75.83.51069.45.20.jpg	WGS84 Latitude	41 28 32.9738 N
	WGS84 Longitude	070 34 51.9541 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



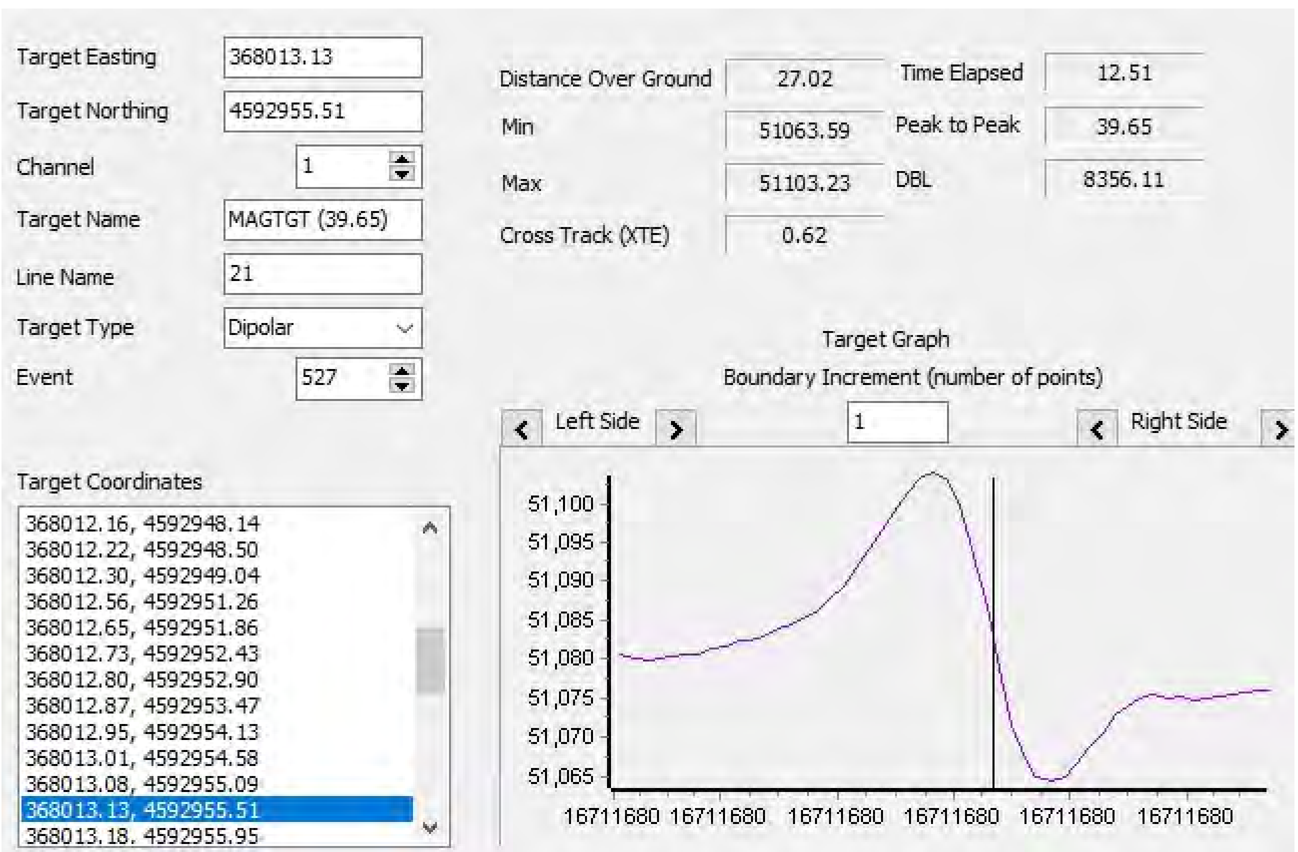
Name	Date	10/05/2021
MAGTGT (39.65)	Time	12:51:01
Survey File	Event	527
21	X	368013.0
Capture File	Y	4592955.0
368013.13.4592955.51.39.65. 51098.93.20.jpg	WGS84 Latitude	41 28 38.4355 N
	WGS84 Longitude	070 34 50.9227 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



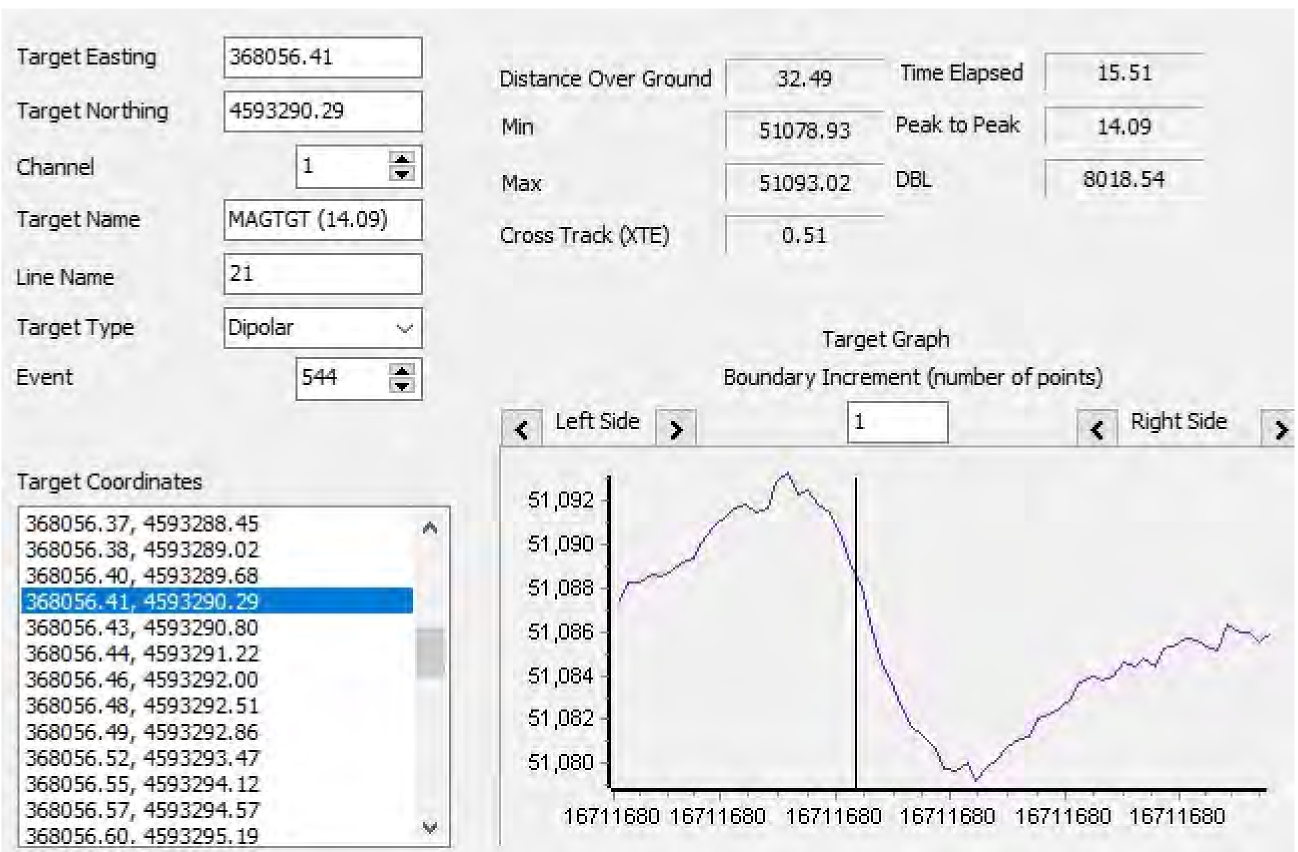
Name	Date	10/05/2021
MAGTGT (39.65)	Time	12:51:01
Survey File	Event	527
21	X	368013.0
Capture File	Y	4592955.0
368013.13.4592955.51.39.65. 51098.93.20.jpg	WGS84 Latitude	41 28 38.4355 N
	WGS84 Longitude	070 34 50.9227 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (14.09)	Time	12:51:11
Survey File	Event	544
21	X	368056.0
Capture File	Y	4593290.0
368056.41.4593290.29.14.09.51079.47.20.jpg	WGS84 Latitude	41 28 49.3198 N
	WGS84 Longitude	070 34 49.3332 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



APPENDIX C

GoPro Plates of Screen Captures by Transect


A 1:00


B 1:27


C 2:22


D 2:57


E 3:55


F 7:05

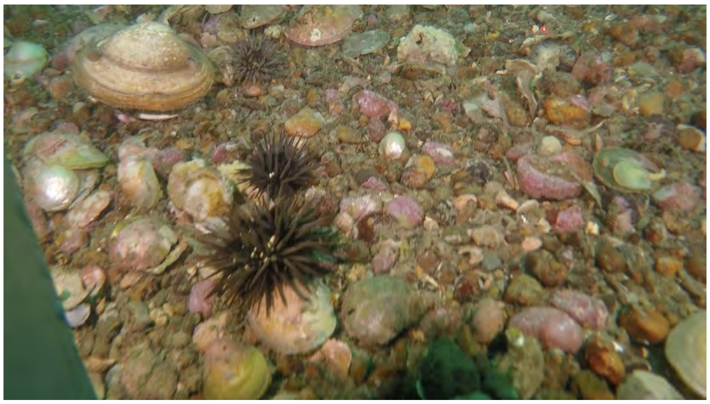

G 9:18


H 9:39

Plate 1a. **Transect VS-1B** – Biotic community: attached sparse *Arbacia punculata* and co-occurring sparse *Didemnum* and *Lithothamnium* on pebble/granule in a sandy gravel matrix at 33 ft MLLW. Associated taxa: trace *Pagarus.*

A 0:59

B 1:29



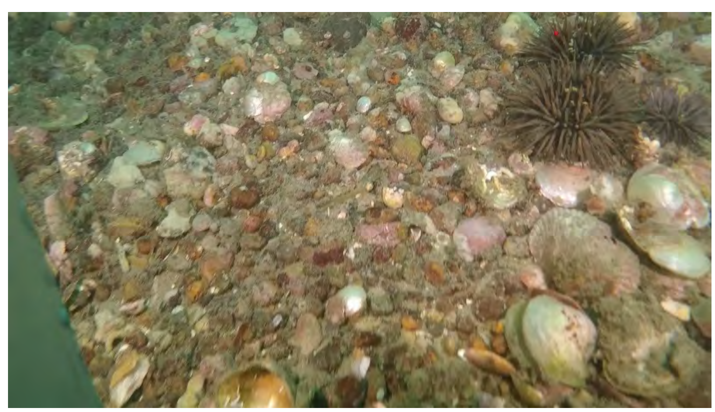
C 2:46

D 3:53

E 4:53

F 6:06

G 7:12



H 8:37

Plate 2a. **Transect VS-2**- Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

I 9:30

J 10:21

K 11:57

L 12:39

M 13:26

N 14:30

O 15:28

P 16:39

Plate 2b. Transect VS-2 - Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

Q 17:02

R 17:38

S 18:53

T 19:46

U 20:53

V 21:42

W 21:45

X 22:49

Plate 2c. Transect VS-2 - Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

A 2:21

B 3:00

C 3:57

D 5:12

E 6:24

F 8:09

G 9:00

H 9:47

Plate 3a. Video Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*


I 11:30


J 12:31


K 13:26


L 14:32


M 15:01


N 16:09


O 17:01


P 17:56

Plate 3b. Video Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*

Q 18:43

R 19:59

S 21:25

T 22:24

U 23:15

V 24:22

W 25:18

X 25:30

Plate 3c. Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*

A 1:43

B 2:53

C 4:02

D 4:58

E 5:58

F 6:30

G 8:04

H 8:59

Plate 4a. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

I 10:02

J 11:01

K 11:59

L 13:05

M 13:39

N 14:28

O 15:32

P 16:32

Plate 4b. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

Q 17:29

R 18:11

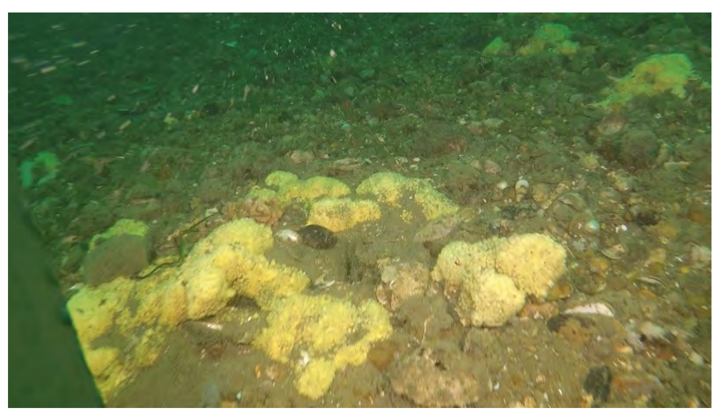
S 19:15

T 20:13

U 21:43

V 22:49

W 24:04



X 25:17

Plate 4c. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

A 1:22

B 1:58

C 7:04

D 9:19

E 10:09

F 13:32

G 15:09

H 15:55

Plate 5a. Transect VS-5 – Biotic Subclass: Soft sediment fauna associated with sand waves and associated mobile taxa: trace *Prionotus*, *Loligo*, and *Ovalipes* at 33 ft MLLW

A 1:30

B 2:16

C 2:51

D 3:27

E 4:15

F 4:44

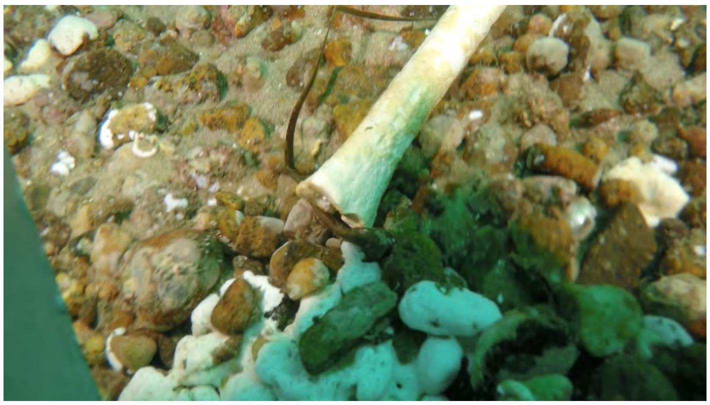
G 5:57

H 6:58

Plate 6a. Video Transect VS-6 – Biotic subclass: Soft sediment fauna associated with sand waves; and biotic community: attached sparse *Didemnum* and trace *Amaroucium* with co-occuring trace *Mytilis* and *Hydrozoa* in the pebble/granule substrate of the sand wave troughs at 30 ft MLLW. Associated taxa: *Pagarus*

I 10:02

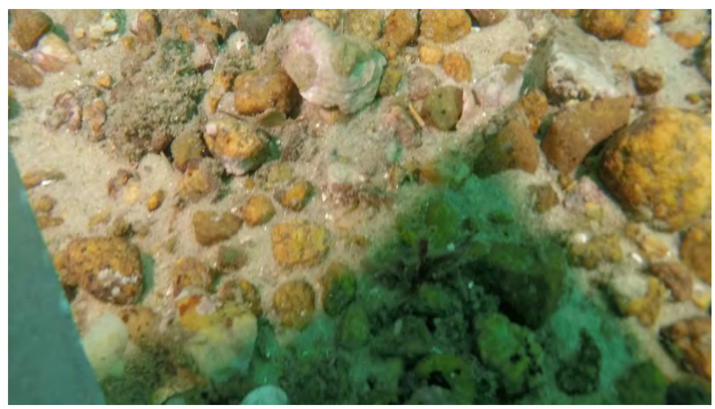
J 11:01



K 11:59

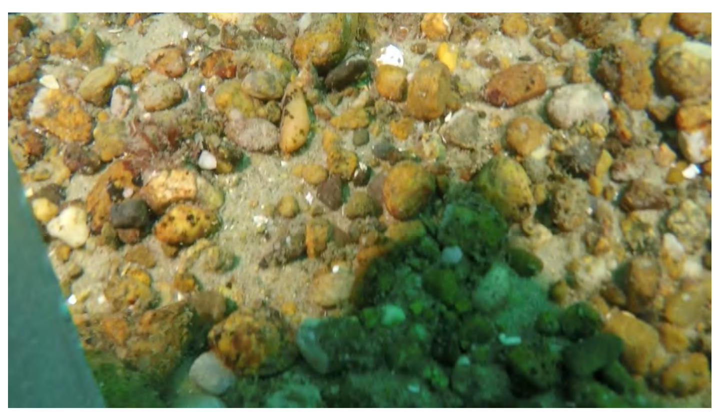
L 13:05

M 13:39



N 14:28

O 15:32



P 16:32

Plate 6b. Video Transect VS-6 – Biotic subclass: Soft sediment fauna associated with sand waves; and biotic community: attached sparse *Didemnum* and trace *Amaroucium* with co-occuring trace *Mytilis* and *Hydrozoa* in the pebble/granule substrate of the sand wave troughs at 30 ft MLLW. Associated taxa: *Pagarus*

A 1:09 B 1:46

C 4:27 D 5:04

E 6:25 F 8:53

G 10:34 H 11:58

Plate 7a. Video Transect VS-7 – Biotic community: attached sparse *Arbacia punculata* and co-occurring sparse *Amaroucium*, and *Lithothamnium* on gravel pavement of pebble/granule at 36 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 1:33

B 2:15

C 2:52

D 3:40

E 5:00

F 5:52

G 7:34

H 8:26

Plate 8a. Video Transect VS-8 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring Sparse **-** *Amaroucium/Didemnum*, *Cliona*, *Schizoporella*, *Arbacia*, and *Mytilis*, and *Anachis* on gravel pavement of cobble at 43 ft MLLW. Associated taxa: trace juvenile *Centropristes*

I 9:35

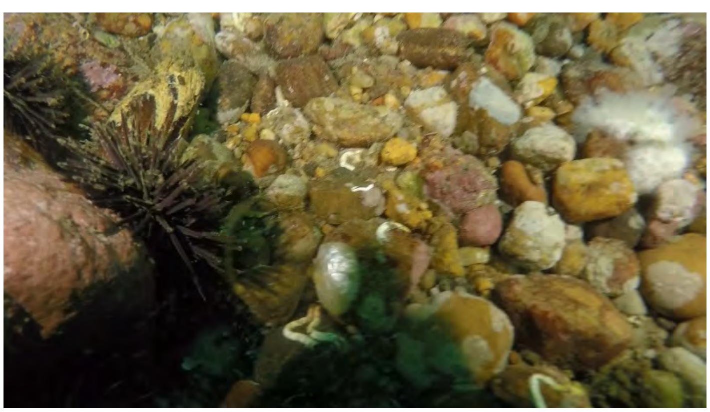
J 10:57

K 11:55

L 13:03

M 14:13

N 14:42

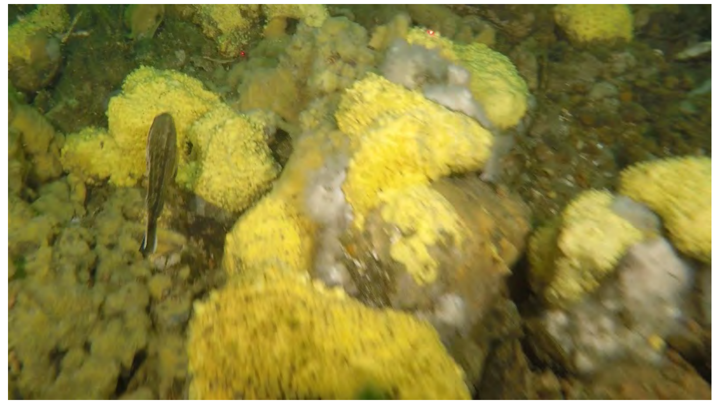


O 14:51

P 16:49

Plate 8b. Video Transect VS-8 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring sparse *Amaroucium/Didemnum*, *Cliona*, *Schizoporella*, *Arbacia*, *Mytilis*, and *Anachis* on gravel pavement of cobble at 43 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 2:49



B 3:39

C 4:28

D 5:47

E 6:56

F 7:35

G 8:52

H 10:30

Plate 9a. Video Transect VS-9 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Mytilis*, sparse- *Amaroucium/Didemnum* and *Arbacia*, and trace *Astrangia* on gravel pavement of Cobble and pebble/granule at 63 ft MLLW. Associated taxa: trace adult *Centropristes*

I 11:49

J 13:02

K 13:19

L 14:33

M 15:00

N 15:22

O 16:04

P 16:37

Plate 9b. Video Transect VS-9 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Mytilis*, sparse *Amaroucium/Didemnum* and *Arbacia*, and trace *Astrangia* on gravel pavement of Cobble and pebble/granule at 63 ft MLLW. Associated taxa: trace adult *Centropristes*


A 1:46 B 2:16


C 3:14 D 4:13


E 4:49 F 5:32


G 7:01 H 8:07

Plate 10a. Transect VS-10 – Biotic community: Attached Sparse *Arbacia punculata* and co-occurring sparse Mytilis and *Anachis* and trace *Astrangia* on gravel pavement of pebble/granule and cobbles at 65 ft MLLW. Associated taxa: trace juvenile *Centropristes*

I 8:48

J 10:06

K 10:45

L 11:35

M 12:07

N 13:31

O 14:20

P 15:17

Plate 10b. Video Transect VS-10 – Biotic community: Attached Sparse *Arbacia punculata* and co-occurring sparse Mytilis and *Anachis* and trace *Astrangia* on gravel pavement of pebble/granule and cobbles at 65 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 2:11

B 2:30

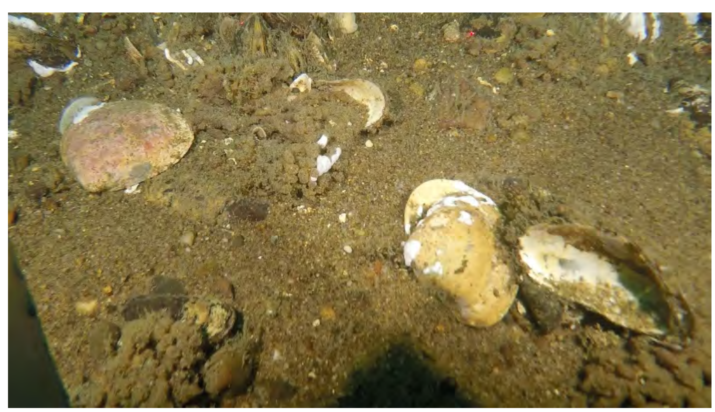
C 3:52

D 4:35

E 5:08

F 5:41

G 6:35



H 7:16

Plate 11a. Transect VS-11 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring moderate *Didemnum*, sparse *Mytilis*, and trace *Schizoporella* on gravel pavement of pebble/granule at 70 ft MLLW. Associated taxa: Mobile Arthopods - Trace *Pagurus*, and Fish – Sparse Juvenile *Centropristes*

A 2:11

B 2:30

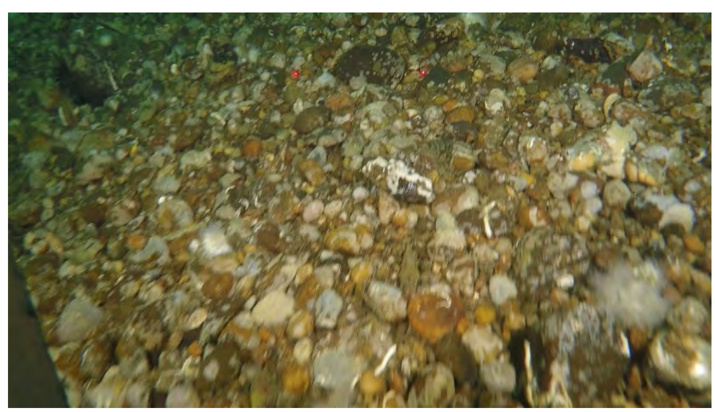
C 3:52

D 4:35

E 5:08

F 5:41

G 6:35



H 7:16

Plate 12a. Transect VS-12 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring sparse *Schizoporella*, *Halichondria*, *Mytilus*, *Anachis* and trace *Astrangia*, and Cliona on gravel pavement of pebble/granule at 64 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

I 8:00

J 8:39

K 9:07

L 9:58

M 10:34

N 10:56

O 11:34

P 12:21

Plate 12b. Transect VS-12 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring sparse *Schizoporella*, *Halichondria*, *Mytilus*, *Anachis* and trace *Astrangia*, and Cliona on gravel pavement of pebble/granule at 64 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 2:23

B 4:07

C 5:00

D 6:03

E 7:03

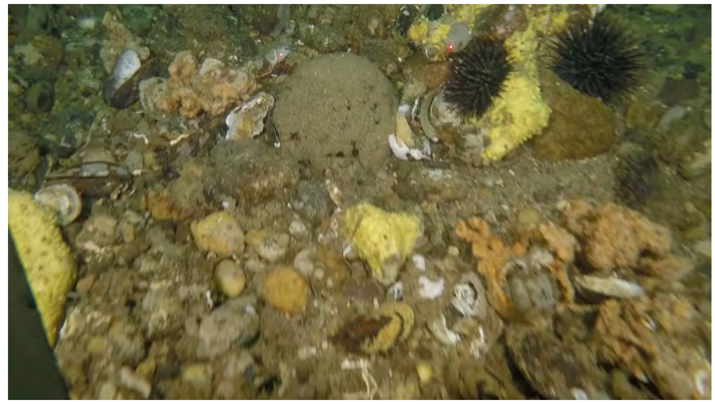
F 8:07

G 8:43

H 9:31

Plate 13a. Transect VS-13 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and Arbacia; sparse *Cliona*, *Halichondria*, *Schizoporella*, and *Ananchis*; trace *Astrangia*, and *Didemnum* on gravel pavement of cobbles at 64 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus*; Fish – sparse Juvenile *Centropritis* and trace *Spaeroides*

I 10:33



J 11:32

K 12:08

L 12:32

M 13:07

N 14:02

O 15:01

P 15:30

Plate 13b. Transect VS-13 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and Arbacia; sparse *Cliona*, *Halichondria*, *Schizoporella*, and *Ananchis*; trace *Astrangia*, and *Didemnum* on gravel pavement of cobbles at 64 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus*; Fish – sparse Juvenile *Centropritis* and trace Sphaeroides

A 4:10

B 5:30

C 8:28

D 9:14

E 10:58

F 11:43

G 12:30

H 14:03

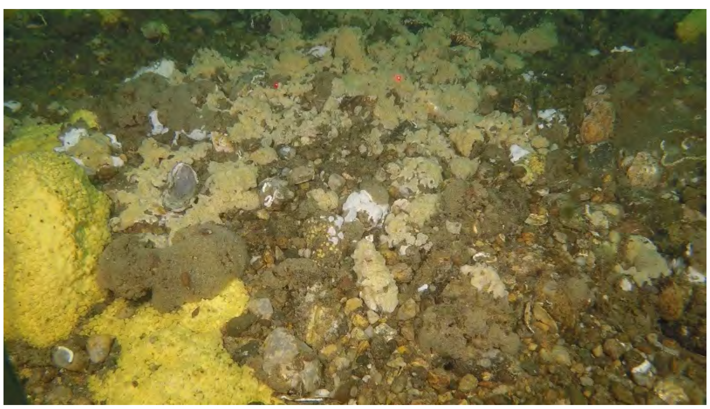
Plate 14a. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

I 17:44

J 21:18

K 25:10

L 27:28



M 29:38

N 31:24

O 33:42

P 35:46

Plate 14b. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

Q 38:19

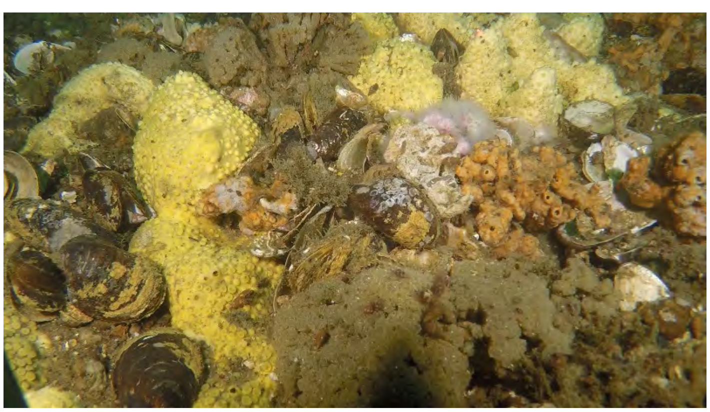
R 40:17

S 42:31

T 44:51

U 47:44

V 49:58



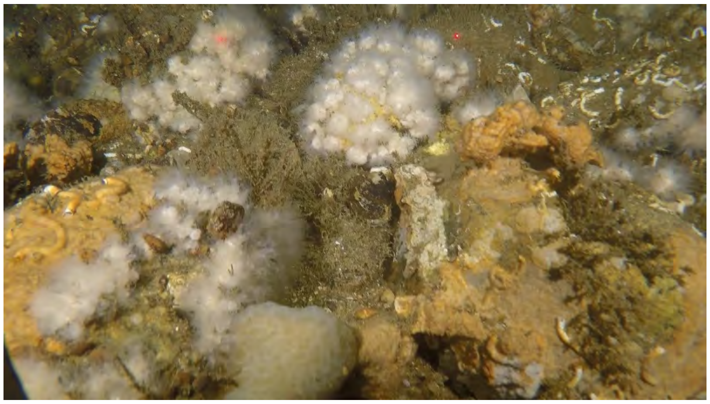
W 52:44

X 53:42

Plate 14c. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

A 2:35

B 3:53



C 5:08

D 5:33

E 6:32

F 7:39

G 8:40

H 9:02

Plate 15a. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*

I 9:58

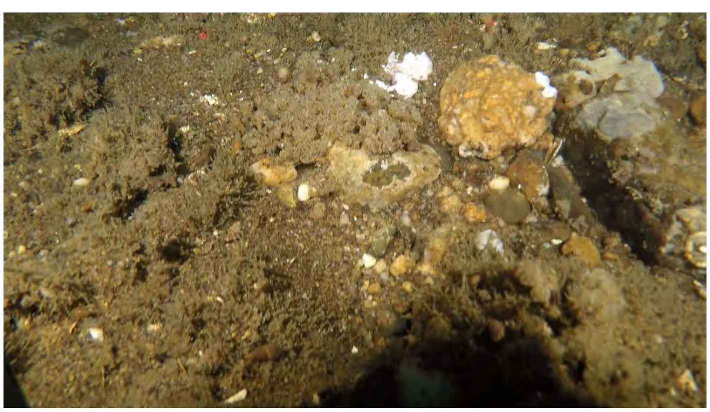
J 10:56

K 12:19

L 14:00

M 14:59

N 15:52



O 16:32

P 17:35

Plate 15b. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*

Q 18:17

R 18:43

S 19:43

T 20:46

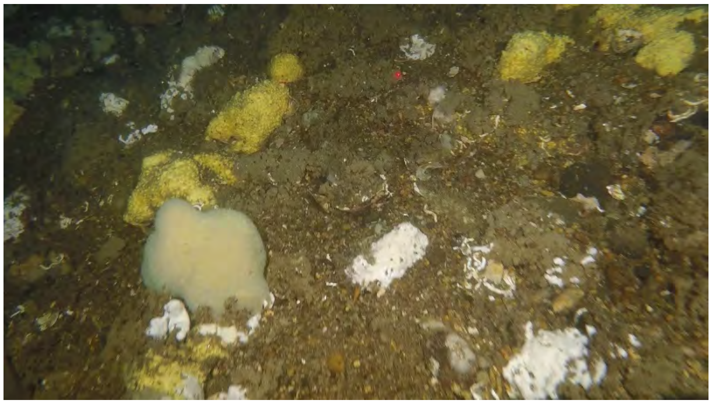
U 21:42

V 22:18

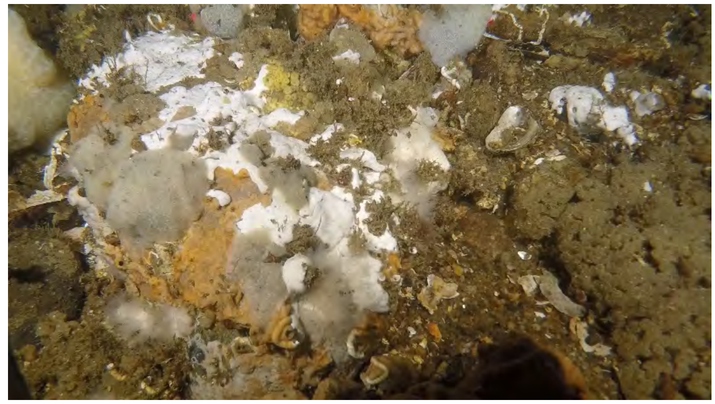
W 22:57

X 23:05

Plate 15c. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*



A 3:22



B 3:33

C 4:20

D 5:18

E 6:53

F 7:14

G 8:48

H 9:20

Plate 16a. Transect VS-16 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and *Cliona*; sparse *Schizoporella*, *Astrangia*, *Didemnum,* and *Anachis*; trace *Arbacia* on gravel pavement with boulders and cobbles at 86 ft MLLW. Associated taxa: Mobile Arthopods – trace *Pagurus* and *Pycnogonida*; Fish - Dense Juvenile *Centropristes*, Trace *Tautoga* and *Tautogolabrus*

I 10:30

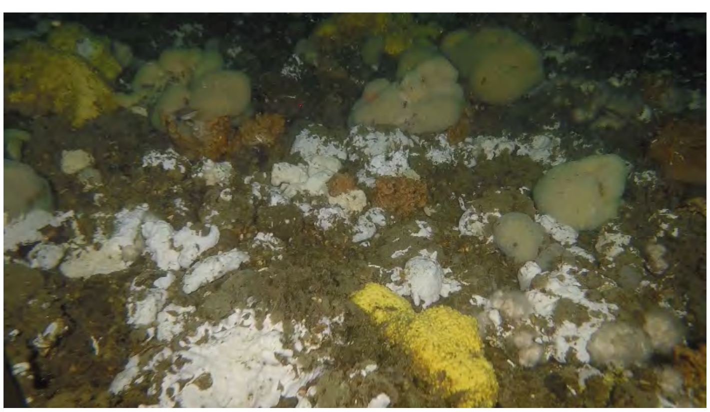
J 11:28

K 14:21

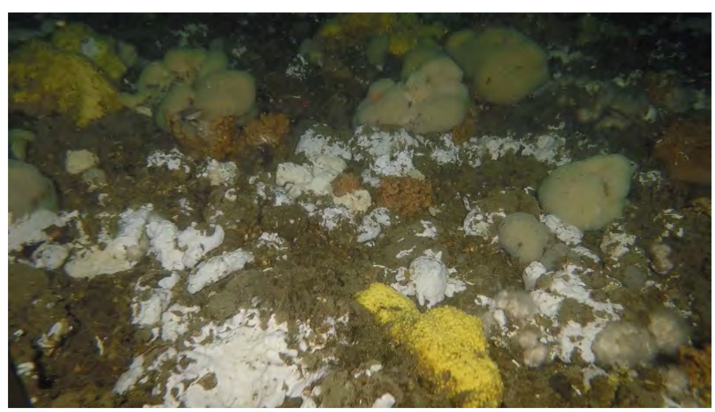
L 14:59

M 16:05

N 17:37



O 17:44



P 18:44

Plate 16b. Transect VS-16 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and *Cliona*; sparse *Schizoporella*, *Astrangia*, *Didemnum,* and *Anachis*; trace *Arbacia* on gravel pavement with boulders and cobbles at 86 ft MLLW. Associated taxa: Mobile Arthopods – trace *Pagurus* and *Pycnogonida*; Fish - Dense Juvenile *Centropristes*, Trace *Tautoga* and *Tautogolabru*s

A 1:17

B 2:24

C 3:02

D 3:53

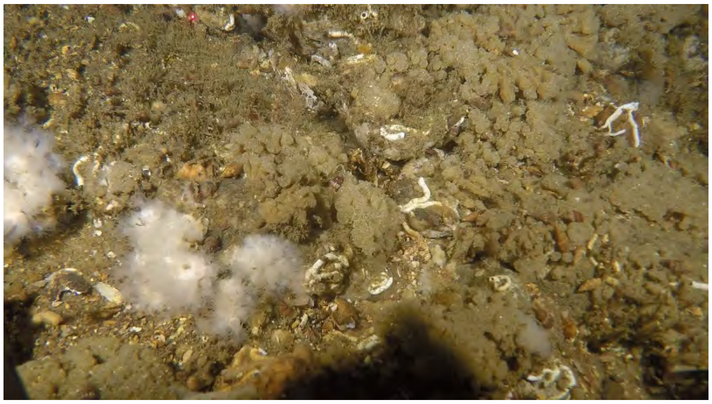
E 4:49

F 5:21

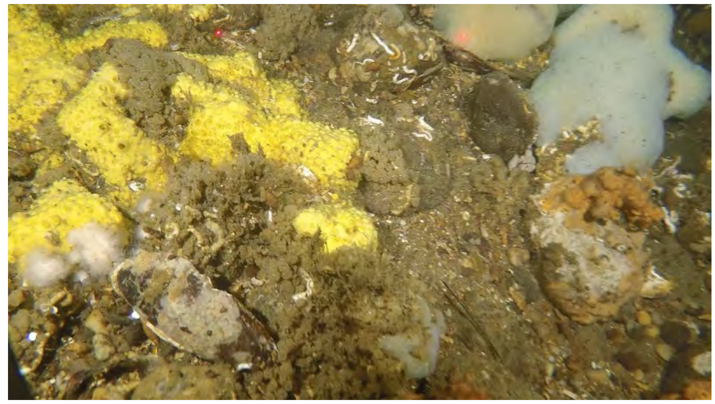
G 6:39

H 7:24

Plate 17a. Transect VS-17 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, *Astrangia*; sparse *Schizoporella*, *Anachis* and *Arbacia* on gravel pavement with boulders at 76 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes*, trace *Tautoga;* Mobile Arthropods - *Pycnogonida*

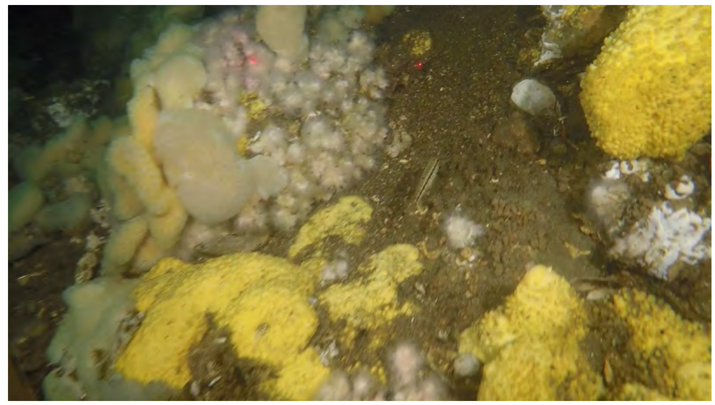


I 8:34



J 8:42

K 12:16



L 13:37

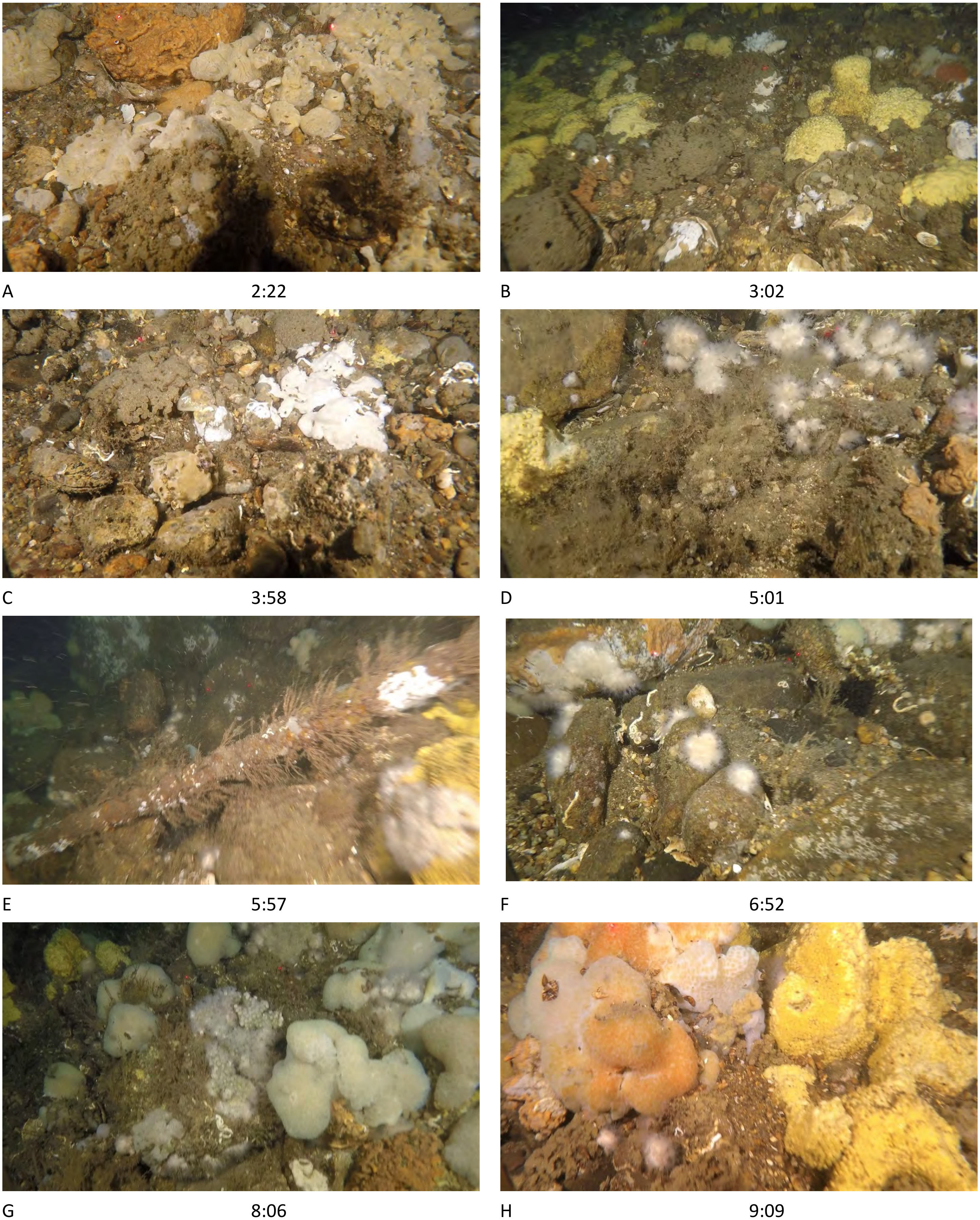
M 14:28

N 14:57

O 15:57

P 17:04

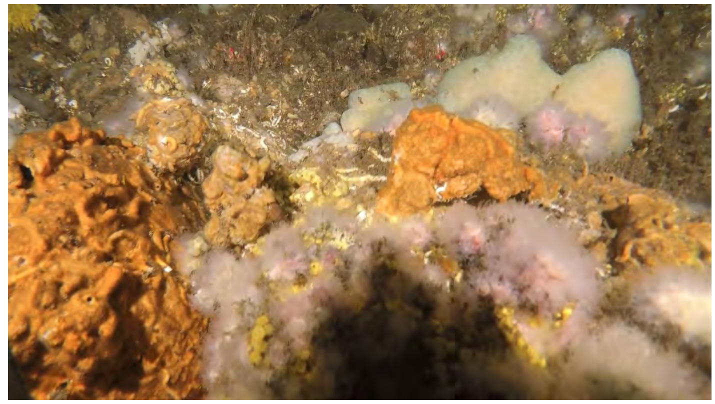
Plate 17b. Transect VS-17 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, *Astrangia*; sparse *Schizoporella*, *Anachis* and *Arbacia* on gravel pavement with boulders at 76 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes*, trace *Tautoga;* Mobile Arthropods - *Pycnogonida*



A 2:22
B 3:02
C 3:58
D 5:01
E 5:57
F 6:52
G 8:06
H 9:09

Plate 18a. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

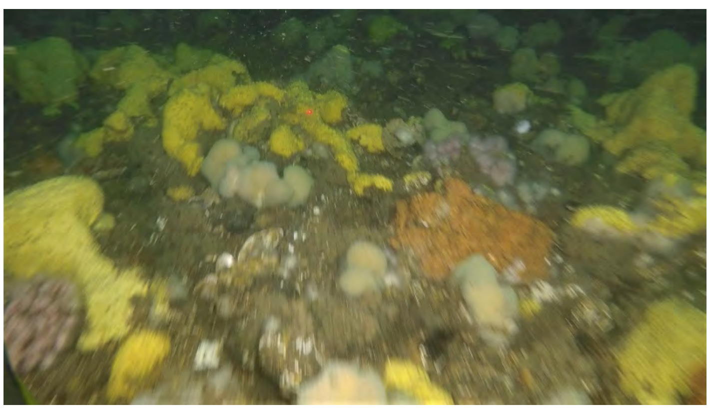
I 9:21



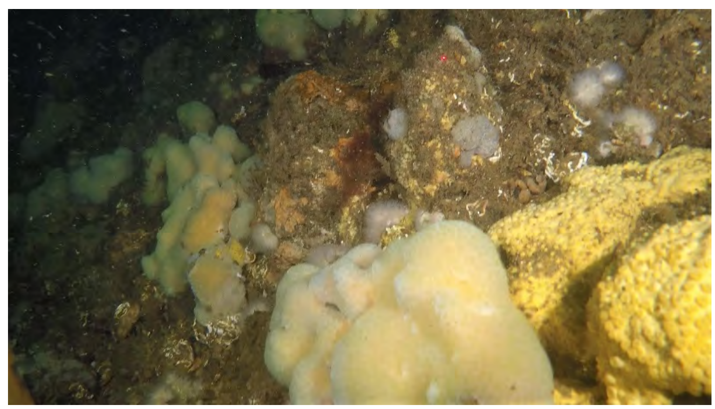
J 9:49

K 10:02

L 10:57



M 11:01



N 12:23

O 13:02

P 13:34

Plate 18b. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

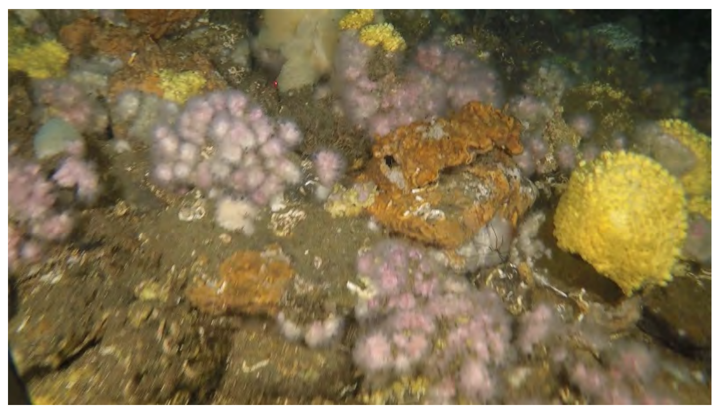
Q 13:57

R 14:31

S 15:07

T 16:04

U 17:04



V 17:32

W 17:49

X 17:55

Plate 18c. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

A 2:27

B 4:32

C 5:04

D 6:05

E 7:57

F 9:00

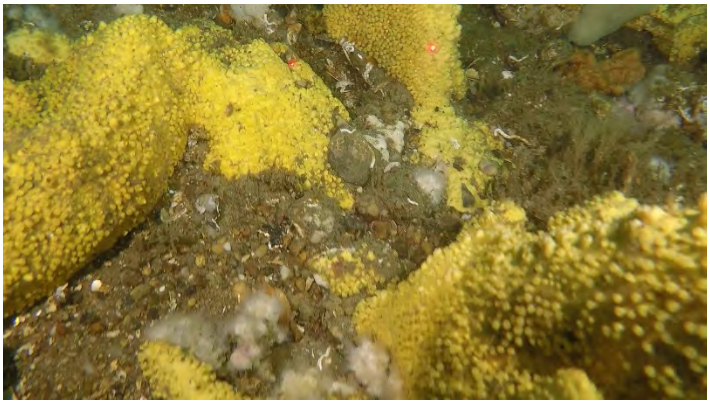
G 10:00

H 11:10

Plate 19a. Transect VS-19 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Halichondria*; sparse – *Schizoporella*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 63 ft MLLW. Associated taxa: Fish - moderate Juvenile *Centropristes*, trace *Tautoga*; Mobile Arthropods - trace *Pycnogonida*

I 12:37

J 13:52



K 15:31

L 16:05

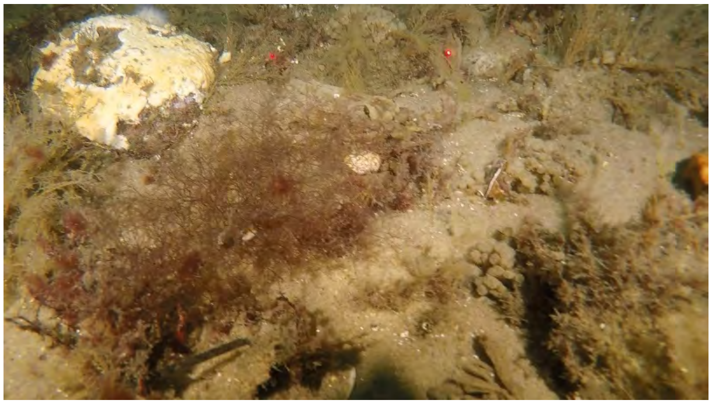
M 17:30

N 18:03

O 18:15

P 19:44

Plate 19b. Transect VS-19 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Halichondria*; sparse – *Schizoporella*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 63 ft MLLW. Associated taxa: Fish - moderate Juvenile *Centropristes*, trace *Tautoga*; Mobile Arthropods - trace *Pycnogonida*



A 4:01

B 5:01

C 5:55

D 6:36

E 7:21

F 8:05

G 8:59

H 9:29

Plate 20a. Transect VS-20- Biotic Community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Didemnum*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Halichondria*, *Schizoporella* on gravel pavement with cobbles at 69 ft MLLW. Associated taxa: Mobile Arthopods trace *Limulus* and *Pycnogonida*; Fish - sparse Juvenile *Centropristes*, trace *Tautoga*

I 10:56

J 11:59

K 12:38

L 12:57

M 14:41

N 15:09

O 16:02

P 16:57

Plate 20b. Transect VS-20- Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Didemnum*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Halichondria*, *Schizoporella* on gravel pavement with cobbles at 69 ft MLLW. Associated taxa: Mobile Arthopods trace *Limulus* and *Pycnogonida*; Fish - sparse Juvenile *Centropristes*, trace *Tautoga*


A 2:08 B 2:59


C 3:22 D 5:23


E 6:48 F 7:56


G 8:31 H 9:34

Plate 21a. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

I 10:45

J 11:26

K 12:30

L 14:29

M 15:37

N 16:48

O 17:10

P 18:15

Plate 21b. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

Q 19:45

R 20:42

S 21:55

T 25:22

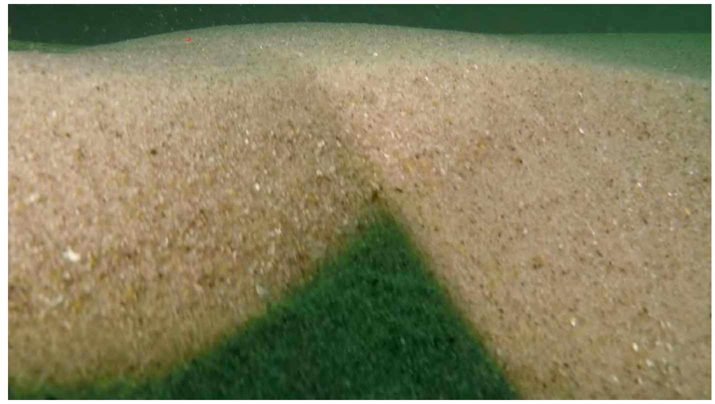
U 28:48

V 32:00

W 33:46

X 35:30

Plate 21c. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

A 1:26 | B 2:38

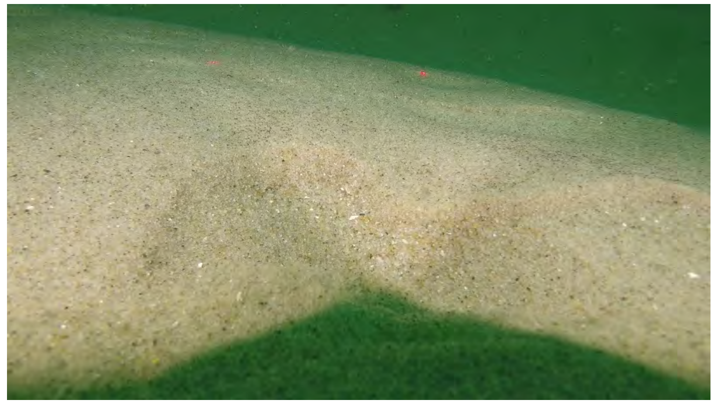

C 3:06 | D 3:57


E 5:02 | F 5:44


G 6:58 | H 8:20

Plate 22a. Transect VS-22 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring trace *Hydrozoa* and *Didemnum* in troughs in the pebble/granule substrate of the sand wave troughs at 50 ft MLLW. Associated taxa: Fish – Trace Adult and Juvenile *Centropristes;* Mobile Arthopods – *Pagurus,* and *Ovalipes*

I 10:03



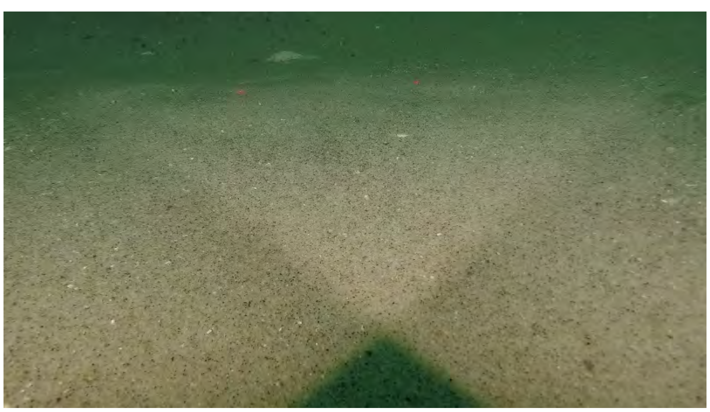
J 11:34

K 14:31

L 16:48

M 19:42

N 20:53



O 22:52

P 25:51

Plate 22b. Transect VS-22 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring trace *Hydrozoa* and *Didemnum* in troughs in the pebble/granule substrate of the sand wave troughs at 50 ft MLLW. Associated taxa: Fish – Trace Adult and Juvenile *Centropristes;* Mobile Arthopods – *Pagurus,* and *Ovalipes*

A 1:25

B 3:58

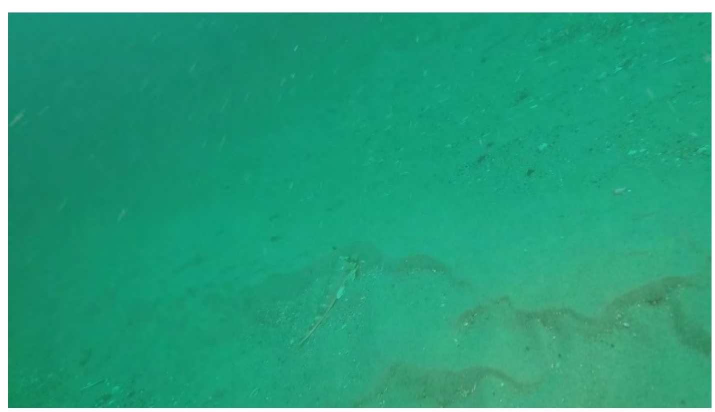
C 6:04

D 6:49

E 8:52

F 10:51

G 11:37



H 13:04

Plate 23a. Transect VS-23 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Crepidul*a and trace *Hydrozoa Codium* and *Sargassum* in troughs of the pebble/granule substrate of the sand wave troughs at 38 ft MLLW. Associated taxa: Fish **-** Sparse *Prionotus*, and trace Juvenile *Centropristes*; Mobile Arthopods - *Limulus*, *Pagurus*, and *Loligo*

I 13:36

J 16:03

K 19:45

L 20:29

M 22:29

N 24:55

O 26:05

P 27:14

Plate 23b. Transect VS-23 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Crepidul*a and trace *Hydrozoa Codium* and *Sargassum* in troughs of the pebble/granule substrate of the sand wave troughs at 38 ft MLLW. Associated taxa: Fish **-** Sparse *Prionotus*, and trace Juvenile *Centropristes*; Mobile Arthopods - *Limulus*, *Pagurus*, and *Loligo*

A 1:17

B 2:11

C 3:21

D 7:21

E 9:31

F 11:46

G 14:39

H 15:29

Plate 24a. Transect VS-24 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Amoroucium*, Anachis and benthic Macroalage Tube Worms in the shell rubble troughs of the sand ripples at 45 ft MLLW. Associated taxa: Fish - trace *Prionotus* and Juvenile *Centropristes*; Mobile Arthopods - Pagurus

I 17:38

J 18:31

K 21:16

L 24:12

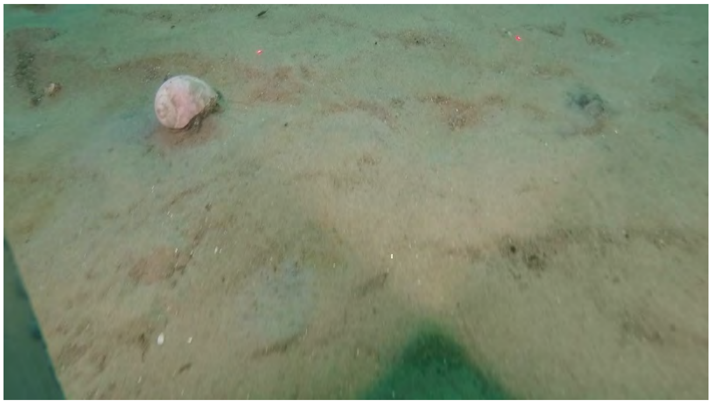
M 24:45

N 27:45

O 32:50

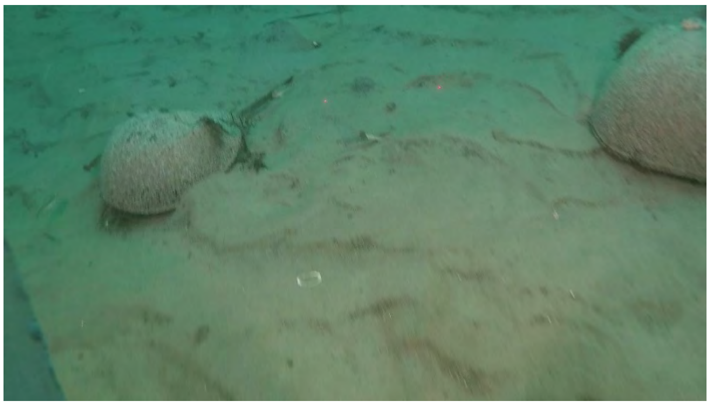
P 34:12

Plate 24b. Transect VS-24 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Amoroucium*, Anachis and benthic Macroalage Tube Worms in the shell rubble troughs of the sand ripples at 45 ft MLLW. Associated taxa: Fish - trace *Prionotus* and Juvenile *Centropristes*; Mobile Arthopods - Pagurus



A 2:13

B 4:36



C 5:34

D 8:29

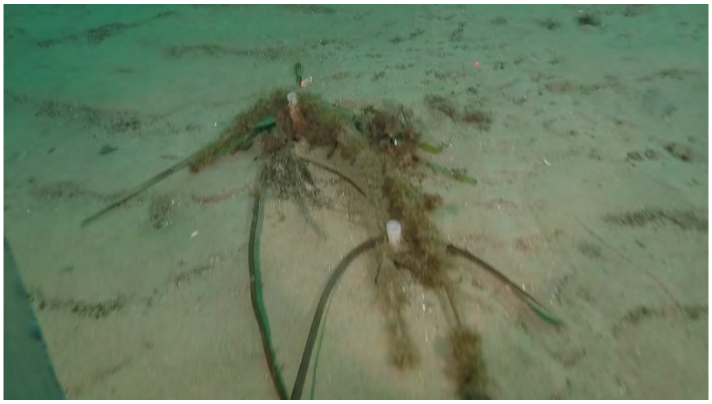
E 10:06

F 12:30

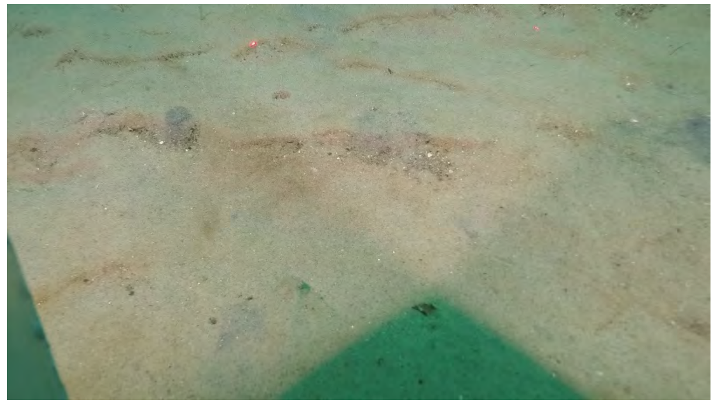
G 13:49

H 15:52

Plate 25a. Transect VS-25 – Biotic subclass: Inferred Fauna with co-occurring sparse Fecal Casts**,** and trace *Chaetopterus* in sand ripples at 34 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Prionotus*; Mobile Arthopods - *Limulus*, and *Pagarus*



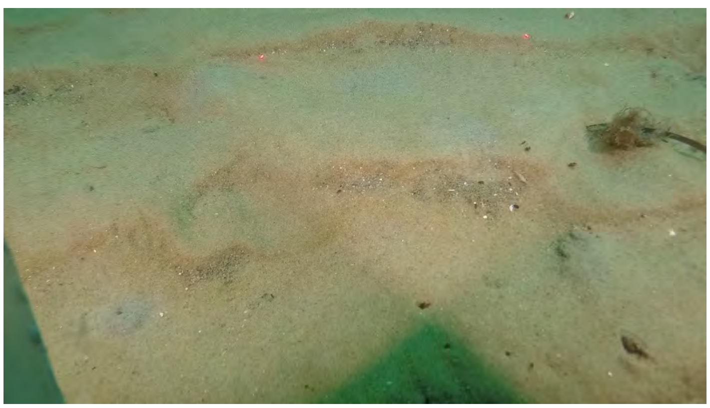
I 17:10



J 17:46

K 18:38

L 20:52



M 22:43

N 23:51

O 24:44

P 25:15

Plate 25b. Transect VS-25 – Biotic subclass: Inferred Fauna with co-occurring sparse Fecal Casts**,** and trace *Chaetopterus* in sand ripples at 34 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Prionotus*; Mobile Arthopods - *Limulus*, and *Pagarus*

A 1:33

B 2:05

C 2:57

D 4:33

E 5:30

F 6:31

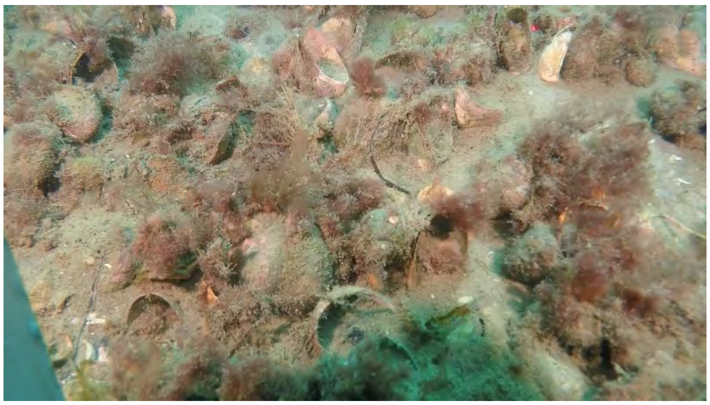
G 7:31

H 8:34

Plate 26a. Transect VS-26 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and trace *Codium, Sargassum*, and *Porphyra* on a *Crepidula* Reef at 23 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*, trace *Sphaeroides*; Mobile Arthopods - trace *Limulus*

I 9:30

J 9:57



K 11:01

L 11:42

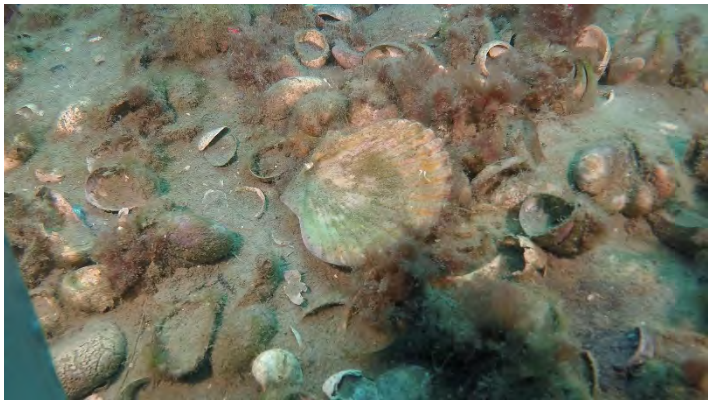
M 12:27

N 13:04

O 13:31

P 14:02

Plate 26b. Transect VS-26 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and trace *Codium, Sargassum*, and *Porphyra* on a *Crepidula* Reef at 23 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*, trace *Sphaeroides*; Mobile Arthopods - trace *Limulus*



A 1:31

B 1:59

C 3:14

D 4:39

E 6:26

F 8:51

G 11:19

H 12:16

Plate 27a. Transect VS-27 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula* and *Porphyra* on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods - Trace *Limulus*; Fish – Trace Juvenile *Centropristes*

A 2:01

B 3:39

C 5:15

D 6:57

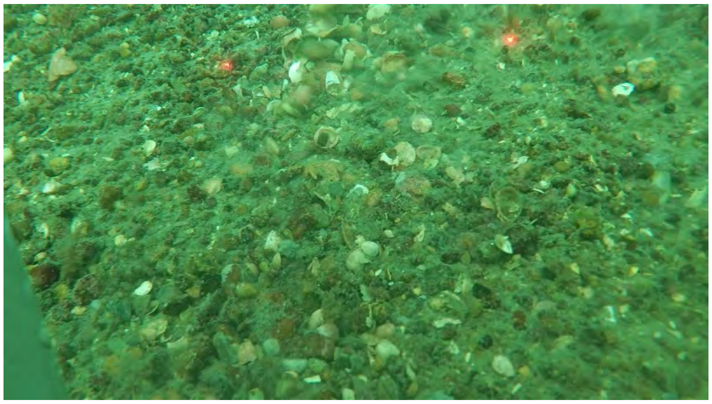
E 7:46

F 9:53

G 10:50

H 11:29

Plate 28a. Transect VS-28 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Sphaeroides*



A 2:07

B 3:13

C 5:01

D 5:57

E 6:19

F 8:07

G 8:43

H 14:08

Plate 29a. Transect CS-1 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 18 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 0:56

B 1:23

C 2:41

D 3:18

E 4:08

F 4:53

G 5:23

H 6:54

Plate 30a. Transect CS-2 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 20 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*


A 0:45 B 1:22


C 2:11 D 3:36


E 4:18 F 4:55


G 5:58 H 6:26

Plate 31a. Transect CS-3 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 18 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 3:01

B 4:44

C 5:20

D 5:39

E 6:40

F 7:49

G 8:07

H 9:36

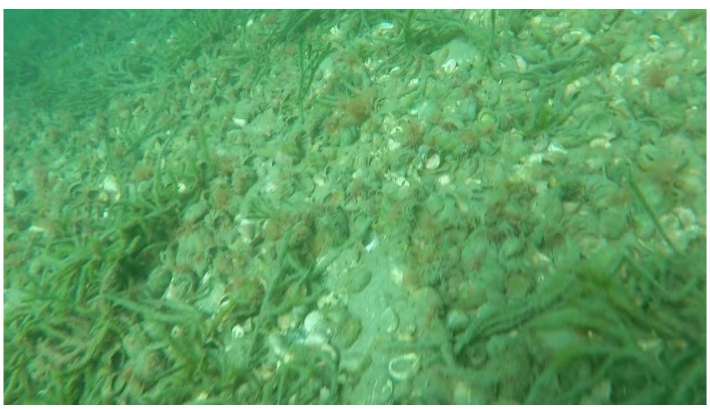
Plate 32a. Transect CS-4 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 16 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristis*

A 1:19

B 2:05

C 2:55

D 3:41



E 4:23

F 5:13

G 5:17

H 5:20

Plate 33a. Transect CS-5 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 15 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 0:47

B 1:02

C 2:48

D 3:10

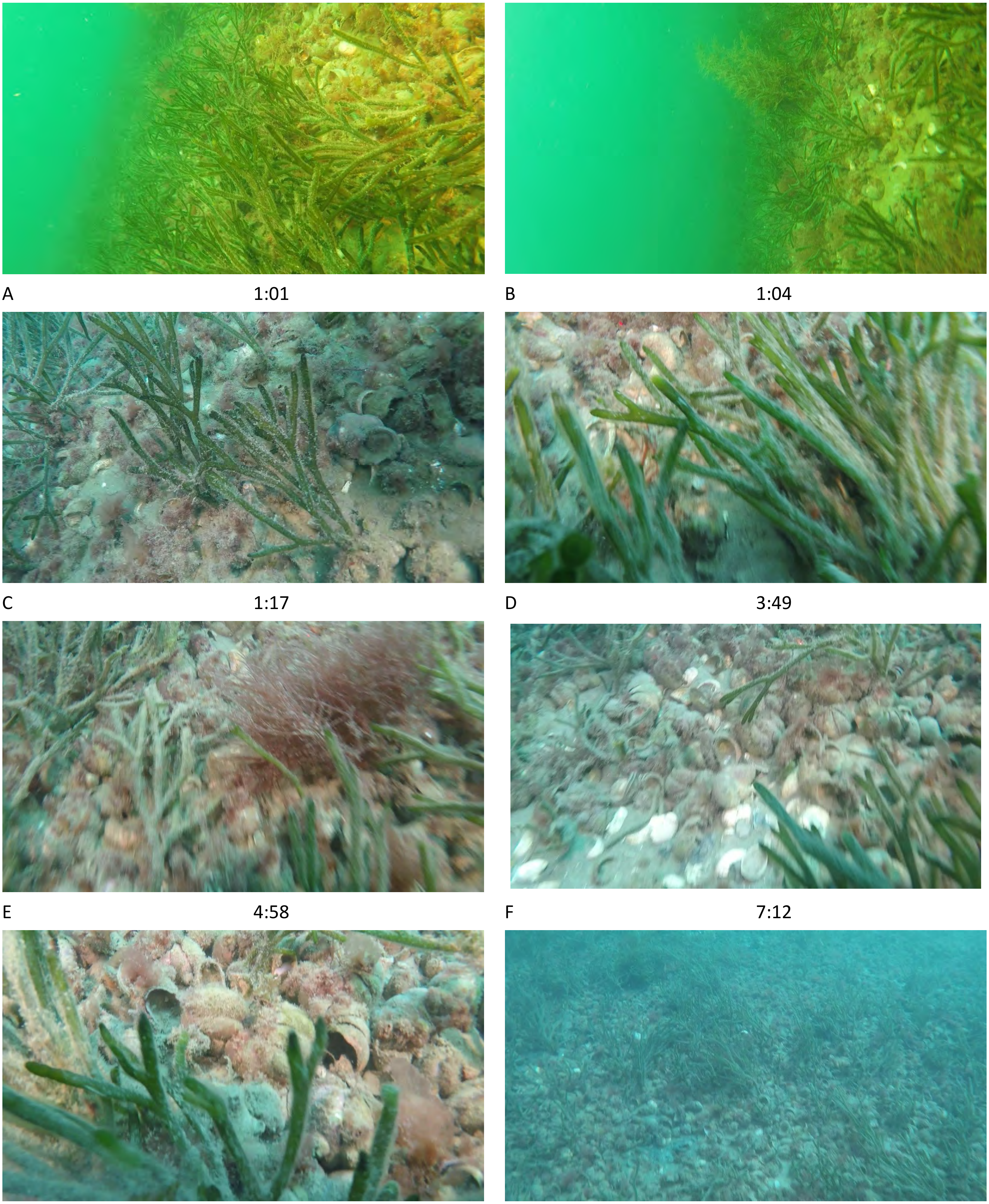
E 5:08

F 6:03

G 6:11

H 6:44

Plate 34a. Transect CS-6 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish – Trace Juvenile *Centropristes*



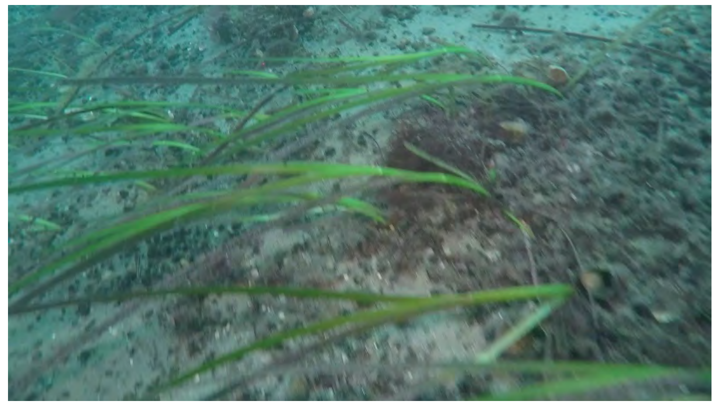
A 1:01
B 1:04
C 1:17
D 3:49
E 4:58
F 7:12
G 7:34
H 7:44

Plate 35a. Transect CS-7 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods – Fish – Trace Juvenile *Centropristes*

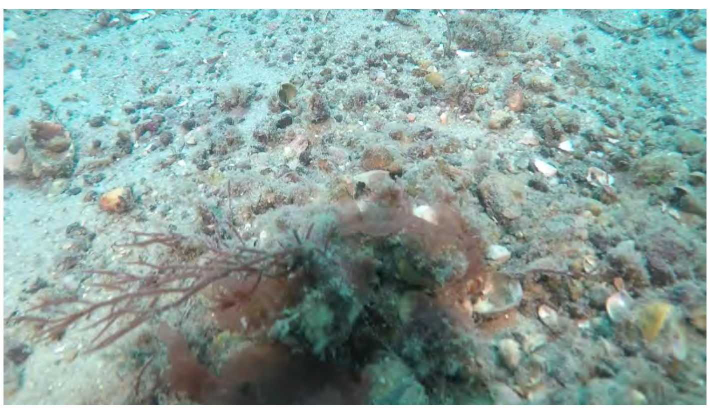
A 0:51

B 1:16

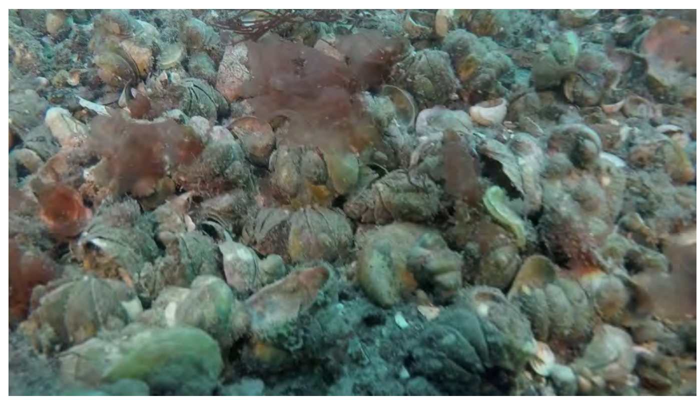
C 2:05



D 4:21



E 6:34



F 6:58

G 7:08

H 7:55

Plate 36a. Transect EG-1 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Porphyra, Sargassum* and Red Branching Algae on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring trace Arbacia and sparse *Porphyra, Codium, and* Branching Red Algae on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Mobile Arthopods – Trace Limulus; Fish - Tautoga

A 2:18

B 3:38

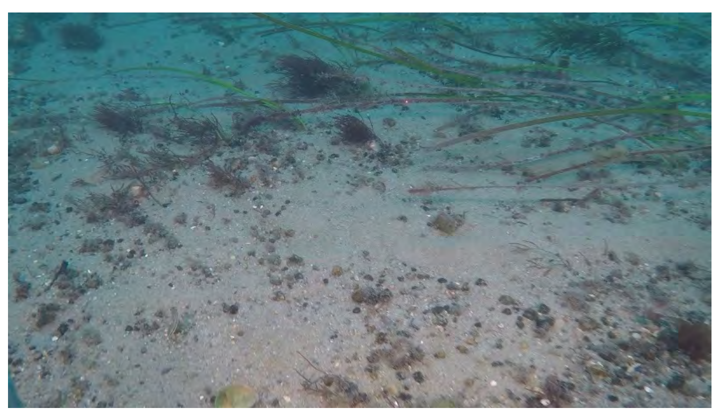
C 5:37

D 7:27

E 7:34

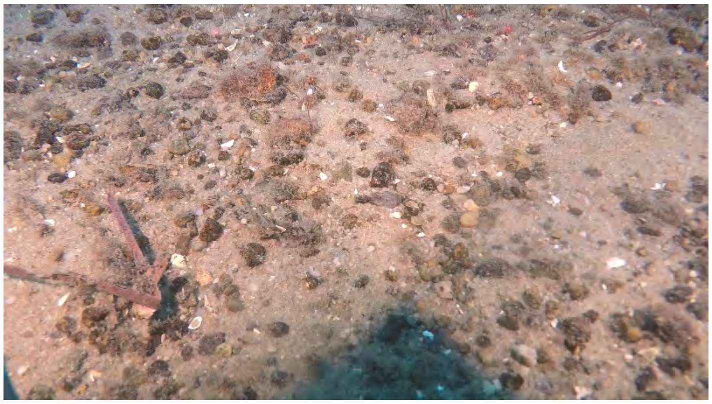
F 8:06

G 8:17



H 9:48

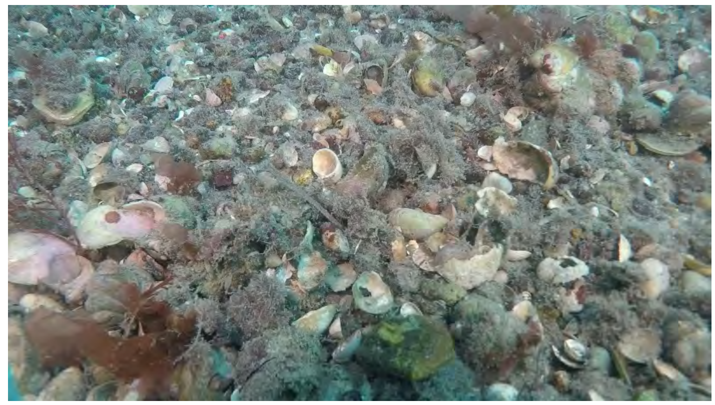
Plate 37a. Transect EG-2C – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Bittium*, Branching Red Algae and trace *Sargassum* on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Porphyra,* Branching Red Algae and trace *Ulva* on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*



I 10:42

J 11:54

K 13:18



L 15:02

M 17:38

N 18:50

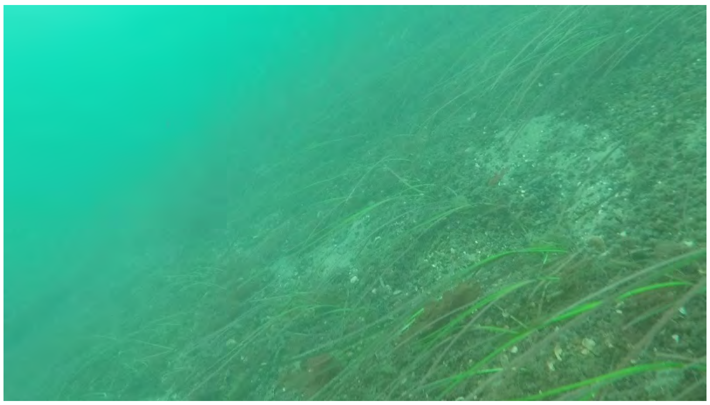
O 22:14

P 23:00

Plate 37b. Transect EG-2C – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Bittium*, Branching Red Algae and trace *Sargassum* on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Porphyra,* Branching Red Algae and trace *Ulva* on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 0:50

B 1:35



C 3:49

D 4:11

E 4:48

F 5:01

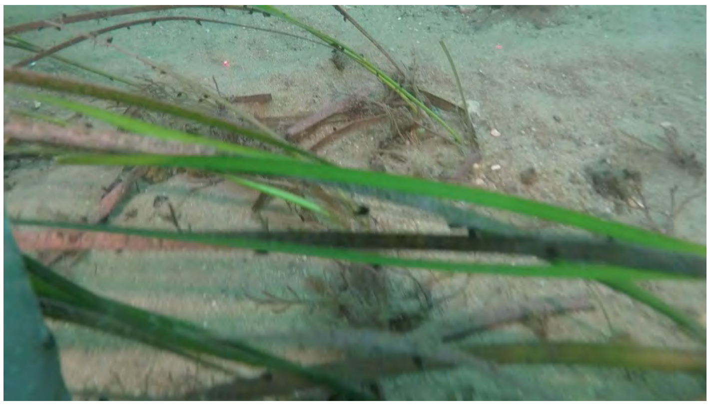
G 5:28

H 8:39

Plate 38a. Transect EG-3 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Porphyra*, Branching Red Algae and trace *Sargassum* on sandy gravel at 14 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring moderate *Bugula*, sparse *Porphyra,* and Branching Red Algae on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 0:53

B 2:31

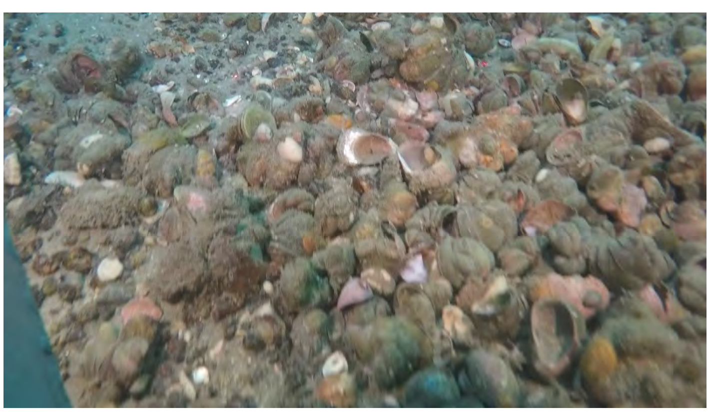


C 4:04

D 5:14

E 6:37

F 7:59



G 10:17

H 11:16

Plate 39a. Transect EG-4 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula* and sparse *Porphyra*, Branching Red Algae and trace *Sargassum* on sandy gravel at 14 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Bugula*, *Porphyra*, and Branching Red Algae in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 2:54

B 3:57

C 4:56

D 5:50

E 7:24

F 7:44

G 8:38

H 10:47

Plate 40a. Transect EG-5 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula;* sparse *Porphyr*a, *Ulva* and Branching Red Algae, and trace *Chaetopterus* on sandy gravel at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring moderate *Bugula*, and sparse *Porphyra*, and Branching Red Algae in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

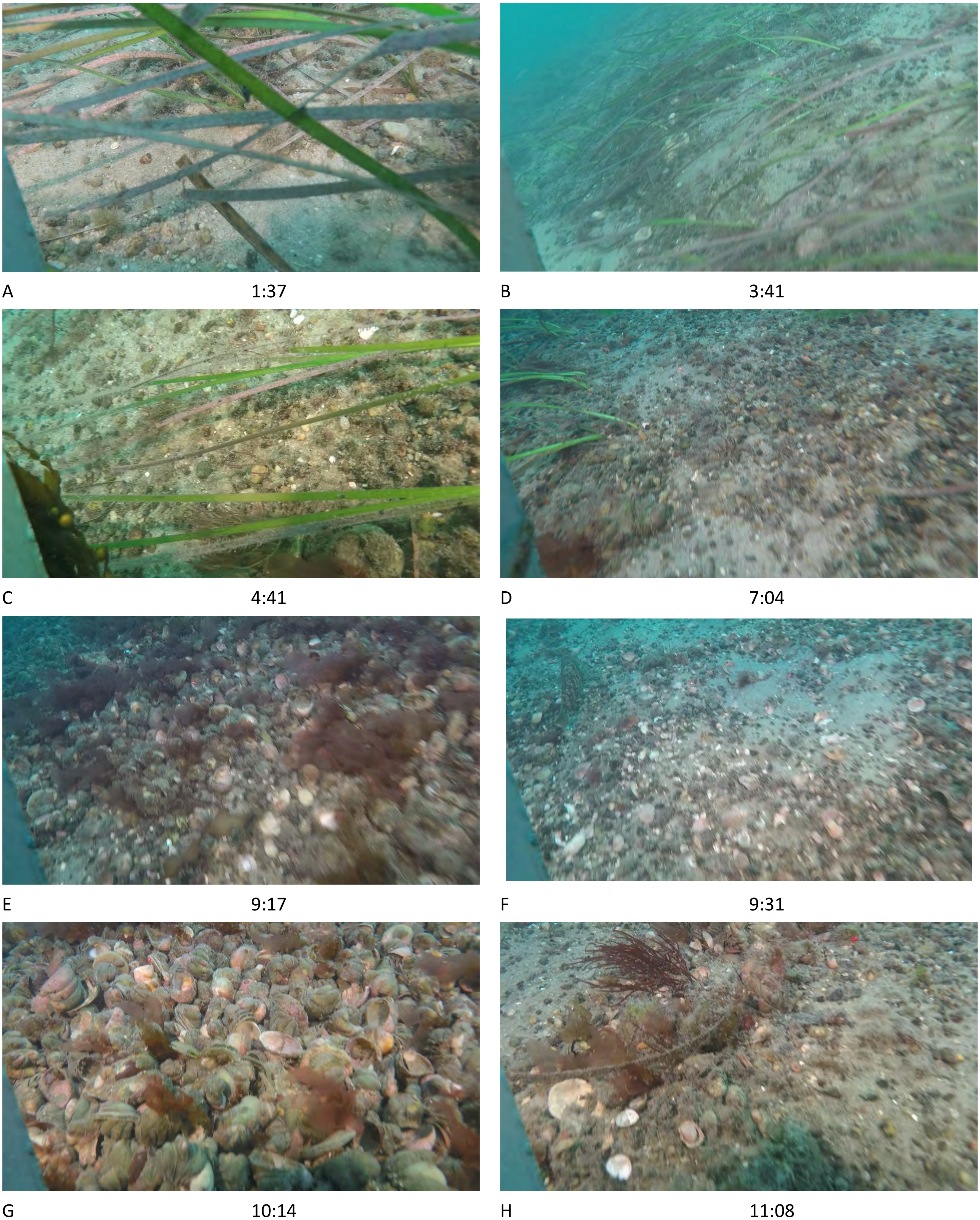


Plate 41a. Transect EG-6 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula, and* sparse *Porphyr*a, and Branching Red Algae on sandy gravel at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Bugula*, and *Porphyra*, and Branching Red Algae, and trace *Sargassum* in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes,* trace *Tautoga*

APPENDIX D

CMECS Representative Classification Units with Photographs

EG-2C-A. Seagrass Bed (*Zostera marina, Bittium*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Aquatic Vegetation Bed

Biotic Subclass: Aquatic Vascular Vegetation

Biotic Group: Seagrass Bed

Biotic Community: *Zostera marina*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Gravelly

Substrate Subgroup: Gravelly Sand

CS-3-F. Gastropod Reef (*Crepidula, Arabacia, Laminaria*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Reef Biota

Biotic Subclass: Mollusk Reef Biota

Biotic Group: Gastropod Reef

Biotic Community: *Crepidula* Reef

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Biogenic Substrate

Substrate Class: Shell Substrate

Substrate Subclass: Shell Reef Substrate

Substrate Group: *Crepidula* Reef Substrate

Transect VS-2-Q. Attached Sea Urchins (*Didemnum, Mytilus, Anomia, Bugula*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Sea Urchins

Biotic Community: Attached *Arbacia punculata*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup : Gravel Pavement (Pebble/Granule)

VS-5-F. Soft Sediment Fauna with associated taxa (*Loligo, Ovalipes, Prionotus*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Soft Sediment Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Sand (Waves)

Transect VS-6-G. **Attached Tunicates (*Didemnum*) on pebble/granules in sand wave troughs**

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Tunicates (in troughs)

Biotic Community: Attached *Didemnum* and *Amoroucium*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Rock Substrate

Substrate Subclass: Coarse Unconsolidated Substrate

Substrate Group: Gravel

Substrate Subgroup: Pebble/Granule

Transect VS-10-E.   Attached Sea Urchins (*Arbacia, Mytilus, Astrangia*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Sea Urchins

Biotic Community: Attached *Arbacia punculata*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Pebble/Granule)

VS-14-K. Diverse Colonizers (*Schizoporella, Amoroucium, Cliona, Astrangia, Mytilus, Arabacia, Hydroides*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Diverse Colonizers

Biotic Community: Mollusk/Sponge/Tunicate (Large Megafauna)

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

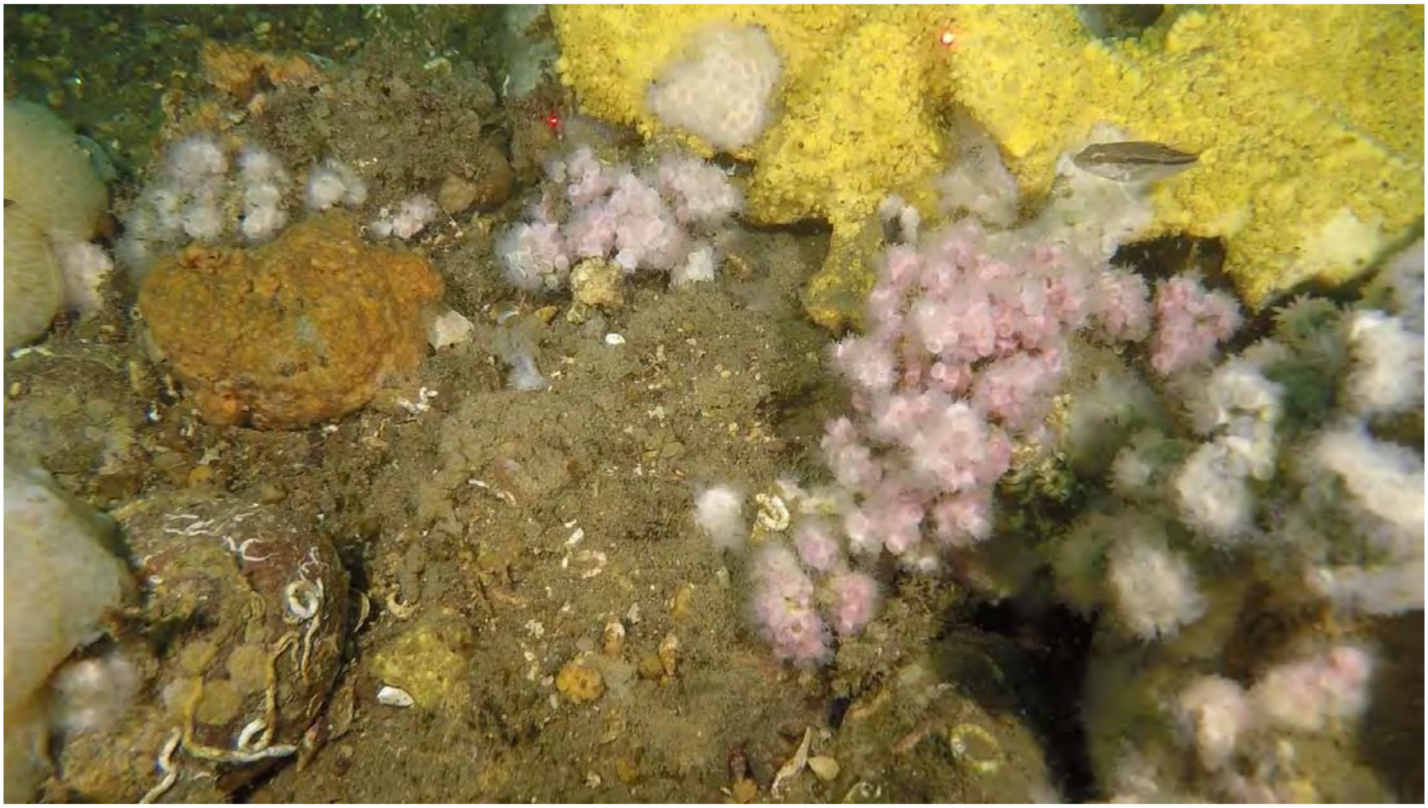
Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Cobble)



VS-19-N. Diverse Colonizers (*Cliona, Amoroucium, Astrangia, Schizoporella, Hydroides*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Diverse Colonizers

Biotic Community: Mollusk/Sponge/Tunicate

(Large Megafauna)

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Levels 1 & 2 Geoform: Sediment Wave Fields

Levels 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Boulder)

VS-23-O. Attached Fauna in Sand Wave Troughs (*Crepidula, Balanus, Branching Red Algae*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surafce Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Subclass: Coarse Unconsolidated Substrate

Substrate Group: Gravel

Substrate Subgroup: Pebble/Granule in a matrix of Fine Unconsolidated Substrate: Sand

VS-25-F. Inferred Fauna (Polychaete worm holes, fecal castings)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Inferred Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Sand/Sand Ripples

CS-4-D. Gastropod Reef/Leathery Leafy Algal Bed (*Crepidula, Codium*, Juvenile *Centropritus*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Reef Biota

Biotic Subclass: Mollusk Reef Biota

Biotic Group: Gastropod Reef/Leathery Leafy Algal Bed

Biotic Community: *Crepidula* Reef with co-occurring Codium Community

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Biogenic Substrate

Substrate Class: Shell Substrate

Substrate Subclass: Shell Reef Substate

Substrate Group: *Crepidula* Reef Substrate

Attachment H

Essential Fish Habitat Report

EVERSOURCE MARTHA'S VINEYARD RELIABILITY PROJECT

Essential Fish Habitat Assessment

Prepared by:

RPS

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Prepared for:

Epsilon Associates, LLC

21-P-215667
Eversource Martha's Vineyard Reliability Project
May 10, 2022

CONTENTS

Figures

Tables

1 INTRODUCTION

RPS was contracted by Epsilon Associates, Inc. to conduct an Essential Fish Habitat (EFH) Assessment in support of the Martha's Vineyard Reliability Project between Oak Bluffs and Falmouth, Massachusetts to determine impacts of cable installation (Figure 1-1).

The primary goals/objectives of the proposed project are the following:

- Install a 5th submarine cable to meet the energy demands of Martha's Vineyard, especially in summer months with increased residency and tourism;
- Improve the reliability and capacity of power to the island, eliminating the need for Eversource to run peaking diesel generators; and
- Use horizontal directional drilling to avoid sensitive intertidal and shallow subtidal habitat types.

This EFH Assessment is a required document as construction and installation activities have the potential to impact EFHs in Vineyard Sound, in and near Falmouth Harbor, and in and near Vineyard Haven Harbor. To fulfil the requirements of an EFH Assessment, Section 2 and 3 include the proposed project plan and a site habitat description. Section 4 discusses species of fish with EFH designations within the project area, as well as NOAA trust resources in the area. Section 5 provides an analysis of potential impacts to EFH from project activities such as hydroplowing and Horizontal Directional Drilling (HDD). Section 6 provides EFH determinations for the described impacts to habitat associated with the project.

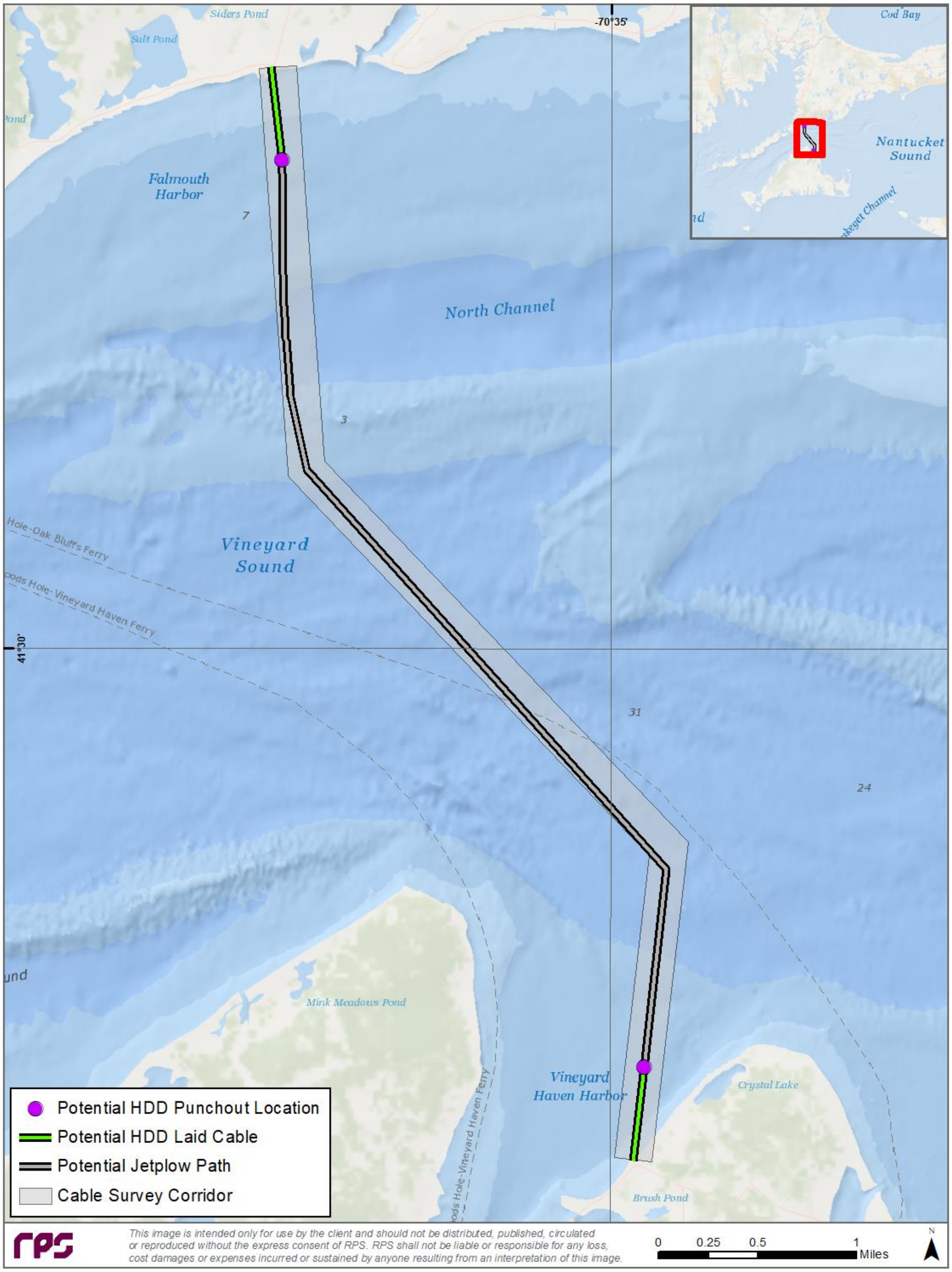

Figure 1-1. Aerial image of proposed Project Area**.**

The Magnuson-Stevens Act mandates that federal agencies conduct an EFH assessment for any activity that may adversely affect EFH of federally managed fish species. The Magnuson-Stevens Act was amended in 1996 by the U.S. Congress under the Sustainable Fisheries Act (SFA). The SFA recognized that many fisheries depend on marine, nearshore, and estuarine habitats for at least part of their lifecycles and introduced requirements to protect estuarine and marine ecosystems through identification and conservation of EFH for those species regulated under a federal fisheries management plan. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Included in the Magnuson-Stevens Act in 1996, 16 U.S.C. ch. 38 § 1801 et seq., the primary goal of EFH designation is to identify and protect important fish habitat from certain fishing activities or coastal and marine development. EFH is designated by National Oceanic and Atmospheric Administration's (NOAA) Fisheries and Regional Fishery Management Councils (P.L. 104-297). EFH is typically assigned by egg, larvae, juvenile and adult life stages and designated as waters or as substrates. NOAA Fisheries defines waters and substrate as (50 C.F.R. § 600.10):

- Waters—Aquatic areas and their associated physical, chemical, and biological properties that are used by fish and, where appropriate, may include aquatic areas historically used by fish.
- Substrate—Sediments, hard bottoms, structures underlying the waters, and associated biological communities.

Additionally, the Regional Fishery Management Councils identify Habitat Areas of Particular Concern (HAPCs) within their Fishery Management Plans (FMPs). HAPCs are discrete subsets of EFH that serve extremely important ecological functions or are especially vulnerable to degradation.

2 PROJECT PLAN

The proposed submarine cable connects Oak Bluffs, Martha's Vineyard to Falmouth, MA, traversing Vineyard Haven Harbor, Vineyard Sound, and Falmouth Harbor. Installation would primarily be conducted through hydroplowing, with Horizontal Directional Drilling (HDD) used to avoid sensitive habitats near landing sites, including eelgrass beds near the Falmouth and boulder fields near Oak Bluffs. A gravity cell will be used at the HDD punchout site and an HDD inadvertent release plan has been prepared. It is estimated that marine project installation will last 20 working days and involve one tug boat and possibly a barge, two support boats, and two 550 HP diesel pumps to run the hydroplow in addition to other minor support equipment.

3 SITE HABITAT DESCRIPTION

The proposed project is to install a 5th submarine cable from Falmouth, MA to Oak Bluffs on East Chop, Martha's Vineyard, MA. The proposed cable route runs approximately 6.1 miles following nearly the same route as the #99 submarine cable (Figure 1-1). The landfall of this cable on Martha's Vineyard is at the end of Eastville Avenue within Vineyard Haven Harbor, and at the Town of Falmouth Beach Department parking lot along Surf Drive.

A benthic survey, "Geophysical and Underwater Video Surveys Sediment Sampling Eversource 5th Cable Vineyard Sound, Falmouth and Vineyard Haven, MA", was conducted by CR Environmental between August and November 2021 (CR Environmental Inc. 2022). CR Environmental conducted sonar surveys, physical sediment collection, and towed underwater camera surveys to characterize benthic habitats occurring in the proposed cable corridor. Mean Lower Low Water (MLLW) within the cable corridor ranged from approximately -2.2 m to -31.0 m MLLW (-7.2 ft to -102 ft MLLW; Figure 3-1). According to bathymetry data, sand ripples, sand waves, sandy gravel waves, boulder fields, and portions of utility crossings occur within the corridor (Figure 3-1). In general, depth increases with distance from shore, except for a shallow, sandy shoal that rises to 6 m MLLW directly after the turn in the cable route approaching Falmouth.

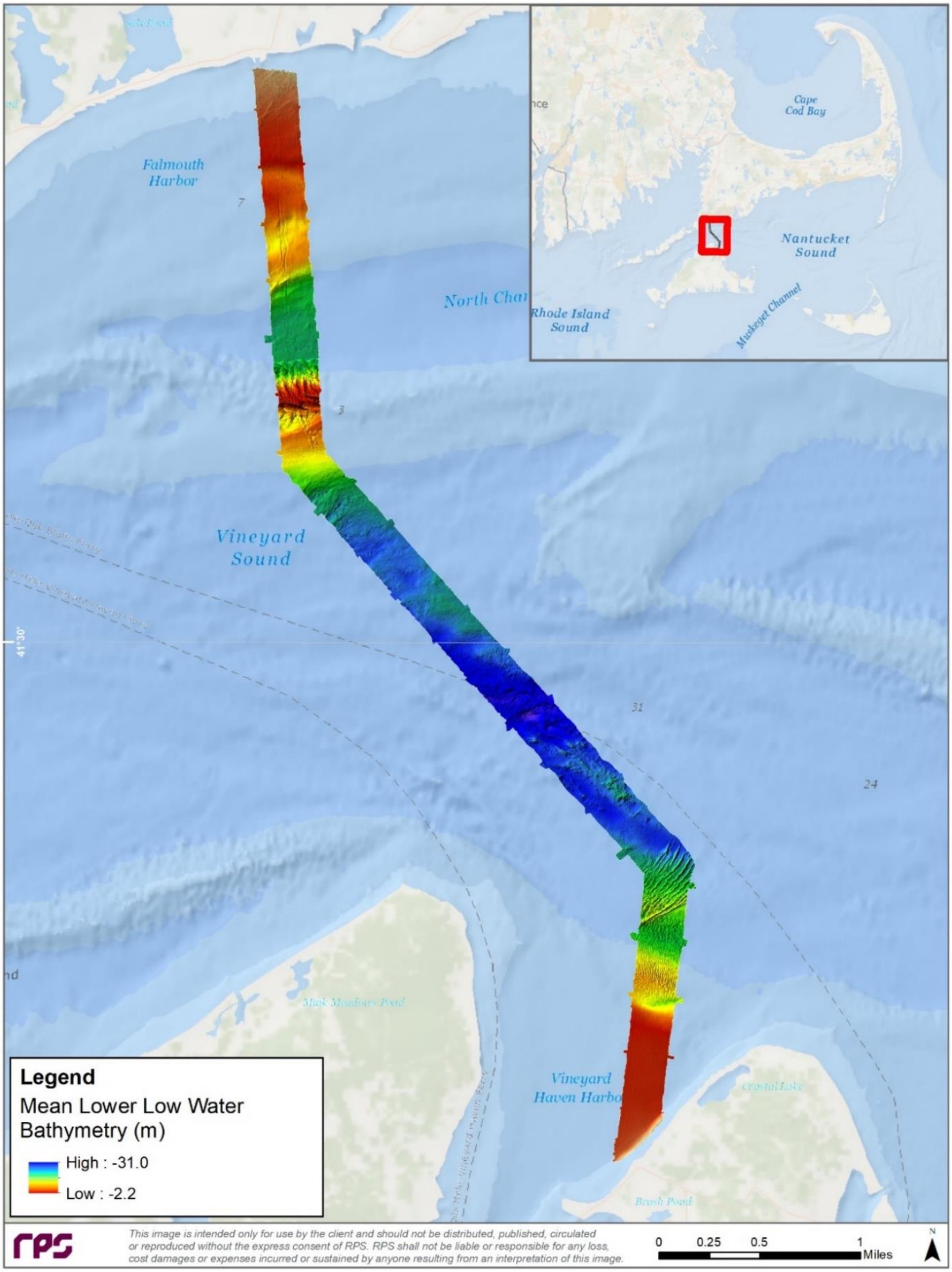

Figure 3-1. Mean lower low water bathymetry (m) collected by CR Environmental during the 2021 bathymetric and geophysical surveys (CR Environmental Inc. 2022).

3.1 Substrate

The results of sonar and backscatter data collected during the 2021 survey indicate a broad extent of hard bottom complex habitat in the cable corridor. Primary transects, running with the corridor, were spaced 15 m apart, lines running perpendicular to the corridor were spaced 470 m apart. Results show sand ripples and wave, sandy gravel waves, boulder fields, portions of surveyed area comprised of coarse sand and gravel, and cobble and boulder areas covered with epibionts.

Physical sediment samples were taken at thirty-one stations with either a vibracore or a Van Veen grab. Coastal and Marine Ecological Classifications Standards (CMECS; FGDC 2012) were used to characterize the benthic environment. Results from the cores and grab samples show a coarse substrate; nineteen of the twenty-four successfully recovered grabs had over 5% gravel and average percent gravel was 33% (Figure 3-2; CR Environmental Inc. 2022). Sites VS-9 through 23 occurred in a ~5 km stretch of cable corridor, in which stations were either failed due to insufficient sediment recovery (few pieces of cobble with biotic components), due to habitats dominated by grain-sizes of cobble or larger, or were classified as sandy gravel (30% to <80% gravel composition), demonstrating the coarse unconsolidated composition of the cable corridor in this area.

Forty-one transects were surveyed with a towed underwater video camera to further characterize benthic habitats for CMECS classification. The majority of transects were 1000 ft in length and spaced approximately 1,000 ft apart along the length of the 5th submarine cable survey corridor. Additional video transects were also surveyed in a grid pattern around Falmouth Harbor and Vineyard Haven Harbor in order to capture sensitive habitats near proposed landing sites. Nineteen of the forty-one transects were classified as coarse unconsolidated substrate, dominated by gravel substrates with particle sizes ranging from pebble/granule to boulder (Figure 3-2). Gravel pavement, which includes substrates containing ≥ 80% gravel of various grain sizes (boulder/cobble/pebble/granule), was the dominant habitat type within Vineyard Sound. Twelve transects were classified as fine unconsolidated substrate composed of sand waves and ripples interspersed with sandy gravel and gravelly sand substrates, often collecting in troughs. Ten transects were classified with a substrate of biogenic origin, *Crepidula* reefs, and were observed in both Falmouth and Vineyard Haven Harbors.

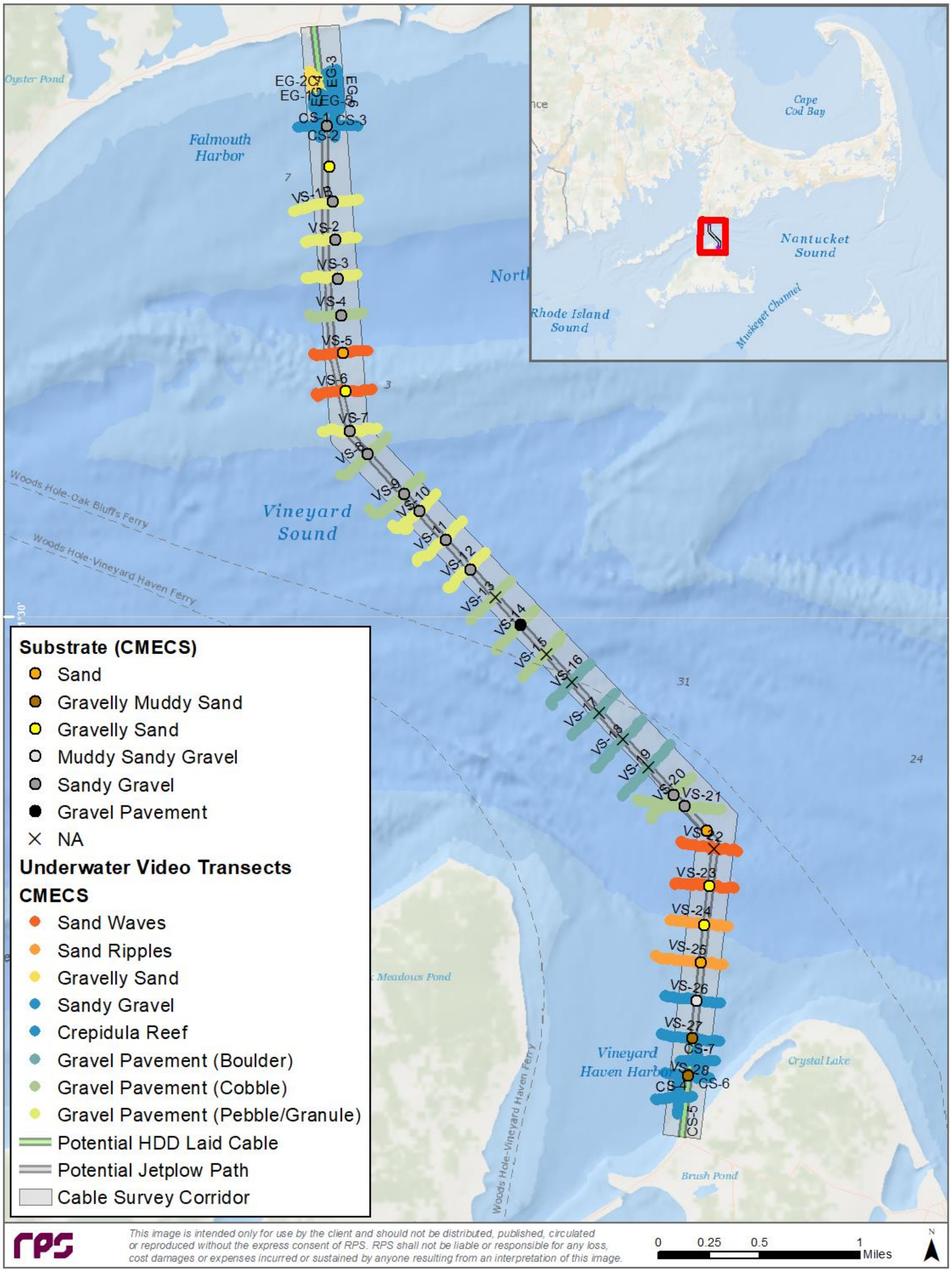

Figure 3-2. Underwater video transects, benthic grab, and vibracore sample locations within the 5th submarine cable survey corridor. Samples are color-coded by CMECS substrate classification.

The Nature Conservancy (TNC) modelled soft sediments by grain size according to the Wentworth (1922) scale at a resolution of 500 meters (m), which can be helpful in assessing substrate types that occur on a regional scale. Point-based data were interpolated using kriging tools from the USGS usSEABED: Atlantic Coast Offshore Surficial Sediment Data Series 118 and the USGS East Coast Sediment Texture Database (2005). Although there is some disagreement in surveyed (CR Environmental Inc. 2022) versus modeled (TNC; Anderson et al. 2010) substrate type, results from both datasets indicate complex habitats (>5% gravel) are widespread and common along the proposed cable and larger Vineyard Sound region (Figure 3-3). Complex habitat is particularly important for many EFH species and is considered HAPC for juvenile Atlantic cod. Specifically, these areas include all habitats that contain structurally complex areas, including eelgrass, macroalgae, mixed sand and gravel, and rocky habitats (NEFMC 2017).

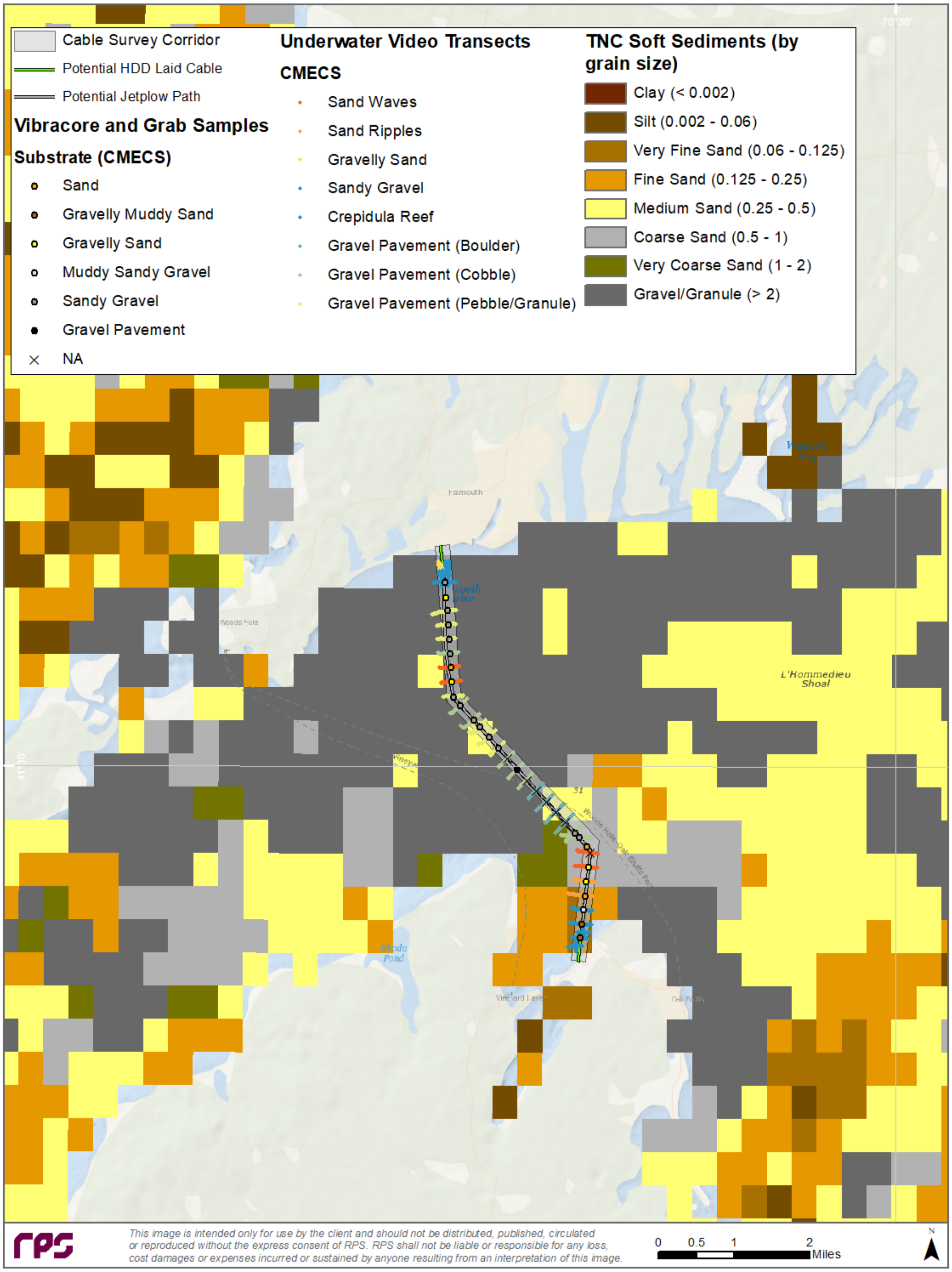

Figure 3-3. Modeled soft sediments by grain size in the Project area (mm, TNC; Anderson et al. 2010) and benthic survey results within the 5th submarine cable survey corridor (CR Environmental Inc. 2022).

3.2 Eelgrass

The dominant marine Submerged Aquatic Vegetation (SAV) along the northeastern U.S. coast is eelgrass (*Zostera marina*). Eelgrass beds are an important coastal habitat that provides valuable ecosystem services as a nursery for the larvae and juveniles of many commercially important fishes. Habitats with weaker resilience are in turn more sensitive, and with eelgrass growing in light limited conditions and having a slow growth rate, they are often considered one of the more sensitive marine habitats (Taormina et al. 2018). This slow growth rate and dense woody rhizome system means that recovery of eelgrass beds may take several years. Increasing coastal development occurs primarily in nearshore waters, and this directly overlaps with the optimal habitat of eelgrass. In 1996, the federal government designated eelgrass as EFH for numerous species and HAPC for summer flounder under the Magnuson-Stevens Fishery Conservation and Management Act.

For this project, a desktop study and an initial site investigation survey were conducted to determine the presence or absence and extent of eelgrass within the project footprint. Eelgrass beds have been mapped locally by the Massachusetts Department of Environmental Protection (MA DEP) and documented since 1995 (Figure 3-4, MassGIS 2022). An eelgrass bed has been established along the shore of Falmouth from the earliest sampling in 1995 to present and has been steadily declining over time according to each sampling event. The most recent mapping, conducted in 2019-2022, shows that this eelgrass bed stretches to the west from Nobska Point to the entrance of Great Pond, to the east. This eelgrass bed is almost exclusively in waters shallower than the 10-m depth contour, extending from nearshore waters out about 600 m. Near the Martha's Vineyard landing location, small patches of eelgrass have been observed throughout Vineyard Sound Harbor. However, none of these patches appear to overlap with the proposed cable footprint, with the closest bed occurring near the entrance to Lagoon Pond, protected by a rock jetty along Eastville Point Beach. The 2021 benthic survey confirmed that no eelgrass was present in the survey corridor near Martha's Vineyard.

Additional underwater video sampling was conducted during the 2021 benthic survey to confirm the extent of the eelgrass bed near Falmouth Harbor. Backscatter data suggests the eelgrass bed may extend as much as 1,312 ft from shore, originating in Falmouth Harbor. The MA DEP eelgrass map data indicates that the eelgrass extended up to 200-300 feet further than 1,312 ft offshore historically. Surveying consisted of six, 1,000 ft transects (EC-1 through EC-6) positioned from north to south within the survey corridor. Sparse to moderate eelgrass was observed across these six transects, growing in gravelly sand and sandy gravel, in depths less than 17 feet (Figure 3-5; Figure 3-6). Survey results confirmed that this eelgrass bed occurs inshore of the expected punch-out area of HDD, approximately 2,000 feet from shore, and would not be directly disturbed during cable installation activities.

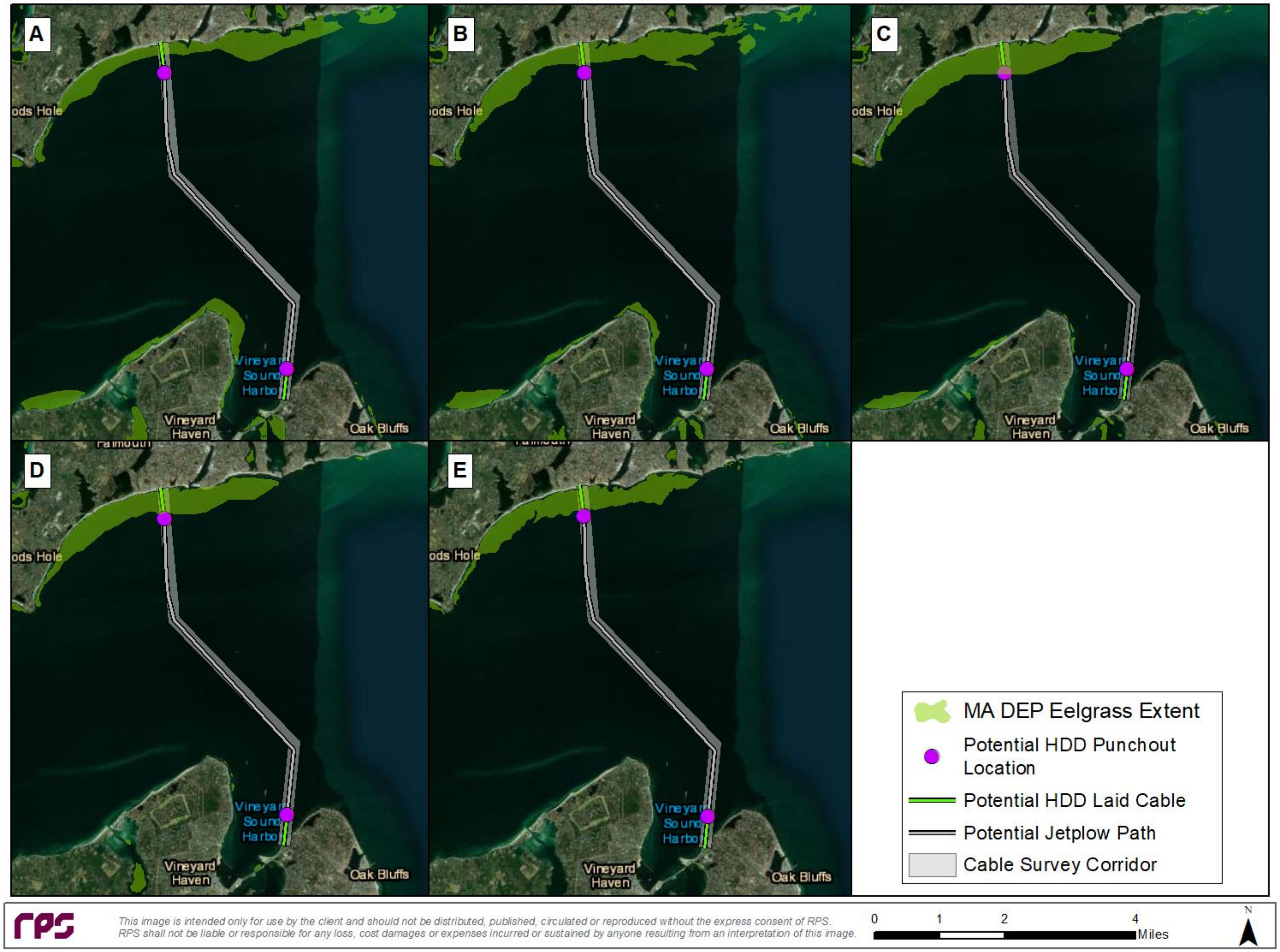

Figure 3-4. MA DEP seagrass maps from (a) 1995 (b) 2001 (c) 2010-2013 (d) 2015-2017 and (e) 2019-2022. All seagrass in green shaded areas is eelgrass (*Zostera marina*).

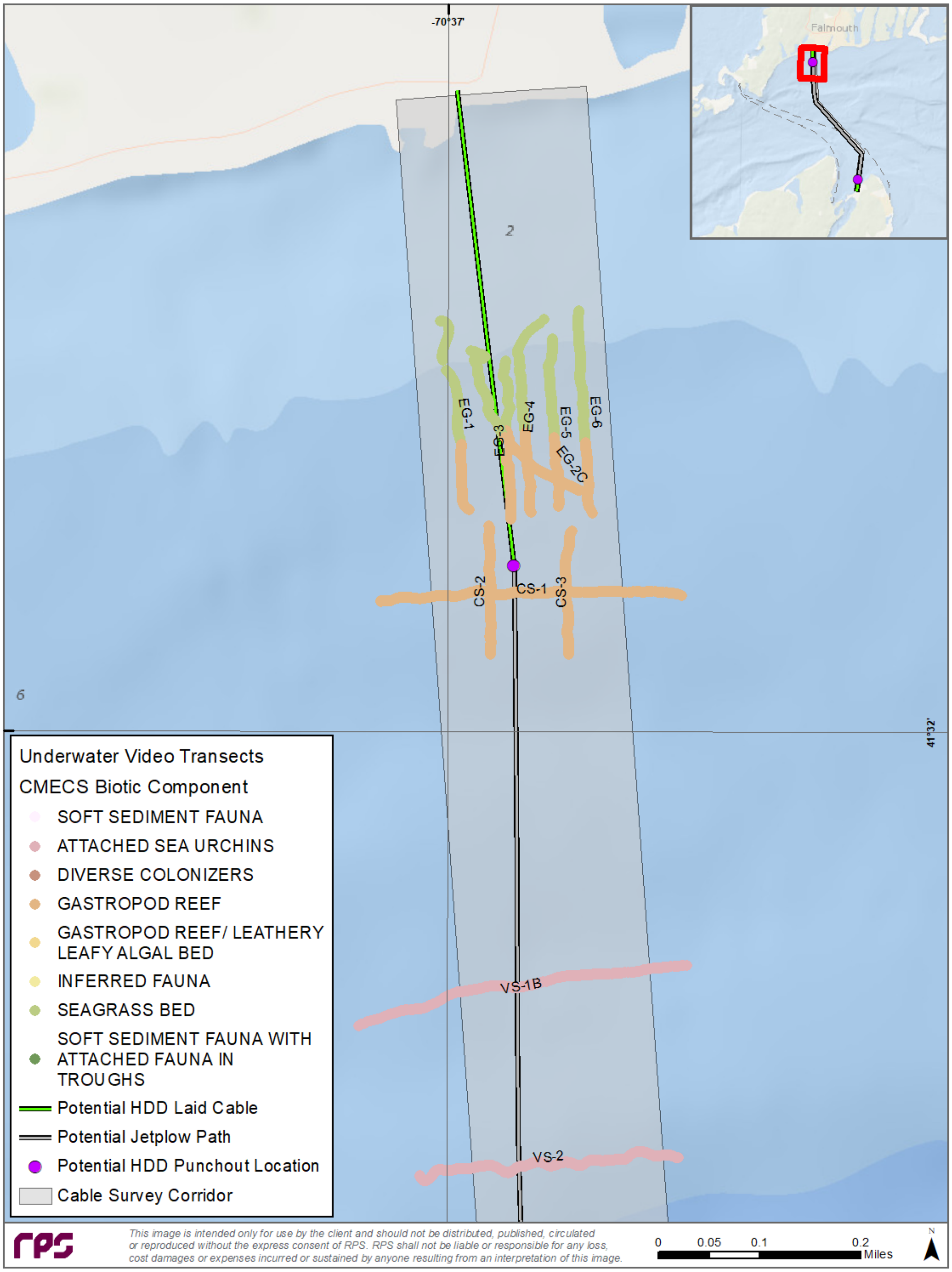

Figure 3-5. Eelgrass transects in the Project Area conducted by CR Environmental Inc. during the 2021 benthic survey.

Figure 3-6. Image of typical eelgrass bed captured in 2021 benthic survey (CR Environmental Inc. 2022).

3.3 Biotic Components

In addition to CMECS substrate classifications, CMECS biotic component classifications were also determined (CR Environmental Inc. 2022). Eight primary biotic groups were observed during the survey. These biotic groups are comprised of various sessile organisms, algae, and submerged aquatic vegetation that form the living habitat that larger mobile megafauna (defined by CMECS as associated taxa) use. The eight biotic groups include attached sea urchins, diverse colonizers, gastropod reef, seagrass bed, inferred fauna, and soft-sediment fauna (Figure 3-8, Table 3-1). Representative images for each biotic group are shown in Figure 3-8 through Figure 3-15.

The sea urchins and diverse colonizers, which includes mollusks, sponges, and tunicates primarily occurred in habitats dominated by gravel substrate types (Figure 3-8 and Figure 3-9). This layered complexity primarily attracted black sea bass (as shown in CR Environmental Inc. 2022, Appendix D for transect VS-19-N) but also other structured oriented species such as Cunner and Tautog. Similar habitat types were seen in over 50% of the transects, in which bryozoans (*Bugula* spp., *Schizoporella unicornis*) northern star corals (*Astrangia poculata*), bread crumb sponge (*Halichondria panicea*), sulfur sponge (*cliona celata*), blue mussels (*Mytilus edulis*), and the tunicates sand sponge (*Amaroucium pellucidum*) and sea pork (*Amarocium stellatum*) formed habitat types on top of gravel substrates, creating sufficient vertical relief to attract juvenile and adult black sea bass in over 85% of transects (Table 3-1). These areas had the greatest species richness, ranging from 15 to 18 species of fish and invertebrates and occurred in the central portion of the survey corridor through Vineyard Sound.

Overall, 29 invertebrates, six fish species, 15 algal species, and eelgrass were observed in the video transects. Of the 29 invertebrates observed, eight were of commercial importance and are all reflected further in Section 4. Of the six fish species observed five are of principal recreational or commercial importance.

MAKING COMPLEX EASY

Table 3-1. Summary CMECS substrate and biotic classifications of underwater video transects collected during the 2021 benthic survey (CR Environmental Inc. 2022).

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	Pebble/Granule in matrix Sandy Gravel	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods - Trace (*Pagurus*)
VS-2	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Trace - Tunicates (*Didemnum*), (*Amaroucium*); Moderate Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods Trace (*Limulus*) Fish - Trace (*Prionotus*)
VS-3	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*);and Trace Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods - Trace (Pagurus) Fish - Trace (Juvenile *Centropritis*)
VS-4	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Sponges (*Cliona*) and Tunicates (*Amaroucium*); Trace - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - Moderate (Juvenile *Centropritis*), Trace (Adult *Centropritis*)
VS-5	Sand (Waves)	Soft Sediment Fauna			Fish - Trace (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	Sand (Waves) Pebble/Granule in troughs	Soft Sediment Fauna / Attached Fauna (in troughs)	Attached Sparse (Didemnum), Trace (Amaroucium) in troughs	Trace - Mollusks (*Mytilus*) in troughs; Hydroid (Hydrozoa)	Mobile Arthopods - Trace (*Pagurus*)
VS-7	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (Lithothamion)	Fish - Trace (Juvenile *Centropritis*)
VS-8	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Sparse - Tunicates (*Amaroucium*/*Didendum*), Sponges (Cliona), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - Trace (Juvenile *Centropritis*)
VS-9	Gravel Pavement (Cobble; Pebble/Granule)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Sponges (Cliona) and Mollusks (*Mytilis*); Sparse- Tunicates (*Amaroucium*/*Didemnum*) and Echinoderms (*Arbacia*); Trace - Coral (*Astrangia*)	Fish - Trace (Adult *Centropritis*)
VS-10	Gravel Pavement (Pebble/Granule; Cobble)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Mollusks (*Mytilis*) (*Anachis*) Trace - Coral (*Astrangia*)	Fish - Trace (Juvenile *Centropritis*)
VS-11	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	Moderate - Tunicates (*Didemnum*); Sparse - Mollusks (*Mytilis*), and Trace - Bryozoan (*Schizoporella*)	Mobile Arthopods - Trace (Pagurus) Fish - Sparse (Juvenile *Centropritis*)
VS-12	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	Sparse - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and Trace Coral (*Astrangia*); Sponge (*Cliona*),	Fish - Trace (Juvenile *Centropritis*)
VS-13	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Echinoderms (*Arbacia*); Sparse - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); Trace - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - Trace (Pagurus); Fish - Sparse (Juvenile *Centropritis*) Trace (Spaeroides)
VS-14	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); Sparse - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (Arbacia); Trace - Coral (*Astrangia*)	Mobile Arthopods - Trace (Pagurus) (Pycnogonida) Fish - Moderate (Juvenile *Centropritis*) Trace (Spaeroides) (Stenotomus)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-15	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), (*Cliona*), and (*Halichondria*); Sparse - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace -Tunicates (*Didemnum*)	Fish - Dense (Juvenile *Centropritis*) Trace (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Cliona*); Sparse - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); Trace - Echinoderms (*Arbacia*)	Mobile Arthopods - Trace (*Pagurus*) (Pycnogonida); Fish - Dense (Juvenile *Centropritis*), Trace (Tautoga) (*Tautogolabrus*)
VS-17	Gravel Pavement (Boulder)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Cliona*), and Coral (*Astrangia*) ; Sparse - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - Dense (Juvenile *Centropritis*), Trace (Tautoga); Mobile Arthropods - (Pycnogonida)
VS-18	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and Sponge (*Cliona*); Sparse- Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Coral (*Astrangia*); Trace Tunicates (*Didemnum*)	Fish - Dense (Juvenile *Centropritis*); Trace (Adult *Centropritis*), (Spaeroides), (*Tautogolabrus*); Mobile Arthropods - Trace (Pycnogonida)
VS-19	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; Sparse - Bryozoan (*Schizoporella*), Sponge (Cliona), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace - Tunicates (*Didemnum*)	Fish - Moderate (Juvenile *Centropritis*), Trace (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace - Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthopods Trace (*Limulus*) (Pycnogonida); Fish - Sparse (Juvenile *Centropritis*), Trace (*Tautoga*)
VS-21	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate -Tunicates (*Amaroucium/Didendum*); Sparse - Bryozoan (*Schizoporella*), Sponge (*Halichondria*) and Mollusks (*Anachis*); Trace - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - Trace (*Pagurus*) Fish - Moderate (Juvenile *Centropritis*)
VS-22	Sand (Waves); Pebble/Granule in troughs	Soft Sediment Fauna; Attached Fauna (in troughs)*		Trace- Hydroid (Hydrozoa); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - Trace (Juvenile *Centropritis*) (Adult *Centropritis*); Mobile Arthropods - (*Pagurus*) (Ovalipes)
VS-23	Sand (Waves); Pebble/Granule in troughs	Soft Sediment Fauna; Attached Fauna (in troughs)*		Sparse Attached (*Crepidula*); Trace - Hydroid (Hydrozoa); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish - Sparse (*Prionotus*), Trace (Juvenile *Centropritis*); Mobile Arthopods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	Sand (Ripples); Shell Rubble in troughs	Soft Sediment Fauna; Attached Fauna in troughs*		Sparse -Attached Tunicate (*Amoroucium*); Mollusks (*Anachis*); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - Trace (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (*Pagurus*)
VS-25	Sand (Ripples)	Inferred Fauna*		Sparse fecal casts, Trace Polychaete (*Chaetopterus*)	Fish - Trace (Juvenile *Centropritis*) (Prionotus); Mobile Arthopods (Limulus) (Pagarus)
VS-26	*CrepidulaCrepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate - Bryozoan (*Bugula*); Trace - Leathery leafy algal bed (*Codium*)(*Sargassum*) (*Porphyra*)	Fish - Sparse (Juvenile Centropritis), Trace *Spaeroides*); Mobile Arthopods - Trace (*Limulus*)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-27	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - Trace (*Limulus*); Fish - Trace (Juvenile *Centropritis*)
VS-28	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*) (Spaeroides)
CS-1	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate - Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-2	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-3	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-4	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-5	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-6	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Mobile Arthopods - Trace (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
EG-1	Gravelly Sand	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) Bryozoan (*Bugula*) and Sparse Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae	Mobile Arthopods - Trace (*Limulus*); Fish - (*Tautoga*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Trace - Echinoderms (*Arbacia*); Sparse Benthic Macroalgae (*Porphyra*) (*Codium*) and Branching Red Algae	
EG-2C	Gravelly Sand	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Sparse (*Zostera marina*) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and Sparse Benthic Macroalgae (Branching Red Algae) and Trace (*Sargassum*)	Fish - Sparse (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae); Trace (*Ulva*)	
EG-3	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) and Bryozoan (*Bugula*), Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - Trace (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*), and Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropd (*Bittium*) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - Trace (Juvenile *Centropritis*)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-5	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); Trace (*Chaetopterus*); Sparse Benthic Macroalgae (*Porphyra*), (*Ulva*) and (Branching Red Algae)	
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae)	Fish - Trace (Juvenile *Centropritis*)
EG-6	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae)	Fish - Trace (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and Trace (*Sargassum*)	Fish - Trace (*Tautoga*)

*Classified only to CMECS biotic sub-class

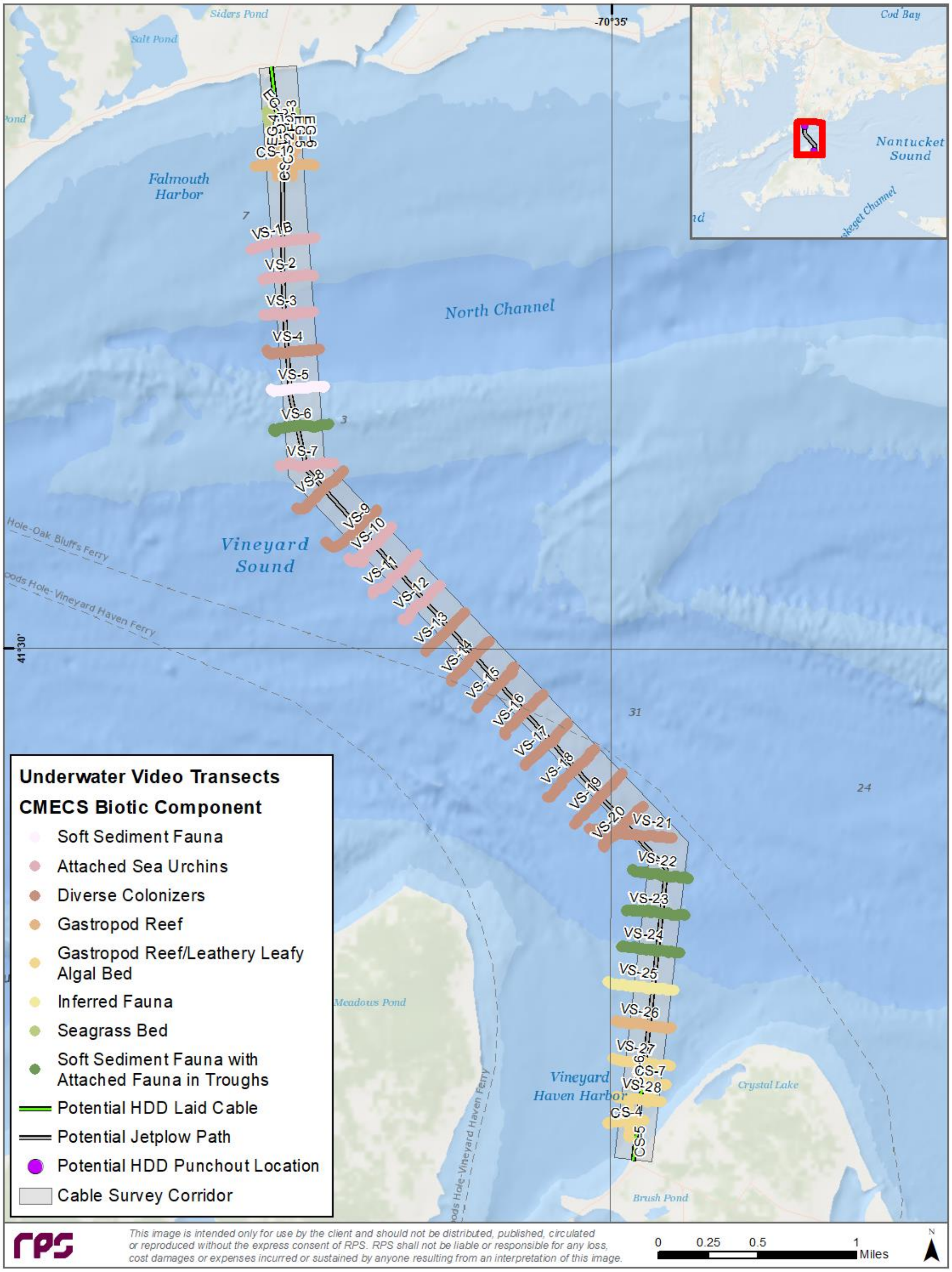

Figure 3-7. Underwater video transects collected during the 2021 benthic survey color coded by CMECS biotic group.

Figure 3-8. Attached sea urchins (*Arbacia punctulate;* CMECS biotic group) on gravel pavement of pebble/granule to cobble (CR Environmental Inc. 2022). Present in seven video transects.

Figure 3-9. Mollusk/sponge/tunicate colonizers (CMECS biotic community) on gravel pavement of pebble/granule, cobbles, and boulders (CR Environmental Inc. 2022). Present in twelve video transects.

Figure 3-10. *Crepidula* reef (CMECS biotic community). Present in ten transects, classified as the single main biotic community (four transects) or as the co-occurring main community with seagrass beds (six transects).

Figure 3-11. *Crepidula* reef (CMECS biotic community) with co-occurring *Codium* (CMECS biotic community; leathery leafy algal bed). Present in six transects, with some areas dominated by *Codium*.

Figure 3-12. Seagrass bed (CMECS biotic group) on gravelly sand and sandy gravel. *Zostera marina* (eelgrass) herbaceous vegetation. Present in six transects (EC-1 through EC-6), which all transition to eelgrass beds from areas dominated by *Crepidula* reef.

Figure 3-13. Inferred fauna (CMECS biotic subclass) on sand ripples with fecal casts. Present in one transect.

Figure 3-14. Soft sediment fauna (CMECS biotic subclass) on sand waves with *Pagarus spp*. (hermit crab). Present in one transect.

Figure 3-15. Soft sediment fauna (CMECS biotic subclass) on sand waves with attached fauna in pebble/granule substrate in wave troughs. Present in four transects.

3.4 Shellfish Habitat Suitability

Habitat suitability data layers have been created by the Massachusetts Division of Marine Fisheries (MA DMF) to estimate which areas shellfish species could potentially inhabit based on known environmental parameters of the habitat use of these species. It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area. According to these data, two shellfish species have habitat suitability areas modeled in the proposed cable footprint (Figure 3-16; MA DMF 2011). The proposed cable route crosses through quahog (*Mercenaria mercenaria*) and bay scallop (*Argopecten irradians*) habitat near the southern landing area on Martha's Vineyard and through bay scallop habitat to the north, near the landfall area in Falmouth, MA. The use of HDD will avoid 2,000 feet of hydroplow installation within bay scallop and quahog delineated suitable habitat near Martha's Vineyard. However, 4,980 ft of hydroplow installation (1.4 acres based on 12-foot-wide footprint) will traverse quahog suitable habitat and 10,740 ft (3.0 acres based on 12-foot-wide footprint) will traverse bay scallop suitable habitat.

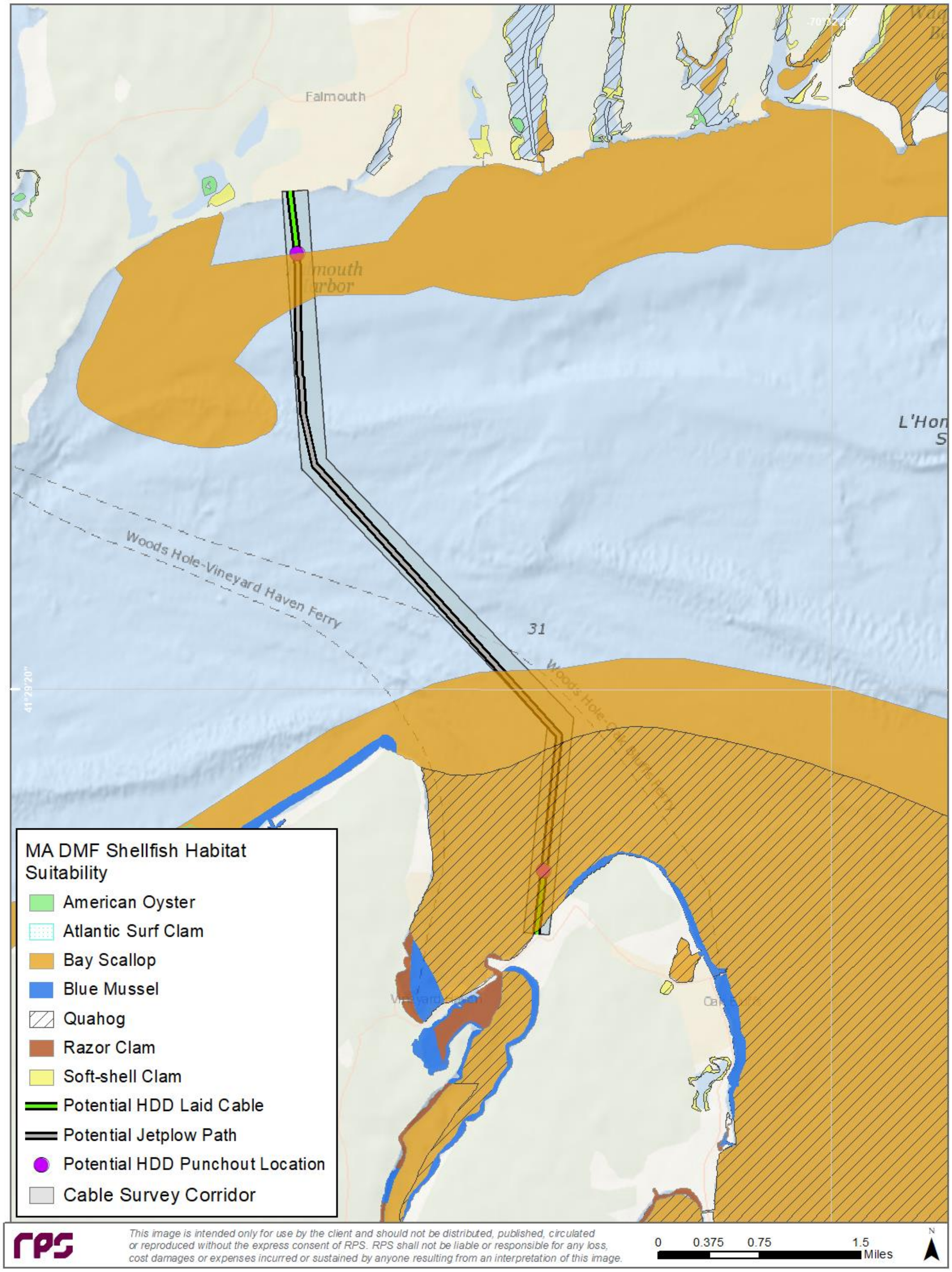

Figure 3-16. Map of MA DMF defined shellfish habitat suitability areas in the Project Area (MA DMF 2011).

4 ESSENTIAL FISH HABITAT DESIGNATIONS AND NOAA TRUST RESOURCES

4.1 Essential Fish Habitat Designations

The EFH designations in this section correspond to the currently accepted designations by the New England Fishery Management Council (NEFMC; NEFMC and NMFS 2017), Mid-Atlantic Fishery Management Council (MAFMC), and NOAA Highly Migratory Species Division (NMFS 2017; Table 4-1). Many EFH designations are determined for each cell in a 10' x 10' longitude square grid in state and federal waters.

Table 4-1. Summary of the twenty-eight species with EFH designations in the Project Area by life stage.

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Atlantic albacore tuna (*Thunnus alalunga*)			*		
Atlantic bluefin tuna (*Thunnus thynnus*)				*	
Atlantic butterfish (*Peprilus triacanthus*)			*	*	
Atlantic cod (*Gadus morhua*)	*	*	*		*
Atlantic mackerel (*Scomber scombrus*)			*		
Atlantic skipjack tuna (*Katsuwonus pelami*)				*	
Atlantic sea herring (*Clupea harengus*)			*		
Atlantic surfclam (*Spisula solidissima*)			*	*	
Atlantic wolffish (*Anarhichas lupus*)[1,2]	*	*	*	*	
Atlantic yellowfin tuna (*Thunnus albacares*)			*		
Black sea bass (*Centropristis striata*)			*	*	
Common thresher shark (*Alopias vulpinus*)[1]	*	*	*	*	
Little skate (*Leucoraia erinacea*)			*	*	
Longfin inshore squid (*Loligo pealeii*)	*		*	*	
Northern shortfin squid (*Illex illecebrosus*)				*	
Red hake (*Urophycis chuss*)	*	*	*		
Sand Tiger Shark (*Carcharias taurus*)		*	*		
Sandbar shark (Carcharhinus plumbeus)			*		
Scup (*Merluccius bilinearis*)			*	*	

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Silver hake (*Stenotomus chrysops*)	*	*			
Smoothhound Shark Complex (Atlantic Stock)	*	*	*	*	
Summer flounder (*Paralichthys dentatus*)	*	*	*	*	*
White hake (*Urophycis tenuis*)		*	*		
White shark (*Carcharodon carcharias*)[1]		*	*	*	
Windowpane flounder (*Scophthalmus aguosus*)			*	*	
Winter flounder (*Pseudopleuronectes americanus*)	*	*	*	*	
Winter skate (*Leucoraja ocellate*)			*	*	
Yellowtail flounder (Limanda ferruginea)			*		

* Shark species emerge from egg cases fully developed and are referred to as neonates.
[1] Indicates EFH designations are the same for all life stages or designations are not specified by life stage.
[2] Indicates Species of Concern.

Atlantic albacore tuna (*Thunnus alalunga*)

Albacore tuna EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile albacore tuna is designated as offshore the US east coast from Cape Cod to Cape Hatteras. Juveniles migrate to northeastern Atlantic waters in the summer for feeding. Albacore tuna are top pelagic predators and opportunistic foragers (NMFS 2009a).

Atlantic bluefin tuna (*Thunnus thynnus*) *Species of Concern

Bluefin tuna EFH is designated in the Project Area for the adult life stage. EFH for adult bluefin tuna is pelagic waters from the mid-coast of Maine to southern New England. Bluefin tuna inhabit northeastern waters to feed and move south to spawning grounds in the spring. Adults exhibit opportunistic foraging behaviors and diets typically consist of fish, jellyfish, and crustaceans (Atlantic Bluefin Tuna Status Review Team 2011). Bluefin tuna is considered a Species of Concern because they support important recreational and commercial fisheries and population size is unknown (NMFS 2011a, Agnew 2011).

Atlantic butterfish (*Peprilus triacanthus*)

Atlantic butterfish EFH is designated in the Project Area for juvenile and adult life stages. Juvenile EFH is defined as pelagic habitats in inshore estuaries and bays from Massachusetts Bay to North Carolina, and on the inner and outer continental shelf (MAFMC and NOAA 2011). Adults occupy the same range of estuaries and bays, but only the outer continental shelf from southern New England to South Carolina. They primarily feed on planktonic prey as juveniles (≤ 11 cm) and then incorporate squids and fishes into their diet as adults (MAMFC and NOAA 2011).

Atlantic cod (*Gadus morhua*)

Atlantic cod EFH is designated in the Project Area for egg, larvae, and juvenile life stages. EFH for Atlantic cod eggs is designated as surface waters from the Gulf of Maine to southern New England. Cod eggs are found in the fall, winter, and spring in water depths less than 110 m. EFH for larval cod is in waters less than 75 m from the Gulf of Maine to southern New England, with larval cod primarily observed in the spring. EFH for juvenile cod is defined as bottom habitats with substrates composed of cobble or gravel from the Gulf of Maine to southern New England. Inshore juvenile Atlantic cod HAPC is designated in coastal areas (from the shore to 20 m depth contour) from Maine to Rhode Island, and inshore waters around Cape Cod to Martha's Vineyard and Nantucket (Figure 4-1; NEFMC and NMFS 2017). These areas include all habitats that contain structurally complex areas, including eelgrass, macroalgae, mixed sand and gravel, and rocky habitats (NEFMC and NMFS 2017). These habitats are particularly important for juvenile Atlantic cod as their structure provides protection from predation and readily available prey sources. Juvenile cod are opportunistic foragers and consume a wide variety of items including small crustaceans, benthic invertebrates, and fish (Lough 2004). Cod spawn primarily in bottom habitats composed of sand, rocks, pebbles, or gravel during fall, winter, and early spring (NOAA 2007).

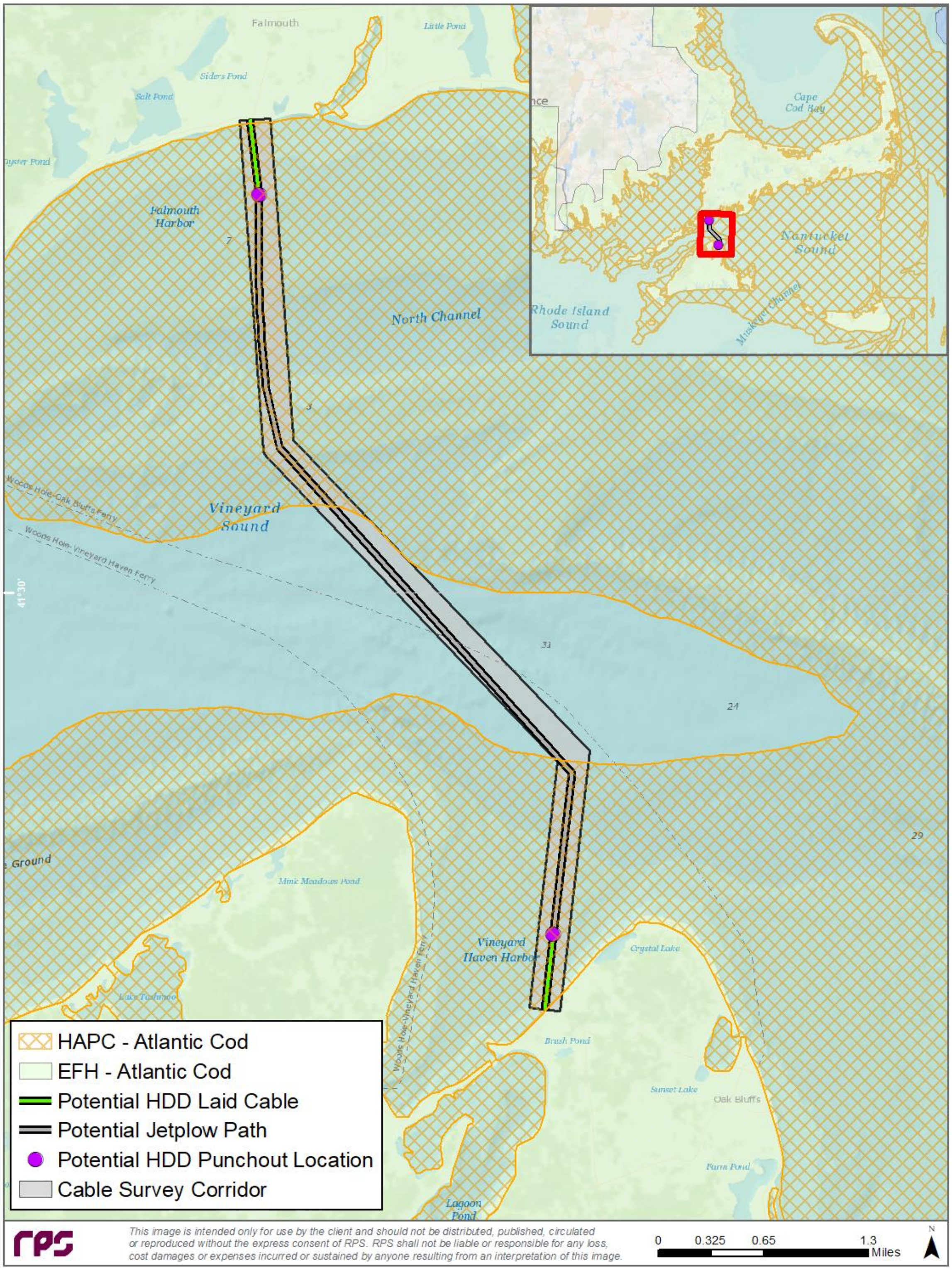

Figure 4-1. Atlantic cod juvenile EFH and HAPC (NEFMC and NMFS 2017).

Atlantic mackerel (*Scomber scombrus*)

Atlantic mackerel EFH is designated in the Project Area for the juvenile stage. Juveniles (≤ 25 cm) range from Cape Hatteras to Georges Bank and the Gulf of Maine. Juveniles tend to inhabit waters closer to shore than adults, with some juveniles collected in nearshore coastal waters in the fall (Studholme et al. 1999).

Atlantic skipjack tuna (*Katsuwonus pelami*)

Skipjack tuna EFH is designated in the Project Area for the adult life stage. EFH for adult skipjack tuna includes coastal and offshore habitats between Massachusetts and South Carolina. Skipjack tuna are opportunistic foragers that feed primarily in surface waters but have also been caught in longline fisheries at greater depths (NMFS 2017).

Atlantic sea herring (*Clupea harengus*)

Atlantic sea herring EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile and adult herring is defined as pelagic and bottom habitats in the Gulf of Maine, Georges Bank, and southern New England. Juvenile herring are found in areas with water depths from 0-300 m. Herring opportunistically feed on zooplankton, with forage species changing as herring size increases (Reid et al. 1999).

Atlantic surfclam (*Spisula solidissima*)

Atlantic surfclam EFH is designated in the Project Area for juvenile and adult life stages. EFH for surfclams occurs throughout the substrate, to a depth of three feet below the water/sediment interface, from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ. Surfclams are generally located from the tidal zone to a depth of about 38 m (125 ft) (NOAA 2007).

Atlantic wolffish (*Anarhichas lupus*) *Species of Concern

Atlantic wolffish EFH is designated in the Project Area for egg, larvae, juvenile, and adult life stages. EFH for wolffish eggs is defined as bottom habitats over the continental shelf and slope within the Gulf of Maine south to Cape Cod. Wolffish eggs are deposited in rocky substrates in brood nests and are present throughout the year. EFH for wolffish larvae is water from the surface to the seafloor within the Gulf of Maine south to Cape Cod. EFH for juvenile and adult wolffish is bottom habitats of the continental shelf and slop within the Gulf of Maine south to Cape Cod. The depth range for all life stages ranges from 40–240 m. Spawning is thought to occur in September and October. Wolffish utilize rocky habitats for shelter and nesting and softer substrate habitats for feeding (NOAA 2007). Although the diets of wolffish can vary, generally they feed on mollusks, crustaceans, and echinoderms (NMFS 2009b). Atlantic wolffish is considered a Species of Concern because the stock is overexploited and severely depleted. Wolffish biomass has shown a consistent downward trend since the 1980's and continues to decline because of capture as bycatch in the otter trawl fishery (NMFS 2009b).

Atlantic yellowfin tuna (*Thunnus albacares*)

Yellowfin tuna EFH is designated in the Project Area for the juvenile life stage. EFH for juveniles is defined as offshore waters from Cape Cod to the mid-east coast of Florida. Yellowfin tuna diets primarily consist of Sargassum or Sargassum-associated fauna (NMFS 2009a).

Black sea bass (*Centropristis striata*)

Black sea bass EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult black sea bass is defined as demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras (NOAA 2007). Juveniles prey on benthic and epibenthic crustaceans and small fish while adults tend to forage more generally for crustaceans, fish, and squids. Adults are generally associated with structurally complex habitats. Juveniles and adults are most commonly observed in the spring and fall (Drohan et al. 2007; NEFSC n.d.; NEODP 2022).

Common thresher shark (*Alopias vulpinus*)

Common thresher shark EFH is designated in the Project Area for all life stages. EFH for all life stages is defined as coastal and pelagic waters from Cape Cod to North Carolina and in other localized areas off the Atlantic coast. Common thresher sharks occur in coastal and oceanic waters but are more common within 64–80 kilometers (km) of the shoreline. Small pelagic fishes and pelagic crustaceans make up much of common thresher shark diet (NMFS 2017).

Little skate (*Leucoraja erinacea*)

Little skate EFH is designated in the Project Area for juvenile and adult life stages. EFH is similar for both life stages and includes intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the mid-Atlantic region. EFH primarily occurs on sand and gravel substrates, but also is found on mud (NEFMC 2017).

Longfin inshore squid *(Loligo pealeii*)

Longfin inshore squid EFH is designated in the Project Area for egg, juvenile (pre-recruit), and adult (recruit) life stages. EFH for longfin inshore squid eggs is inshore and offshore bottom habitats from Georges Bank to Cape Hatteras. Longfin inshore squids lay eggs in masses referred to as "mops" that are demersal and anchored to various substrates and hard bottom types, including shells, lobster pots, fish traps, boulders, submerged aquatic vegetation, sand, and mud (NOAA 2007). Female longfin squid lay these egg mops during three-week periods which can occur throughout the year (reviewed in Hendrickson 2017). EFH for juveniles and adults, also referred to as pre-recruits and recruits, is pelagic habitats inshore and offshore continental shelf waters from Georges Bank to South Carolina. Pre-recruits and recruits inhabit inshore areas in the spring and summer and migrate to deeper, offshore areas in the fall to overwinter (NOAA 2007). Forage base for longfin inshore squid varies with individual size, where small squids feed on planktonic organisms and large squids feed on crustaceans and small fishes (Jacobson 2005).

Northern shortfin squid (*Illex illecebrosus*)

Northern shortfin squid EFH is designated in the Project Area for the adult life stage. EFH for adult northern shortfin squid is defined as pelagic habitat on the continental shelf and slope from Georges Bank to South Carolina and in inshore waters of the Gulf of Maine and southern New England. Adult northern shortfin squid primarily forage for fish, euphausiids, and smaller squids (MAFMC and NOAA 2011).

Red hake (*Urophycis chuss*)

Red hake EFH is designated in the Project Area for egg, larvae, and juvenile stages based on data from NMFS trawl surveys. Eggs/larvae EFH is designated in pelagic habitats in the Gulf of Maine, on Georges Bank, the Mid-Atlantic and in bays and estuaries. Juvenile red hake EFH is designated in the intertidal and subtidal benthic habitats throughout the region on mud and sand substrates to max depths of 80 meters, and in bays and estuaries. Habitats that provide shelter in the form of biogenic activity, i.e., burrows, eel grass, macroalgae, etc., and scallop beds, are important for juvenile red hake (NEFMC 1998).

Sand tiger shark (*Carcharias taurus*)

Sand tiger shark EFH is designated in the Project Area for neonates and juveniles. Neonate and juvenile EFH range from Massachusetts to Florida. They occur in sand and mud areas that contain benthic structure (NOAA 2010).

Sandbar shark (Carcharhinus plumbeus)

Sandbar shark EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile sandbar shark includes coastal areas of the US Atlantic between southern New England and Georgia (NMFS 2017). Sandbar sharks are a bottom-dwelling shark species that primarily forages for small bony fishes and crustaceans (NMFS 2009a).

Scup (*Stenotomus chrysops*)

Scup EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult scup is defined as the inshore and offshore demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras (NOAA 2007). Juvenile scup feed mainly on polychaetes, epibenthic amphipods, and small crustaceans, mollusks, and fish eggs while adults have a similar diet, they also feed on small squid, vegetable detritus, insect larvae, sand dollars, and small fish (Steimle et al. 1999). Scup occupy inshore areas in the spring, summer, and fall and migrate offshore to overwinter in warmer waters on the outer continental shelf (Steimle et al. 1999).

Silver hake (*Merluccius bilinearis*)

Silver hake, also known as whiting, EFH is designated in the Project Area for egg and larval life stages. EFH for the egg and larval stages is defined as surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Whiting eggs and larvae are observed all year with peaks in egg observations from June through October and peaks in larvae observations from July through September (NEFMC and NMFS 2017).

Smoothhound shark complex (Atlantic stock)

The smoothhound shark complex was split into two regional stocks in 2015 after a stock assessment led NMFS to manage each stock complex separately. Due to insufficient information on the individual life stages (neonate, juvenile, and adult), EFH for smooth dogfish is designated for all life stages combined and occurs in the Project Area. EFH for smooth dogfish includes coastal areas and inshore bays and estuaries from Cape Cod Bay, Massachusetts to South Carolina (NMFS 2017). Smooth dogfish are primarily demersal and undergo temperature stimulated migrations between inshore and offshore waters. Their diets are dominated by invertebrates, especially American lobsters, throughout their region; however, they also feed on small bony fishes throughout New England (NMFS 2017).

Summer flounder (*Paralichthys dentatus*)

Summer flounder EFH is designated in the Project Area for eggs, larval, juvenile, and adult life stages. Egg and larval EFH is pelagic waters over the Continental Shelf from the Gulf of Maine to Cape Hatteras, North Carolina (NMFS 2009c). EFH for juvenile and adult summer flounder is demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras. In addition to EFH designations, there are also HAPC designations throughout the region. HAPC is designated as areas of all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH (NOAA 2007). Juvenile summer flounder inhabit inshore areas such as salt marsh creeks, seagrass beds, and mudflats in the spring, summer, and fall and move to deeper waters offshore in the winter. Consequently, seagrass beds off Falmouth Harbor may serve as refuge for juvenile summer flounder. Adults inhabit shallow coastal and estuarine areas during the warmer seasons and migrate offshore during the winter (Packer et al. 1999). Summer flounder are opportunistic feeders and diets generally correspond to prey availability in relation to flounder size, with smaller individuals primarily consuming crustaceans and polychaetes and larger individuals focusing more on fish prey (Packer et al. 1999).

White hake (*Urophycis tenuis*)

White hake EFH is designated in the Project Area for larval and juvenile life stages. Larvae EFH occurs in the Gulf of Maine, in southern New England, and on George's Bank. Early-stage larvae have been collected on the continental slope and cross the shelf-slope front to access juvenile nearshore habitat nurseries (NEFMC 2017). Juveniles are pelagic until they reach a certain length and become demersal (Chang et al. 1999a). EFH for the juvenile stage is designated as intertidal and sub-tidal estuarine and marine habitats in the Gulf of Maine, on Georges Bank, and in southern New England, including mixed and high salinity zones in a number of bays and estuaries north of Cape Cod, to a maximum depth of 300 m (NEFMC 2017). For the demersal phase, EFH occurs on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats.

White shark (*Carcharodon carcharias*)

White shark EFH is designated in the Project Area for neonate, juvenile, and adult life stages. EFH for neonates is inshore waters out to 105 km (57 NM) from Cape Cod to New Jersey. EFH for juvenile and adult white shark is combined and includes inshore waters out to 105 km (65.2 mi) from Cape Ann, Massachusetts to Cape Canaveral (NMFS 2017). As neonates and juveniles below 300 centimeters (cm) (120 inches) total length, white shark primarily consume fish. Upon reaching lengths greater than 300 cm (120 inches), white sharks begin consuming primarily marine mammals (Estrada et al. 2006).

Windowpane flounder (*Scophthalmus aquosus*)

Windowpane flounder EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult life stages is defined as bottom habitats that consist of mud or fine-grained sand substrate around the perimeter of the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras (NOAA 2007). Juvenile and adult windowpane flounder feed on small crustaceans, especially mysid and decapod shrimp, and fish larvae (Chang et al. 1999b).

Winter flounder (*Pseudopleuronectes americanus*)

Winter flounder EFH is designated in the Project Area for eggs, larvae, juvenile and adult life stages. EFH for eggs is defined as bottom habitats with sandy, muddy, mixed sand/mud, gravel, and submerged aquatic vegetation on Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Eggs are primarily observed from February through June and EFH for winter flounder spawning adults and eggs generally includes coastal benthic habitats from Mean Low Water (MLW) to the 5 m bathymetric contour due to typical spawning depths (Pereira 1999). The 5 m contour is roughly 2,000-2,500 ft from shore at both ends of the project cable route. EFH for larvae is defined as pelagic and bottom waters in Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to Delaware Bay. Larvae are generally observed from March through July. EFH for juvenile and adult Winter Flounder is defined as bottom habitats with muddy or sandy substrate in Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to Delaware Bay. Sandy substrates are found throughout the project area, in particular VS-5, VS-6, VS-22, VS-23, VS-24, and VS-25 (Figure 3-2). Winter flounder spawning occurs in the winter with peaks in February and March (NOAA 2007). Winter flounder are considered opportunistic feeders throughout each life stage and consume a wide range of prey. Adults feed on bivalves, eggs, and fish, but shift diets based on prey availability (Pereira et al. 1999).

Winter skate (*Leucoraja ocellate*)

Winter skate EFH is designated in the Project Area for juvenile and adult life stages (NEFMC 2017). EFH for juvenile and adult winter skate includes sand and gravel substrates in sub-tidal benthic habitats in depths from the shore to 80–90 m (262–295 ft) from eastern Maine to Delaware Bay and on the continental shelf in southern New England and the mid-Atlantic region, and on Georges Bank. As a demersal species, winter skate consume a large variety of demersal prey including polychaetes, amphipods, and crustaceans (Packer et al. 2003a).

Yellowtail flounder (*Limanda ferruginea*)

Yellowtail flounder EFH is designated in the Project Area for the juvenile stage. EFH for juvenile yellowtail flounder is sub-tidal bottom habitats with sandy or mixed sand and mud substrates on Georges Bank, the Gulf of Maine, and the southern New England shelf south to Delaware Bay (NOAA 2007). Yellowtail flounder forage primarily for benthic macrofaunal and diets largely consist of amphipods, polychaetes, and crustaceans (Johnson et al. 1999).

4.2 NOAA Trust Resources

In addition to fish and invertebrate species with designated EFH, NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as designated by the Fish and Wildlife Coordination Act, may also use or overlap the Project Area. NOAA-trust resources that may use the project area are described and listed below (Table 4-2).

Alewife (*Alosa pseudoharengus*)

Alewife, along with blueback herring, are referred to as river herring. In 2006, river herring were listed as a species of concern by NOAA due to declines in population from dams, habitat degradation, fishing and predation. Alewife range from Newfoundland to the Carolinas. Alewife are anadromous and migrate up coastal rivers in the spring to spawn with water temperatures ranging from 41°F to 50°F. Alewife spawn over hard and soft bottom habitats in ponds, lakes, streams and rivers. Alewife reach sexually maturity by age 4 and females produced up to 300,000 eggs annually. Their diet consists of zooplankton, small fish, larvae and eggs (NOAA 2009).

American Eel (*Anguilla rostrata*)

American eel are a diadromous fish species ranging from Greenland to Brazil. Unlike herring they are catadromous, or born at sea as drifting eggs and larvae that arrive in estuaries in the spring and spend most of their lives (8-15 years) in freshwater before returning to the sea to spawn during fall migrations that span thousands of miles. They are also semelparous, spawning up to three to ten million eggs only one time and dying shortly after. American eels are subject to poaching in Massachusetts. Regulations require a 9-inch minimum size to harvest; however, glass (American eels <4 inches) and elvers (American eels between 4 to 8 inches in length) have been known to sell for as much as $2,600 a pound (Sneed 2014). American eel stocks were declared depleted in 2012 and recovery efforts involve dam removal, fish passages, and the start of quota-based management in 2014 by the Atlantic States Marine Fishery Council (Chase 2018).

American Shad (*Alosa sapidissima*)

American shad are an anadromous fish species that occur from Canada to Florida. Shad return to their natal rivers to spawn and consequently each major river along the East coast supports a discrete stock. In Massachusetts, shad spawn from late April to July usually by the time they reach 3 to 5 years old and in northern latitudes shad can spawn multiple times in their life. Fertilized eggs float in river currents, where they hatch into larvae that remain in freshwater for several months before moving downstream and eventually out to sea in the fall. Recreational fisheries for American shad in Massachusetts occur in the

Merrimack, Pembroke, Marshfield, Palmer, and Connecticut Rivers (all greater than 30 miles from the project) with smaller populations in smaller coastal rivers. Shad are in decline in Massachusetts largely a result of the effects of elevated turbidity on migrating, spawning, and larval development. (Evans et al. 2011)

Atlantic Menhaden (*Brevoortia tyrannus*)

Menhaden are found in estuarine and coastal waters from Nova Scotia to Florida and generally stay within 20 miles of shore, spawning occurs in the in winter with females laying up to 300,000 eggs. Menhaden spawn in coastal waters. Larvae drift into estuaries and develop into juveniles. Juveniles will stay in estuaries for approximately a year before migrating to coastal waters. Menhaden feed on plankton and are an important prey species for a highly migratory species of fish, marine mammals, and birds (NOAA 2021).

Bay Scallop (*Agropecten irradians*)

Bay scallops live for approximately 18 to 30 months and spawn in the summer with a secondary spawning event possible in the fall, bay scallops spawn once in their lifetime. Bay scallop habitat occurs off southern Cape Cod and northern Martha's Vineyard and are usually found in depths of 5 to 30 feet where spat settle on eelgrass, pebbles, and shell debris with robust sets of scallops found in sand/mud substrates with eelgrass. Bay scallops are harvested both recreationally and commercially, the harvest season runs from October to April. Commercial abundances occur only in waters south of Boston with highest catches in Buzzards Bay, Cape Cod, and around Martha's Vineyard and Nantucket. (Evans et al. 2011). The shellfish classification areas along the cable route are all classified as approved for shellfishing.

Blue crab (*Callinectes sapidus*)

While commonly associated with the Chesapeake Bay, blue crabs are also found in New England. The waters of Massachusetts, represent the northern extreme of the species reproductive range. Thus, blue crabs can be found in the waters off the south coast of Massachusetts and Rhode Island, and are found in Buzzards Bay, Narragansett Bay, Cape Cod and the Islands. Generally, mating occurs in brackish waters, and spawning occurs in higher salinity habitats, larvae are carried offshore by ocean currents, and will eventually settle back in estuaries, after going through several series of developments. Blue crabs will settle in complex habitats with submerged aquatic vegetation. While the abundance of blue crabs does not support a commercial fishery, blue crabs can be harvested from May 1st through to the end of year (Estrella and Meserve 2011).

Bluefish (*Pomatomus saltatrix*)

Bluefish are common throughout the continental shelf of the Atlantic Ocean and are a near-shore pelagic schooling fish staying mainly in the water column. Schools of bluefish on the East Coast move north with warmer weather, preferring water temperatures of 60°F and often enter estuaries to feed. Bluefish spawn offshore from Massachusetts to Florida. Eggs are pelagic and buoyant; larvae and juveniles are found in estuarine and nearshore shelf habitats. Bluefish are likely in the project area in July and August (ASMFC 2018).

Blueback herring (*Alosa aestivalis*)

Difficult to distinguish from alewife, the two species are often harvested and subsequently managed together under river herring. Blueback herring range from Nova Scotia to Florida. In the late spring, blueback herring travel upstream to spawn, often following alewife spawning events. Blueback herring are thought to spawn in a greater variety of habitat types than alewife, and will use swamps, submerged aquatic vegetation, and small tributaries, maturity is usually reached by age 5 and females can produce up to 100,000 eggs. Blueback herring feed on similar species to alewife (NOAA 2009).

Blue mussel (*Mytilus edulis*)

Blue mussels historically occurred in vast numbers in Vineyard and Nantucket Sounds, although greatly reduced, blue mussels still occur in the sounds. Mussels can have one or two spawning periods, depending on latitude; from Maine to Delaware mussel spawning peaks occur generally from May to June. Blue mussels are fast growing and have high reproductive rates, each female capable of producing 50 to 200 million eggs per spawning event. Blue mussels spend their early life in a pelagic stage eventually attaching to filamentous substrates, such as algae or hydroids. Mussels will detach from filamentous substrates and drift until finding adult blue mussel beds, and either attaching in the vicinity or directly onto attached blue mussels (NOAA 2016a).

Channeled Whelk (*Busycotypus canaliculatus*)

Channeled whelk are found in coastal environments from Massachusetts to Florida. Channeled whelk are internal fertilizers and form spawning aggregations, fertilized eggs are laid in strings in intertidal and shallow mudflats during the fall. Eggs hatch in the spring, and juvenile whelk stay close to shore, migrating to deeper coastal waters as they age. Whelk are harvested commercially in Massachusetts from Mid-April to Mid-December (NOAA 2016b).

Eastern Oyster (*Crassostrea virginica*)

Eastern oysters generally spawn in the area from June through August, at approximately 2 years of age. While natural sets of Eastern oysters can occur anywhere along the Massachusetts coast, sets are most likely rare in the project area. Dramatic declines in the Eastern oyster in the last century are due to habitat degradation, overfishing, predation pressure, and disease (Evans et al. 2011). Despite these declines, oyster aquaculture is a valuable industry in Massachusetts, and there is a permitted (granted in 2014), two-acre multi-trophic aquaculture operation southwest of the project area landing site in Vineyard Haven Harbor, growing oysters, quahogs, and sugar kelp (NEODP 20202).

Horseshoe crab (*Limulus polyphemus*)

Horseshoe crabs range from Maine to the Gulf of Mexico, during different life-stages horseshoe crabs will go from intertidal zones to depths up to 75 feet. Females deposit their eggs in the upper intertidal zone and have stringent requirements for the physicochemical properties of the sand and water in which they lay. The eggs hatch into larvae and remain as nearshore plankton through late summer. After molting, crabs settle to the bottom and live for several years in intertidal and shallow subtidal areas. Horseshoe crabs are harvested for biomedical reasons because of their blood and also as bait for eel and whelk fisheries. Declines in horseshoe crab populations are due to overfishing and changes in nest physicochemical conditions from dredging and beach nourishment projects (Evans et al. 2011). Spawning beaches and nursery areas for horseshoe crabs have been identified in beaches along Falmouth, MA, in Vineyard Sound along Gosnold, and in Vineyard haven and Lagoon Pond (Glenn 2009). Adult horseshoe crabs were observed during the 2021 benthic survey in transects VS-2, VS-20, VS-25, VS-26, and VS-27 and EG-1,

Knobbed (*Busycon carica*) whelk

Knobbed whelk occur in estuaries and offshore environments from Massachusetts to Florida. Spawning occurs in the spring and fall, knobbed whelk are internal fertilizers and form spawning aggregations. Females then lay fertilized eggs in a long string with one end buried in the mud. Eggs generally hatch in the spring and typically inhabit sand and mud habitats (NOAA 2016c).

Northern quahog (*Mercenaria mercenaria*)

Quahogs can be found year-around in Vineyard Haven Harbor and the Project Area overlaps with suitable quahog habitat in this area as mapped by MA DMF. Quahogs typically spawn once in the summer in the northern Atlantic (MacKenzie et al. 2002). Larval settlement can take up to a month depending on temperature and larvae usually settle in sand to mud habitats in subtidal waters of estuaries and coasts (Evans et al. 2011).

Soft-shell clams (*Mya arenaria*)

Soft-shell clams are ubiquitous along the entire Massachusetts coasts. They are found in the shallow waters of bays and estuaries in rocky gravel to soft mud although most abundant in silty mud and sand environments. Soft-shell clams occurs both tidally and sub-tidally with increased production associated with shallow subtidal habitats. Soft-shell clams reach sexually maturity by age 2 and spawn in the spring and in the summer (Evans et al. 2011).

Striped Bass (*Morone saxatalis*)

Striped bass can be found from Florida to Canada and spend most of their adult life in coastal estuaries or the ocean. Striped bass are commonly caught in Vineyard and Nantucket Sounds, beginning in early May following migrations of squid. Migratory striped bass spawn in freshwater in the spring and can be found far inland in some major tributaries. Migratory striped bass have principal spawning areas in the Chesapeake Bay, and rivers such as the Delaware, Hudson, and Roanoke (ASMFC 2016).

Tautog (*Tautoga onitis*)

Generally a coastal species, Tautog can be found in waters from the outer coast of Nova Scotia to South Carolina; however, they are most abundant from Cape Cod to Chesapeake Bay. Tautog are associated with complex structured habitat including submerged vegetation, shellfish beds, and underwater structures. Additionally, tautog feed on the epibenthic and encrusting invertebrates that grow on hard substrates. Tautog spawn in or near estuaries from May to August throughout their range. Eggs and larvae have been documented in waters off Southern New England. Tautog eggs are buoyant and settle on submerged vegetation three weeks post-fertilization, larval and juvenile tautog inhabit shallow water habitats with eelgrass, macroalgae, and mussels. Tautog are highly reliant on underwater structures and will shelter overwinter in rocks, jetties, and natural and manmade reefs (ASMFC 2015).

Table 4-2. Summary NOAA Trust Species possibly located within the Project Area.

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Alewife			*	*	
American eel				*	
American shad				*	
Atlantic menhaden	*	*		*	
Bay Scallop	*	*	*	*	
Blue crab	*	*		*	
Bluefish				*	
Blueback herring			*	*	

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Blue mussel	*	*	*	*	
Channeled whelk	*	*	*	*	
Eastern oyster	*	*	*	*	
Knobbed whelk	*	*	*	*	
Horseshoe crab	*	*	*	*	
Northern quahog	*	*	*	*	
Soft-shell clams	*	*	*	*	
Striped bass				*	
Tautog	*	*	*	*	

5 ANALYSIS OF POTENTIAL IMPACTS TO EFH

Proposed work to install the 5th submarine cable includes hydroplowing and horizontal directional drilling (HDD). HDD will be used to avoid eelgrass beds near the Falmouth, MA landing site and *Crepidula* reefs near the Martha's Vineyard, MA landing site. The exit holes for HDD will be occur approximately 2,000 feet from shore. In late April 2014, Comcast and Eversource (formerly NSTAR) completed hybrid submarine fiber optic cable installation just west of the current Project Area and contracted CR Environmental and Epsilon Associates, Inc to conduct a post-construction survey within six weeks of installation (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a; Epsilon Associates, Inc. & CR Environmental, Inc. 2015b). This previous project also used HDD at cable landing locations and hydroplowing for seaward cable laying. Generally, results from the post-construction survey showed minimal habitat disturbance (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a). HDD begins on land and is capable of installing cable 60 to 80 feet below the benthic sediment surface. The potential for HDD disturbance to essential fish habitats exists at cable exit sites where the transition from HDD to hydroplowing occurs by divers jetting surficial sediment layers out of the way of cable installation. Additionally, drill mud can be released into the environment (accidentally or through planned releases), smothering nearby benthic habitats. Hydroplowing directly impacts the benthic surface in a relatively narrow, twelve foot wide, and shallow, one to two foot deep, furrow. Impact producing factors to EFH and species and NOAA Trust Resources related to installation of the 5th submarine cable include increased noise, habitat disturbance, habitat alteration, and increased vessel traffic (Table 5-1).

Table 5-1. Impact-producing factors for finfish and invertebrates with EFH within the Project Area.

Impact-producing Factors	Construction and Installation	Operations and Maintenance
Increased noise: vessel traffic	X	X
Habitat disturbance	X	
Habitat alteration	X	X
Increased vessel traffic	X	X

5.1 Hydroplow

The installation of the submarine cable into the sediment via hydroplow will be the source of the largest benthic habitat disturbance associated with this project. Hydroplowing is typically used in shallow (<150 ft depth), high vessel traffic areas, where recreational and commercial boating and fishing activities occur (Eversource Energy 2018). Cable burial is required in these areas for human safety and to protect the cable from anchors and fishing gear. The hydroplow is towed on the seafloor by a barge and consists of two skids that allow it to slide across the bottom and an articulated blade that injects water into the sediment, greatly reducing the force needed to pull the plow forward. The sediment is fluidized as the plow is towed forward, cable unspools from the barge, down through the blade of the plow; the cable's weight causes it to sink through the fluidized sediment and is buried as the sediment returns to its pre-jetted condition (Eversource Energy 2018; Swanson et al. 2006). For this project, a pre-pass survey of the hydroplow will be done to detect any sub-surface obstructions throughout the corridor as patches of hard bottom or boulders could limit burial in some areas.

The points of bottom contact during hydroplow installation are the skids and blade of the hydroplow, and anchoring of the barge, contingent on whether an ROV hydroplow is used. If anchoring is required, it's estimated that 14 anchor sets with an impact of 2,500 square feet per set will occur. The most direct and deleterious effects to habitat types come from the hydraulic action of the blade, that blasts a portion of surface and subsurface sediment, epifaunal and infaunal organisms, and flora immediately in front of the plow into the water column. The greatest indirect disturbances come from the effects of suspended sediments, which can affect water and sediment quality, and mobile and sessile organisms as suspended sediments settle over nearby undisturbed habitat types. Highly mobile species will likely be able to avoid most direct impacts.

5.1.1 Water Quality

The project may contribute to temporary water quality impacts during construction activities through increase suspended sediments. Increases in suspended sediments can impact foraging, navigation, and sheltering behaviors of fish and invertebrates through visual impairment. Sublethal effects have been observed in adult fish when 650 milligrams per liter (mg/L) of suspended sediments persisted for five days, while lethal effects have been observed at concentrations greater than 1,000 mg/L that persisted for at least 24 hours (Sherk et al. 1974; Wilber and Clarke 2001). In addition, reduced oxygen consumption, filter feeding abilities, and growth has been observed in mollusks exposed to suspended sediment concentrations of 100 mg/L for two days (Wilber and Clarke 2001). The egg and larval life stages of many fish and invertebrate organisms are assumed to be the most sensitive, with some research finding delayed hatching of eggs at a sediment concentration of 100 mg/L for one day (fish) or 200 mg/L for 12 hours (mollusks; Sherk et al. 1974; Wilber and Clarke 2001).

The sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Using the SSFATE model, Swanson et al. (2006) modeled total suspended solids (TSS) from the installation of notional cables during hydroplow activities in the waters of Horseshoe Shoal, near Barnstable Harbor, MA. The model showed that deposition occurs close to the cable installation route at concentrations of 100 mg/L for 2-to-3-hour durations. Approximately 30% of the fluidized sediment, commensurate with previous studies, was assumed to be vertically distributed into the water column, with the remainder staying in the limits of the plowed trench. Sediment types observed in Horseshoe Shoal are similar to those in the Project Area, indicating that suspended solids will likely be short-lived and localized during installation of the 5th submarine cable. In addition, TSS levels will be below the threshold for adverse effects on fish (1,000 mg/l for most fish, and 200 mg/l for sensitive fish/invertebrate life stages) and benthic communities (390 mg/l; EPA 1986). TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away. Although slow moving or sessile invertebrates will be unable to leave the area during installation, the short duration and limited concentration of suspended sediments are not expected to seriously harm organisms. Therefore, elevated TSS levels during cable installation is not likely to result in reductions in the quality or quantity of EFH or have substantial negative effects on species with designated EFH or considered NOAA Trust Resources in the area.

5.1.2 Habitat Disturbance and Alteration

During the installation phase, immobile life stages of fish and invertebrate species in or on benthic sediment in the direct path of the hydroplow will be the most at risk of direct injury or mortality. The 12-foot-wide direct disturbance swath is expected to impact a total of 7.7 acres. Only a minimal amount of sediment is expected to be displaced during cable installation and this amount is not expected to cause substantial injury or mortality to nearby stationary flora or fauna. Mobile benthic fish and invertebrates may be displaced temporarily by noise, sedimentation, and installation activities but will likely be able to escape harm by avoiding the Project Area during construction.

The habitat types encountered in the Project Area range from homogenous flat sand to complex hard-bottom habitat types that supported diverse communities and consisted of gravel and cobble with shell hash, brown and red algae, bryozoans, tunicates, sponges, corals, and hydrozoans. Many of these hard-bottom habitats are designated as HAPC for juvenile Atlantic cod (HAPC for cod specifically includes mixed sand and gravel and rocky habitats). More complex bottom habitat types also support many other fish and invertebrate species, as the structural complexity of larger grain sizes provides shelter and refuge habitat for small fish and invertebrates and hard substrates for epibenthos attachment (Auster 1998). Benthic habitats in the direct path of the hydroplow will be disturbed as sediments are fluidized and cable is laid in the trench. A post-construction survey conducted six weeks after installation of a submarine cable close to the Project Area showed rapid recovery of habitats and community, with the only disturbance observed including the presence of a narrow sand furrow from cable plowing, that created slightly higher bathymetric relief and attracted black sea bass. Either side of and crossing the cable showed signs of biogenic activity, pebbles, and cobbles; indicating that sediment deposition did not smother the area. The post-installation survey also observed sand waves, indicative of routine surficial sediment movement throughout the area. Research on benthic recovery has found that shallow, sandy environments exposed to strong natural disturbances typically recover quickly as strong bottom currents and storms infill anthropogenically disturbed patches of sediment (Meyer et al. 1981; Dernie, Kaiser, & Warwick 2003). Additionally, benthic communities in high energy, shallow areas with surficial sediment movement are thought to be disturbance-adapted and quicker to recover from anthropogenic disturbances (Collie et al. 2000). Although habitat in the direct path of the hydroplow will be disturbed during cable installation, recolonization and recovery of these habitats is expected based on results from similar projects in the region and given the similarity of nearby habitat and species. In addition, micro-siting implemented during the pre-pass phase of construction will be used to attempt to avoid impassable complex substrates, such as those containing large boulders or dense gravel pavement.

5.2 Horizontal Directional Drilling

To avoid sensitive coastal habitats with eelgrass, boulder fields, and nursery areas for fish, HDD will be used from onshore locations to approximately 2,000 feet seaward. According to regional bathymetric data, and confirmed by survey data the hydroplow paths terminate at the punchout locations in about 18 feet (5.5 m) of water (NEODP 2022, CR Environmental Inc. 2022. HDD is a trenchless method of installing underground utilities within a pipe along a pre-designed bore path using a surface-launched drilling rig (Eversource Energy 2018). An initial small diameter pilot hole is drilled to establish a bore path, and the hole is gradually enlarged through a series of reaming passes. Typically, HDD is used for pipes with a diameter less than 36” with typical length of HDD operations between 500 to 3,500 ft. (Eversource Energy 2018).

HDD activities require a shoreside drill site and a staging vessel for reaming the bore hole, and divers for the transition from HDD to hydroplowing during cable laying operations. Bore holes are selected through exploratory investigation of the planned area. Previous cable installation projects near the Project Area indicate that the Falmouth, MA and Martha’s Vineyard landing zones contain sandy to sandy/gravelly soils from 20 to 40 ft down, which are soil types conducive to HDD operations. This will likely decrease the number of exploratory boreholes needed, reducing potential impacts to the environment. Additionally, a drill mud, consisting of bentonite clay, chemical polymers, and water is used to lubricate the drill head and maintain the integrity of the bore hole. The bentonite and chemical polymers are non-toxic (Dillis & Roy Civil Design Group, Inc 2021 & Epsilon Associate Inc., and CR Environmental 2015b) and the main concern with excess bentonite clay is smothering of nearby sessile organisms (Howitt et al. 2021). During HDD operations, both planned and unplanned releases of drill mud may occur. Unplanned releases involve drill mud escaping through geologic fractures in the bore hole (Dillis and Roy Civil Design Group, Inc; Howitt et al. 2021). Planned releases involve the amount of mud that is released during HDD pilot hole punch-out. The amount of planned release is calculated pre-punch out, and a gravity cell (steel box) will be used to mitigate the release and cleanup of drill mud (Epsilon Associates Inc & CR Environmental Inc 2015b). During the 2014 Martha’s Vineyard hybrid submarine cable installation activities near the Project Area, the drill mud was removed at the bore hole exit, where divers excavated a pit with venturi pumps (submersible, handheld pump) and a barge-mounted hydraulic pump removed the mud to holding tanks on the barge (Eversource Energy 2018, Epsilon Associates Inc. & CR Environmental Inc. 2015b).

5.2.1 Water Quality

The potential effects to water quality during routine operations, are predominantly located at the bore hole exit; where suspended sediments from boring, excavation, and jetting will occur. Water quality could also be impacted from an inadvertent release of drill mud, which contains bentonite clay that can be slow to settle out of the water column. A 2010 HDD project in Western Australia, that occurred in variable geological strata, with an exit bore hole surrounded by benthic habitats consisting of corals, seagrass, and macroalgae in a marine conservation reserve was successfully completed with minimum deleterious effects to the environment (Howitt et al. 2012). The HDD length was 1.85 km and the exit bore hole occurred in 6 m water depth. A sediment plume approximately 850 m long and 60 m wide observed via aerial survey during the punch out of the bore hole dissipated within 7 hours (Howitt et al. 2012). Impacts to water quality affecting EFH and associated fish and invertebrate species and NOAA trust species are expected to be similar to those associated with hydroplow operations. No substantial adverse impacts are expected due to the distance from sensitive eelgrass habitat and the limited duration and concentration of suspended sediments related to HDD activities.

5.2.2 Habitat Disturbance and Alteration

Essential fish habitat in the Project Area would be disturbed at and around the bore hole exits near Falmouth, MA and Oak Bluffs, MA. Bore sites will be positioned outside of known eelgrass beds near Falmouth, MA and *Crepidula reef* near Oak Bluffs, MA, likely occurring in areas of *Crepidula* reef habitat. Mobile fish and invertebrate species will likely be able to escape any potential harm through avoidance of the area near the bore hole exit. Slow or sessile benthic organisms in the direct path of the bore hole exit will likely experience injury or direct mortality as the drill punches out. Results from a post-installation survey conducted six weeks after the installation of a nearby submarine cable in Vineyard Sound, which also used HDD with venturi pumps to mitigate the spread of planned releases of drill mud, showed that habitats immediately around the exit bore hole had recovered and consisted of coarse sediments with branching brown and red algae and common slipper shells (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a). The survey did not find any evidence of drill mud covering the area, suggesting the hydraulic pump system was effective in removing drill cuttings and mud and/or natural processes (currents, storms) washed away excess mud and cuttings. In an inadvertent release of drill mud associated with a 2010 HDD project in Western Australia, the released mud covered 422 m^2 of seafloor habitat to an average depth of 15 cm (Howitt et al. 2012). This mud escaped through geologic fractures in the sediment, smothering sensitive habitat that was supposed to be avoided through HDD activities. Surveyors found that directly after impact, drill mud completely covered 75% of macroalgae in the area; however, within a month, the covered area reduced to 76 m^2 and average depth decreased to 3.5 cm. Four months after the inadvertent release there was no longer any presence of drill mud and macroalgae started to recolonize the area (Howitt et al. 2012). Long-term, substantial alteration of EFH due to sedimentation, from bentonite clay, associated with HDD is not expected as previous projects and research in nearby waters indicate limited deposition and rapid recovery to biotic communities near exit bore holes.

5.3 Vessel Traffic

Vessel noise and construction activities can impact fish species that have advanced hearing or communicate with low-frequency sound signals (Ladich and Myrberg 2006). Construction vessels for the project include a barge to pull the hydroplow and a staging vessel for divers to connect the cable from the hydroplow to the HDD punchout location. Potential impacts from construction vessels include barge grounding, vessel noise, and barge-mounted equipment noise. A maximum sound pressure level of 192 dB re 1 μPa for numerous vessels with varying propulsion power under dynamic positioning is estimated to be under the physiological injury threshold for fishes with a peak sound pressure of 206 dB re 1 μPa (FHWG 2008; Stadler and Woodbury 2009; McPherson et al. 2017). Behavioral avoidance of fishes occurs at sound pressure levels of 150 dB re 1 μPa (Andersson et al. 2007; Mueller-Blenkle et al. 2010). Continuous noise above 170 dB root-mean-square (rms) for 48 hours can lead to injury, while exposure to noise of 158 dB rms or above for 12 hours can lead to behavioral disturbance (Hawkins and Popper 2017; Popper et al. 2014). Unless construction operations occur for more than 12 hours without break, vessel noise is not expected to cause behavioral impacts to fish or invertebrates in the Project Area during construction.

In addition, in a laboratory experiment exposing a seagrass species, *Posidonia oceanica,* to sound pressure levels observed in marine construction (157 dB re 1 μPa with peak levels up to 175 dB re 1 μPa), a decrease in the number of starch grains used for energy storage was observed (Solé et al. 2021). Although this was an observational experiment with electron microscopy and more studies are needed, it shows that there is potential for anthropogenic noise to impact seagrass growth.

At this time, it is assumed there will only be a slight increase in risk from the minimal number of additional vessels added to baseline activity in the Project Area and that any associated increase in risk of injury or mortality due to noise related to vessels would be too small to be detected or measured and effects to EFH are therefore insignificant. Regarding vessel noise, this will not be more than existing background vessel noise from existing vessels and ferries in the area, and species in the Project Area are acclimated to these levels.

5.4 Electromagnetic Fields

Many marine organisms have specialized structures to detect electromagnetic fields for navigation, communication, or feeding. The impacts of anthropogenic electromagnetic fields (EMF) on marine species and the strength of their ability to detect them is still largely speculative, and more studies are needed to understand if estimated potential impacts are of ecological significance (Normandeau et al. 2011). Cable EMFs are likely less intense than the geomagnetic field of Earth and it is generally assumed that marine animals will not be able to detect these EMFs unless directly over the center of a cable (Copping et al. 2016; Gradient 2017). Electrosensitive invertebrate species, such as sea slugs and sea urchins, have sensitivity thresholds above the modeled level of induced electric fields from undersea cables (Normandeau et al. 2011). Elasmobranchs and fishes that sense EMF for feeding or movement are mostly highly mobile. Due to EMF weakening with distance and the cable being buried by sediment, the magnetic field emitted by these cables is likely only detectable by demersal species (Normandeau et al. 2011). Changes in behavior were observed in little skates and American lobsters in the presence of energized cables, but did not inhibit movement of these species (Hutchison et al. 2018). A study investigating habitat use around energized cables found no evidence that fish or invertebrates were either attracted to or repelled by EMF in the vicinity of the cables (Love et al. 2017). Commercially important cancer crabs (similar to two species present in the region) exposed to EMF were found to disrupt the L-Lactate and D-Glucose circadian rhythm and altered total hemocyte count. The crabs showed a clear attraction to EMF exposed shelters with a significant reduction in time spent roaming (Scott et al. 2021). However, the submarine cable to be installed will be encased in a protective sheathing and buried approximately 2 meters below the sediment with the hydroplow and have significantly lower detection levels, limiting comparability with the current project. With no known studies to date of negative effects of EMF on marine organisms and the protection of the cable with sheathing and sediment, no EMF impacts are expected from this project.

6 MITIGATION AND MINIMIZATION

Potential adverse effects to eggs and larvae of species with EFH in the Project Area may be reduced through adherence to Time of Year (TOY) restrictions recommended for five of the EFH species (Atlantic cod, winter flounder, longfin inshore squid, northern shortfin squid, and Atlantic surfclam) that may occur in the Project Area (Evans et al. 2015; Table 6-1).

In addition to adhering to TOY restrictions, impacts to eelgrass, considered HAPC for summer flounder, and complex boulder habitat will be avoided by using HDD at the landfall locations where eelgrass is known to be present, which installs submarine cables horizontally through sediment. During HDD activities, a gravity cell will also be used to mitigate the spread of planned releases of drill mud and sedimentation of nearby habitats. The gravity cell is a 20-foot by 20-foot steel box, used to retain drilling fluid when the pilot drill "punches out" and will be applied in the case of an inadvertent release as described in the HDD Inadvertent Release Plan.

Table 6-1. Time of year restrictions for Massachusetts Coastal Alteration Projects.

EFH	Time of Year Restriction
Winter Flounder	January 15 – May 31
Atlantic Cod	April 1 – June 30
Longfin Inshore Squid	April 15 – June 15
Northern Shortfin Squid	June 15 – October 15
Atlantic Surfclam	June 15 – October 15

Source: Massachusetts Division of Marine Fisheries, 2011.

7 EFH DETERMINATION

Determinations for potential impacts to EFH/HAPC and designated species and NOAA Trust Resources from the 5th cable installation are summarized in Table 7-1. Overall, project impacts are primarily expected to be temporary and cause no substantial adverse effect on habitat or associated species. Installation of the 5th submarine cable is not expected to have substantial adverse effects on EFH/HAPC and associated species or NOAA Trust Resources given observed recovery of nearby habitat after similar installation activities and limited spatial impact area.

Table 7-1. Determination of potential impacts to EFH and associated species from 5th submarine cable installation.

Project Activity	Impact	Adverse Effect on EFH is not Substantial	Adverse Effect on EFH is Substantial	Minimization	Mitigation
Hydroplow	Underwater Noise (behavioral avoidance)	Temporary: Juvenile cod HAPC, Adult summer flounder HAPC, all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Water Quality (TSS)	Minimal and Temporary: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Habitat disturbance in path of hydroplow (7.7 acres); potential alteration of sand/granule/small pebble habitat	Temporary, minimal area (recovery expected): Adult summer flounder and juvenile Atlantic cod HAPC, all EFH species	None expected	Adherence to TOY restrictions	Mitigation to be negotiated with regulatory agencies.
HDD	Water Quality (TSS)	Minimal and Temporary: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Habitat disturbance in path of hydroplow; potential alteration of sand/granule/small pebble habitat	Temporary, minimal area (recovery expected): Adult summer flounder and juvenile Atlantic cod HAPC, all EFH species	None expected	- Adherence to TOY restrictions - Use of HDD to avoid eelgrass beds - Use of gravity cell	Mitigation to be negotiated with regulatory agencies.
Vessel Traffic	Noise and Barge Grounding	Minimal: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
Electromagnetic Fields	None expected	Negligible impacts expected	None expected	No minimization required	No mitigation required.

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Attachment I

Marine Archaeological Report

This Attachment Contains Confidential Information and has been Distributed to MHC Only

Attachment J

RMAT Tool Output

RMAT Climate Resilience Design Standards Tool Project Report

Eversource 70 Cable

Date Created: 11/23/2021 1:12:37 PM   Created By: nperlot   Download

Project Summary

Link to Project

Estimated Construction Cost: $60000000.00
End of Life Year: 2072
Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low

Exposure	Scores
Sea Level Rise/Storm Surge	High Exposure
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	Moderate Exposure
Extreme Heat	High Exposure

Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
70 Cable	High Risk	Moderate Risk	Moderate Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
70 Cable	2070	2050		100-yr (1%)	Tier 3
Extreme Precipitation					
70 Cable	2070			25-yr (4%)	Tier 3
Extreme Heat					
70 Cable	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "High Exposure" because of the following:

- Located within the predicted mean high water shoreline by 2030
- Exposed to the 1% annual coastal flood event as early as 2030
- Historic coastal flooding at project site

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "Moderate Exposure" because of the following:

- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- Less than 10% of the existing project site has canopy cover
- 10 to 30 day increase in days over 90 deg. F within project's useful life
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Risk Scoring

Asset - 70 Cable
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable for more than a day but less than a week after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- There are no hazardous materials in the asset

Project Design Standards Output

Asset: 70 Cable — Infrastructure

Sea Level Rise/Storm Surge — High Risk

Target Planning Horizon: 2070
Intermediate Planning Horizon: 2050
Return Period: 100-yr (1%)

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Tidal Benchmarks: Yes
Stillwater Elevation: Yes
Design Flood Elevation (DFE): Yes
Wave Heights: Yes
Duration of Flooding: Yes
Design Flood Velocity: Yes
Wave Forces: Yes
Scour or Erosion: Yes

Extreme Precipitation — Moderate Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes
Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes
Cooling Degree Days (Base = 65°F): No
Heating Degree Days (Base = 65°F): No
Growing Degree Days: No

Project Inputs

Core Project Information

Name:	Eversource 70 Cable
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2072
Location of Project:	Falmouth
Estimated Capital Cost:	$60,000,000
Who is the Submitting Entity?	Private Other NSTAR Electric Company d/b/a Eversource Energy Nicole Perlot (nperlot@epsilonassociates.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	Eversource proposes to construct a new submarine cable across Vineyard Sound from the Town of Falmouth on Cape Cod to the Town of Oak Bluffs on Martha's Vineyard to provide additional electric service that will meet the growing demand for electricity on the island. The preferred method of cable installation will be via HDD at each landing to avoid potential impacts to coastal wetland resource areas. The rest of the proposed cable route will be installed via hydroplow or jet plow.
Project Submission Comments:	

Project Ecosystem Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

✓ Incorporate nature-based solutions that may provide flood protection
✓ Incorporate nature-based solutions that may reduce storm damage
✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
✓ Incorporate strategies that reduce carbon emissions
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that improve water quality
✓ Incorporate nature-based solutions that sequester carbon carbon
✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
✓ Preserve, enhance, and/or restore coastal shellfish habitats
✓ Incorporate vegetation that provides pollinator habitat
✓ Identify opportunities to remediate existing sources of pollution
✓ Provide opportunities for passive and/or active recreation through open space
✓ Increase plants, trees, and/or other vegetation to provide oxygen production
✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
✓ Identify opportunities to prevent pollutants from impacting ecosystems

✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	Yes
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: 70 Cable
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: New Construction
Construction Year: 2022
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure may be inaccessible/inoperable for more than a day, but less than a week after natural hazard without consequences.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Greater than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

There are no hazardous materials in the infrastructure

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Reduced morale and public support

Report Comments

N/A

Attachment K

Public Outreach Materials

- EJ Screening Form
- EJ Screening Form Distribution Email List
- Fact Sheet

EJ Screening Form

247 Station Drive
Mail Stop NE 390
Westwood, MA 02090

April 1, 2022

Dear Stakeholder,

As part of our everyday effort to deliver reliable energy to our customers and communities, we are planning improvements to the electric system. This project will improve the reliability of the electric grid on Martha's Vineyard so that all of our customers have access to dependable power that meet their current and growing energy needs.

We're Always Working to Serve You Better

We are planning the **Martha's Vineyard Reliability Project**, a new distribution underground manhole (precast concrete vault) and duct bank (a series of conduits that house electric cables) system between Eversource's Falmouth Substation and Oak Bluffs. This project will bolster the system capacity on Martha's Vineyard to meet growing energy needs. It will also help facilitate Eversource's efforts to decrease its carbon footprint by decommissioning the five existing diesel generators on the Island. The new line will travel approximately 2.7 miles from the existing Falmouth Substation on Stephens Lane to Jones Road, onto the Shining Sea Bikeway, down Mill Road to Surf Drive before transitioning in the Surf Drive parking lot to a submarine cable to cross Vineyard Sound. The line will then travel approximately 6.1 miles buried in the sea floor of Vineyard Sound before landing at East Chop, on Eastville Avenue where it will transition to onshore cables. Once onshore, the line follows a new duct bank and manhole system along Eastville Avenue to an Eversource parcel. The project will also include upgrades to the Falmouth Substation to support the new line and the installation of six pad-mounted transformers at the Eastville parcel to facilitate distribution of the new electric line feeding the Island.

For More Information

Keeping the lines of communication open is important to us. The attached form includes additional information on the project, or you may contact Andrea Burton at Andrea.Burton@Eversource.com or 617-922-3721. You can also contact our Project Hotline at 1-800-793-2202 or send an email to ProjectInfo@eversource.com and mention the proposed project **Martha's Vineyard Reliability Project** in the subject line.

We welcome your feedback and look forward to discussing this project in more detail.

Sincerely,

Andrea Burton

Andrea Burton

Environmental Justice Screening Form

Project Name	**Martha's Vineyard Reliability Project**
Anticipated Date of MEPA Filing	**April 29, 2022**
Proponent Name	**NSTAR Electric Company d/b/a Eversource Energy**
Contact Information (e.g., consultant)	**Andrea Burton** **Project Manager – Project Services** **Andrea.burton@eversource.com ; 617-922-3721** **Project Hotline –ProjectInfo@Eversource.com; 800-793-2202**
Public website for project or other physical location where project materials can be obtained (if available)	**The Project website is: www.eversource.com/content/MV-Reliability-91-Cable-Projects** **It will be live on April 4, 2022.**
Municipality and Zip Code for Project (if known)	**Falmouth, MA 02540 and** **Oak Bluffs, MA 02557**
Project Type* (list all that apply)	**Coastal Infrastructure and Dredging (repositioning of sediments)**
Is the project site within a mapped 100-year FEMA flood plain? Y/N/ unknown	**Y**
Estimated GHG emissions of conditioned spaces (click **here** for GHG Estimation tool)	**0**

Project Description

1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures if known.

The Project involves installing a new submarine cable across Vineyard Sound from the Town of Falmouth on Cape Cod to the Town of Oak Bluffs on Martha's Vineyard. The purpose is to improve reliability with increased grid-based electric service to meet current and future electricity demand. It will also improve the ability to integrate dispersed renewable generation into the system.

The Project is comprised of: (1) an approximately 6.1-mile submarine cable, (2) an approximately 2.7-mile duct bank and manhole system for the onshore cable in Falmouth, (3) an approximately 0.25-mile duct bank and manhole system in Oak Bluffs, (4) new equipment installed in the existing Eversource Stephens Lane Substation in Falmouth, and (5) installing new equipment at the Eversource-owned parcel off Eastville Avenue in Oak Bluffs. This Project will allow Eversource to decommission of five diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard.

Submarine cable installation includes Horizontal Directional Drilling at the sea to shore transition points in Falmouth and Oak Bluffs to avoid shoreline and intertidal habitats. The cable will be installed by jet plow construction across Vineyard Sound. The Landside duct bank will be constructed using open trenching and backfill construction techniques.

2. List anticipated MEPA review thresholds (301 CMR 11.03) (if known)

Wetlands, Waterways, and Tidelands (301 CMR 11.03(3)(b)):
1.f. Provided a Permit is required, alteration of ½ or more acres of any other wetlands (Land Under the Ocean and Coastal Beach), and 3. dredging 10,000 or more cy of material.

3. List all anticipated state, local and federal permits needed for the project (if known)

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers ("USACE")	**Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899: Individual Permit pursuant to the Massachusetts General Permit. .**
	USFWS & NMFS Consultation under Section 7 of the Endangered Species Act ("ESA")
	SHPO, MBUAR and THPO Consultation pursuant to Section 106 of the National Historic Preservation Act ("NHPA")
U.S. Coast Guard ("USCG")	**Notice to Mariners**
State	
Massachusetts Office of Coastal Zone Management ("CZM")	**Federal Consistency Determination**
Massachusetts Department of Environmental Protection ("MassDEP")	**Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act** **Chapter 91 Waterways License**
Massachusetts Environmental Policy Act Office ("MEPA")	**MEPA Certificate**
Natural Heritage and Endangered Species Program ("NHESP")	**Massachusetts Endangered Species Act ("MESA") Review[1]**
Local and Regional	
Falmouth Conservation Commission	**Notice of Intent/Order of Conditions**
Tisbury Conservation Commission	**Notice of Intent/Order of Conditions**
Oak Bluffs Conservation Commission	**Notice of Intent/Order of Conditions**
Cape Cod Commission	**Development of Regional Impact Determination**
Martha's Vineyard Commission	**Development of Regional Impact Determination**

4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 5 miles of project site (can attach map identifying 5-mile radius from EJ Maps Viewer in lieu of narrative)

The project is located within 1 mile of the following census block groups on the EJ Maps Viewer:
Block Group 3, Census Tract 149 in Falmouth with the EJ criteria "Income"
Block Group 1, Census Tract 148 in Falmouth with the EJ criteria "Income"

[1] Proposed to be filed a Joint WPA / MESA application

Block Group 3, Census Tract 148 in Falmouth with the EJ criteria "Income"
Block Group 4, Census Tract 2002 in Oak Bluffs with the EJ criteria "Income"
Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria "Minority"
Block Group 1, Census Tract 2001 in Tisbury with the EJ criteria "Income"

The following languages are spoken by 5 percent or more of the EJ population who also identifies as not speaking English "very well."
Census Tract 2001 in Tisbury: Portuguese or Portuguese Creole: 8.4%

In addition to the groups listed above, the project is located within 5 miles of the following census block groups on the EJ Maps Viewer:
Block Group 3, Census Tract 145 in Falmouth with the EJ criteria "Income"
Block Group 2, Census Tract 146 in Falmouth with the EJ criteria "Income" and "Minority"
Block Group 2, Census Tract 144.02 in Falmouth with the EJ criteria "Minority"
Block Group 4, Census Tract 2001 in Tisbury with the EJ criteria "Income"
Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria "Minority"
Block Group 2, Census Tract 2003 in Edgartown with the EJ criteria "Minority"

5. Identify any municipality or census tract meeting the definition of "vulnerable health EJ criteria" in the DPH EJ Tool located in whole or in part within a 1 mile radius of the project site

The DPH EJ Tool identifies the following municipalities or census tracts within a 1 mile radius of the project as having the following Vulnerable Health EJ Criteria.

Falmouth:
- **Heart Attack 34.4 per 10,000 (110% statewide rate 29.065 per 10,000)**

Oak Bluffs Municipality
- **Elevated Blood Lead Prevalence 35.4 per 1,000 (110% statewide rate 17.7 per 1,000)**[2]

Tisbury Municipality:
- **Pediatric Asthma ED Visits 168.3 per 10,000. (110% statewide rate 91.4 per 10,000)**
- **Heart Attack 46.1 per 10,000 (110% statewide rate 29.065 per 10,000)**
- **Low Birth Weight 379.7 per 1,000 (110% statewide rate 238.5 per 1,000)**
- **Elevated Blood Lead Prevalence 28.6 per 1,000 (110% statewide rate 17.7 per 1,000)**[3]

Tisbury Census Tract (25007200100):
- **Low Birth Weight 411 per 1,000 (110% statewide rate 238.5 per 1,000)**

Vulnerable Heath EJ Criteria is not available by census tract on Martha's Vineyard and none of the census tracts within 1 mile of the project in Falmouth exceed the 110%.

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[2] This vulnerable health EJ criteria is evaluated at the census tract level. The DPH EJ tool indicates that census tract 25007200200 in Oak Bluffs does not meet the vulnerable health EJ criteria for Elevated Blood Lead Prevalence. This census tract comprises the entire Oak Bluffs municipality.

[3] This vulnerable health EJ criteria is evaluated at the census tract level. The DPH EJ tool indicates that census tract 25007200100 in Tisbury does not meet the vulnerable health EJ criteria for Elevated Blood Lead Prevalence. This census tract comprises the entire Tisbury municipality.

6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation

During project construction, there will be short-term air emissions from construction vehicles (construction and personnel vehicles), construction equipment, and vessels, and possibly the generation of fugitive dust. The following best management practices ("BMPs") and mitigation measures will be implemented during construction of the onshore cable routes:

- **Mechanical sweeping of construction areas and surrounding streets and sidewalks, as necessary;**
- **Using covered trucks or enclosed trailers;**
- **Removal of all dirt/mud from the wheels and undercarriage of all trucks prior leaving the site;**
- **Wetting and / or covering of exposed soils and stockpiles to prevent dust generation, as necessary;**
- **Minimizing stockpiling of material and debris on-site;**
- **Turning off construction equipment when not in use and minimizing vehicle idling in accordance with Massachusetts' anti-idling law, and**
- **Minimizing the duration that soils are left exposed.**

Construction equipment engines will comply with requirements for the use of ultra-low sulfur diesel (ULSD) in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

No long-term environmental or public health impacts are anticipated as a result of the project.

7. Identify project benefits, including "Environmental Benefits" as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population

Once the electric transmission cable is operational, the five (5) diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard will be decommissioned. The diesel generators are operated during summer peak load conditions. Decommissioning of the five diesel generators will result in a long-term reduction in air emissions. Impacted populations are located within 5 miles of the two diesel generator sites.

8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting. Specify how to request other accommodations, including meetings after business hours and at locations near public transportation.

The Community can reach out to the Project Team via a hotline number 800-793-2202 or email ProjectInfo@eversource.com to request a meeting to discuss the project and to request accommodations that may be needed for that meeting e.g. timing, locations, need for interpreter.

EVERSOURCE ENERGY

247 Station Drive
Mail Stop NE 390
Westwood, MA 02090

1º de abril de 2022

Prezados interessados,

Como parte de nossos esforços diários para fornecer energia confiável a nossos clientes e comunidades, programamos a realização de melhorias no sistema de transmissão elétrica. O projeto irá aperfeiçoar a confiabilidade da rede elétrica em Martha's Vineyard, de modo que todos os nossos clientes tenham acesso à energia segura que atenda às demandas de energia atuais e futuras.

Estamos sempre trabalhando para atendê-lo melhor

Estamos planejando o **Projeto de Confiabilidade de Martha's Vineyard**, um novo sistema subterrâneo de distribuição com bueiro (câmara de concreto pré-moldado) e banco de dutos (uma série de conduítes que abrigam cabos elétricos) entre a subestação de Falmouth da Eversource e Oak Bluffs. O projeto reforçará a capacidade do sistema em Martha's Vineyard para atender às crescentes necessidades de energia. Também ajudará a facilitar os esforços da Eversource para diminuir sua pegada de carbono, desativando os cinco geradores a diesel existentes na ilha. A nova linha percorrerá aproximadamente 2,7 milhas (4,3 km) da subestação de Falmouth existente na Stephens Lane até a Jones Road, seguindo na Shining Sea Bikeway, descendo a Mill Road até a Surf Drive antes da transição no estacionamento da Surf Drive para um cabo submarino que atravessa a Vineyard Sound. Em seguida, a linha percorrerá aproximadamente 6,1 milhas (9,8 km), enterrada no fundo do mar de Vineyard Sound, antes de chegar em East Chop, na Eastville Avenue, onde haverá a transição para cabos terrestres. Uma vez em terra, a linha seguirá um novo banco de dutos e sistema de bueiros ao longo da Eastville Avenue até um lote da Eversource. O projeto também incluirá atualizações na Subestação de Falmouth para apoiar a instalação da nova linha e a instalação de seis transformadores montados em blocos na parcela de Eastville para facilitar a distribuição da nova linha elétrica que alimenta a ilha.

Para obter mais informações

Manter as linhas de comunicação abertas é importante para nós. Consulte o formulário anexo para obter informações adicionais sobre o projeto ou entre em contato com Andrea Burton através do e-mail Andrea.Burton@Eversource.com ou pelo telefone 617-922-3721. Também é possível ligar para a Linha Direta do projeto: 1-800-793-2202 ou enviar um e-mail para ProjectInfo@eversource.com; mencione o projeto proposto **«Martha's Vineyard Reliability Project»** na linha de assunto.

Agradecemos seus comentários e não vemos a hora de poder discutir este projeto com mais detalhes.

Atenciosamente,

Andrea Burton

Andrea Burton

Formulário de Triagem da Justiça Ambiental

Nome do projeto	**Projeto de Confiabilidade de Martha's Vineyard**
Data antecipada de apresentação à MEPA	**29 de abril de 2022**
Nome do proponente	**NSTAR Electric Company (nome fantasia: Eversource Energy)**
Informações para contato (por ex., consultor)	**Andrea Burton** **Gerente de Projeto - Serviços de Projeto** **Andrea.burton@eversource.com ; 617-922-3721** **Linha Direta –ProjectInfo@Eversource.com; 800-793-2202**
Site público do projeto ou outro local físico onde os materiais do projeto possam ser obtidos (caso estejam disponíveis)	**O site do projeto é: www.eversource.com/content/MV-Reliability-91-Cable-Projects** **Estará no ar no dia 4 de abril de 2022.**
Município e CEP do Projeto (se conhecidos)	**Falmouth, MA 02540 e** **Oak Bluffs, MA 02557**
Tipo de projeto* (listar todos os que se aplicam)	**Infraestrutura costeira e dragagem (reposicionamento de sedimentos)**
O local do projeto está dentro de uma planície de inundação de 100 anos mapeada pelo FEMA? S/N/Não sei	**S**
Estimativa de emissões de GEE de espaços condicionados (clique **aqui**para acessar uma ferramenta de estimativa de GEE)	**0**

Descrição do projeto

1. Faça uma breve descrição do projeto, incluindo o tamanho geral do local do projeto e a metragem quadrada dos prédios e estruturas propostos, se souber.

O Projeto envolve a instalação de um novo cabo submarino em toda a **Vineyard Sound, da vila de Falmouth em Cape Cod até a vila de Oak Bluffs em Martha's Vineyard. O objetivo é melhorar a confiabilidade com o aumento da rede de transmissão de energia elétrica para atender à demanda de eletricidade atual e futura. Também irá melhorar a capacidade de integrar a geração renovável dispersa ao sistema.**

O Projeto é composto por: (1) um cabo submarino de aproximadamente 6,1 milhas (9,8 km), (2) um banco de dutos de aproximadamente 2,7 milhas (4,3 km) e sistema de bueiros para o cabo terrestre em Falmouth, (3) um banco de dutos de aproximadamente 0,25 milhas e sistema de bueiros em Oak Bluffs, (4) novos equipamentos instalados na subestação da Eversource na Stephens Lane em Falmouth e (5) instalação de novos equipamentos no lote de propriedade da Eversource na Eastville Avenue em Oak Bluffs. Com o projeto, a Eversource poderá desativar cinco geradores a diesel localizados em Oak Bluffs e Vineyard Haven, em Martha's Vineyard.

A instalação de cabos submarinos inclui a perfuração direcional horizontal nos pontos de transição do mar para a costa em Falmouth e Oak Bluffs para evitar habitats costeiros e zonas entremarés. O cabo será instalado por construção com tecnologia de arado a jato em toda a Vineyard Sound. O banco de dutos (Landside) será construído usando técnicas de abertura e fechamento de valas.

2. Liste os limites previstos de revisão do MEPA (301 CMR 11.03) (se souber).

Áreas úmidas, hidrovias e áreas de maré (301 CMR 11.03(3)(b)):
1.f. Desde que seja necessária uma Permissão, alteração de ½ ou mais acres de quaisquer outras áreas úmidas (terra submarina e praia costeira) e 3. dragagem de 10.000 ou mais jardas cúbicas (cerca de 9.000 metros cúbicos) de material.

3. Liste todas as autorizações estaduais, locais e federais previstas que são necessárias para o projeto (se souber).

Agência	Permissão/Aprovação
Federal	
Corpo de Engenheiros do Exército dos EUA ("USACE")	Capítulo 404 da Lei da Água Potável e Capítulo 10 da Lei de Rios e Portos de 1899: Permissão Individual de acordo com a Permissão Geral de Massachusetts.
	Consulta à USFWS e NMFS nos termos do Capítulo 7 da Lei de Espécies Ameaçadas ("ESA")
	Consulta à SHPO, MBUAR e THPO nos termos do Capítulo 106 da Lei Nacional de Preservação Histórica ("NHPA")
Guarda Costeira dos EUA ("USCG")	Aviso aos Marinheiros
Estadual	
Agência de Gestão da Zona Costeira de Massachusetts ("CZM")	Determinação de Consistência Federal
Departamento de Proteção Ambiental de Massachusetts ("MassDEP")	Certificação de Qualidade da Água ("WQC") nos termos do Capítulo 401 da Lei da Água Potável Licença de Hidrovias de acordo com o Capítulo 91
Agência da Lei de Política Ambiental de Massachusetts ("MEPA")	Certificado da MEPA
Programa do Patrimônio Natural e de Espécies Ameaçadas ("NHESP")	Avaliação de acordo com a Lei de Espécies Ameaçadas de Massachusetts ("MESA")[1]
Locais e regionais	
Comitê de Conservação de Falmouth	Aviso de Intenção/Ordem de Condições
Comitê de Conservação de Tisbury	Aviso de Intenção/Ordem de Condições
Comitê de Conservação de Oak Bluffs	Aviso de Intenção/Ordem de Condições
Comitê de Cape Cod	Desenvolvimento de Determinação de Impacto Regional
Comitê de Martha's Vineyard	Desenvolvimento de Determinação de Impacto Regional

[1] Proposta de apresentação de um pedido conjunto à WPA / MESA

4. Identifique as populações e características de Justiça Ambiental (minoria, renda, falta de conhecimento de inglês) dentro de 5 milhas (8 km) do local do projeto (é possível anexar um mapa que mostre o raio de 5 milhas usando o Visualizador de mapas da Justiça Ambiental em vez de descrever por escrito).

O projeto está localizado a 1,6 km dos seguintes grupos de blocos censitários, conforme o Visualizador de Mapas da Justiça Ambiental:

Grupo do Bloco 3, Setor Censitário 149 em Falmouth com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 1, Setor Censitário 148 em Falmouth com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 3, Setor Censitário 148 em Falmouth com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 4, Setor Censitário 2002 em Oak Bluffs com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 2, Setor Censitário 2002 em Oak Bluffs com os critérios de "Minoria" da Justiça Ambiental
Grupo do Bloco 1, Setor Censitário 2001 em Tisbury com os critérios de "Renda" da Justiça Ambiental

Os seguintes idiomas são falados por 5% ou mais da população da Justiça Ambiental que também se identifica como não falando inglês "muito bem".
Setor Censitário 2001 em Tisbury: Português ou crioulo português: 8,4%

Além dos grupos listados acima, o projeto está localizado a 5,6 km dos seguintes grupos de blocos censitários, conforme o Visualizador de Mapas da Justiça Ambiental:

Grupo do Bloco 3, Setor Censitário 145 em Falmouth com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 2, Setor Censitário 146 em Falmouth com os critérios de "Renda" e "Minoria" da Justiça Ambiental
Grupo do Bloco 2, Setor Censitário 144.02 em Falmouth com os critérios de "Minoria" da Justiça Ambiental
Grupo do Bloco 4, Setor Censitário 2001 em Tisbury com os critérios de "Renda" da Justiça Ambiental
Grupo do Bloco 2, Setor Censitário 2002 em Oak Bluffs com os critérios de "Minoria" da Justiça Ambiental
Grupo do Bloco 2, Setor Censitário 2003 em Edgartown com os critérios de "Minoria" da Justiça Ambiental

5. Identifique qualquer município ou setor censitário que atenda à definição de "critérios de saúde de vulneráveis da Justiça Ambiental", de acordo com aFerramenta de Justiça ambiental da Secretaria de Saúde Pública , localizado totalmente ou parcialmente dentro do raio de 1 milha (1,6 km) do local do projeto.

A ferramenta da Justiça Ambiental da Secretaria de Saúde Pública identifica os seguintes municípios ou setores censitários dentro de um raio de 1 milha (1,6 km) do projeto como tendo os seguintes Critérios de Saúde Vulnerável da Justiça Ambiental.

Falmouth:

- **Ataque cardíaco 34,4 por 10.000 (taxa estadual de 110% 29,065 por 10.000)**

Município de Oak Bluffs

- **Prevalência elevada de chumbo no sangue 35,4 por 1.000 (taxa estadual de 110% 17,7 por 1.000)**[2]

Município de Tisbury:

- **Asma Pediátrica - visitas de emergência 168,3 por 10.000. (taxa estadual de 110% 91,4 por 10.000)**
- **Ataque cardíaco 46,1 por 10.000 (taxa estadual de 110% 29,065 por 10.000)**
- **Baixo peso ao nascer 379,7 por 1.000 (taxa estadual de 110% 238,5 por 1.000)**
- **Prevalência elevada de chumbo no sangue 28,6 por 1.000 (taxa estadual de 110% 17,7 por 1.000)**[3]

Setor Censitário de Tisbury (25007200100):

- **Baixo peso ao nascer 411 por 1.000 (taxa estadual de 110% 238,5 por 1.000)**

Os critérios de saúde vulnerável da Justiça Ambiental não estão disponíveis por setor censitário em Martha's Vineyard e nenhum dos setores censitários dentro de 1 milha (1,6 km) do projeto em Falmouth excede os 110%.

[2] Este critério de saúde vulnerável da Justiça Ambiental é avaliado no nível do setor censitário. A ferramenta da Justiça Ambiental da Secretaria de Saúde Pública indica que o setor censitário 25007200200 em Oak Bluffs não atende aos critérios EJ de saúde vulnerável para prevalência elevada de chumbo no sangue. Este setor censitário compreende todo o município de Oak Bluffs.

[3] Este critério de saúde vulnerável da Justiça Ambiental é avaliado no nível do setor censitário. A ferramenta da Justiça Ambiental do Departamento de Saúde Pública indica que o setor censitário 25007200100 em Tisbury não atende aos critérios de saúde vulnerável da Justiça Ambiental para prevalência elevada de chumbo no sangue. Este setor censitário compreende todo o município de Tisbury.

6. Identifique potenciais impactos ambientais e de saúde pública de curto e longo prazo que podem afetar as Populações de Justiça Ambiental e qualquer mitigação prevista.

Durante a construção do projeto, haverá emissões atmosféricas de curto prazo de veículos de construção (veículos de construção e de pessoal), equipamentos de construção e embarcações, e possivelmente a geração de poeira fugitiva. As seguintes boas práticas de gestão ("BMPs") e medidas de mitigação serão implementadas durante a construção das rotas de cabos terrestres:

- **Varredura mecânica das áreas de construção e ruas e calçadas do entorno, quando necessário;**
- **Uso de caminhões cobertos ou reboques fechados;**
- **Remoção de toda sujeira/lama das rodas e chassi de todos os caminhões antes que deixem o local;**
- **Umedecimento e/ou cobertura de solos expostos e pilhas de estocagem para evitar a geração de poeira, conforme necessário;**
- **Redução da estocagem de material e detritos no local;**
- **Desligamento do equipamento de construção quando não estiver em uso e minimização da marcha lenta do veículo de acordo com a lei anti-marcha lenta de Massachusetts e**
- **Minimização do tempo de duração da exposição dos solos.**

Os motores de equipamentos de construção cumprirão os requisitos para o uso de diesel com baixo teor de enxofre (ULSD) em motores *off-road*. O empreiteiro de construção será incentivado a usar equipamentos de construção a diesel com controles de emissão de gases de escape instalados, como catalisadores de oxidação ou filtros de partículas em seus motores a diesel.

Não estão previstos impactos ambientais ou de saúde pública de longo prazo como resultado do projeto.

7. Identifique os benefícios do projeto, incluindo os "Benefícios ambientais", conforme definido na norma 301 CMR 11.02, que podem melhorar as condições ambientais ou a saúde pública da População de Justiça ambiental.

Assim que o cabo de transmissão elétrica estiver em operação, serão desativados os 5 (cinco) geradores a diesel localizados em Oak Bluffs e Vineyard Haven em Martha's Vineyard. Os geradores a diesel são operados durante as condições de pico de carga do verão. A desativação dos cinco geradores a diesel resultará em uma redução de longo prazo nas emissões atmosféricas. As populações afetadas estão localizadas a 5 milhas (8 km) dos dois locais com geradores a diesel.

8. Descreva como a comunidade pode organizar uma reunião para discutir o projeto e como a comunidade pode solicitar serviços de interpretação para a reunião. Especifique como solicitar outras acomodações, incluindo reuniões fora do horário comercial e em locais próximos a transportes públicos.

A comunidade pode entrar em contato com a equipe do projeto por meio de um número de linha direta 800-793-2202 ou pelo e-mail ProjectInfo@eversource.com para solicitar uma reunião para discutir o projeto, bem como arranjos que sejam necessários para essa reunião,

por exemplo. horário, locais, necessidade de intérprete.

EJ Screening Form Distribution Email List

From: Burton, Andrea R <andrea.burton@eversource.com>
Sent: Thursday, March 31, 2022 4:24 PM
To: ben@environmentmassachusetts.org <ben@environmentmassachusetts.org>; cluppi@cleanwater.org <cluppi@cleanwater.org>; deb.pasternak@sierraclub.org <deb.pasternak@sierraclub.org>; elvis@n2nma.org <elvis@n2nma.org>; hclish@outdoors.org <hclish@outdoors.org>; hricci@massaudubon.org <hricci@massaudubon.org>; juliablatt@massriversalliance.org <juliablatt@massriversalliance.org>; kelly.boling@tpl.org <kelly.boling@tpl.org>; kerry@msaadapartners.com <kerry@msaadapartners.com>; ngoodman@environmentalleague.org <ngoodman@environmentalleague.org>; pstanton@e4thefuture.org <pstanton@e4thefuture.org>; rob@oceanriver.org <rob@oceanriver.org>; robb@massland.org <robb@massland.org>; sarah@massclimateaction.net <sarah@massclimateaction.net>; srubin@clf.org <srubin@clf.org>; sylvia@communityactionworks.org <sylvia@communityactionworks.org>; tsmookler@uumassaction.org <tsmookler@uumassaction.org>; wvaughan@hcwh.org <wvaughan@hcwh.org>; tribalcouncil@chappaquiddick-wampanoag.org <tribalcouncil@chappaquiddick-wampanoag.org>; thpo@wampanoagtribe-nsn.gov <thpo@wampanoagtribe-nsn.gov>; crwritings@aol.com <crwritings@aol.com>; john.peters@mass.gov <john.peters@mass.gov>; acw1213@verizon.net <acw1213@verizon.net>; melissa@herringpondtribe.org <melissa@herringpondtribe.org>; rockerpatriciad@verizon.net <rockerpatriciad@verizon.net>; rhalsey@naicob.org <rhalsey@naicob.org>; thpo@wampanoagtribe-nsn.gov <thpo@wampanoagtribe-nsn.gov>; bonney.hartley@mohican-nsn.gov <bonney.hartley@mohican-nsn.gov>; Brian.Weeden@mwtribe-nsn.gov <Brian.Weeden@mwtribe-nsn.gov>; info@capecodclimate.org <info@capecodclimate.org>; info@cacci.cc <info@cacci.cc>; engagefalmouth@gmail.com <engagefalmouth@gmail.com>; MDiGiano@falmouthedic.org <MDiGiano@falmouthedic.org>; murphydalzell@aol.com <murphydalzell@aol.com>; admin@uuffm.org <admin@uuffm.org>; hauke@whoi.edu <hauke@whoi.edu>
Subject: Eversource's Martha's Vineyard Reliability Project and 91 Replacement Cable Project

Dear Stakeholders,

Please see the attached cover letter and Environmental Justice Screening Form regarding Eversource's Martha's Vineyard Reliability Project and 91 Replacement Cable Project.

The documents are provided in the following languages: English and Portuguese.

We look forward to any input, questions, or concerns you may have.

Sincerely,

Andrea Burton

Andrea Burton, Project Manager
Project Services, Eversource Energy
O: 781-441-8515
C: 617-922-3721
Email: Andrea.Burton@eversource.com

EVERSOURCE

Fact Sheet

EVERSOURCE

Martha's Vineyard Reliability Project
&
91 Replacement Cable Project

Ensuring an Enhanced Network and Enabling a Clean Energy Future

Project Need

As a part of our ongoing commitment to deliver reliable energy to our customers, Eversource is proposing to construct a new 23kV underground and submarine line between Falmouth and Oak Bluffs, Massachusetts and to replace an existing underground and submarine cable between Falmouth and Tisbury, Massachusetts. Both of these new lines will interconnect to existing substations in the area and will bolster system capacity and reliability on Martha's Vineyard to meet growing energy needs. These projects will also help facilitate Eversource's efforts to decrease its Carbon footprint by decommissioning the five existing diesel generators on the Island.

Projects' Description

Martha's Vineyard Reliability Project

The proposed project will include the installation of a new approximately 2.7-mile underground manhole (precast concrete vault) and duct bank system (a series of conduits that house electric cables). Eversource's proposed route runs from the existing Falmouth Station on Stephens Lane to Jones Road, onto the Shining Sea Bikeway, down Mill Road to Surf Drive before transitioning in the Surf Drive parking lot to a submarine cable to cross Vineyard Sound. The line will then travel approximately 6.1 miles buried in the sea the floor of Vineyard Sound before landing at East Chop, on Eastville Avenue where it will transition to onshore cables. Once onshore, the line follows a new duct bank and manhole system along Eastville Avenue to an Eversource parcel. The project will include upgrades to the Falmouth Substation to support the installation of the new line and the installation of six pad-mounted transformers at the Eastville parcel to facilitate distribution of the new electric line feeding the Island.

91 Cable Replacement Project

The proposed project will follow the same duct bank and manhole system as the Martha's Vineyard Reliability Project but will terminate at the Mill Road Parking Lot before transitioning to an approximately 5.5-mile submarine cable to cross the Vineyard Sound and land at Eversource facilities in West Chop.

As a result of an extensive review that considered system reliability, technical feasibility, cost, environmental and community impacts and stakeholder feedback, the distribution line routes (*shown on the next page(s))* were ultimately developed for the Falmouth, Oak Bluffs, and Tisbury landings.

Estimated Timetable*

- **Public Open Houses:** Spring 2022
- **File Environmental Notification Form for Review under the Massachusetts Environmental Policy (MEPA):** Projected May 2022
- **Pre-Construction Open Houses:** Summer 2022
- **Start of construction:** Fall 2022
- **Estimated in-service date:** December 2024

**Dates subject to change*

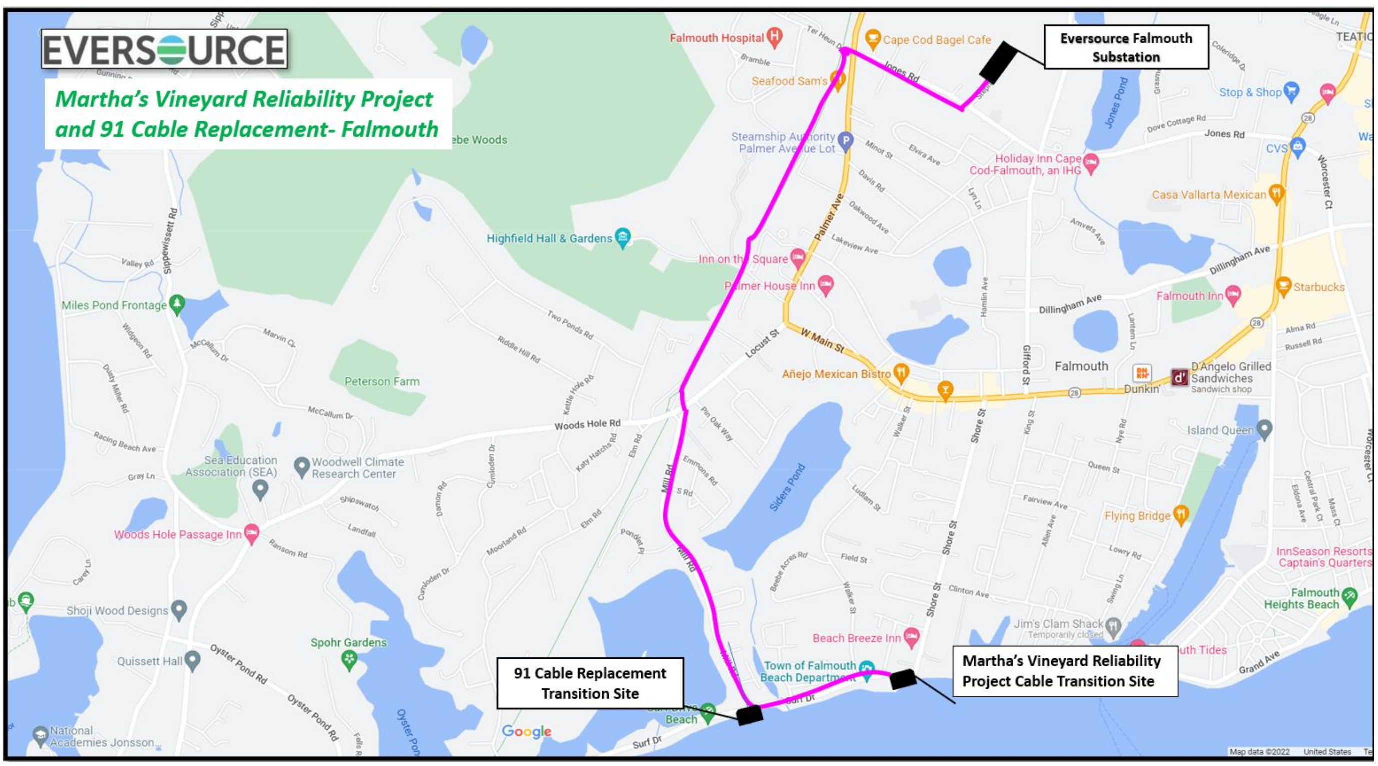
Community Outreach

Eversource is committed to continuing its collaborative working partnership with each local community, municipal leaders, and other interested stakeholders to provide information on the project, gather feedback and answer any questions or concerns. Public Open Houses will be held both virtually and in-person in each host community during the Spring of 2022 and Eversource will hold informational in-community pop-up events in an effort to solicit feedback from a diverse cross-section of the neighborhoods the project will traverse.

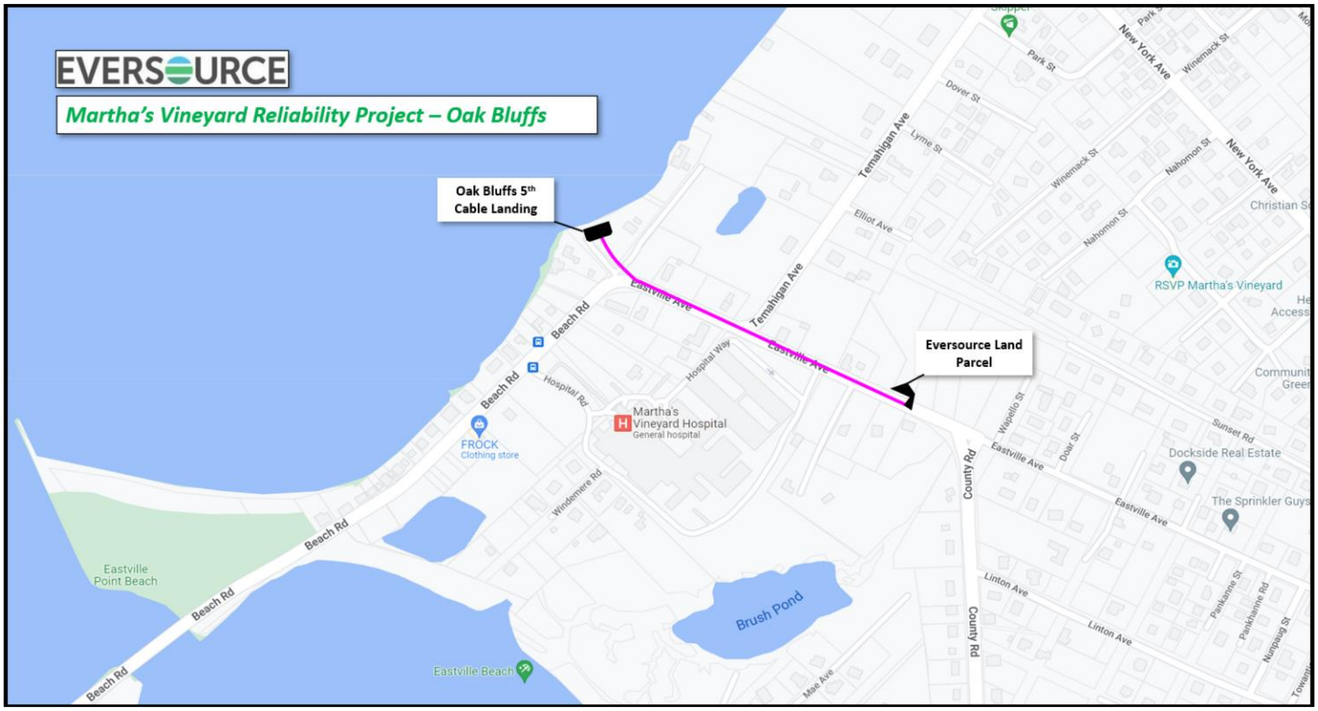
For More Information

Contact Eversource at ProjectInfo@eversource.com or call 800-793-2202. You can also keep up with happenings in your community by providing your contact information and we will share new project information as it is available.

Falmouth



Oak Bluffs



Tisbury

Martha’s Vineyard Reliability Project
&
91 Replacement Cable Project

Por que estamos desenvolvendo esses projetos?

Ambas as novas linhas serão interligadas às subestações existentes na área e aumentarão a capacidade e a confiabilidade do sistema em Martha’s Vineyard para atender às crescentes demandas de energia. Os projetos também ajudarão a facilitar os esforços da Eversource para diminuir sua pegada de carbono, desativando os cinco geradores a diesel existentes na ilha.

Sobre o Projeto

Projeto de Confiabilidade de Martha’s Vineyard

- O projeto proposto incluirá a instalação de um novo sistema subterrâneo de bueiro (caixa de concreto pré-moldado) de 2,7 milhas (4,3 km) e banco de dutos (uma série de conduítes que abrigam cabos elétricos). A rota proposta pela Eversource se estende da Estação de Falmouth existente na Stephens Lane até a Jones Road, seguindo na Shining Sea Bikeway, descendo a Mill Road até a Surf Drive antes da transição no estacionamento da Surf Drive para um cabo submarino que atravessa a Vineyard Sound.
- Em seguida, a linha percorrerá aproximadamente 6,1 milhas (9,8 km), enterrada no fundo do mar de Vineyard Sound, antes de chegar em East Chop, na Eastville Avenue, onde haverá a transição para cabos terrestres. Uma vez em terra, a linha seguirá um novo banco de dutos e sistema de bueiros ao longo da Eastville Avenue até um lote da Eversource.

Projeto de Substituição do Cabo 91

- O projeto proposto seguirá o mesmo banco de dutos e sistema de bueiros usados no Projeto de Confiabilidade de Martha’s Vineyard, mas terminará no Mill Road Parking Lot antes que ocorra a transição para um cabo submarino de 5,5 milhas (8,8 km) para cruzar o Vineyard Sound e chegar até as instalações da Eversource em West Chop.

Comprimento da rota – Projeto de Confiabilidade de Martha's Vineyard

- Falmouth: aprox. 2,7 milhas (4,3 km)
- Vineyard Sound: aprox. 6,1 milhas (9,8 km)
- Oak Bluffs: aprox. 0,3 milhas (0,48 km)

Tensão da rede: 23kV

Comprimento da rota – Projeto de Substituição do Cabo 91

- Falmouth: aprox. 2,7 milhas (4,3 km)
- Vineyard Sound: aprox. 5,5 milhas (8,8 km)

Tensão da rede: 23kV

Cronograma do Projeto*

- **Reuniões Open House públicas:** Primavera de 2022
- **Protocolar Formulário de Notificação Ambiental para revisão nos termos da Lei de Política Ambiental de Massachusetts (MEPA):** Data estimada: maio de 2022
- **Início da construção:** Data estimada: outono de 2022
- **Data prevista para conclusão:** Final de 2024

**Datas estimadas*

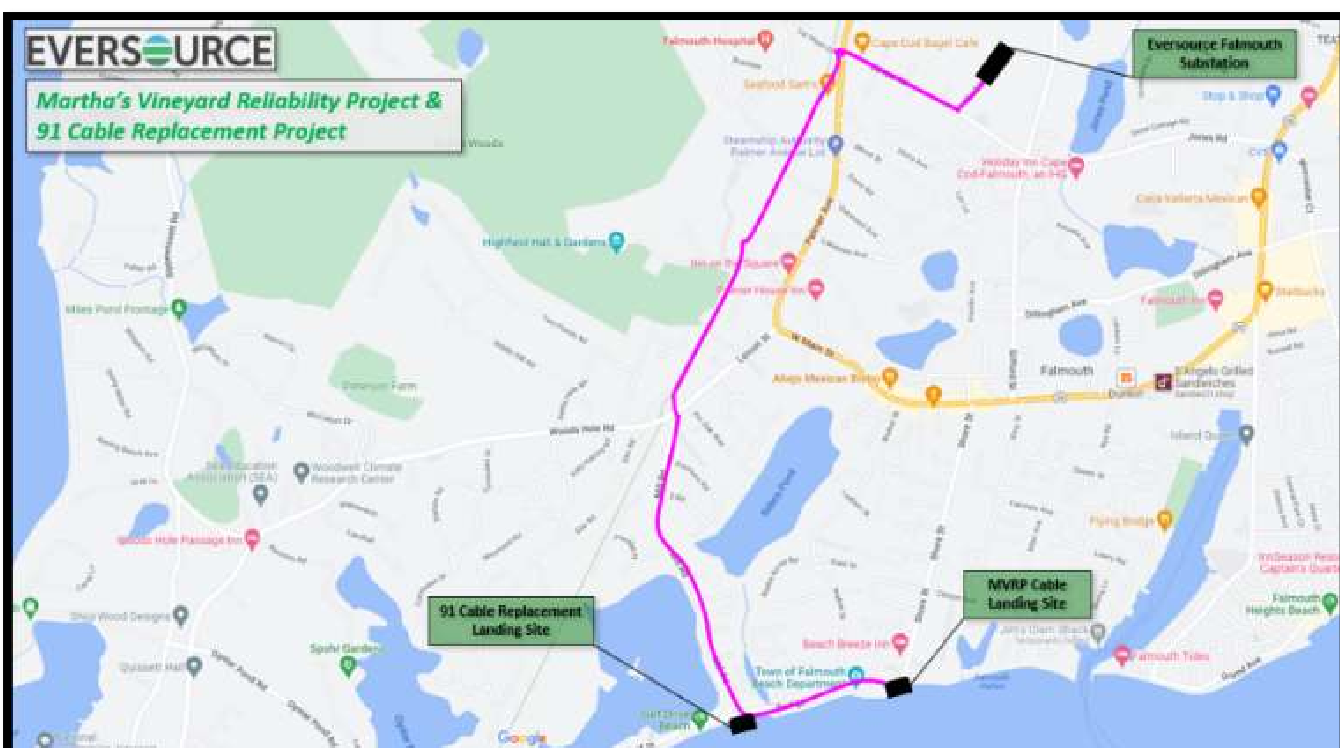
Extensão comunitária

A Eversource está comprometida em formar parcerias com todos os membros da comunidade, líderes municipais e outras partes interessadas para fornecer informações sobre os projetos, obter feedback e responder a quaisquer dúvidas. As reuniões Open House serão realizadas tanto presencial quanto virtualmente em cada comunidade anfitriã na primavera de 2022 (no hemisfério norte). Continuamos aderindo ao distanciamento social da COVID-19 e outras diretrizes de saúde e segurança relacionadas.

Informações para contato

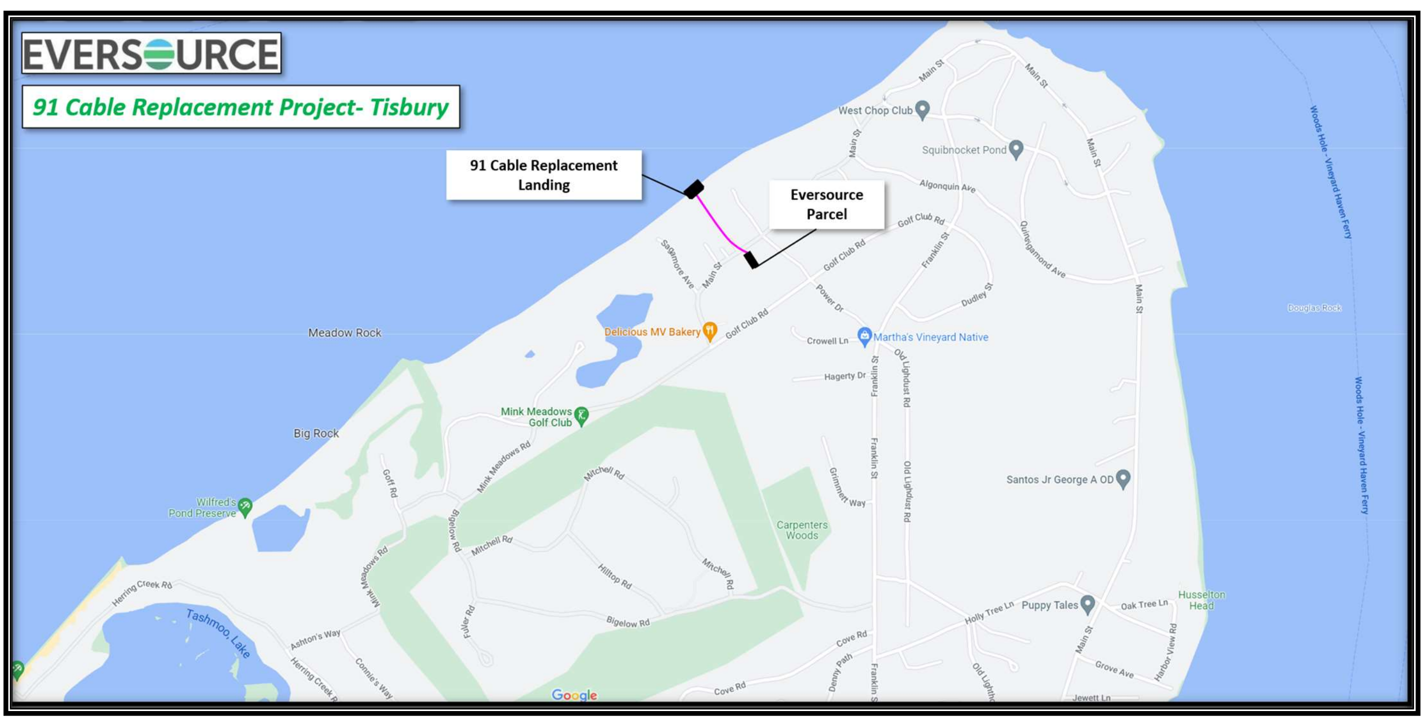
Manter abertos os canais de comunicação é parte importante do nosso trabalho em sua comunidade. Em caso de dúvida ou para obter mais informações sobre o projeto, entre em contato pelo telefone 1-800-793-2202 ou através do e-mail ProjectInfo@eversource.com.

Falmouth



Oak Bluffs

Tisbury



Attachment L

ENF Certificate and Comment Letters

The Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Bethany A. Card
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/eea

July 15, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM AND
PROPOSED ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Martha's Vineyard Reliability Project
PROJECT MUNICIPALITY	: Falmouth, Oak Bluffs and Tisbury
PROJECT WATERSHED	: Cape & Islands
EEA NUMBER	: 16562
PROJECT PROPONENT	: NSTAR Electric Company d/b/a Eversource Energy
DATE NOTICED IN MONITOR	: May 25, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and Proposed Environmental Impact Report (EIR), collectively referred to herein as the "EENF/Proposed EIR", for the project. The EENF/Proposed EIR was submitted by the Proponent in accordance with 301 CMR 11.05(9) with a request that I allow a rollover in accordance with 301 11.06(13). As noted below, comments submitted by Agencies identified the need for additional information and analyses that were not provided in the EENF/Proposed EIR. The Proponent requested that, if a rollover EIR were not granted, a Single EIR be allowed to be submitted in accordance with 301 CMR 11.06(8) in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

Project Description

As described in the EENF/Proposed EIR, the project consists of the construction of an approximately 9.19-mile long 25-kiloVolt (kV) distribution cable between an existing Eversource Substation #933 off Stephens Lane in Falmouth to a connection site off Eastville Avenue in Oak Bluffs. Approximately 2.95 miles of the cable will be installed on land, including a 2.7-mile long section in Falmouth and a 0.25-mile long section in Oak Bluffs, and approximately 6.24 miles of the cable will be installed across Vineyard Sound through the waters of Falmouth, Tisbury and Oak Bluffs. The cable will contain three power conductors and two fiberoptic cables enclosed in Ethylene Propylene Rubber (EPR) insulation with an overall outside diameter of 5.5 inches.

The Proponent owns and operates four existing 23-kV cables across Vineyard Sound between Falmouth and Martha's Vineyard that deliver electricity to Martha's Vineyard. As described in the EENF/Proposed EIR, two of the cables have experienced multiple failures; one of the failing cables (Cable # 91) will be replaced in the near future.[1] According to the Proponent, the existing cables cannot reliably supply the peak demand during the summer months, when the population of Martha's Vineyard increases from 17,000 year-round residents to approximately 200,000 summer residents. Five diesel generators are currently used to supplement power delivered by the four cables to meet summer peak demand for electricity. The purpose of the project is to add a fifth electric distribution cable to improve the reliability and supply of grid-based electricity on Martha's Vineyard and to meet future load growth. Electricity supplied by the project will displace power provided by five diesel generators during peak demand periods on Martha's Vineyard.

Onshore Cable Installation

The terrestrial route in Falmouth will proceed south on Stephen Lane from Substation #933 west on Jones Road to the Shining Sea Bikeway, follow the bikeway to Cemetery Lane, then turn south onto Mill Road, then east onto Surf Road and terminate at the parking lot eastern end of Surf Road. The approximately 2.3-mile long portion of the cable between Substation #933 and Surf Road will be installed within a new concrete conduit to be installed in a 4-ft wide, 4-6 ft deep excavated trench; the final 0.38-mile long section of the cable will be installed within an existing concrete conduit in Surf Road. Manholes measuring 8 ft wide by 14 feet long and 8 ft deep will be installed every 400 to 700 ft along the route. In Oak Bluffs, the cable will be installed within a new 0.25-mile long conduit installed in Eastville Avenue between the cable landfall location and an Eversource equipment yard. Installation of ducts and manholes in Falmouth ais scheduled to begin in autumn 2022 and will be completed within 6 to 9 months; construction of ducts and manholes in Oak Bluff will take only 15 days. No landside work will occur between Memorial Day and Labor Day.

[1] The Proponent will file a separate ENF for the Cable #91 replacement project.

Cable Transition between Onshore and Offshore

The cables will be transitioned from the offshore environment at the landfall locations at the Surf Drive Beach parking lot in Falmouth and Eastville Avenue within 12- to 18-inch diameter high density polyethylene (HDPE) conduits. The conduits will be installed within 2,500-ft long bore holes excavated using Horizontal Directional Drilling (HDD). The HDD construction technique involves excavation of 10-ft by 20-ft approach pits on land at both landfall locations, and drilling a small diameter pilot hole from the approach pit, below the beach, eelgrass beds and other coastal wetland resource areas, to the offshore location where the cable trenching will terminate. After the pilot hole has been established, the end of the drill will be fitted with a cutter head and pulled back to the approach pit to create a hole of sufficient diameter for a conduit to be pulled through. Once the conduit is installed, the offshore export cables will be pulled through the conduit into an onshore underground vault, where it will be routed through onshore concrete conduits. HDD operations are expected to last for 30 days at each landfall location and will commence in the autumn to avoid shorebird breeding and nesting periods. The EENF/Proposed EIR included an HDD contingency plan that described measures that will be undertaken to identify any unintended releases of HDD drilling fluid and restore impacted areas.

Offshore Cable Installation

The offshore portion of the cable will be installed along a 6.24-mile long underwater route to the west of the existing Cable #99 between Falmouth and Oak Bluffs. The cable will be installed using a hydroplow or jet plow, which simultaneously dig a trench and lay and bury the cable. The plow will dig a 3- to 5-ft wide trench in which the cable will be buried to a depth of 6 to 10 feet and covered with sediment. The plow will be pulled along the seafloor on skids or tracks that are approximately five feet wide. Cable installation will be done using vessels that pull the trenching tool and maintain position along the route by repositioning anchors.[2] According to the EENF/Proposed EIR, cable installation will disturb a 12-ft wide area along the cable route from the combined impacts of the trench and skids (up to 7.7 acres total); anchor impacts will disturb an additional 0.8 acres of benthic habitat. Prior to installation of the cable, a plow "pre-pass" will be conducted along all or portions of the route to confirm that the cable can be buried to the design depth. If unexpected conditions are encountered, such as submerged boulders, stiff clays or consolidated materials that prevent burial of the cable to a sufficient depth, the Proponent may slightly adjust the route to avoid the obstruction, or place the cable without burying it at the design depth. In the latter event, the cable will be covered with protective armoring, which may include rocks, concrete mattresses or half-shell pipes. Offshore cable installation using the plow is anticipated to proceed at a rate of 300 feet per hour and will be completed in no more than 30 days.

[2] According to the EENF/Proposed EIR, a self-propelled plow may be used, which would avoid benthic impacts associated with the use of anchors.

Project Site

Site conditions at the locations of proposed upland activities in Falmouth and Oak Bluffs are described below.[3]

Falmouth

Project activities in Falmouth will take place in the southern portion of the town. Substation #933 is located at the northern terminus of Stephens Lane. The substation is bordered to the north and east by a concrete plant, to the west by commercial uses and to the south by single family residences along Stephens Lane. The section of Jones Road along the cable route includes residential uses and commercial uses. The approximately one mile-long segment of the Shining Sea Bikeway along the cable route runs in a generally north-south direction. The east side of the bikeway is bordered by commercial and industrial uses, including a parking lot for the Steamship Authority, and the west side is bordered by an electrical transmission right-of-way, undeveloped land, institutional uses, a residential apartment complex and commercial uses.

Most of the cable route south of the Shining Sea Bikeway is located within the 100-year floodplain (Land Subject to Coastal Storm Flowage or LSCSF). As shown on the Federal Emergency Management Agency's (FEMA) National Flood Insurance Rate Map (FIRM) numbers 25001C0717J and 25001C0736J (both maps effective July 16, 2014), the northern section of Mill Road is located within the Zone AE with Base Flood Elevation (BFE) of 12 ft NAVD 88; the southern section of Mill Road and Surf Road are located in a coastal flood zone with a velocity hazard (VE zone) with a BFE of 15 ft NAVD 88.

Project components in Falmouth are located within and within one mile one mile of three Environmental Justice (EJ) population designated as Income. The Falmouth project components are within five miles of additional EJ populations in Falmouth designated as Minority; Income; and Minority and Income, and an EJ population in Tisbury designated as Income.

Oak Bluffs

Project activities in Oak Bluffs will occur in a primarily residential neighborhood in which Martha's Vineyard Hospital a State Police barracks are also located. The equipment yard will be located on a 0.69-acre wooded parcel off Eastville Road. The equipment yard site is approximately 0.25 miles east of the landfall site adjacent to Vineyard Haven Harbor. The equipment yard parcel is bordered by a residential building and Eastville Avenue to the south and undeveloped land to the north, east and west. The western half of the section of Eastville Avenue in which the proposed Cable will be installed is located within a VE Zone with a BFE of 12 ft NAVD 88.

Project components in Oak Bluffs are located within one mile of one EJ population designated as Income and one EJ population designated as Minority in Oak Bluffs, and one EJ

[3] Project activities in Tisbury are limited to offshore cable installation, which is described in the "Review of the EENF/Proposed EIR" section of this Certificate.

population designated as Income in Tisbury. The Oak Bluffs project components are within five miles of an additional EJ population designated as Minority located in Edgartown.

Environmental Impacts and Mitigation

Potential environmental impacts of onshore components of the project include addition of 0.35 acres of impervious area associated with widening of the Shining Sea Bike Path and construction of transformer pads at the equipment yard in Oak Bluffs; alteration of 0.51 acres of land associated with clearing of the equipment yard in Oak Bluffs; and alteration of 1.1 acres of Land Subject to Coastal Storm Flowage (LSCSF) associated with onshore cable installation and HDD operations. Potential environmental impacts of offshore components include alteration of 8.5 acres of Land Under the Ocean (LUO) and dredging of up to 53,800 cubic yards (cy) of sediment. The offshore component of the project will be located in rare species habitat.

Electricity supplied by the project will displace power provided by five diesel generators during peak demand periods on Martha's Vineyard, which will avoid the following emissions: 45 tons per year (tpy) of nitrogen oxides (NOx), 0.9 tpy of particulate matter, and 2,300 tpy of carbon dioxide (CO_2). This power will be replaced with electricity generated from the electrical grid, which would still result in emissions but at a declining rate over time due to the anticipated procurement of renewable energy sources to power the grid. Measures to avoid, minimize, and mitigate environmental impacts include selecting a route that minimizes impacts to sensitive habitats, using cable installation methods with temporary impacts within a narrow footprint, using HDD to minimize impacts to nearshore coastal wetlands, payment of an Ocean Development Mitigation Fee to mitigate underwater impacts, and implementation of construction-period mitigation measures. The project will adhere to time-of-year (TOY) restrictions to avoid rare species nesting and squid spawning periods.

Permitting and Jurisdiction

The project is undergoing MEPA review because it requires Agency Action and meets or exceeds the review thresholds at 301 CMR 11.03(3)(b)(1)(f) (alteration of ½ or more acres of any other wetlands (LUO) and 301 CMR 11.03(3)(b)(3) (dredging of 10,000 or more cy of material). The project is required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a Designated Geographic Area (or DGA) (as defined in 301 CMR 11.02) around an EJ population. . The project requires a Chapter 91 (c.91) License and 401 Water Quality Certificate (WQC) from the Massachusetts Department of Environmental Protection (MassDEP) and an Access Permit and Easement Agreement from the Massachusetts Department of Transportation (MassDOT).

The project requires Orders of Conditions from the Conservation Commissions in Falmouth, Oak Bluffs and Tisbury (or in the case of an appeal, Superseding Orders of Conditions from MassDEP). It requires Development of Regional Impact (DRI) review by the Cape Cod Commission (CCC) and Martha's Vineyard Commission (MVC). It requires an Individual Permit from the Army Corps of Engineers (ACOE) under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (Section 10) and a National Pollutant

Discharge Elimination System (NPDES) Construction General Permit from the Environmental Protection Agency (EPA).

Because the Proponent is not seeking Financial Assistance from Agencies, MEPA jurisdiction extends to those aspects of the project that are within the subject matter of required or potentially required Permits that are likely, directly or indirectly, to cause Damage to the Environment. The subject matter of the c. 91 License is sufficiently broad such that jurisdiction is functionally equivalent to full scope jurisdiction and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment.

Request for Rollover EIR or Single EIR

The EENF/Proposed EIR included a request that I allow a Rollover EIR in accordance with 301 CMR 11.06(13) or alternatively, a Single EIR in accordance with 301 CMR 11.06(8).

The MEPA regulations provide that for projects required to submit an EIR under 301 CMR 11.06(7)(b), the Proponent may submit an EENF with a request that I allow a Rollover EIR in accordance with 301 CMR 11.06(13). To support this request, the EENF must be accompanied by a Proposed EIR, which, if the request for Rollover EIR is granted, would be published as a Final EIR in a subsequent Environmental Monitor in lieu of the typical two-stage Draft and Final EIR process.

In order to allow a Rollover EIR, I must find that the dual EENF and Proposed EIR:

1. presents a complete and definitive description and analysis of the project and its alternatives, and an assessment of its potential environmental and public health impacts and mitigation measures sufficient to allow a Participating Agency to fulfill its obligations in accordance with M.G.L. c. 30, §§ 61 and 62K and 301 CMR 11.12(5);
2. demonstrates that the project will not materially exacerbate any existing unfair or inequitable Environmental Burden and related public health consequences impacting an EJ population, and will not result in a disproportionate adverse effect or increased climate change effects on an EJ population;
3. describes measures taken to provide meaningful opportunities for public involvement by EJ populations prior to filing the dual ENF and Proposed EIR, including any changes made to the project to address concerns raised by or on behalf of EJ populations;
4. shows that comments received on the dual ENF and Proposed EIR do not raise substantial issues not previously considered by the Proponent; and
5. shows that no substantive issues remain to be resolved.

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF/Proposed EIR:

a. describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
b. provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,

c. demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

Consistent with these requests, the EENF/Proposed EIR was subject to an extended comment period under 301 CMR 11.05(9).

Review of the EENF/Proposed EIR

The EENF/Proposed EIR described existing site conditions, provided a project description and site plans and identified alternatives to the project. It documented the project's impacts with respect to transportation, water and wastewater infrastructure and land alteration and stormwater management and identified potential measures to mitigate these impacts. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF/Proposed EIR contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"),[4] together with information on climate resilience strategies to be undertaken by the project. The Proponent distributed supplemental information on June 28, 2022, which included a supplemental analysis of the project's consistency with the Ocean Management Plan (OMP) standards and a proposed Ocean Development Mitigation Fee amount, identified potential cable protection and addressed the climate resiliency of the project. The Proponent should submit a Single EIR that provides the information and analyses specified in the Scope below.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content and provide the information and analyses required in this Scope. It should demonstrate that the Proponent will pursue all feasible measures to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible

Project Description and Permitting MEPA 01

The Single EIR should identify any changes to the project since the filing of the EENF/Proposed EIR. It should identify and describe state, federal, and local permitting and review requirements associated with the project and provide an update on the status of each of these pending actions. The Single EIR should include a description and analysis of applicable statutory and regulatory standards and requirements, and a discussion of the project's consistency with those standards. MEPA 02

The Single EIR should include detailed site plans for existing and post-development conditions at a legible scale. Plans should clearly identify buildings, interior and exterior public areas, impervious areas, transportation improvements, pedestrian and bicycle accommodations, and MEPA 03

[4] https://resilientma.org/rmat_home/designstandards/

stormwater and utility infrastructure. The Single EIR should provide detailed plans, sections, and elevations to accurately depict existing and proposed conditions, including proposed above- and below-ground structures, on- and-off-site open space, and resiliency and other mitigation measures. The Single EIR should provide supplemental information in support of the project's purpose and need with respect to increasing the supply of electricity to meet future load growth. MEPA 04
It should provide an analysis documenting why four cables cannot meet the electricity needs of Martha's Vineyard, clarify whether the Preferred Alternative has the potential to expand capacity in non-peak periods, and, if so, estimate the maximum potential amount of increased capacity and associated energy generation that is made possible by the project. The Single EIR should clarify what, if any, regulatory process is necessary to expand capacity in this fashion.

The information and analyses identified in this Scope should be addressed within the main body of the SEIR and not in appendices. In general, appendices should be used only to provide raw data, such as drainage calculations, traffic counts, capacity analyses and energy modelling, that is otherwise adequately summarized with text, tables and figures within the main body of the Single EIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the Single EIR to materials provided in an appendix should include specific page numbers to facilitate review.

Alternatives Analysis

The EENF/Proposed EIR described a No Build Alternative and reviewed alternatives for improving resiliency of the electrical grid on Martha's Vineyard by providing an on-island energy source; upland and offshore cable alignments; and cable installation methods. Under the No Build Alternative, Martha's Vineyard would continue to be served by the four existing electrical supply cables, which would not address the project purpose of improving reliability of the electric grid or increasing supply during peak demand periods. The No Build Alternative would not realize the air quality benefits of decommissioning the existing diesel generators.

The EENF/Proposed EIR reviewed Diesel Generator and Battery Storage Alternatives for providing an on-island energy source. The Diesel Generator Alternative would continue to use the existing generators, increase the number of generators and/or replace the generators with more efficient and larger capacity diesel generators. This alternative was excluded from consideration because of its capital, maintenance and operations costs and air quality impacts, and because it is inconsistent with the goal of communities on Martha's Vineyard to reduce or eliminate fossil fuel use. The Battery Storage Alternative was first proposed by the Proponent in 2017 as a means of reducing reliance on the diesel generators for peak demand periods. The Battery Storage Alternative would include construction of a 4.9-megawatt (MW) battery energy storage system (BES) on the equipment yard site on Eastville Avenue in Oak Bluffs. According to the EENF/Proposed EIR, this alternative was determined to be not feasible because requests made by the Town of Oak Bluffs during the local permitting process to locate the BES within a building rather than in containers to address visual impacts; construction of a building to house the BES would significantly increase the cost of the project due to construction of a foundation and the need for ventilation and fire protection systems. In addition, the Battery Storage Alternative would not meet future energy needs based on the Martha's Vineyard Commission's

2029 load forecast of 70 MW; therefore, another project, with additional potential environmental impacts, could be necessary in the future to meet increased demand for electricity.

The Single EIR should analyze an alternative involving only four cables, including replacement of Cable #91 with a higher-capacity cable, and an on-Island energy generation alternative that avoids the need for a fifth cable. MEPA 05

Cable Alignment Alternatives

In evaluating cable alignment alternatives, the Proponent first considered four landfall locations in Falmouth and two locations on Martha's Vineyard. Four upland routes between Substation #933 and the proposed landfall location at the eastern end of Surf Drive were then analyzed; no alternative routes between the Oak Bluffs landfall site and equipment yard were evaluated due to the short distance between the sites. The EENF/Proposed EIR did not evaluate alternative routes across Vineyard Sound; as described below, this analysis should be provided in the Single EIR. MEPA 06

Landfall Location Alternatives

Alternative landfall locations in Falmouth included Wood's Hole and three locations along Surf Road: the intersections of Elm Road, Mill Road and Shore Street with Surf Road. An existing cable between Falmouth and Martha's Vineyard makes landfall in Wood's Hole; however, the Proponent determined that cable installation in that location would be too complicated because the harbor is too congested with docks, anchorages and a high volume of boat traffic. The Elm Road Alternative is the westernmost site and is the landing site of Cables #91 and 97. Pad mounted equipment and riser poles associated with the existing cables are already present near this landfall alternative. However, the area available for workspace is constrained by wetlands located on either side of Elm Road and by land owned by a local conservation organization. The Mill Road Alternative is located between the other two alternative landfall sites and is the landing site of Cable #75. This location has adequate area available for workspace and is directly north of the Tisbury alternative landfall site on Martha's Vineyard. According to the EENF/Proposed EIR, this appears to be a feasible location for the Falmouth landfall site; however, the Proponent is considering its use for the future replacement of cable #91. The Shore Street site, at the eastern end of Surf Drive, is the Preferred Alternative. This is the Falmouth landfall site of Cable #99, which also makes landfall at Eastville Avenue in Oak Bluffs. The parking lot on Surf Road will provides adequate workspace for HDD operations to the west of Cable #99 in order to avoid a crossing of that cable by the proposed cable.

In addition to the proposed landfall location at Eastville Road in Oak Bluffs, the EENF/Proposed EIR reviewed an alternative landfill site on Squantum Avenue in Tisbury, where Cables #75, #91 and #97 make landfall. The Squantum Avenue location has adequate workspace available for cable installation, but no land is available for an equipment yard where the new cable could be integrated into Martha's Vineyard's electrical distribution network. The Proponent plans to use this landfall site for the future replacement of Cable #91. The Eastville Avenue site is the Preferred Alternative because adequate workspace is available and an equipment yard is located nearby which can accommodate the equipment needed to connect the new cable to the island's electrical distribution system.

Onshore Cable Route Alternatives

The four routes between Substation #933 and the Surf Road landing site listed below were evaluated in the EENF/Proposed EIR. All four options would use a portion of the existing conduit in Surf Road for the final section

- Option 1: A 2.2-mile long route following Stephens Lane, Jones Road, Nursery Road, Katharine Lee Bates Road, Library Lane, Main Street and Walker Street. This route is through primarily residential areas, but includes a 370-ft section through a densely developed commercial area on Main Street. This option requires 11,550 ft (2.18 miles) of new duct bank and the use of an approximately 100-ft section of the existing duct bank in Surf Road.
- Option 2: A 2.2-mile long route following Stephens Lane, Jones Road, Palmer Avenue, Main Street and Walker Street. Approximately half of the route is through a residential area and the other half is through a dense commercial area on Main Street and Palmer Street. This option requires 11,550 ft (2.18 miles) of new duct bank and the use of an approximately 100-ft section of the existing duct bank in Surf Road.
- Option 3 (Preferred Alternative): A 2.5-mile long route following Stephens Lane, Jones Road, the Shining Sea Bikeway, Cemetery Lane, and Mill Road. This route passes primarily through residential areas; however, commercial and industrial uses abut the section of the bike path used in this option. This option requires 12,030 ft (2.28 miles) of new duct bank and the use of an approximately 2,000-ft (0.38 miles) section of the existing duct bank in Surf Road.
- Option 4: A 3.3-mile long route following Stephens Lane, Jones Road, the Shining Sea Bikeway, Elm Road and the western portion of Surf Road, which is on a mapped barrier beach. This route passes primarily through residential areas and commercial and industrial uses abutting the bike path. This option requires 13,610 ft (2.6 miles) of new duct bank and the use of an approximately 3,800-ft (0.7 miles) section of the existing duct bank in Surf Road.

According to the EENF/Proposed EIR, Option 3 was selected as the Preferred Alternative because it minimizes direct impacts to wetlands, avoids high traffic areas along Main Street and minimizes work in public roads. The portion of the bike path disturbed by construction will be restored and expanded from 10 ft in width to 13 feet. However, as noted by CZM, the analysis did not consider impacts to LSCSF or the long-term resiliency of each route with respect to storm-induced shoreline erosion. The Proponent should provide an additional analysis of the vulnerability of the preferred route to erosion and review alternatives that minimize vulnerability to erosion. MEPA 07

Environmental Justice

As noted above, the southern portion of the upland cable route in Falmouth is located within an EJ population designated as Income. Project components are located within one mile of additional EJ populations in Falmouth designated as Income; in Oak Bluffs designated as Minority and Income; and in Tisbury designated as Income. Within one of the census tracts containing an EJ population in Tisbury, Portuguese or Portuguese Creole are identified as being spoken by 5% of more of residents who also identify as not speaking English very well.

Effective January 1, 2022, all new projects in Designated Geographic Areas ("DGA," as defined in 301 CMR 11.02) around EJ populations are subject to new requirements imposed by the Chapter 8 of the Acts of 2021: *An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy* (the "Climate Roadmap Map") and amended MEPA regulations at 301 CMR 11.00.[5] Two related MEPA protocols—the MEPA Public Involvement Protocol for Environmental Justice Populations (the "MEPA EJ Public Involvement Protocol") and MEPA Interim Protocol for Analysis of project Impacts on Environmental Justice Populations (the "MEPA Interim Protocol for Analysis of EJ Impacts")—are also in effect for new projects filed on or after January 1, 2022.[6] Under the new regulations and protocols, all projects located in a DGA around one or more EJ populations must take steps to enhance public involvement opportunities for EJ populations, and must submit analysis of impacts to such EJ populations in the form of an EIR. The EENF/Proposed EIR indicated that the DGA for the project is one mile.

The Proponent distributed a project fact sheet that was translated into Portuguese. In addition, the Proponent distributed an EJ Screening Form in English and Portuguese to a list of community-based organizations (CBOs) and tribes/indigenous organizations provided by the MEPA Office. In addition, the Proponent held 11 public outreach events at locations within EJ populations in Falmouth, Oak Bluffs and Tisbury.

The EENF/Proposed EIR included a baseline assessment of existing "unfair or inequitable Environmental Burden and related public health consequences" impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)(1) and the MEPA Interim Protocol for Analysis of EJ Impacts. The baseline assessment included a review of the data provided by the Department of Public Health (DPH) EJ Tool applicable to the DGA regarding "vulnerable health EJ criteria"; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average.[7] According to the EENF/Proposed EIR, the data surveyed indicate that Tisbury exceeds the criteria for heart attack hospitalizations, childhood blood lead levels, low birth rate and childhood asthma. Falmouth exhibits rates of heart attack hospitalizations that exceed 110%

[5] MEPA regulations have been amended to implement Sections 55-60 of the Climate Roadmap Act, and took effect on December 24, 2021. More information is available at https://www.mass.gov/service-details/information-about-upcoming-regulatory-updates.
[6] Available at https://www.mass.gov/service-details/eea-policies-and-guidance.
[7] See https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html. Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer, of which two (heart attack hospitalization and childhood asthma) are tracked on a municipal level, and two (childhood blood lead, and low birth weight) are tracked on a census tract level.

of the statewide average, and census blocks within Falmouth exhibit rates of high childhood blood lead levels and low birth weight that exceed 110% of the statewide average. Oak Bluffs exhibits rates of high childhood blood lead levels that exceed 110% of the statewide average, and a census block within Oak Bluffs exhibits rates of heart attack hospitalizations that exceed 110% of the statewide average. Based on this analysis, the EENF/Proposed EIR concluded that the data surveyed show some indication of an existing "unfair or inequitable" burden impacting the identified EJ populations. In addition, the EENF/Proposed EIR indicated that the following sources of potential pollution exist within the identified EJ populations, based on the mapping layers available in the DPH EJ Tool:

- Major air and waste facilities: three facilities in Falmouth;
- M.G.L. c. 21E sites: three sites in Oak Bluffs and two sites in Falmouth with reported releases of hazardous waste;
- "Tier II" toxics use reporting facilities: two facilities in Falmouth and one facility in Tisbury;
- MassDEP sites with Activity and Use Limitations (AULs): three sites in Oak Bluffs and two sites in Falmouth;
- MassDEP Groundwater Discharge Permits: one site in Falmouth and one site in Oak Bluffs;
- Underground storage tanks (USTs): six locations in Falmouth and one location in Oak Bluffs;
- Road infrastructure: one major road in Falmouth;
- Other Transportation Infrastructure: ferry terminals in Falmouth, Oak Bluffs and Tisbury; and,
- Energy generation and supplies: one wind generating facility in Falmouth.

Although not required by the MEPA Interim Protocol for Analysis of EJ Impacts, the EENF/Proposed EIR also surveyed environmental indicators tracked through the U.S. EPA's "EJ Screen," which shows the indicators measured for the identified EJ populations as percentiles of the MA statewide average. In accordance with the MEPA Interim Protocol for Analysis of EJ Impacts, these indicators were reported based on raw data, not based on the "EJ index" which includes differential weighting of the indicators based on demographics. Of the eleven indicators assessed, the statewide 80th percentile was only exceeded for the number of underground storage tanks by two census blocks in Falmouth.

The EENF/Proposed EIR indicated that the output report produced by the MA Resilience Design Tool identified a high risk rating for the project for sea level rise/storm surge; EJ populations within the DGA are also likely at risk form sea level rise and storm surge.

The analysis above indicates that EJ populations in the DGA are likely to be impacted by an unfair or inequitable environmental burden. The EENF/Proposed EIR asserted that the project will not create additional environmental or public health burdens that are borne disproportionately by EJ populations, nor will it increase the effects of climate change on EJ populations, because it consists solely of an underground cable that will not be a source of potential public health impacts. The Single EIR should analyze any other relevant short-term and long-term environmental or public health impacts of the project, including construction period MEPA 08 activities. If any disproportionate adverse effects or increased risks of climate change are identified, the Single EIR must include a discussion of proposed mitigation and include such measures in draft Section 61 findings. The Single EIR should discuss the air quality and other benefits of the project, and whether those benefits would specifically benefit EJ populations so as to promote the equitable distribution of Environmental Burdens and Environmental Burdens, in accordance with "Environmental Justice Principles" as defined in 301 CMR 11.02. The Single EIR should provide an update on public involvement activities undertaken by the Proponent and describe its plan for outreach during subsequent permitting for the project. The Single EIR, or a summary thereof, should be circulated to the EJ Reference List provided for the project prior to the filing of the Single EIR.

MEPA 09

MEPA 10

MEPA 11

MEPA 12

Public Health

The Single EIR should include a separate section on "Public Health," and discuss any known or reasonably foreseeable public health consequences that may result from the environmental impacts of the project. Particular focus should be given to any impacts that may materially exacerbate "vulnerable health EJ criteria," in accordance with the MEPA Interim Protocol for Analysis of EJ Impacts. In addition, other publicly available data, including through the DPH EJ Tool, should be surveyed to assess the public health conditions in the immediate vicinity of the project site, in accordance with 301 CMR 11.07(6)(g)10. Any project impacts that could materially exacerbate such conditions should be analyzed. To the extent any required Permits for the project contain performance standards intended to protect public health, the Single EIR should contain specific discussion of such standards and how the project intends to meet or exceed them.

MEPA 13

MEPA 14

MEPA 15

Ocean Management Plan

The project is subject to review under the OMP, which includes maps of important ecological resources that are key components of the state's estuarine and marine ecosystems—defined as "special, sensitive or unique resources" (SSU)—and identifies key areas of water-dependent uses including commercial and recreational fishing and navigation. The relevant SSUs for cable projects identified in the OMP include intertidal flats, North Atlantic Right Whale Core habitat, Fin Whale Core Habitat, Humpback Whale Core Habitat, eelgrass and areas of hard/complex seafloor; of these SSUs, only eelgrass and hard/complex seafloor[8] are located along the proposed offshore cable route. The OMP also requires that cable projects should address the presence of fixed fishing facilities along the cable route; however, no such facilities are mapped within the proposed cable route. The siting standards of the OMP and its implementing regulations (301 CMR 28.00) presume that a project alternative located outside mapped SSU resources is a less environmentally damaging practicable alternative than a project located within a mapped SSU resource. As defined in the OMP regulations, an alternative practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics with respect to the purpose of the project. The OMP management standards require a demonstration that the project has undertaken all practicable

[8] Hard/complex seafloor is defined in the OMP as "seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions."

measures to avoid damage to SSUs; and a demonstration that the public benefits of the project outweigh the public detriments to the SSU resource.

SSUs

The EENF/Proposed EIR provided the results of marine surveys of a 1,000-ft wide corridor centered on the proposed offshore cable route conducted from August to November, 2021. According to the EENF/Proposed EIR, the survey corridor was selected based on the maps of hard/complex seafloor SSUs included in the 2015 OMP. The surveys were conducted using a multibeam echosounder, side scan sonar, sub bottom sonar, magnetometer, underwater video and sediment sampling. These survey techniques provided data on bathymetry, surficial seabed features and textures, geological conditions below the seafloor, marine archaeological artifacts, and benthic biota. Ecosystem features shown documented in the underwater video transects were classified in a standard format using the Coastal and Marine Ecological Classification Standard (CMECS). As requested by CZM and DMF, the Proponent should provide the results of the marine surveys in the formats identified in their comment letters. MEPA 16

Based on the Proponent's surveys, conditions along the proposed cable route consist predominantly of coarse material, such as biogenic reefs formed by mollusk shells (referred to in the EENF/Proposed EIR as "*Crepidula* reef"), coarse sand, pebbles, gravel, boulders and cobble, with siltier sediment found at the southern end of the route in Vineyard Haven Harbor. Areas of hard/complex seafloor SSUs documented in the Proponent's marine surveys, including sand waves and areas with gravel, cobbles and boulders, were generally consistent with those shown in maps included in the 2021 OMP. The largest areas of hard/complex seafloor in Vineyard Sound are generally oriented in an east-west direction spanning the area between Falmouth and Martha's Vineyard. According to the EENF/Proposed EIR, approximately 10,159 feet (approximately 1.9 miles or 30 percent of the total offshore route) of the proposed cable route is categorized as hard/complex seafloor and the remainder of the route will pass through soft bottom seafloor. The EENF/Proposed EIR also documented eelgrass beds at the northern end of the cable route off the coast of Falmouth.

The Single EIR should quantify the length of cable to be buried in each type of seafloor along the proposed route. It should characterize and describe temporary and permanent impacts to hard/complex seafloor and estimate the habitat recovery time. MEPA 17

OMP Performance Standards

The EENF/Proposed EIR included a qualitative analysis of the project's conformance to the OMP management standards. According to the Proponent, the Preferred Alternative is a cost-effective way of addressing electrical reliability and capacity needs on Martha's Vineyard. In addition, the Proponent has asserted that the proposed cable route is the least damaging practicable alternative because it avoids directly crossing through eelgrass beds; crosses unavoidable areas of hard complex seafloor across the narrow north-south dimension to minimize the length of the cable crossing through SSUs; avoids crossings of other cables, which would require the use of cable protection measures that would permanently alter benthic conditions; uses cable installation technologies, including HDD to avoid eelgrass beds and jet plows or hydroplows to minimize direct and permanent impacts to hard/complex seafloor. According to the EENF/Proposed EIR, benthic habitat impacted when Cable #75 was installed in 2014 showed minimal disturbance in a post-construction survey completed six weeks after the cable was installed. According to the EENF/Proposed EIR, the project will have minimal permanent impacts to benthic habitat associated with cable protection. During the review period, the Proponent estimated that 10,000 sf (approximately 0.23 acres) of cable protection would be needed if the cable could not be adequately buried along one-third of the length of the largest planned crossing of hard/complex seafloor. The Single EIR should provide a more detailed justification for the estimate of cable protection area or provide a range of estimates. MEPA 18

The Single EIR should provide a supplemental analysis to support a determination that he Preferred Alternative is the least environmentally damaging practicable alternative, that all practicable measures have been taken to avoid areas of hard/complex seafloor SSU and that the project will not significant alter SSUs. The analysis should quantify temporary and permanent impacts to hard/complex seafloor of the Preferred Alternative. It should review alternative offshore cable routes, including routes that avoid or minimize impacts to SSUs, and qualitatively and quantitatively compare the alternative routes. The Single EIR should demonstrate that the proposed construction methods and mitigation measures will minimize impacts to SSUs. MEPA 19 MEPA 20 MEPA 21

According to the EENF/Proposed EIR, the purpose of the project is to provide a more reliable electrical grid and meet increased electrical demand during peak usage periods for residents of Martha's Vineyard. In addition, the EENF/Proposed EIR identified the following public benefits of the project which the Proponent asserts outweigh the detriments to SSUs, as required by the OMP Management Standards:

- Reconstruction and widening of the Shining Sea Bikeway from 10 ft to 13 ft.
- Decommissioning of the five diesel generators which are used to meet peak electrical demand. The diesel generators operated for a combined duration of over 668 hours in 2020 and over 1,230 hours in 2021. According to the Proponent, based on the average use of the diesel generators in 2020 and 2021, decommissioning of the generators will avoid emissions of 45 tpy of NOx, 0.9 tpy of particulate matter and 2,300 tpy of CO_2.
- Relocation of 15 utility poles on Palmer Avenue to increase sidewalk clearance.
- Installation of electric vehicle (EV) charging stations at the Palmer Avenue parking lot and other locations in Falmouth.

Ocean Development Mitigation Fee

The Massachusetts Oceans Act (M.G.L. c. 21A, section 4C and M.G.L. 132A, sections 12A through 16F) established an Ocean Development Mitigation Fee to be assessed for offshore development projects as compensation to the Commonwealth for impacts to ocean resources and the broad public interests and rights in the lands, waters and resources of the OMP areas. The ocean development mitigation fee schedule included in the OMP provides guidance on how the fee should be determined based upon project footprint and the spatial/temporal extent of effects on marine resources and water-dependent uses.

For purposes of calculating the fee, the Proponent believes that the project is consistent with a Class 1 activity because of the limited duration of construction activity; the limited scale, size and footprint of the cable; and its negligible impacts on habitat and water-dependent uses. However, the Proponent acknowledged that the area of seafloor impacts (8.5 acres) is within the impact range associated with a Class II activity. The Proponent has proposed an ocean development mitigation fee of $75,000, which exceeds the $50,000 maximum for a Class I activity and is below the minimum of $100,000 for a Class II activity. Based on the analysis of project impacts and mitigation measures provided in the Single EIR, comments from Agencies and the public, an evaluation of the public benefits of the project and other relevant factors, I will establish the ocean development mitigation fee for this project in the certificate on the Single EIR. MEPA 22

Wetlands and Water Quality

According to the EENF/Proposed EIR, the installation of the 6.24-mile long offshore cable will impact up to 8.5 acres of LUO, of which 7.7 acres represents the area of direct impact from installation the cable using a hydroplow or jet plow and 0.8 acres will be impacted by anchors used to tow the plow. Approximately 1.9 miles of the cable route crosses hard/complex seafloor and the remainder is located in areas with soft sediments. According to the EENF/Proposed EIR, approximately 8.27 acres of impact will be temporary and the seafloor will be naturally restored to pre-construction conditions. The EENF/Proposed EIR did not evaluate potential impacts to benthic habitat associated with suspension of sediments during cable installation or identify potential mitigation measures; this analysis should be provided in the Single EIR. MEPA 23

The Proponent's marine surveys document areas of cobble and boulders along the proposed cable route which could prevent burial of the cable by the plow. If the cable cannot be buried to the design depth of 6-10 feet, armoring will be placed over the cable to protect it. The Proponent estimated that approximately 0.23 acres of seafloor may be covered by armoring, which would permanently impact LUO. Potential cable protection methods include the placement of rock or concrete mattresses over an approximately 12-ft wide area of the seafloor centered on the cable. Half-shell pipes made of composite materials or cast iron that directly enclose the cable may also be used; this cable protection method has a smaller footprint than rock or concrete mattresses, but has limited ecological value. As recommended by CZM, if proper burial depth is not achieved with an initial pass of the plow, another attempt to deepen the trench is preferable to placement of cable armoring. The Single EIR should provide a detailed description of steps that will be taken to minimize permanent impacts associated with the placement of cable protection, including techniques for deepening the cable trench ad the use of armoring materials that match the characteristics of the surrounding seafloor. MEPA 24

The Single EIR should identify post-construction surveys, such as video transects, that will be undertaken to document recovery of benthic habitat along the cable route. I encourage the Proponent to consult with CZM regarding appropriate post-construction surveys. MEPA 25

Chapter 91 / Waterways

Portions of the cable to be located in flowed and filled tidelands will be subject to licensing under c. 91 and the Waterways Regulations (310 CMR 9.00). The EENF/Proposed EIR asserted that the project is a water-dependent infrastructure crossing facility. According to the Waterways Regulations at 310 CMR 9.12(2)(d), an infrastructure facility for which an EIR is submitted shall be determined to be water-dependent if the facility cannot be reasonably located away from tidal waters based on a comprehensive analysis of alternatives and measures to minimize impacts on the environment presented during MEPA review. I note that the nature and purpose of the proposed cable appears to be consistent with similar infrastructure crossing facilities, such as Cable #75 (EEA# 14755), which have been determined to be water-dependent. The Single EIR should provide an analysis in support of a finding of water-dependency and review the project's conformance with the relevant c. 91 regulatory standards. MEPA 26

Marine Fisheries

The EENF/Proposed EIR provided a summary of marine fish and invertebrates likely to be found along the cable route. According to the Division of Marine Fisheries (DMF), the primary fish and invertebrate resources of concern in Vineyard Sound that are vulnerable to the adverse effects of cable laying activities include longfin squid (*Doryteuthis pealeii*), horseshoe crabs (*Limulus polyphemus*), whelks, skates, and juvenile black sea bass (*Centropristis striata*). The proposed cable route passes through mapped shellfish habitat for bay scallop (*Argopecten irradians*) and quahog (*Mercenaria mercenaria*). In addition, eelgrass beds in the nearshore waters off Falmouth landfall provide important habitat for fish and shellfish. According to the EENF/Proposed EIR, the use of a hydroplow or jet plow will minimize impacts to benthic habitat and organisms because the direct impacts of these techniques are limited to a 10-12 ft wide area along the cable route. In addition, the project will minimize impacts to marine fisheries by conducting offshore work in the autumn and winter, which is consistent with the time-of-year (TOY) restriction of April 15 to June 15 recommended by DMF. The Proponent should coordinate with DMF during the construction period to minimize interference of the project with MEPA 27
DMF's bottom trawl survey conducted annually in Vineyard Sound the spring and autumn.

Rare Species

According to the EENF/Proposed EIR, the cable route passes through mapped Priority Habitat for three state-listed rare species, including Common tern (*Sterna hirundo*), Roseate tern (*Sterna dougallii*) and Least tern (*Sternula antillarum*), which feed in the waters of Vineyard Sound. The Roseate tern is designated as an Endangered species and Common tern and Least tern are designated as Species of Special Concern. Nesting habitat for these species is found along the Falmouth shoreline; however, the onshore portion of the cable route does not pass through areas of mapped rare species habitat.

The project requires a direct filing with the Natural Heritage and Endangered Species Program (NHESP) in accordance with the Massachusetts Endangered Species Act (MESA). According to NHESP, the project will likely be subject to conditions to avoid a prohibited take of rare species, including but not limited to avoiding construction activities that may disturb birds during the breeding season extending form April 1 to August 31. The Single EIR should include an update on any coordination with NHESP that the Proponent has undertaken with NHESP after the EENF/Proposed EIR was filed and identify additional potential mitigation measures. MEPA 28

Climate Change

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569; the Order) was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and directs Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The Order seeks to ensure that Massachusetts will meet GHG emissions reduction limits established under the Global Warming Solution Act of 2008 (GWSA) and will work to prepare state government and cities and towns for the impacts of climate change. I note that the MEPA statute directs all State Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise, when issuing permits, licenses and other administrative approvals and decisions under M.G.L. c. 30, § 61. The GHG Policy and requirements to analyze the effects of climate change through EIR review play an important role in this statewide strategy. These analyses advance proponents' understanding of a project's contribution and vulnerability to climate change.

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the ENF, the project has a high exposure rating for sea level rise and extreme heat based on the project's location. Based on the 50-year useful life and the self-assessed criticality identified for the project, the MA Resilience Design Tool recommends a planning horizon of 2070 and a return period associated with a 100-year (one percent chance) storm event when designing the project. According to the EENF/Proposed EIR, the cable, manholes and underground vaults will be buried and are designed to be submerged; therefore, they will be resilient to sea level rise and associated flooding and not likely to be damaged by storms affecting surface features. The equipment yard in Oak Bluffs is located within an area that may experience flooding during future storm events and higher sea levels anticipated by the year 2100. Equipment installed at this location will be designed to be protected from flooding by placing opening in structure above anticipated flood elevations, sealing conduits, directing stormwater runoff away from equipment and using deployable flood barriers if necessary.

As noted by CZM, the preferred cable landing locations and portions of the onshore cable routes in Falmouth and Oak Bluffs are located in VE zones, including the entirety of Surf Drive and over 1,000 feet of the southern end of Mill Road in Falmouth. Surf Drive is low-lying, with a narrow beach located seaward and, as a result, it is subject to potential erosion, overwash, and increased frequency of undermining and damage to the road in relatively small as well as larger coastal storm events. The EENF/Proposed EIR determined that the cable will not be vulnerable to shoreline erosion during its useful life based on relatively modest average shoreline erosion

rates over a long period of time. However, average erosion rates do not accurately reflect erosion hazards because impacts associated with infrequent large storm events are spread out over time. The Single EIR should include the results of a quantitative desktop analysis (using existing MEPA 29
LIDAR data etc.) of the shoreline erosion likely to occur in a major hurricane or storm event at the cable landfall location and along Surf Drive for the life of the project, including sea level rise. This analysis will help determine if the preferred cable route is vulnerable to erosion over the design life of the project. Depending on the results of the erosion analysis, the Proponent should consider alternate landfall locations and other onshore cable route options that more directly lead away for areas prone to shoreline erosion.

Greenhouse Gas (GHG) Emissions

In accordance with the MEPA Interim Protocol for Analysis of EJ Impacts, a GHG analysis is not required because the project does not propose to construct any conditioned spaces that generate 2,000 or more tons per year (tpy) of GHG emissions.

Mitigation and Draft Section 61 Findings

The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a MEPA 30
comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. The filing should contain MEPA 31
clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing
should clearly indicate which mitigation measures will be constructed or implemented based MEPA 32
upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, the Proponent MEPA 33
must provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above shall be incorporated into the draft Section 61 Findings included in the Single EIR.

Responses to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF/Proposed MEPA 34
EIR that specifically address each issue raised in the comment letter; references to a chapter or sections of the Single EIR alone are not adequate and should only be used, with reference to

specific page numbers, to support a direct response. This directive is not intended to, and shall not be construed to, enlarge the Scope of the Single EIR beyond what has been expressly identified in this certificate.

Circulation

The Proponent should circulate the Single EIR to each Person or Agency who previously commented on the EENF/Proposed EIR, each Agency from which the Project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. Per 301 CMR 11.16(5), the Proponent may circulate copies of the EIR to commenters in CD-ROM format or by directing commenters to a project website address. However, the Proponent must make a reasonable number of hard copies available to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Proponent should send a letter accompanying the digital copy or identifying the web address of the online version of the Single EIR indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. If submitted in hard copy, the Single EIR submitted to the MEPA office should include a digital copy of the complete document. A copy of the Single EIR should be made available for review at the public libraries of Falmouth, Oak Bluffs and Tisbury.

Bethany A. Card

July15, 2022
Date

Bethany A. Card

Comments received:

07/05/2022	Division of Marine Fisheries (DMF)
07/08/2022	Massachusetts Office of Coastal Zone Management (CZM)
07/08/2022	Natural Heritage and Endangered Species Program (NHESP)
07/08/2022	Massachusetts Department of Transportation (MassDOT)
07/08/2022	Cape Cod Commission
07/08/2022	Gail Miller
07/13/2022	Massachusetts Department of Environmental Protection (MassDEP)/Southeast Regional Office (SERO)

BAC/AJS/ajs

The Commonwealth of Massachusetts
Division of Marine Fisheries
251 Causeway Street, Suite 400, Boston, MA 02114
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www.mass.gov/marinefisheries

CHARLES D. BAKER Governor | KARYN E. POLITO Lt. Governor | BETHANY A. CARD Secretary | RONALD S. AMIDON Commissioner | DANIEL J. MCKIERNAN Director

July 5, 2022

Secretary Bethany A. Card
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Alex Strysky, EEA No. 16562
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Secretary Card:

The Division of Marine Fisheries (MA DMF) has reviewed the Expanded Environmental Notification Form (EENF) and Proposed Environmental Impact Report (PEIR) by NSTAR Electric Company d/b/a Eversource Energy for the Martha's Vineyard Reliability Project. The marine component of the project consists of the installation of an approximate 6.24 mile cable across Vineyard Sound with landfall sites located at Surf Road in the Town of Falmouth and Eastville Avenue in the Town of Oak Bluffs. Horizontal Directional Drilling (HDD) is proposed for both landfall locations while submarine cable burial to a depth of 6 to 10 feet is proposed using hydroplow or jetplow. The cable installation is anticipated to impact approximately 370,220 square feet of Land Under Ocean (LUO). Total volume of dredging is anticipated to be 37,250 cubic yards with a range of potential volumes of 20,695 to 53,800 cubic yards depending on the burial depth across the cable route. Existing marine fisheries resources and habitat and potential project impacts to those resources are outlined in the following paragraphs.

Vineyard Sound supports a variety of finfish and invertebrate species. The primary fish and invertebrate resources of concern in Vineyard Sound that are vulnerable to the adverse effects of cable laying and EMF include (but are not limited to) longfin squid (*Doryteuthis pealeii*), horseshoe crabs (*Limulus polyphemus*), whelks, skates, and juvenile black sea bass (*Centropristis striata*). The proposed cable route includes mapped shellfish habitat for both bay scallop (*Argopecten irradians*) and quahog (*Mercenaria mercenaria*).

The nearshore waters bordering the Falmouth landfall site have been mapped as an eelgrass (*Zostera marina*) meadow based on Massachusetts Department of Environmental Protection (MassDEP) aerial surveys as well as an in-water survey conducted by CR Environmental, Inc conducted in 2021. Eelgrass beds provide one of the most productive habitats for numerous marine species and are designated "special aquatic sites" under the Federal Clean Water Act 404(b) (1) guidelines. Anthropogenic impacts, including declining water quality, are responsible for large losses of this important habitat throughout the Commonwealth. Eelgrass is sensitive to light limitation and therefore is particularly sensitive to turbidity plumes resulting from coastal alteration projects. Eelgrass is also sensitive to burial. As little as 2 to 4 cm of sand burial can result in 70 to 90% mortality of eelgrass (Cabaço *et al.*, 2008).

MA DMF offers the following comments for your consideration:

- A Letter of Authorization from MA DMF will be needed for any activities that could result in the collection of fishing gear in Vineyard Sound and Massachusetts state waters. A Scientific Permit from MA DMF will be needed for any activities that could result in the collection of marine plants or animals in Vineyard Sound and Massachusetts state waters. DMF 01
- The MA DMF bottom trawl survey operates throughout Vineyard Sound annually during spring and fall (King *et al.*, 2010). Coordination with MA DMF is recommended to ensure lack of direct conflict with this survey during survey activities and cable installation. Coordination and communication can be made with Steve Wilcox, the Resource Survey Assessment Program Manager (steve.wilcox@mass.gov). DMF 02
- Avoidance of in-water silt producing work associated with cable laying from **April 15 to June 15** is recommended to protect spawning aggregations and incubating eggs of squid in Nantucket and Vineyard Sounds (Evans *et al.*, 2011). The proposed sequencing of in-water work from Fall 2023 to winter 2023/2024 would avoid this time of year (TOY) restriction period. DMF 03
- Through the Ocean Plan, the Commonwealth established a standard substrate map. We would like to see that the data produced by this effort be compatible with that substrate map, since it underlies the interpretation of hard/complex seafloor. Toward that end, substrate analyses from project survey work should be produced in the same Excel spreadsheet as the Commonwealth's substrate data and interpreted substrate units should be produced as an ArcGIS shapefile or geodatabase. All data should be provided digitally in formats compatible with ArcGIS to enable comparison with existing datasets. Acoustic mosaics should be provided as geotiffs at the maximum resolution possible. There should be at least four geotiffs provided: multibeam backscatter, sidescan sonar backscatter, multibeam bathymetry, and backscatter draped on bathymetry. The date of data collection should be easily discernable for all products. DMF 04
- Potential prohibition or relocation of fishing (fixed or mobile gear) for any length of time as a result of survey, installation, or repair procedures should be addressed in the permitting process. The size, length, and potential economic impact of closures should be included in the description. DMF 05
- Anticipated areas requiring covering should be described in greater detail, both in terms of the spatial distribution and existing habitat characteristics. Potential hard cover alternatives should be evaluated in terms of area of impact, habitat equivalency, and potential conflict with fishing activities. DMF 06
- Since cable burial will be relied upon to minimize adverse effects associated with EMF transmission (6-10 foot burial anticipated), plans for cable burial monitoring should be described in the permitting process. DMF 07
- The cable installation work in nearshore waters containing eelgrass is proposed to be performed using Horizontal Directional Drilling (HDD) and the PEIR includes a frac out contingency plan (Attachment G). A mitigation plan should also be established in the permitting process in the event that inadvertent release and associated direct impacts to eelgrass occur. DMF 08

Questions regarding this review may be directed to John Logan in our New Bedford office at john.logan@mass.gov.

Sincerely,

Daniel J. McKiernan

Director

cc: Falmouth Conservation Commission
Oak Bluffs Conservation Commission
Dwight Dunk, Epsilon Associates, Inc.
Kaitlyn Shaw, Sabrina Pereira, NMFS
Rebecca Haney, Robert Boeri, CZM
Rachel Croy, Ed Reiner, EPA
David Wong, DEP
Tori LaBate, DFG
Simi Harrison, Emma Gallagher, Amanda Davis, Steve Wilcox, DMF

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DM/JL/sd

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CAPE COD
COMMISSION

Via Email

July 8, 2022
Bethany A. Card, Secretary of Energy and Environmental Affairs
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, Alexander Strysky, MEPA Analyst
100 Cambridge Street, Suite 900, Boston, MA 02114

Re: Expanded Environmental Notification Form
EEA No. 16562 (Cape Cod Commission File No. 22009)
Martha's Vineyard Reliability Project, Falmouth

Dear Secretary Card:

Thank you for the opportunity to provide comments on the above-referenced EENF.

The applicant has identified several mitigation measures that are expected to minimize construction related impacts, including locating the cable route in existing paved surfaces, implementing a Stormwater Pollution Prevention Plan, and observing time-of-year restrictions. While the proposed cable landfall site is within 100-foot buffers to coastal beach and dune within the existing parking lot at Surf Drive Beach, the applicant plans to conduct cable installation at the landfall in the off-season to minimize impacts to beach access. Based on the applicant's evaluation of Massachusetts Coastal Zone Management (CZM) Shoreline Change Project maps, the proposed use of horizontal directional drilling (HDD) should avoid alterations to coastal resource areas and eelgrass beds.

The preferred and alternative onshore cable routes are primarily located within existing roadway or bikeway layouts. Existing infrastructure, including roads, sidewalks, parking lots, and street trees, CCC 1
should be replaced to the same or better condition, and Commission staff suggest that the applicant clarify pavement restoration plans. On roadways where work will be performed in the shoulder area, there may be an opportunity to leave a graded surface that would be suitable for future installation of sidewalks or multi-use paths, if desired by the Town. Commission staff suggest that strategies, such as night work at certain major intersections, should be considered to reduce impacts to regional traffic CCC 2
(i.e. Route 28) and access to Falmouth Hospital.

The Project will tie into an existing substation, with new equipment upgrades proposed within the CCC 3
existing substation footprint. Commission staff do not anticipate significant adverse impacts to natural resources from the proposed onshore installation routes or substation upgrades presented, provided construction best management practices are followed.

Because this Project requires an EIR in some form, this Project is deemed a Development of Regional Impact under § 12(i) of the Cape Cod Commission Act, c. 716 of the Acts of 1989. Thank you for the opportunity to provide comments on the above referenced EENF. Commission staff are available to answer any questions you might have about these comments. CCC 4

Sincerely,

Kristy Senatori
Executive Director

Cc: Project File
Julian Suso, Falmouth Town Manager, via email
Jed Cornock, Falmouth Town Planner, via email
Falmouth Cape Cod Commission Representative via email
Cape Cod Commission Chair via email
Cape Cod Commission Committee on Planning and Regulation Chair via email

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

MEMORANDUM

TO: Bethany A. Card, Secretary, EEA
ATTN: Alex Strysky, MEPA Unit
FROM: Lisa Engler, Director, CZM
DATE: July 8, 2022
RE: EEA 16562 – Martha's Vineyard Reliability Project, Falmouth/Oak Bluffs

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Expanded Environmental Notification Form (EENF) and Proposed Environmental Impact Report (PEIR), noticed in the *Environmental Monitor* dated May 25, 2022. CZM also reviewed supplemental information that the applicant supplied on June 30, 2022, in response to CZM comments made during the virtual site visit on June 24, 2022 and information sent to MEPA on July 1, 2022. CZM offers the following comments for consideration and inclusion in the scoping and development of a Single Environmental Impact Report (SEIR).

Project Description

The proposed project involves the installation of a submarine electric cable between Falmouth and Oak Bluffs on Martha's Vineyard to 1) meet current and future electrical demand, 2) increase the reliability of the grid-based electrical service on the Island, and 3) allow the proponent to decommission five existing diesel generators, thus reducing fossil fuel use on the Island as well as combustion emissions and emissions of greenhouse gases. The proposed cable route is approximately 6.24 miles long and will extend from Surf Drive in Falmouth to Eastville Avenue in Oak Bluffs. The cable construction will avoid disturbing sensitive habitats nearshore by using horizontal directional drilling (HDD) at the Falmouth and Oak Bluff landings. Within the seaward portion of the project the cable is proposed to be installed approximately 6 to 10 feet below the seafloor using either a hydroplow or a jetplow.

The project requires an Order of Conditions under the Wetland Protection Act, a Chapter 91 License, a 401 Water Quality Certification, an Individual Army Corps Permit, CZM Federal Consistency review, and Development of Regional Impact review by both the Cape Cod Commission and Martha's Vineyard Commission.

Project Comments

Ocean Management Plan Siting and Performance Standards

The Massachusetts Ocean Management Plan (OMP) and implementing regulations at 301 CMR 28.00 set out standards for certain marine uses including submarine cable laying. Cable laying activities in the ocean planning area are presumptively excluded from Special, Sensitive, or Unique (SSU) resource areas as mapped in the OMP. CZM 01 A project alternative that is located outside of mapped SSU resources is presumed to be a less environmentally damaging practicable alternative than a project located within a mapped SSU resource. The SSU areas that cable projects in the ocean planning area must avoid are North Atlantic right whale core habitat, humpback whale core habitat, fin whale core habitat, areas of hard/complex seafloor, intertidal flats, and eelgrass. According to the mapped SSU resources in the 2021 OMP and the proponent's survey results within the proposed construction corridor, SSU resources potentially impacted by the project are areas of hard/complex seafloor and eelgrass.

While in general cable-laying projects are presumptively excluded from areas with hard/complex seafloor, the presence of relatively small areas of hard-bottom substrate, such that the cable route cannot be practicably located without going through these areas of hard-bottom substrate, within acceptable limits, is permissible, based on review and determination by the Secretary in consultation with Executive Office of Energy and Environmental Affairs (EEA) agencies. In cases CZM 02
where the crossing of hard/complex seafloor is more than *de minimis*, the OMP siting standard requires the proponent to demonstrate that the maps delineating the SSU resources do not accurately characterize the resource **or** that 1) no less environmentally damaging alternative is practicable, 2) the project will cause no significant alteration of SSU resources, and 3) the public benefits of the project outweigh the potential detriments posed by impacts to SSU resources.

Regarding the determination of no less environmentally damaging alternative and no significant alteration of SSU resources by the project, the proponent has provided supportive information in the EENF, PEIR, and supplemental information sent to agencies on June 30, 2022, and via an email to MEPA analyst Alex Strysky. However, additional information is required for CZM to complete its review, as described in the hard/complex seafloor and eelgrass sections below. As part CZM 03a
of the analysis, the proponent should demonstrate how the proposed project compares to a cable-laying project in an alternative location and how the proposed project minimizes impacts. The comparison of alternatives should be quantitative as well as qualitative. Regarding the public benefits determination, again the applicant provided supplemental information after the submittal of the EENF/PEIR on how the project will improve electrical grid reliability, reduce fossil fuel use, increase electrical vehicle use, replace five diesel generators, improve the Shining Sea Bikeway, increase sidewalk clearance by relocating utility poles, and increase the number of electrical vehicle charging stations; however, the details of these improvements in some cases is lacking. The SEIR should CZM 03b
provide specific details (e.g. numeric reductions in emissions) for all of these anticipated improvements and include them in a public benefits determination section.

Hard/Complex Seafloor

According to Figure 13, the proposed project would cross significant areas of hard/complex seafloor despite what appears to be an alternative route to the east with less hard/complex seafloor. While the proponent's supplemental information states that the proposed route will pass through CZM 04
"seafloor predominantly characterized by sand bottom," this was not quantified. The SEIR should include a description of how the project meets the OMP standards as described above. As part of that demonstration, the proponent should quantify the length of cable and the acres of disturbance within each of the several types of seafloor crossed by the project (flat sand, sand waves, gravel pavement, cobble pavement, boulder field). The SEIR should also characterize and describe the expected impacts CZM 05
of cable installation through hard/complex seafloor and describe both the short-term impacts (e.g., area physically disturbed and the area covered by measurable sediment drape during installation) and long-term impacts (e.g., area covered by cable protection) and estimated recovery time. The above information should be used in the demonstration that no less environmentally damaging practicable alternative exists, that all practicable measures have been taken to avoid the hard/complex SSU, and that there will be no significant alteration.

The proponent's video and sub bottom profile data suggest that significant areas of the CZM 06
proposed cable corridor contain cobble and boulder substrate with less than the proposed 6 to 10 feet of unconsolidated sediments necessary for burying the cable (i.e., depth to "acoustic basement" as depicted in Figures 11A-C in Attachment H). In areas where adequate cover is not available, the PEIR describes how the proponent intends to protect the cable with either rock, concrete mattresses,

sandbags, or half-shell pipes. Where required, CZM supports the placement of cable protection that mimics the natural surrounding substrate. The expected area of seafloor that will be permanently converted via the proposed protection measures should be quantified in the SEIR and used to inform the mitigation proposal. CZM recommends that the proponent consider a post-construction video survey over the buried cable to document the as-built conditions. Following the post-lay survey, if the proponent and the permitting agencies find that the cable is not adequately buried, CZM recommends that the proponent first make another attempt to bury the cable to the appropriate depth (via jetplow, hand jetting, or other means) and only then consider importing and placing cover that mimics the surrounding seafloor to ensure that the cable will not be exposed during the lifetime of the project. CZM supports the proponent's plan to conduct non-intrusive surveys, such as a multi-beam survey, of the cable corridor every five years to confirm the cable remains buried. CZM 07

Eelgrass

The proponent has mapped the landward approach of the project relative to the Massachusetts Department of Environmental Protection mapped eelgrass (2019-2022; see sheets 13 and 16 of the Project Map Set in Attachment C) and conducted additional acoustic and video surveys to determine the location of eelgrass relative to the project. The proponent proposes to use HDD to locate the cable vertically beneath wetland resources such as eelgrass and coastal beach that would otherwise be vulnerable to cable laying activities. According to the information provided, it appears that the HDD exit hole locations will avoid eelgrass. The proponent should conduct a field survey just prior to HDD exit hole construction to verify that eelgrass remains absent in the proposed locations. CZM 08

Ocean Development Mitigation Fee

Pursuant to the OMP and its regulations, the project is subject to an ocean development mitigation fee to compensate the Commonwealth for the unavoidable impacts of the project on the broad public interests and rights in the lands, waters, and resources of the ocean planning area and to support the planning, management, restoration, or enhancement of marine habitat, resources, and uses pursuant to the Massachusetts Oceans Act. Details on the ocean development mitigation fee are contained in the OMP (Volume 1 Appendix 3) and at 301 CMR 28.06. The EENF (p. 20) suggests that the proposed project will require 6.4 to 7.7 acres of dredging, which would place the project into Class II for mitigation fee purposes. In supplemental information provided to the agencies the proponent proposed a mitigation fee of $75,000—midway between a Class I and Class II ocean development project. Based on MEPA filings; comments received; the evaluation of the proposed project and its effects, public benefits, and other mitigation proposed; and other information, the Secretary will determine the mitigation fee in the final MEPA certificate. Given the proposed length of cable (~3,000 feet) that will traverse rocky seafloor in the proposed cable corridor and although not foreseen in the PEIR, but with the expectation that some amount of cable protection will be necessary, the final ocean development mitigation fee may be increased to reflect the potential for additional long-term impacts to the seafloor. CZM 09a CZM 9b

Data Deliverables

CZM requests that the benthic and geophysical survey information be provided to EEA agencies in formats compatible with ArcGIS (e.g., shapefiles). CZM recommends that the GIS data: 1) relate horizontally to the Massachusetts State Plane Coordinate System Mainland Zone (NAD83, meters) and, where applicable, vertically to NAVD88 and 2) be completely compliant and thoroughly substantiated by metadata, compliant with the FGDC Standard, *Content Standard for Digital Geospatial Metadata, FGDC-STD-001-1998*, Sections 1-7, and the Federal Geographic Data Committee (FGDC) *Geospatial Positioning Accuracy Standard*, Parts 1-5, as appropriate. The National Standard for Spatial Data CZM 10

Accuracy provides guidelines in section 3.2.3, Accuracy Reporting, for reporting positional accuracy in Metadata. All metadata must include ISO Dataset Topic Categories and NASA/GCMD Earth Science Keywords as CSDGM Theme_Keyword.

Coastal Resiliency

The preferred cable landing locations and portions of the onshore cable routes in Falmouth and Oak Bluffs are located in Velocity flood zones, as mapped by the Federal Emergency Management Agency (FEMA) on their Flood Insurance Rate Maps (FIRMs). For the Falmouth cable route, the entirety of Surf Drive and over 1,000 feet of the southern end of Mill Road are located within the Velocity Zone. Surf Drive is low-lying, with a narrow beach located seaward. As a result, it is subject to potential erosion, overwash, and increased frequency of undermining and damage to the road in relatively small as well as larger coastal storm events.

A response to CZM comments dated June 28, 2022, includes analysis of the *Coastal Resiliency Planning, Surf Drive* report completed for the Town of Falmouth in 2020. The report focuses on the vulnerabilities of the Surf Drive area based on the Massachusetts Coast Flood Risk Model (MC-FRM) data developed by Woods Hole Group. The proponent provided supplemental information addressing how the cable will be protected from future flooding conditions. However, because the MC-FRM does not consider future erosion, erosion-related concerns were not addressed in the supplemental information.

The PEIR analysis concludes that the Surf Drive landfall location is not vulnerable to erosion. However, the conclusion relies on the shoreline change history which is not a useful data source for quantifying the vulnerability of this shoreline to coastal erosion due to the infrequency of large storm events in this area. The major changes that occur once every 75 – 100 years are averaged out over a long period of time in the shoreline change rates, and therefore do not reflect the ongoing erosion hazard or provide the information needed to assess the vulnerability of the cable landing site or the cable in the utility duct bank along Surf Drive. To assess the vulnerability of the preferred cable route CZM 11
along Surf Drive to Mill Road to coastal erosion, a quantitative desktop analysis (using existing LIDAR data etc.) of the shoreline erosion likely to occur in a major hurricane or storm event at the cable landfall location and along Surf Drive for the life of the project, including sea level rise, is required. This analysis is critical to determine if the preferred cable route is vulnerable to erosion over the design life of the project. Depending on the results of the erosion analysis, the proponent may consider the CZM 12
option of landing at Surf Drive and running the cable north, up Walker Street, to minimize vulnerability to major erosion in storms. Other cable route options that head landward from the cable landing site may also be considered.

Federal Consistency Review

The proposed project is subject to CZM federal consistency review and so must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Robert Boeri, Project Review Coordinator, at robert.boeri@mass.gov, or visit the CZM web site at https://www.mass.gov/federal-consistency-review-program.

LBE/sm/tc/rh/rlb

Cc: Dwight Dunk, Epsilon Associates
Matthew Waldrip, Eversource

Christine Jacek, USACE
Steve McKenna, CZM
Todd Callaghan, CZM
Rebecca Haney, CZM
Daniel Padien, MassDEP
David Wong, MassDEP
Derek Standish, MassDEP

July 8, 2022

Secretary Elizabeth Card
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Subj: Martha's Vineyard Reliability Project, Falmouth and Oak Bluffs, MA
Proposed Environmental Impact Report; MEPA Comment EEA 16562
NSTAR Electric Company d/b/a/ Eversource Energy – Proponent

Dear Secretary Card:

NSTAR Electric Company, d/b/a Eversource Energy ("Eversource"), via Epsilon Associates, Inc. has submitted a Proposed Environmental Impact Report ("PEIR") concurrent with the Expanded Environmental Notification Form ("EENF") for the proposed Martha's Vineyard Reliability Project (the "Project"), and requested review of the Project as a Rollover EIR pursuant to 301 CMR 11.06(13).

Residents and groups in East Boston (Residents Group) have been evaluating the Martha's Vineyard Reliability Project in the context of how the Commonwealth balances considerations of energy reliability, cost, and environmental protection (including environmental justice) in review of proposed energy infrastructure facilities, and specifically a proposed Eversource substation in East Boston.

Review of proposed energy infrastructure facilities balancing these considerations is a matter of serious interest and concern, because, as Assistant Attorney General Jessica Freedman stated in a comment letter dated September 10, 2021 to the Energy Facilities Siting Board (Docket EFSB 21-01):

> . . . our current energy system imposes disproportionate economic, environmental, and health-related burdens on communities of color, low-income communities, and immigrants . . .

The Martha's Vineyard Reliability Project has immediate and direct relevance in this context, and the Residents Group now provides comment to the Commonwealth during the MEPA review period, recommending that the listed issues be addressed in a final EIR and Secretary's Certificate, should one be issued.

Thank you for your time and attention in this matter.

Sincerely,

Gail Miller

Gail Miller
232 Orient Avenue
East Boston, MA 02128
east.boston.climate.action@gmail.com
for Boston Residents Group

Subj: Martha’s Vineyard Reliability Project, Falmouth and Oak Bluffs, MA
Proposed Environmental Impact Report; MEPA Comment by Boston Residents Group
NSTAR Electric Company d/b/a/ Eversource Energy – Proponent

Boston Residents Group (BRG) comment is based on the following materials:

Proposed EIR: May 16, 2022
Expanded ENF: May 16, 2022
EEA 16562 Response to Mass CZM Comments: June 28, 2022

BRG Comment 01. Materials submitted for the Reliability Project state that the purpose of the project is to (1) meet current and future electrical demand, and (2) increase the reliability of grid-based electrical service on the Island.

Additional benefits from the project are also listed, including phase-out of diesel powered generators, incremental increase in distributed energy resources, and support for electric vehicle use on-island.

Project materials note that summer peak use is a significant factor in Eversource’s determination of project need.

Data on historic, current, and projected electrical demand on-island is not provided in great detail (nless BRG has not been looking in the right places). Table 1. Peak Generator Use Summary by Month (Response to CZM letter), indicates the cluster of generator use occurring from May through August, with modest additional use in fall and winter months.

Additionally, project materials state that the proposed project is a consequence of need analysis that resulted in abandonment of a Battery Energy Storage System (BESS) in DPU 17-05 and related proceedings DPU 15-22 and 21-30.

MV Reliability project need, alternatives, impacts, and mitigation measures will be better understood and based on substantial evidence only if MV electrical demand past, present, and projected is provided.

BRG Question 01. Proponent to provide detail of historic, current, and projected electrical demand on Martha’s Vineyard on which the proposed reliability project is based. BRG 01

BRG Question 02. Proponent does not list Energy Facility Siting Board as among anticipated state-level reviews. Please explain whether EFSB has already occurred for the project, by docket number reference, or, alternatively, why EFSB review is not required. BRG 02

BRG Comment 02: In the context of understanding and confirming Chapter 91 licensing requirements, the proponent must clarify the functional relationship between the submarine cable and the landside facilities to which the cable will be connected.

The Project is identified as an "Infrastructure Crossing Facility," defined in 310 CMR 9.02 which reads in part:

> *"...any infrastructure facility which is a bridge, tunnel, pipeline, aqueduct, conduit, cable, or wire, including associated piers, bulkheads, culverts, or other vertical support structures, which is located over or under the water and which connects existing or new infrastructure facilities located on the opposite banks of the waterway..."*

Project materials further state that

> As an Infrastructure Crossing Facility that will cross the flowed tidelands of Vineyard Sound and that cannot be located away from those tidelands while achieving the Project purpose, the Project is classified as a "Water-Dependent Use" by the Waterways Regulations (310 CMR 9.12(2)(d)). PEIR Sec. 1-3.

Coastal Zone Management Plan consistency review includes analysis as follows:

6.2.2.2 Energy: Energy Policy #1: For coastally dependent energy facilities, consider siting in alternative coastal locations. For non- coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

> As an infrastructure crossing facility, it is by definition a water dependent use (310 CMR 9.02) and also considered to be a coastally dependent energy facility. The Project purpose is to increase the reliability of grid-based electrical service on Martha's Vineyard and therefore cannot be located away from the coast.
> P-EIR 6.2.2.2

6.2.2.8 Public Access: Public Access Policy #1: Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

> The Project does not involve development of a coastal site. The Project involves installing submarine cable across Vineyard Sound from a landfall site off Surf Drive

in Falmouth to a landfall site off Eastville Avenue in Oak Bluffs. By definition, the Project is a water-dependent infrastructure project (310 CMR 9.02). All permanent structures will be buried and will not interfere with the public's interest in flowed and filled tidelands. See the Public Benefit Determination Review in Section 1.4 above.

Project materials explain that the proposed submarine cable will connect with an existing Eversource substation #933 off Stephens Lane in Falmouth, and with the Eastville Avenue site in Oak Bluffs.

Substation #933 is located approximately 2.7 miles from the Falmouth submarine cable landfall location. The Eastville Avenue parcel is located approximately 0.25 miles inland from the Oak Bluffs landfall site.

Project materials state that Horizontal Directional Drilling techniques will minimize construction impacts to coastal resources at the landfall sites, and that along Eastville Avenue construction will be limited to off-season time windows.

Proposed EIR Figure 6 and Figure 8 show that both Substation #933 and the Eastville Avenue parcel are located outside Commonwealth tidelands and thus are not subject to Chapter 91 licensing.

BRG states that the "Infrastructure Crossing Facility" designation is materially ambiguous, and that the proponent must clarify is this designation refers only to the submarine cable or to all elements of the project, including the landside underground cable connection routes, the modifications at substation #933 in Falmouth, and the pad-mounted transformers and associated tree removals and access road at Eastville Avenue.

Further, BRG states that the MV Reliability Project may demonstrate that a substation (such as #933) or a land-side transformer facility (as proposed at Eastville Avenue) may be ancillary structures for an "Infrastructure Crossing Facility" but that locating these ancillary structures within a Chapter 91 tidelands location is not functionally required for reliable, safe, and efficient operation of the submarine cable and the entire electricity delivery system.

BRG Question 03: Please clarify by a precise listing which elements of the proposed MV Reliability Project are included within the "Infrastructure Crossing Facility" designation. BRG 03

BRG Question 04: Please confirm that for operation of the "Infrastructure Crossing Facility" submarine cable, the ancillary facilities of substation #933 and the Eastville Avenue transformers may be located outside Chapter 91 tidelands, as currently proposed. BRG 04

- - -

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO

massDOT
Massachusetts Department of Transportation

July 8, 2022

Bethany A. Card, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Falmouth – Martha's Vineyard Reliability Project
(EEA #16562)

ATTN: MEPA Unit
Alex Strysky

Dear Secretary Card:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Environmental Notification Form filed for the proposed Martha's Vineyard Reliability project in Falmouth, Oak Bluffs, and Tisbury as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Chief Engineer, Highway Division
Mary-Joe Perry, District 5 Highway Director
Neil Boudreau, Assistant Administrator of Traffic and Highway Safety
Cape Code Commission
Planning Board, Town of Falmouth
Planning Board, Town of Tisbury
Planning Board, Town of Oak Bluffs

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO

massDOT
Massachusetts Department of Transportation

MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: July 8, 2022

RE: Falmouth – Martha's Vineyard Reliability Project
(EEA #16562)

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the Martha's Vineyard Reliability Project (the "Project") in Falmouth, Oak Bluffs, and Tisbury submitted by Epsilon on behalf of NSTAR Electric Company d/b/a Eversource Energy (collectively, the "Proponent"). The Project entails the installation of 6.24 miles of submarine electrical cable and 2.94 miles of subterranean electrical cable and associated infrastructure, which together will connect the existing Eversource substation on Stephens Lane in Falmouth to a proposed Eversource equipment yard in Oak Bluffs.

On land in Falmouth, the proposed electrical infrastructure follows the Shining Sea Bikeway adjacent to Route 28, a MassDOT jurisdictional road, and crosses this jurisdictional roadway at Jones Road to access the extant Eversource substation on Stephens Lane. The electrical infrastructure transitions underwater from a point on Surf Drive and extends through Tisbury jurisdictional waters into Oak Bluffs. Following landfall in Oak Bluffs, the proposed electrical infrastructure crosses Temahigan Avenue, a MassDOT jurisdictional roadway, to access the Eversource property on Eastville Avenue.

As it entails the alteration of undersea land as well as more than 10,000 cubic yards (cy) of dredging, the Project surpasses MEPA thresholds for review of an ENF due to impacts on wetlands per 301 CMR 11.03(3). The Project also requires an Environmental Impact Report (EIR) per 301 CMR 11.06(7)(b) as a project within the Designated Geographic Area surrounding an Environmental Justice (EJ) Population. Finally, the Project will require a Non-Vehicular Access Permit issued by MassDOT in order to install proposed infrastructure on Temahigan Avenue and Route 28.

There is an HSIP Crash Cluster in Falmouth just beyond the intersection of Jones Street with Stephens Lane providing access to the substation. The Proponent should coordinate with MassDOT District 5 to limit impacts on public safety and MassDOT jurisdictional roadways during Project development. DOT 01

Once completed, the Project is anticipated to result in fewer than one vehicle trip per day. Based on the limited trip generation and temporary construction delays, MassDOT does not anticipate that the transportation impacts resulting from Project development will have significant impacts on the transportation system. DOT 02

Based upon the above criteria, MassDOT recommends that no further environmental review be required based on transportation-related issues. The Proponent should coordinate with the Towns of Oak Bluffs, Falmouth, and Tisbury, as well as MassDOT District 5 to minimize traffic disruption and safety impacts during project construction. If you have any questions regarding these comments, please contact *Curtis.B.Wiemann@dot.state.ma.us*. DOT 03

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

July 8, 2022

Bethany Card, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Alexander Strysky, EEA No. 16562
100 Cambridge Street
Boston, Massachusetts 02114

Project Name:	Martha's Vineyard Reliability Project - New Distribution Cable
Proponent:	NSTAR Electric Company d/b/a Eversource Energy
Location:	Falmouth, Tisbury & Oak Bluffs
Project Description:	New Distribution Cable from Falmouth to Oak Bluffs
Document Reviewed:	Expanded Environmental Notification Form (EENF) & Proposed Environmental Impact Report (PEIR)
EEA File Number:	16562
NHESP Tracking No.:	21-40597

Dear Secretary Card,

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the Division) reviewed the EENF and PEIR for the *Martha's Vineyard Reliability Project* - New Distribution Cable from Falmouth to Oak Bluffs and would like to offer the following comments.

Portions of the proposed project site are mapped as *Priority Habitat* and *Estimated Habitat* according to the *Massachusetts Natural Heritage Atlas* (15th Edition). The Piping Plover (*Charadrius melodus*) and state-listed Tern species may be found within the project area. State-listed species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (M.G.L c. 131A) and its implementing regulations (MESA, 321 CMR 10.00) as well as the rare species provisions of the Massachusetts Wetlands Protection Act (WPA, 310 CMR 10.00). This project requires a direct filing with the Division for compliance with the Massachusetts Endangered Species Act (MESA 321 CMR 10.00).

Based on the information contained within the EENF and PEIR, and in advance of a formal filing pursuant to the MESA, the Division anticipates that this project may require conditions to avoid a prohibited Take of state-listed species including but not limited to preventing disturbance to state-listed species and their habitat during the breeding period (April 1 – August 31). The Division anticipates that any state-listed species concerns can be addressed during the MESA review process. NHESP 01

The Division will not render a final decision until the MEPA review process and associated public and agency comment period is completed, and until all required MESA filing materials are submitted by the proponent to the Division. As our MESA review is not complete, no alteration to the soil, surface, or vegetation and no work associated with the proposed project shall occur until the Division has made a final determination. NHESP 02

If you have any questions about this letter, please contact either Endangered Species Review Biologist Lauren Glorioso Lauren.Glorioso@mass.gov or Amy Hoenig Amy.Hoenig@mass.gov. We appreciate the opportunity to comment on this project.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Assistant Director

cc: Dr. Dwight R. Dunk, Epsilon Associates, Inc.
Falmouth Board of Selectmen
Falmouth Conservation Commission
Falmouth Planning Department
Oak Bluffs Board of Selectmen
Oak Bluffs Conservation Commission
Oak Bluffs Planning Department
Tisbury Board of Selectmen
Tisbury Conservation Commission
Tisbury Planning Department
DEP Southeast Regional Office, MEPA

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Bethany A. Card
Secretary

Martin Suuberg
Commissioner

July 13, 2022

Bethany A. Card
Secretary of Energy and Environment
Executive Office of Energy and
Environmental Affairs
ATTN: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: EENF Review EOEEA #16562
ACUSHNET to FALMOUTH &
OAKBLUFFS. Martha's Vineyard
Reliability Project at New distribution cable
in existing right-of-way and Vineyard Sound
from #933 Stephens Ln. Substation in
Falmouth to an equipment yard off Eastville
Ave. in Oak Bluffs

Dear Secretary Card,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Expanded Environmental Notification Form (EENF) for the Martha's Vineyard Reliability Project at New distribution cable in existing right-of-way and Vineyard Sound from #933 Stephens Ln. Substation in Falmouth to an equipment yard off Eastville Ave. in Oak Bluffs, Acushnet and Falmouth, Massachusetts (EOEEA # 16562). The Project Proponent provides the following information for the Project:

The proposed Martha's Vineyard Reliability Project (the "Project") involves constructing a fifth cable from Falmouth to Oak Bluffs to improve the reliability of grid-based electricity on Martha's Vineyard (or the "Island"). The Project also will allow Eversource to retire five standby diesel generators on the Island which are currently used to provide power during times of peak demand.

Bureau of Water Resources Comments

Wetlands and Waterways. The Wetlands and Waterways Program has reviewed the EENF & PEIR for the above referenced Project and offers the following comments. The Project Proponent has acknowledged the need to file a Notice of Intent, 401 Water Quality Certification, and Chapter 91 License application. The Wetlands Program has reviewed several similar Projects and believes that the proposed work can be undertaken and conditioned to avoid, minimize and mitigate any potential Damage to the Environment through the Program's permitting process. The Proponent has already developed the Sampling and Analysis Plan (SAP), necessary for the combined 401/c. 91 permit, which has been approved. DEP 01

Stormwater Management/National Pollutants Discharge Elimination System (NPDES) Permit. The Proponent states that "a SWPPP will be developed for the Project and coverage under the NPDES Construction General Permit (GCP) for Stormwater Discharges from Construction Activities will be obtained."

The Proponent can access information regarding the NPDES Stormwater requirements and an application for the Construction General Permit by completing and submitting a Notice of Intent (NOI) to EPA via the Stormwater Discharges from Construction Activities | National Pollutant Discharge Elimination System (NPDES) | US EPA.

The Proponent is advised to consult with Sania Kamran (Kamran.Sania@epa.gov, 617- 918-1522) for questions regarding EPA's NPDES Construction General Permit requirements.

In addition, the Proponent is reminded that local the Planning Boards and/or other local authorities may require stormwater controls beyond that of the Wetlands protection Act. These controls are usually created to keep stormwater onsite so as not to create nuisance conditions offsite. DEP 02

Bureau of Waste Site Cleanup Comments

Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed Project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000]. DEP 03

There are no listed MCP disposal sites located at or in the vicinity of the site that would appear to impact the proposed Project area. Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer at MassMapper. Under the Available Data Layers listed on the right sidebar, select "Regulated Areas", and then "DEP Tier Classified 21E Sites". MCP reports and the compliance status of specific disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: https://eeaonline.eea.state.ma.us/portal#!/search/wastesite

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this Project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup. DEP 04

Spills Prevention and Control. A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases. DEP 05

Bureau of Air and Waste Comments

Air Quality. Construction and operation activities shall not cause or contribute to a condition of air pollution due to dust, odor or noise. To determine the appropriate requirements please refer to:

- 310 CMR 7.09 Dust, Odor, Construction, and Demolition
- 310 CMR 7.10 Noise

GHG Emissions Comments: If the Project involves the use of Gas Insulated Switchgear (GIS), the Proponent must follow the state (310 CMR 7.72) and federal regulations to reduce sulfur hexaflouride (SF6) emissions from that switchgear. DEP 06

Construction-Related Measures. The Project Proponent reports: "Construction equipment will comply with requirements for using ultra-low sulfur diesel ("ULSD") in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

The construction contractor will also be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines."

Construction-Related Measures
MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, the Proponent DEP 07 should then use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.

Massachusetts Idling Regulation. The Project Proponent reports: "MassDEP reminds the Proponent that unnecessary idling (i.e., in excess of five minutes), with limited exception, is not permitted during the construction and operations phase of the Project (310 CMR 7.11). Regarding construction period activity, typical methods of reducing idling include driver training, periodic DEP 08 inspections by site supervisors, and posting signage. In addition, to ensure compliance with this regulation once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less on-site.

Solid Waste Management. The ENF states that "The Project will involve open trenching through existing roadways and an existing paved bikeway. Following saw cutting, the existing pavement will be removed and loaded into a dump truck. Pavement will be handled separately from soil and will be recycled at an asphalt batching plant. Packing crates and wood from equipment shipments will be reused or recycled to the extent practicable or will be disposed of appropriately.

Waste materials excavated along the routes during duct and manhole system construction will be promptly removed and re-used or properly managed at a suitable permitted facility."

Furthermore, the Project Proponent states: "The Project involves "dredging" of up to approximately 37,250 c.y. (range of 2 0,6 95 cy t o 53,800 cy) of material, depending on final burial depth and plow trench width. Dredging as defined in 314 CMR 9.00 includes the "repositioning of sediment." Cable construction by hydroplow will cause the temporary repositioning of sediment, however no permanent removal of bottom sediments is required to construct the submarine cable."

The Proponent further states: "Any existing asbestos containing material (ACM) will be removed, abated, transported etc. in accordance with all local, state, and federal requirements. This will include having the structures inspected by a licensed asbestos inspector to identify presence, location and quantity of ACM and prepare a written asbestos survey report as well as filing the appropriate removal/demolition notification forms (ANF001 and/or BWP-AQ06) with MassDEP prior to beginning work."

As a reminder, the Project Proponent is advised of the following requirements:

1. *Reuse of any demolition material requires submittal of MassDEP's BWP SW41 – Beneficial Use Determination – Restricted Applications. The permit is intended to protect public health, safety, and the environment by comprehensively regulating the reuse of waste materials as effective substitutes for a commercial product or commodity. Information pertaining to this requirement is available at* https://www.mass.gov/doc/instructions-sw-39-40-41-42-beneficial-use-determinations/download. DEP 09

2. *Compliance with Waste Ban Regulations*: Waste materials discovered during construction that are determined to be solid waste (e.g., construction and demolition waste) and/or recyclable material (e.g., metal, asphalt, brick, and concrete) shall be disposed, recycled, and/or otherwise handled in accordance with the Solid Waste Regulations including *310 CMR 19.017: Waste Bans*. Waste Ban regulations prohibit the disposal, transfer for disposal, or contracting for disposal of certain hazardous, recyclable, or compostable items at solid waste facilities in Massachusetts, including, but not limited to, metal, wood, asphalt pavement, brick, concrete, and clean gypsum wallboard. The goals of the waste bans are to: promote reuse, waste reduction, or recycling; reduce the adverse impacts of solid waste management on the environment; conserve capacity at existing solid waste disposal facilities; minimize the need for construction of new solid waste disposal facilities; and support the recycling industry by ensuring that large volumes of material are available on a consistent basis. Further guidance can be found at: https://www.mass.gov/guides/massdep-waste-disposal-bans.

   MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs. Further guidance can be found at: https://recyclingworksma.com/construction-demolition-materials-guidance/ DEP 10

   For more information on how to prevent banned materials from entering the waste stream the Proponent should contact the RecyclingWorks in Massachusetts program at (888) 254-5525 or via email at info@recyclingworksma.com. RecyclingWorks in Massachusetts also provides a website that includes a searchable database of recycling service providers, available at http://www.recyclingworksma.com.

3. *Asphalt, brick, and concrete (ABC) rubble,* such as the rubble generated by the demolition of buildings or other structures must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to MassDEP's Information Sheet, entitled " Using or DEP 11

Processing Asphalt Pavement, Brick and Concrete Rubble, Updated February 27, 2017 ", that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found on-line at the MassDEP website:
https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf.

4. *Clean Wood:* As defined in 310 CMR 16.02, clean wood means "discarded material consisting of trees, stumps and brush, including but limited to sawdust, chips, shavings, bark, and new or used lumber"…etc. Clean wood does not include wood from commingled construction and demolition waste, engineered wood products, and wood containing or likely to contain asbestos, chemical preservatives, or paints, stains or other coatings, or adhesives. The Proponent should be aware that wood is not allowed to be buried or disposed of at the Site pursuant to 310 CMR 16.00 & 310 CMR 19.000 unless otherwise approved by MassDEP. Clean wood may be handled in accordance with 310 CMR 16.03(2)(c)7 which allows for the on-site processing (i.e., chipping) of wood for use at the Site (i.e., use as landscaping material) and/or the wood to be transported to a permitted facility (i.e., wood waste reclamation facility) or other facility that is permitted to accept and process wood. DEP 12

5. Building Demolition and Asbestos Containing Waste Material: the Project Proponent is advised that demolition activity must comply with both Solid Waste and Air Quality Control regulations. Please note that MassDEP promulgated revised Asbestos Regulations (310 CMR 7.15) that became effective on June 20, 2014. The new regulations contain requirements to conduct a pre-demolition/renovation asbestos survey by a licensed asbestos inspector and post abatement visual inspections by a licensed asbestos Project monitor. The Massachusetts Department of Labor and Work Force Development, Division of Labor Standards (DLS) is the agency responsible for licensing and regulating all asbestos abatement contractors, designers, Project monitors, inspectors and analytical laboratories in the state of Massachusetts. DEP 13

6. In accordance with the revised Asbestos Regulations at 310 CMR 7.15(4), any owner or operator of a facility or facility component that contains suspect asbestos containing material (ACM) shall, prior to conducting any demolition or renovation, employ a DLS licensed asbestos inspector to thoroughly inspect the facility or facility component, to identify the presence, location and quantity of any ACM or suspect ACM and to prepare a written asbestos survey report. As part of the asbestos survey, samples must be taken of all suspect asbestos containing building materials and sent to a DLS certified laboratory for analysis, using USEPA approved analytical methods. DEP 14

7. If ACM is identified in the asbestos survey, the Proponent must hire a DLS licensed asbestos abatement contractor to remove and dispose of any asbestos containing material(s) from the facility or facility component in accordance with 310 CMR 7.15, prior to conducting any demolition or renovation activities. The removal and handling of asbestos from the facility or facility components must adhere to the Specific Asbestos Abatement Work Practice Standards required at 310 CMR 7.15(7). The Proponent and asbestos contractor will be responsible for submitting an *Asbestos Notification FormANF-001* to MassDEP at least ten (10) working days prior to beginning any removal of the asbestos containing materials as specified at 310 CMR 7.15(6). DEP 15

8. The Proponent shall ensure that all asbestos containing waste material from any asbestos abatement activity is properly stored and disposed of at a landfill approved to accept such material in accordance with 310 CMR 7.15 (17). The Solid Waste Regulations at 310 CMR 19.061(3) list the requirements for any solid waste facility handling or disposing of asbestos waste. Pursuant to 310 CMR 19.061(3) (b) 1, no asbestos containing material; including VAT, asphaltic-asbestos felts or shingles; may be disposed at a solid waste combustion facility. DEP 16

9. In accordance with the Air Quality Regulations at 310 CMR 7.09(2), the Proponent must submit a BWP AQ 06 Notification Prior to Construction or Demolition form to MassDEP for any construction or demolition of an industrial, commercial or institutional building or residential building with 20 or more dwelling units at least ten (10) working days prior to initiation of said construction or demolition Project. The Proponent should propose measures to prevent or alleviate dust, noise, and odor nuisance conditions, which may occur during the demolition. DEP 17

If you have any questions regarding the Solid Waste Management Program comments above, please contact Elza Bystrom at Elza.Bystom@mass.gov or Mark Dakers at Mark.Dakers@mass.gov for solid waste comments and Cynthia Baran at Cynthia.Baran@mass.gov for asbestos comments.

Proposed s.61 Findings

The "Certificate of the Secretary of Energy and Environmental Affairs on the Expanded Environmental Notification Form" may indicate that this Project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issue permits for the Project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. DEP 18

Other Comments/Guidance

MassDEP has no objections to the use of the Rollover EIR process.

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this proposed Project. If you have any questions regarding these comments, please contact George Zoto at George.Zoto@mass.gov or Jonathan Hobill at Jonaathan.Hobill@mass.gov

Very truly yours,

Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director
Gerard Martin, Deputy Regional Director, BWR
John Handrahan, Acting Deputy Regional Director, BWSC
Jennifer Viveiros, Deputy Regional Director, ADMIN
Carlos Fragata, Wetlands and Waterways, BWR
Daniel Gilmore, Chief, Wetlands and Waterways, BWR
Brendan Mullaney, Waterways, BWR
Carlos Fragata, Waterway, BWR
Mark Dakers, Chief, Solid Waste Management, BAW
Elza Bystrom, Solid Waste Management, BAW
Allen Hemberger, Site Management, BWSC

View Comment

Comment Details

EEA #/MEPA ID 16562	**First Name** Peter	**Address Line 1** 59 Town Hall Square	**Organization** Town of Falmouth
Comments Submit Date 7-5-2022	**Last Name** Johnson-Staub	**Address Line 2** --	**Affiliation Description** Municipality
Certificate Action Date 7-8-2022	**Phone** --	**State** MASSACHUSETTS	**Status** Opened
Reviewer Alexander Strysky, (857)408-6957, alexander.strysky@mass.gov	**Email** peter.johnson-staub@falmouthma.gov	**Zip Code** 02540	

Comment Title or Subject

Topic: Town of Falmouth supports underground route in Falmouth

Comments

Segoe UI 10 pt Paragraph

The Town worked cooperatively/collaboratively with Eversource to evaluate underground routes from their substation to Surf Drive. The Town supports the selected route –using the Shining Sea Bikeway– to minimize traffic disruption, impact to residents and businesses. The selected route avoids streets with high underground utility congestion –including public utilities such as water and sewer– to avoid potential impacts to these essential services during construction. The Town supports using the existing Surf Drive duct bank, to the extent practicable.

FALMOUTH 01

Peter Johnson-Staub,
Acting Town Manager

Attachments

Update Status

Status

Opened

SUBMIT

Share Comment

SHARE WITH A REGISTERED USER

BACK TO SEARCH RESULTS

Attachment M

Project Plans

- Supply Line Sta 933 to Martha's Vineyard Falmouth, MA (27 Sheets)
- Martha's Vineyard Submarine Line #70 Falmouth to Martha's Vineyard, MA (23 Sheets)
- Eastville Avenue Oak Bluffs, Massachusetts (3 Sheets)

Supply Line Sta 933 Martha’s Vineyard Falmouth, MA (27 Sheets)

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 300'	1 OF 27	IDX

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022–10–21	1" = 20'	2 OF 27	PP–01

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	3 OF 27	PP-02

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)

0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	4 OF 27	PP-03

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #
WORK #

DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	5 OF 27	PP-04

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	6 OF 27	PP-05

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	7 OF 27	PP-06

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET) 0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	8 OF 27	PP-07

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)

0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	9 OF 27	PP-08

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	10 OF 27	PP-09

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	11 OF 27	PP-10

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022–10–21	1" = 20'	12 OF 27	PP–11

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	13 OF 27	PP-12

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	14 OF 27	PP-13

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	15 OF 27	PP-14

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	16 OF 27	PP-15

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET) 0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #
WORK #

DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	17 OF 27	PP-16

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	18 OF 27	PP-17

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	19 OF 27	PP-18

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022–10–21	1" = 20'	20 OF 27	PP–19

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET) 0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	21 OF 27	PP-20

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	22 OF 27	PP-21

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	23 OF 27	PP-22

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	24 OF 27	PP-23

PLAN
SCALE: 1"=20'

PROFILE
SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	25 OF 27	PP-24

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET) 0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #

WORK #

DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	26 OF 27	PP-25

PLAN

SCALE: 1"=20'

PROFILE

SCALE: 1"=20' HORIZONTAL
1"=4' VERTICAL

AUTOCAD FILE NAME: MARTHAS VINEYARD FALMOUTH.dwg

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HORIZONTAL SCALE (IN FEET)
0 20 40 60 80

POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
			MM	JB	JB	JB

EVERSOURCE

PROJ #	
WORK #	
DRAWN	MM
CHECKED	JB
DESIGN ENG	JB
DESIGN SUPV	JB

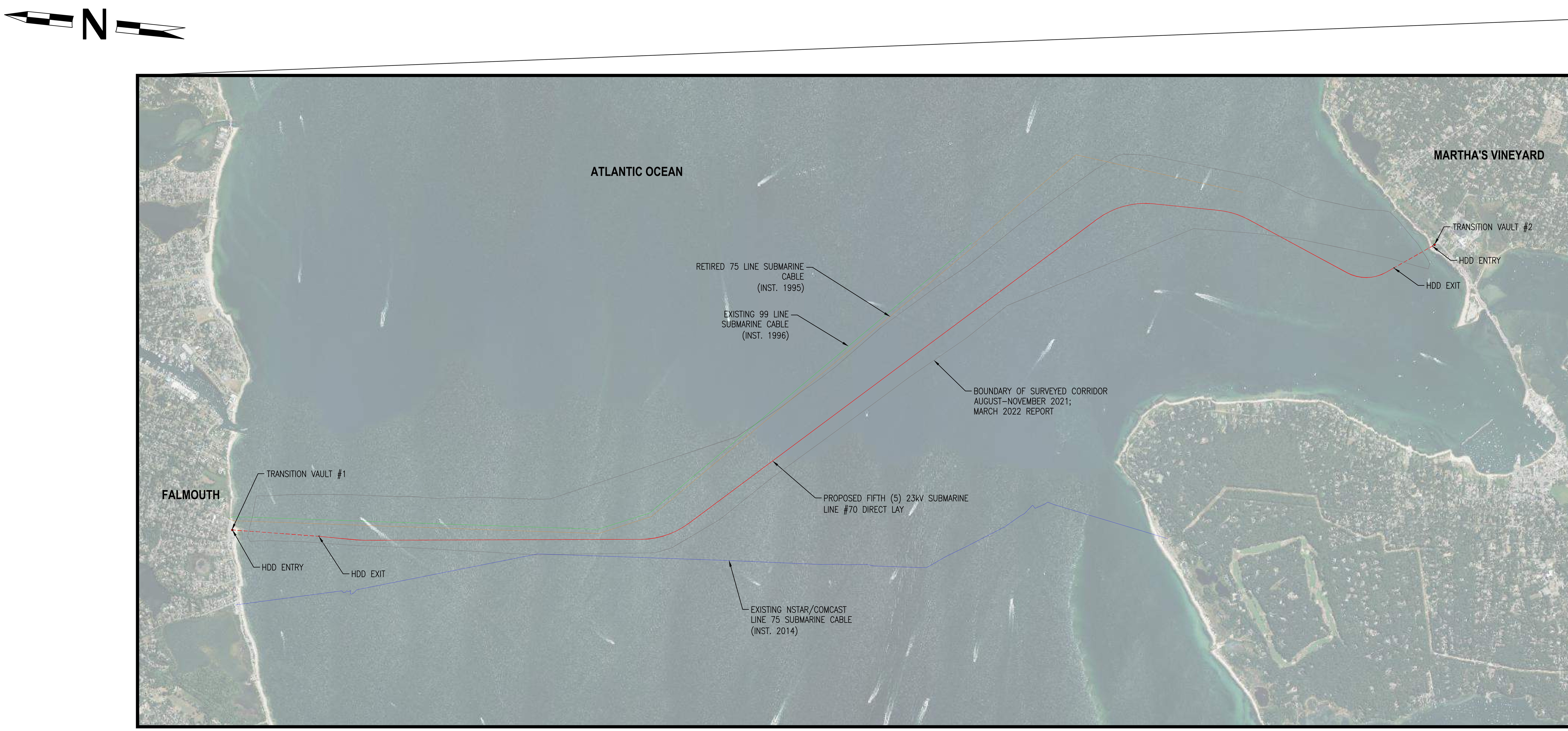
SUPPLY LINE
STA 933 TO MARTHA'S VINEYARD
FALMOUTH, MA

DATE	SCALE	SHEET	SHEET NAME
2022-10-21	1" = 20'	27 OF 27	PP-26

Martha’s Vineyard Submarine Line #70 Falmouth to Martha’s Vineyard, MA (23 Sheets)

NSTAR ELECTRIC COMPANY d/b/a EVERSOURCE ENERGY
PROJECT 21012 FIFTH (5) 23kV SUBMARINE LINE #70
TO OAK BLUFFS FROM STATION #933
FALMOUTH & MARTHA'S VINEYARD, MA

AREA MAP
MASSACHUSETTS
N.T.S.



VICINITY MAP
N.T.S.

NSTAR
DESIGN ENGINEER:

NSTAR
WORK ORDER NUMBER: 80047133

POWER ENGINEERS
PROJECT ENGINEER: THOMAS BUONOMANO

POWER ENGINEERS
PROJECT NUMBER: 0237849_0000

AUTOCAD FILE NAME: 0237849-0000 70 Sub Cover.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	ASW	TPB

EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
COVER SHEET

DATE	SCALE	SHEET	SHEET NAME
2022–11–18	N.T.S.	1 OF 23	1

GENERAL NOTES

1. THE PLANIMETRICS, UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS SHOWN BELOW IN BULLETED LIST. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK AND OTHER UTILITY LOCATING ACTIVITIES. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR (888) 344-7233.
   - EXISTING CABLE LOCATIONS CIRCUIT 91, 97, 99, 75, AND RETIRED LINES 100 & 75, PROVIDED BY CALDWELL NSTAR/COMCAST HYBRID SUBMARINE CABLE PROJECT CABLE AS-BUILTS ISSUED JUNE 26, 2014.
   - EASTVILLE AVE EXISTING CONDITIONS LAND SURVEY PROVIDED BY CHA COMPANY ISSUED 06/30/2022.
   - FALMOUTH EXISTING CONDITIONS LAND SURVEY PROVIDED BY BSC GROUP ISSUED 02/10/2022.
   - BATHYMETRY, SIDE SONAR TABLE, MAGNETIC ANOMALIES TABLE, SEAGRASS SURVEY, AND VIBRACORE/GRAB SAMPLES PROVIDED BY CR ENVIRONMENTAL IN GEOPHYSICAL AND UNDERWATER VIDEO SURVEYS SEDIMENT SAMPLING EVERSOURCE 5TH CABLE VINEYARD SOUND, FALMOUTH AND VINEYARD HAVEN REPORT DATED MARCH 2022.
   - SURFACES DERIVED FROM NOAA CHART 13229 SOUTH COAST OF CAPE COD AND BUZZARDS BAY MASSACHUSETTS NORTH AMERICAN DATUM OF 1983.
   - ENVIRONMENTAL SURVEY LAYERS (FEMA FLOOD ZONE 100-YEAR, LANDWARD LIMIT OF COASTAL BEACH, 100' BUFFER FROM COASTAL BEACH, COASTAL DUNE, EELGRASS AND HARD COMPLEX BOTTOM) COMPILED BY EPSILON AND PROVIDED BY EVERSOURCE 12/02/2022.
2. VERTICAL DATUM IS BASED ON NAVD 1988, HORIZONTAL DATUM IS BASED ON MASSACHUSETTS PLANE COORDINATE SYSTEM, MAINLAND ZONE GRID, VALUES IN US FEET, NAD 1983 (NAD 83/11).
3. VERTICAL LOCATION OF SUBSURFACE UTILITY LINES ARE BASED ON ASSUMED DEPTHS USING BEST AVAILABLE INFORMATION AND MAY VARY FROM THE ACTUAL VERTICAL LOCATIONS. BUILDING SERVICE CONNECTIONS (ELECTRIC, GAS, TELEPHONE, WATER AND SANITARY) ARE NOT SHOWN. CONTRACTOR IS TO ASSUME SERVICES ARE PRESENT TO ALL BUILDINGS.
4. DETAIL DESIGN MAY BE OPTIMIZED TO REFLECT ACTUAL CONDITIONS WITH OWNER REVIEW AND ACCEPTANCE.
5. ALL THE WORK SHALL BE PERFORMED WITHIN THE DESIGNATED PROPERTIES AS NOTED ON THE DRAWINGS.
6. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RETURNED TO THEIR ORIGINAL CONDITION OR BETTER AS DETERMINED BY OWNER AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, AND THE APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS.
7. CIVIL CONTRACTOR SHALL HAUL AWAY ALL UNUSED EXCAVATED MATERIAL TO PERMITTED SOIL DISPOSAL SITE PROJECT SPECIFICATIONS, AND THE APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS.
8. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY & ALL UTILITIES AND FACILITIES (INCLUDING THOSE NOT SHOWN ON THE DRAWINGS) DAMAGED DURING CONSTRUCTION IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, APPLICABLE UTILITY SPECIFICATION, FEDERAL, STATE AND LOCAL REQUIREMENTS.
9. ABANDONED UTILITIES SHALL BE CUT AND CAPPED AS NECESSARY WITH UTILITY OWNER REVIEW AND ACCEPTANCE. ABANDONED GAS LINES SHALL NOT BE CUT.
10. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING BEST MANAGEMENT PRACTICES FOR CONTROLLING EROSION AND SEDIMENTATION IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, AND THE APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS.
11. CIVIL CONTRACTOR SHALL RESTORE GRADE TO PRE-CONSTRUCTION ELEVATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
12. ALL VERTICAL RADII ARE 400' AND ALL HORIZONTAL RADII ARE 500' UNLESS OTHERWISE NOTED ON THE DRAWINGS.
13. PROPOSED SUBMARINE CABLE SHALL MAINTAIN MINIMUM HORIZONTAL CLEARANCES TO OTHER UTILITIES AS SPECIFIED IN THE PROJECT SPECIFICATION OR AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL NOTIFY OWNER OF ALL UNDOCUMENTED UTILITIES DISCOVERED DURING CONSTRUCTION THAT IMPEDE ON THE REQUIRED CLEARANCES TO THE PROPOSED DUCT BANK.
14. PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. CONTRACTOR IS RESPONSIBLE FOR ENSURING PRINTED COPIES ARE THE LATEST REVISION.
15. PROPOSED CABLE PROFILE IS SHOWN BASED ON SURVEYED PROFILE CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING MINIMUM BURIAL DEPTH REQUIREMENTS PER PERMITTING AND OWNER REQUIREMENTS.

LEGEND: PROPOSED

- PROPOSED HDD EXIT/ENTRY
- 95+00 PROPOSED FIFTH (5) 23kV SUBMARINE LINE #70 (DIRECT LAY CABLE)
- 95+00 PROPOSED FIFTH (5) 23kV SUBMARINE LINE #70 (BY HDD)
- PROPOSED VAULT

LEGEND: DIVER TARGETS

- m-XXX MAGNETIC ANOMALIES
- c-XXX SIDE SCAN SONAR TARGETS
- g-XXX GRAB TARGETS
- vc-XXX VIBRACORE TARGETS

ENVIRONMENTAL LAYERS PROVIDED BY EVERSOURCE 12-02-2022

- DUNE — COASTAL DUNE
- FEMA — FEMA FLOOD ZONE 100-YEAR
- COASTAL — LANDWARD LIMIT OF COASTAL BEACH
- BUFFER — 100' BUFFER FROM COASTAL BEACH
- HARD COMPLEX BOTTOM
- EELGRASS

DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
1	COVER SHEET	C	12/19/22
2	DRAWING MANIFEST & GENERAL NOTES	C	12/19/22
3	SURVEY TABLES	C	12/19/22
4	SURVEY TABLES	C	12/19/22
5	SURVEY TABLES	C	12/19/22
6	PLAN & PROFILE VIEW STA. -1+00 TO 4+00	C	12/19/22
7	PLAN & PROFILE VIEW STA. 4+00 TO 9+00	C	12/19/22
8	PLAN & PROFILE VIEW STA. 9+00 TO 14+00	C	12/19/22
9	PLAN & PROFILE VIEW STA. 14+00 TO 19+00	C	12/19/22
10	PLAN & PROFILE VIEW STA. 19+00 TO 22+00	C	12/19/22
11	PLAN & PROFILE VIEW STA. 22+00 TO 82+00	C	12/19/22
12	PLAN & PROFILE VIEW STA. 82+00 TO 142+00	C	12/19/22
13	PLAN & PROFILE VIEW STA. 142+00 TO 202+00	C	12/19/22
14	PLAN & PROFILE VIEW STA. 202+00 TO 262+00	C	12/19/22
15	PLAN & PROFILE VIEW STA. 262+00 TO 319+00	C	12/19/22
16	PLAN & PROFILE VIEW STA. 319+00 TO 324+00	C	12/19/22
17	PLAN & PROFILE VIEW STA. 324+00 TO 329+00	C	12/19/22
18	PLAN & PROFILE VIEW STA. 329+00 TO 331+30	C	12/19/22
19	DETAILS	C	12/19/22
20	FALMOUTH HDD EQUIPMENT LAYOUT	C	12/19/22
21	OAK BLUFFS HDD EQUIPMENT LAYOUT	C	12/19/22
22	ENVIRONMENTAL LAYER OVERVIEW	C	12/19/22
23	ENVIRONMENTAL LAYER OVERVIEW	C	12/19/22

FALMOUTH EXISTING CONDITIONS LAND SURVEY LEGEND:

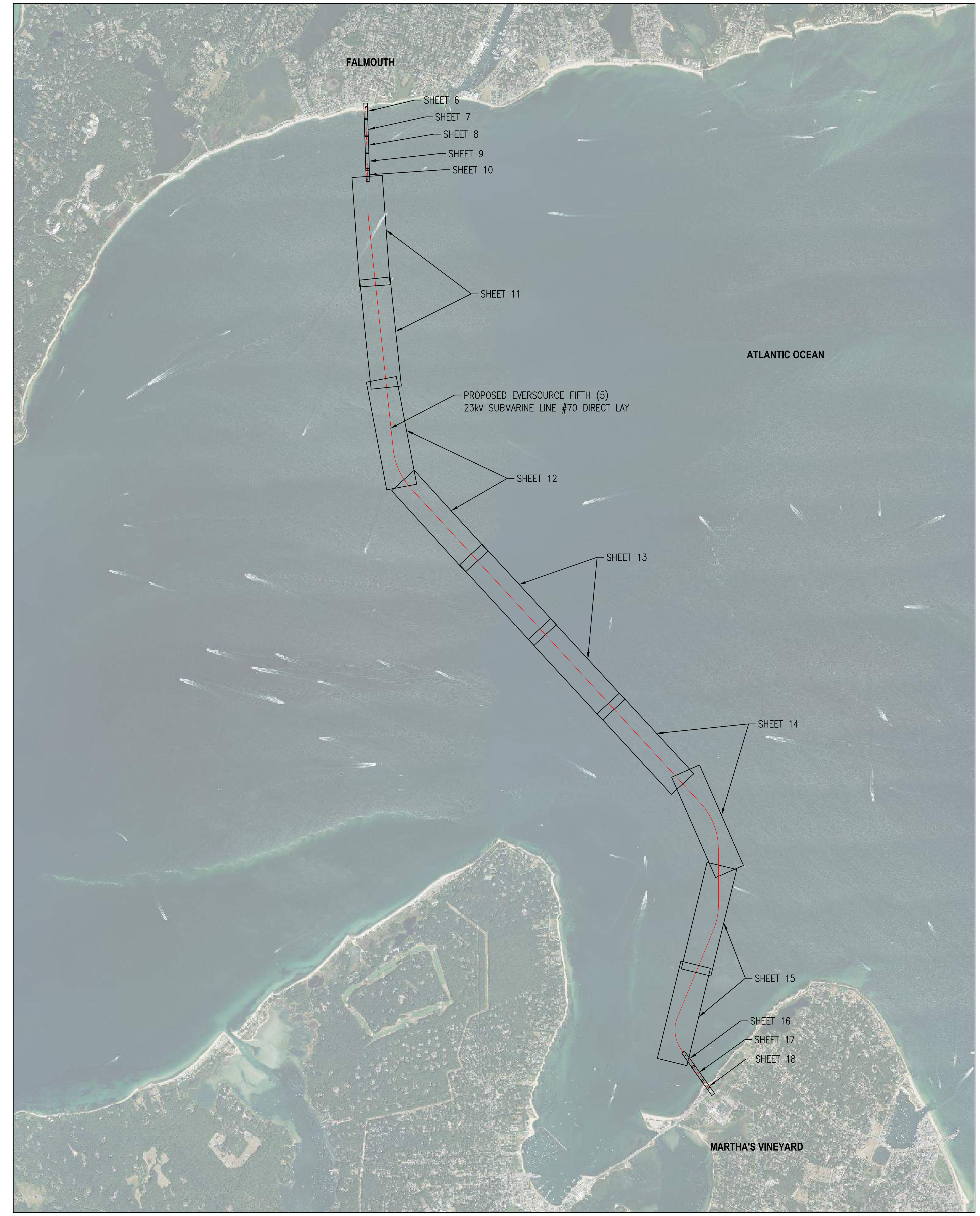
- STONE BOUND
- STONE BOUND W/DRILL HOLE
- STONE BOUND W/ESCUTCHEON PIN
- CONCRETE BOUND
- CONCRETE BOUND W/DRILL HOLE
- IRON PIPE
- IRON ROD
- DRILL HOLE
- PK NAIL
- CABLE HANDHOLE
- SEWER MANHOLE
- DRAIN MANHOLE
- ELECTRIC CONTROL BOX
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- CABLE MANHOLE
- MANHOLE
- CATCH BASIN
- HYDRANT
- WATER GATE
- GAS GATE
- UTILITY POLE
- UTILITY POLE W/LIGHT
- UTILITY POLE W/TRANSFORMER
- GUY ANCHOR
- TS TRAFFIC SIGNAL
- LAMP OR STREET LIGHT
- ELECTRIC HANDHOLE
- WATER METER
- SIGN
- MAIL BOX
- M METAL POST
- FLAG POLE
- SHRUB
- INV. INVERT
- SFM SEWER FORCE MAIN
- S SEWER LINE
- D DRAIN LINE
- W WATER LINE
- G GAS LINE
- FO FIBER OPTIC LINE
- E UNDERGROUND ELECTRIC CONDUIT
- OHW OVERHEAD WIRE
- X CHAIN LINK FENCE
- RAIL FENCE
- FENCE
- GUARDRAIL
- STONE WALL
- TREELINE
- BRUSHLINE
- GRASSED AREA

- AC ASBESTOS CEMENT
- CI CAST IRON
- DICL DUCTILE IRON
- PVC POLYVINYL CHLORIDE
- RCP REINFORCED CONCRETE PIPE

EASTVILLE AVE EXISTING CONDITIONS LAND SURVEY LEGEND:

- PARCEL BOUNDARY LINE
- EASEMENT LINE
- ADJOINING PARCEL LINE
- STREET/HIGHWAY LINE
- E ELECTRIC LINE
- S SEWER LINE
- D DRAINAGE LINE
- W WATER LINE
- OHW OVERHEAD UTILITY LINE
- TREE LINE
- MHB MASS. HIGHWAY BOUND
- CBDH CONCRETE BOUND WITH DRILL HOLE
- RB REBAR
- X 100.0 SPOT GRADE
- SIGN
- SIGN - DOUBLE POST
- WG WATER GATE
- WSO WATER SHUTOFF
- WF# WETLAND FLAG
- MB MAIL BOX
- CB CATCH BASIN
- SEWER MANHOLE
- DRAINAGE MANHOLE
- EHH ELECTRIC HAND HOLE
- ELECTRIC MANHOLE
- TREE PINE TREE
- TREE DECIDUOUS TREE
- 22"M TREE
- ULT# UTILITY POLE W/ LIGHT
- GUY WIRE
- VP VENT PIPE
- EXISTING NSTAR/COMCAST 75 LINE
- RETIRED 75 LINE
- EXISTING 99 LINE
- RETIRED 100 LINE

N



VICINITY MAP
N.T.S.

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW - ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW - REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW - 30% PLAN	LAS	TPB	ASW	TPB

EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
DRAWING MANIFEST & GENERAL NOTES

DATE 2022-11-11 | SCALE N.T.S. | SHEET 2 OF 23 | SHEET NAME 2

AUTOCAD FILE NAME: 0237849-0000 70 Sub Cover.dwg

DIGITIZED MAGNETIC ANOMALIES (1 OF 3)

ID	HYPACK Name	X	Y	Lat	Long	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class	Source	Line
M-1	MAGTGT (272.64)	367867	4591692	41.46594715	-70.58228323	272.6	15.3	29.6	Multiple Component	MAGEDIT	20
M-2	MAGTGT (34.07)	367890	4591859	41.46745462	-70.58204447	34.1	7.8	14.6	Dipolar	MAGEDIT	20
M-3	MAGTGT (22.54)	367963	4592220	41.47071711	-70.5812496	22.5	7.5	12.9	Dipolar	MAGEDIT	18
M-4	MAGTGT (12.95)	367933	4591963	41.46839812	-70.58155249	13.0	7.5	12.7	Multiple Component	MAGEDIT	18
M-5	MAGTGT (75.85)	367924	4591914	41.46795544	-70.5816495	75.9	11.0	18.2	Dipolar	MAGEDIT	18
M-6	MAGTGT (175.46)	367950	4592134	41.46994062	-70.5813864	175.5	11.0	18.3	Dipolar	MAGEDIT	18
M-7	MAGTGT (21.96)	367903	4591744	41.46642129	-70.58186368	22.0	7.5	13.8	Monopolar	MAGEDIT	18
M-8	MAGTGT (33.18)	367888	4591653	41.46559945	-70.58202331	33.2	17.0	30.4	Multiple Component	MAGEDIT	18
M-9	MAGTGT (220.00)	367909	4592045	41.4691325	-70.58185774	220.0	33.5	63.1	Multiple Component	MAGEDIT	20
M-10	MAGTGT (36.72)	367950	4592307	41.47149832	-70.58142427	36.7	8.0	17.0	Dipolar	MAGEDIT	20
M-11	MAGTGT (12.09)	367954	4592404	41.47237237	-70.58139761	12.1	7.1	15.1	Monopolar	MAGEDIT	20
M-12	MAGTGT (25.70)	368102	4592460	41.47290095	-70.57963804	25.7	23.8	36.4	Dipolar	MAGEDIT	11
M-13	MAGTGT (25.70)	368102	4592460	41.47290095	-70.57963804	25.7	23.8	36.4	Dipolar	MAGEDIT	11
M-14	MAGTGT (44.38)	368001	4591791	41.46686061	-70.58070083	44.4	13.5	23.7	Dipolar	MAGEDIT	11
M-15	MAGTGT (12.39)	367998	4591677	41.46583366	-70.58071181	12.4	6.7	12.1	Monopolar	MAGEDIT	11
M-16	MAGTGT (296.86)	367879	4591676	41.46580506	-70.58213608	296.9	30.5	60.2	Multiple Component	MAGEDIT	19
M-17	MAGTGT (20.20)	367906	4591856	41.46743024	-70.58185228	20.2	10.3	19.9	Monopolar	MAGEDIT	19
M-18	MAGTGT (20.89)	367914	4591921	41.46801682	-70.58177074	20.9	7.2	12.0	Dipolar	MAGEDIT	19
M-19	MAGTGT (90.28)	367942	4592140	41.46999332	-70.58148349	90.3	7.7	15.6	Dipolar	MAGEDIT	19
M-20	MAGTGT (96.66)	368048	4591965	41.46843506	-70.58017626	96.7	19.3	34.3	Dipolar	MAGEDIT	10
M-21	MAGTGT (14.43)	368028	4591768	41.46665796	-70.58037259	14.4	8.3	17.1	Dipolar	MAGEDIT	10
M-22	MAGTGT (16.70)	368002	4591587	41.46502395	-70.58064424	16.7	6.8	12.9	Dipolar	MAGEDIT	10
M-23	MAGTGT (47.88)	367915	4591713	41.46614414	-70.58171324	47.9	12.3	29.7	Monopolar	MAGEDIT	17
M-24	MAGTGT (46.11)	367938	4591881	41.46766061	-70.58147469	46.1	9.5	17.4	Dipolar	MAGEDIT	17
M-25	MAGTGT (14.36)	367962	4592063	41.4693033	-70.58122721	14.4	6.6	15.3	Dipolar	MAGEDIT	17
M-26	MAGTGT (23.77)	368003	4592406	41.47239844	-70.58081144	23.8	12.0	22.4	Dipolar	MAGEDIT	17
M-27	MAGTGT (42568.55)	368178	4592312	41.47158084	-70.57869584	42568.6	7.5	14.3	Multiple Component	MAGEDIT	5
M-28	MAGTGT (34.16)	367932	4591751	41.4664891	-70.58151806	34.2	9.3	23.2	Monopolar	MAGEDIT	16
M-29	MAGTGT (36.68)	367948	4591850	41.46738313	-70.58134819	36.7	9.3	17.1	Multiple Component	MAGEDIT	16
M-30	MAGTGT (10.74)	367981	4592099	41.46963058	-70.58100764	10.7	23.7	43.1	Multiple Component	MAGEDIT	16
M-31	MAGTGT (423.87)	368114	4591740	41.46641999	-70.579337	423.9	8.7	16.7	Dipolar	MAGEDIT	4
M-32	MAGTGT (75.66)	367984	4592014	41.46886572	-70.58095312	75.7	20.3	40.0	Dipolar	MAGEDIT	15
M-33	MAGTGT (51.62)	367993	4592072	41.46938944	-70.58085807	51.6	5.8	11.0	Monopolar	MAGEDIT	15
M-34	MAGTGT (11.28)	368003	4592148	41.4700754	-70.58075499	11.3	12.3	24.9	Multiple Component	MAGEDIT	15
M-35	MAGTGT (45.69)	368206	4592308	41.47154943	-70.57835976	45.7	7.8	13.6	Dipolar	MAGEDIT	3
M-36	MAGTGT (78.90)	368163	4591956	41.46837293	-70.57879763	78.9	8.0	13.9	Dipolar	MAGEDIT	3
M-37	MAGTGT (749.91)	368128	4591710	41.46615217	-70.57916285	749.9	16.5	30.4	Multiple Component	MAGEDIT	3
M-38	MAGTGT (38.93)	367942	4591566	41.46482499	-70.58135787	38.9	5.3	11.1	Dipolar	MAGEDIT	14
M-39	MAGTGT (27.20)	367959	4591675	41.46580923	-70.58117822	27.2	5.3	9.9	Monopolar	MAGEDIT	14
M-40	MAGTGT (137.68)	368041	4592321	41.47163935	-70.58033792	137.7	19.8	37.4	Multiple Component	MAGEDIT	14
M-41	MAGTGT (22.68)	368095	4592144	41.47005451	-70.57965275	22.7	18.8	36.8	Multiple Component	MAGEDIT	9
M-42	MAGTGT (56.66)	368049	4591835	41.46726469	-70.58013586	56.7	18.7	33.9	Multiple Component	MAGEDIT	9
M-43	MAGTGT (27.67)	367963	4591607	41.46519761	-70.58111546	27.7	8.3	19.1	Monopolar	MAGEDIT	13
M-44	MAGTGT (19.96)	367984	4591774	41.46670475	-70.58090062	20.0	5.5	13.3	Monopolar	MAGEDIT	13
M-45	MAGTGT (23.32)	367994	4591864	41.46751676	-70.5808006	23.3	6.5	15.8	Monopolar	MAGEDIT	13
M-46	MAGTGT (43.69)	368047	4592232	41.47083898	-70.58024662	43.7	16.8	39.1	Dipolar	MAGEDIT	13
M-47	MAGTGT (78.52)	368054	4592322	41.47165049	-70.58018251	78.5	13.0	29.8	Monopolar	MAGEDIT	13
M-48	MAGTGT (60.73)	368206	4592205	41.47062201	-70.57833726	60.7	11.8	18.8	Dipolar	MAGEDIT	2
M-49	MAGTGT (163.81)	368224	4592211	41.47067899	-70.57812309	163.8	12.3	21.8	Dipolar	MAGEDIT	1
M-50	MAGTGT (35.86)	368197	4592011	41.46887374	-70.57840263	35.9	9.5	16.4	Dipolar	MAGEDIT	1
M-51	MAGTGT (47.66)	368159	4591720	41.46624731	-70.57879395	47.7	7.5	15.4	Dipolar	MAGEDIT	1
M-52	MAGTGT (21.58)	368093	4592464	41.47293549	-70.57974666	21.6	28.0	45.9	Dipolar	MAGEDIT	12
M-53	MAGTGT (38482.51)	368075	4591660	41.46569325	-70.57978636	38482.5	8.3	17.0	Multiple Component	MAGEDIT	6
M-54	MAGTGT (31664.83)	368173	4592404	41.47240839	-70.5787758	31664.8	9.8	17.5	Multiple Component	MAGEDIT	6
M-55	MAGTGT (36957.06)	368389	4593784	41.48486948	-70.57649106	36957.1	11.5	18.5	Multiple Component	MAGEDIT	1
M-56	MAGTGT (52778.16)	367867	4594396	41.49029409	-70.58287566	52778.2	116.7	136.1	Multiple Component	MAGEDIT	1
M-57	MAGTGT (36.18)	367838	4594385	41.49019027	-70.58322052	36.2	28.8	31.9	Dipolar	MAGEDIT	2
M-58	MAGTGT (11.89)	368293	4593846	41.48541197	-70.57765412	11.9	39.7	41.6	Monopolar	MAGEDIT	2
M-59	MAGTGT (14.83)	367913	4594082	41.48747441	-70.582256	14.8	14.3	24.6	Dipolar	MAGEDIT	11
M-60	MAGTGT (48.34)	367819	4594202	41.4885394	-70.58340791	48.3	18.8	33.3	Dipolar	MAGEDIT	11
M-61	MAGTGT (10769.83)	368003	4593956	41.48635472	-70.5811507	10769.8	12.9	19.3	Multiple Component	MAGEDIT	12
M-62	MAGTGT (74.16)	367991	4593973	41.48650582	-70.58129812	74.2	9.5	15.2	Dipolar	MAGEDIT	12
M-63	MAGTGT (108.53)	367693	4594327	41.48964411	-70.58494416	108.5	9.0	15.5	Monopolar	MAGEDIT	12
M-64	MAGTGT (60.98)	367613	4594413	41.49040525	-70.58592104	61.0	9.3	16.5	Dipolar	MAGEDIT	12
M-65	MAGTGT (1353.26)	367520	4594522	41.49137132	-70.58705868	1353.3	16.8	30.4	Multiple Component	MAGEDIT	12
M-66	MAGTGT (476.17)	367466	4594578	41.49186662	-70.58771765	476.2	11.6	21.3	Monopolar	MAGEDIT	12
M-67	MAGTGT (12.59)	367771	4594414	41.49044033	-70.58402921	12.6	108.0	61.4	Dipolar	MAGEDIT	4
M-68	MAGTGT (11.44)	367911	4594248	41.48896875	-70.58231632	11.4	40.5	32.0	Multiple Component	MAGEDIT	4
M-69	MAGTGT (10519.06)	368016	4593733	41.48434896	-70.58094622	10519.1	37.0	64.9	Multiple Component	MAGEDIT	21
M-70	MAGTGT (44.96)	367738	4594054	41.48719344	-70.58434539	45.0	13.0	25.6	Dipolar	MAGEDIT	21
M-71	MAGTGT (79.16)	367696	4594105	41.48764572	-70.58485951	79.2	8.3	15.4	Monopolar	MAGEDIT	21
M-72	MAGTGT (22.51)	367257	4594616	41.49217419	-70.59022885	22.5	9.5	17.6	Monopolar	MAGEDIT	21
M-73	MAGTGT (32.96)	367601	4594590	41.49199698	-70.58610363	33.0	75.5	29.0	Monopolar	MAGEDIT	5
M-74	MAGTGT (16.25)	367749	4594418	41.49047272	-70.58429354	16.3	56.8	23.7	Monopolar	MAGEDIT	5
M-75	MAGTGT (21.07)	367760	4594398	41.49029446	-70.58415742	21.1	59.5	12.5	Monopolar	MAGEDIT	5
M-76	MAGTGT (23.62)	367806	4594358	41.48994188	-70.5835978	23.6	21.8	2.8	Monopolar	MAGEDIT	5
M-77	MAGTGT (2896.83)	368058	4593702	41.48407675	-70.58043653	2896.8	8.7	14.3	Monopolar	MAGEDIT	20
M-78	MAGTGT (51183.76)	367356	4594520	41.49132619	-70.58902217	51183.8	15.6	26.0	Multiple Component	MAGEDIT	20
M-79	MAGTGT (53.32)	367090	4594822	41.49400133	-70.59227416	53.3	14.5	27.3	Dipolar	MAGEDIT	20
M-80	MAGTGT (12.32)	367503	4594679	41.49278214	-70.58729677	12.3	24.5	11.6	Monopolar	MAGEDIT	6

DIGITIZED MAGNETIC ANOMALIES (2 OF 3)

ID	HYPACK Name	X	Y	Lat	Long	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class	Source	Line
M-81	MAGTGT (28.51)	367726	4594419	41.49047793	-70.58456918	28.5	102.5	52.3	Multiple Component	MAGEDIT	6
M-82	MAGTGT (39.06)	368081	4594013	41.48688079	-70.58022918	39.1	55.4	49.4	Monopolar	MAGEDIT	6
M-83	MAGTGT (69.67)	368016	4594064	41.4873293	-70.58101868	69.7	146.3	251.6	Multiple Component	MAGEDIT	7
M-84	MAGTGT (13.46)	368040	4594015	41.48689205	-70.58072057	13.5	97.3	155.6	Multiple Component	MAGEDIT	8
M-85	MAGTGT (30.10)	367591	4594322	41.48958225	-70.5861645	30.1	77.5	131.9	Multiple Component	MAGEDIT	17
M-86	MAGTGT (25.85)	367265	4594695	41.49288683	-70.59015045	25.9	72.0	127.2	Multiple Component	MAGEDIT	17
M-87	MAGTGT (55.68)	365719	4596480	41.50870127	-70.60906227	55.7	28.3	45.8	Monopolar	MAGEDIT	17
M-88	MAGTGT (9.95)	367572	4594527	41.49142494	-70.58643707	10.0	43.0	49.3	Dipolar	MAGEDIT	9
M-89	MAGTGT (770.43)	367488	4594463	41.4908348	-70.58742891	770.4	432.7	859.8	Multiple Component	MAGEDIT	16
M-90	MAGTGT (58.27)	365730	4596487	41.50876614	-70.60893207	58.3	27.5	36.9	Monopolar	MAGEDIT	16
M-91	MAGTGT (81.33)	365674	4596555	41.50936902	-70.60961803	81.3	22.2	35.5	Monopolar	MAGEDIT	16
M-92	MAGTGT (34.01)	367586	4594376	41.49006764	-70.58623624	34.0	30.2	66.9	Monopolar	MAGEDIT	15
M-93	MAGTGT (32.74)	367432	4594552	41.49162689	-70.58811909	32.7	28.5	54.5	Dipolar	MAGEDIT	15
M-94	MAGTGT (19.82)	367260	4594744	41.4933272	-70.59022112	19.8	23.7	47.6	Monopolar	MAGEDIT	15
M-95	MAGTGT (23.18)	366650	4595447	41.49955572	-70.59768176	23.2	17.3	29.8	Monopolar	MAGEDIT	15
M-96	MAGTGT (48.41)	365602	4596665	41.51034737	-70.61050502	48.4	16.3	30.0	Monopolar	MAGEDIT	15
M-97	MAGTGT (21.05)	367443	4594560	41.49170075	-70.58798913	21.1	48.0	52.8	Dipolar	MAGEDIT	14
M-98	MAGTGT (21.05)	367443	4594560	41.49170075	-70.58798913	21.1	48.0	52.8	Dipolar	MAGEDIT	14
M-99	MAGTGT (35.56)	365381	4596782	41.51136371	-70.61317844	35.6	26.5	37.4	Dipolar	MAGEDIT	21
M-100	MAGTGT (12.75)	365221	4597524	41.51801766	-70.61526116	12.8	16.6	41.6	Dipolar	MAGEDIT	21
M-101	MAGTGT (22.32)	365385	4596790	41.51143641	-70.61313231	22.3	17.0	36.2	Dipolar	MAGEDIT	20
M-102	MAGTGT (10.32)	365241	4597527	41.51804803	-70.61502223	10.3	25.0	63.0	Dipolar	MAGEDIT	20
M-103	MAGTGT (38568.00)	365620	4596961	41.51301553	-70.61035547	38568.0	123.8	211.2	Multiple Component	MAGEDIT	1
M-104	MAGTGT (25.23)	365541	4597525	41.51808045	-70.6114278	25.2	22.8	45.5	Dipolar	MAGEDIT	1
M-105	MAGTGT (33.61)	365396	4596897	41.51240167	-70.61302447	33.6	21.2	42.9	Dipolar	MAGEDIT	15
M-106	MAGTGT (80.33)	365317	4597494	41.51776369	-70.61410437	80.3	74.8	136.1	Multiple Component	MAGEDIT	15
M-107	MAGTGT (788.32)	365431	4598996	41.53130662	-70.61307459	788.3	14.7	24.0	Monopolar	MAGEDIT	2
M-108	MAGTGT (7566.56)	365446	4598675	41.52841891	-70.61282305	7566.6	21.0	35.9	Multiple Component	MAGEDIT	2
M-109	MAGTGT (4764.12)	365452	4598572	41.52749253	-70.61272812	4764.1	24.0	22.1	Multiple Component	MAGEDIT	2
M-110	MAGTGT (12523.26)	365528	4597153	41.51472883	-70.61150043	12523.3	4.0	9.0	Monopolar	MAGEDIT	2
M-111	MAGTGT (32727.37)	365539	4597057	41.51386631	-70.61134722	32727.4	6.5	21.7	Monopolar	MAGEDIT	2
M-112	MAGTGT (53236.59)	365562	4597001	41.51336595	-70.61105919	53236.6	25.2	34.4	Dipolar	MAGEDIT	2
M-113	MAGTGT (38292.99)	365335	4597451	41.51737955	-70.61387911	38293.0	74.5	120.2	Multiple Component	MAGEDIT	14
M-114	MAGTGT (7817.76)	367186	4595171	41.49715964	-70.59120143	7817.8	13.0	20.5	Multiple Component	MAGEDIT	1
M-115	MAGTGT (365.48)	365970	4596566	41.50951764	-70.60607487	365.5	106.2	145.0	Multiple Component	MAGEDIT	1
M-116	MAGTGT (43.63)	367029	4594893	41.4946305	-70.59302035	43.6	22.3	41.4	Multiple Component	MAGEDIT	20
M-117	MAGTGT (20.80)	365688	4596444	41.50837193	-70.60942557	20.8	17.8	37.0	Monopolar	MAGEDIT	20
M-118	MAGTGT (564.20)	367180	4594752	41.49338598	-70.59118093	564.2	25.2	43.1	Dipolar	MAGEDIT	19
M-119	MAGTGT (44.68)	365700	4596469	41.50859904	-70.60928741	44.7	30.0	52.8	Monopolar	MAGEDIT	18
M-120	MAGTGT (21.25)	367137	4594949	41.49515263	-70.59173931	21.3	46.5	51.8	Multiple Component	MAGEDIT	12
M-121	MAGTGT (9.78)	367063	4595039	41.49595072	-70.59264538	9.8	23.3	29.1	Monopolar	MAGEDIT	12
M-122	MAGTGT (22.63)	366671	4595491	41.49995539	-70.59743999	22.6	43.7	65.0	Dipolar	MAGEDIT	12
M-123	MAGTGT (65.05)	367090	4595061	41.49615328	-70.59232688	65.1	69.0	9.9	Multiple Component	MAGEDIT	8
M-124	MAGTGT (24.22)	365412	4596785	41.51139593	-70.61280777	24.2	20.3	29.3	Dipolar	MAGEDIT	19
M-125	MAGTGT (23.90)	365381	4596845	41.51193095	-70.61319252	23.9	24.0	46.7	Dipolar	MAGEDIT	18
M-126	MAGTGT (19.26)	365416	4598988	41.53123207	-70.61325254	19.3	11.5	24.7	Monopolar	MAGEDIT	3
M-127	MAGTGT (9.65)	365435	4597501	41.51784655	-70.61269231	9.7	15.0	22.6	Monopolar	MAGEDIT	7
M-128	MAGTGT (5670.87)	365456	4597154	41.51472575	-70.61236317	38499.9	16.8	27.7	Multiple Component	MAGEDIT	7
M-129	MAGTGT (139.11)	365460	4597065	41.51392507	-70.61229536	139.1	26.0	45.8	Multiple Component	MAGEDIT	7
M-130	MAGTGT (31.12)	365384	4596867	41.51212954	-70.61316151	31.1	33.2	40.4	Multiple Component	MAGEDIT	17
M-131	MAGTGT (30.80)	365291	4597540	41.5181735	-70.61442614	30.8	38.5	56.5	Multiple Component	MAGEDIT	17
M-132	MAGTGT (16.96)	365274	4597714	41.5197373	-70.61466875	17.0	61.5	88.3	Multiple Component	MAGEDIT	17
M-133	MAGTGT (38378.41)	365507	4597077	41.51404101	-70.61173502	38378.4	29.5	53.4	Multiple Component	MAGEDIT	4
M-134	MAGTGT (19.95)	365463	4597857	41.52105663	-70.61243645	20.0	17.5	31.1	Monopolar	MAGEDIT	4
M-135	MAGTGT (42.60)	365482	4597474	41.51761135	-70.61212322	42.6	17.3	32.3	Dipolar	MAGEDIT	4
M-136	MAGTGT (4647.32)	365376	4599180	41.53295408	-70.61377481	4647.3	23.8	39.7	Multiple Component	MAGEDIT	5
M-137	MAGTGT (1394.00)	365495	4597028	41.51359781	-70.61186782	1394.0	34.5	57.5	Multiple Component	MAGEDIT	5
M-138	MAGTGT (38434.33)	365303	4598441	41.52628797	-70.61448406	38434.3	31.8	58.9	Multiple Component	MAGEDIT	12
M-139	MAGTGT (51.20)	365324	4599249	41.53356659	-70.61441336	51.2	12.0	24.6	Monopolar	MAGEDIT	8
M-140	MAGTGT (18.88)	365343	4598864	41.53010332	-70.61409949	18.9	15.3	28.7	Monopolar	MAGEDIT	8
M-141	MAGTGT (39.27)	365367	4598562	41.5273882	-70.61374433	39.3	14.0	27.2	Dipolar	MAGEDIT	8
M-142	MAGTGT (154.55)	365436	4597196	41.51510055	-70.61261214	154.6	82.0	171.2	Multiple Component	MAGEDIT	8
M-143	MAGTGT (51.82)	365402	4596983	41.51317701	-70.61297182	51.8	20.8	27.6	Monopolar	MAGEDIT	11
M-144	MAGTGT (4253.49)	365473	4597124	41.51445849	-70.61215282	4253.5	109.5	206.6	Multiple Component	MAGEDIT	6
M-145	MAGTGT (91.07)	365314	4598875	41.53019748	-70.61444944	91.1	19.5	41.4	Monopolar	MAGEDIT	10
M-146	MAGTGT (936.62)	365287	4599231	41.5333983	-70.61485269	936.6	77.7	170.3	Multiple Component	MAGEDIT	10
M-147	MAGTGT (1208.87)	365416	4598995	41.5312951	-70.6132541	1208.9	12.7	24.0	Dipolar	MAGEDIT	3
M-148	MAGTGT (17.58)	365478	4597871	41.5211852	-70.61225987	17.6	17.5	27.5	Dipolar	MAGEDIT	3
M-149	MAGTGT (62.69)	365481	4597477	41.51763819	-70.61213587	62.7	29.0	58.7	Dipolar	MAGEDIT	3
M-150	MAGTGT (162.85)	365424	4597173	41.51489144	-70.61275076	162.9	22.0	41.1	Dipolar	MAGEDIT	9
M-151	MAGTGT (37514.31)	365421	4597268	41.5157463	-70.61280793	37514.3	26.7	48.3	Multiple Component	MAGEDIT	9
M-152	MAGTGT (615.50)	365299	4599535	41.53613748	-70.61477699	615.5	55.8	132.7	Multiple Component	MAGEDIT	9
M-153	MAGTGT (53.63)	368300	4592786	41.47586881	-70.57733879	53.6	13.2	27.8	Dipolar	MAGEDIT	1
M-154	MAGTGT (82.11)	368136	4592813	41.47608498	-70.57930817	82.1	12.0	28.0	Dipolar	MAGEDIT	12
M-155	MAGTGT (23.97)	368174	4593111	41.47877443	-70.57891835	24.0	18.0	36.3	Dipolar	MAGEDIT	12
M-156	MAGTGT (30.00)	368209	4593414	41.48150842	-70.57856552	30.0	16.8	34.7	Monopolar	MAGEDIT	12
M-157	MAGTGT (124.41)	368103	4592694	41.47500807	-70.57967723	124.4	12.0	26.0	Dipolar	MAGEDIT	13
M-158	MAGTGT (1019.85)	368244	4592834	41.47629181	-70.57801973	1019.9	13.0	24.1	Dipolar	MAGEDIT	5
M-159	MAGTGT (32.07)	368066	4592766	41.47565027	-70.58013596	32.1	15.4	35.9	Multiple Component	MAGEDIT	16
M-160	MAGTGT (37.09)	368042	4592705	41.47509708	-70.58040995	37.1	12.8	34.4	Monopolar	MAGEDIT	17

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	ASW	TPB

EVERSOURCE

PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
SURVEY TABLES

DATE	SCALE	SHEET	SHEET NAME
2022–11–18	N.T.S.	3 OF 23	3

DIGITIZED MAGNETIC ANOMALIES (3 OF 3)

ID	HYPACK Name	X	Y	Lat	Long	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class	Source	Line
M-161	MAGTGT (58.57)	368062	4592850	41.47640596	-70.58020222	58.6	12.8	24.5	Dipolar	MAGEDIT	17
M-162	MAGTGT (58.57)	368062	4592850	41.47640596	-70.58020222	58.6	12.8	24.5	Dipolar	MAGEDIT	17
M-163	MAGTGT (17.26)	368081	4592991	41.47767865	-70.58000558	17.3	14.5	27.3	Multiple Component	MAGEDIT	17
M-164	MAGTGT (76.61)	368092	4593090	41.47857186	-70.57989554	76.6	22.0	43.5	Dipolar	MAGEDIT	17
M-165	MAGTGT (28.15)	368123	4593329	41.48072893	-70.57957664	28.2	18.1	33.6	Dipolar	MAGEDIT	17
M-166	MAGTGT (22.18)	368273	4593321	41.48068156	-70.5777789	22.2	16.0	27.9	Dipolar	MAGEDIT	7
M-167	MAGTGT (26.11)	368034	4592770	41.47568102	-70.58051995	26.1	10.8	30.1	Multiple Component	MAGEDIT	18
M-168	MAGTGT (14.28)	368033	4592852	41.47641919	-70.58054986	14.3	8.3	17.7	Multiple Component	MAGEDIT	19
M-169	MAGTGT (8.36)	368053	4593019	41.47792616	-70.58034694	8.4	12.7	27.5	Dipolar	MAGEDIT	19
M-170	MAGTGT (14.06)	368195	4593103	41.47870585	-70.57866517	14.1	25.3	42.2	Dipolar	MAGEDIT	10
M-171	MAGTGT (75.83)	367986	4592787	41.47582619	-70.58109834	75.8	13.0	23.3	Dipolar	MAGEDIT	21
M-172	MAGTGT (39.65)	368013	4592955	41.47734332	-70.58081185	39.7	12.5	27.0	Dipolar	MAGEDIT	21
M-173	MAGTGT (39.65)	368013	4592955	41.47734332	-70.58081185	39.7	12.5	27.0	Dipolar	MAGEDIT	21
M-174	MAGTGT (14.09)	368056	4593290	41.48036675	-70.58037032	14.1	15.5	32.5	Dipolar	MAGEDIT	21

NOTES:
DIGITIZED MAGNETIC ANOMALIES TABLE PROVIDED BY CR ENVIRONMENTAL IN GEOPHYSICAL AND UNDERWATER VIDEO SURVEYS SEDIMENT SAMPLING EVERSOURCE 5TH CABLE VINEYARD SOUND, FALMOUTH AND VINEYARD HAVEN REPORT DATED MARCH 2022.

SIDE SONAR CONTACTS (1 OF 2)

Target	ClickLat	ClickLon	X	Y	FishHeight	FishCmg	Ping Number	NadirDistance FromLeftEdge	RangeAtLeft Edge	RangeAtRight Edge	SonarRange	RangeToTarget	PortOrStarboard	Target On Port Side	Target Spans Channels	Samples PerChan	CsfTarget Row	FirstCsfRow	LastCsfRow	MapProjection	TopLeftLat	TopLeftLon	BotLeftLat	BotLeftLon	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0001	41.53733929	-70.61353254	365405.3	4599666.5	3.554569057	179.6006271	102349	12.09920621	12.0992062	22.89962758	34.99883379	5.416280888	Stbd	0	1	1024	1677	1528	1826	UTM83-19	41.53749475	-70.6133613	41.53718749	-70.61328552	Boulder		0.7	2.3	1.3	1.3	0.0
C-0002	41.53057411	-70.61474858	365289.8	4598917.3	3.896354543	359.9554715	188907	6.801531177	6.80153118	28.19730262	34.99883379	10.7062729	Stbd	0	1	1024	23469	23286	23653	UTM83-19	41.530417	-70.61496069	41.53072633	-70.61492775	Cable or fishing gear	Dimensions given for central target	0.2	1.5	0.3	0.6	0.0
C-0003	41.53038608	-70.61522042	365250.1	4598897.2	5.581854	178.6850302	41188	34.99883379	34.9988338	0	34.99883379	20.89970067	Port	1	0	1024	7775	7613	7940	UTM83-19	41.53057335	-70.61506441	41.53022686	-70.6150652	Cable		0.3	0.0	0.3	1.1	0.0
C-0004	41.5227963	-70.61235716	365473.2	4598050.0	10.332672	165.3420112	137918	0	0	34.99883379	34.99883379	26.03538854	Stbd	0	0	1024	17351	17185	17512	UTM83-19	41.52296055	-70.61208127	41.5227205	-70.61201916	Boulder Field		0.3	20.7	6.7	0.7	0.0
C-0005	41.52257561	-70.61306701	365413.5	4598026.6	10.708636	171.4412734	31298	25.49719728	25.4971973	9.501636518	34.99883379	7.999404097	Port	1	1	1024	21767	21598	21937	UTM83-19	41.52272466	-70.61288276	41.52248755	-70.61283903	Boulder		2.5	3.1	1.0	2.4	0.0
C-0006	41.52137905	-70.61231634	365473.7	4597892.6	9.604172164	177.9318039	218903	0	0	34.99883379	34.99883379	18.56860984	Stbd	0	0	1024	15323	15138	15502	UTM83-19	41.52151808	-70.61210826	41.52125372	-70.61209038	Boulder		0.8	4.2	1.9	1.6	0.0
C-0007	41.51821197	-70.61161333	365525.8	4597539.9	5.786925	170.4679711	143080	0.820285167	0.82028517	34.17854863	34.99883379	16.70143175	Stbd	0	1	1024	22513	22351	22663	UTM83-19	41.5183881	-70.61146295	41.51809514	-70.61136536	Fishing Gear		0.8	0.7	0.9	2.7	0.0
C-0008	41.51809085	-70.61153074	365532.4	4597526.3	6.504674	195.643864	143271	3.964711641	3.96471164	31.03412215	34.99883379	13.55293299	Stbd	0	1	1024	22704	22565	22846	UTM83-19	41.51819449	-70.6113521	41.51792885	-70.61140064	Boulder		1.0	5.4	1.1	2.3	0.0
C-0009	41.51804314	-70.61144026	365539.9	4597520.9	7.017353	197.9495383	143302	12.47517025	12.4751702	22.52366355	34.99883379	5.027197644	Stbd	0	1	1024	22735	22603	22882	UTM83-19	41.51815212	-70.6112347	41.51787275	-70.61133574	Boulder		1.9	2.2	1.3	1.9	0.0
C-0010	41.5158296	-70.61345209	365367.4	4597278.3	6.026175	353.2918162	97253	9.194029581	9.19402958	25.80480421	34.99883379	8.323857117	Stbd	0	1	1024	7239	7070	7400	UTM83-19	41.51565824	-70.61363515	41.51596562	-70.61369164	Possible Cable Segment		0.2	17.7	0.3	0.3	0.0
C-0011	41.51083178	-70.61069882	365586.8	4596719.1	10.90295701	315.4830342	156760	0	0	34.99883379	34.99883379	24.84271962	Stbd	0	0	1024	1470	1314	1625	UTM83-19	41.51056529	-70.61079286	41.51078182	-70.61102966	Boulder		2.1	4.3	3.5	5.8	0.0
C-0012	41.51083092	-70.61228543	365454.4	4596721.5	0	317.2461203	207439	25.63178404	25.631784	9.364145104	34.99592915	8.161802268	Port	1	1	1024	30840	30661	31018	UTM83-19	41.51060758	-70.61229538	41.51084022	-70.61258173	Debris or Wreckage		0.0	7.0	1.6	0.2	0.0
C-0013	41.51018308	-70.60829684	365785.9	4596643.3	6.060353	141.5615802	161971	34.99883379	34.9988338	0	34.99883379	31.28978285	Port	1	0	1024	3755	3605	3901	UTM83-19	41.51030801	-70.60839017	41.51008137	-70.60815046	Boulder	Possible debris	0.5	8.0	2.5	3.1	0.0
C-0014	41.51002532	-70.60820834	365793.0	4596625.7	6.402139	139.8126141	351661	0	0	34.99883379	34.99883379	19.28311205	Stbd	0	0	1024	2417	2253	2582	UTM83-19	41.51026805	-70.60814648	41.51001448	-70.60790237	Boulder		1.3	6.1	2.3	4.7	0.0
C-0015	41.50999934	-70.60843485	365774.0	4596623.2	8.168673122	135.6812983	430150	2.700105342	2.70010534	32.29872845	34.99883379	14.80860855	Stbd	0	1	1024	2059	1909	2202	UTM83-19	41.51022281	-70.60840539	41.50999948	-70.6081418	Boulder		1.7	4.2	3.1	4.0	0.0
C-0016	41.50987307	-70.60833245	365782.3	4596609.0	7.895244733	131.5744213	430272	0	0	34.99883379	34.99883379	18.40232954	Stbd	0	0	1024	2181	2036	2321	UTM83-19	41.51010888	-70.60833108	41.50988952	-70.60803479	Boulder		1.6	3.5	1.3	4.6	0.0
C-0017	41.50984941	-70.60808576	365802.9	4596606.0	8.066137476	129.9882879	430409	11.34727814	11.3472781	23.65155565	34.99883379	6.176072757	Stbd	0	1	1024	2318	2177	2456	UTM83-19	41.51007664	-70.60810016	41.5098728	-70.60778243	Boulder		2.5	6.8	3.2	2.8	0.0
C-0018	41.50978891	-70.6082772	365786.8	4596599.5	7.655994892	130.3450228	430346	0	0	34.99883379	34.99883379	22.20643869	Stbd	0	0	1024	2255	2113	2394	UTM83-19	41.51005021	-70.60825455	41.50983568	-70.60795005	Boulder or debris		1.0	4.0	1.1	3.4	0.0
C-0019	41.50972897	-70.60942963	365690.5	4596594.7	12.16756331	143.4855673	97090	9.194029581	9.19402958	25.80480421	34.99883379	8.327156101	Stbd	0	1	1024	1045	913	1189	UTM83-19	41.50990866	-70.60937591	41.50972069	-70.60912139	Boulder		5.2	8.0	2.2	6.1	0.0
C-0020	41.50950407	-70.60991755	365649.3	4596570.5	5.479318	319.9265684	274522	0	0	34.99883379	34.99883379	22.41819162	Stbd	0	0	1024	29554	29365	29772	UTM83-19	41.5092557	-70.60999268	41.50947823	-70.61026238	Boulder		1.4	3.7	2.7	8.0	0.0
C-0021	41.50886309	-70.6088308	365738.7	4596497.6	5.673639072	315.8043412	151553	0	0	34.99883379	34.99883379	24.1392484	Stbd	0	0	1024	24557	24352	24735	UTM83-19	41.50858236	-70.60892136	41.50882275	-70.60918177	Boulder		1.6	5.7	3.0	9.1	0.0
C-0022	41.50881809	-70.60865017	365753.6	4596492.3	5.445139	319.7036369	269994	0	0	34.99883379	34.99883379	22.35631122	Stbd	0	0	1024	41740	41496	41987	UTM83-19	41.5085861	-70.60873245	41.50880695	-70.60898013	Boulder		1.6	5.5	2.8	9.2	0.0
C-0023	41.5083013	-70.60617215	365959.4	4596431.1	8.783886997	315.42514	528088	8.373744414	8.37374441	26.62508938	34.99883379	9.150451619	Stbd	0	1	1024	30309	30079	30538	UTM83-19	41.5080951	-70.60621074	41.50828911	-70.60646204	Boulder field	Anomalous cluster of rocks	1.1	5.2	9.7	1.3	0.0
C-0024	41.49928881	-70.59838533	366590.7	4595418.5	5.581854	313.8830821	117055	6.117960204	6.1179602	28.88087359	34.99883379	11.38992281	Stbd	0	1	1024	10375	10182	10567	UTM83-19	41.49906948	-70.59837822	41.49927202	-70.59868638	Fish shoal (typical)	Inverted image	0.0	0.0	0.0	0.0	0.0
C-0025	41.49707618	-70.59250562	367077.0	4595163.8	4.659033	137.4508081	301804	0	0	34.99883379	34.99883379	20.37956834	Stbd	0	0	1024	23444	23193	23674	UTM83-19	41.49731131	-70.59246434	41.49709128	-70.59218368	Sand	formation. Possible buried	0.2	5.1	3.6	0.8	0.0
C-0026	41.49665333	-70.59432803	366924.0	4595119.6	7.690173441	308.4590465	128414	0	0	34.99883379	34.99883379	18.85866234	Stbd	0	0	1024	1418	1185	1654	UTM83-19	41.496421	-70.59430939	41.49660645	-70.59463963	Fishing gear	Likely conch trap	1.2	1.3	1.0	3.5	0.0
C-0027	41.49632966	-70.59144208	367164.2	4595079.2	18.911488	136.0198346	229705	9.775064907	9.77506491	25.22376889	34.99883379	7.757722826	Stbd	0	1	1024	5381	5215	5515	UTM83-19	41.49645855	-70.59133274	41.49638369	-70.59121321	Debris		0.0	6.2	1.9	0.0	1.4
C-0028	41.49263248	-70.58667214	367554.8	4594661.4	11.221314	142.870668	117367	0	0	34.99883379	34.99883379	20.25863418	Stbd	0	0	1024	4363	4118	4613	UTM83-19	41.49285093	-70.58658114	41.49262549	-70.58636906	Boulder Field	Measurments for typical boulder	1.1	2.3	1.6	2.3	0.0
C-0029	41.49244223	-70.58620371	367593.6	4594639.6	8.897173	162.4092179	258195	34.99883379	34.9988338	0	34.99883379	26.03685412	Port	1	0	1024	33871	33524	34149	UTM83-19	41.49268063	-70.58629231	41.49243253	-70.58609653	Boulder or ledge		0.8	7.2	3.1	2.4	0.0
C-0030	41.49239111	-70.58598643	367611.6	4594633.6	12.998599	129.3826669	167879	34.99883379	34.9988338	0	34.99883379	20.9419672	Port	1	0	1024	4458	4250	4679	UTM83-19	41.4925493	-70.58596629	41.49240973	-70.58578945	Trench		0.0	20.1	2.5	0.0	0.0
C-0031	41.49215245	-70.58748895	367485.7	4594609.4	5.137532	315.5225827	104894	2.392498404	2.3924984	32.60633539	34.99883379	15.12410015	Stbd	0	1	1024	14401	14218	14571	UTM83-19	41.49194865	-70.58751476	41.49211588	-70.58776676	Boulder Field	Boulder ridge	0.0	0.0	0.0	0.0	0.0
C-0032	41.49120371	-70.58376588	367794.5	4594498.4	4.214712	306.7568269	54928	10.28774314	10.2877431	24.71109066	34.99883379	7.239938233	Stbd	0	1	1024	13758	13515	14033	UTM83-19	41.49101091	-70.58379585	41.49113748	-70.58402129	Trench with possible cable segment		0.0	0.0	0.0	0.0	0.0
C-0033	41.49098399	-70.5850892	367683.6	4594476.0	7.427495	161.010393	268053	9.740886359	9.74088636	25.25794744	34.99883379	7.785623826	Stbd	0	1	1024	43729	43191	43841	UTM83-19	41.49113109	-70.58491466	41.49100099	-70.58485739	Boulder		1.3	3.0	1.7	1.7	0.0
C-0034	41.49007916	-70.58758084	367473.8	4594379.4	14.023955	327.6713288	33007	34.99883379	34.9988338	0	34.99883379	21.9683099	Port	1	0	1024	10785	10596	10986	UTM83-19	41.48989973	-70.58761662	41.49010624	-70.58779412	Boulder or debris		2.5	3.2	2.6	4.9	0.0
C-0035	41.49007238	-70.58734298	367493.6	4594378.2	4.761568	316.4937982	310827	8.544637157	8.54463716	26.45419664	34.99883379	8.98029214	Stbd	0	1	1024	10661	10486	10839	UTM83-19	41.48986608	-70.58736812	41.49006966	-70.58763303	Boulder or debris		2.4	5.4	3.3	9.3	0.0
C-0036	41.48728115	-70.57975789	368121.2	4594056.7	12.349206	135.9917686	128840	29.46190892	29.4619089	5.536924878	34.99883379	11.9745809	Port	1	1	1024	15836	15628	16039	UTM83-19	41.48749608	-70.57974427	41.48727675	-70.57946431	Boulder or debris		3.8	6.1	3.4	5.2	0.0
C-0037	41.48724008	-70.57979981	368117.6	4594052.2	4.898283	314.7589526	46890	34.99883379	34.9988338	0	34.99883379	23.43423861	Port	1	0	1024	5720	5485	5917	UTM83-19	41.4870737	-70.5798012	41.48725856	-70.58003469	Boulder or debris		1.5	9.2	3.1	10.0	0.0
C-0038	41.48709635	-70.58112324	368006.8	4594038.3	10.605241	140.514507	56081	0	0	34.99592915	34.99592915	24.29360671	Stbd	0	0	1024	12548	12345	12752	UTM83-19	41.48735468	-70.58103708	41.4871116	-70.58076937	Possible cable segment		0.6	17.4	0.3	1.5	0.0

SIDE SONAR CONTACTS (2 OF 2)

Target	ClickLat	ClickLon	X	Y	FishHeight	FishCmg	Ping Number	NadirDistance FromLeftEdge	RangeAtLeft Edge	RangeAtRight Edge	SonarRange	RangeToTarget	PortOrStarboard	Target On Port Side	Target Spans Channels	Samples PerChan	CsfTarget Row	FirstCsfRow	LastCsfRow	MapProjection	TopLeftLat	TopLeftLon	BotLeftLat	BotLeftLon	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0039	41.48678841	-70.58022905	368080.8	4594002.8	7.861066184	139.897929	374780	10.11685039	10.1168504	24.8819834	34.99883379	7.402021061	Stbd	0	1	1024	2937	2613	3227	UTM83-19	41.48697555	-70.58015819	41.48678052	-70.57997863	Debris	Possible debris field	1.6	6.7	3.9	1.9	0.0
C-0040	41.4866767	-70.58023489	368080.1	4593990.4	12.315028	136.8915004	99676	30.79487231	30.7948723	4.203961481	34.99883379	13.30875995	Port	1	1	1024	15530	15448	15660	UTM83-19	41.48688011	-70.58018898	41.48675436	-70.58005395	Possible cable segment		0.2	11.2	1.8	0.3	0.0
C-0041	41.48518672	-70.57876153	368200.1	4593822.7	3.428605	148.0754099	221984	31.37590764	31.3759076	3.622926154	34.99883379	13.88020887	Port	1	1	1024	19927	19682	20322	UTM83-19	41.48537736	-70.578702	41.48517571	-70.57850726	Debris		0.5	6.5	0.7	2.3	0.0
C-0042	41.48496655	-70.5768132	368362.3	4593795.3	8.931351	319.9384782	42135	31.58097893	31.5809789	3.417854863	34.99883379	14.08769744	Port	1	1	1024	965	769	1079	UTM83-19	41.48474506	-70.57685313	41.48498246	-70.57708087	Cable		0.0	35.1	0.2	0.0	0.0
C-0043	41.48462647	-70.57668046	368372.7	4593757.3	11.255493	143.2480042	134569	26.89851777	26.8985178	8.100316025	34.99883379	9.408223964	Port	1	1	1024	21565	21379	21792	UTM83-19	41.48481526	-70.57656757	41.48462607	-70.57644518	Cable		0.0	27.6	0.0	0.0	0.0
C-0044	41.48451968	-70.57872	368202.2	4593748.6	3.360248	332.3540368	91760	24.30094807	24.3009481	10.69788572	34.99883379	6.811771125	Port	1	1	1024	1267	1093	1450	UTM83-19	41.48433422	-70.5788006	41.48454995	-70.57896895	Sand waves	Width = approximate	0.0	0.0	1.7	0.0	0.0
C-0045	41.47872683	-70.57877809	368185.6	4593105.5	9.068066	186.249143	276862	0	0	34.99883379	34.99883379	28.85074924	Stbd	0	0	1024	8529	8371	8701	UTM83-19	41.47882647	-70.57843628	41.47858184	-70.57847079	Debris		0.6	3.2	1.3	1.9	0.0
C-0046	41.47824609	-70.58047723	368042.8	4593054.7	7.666745	5.913431547	319012	0.410142584	0.41014258	34.58869121	34.99883379	17.09184665	Stbd	0	1	1024	4987	4818	5153	UTM83-19	41.47810836	-70.58069794	41.47841108	-70.58064691	Debris	Debris in sand waves	0.4	6.4	0.4	0.9	0.0
C-0047	41.47820183	-70.57873927	368187.8	4593047.2	7.803459	178.7681722	277563	0	0	34.99883379	34.99883379	20.27778875	Stbd	0	0	1024	9230	9074	9397	UTM83-19	41.47830282	-70.57850127	41.47808671	-70.57848093	Debris	Debris in sand waves	0.2	1.6	2.5	0.7	0.0
C-0048	41.47605329	-70.57932639	368134.4	4592809.5	3.941283	11.21262005	29283	30.79487231	30.7948723	4.203961481	34.99883379	13.31684093	Port	1	1	1024	2355	2187	2529	UTM83-19	41.47592113	-70.57956942	41.47624181	-70.57948846	Fishing gear	Likely conch trap near sand ridge	0.3	1.3	0.8	1.0	0.0
C-0049	41.47349265	-70.57875829	368176.7	4592524.4	7.794755	8.89652111	458552	24.17251597	24.172516	0.830167215	25.00268319	11.6823553	Port	1	1	1024	13946	13755	14114	UTM83-19	41.47341182	-70.57893666	41.47362075	-70.57888757	Debris		0.1	3.1	0.1	0.2	0.0
C-0050	41.47056082	-70.57863992	368180.6	4592198.7	2.349835	187.4102912	207665	15.45576021	15.4557602	9.546922975	25.00268319	2.957027665	Port	1	1	1024	8451	8203	8698	UTM83-19	41.47065678	-70.57845675	41.47044626	-70.57850434	Fishing Gear	Likely conch trap	0.2	1.5	0.7	0.2	0.0
C-0051	41.47046698	-70.57905665	368145.6	4592188.9	2.862585	178.8212866	429320	25.00268319	25.0026832	0	25.00268319	16.4568089	Port	1	0	1024	7441	7251	7633	UTM83-19	41.47058426	-70.57895489	41.47034014	-70.57894315	Fishing Gear	Likely conch trap	0.3	1.0	0.9	1.8	0.0
C-0052	41.4703899	-70.57914161	368138.4	4592180.5	2.471918	2.810668815	375645	0	0	25.00268319	25.00268319	21.83094093	Stbd	0	0	1024	8925	8712	9139	UTM83-19	41.47029365	-70.57942134	41.47051071	-70.5793966	Fishing Gear	Likely conch trap	0.2	1.0	0.6	2.3	0.0
C-0053	41.47033836	-70.57950951	368107.5	4592175.3	2.545168	3.755515377	375514	21.04718057	21.0471806	3.955502614	25.00268319	8.567053178	Port	1	1	1024	8794	8590	9008	UTM83-19	41.47024803	-70.57967664	41.47045167	-70.57965738	Fishing Gear	Likely conch trap	0.3	1.1	0.5	1.3	0.0
C-0054	41.47025841	-70.57978297	368084.5	4592166.9	2.960252	183.0385591	321817	0	0	25.00268319	25.00268319	14.5709532	Stbd	0	0	1024	7633	7454	7823	UTM83-19	41.47035674	-70.57960944	41.47014034	-70.57961592	Fishing Gear	Likely conch trap	0.3	0.8	0.5	1.9	0.0
C-0055	41.47009729	-70.58072053	368005.9	4592150.4	2.838168	8.501746813	188073	0	0	25.00268319	25.00268319	20.09529583	Stbd	0	0	1024	8763	8592	8952	UTM83-19	41.47002722	-70.58096777	41.47022665	-70.58092924	Fishing Gear	Likely conch trap	0.3	0.9	0.8	2.2	0.0
C-0056	41.46989993	-70.58185368	367910.9	4592130.2	3.106752	3.811377673	37597	8.594672346	8.59467235	16.40801084	25.00268319	3.918348973	Stbd	0	1	1024	9717	9565	9904	UTM83-19	41.46983724	-70.58200912	41.47001376	-70.58199152	Fishing Gear	Likely conch trap	0.1	1.3	0.7	0.2	0.0
C-0057	41.4688784	-70.57950606	368104.9	4592013.2	3.057919	188.7213424	432121	9.449256244	9.44925624	15.55342694	25.00268319	3.073485481	Stbd	0	1	1024	10242	10048	10431	UTM83-19	41.46898138	-70.57933723	41.46874967	-70.57937734	Fishing Gear	Likely conch trap	0.6	1.2	0.7	0.8	0.0
C-0058	41.46812861	-70.5814828	367938.3	4591933.0	2.789335	187.3150551	58844	21.75526438	21.7552644	3.247418813	25.00268319	9.271386406	Port	1	1	1024	11708	11494	11927	UTM83-19	41.46822374	-70.581323	41.46800635	-70.58136526	Wreck	Northern portion	0.8	19.3	3.5	3.6	0.0
C-0059	41.46812408	-70.58154706	367932.9	4591932.6	3.350919	3.232176841	148699	25.00268319	25.0026832	0	25.00268319	15.95689355	Port	1	0	1024	5440	5281	5597	UTM83-19	41.46803344	-70.58165109	41.46822554	-70.58164679	Wreck		0.2	15.8	3.0	0.9	0.0
C-0060	41.46812002	-70.5796946	368087.6	4591929.3	2.716085	11.77732978	371517	7.251754792	7.25175479	17.7509284	25.00268319	5.273085199	Stbd	0	1	1024	4797	4593	5002	UTM83-19	41.46803379	-70.57986298	41.46824487	-70.57980757	Fishing Gear	Likely conch trap	0.0	1.1	0.7	0.0	0.0
C-0061	41.46809794	-70.5815842	367929.7	4591929.7	2.545168	7.711172316	113708	0.122083414	0.12208341	24.88059977	25.00268319	12.40247351	Stbd	0	1	1024	6251	6064	6460	UTM83-19	41.468024	-70.58175467	41.46822175	-70.58171638	Wreck		0.5	18.8	8.0	2.9	0.0
C-0062	41.46778144	-70.57829313	368203.9	4591889.6	3.326502	188.2469866	397475	25.00268319	25.0026832	0	25.00268319	19.96632367	Port	1	0	1024	12109	11923	12296	UTM83-19	41.46789843	-70.5782011	41.46765402	-70.57825449	Debris	Debris likely associated with	0.3	15.0	1.0	2.0	0.0
C-0063	41.46728416	-70.5807724	367995.9	4591838.1	2.691668	353.6359403	300056	0	0	25.00268319	25.00268319	16.83589211	Stbd	0	0	1024	4293	4105	4476	UTM83-19	41.46715543	-70.58096209	41.46737944	-70.58098358	Fishing Gear	Likely conch trap	0.5	1.2	0.9	3.5	0.0
C-0064	41.46709488	-70.57939986	368110.1	4591815.0	3.057919	182.5880337	214153	0	0	25.00268319	25.00268319	18.20438426	Stbd	0	0	1024	14939	14751	15127	UTM83-19	41.46719907	-70.57916882	41.46697604	-70.57919927	Fishing Gear	Likely conch trap	0.3	1.2	0.4	2.0	0.0
C-0065	41.46686858	-70.580819	367991.1	4591792.1	2.911418	19.73270465	299468	0	0	25.00268319	25.00268319	18.95530539	Stbd	0	0	1024	3705	3520	3894	UTM83-19	41.46682066	-70.58108332	41.46703186	-70.58098424	Fishing Gear	Likely conch trap	0.3	1.2	0.5	2.6	0.0
C-0066	41.46671546	-70.58085913	367987.5	4591775.1	2.642835	16.48834273	299195	0	0	25.00268319	25.00268319	22.2127544	Stbd	0	0	1024	3432	3251	3615	UTM83-19	41.46666562	-70.58116235	41.46687508	-70.58105648	Fishing Gear	Likely conch trap	0.2	0.9	0.5	2.0	0.0
C-0067	41.46621857	-70.57913836	368130.2	4591717.3	2.618418	179.9015017	215634	25.00268319	25.0026832	0	25.00268319	17.86963062	Port	1	0	1024	16420	16229	16607	UTM83-19	41.46631371	-70.57904479	41.46610452	-70.57905447	Fishing Gear	Likely conch trap	0.6	1.7	0.7	4.8	0.0
C-0068	41.46602626	-70.57916207	368127.8	4591696.0	2.349835	183.0324525	215943	25.00268319	25.0026832	0	25.00268319	15.70453649	Port	1	0	1024	16729	16541	16912	UTM83-19	41.46614689	-70.57905924	41.46589907	-70.57906097	Fishing Gear	Likely conch trap	0.5	1.4	1.0	4.0	0.0
C-0069	41.46601295	-70.58142139	367939.1	4591698.0	2.618418	6.770298359	258858	19.3135961	19.3135961	5.689087093	25.00268319	6.829895775	Port	1	1	1024	3441	3255	3628	UTM83-19	41.46592267	-70.58157398	41.46612174	-70.58153919	Fish shoal (typical)		0.0	0.0	0.0	0.0	0.0
C-0070	41.46585357	-70.57954338	368095.6	4591677.4	2.301001	187.9429904	216272	0	0	25.00268319	25.00268319	14.0429849	Stbd	0	0	1024	17058	16874	17240	UTM83-19	41.46594561	-70.57934853	41.46572646	-70.57940004	Fishing Gear	Likely conch trap	0.3	1.0	0.6	2.2	0.0
C-0071	41.46555694	-70.5811618	367959.9	4591647.0	2.081251	5.845233669	258126	0	0	25.00268319	25.00268319	21.12339876	Stbd	0	0	1024	2709	2517	2896	UTM83-19	41.46546452	-70.58142474	41.46568625	-70.58140414	Fishing Gear	Likely conch trap	0.3	1.6	0.8	2.9	0.0
C-0072	41.46548992	-70.57960096	368090.1	4591637.2	1.934751	350.4710484	444940	0	0	25.00268319	25.00268319	12.96959429	Stbd	0	0	1024	334	149	514	UTM83-19	41.46535961	-70.57973118	41.46557959	-70.57978006	Debris		0.2	3.0	0.3	1.2	0.0
C-0073	41.46530014	-70.58197322	367891.6	4591619.7	2.349835	6.491767323	109011	0	0	25.00268319	25.00268319	16.02720176	Stbd	0	0	1024	1554	1372	1737	UTM83-19	41.46520474	-70.58218014	41.4654275	-70.58215649	Trench		0.0	9.4	1.1	0.0	0.9
C-0074	41.46506209	-70.58027906	368032.6	4591590.7	2.130085	195.4361176	330538	25.00268319	25.0026832	0	25.00268319	14.55397416	Port	1	0	1024	16354	16179	16529	UTM83-19	41.46516319	-70.58011232	41.46491871	-70.58020382	Fishing Gear	Likely conch trap	0.3	1.3	0.5	2.1	0.0

NOTES:
SIDE SONAR CONTACTS TABLE PROVIDED BY CR ENVIRONMENTAL IN GEOPHYSICAL AND UNDERWATER VIDEO SURVEYS SEDIMENT SAMPLING EVERSOURCE 5TH CABLE VINEYARD SOUND, FALMOUTH AND VINEYARD HAVEN REPORT DATED MARCH 2022.
ABOVE TABLE IS TRUNCATED FOR SPACE. COLUMNS NOT INCLUDED IN ABOVE TABLE INCLUDE:
DATA PERTAINING TO IMAGES (UNITS, HEIGHT, WIDTH, IN METERS AND PIXELS)
USER CLASS 2 (EMPTY COLUMN)
MAP IMAGE NAME
ACOUSTIC FILE
CSF FILE LOCATION
CAPTURE DATE TIME LOCAL AND UTC
SONAR DATE TIME

AUTOCAD FILE NAME: 0237849-0000 70 Sub Cover.dwg

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811
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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	ASW	TPB

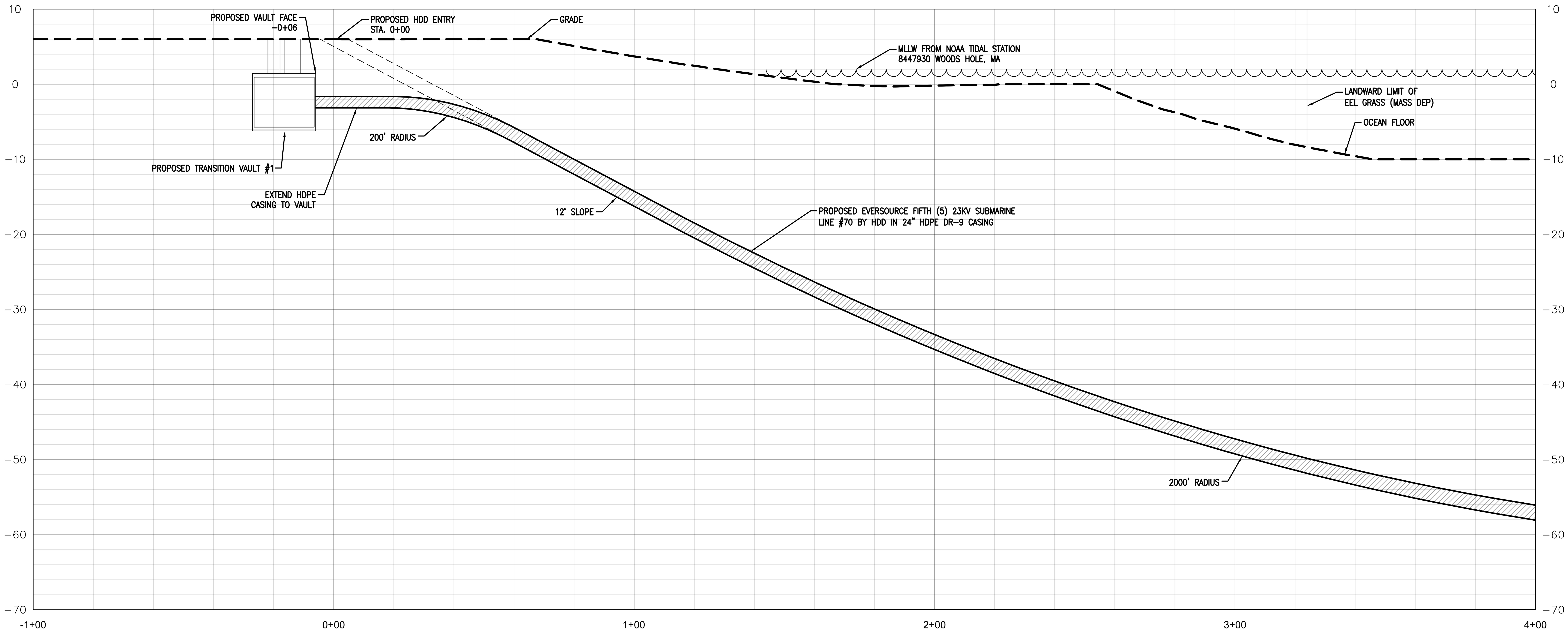
EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

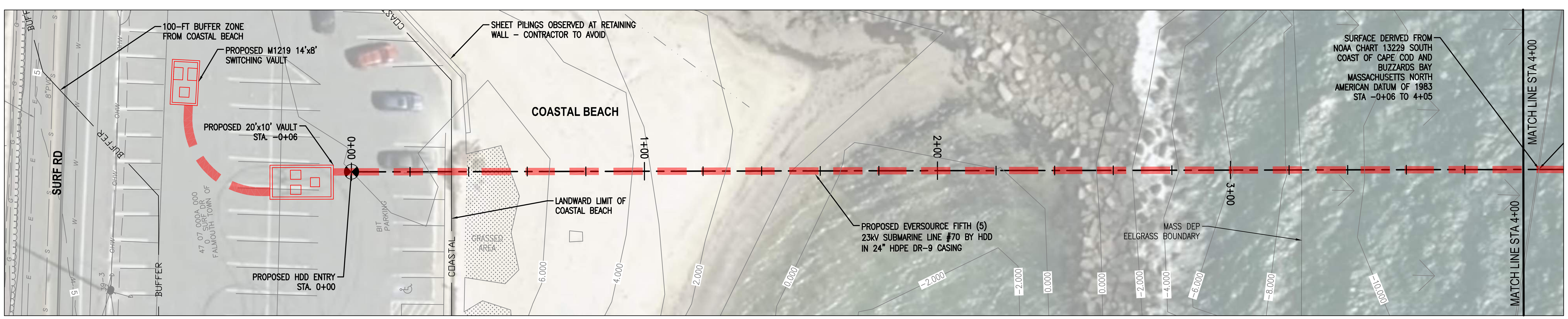
MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
SURVEY TABLES

DATE	SCALE	SHEET	SHEET NAME
2022-11-18	N.T.S.	5 OF 23	5

PROFILE VIEW



PLAN VIEW



NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR (888) 344-7233.
2. VERTICAL LOCATION OF SUBSURFACE UTILITY LINES ARE BASED ON ASSUMED DEPTHS AND MAY VARY FROM THE ACTUAL VERTICAL LOCATIONS.
3. ALL PROFILE VERTICAL CURVES ARE 400' RADIUS UNLESS OTHERWISE NOTED.
4. EXISTING LINE 99 & RETIRED LINE 75 COME TO SHORE DIRECT BURIED AT BOTH LOCATIONS - CONTRACTOR TO EXERCISE CAUTION.
5. CONTRACTOR TO VERIFY SIZE AND LOCATION OF TARGETED ANOMALIES.

0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 - MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW - ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW - REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW - 30% PLAN	ASW	TPB	TPB	TPB

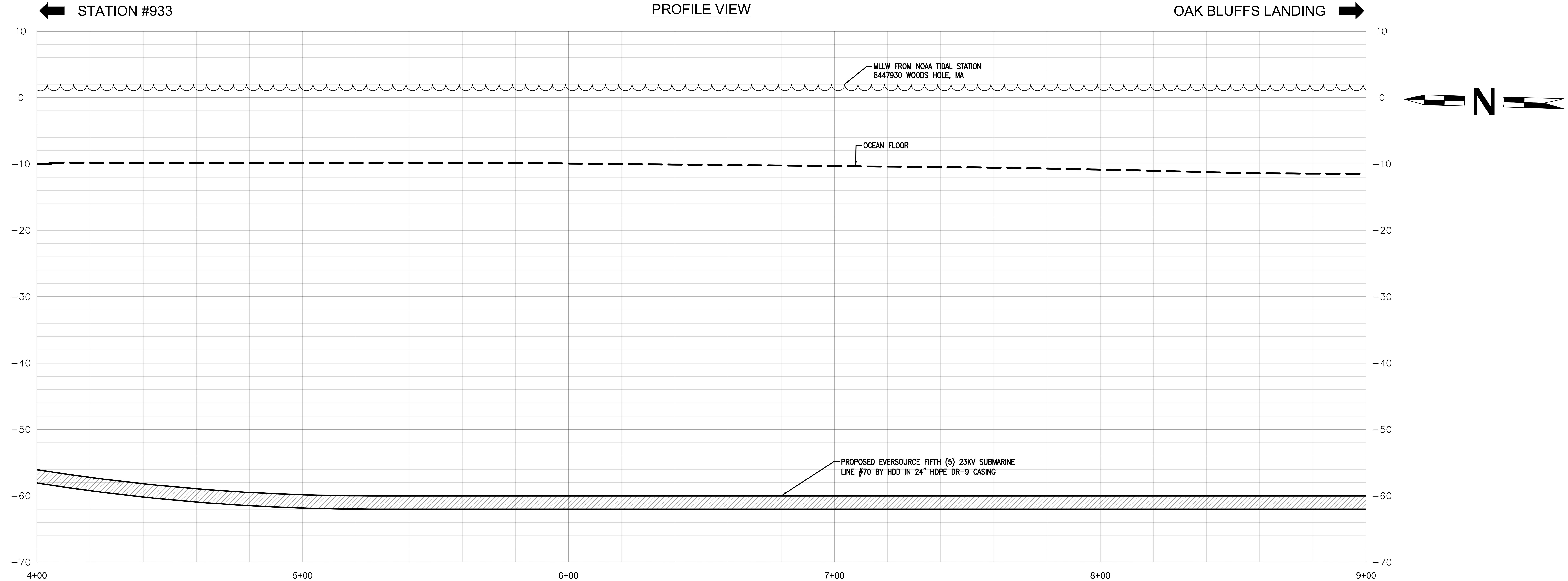
EVERSOURCE

PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

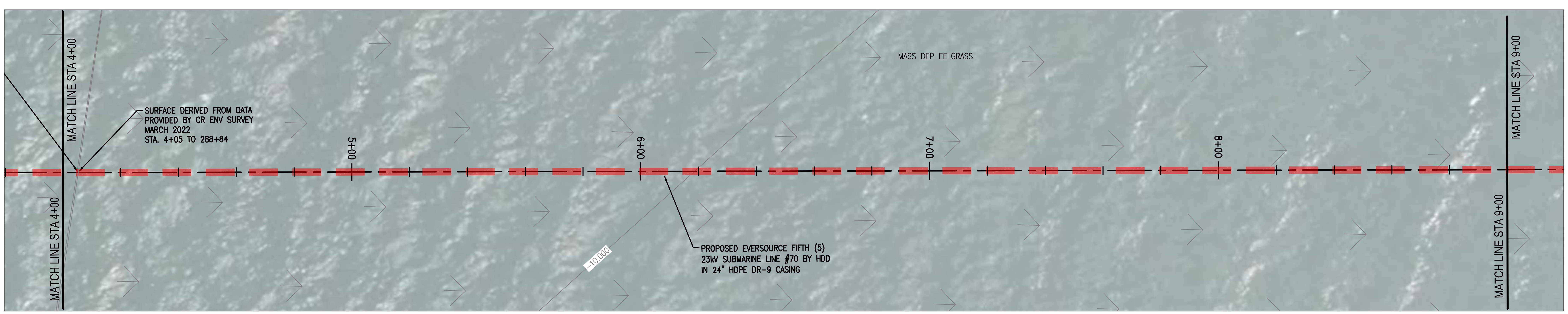
MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. -1+00 TO 4+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	6 OF 23	6

PROFILE VIEW



PLAN VIEW



NOTES

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3. ALL PROFILE VERTICAL CURVES ARE 400' RADIUS UNLESS OTHERWISE NOTED.
4. EXISTING LINE 99 & RETIRED LINE 75 COME TO SHORE DIRECT BURIED AT BOTH LOCATIONS – CONTRACTOR TO EXERCISE CAUTION.
5. CONTRACTOR TO VERIFY SIZE AND LOCATION OF TARGETED ANOMALIES.

0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

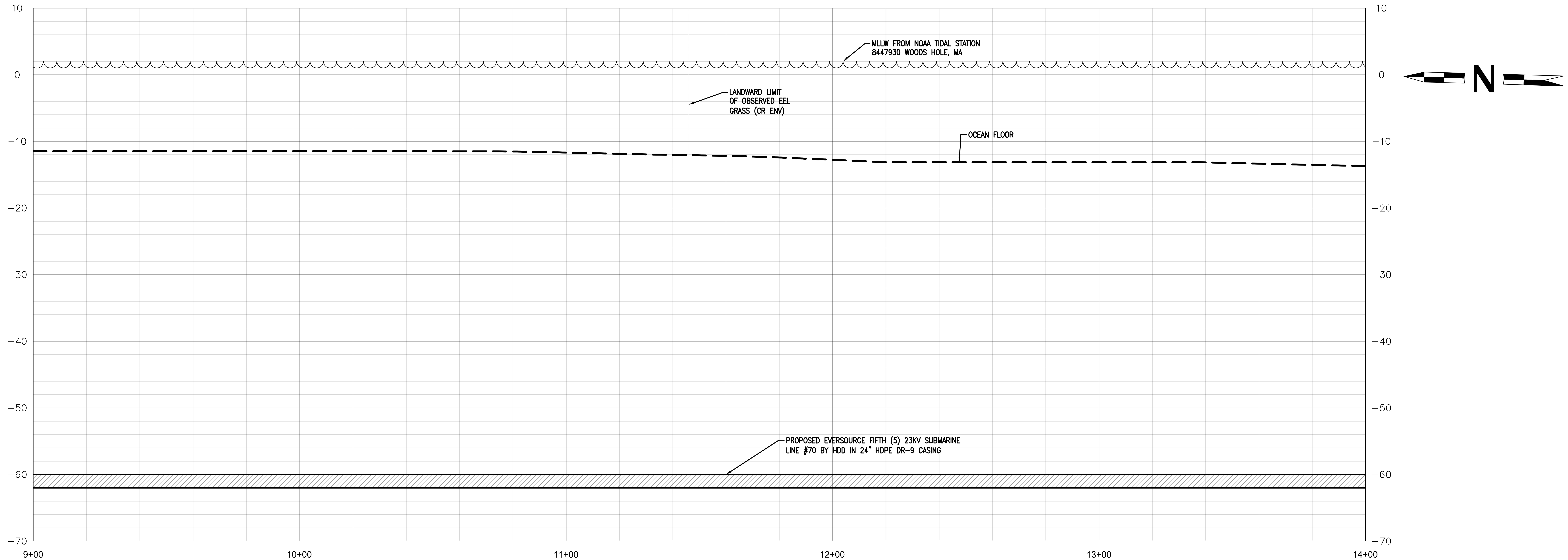
EVERSOURCE

PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

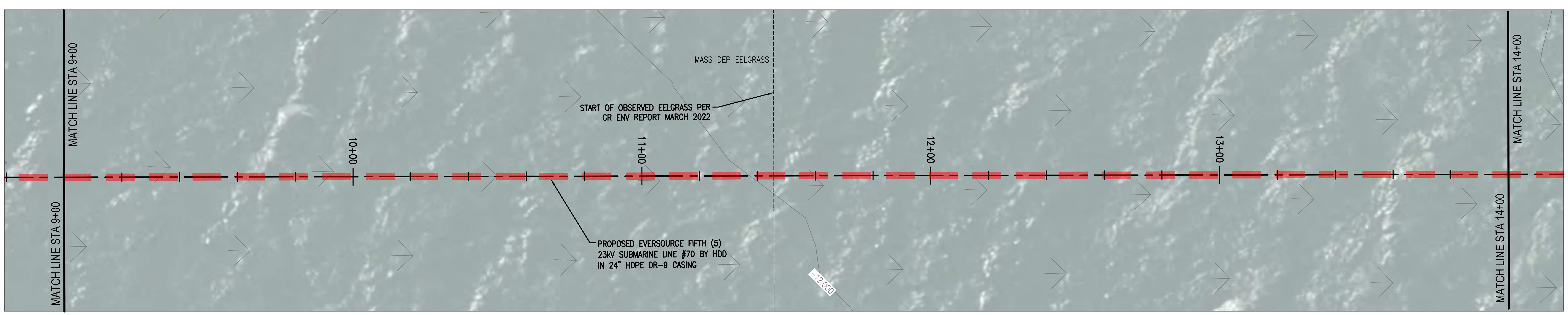
MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 4+00 TO 9+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	7 OF 23	7

PROFILE VIEW



PLAN VIEW



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0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

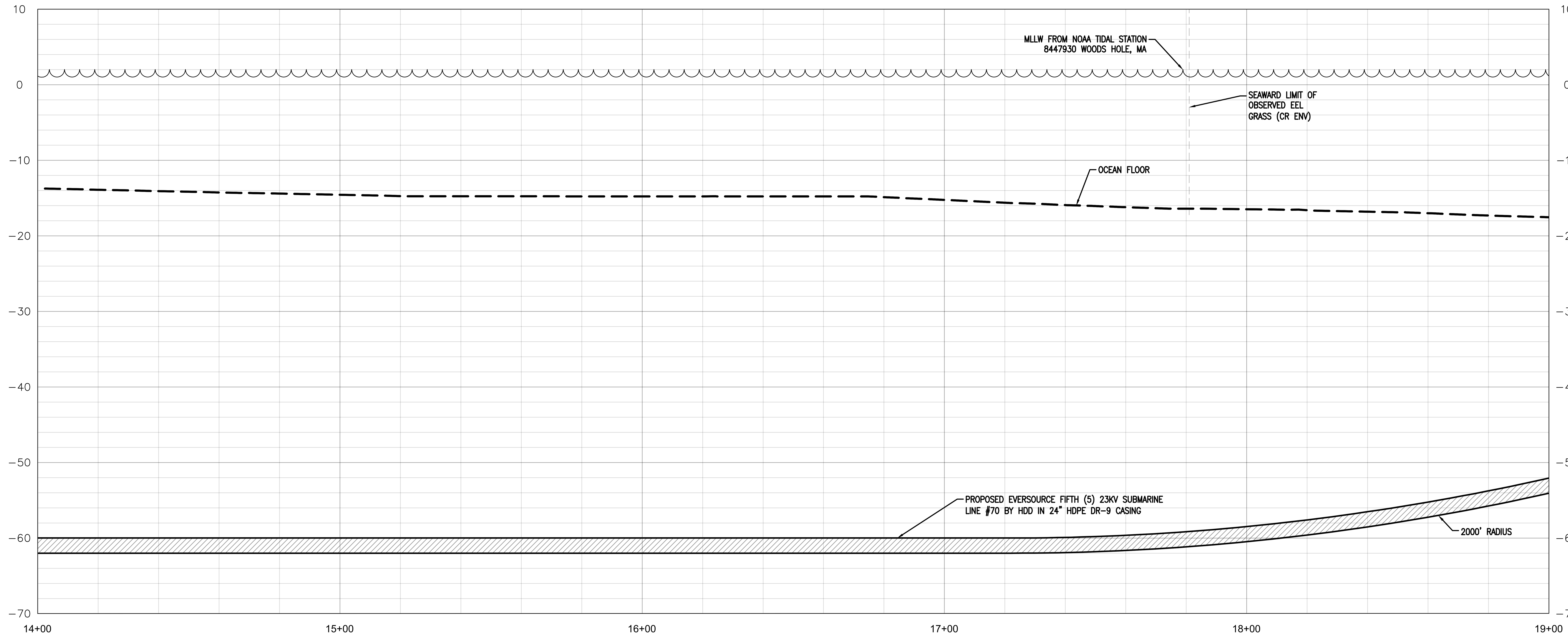
EVERSOURCE

PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 9+00 TO 14+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	8 OF 23	8

STATION #933 ← | PROFILE VIEW | OAK BLUFFS LANDING →



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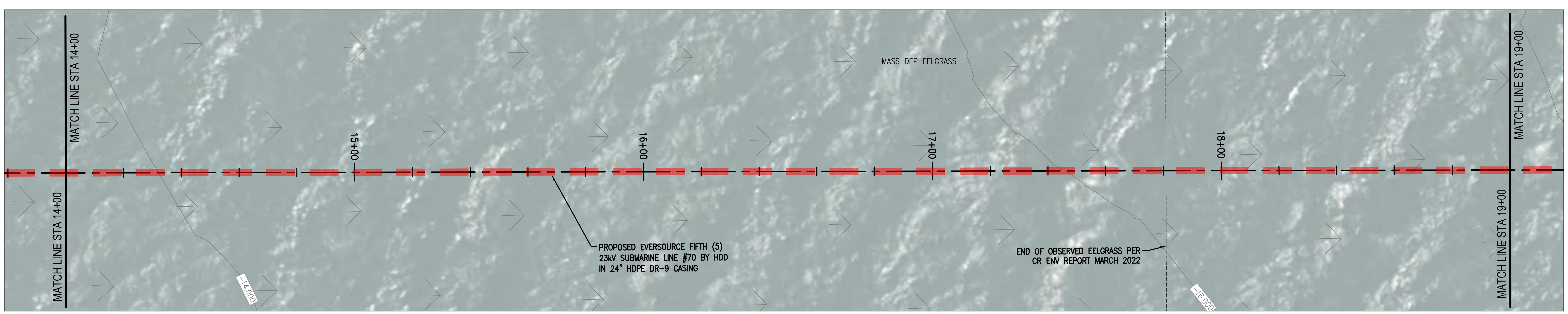
PLAN VIEW



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0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

EVERSOURCE

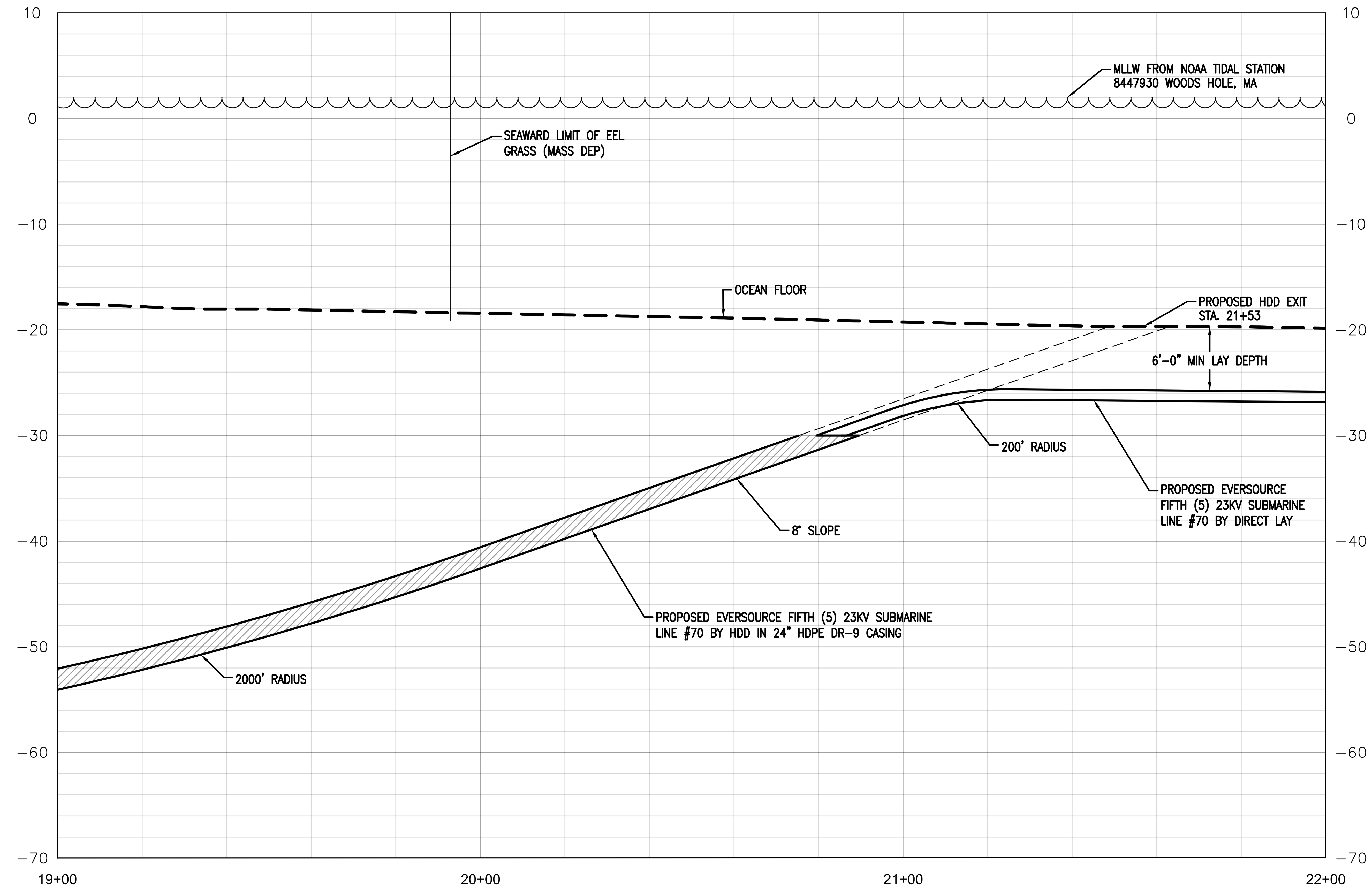
PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 14+00 TO 19+00

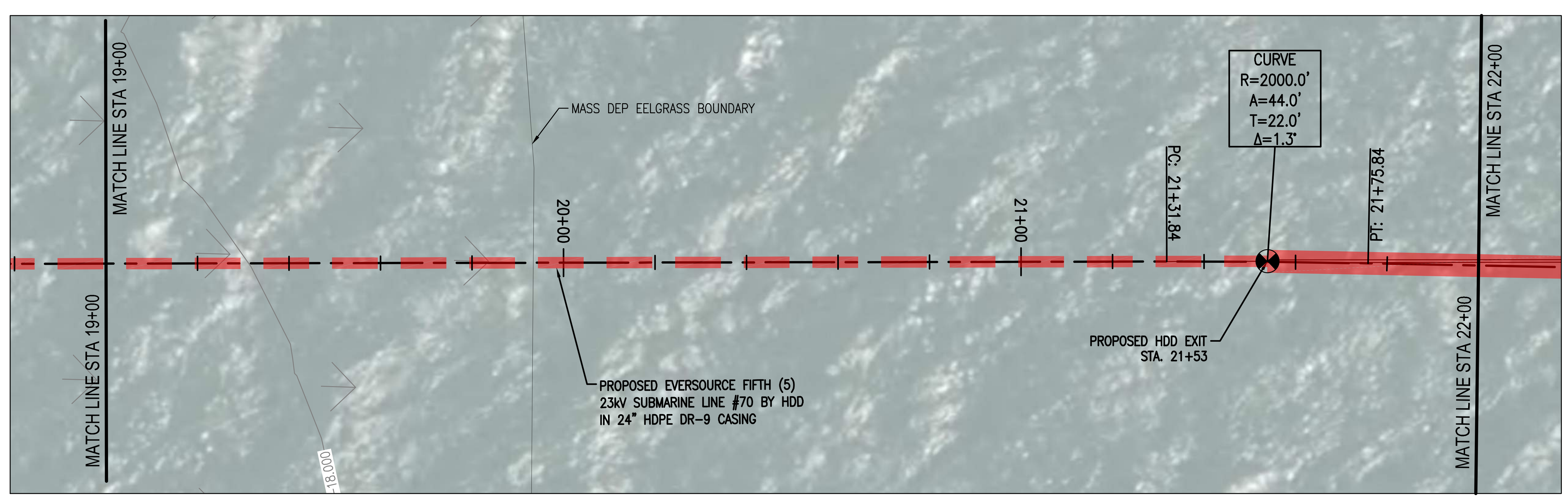
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	9 OF 23	9

STATION #933 — PROFILE VIEW — OAK BLUFFS LANDING

PROFILE VIEW



PLAN VIEW



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0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

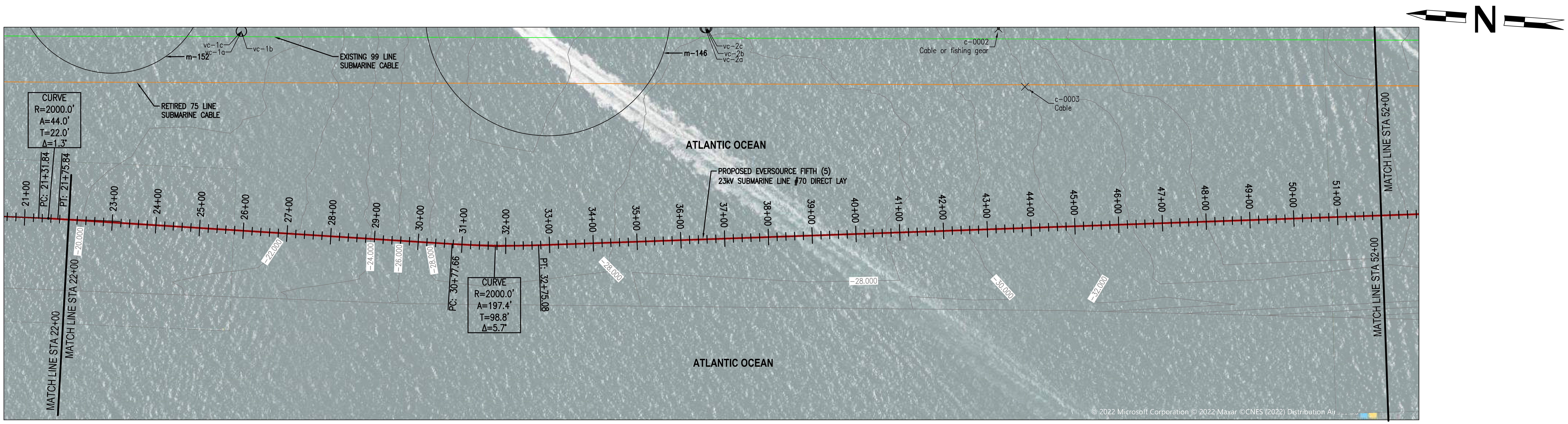
No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

EVERSOURCE

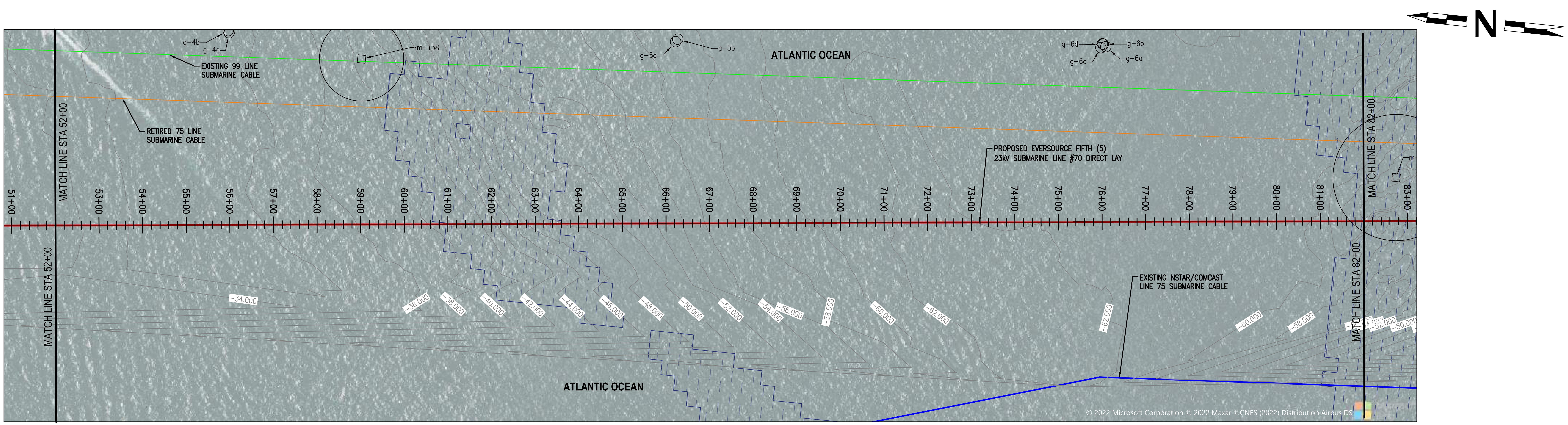
PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 19+00 TO 22+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	10 OF 23	10



STATION #933 | PLAN VIEW | OAK BLUFFS LANDING



PLAN VIEW

0 60 120 240 360 FEET

HORIZONTAL SCALE: 1"= 120'

NOTES

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

EVERSOURCE

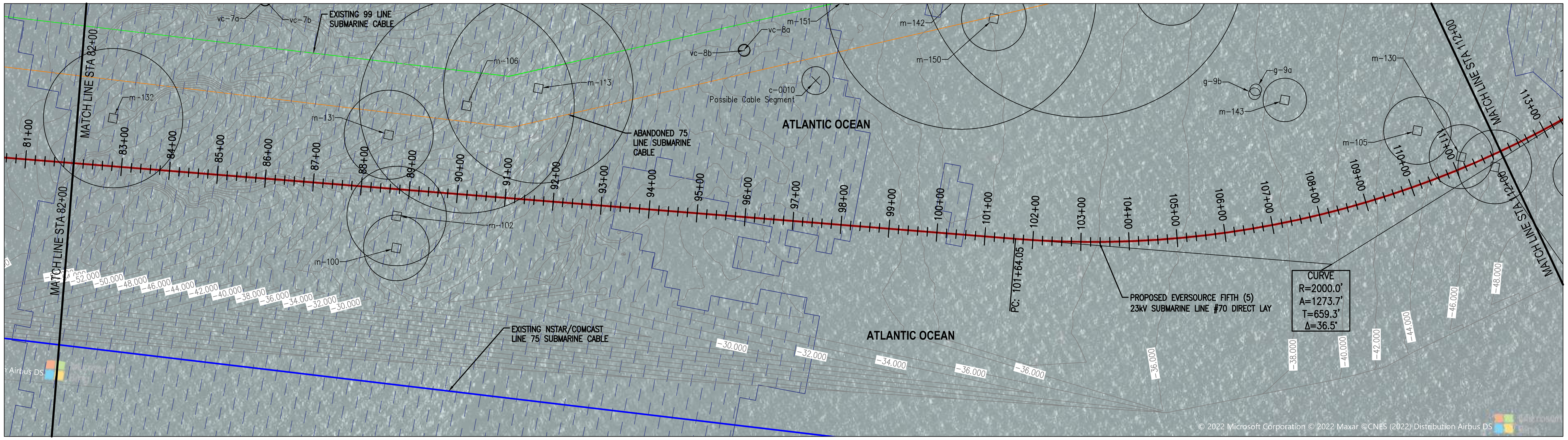
PROJ # 0237849_0000
WORK # 80047133

DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN VIEW STA. 22+00 TO 82+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 120'	11 OF 23	11

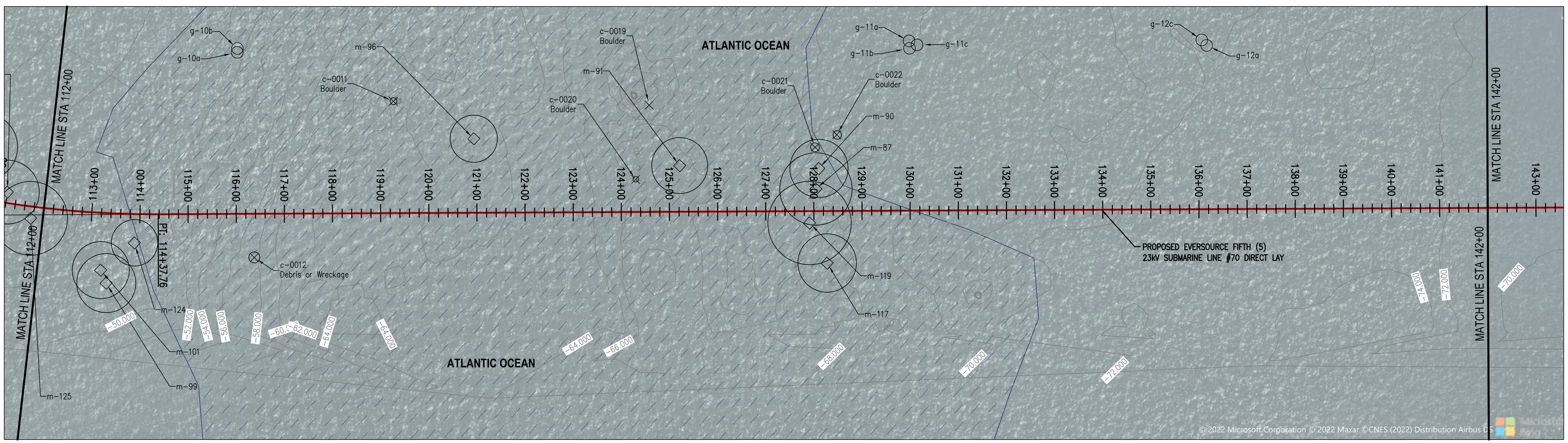
AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg



STATION #933

PLAN VIEW

OAK BLUFFS LANDING



PLAN VIEW

0 60 120 240 360 FEET

HORIZONTAL SCALE: 1"= 120'

NOTES

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AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

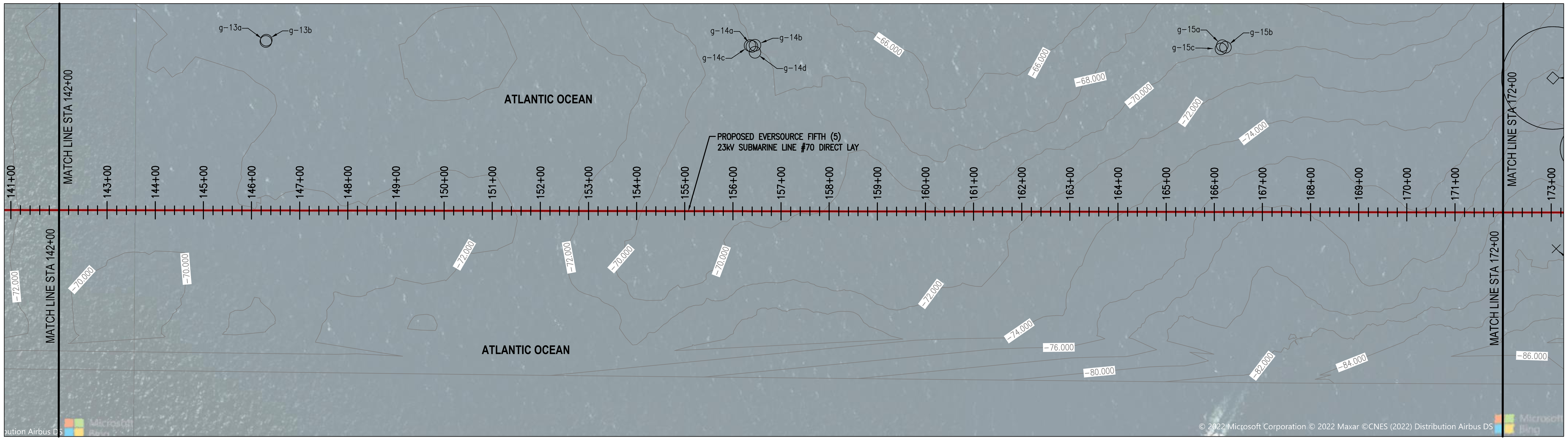
EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133

DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN VIEW STA. 82+00 TO 142+00

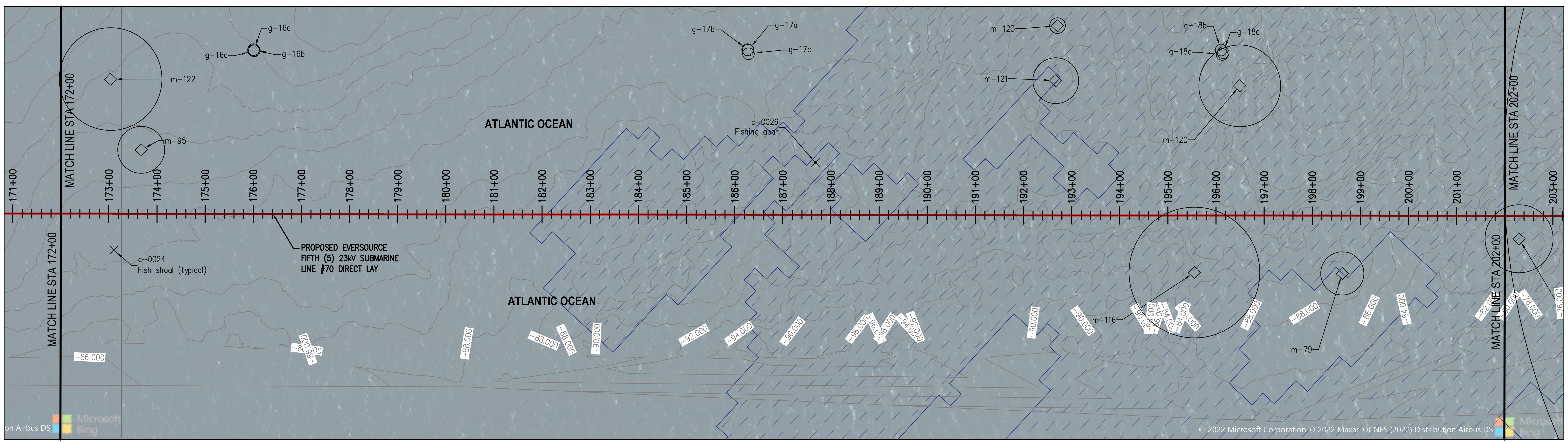
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 120'	12 OF 23	12



STATION #933

PLAN VIEW

OAK BLUFFS LANDING



PLAN VIEW

0 60 120 240 360 FEET

HORIZONTAL SCALE: 1"= 120'

NOTES

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AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

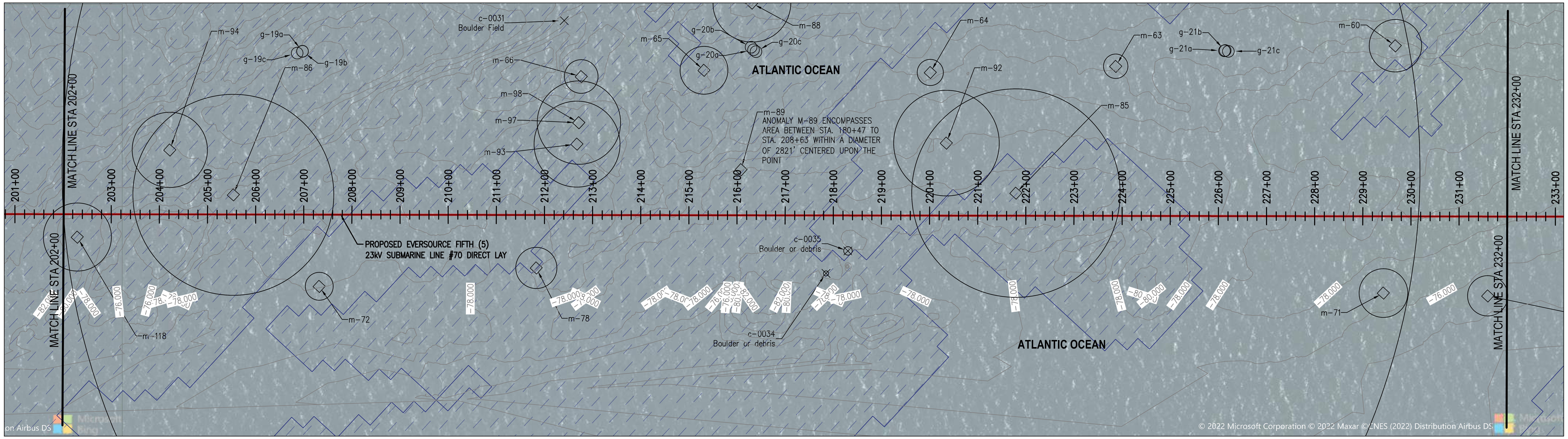
EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133

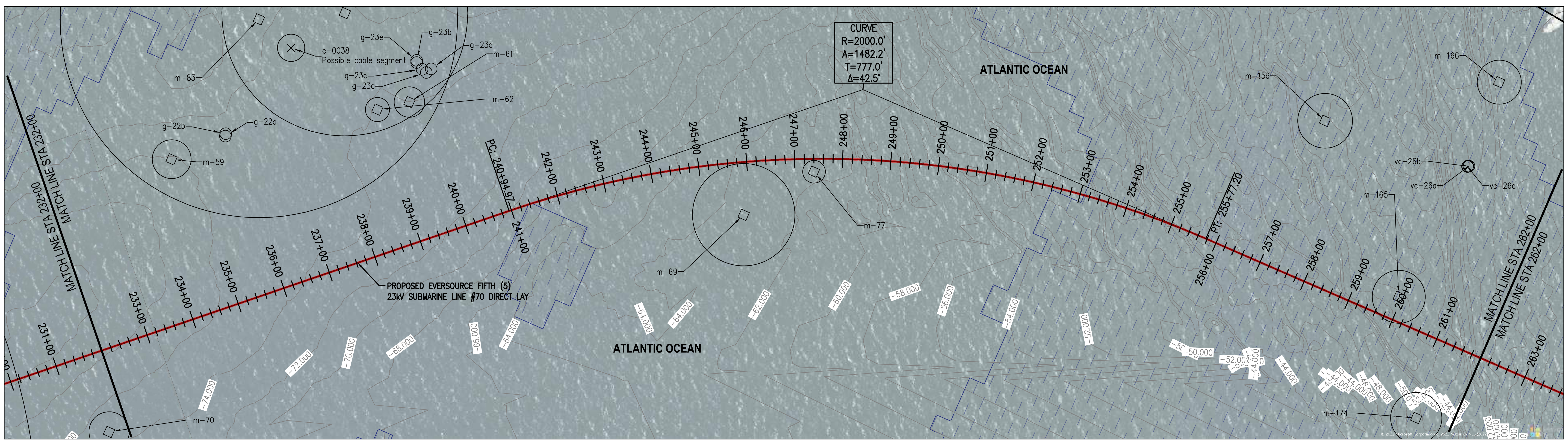
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN VIEW STA. 142+00 TO 202+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 120'	13 OF 23	13



STATION #933 — PLAN VIEW — OAK BLUFFS LANDING



PLAN VIEW

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0 60 120 240 360 FEET
HORIZONTAL SCALE: 1"= 120'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

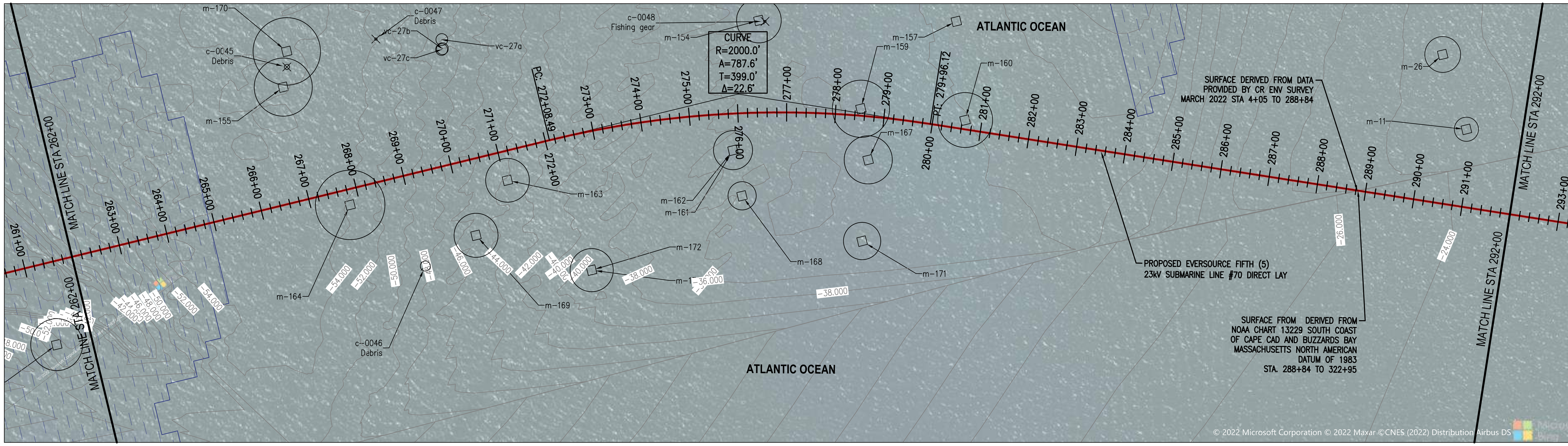
No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN VIEW STA. 202+00 TO 262+00

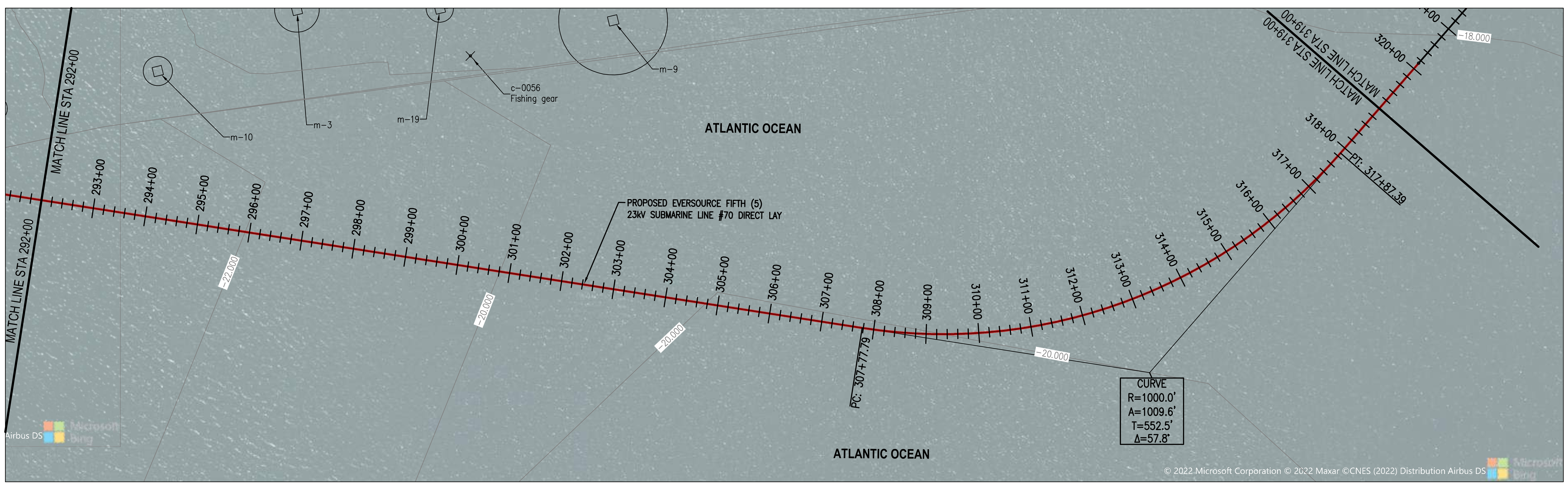
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 120'	14 OF 23	14



STATION #933

PLAN VIEW

OAK BLUFFS LANDING



PLAN VIEW

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0 60 120 240 360 FEET

HORIZONTAL SCALE: 1"= 120'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

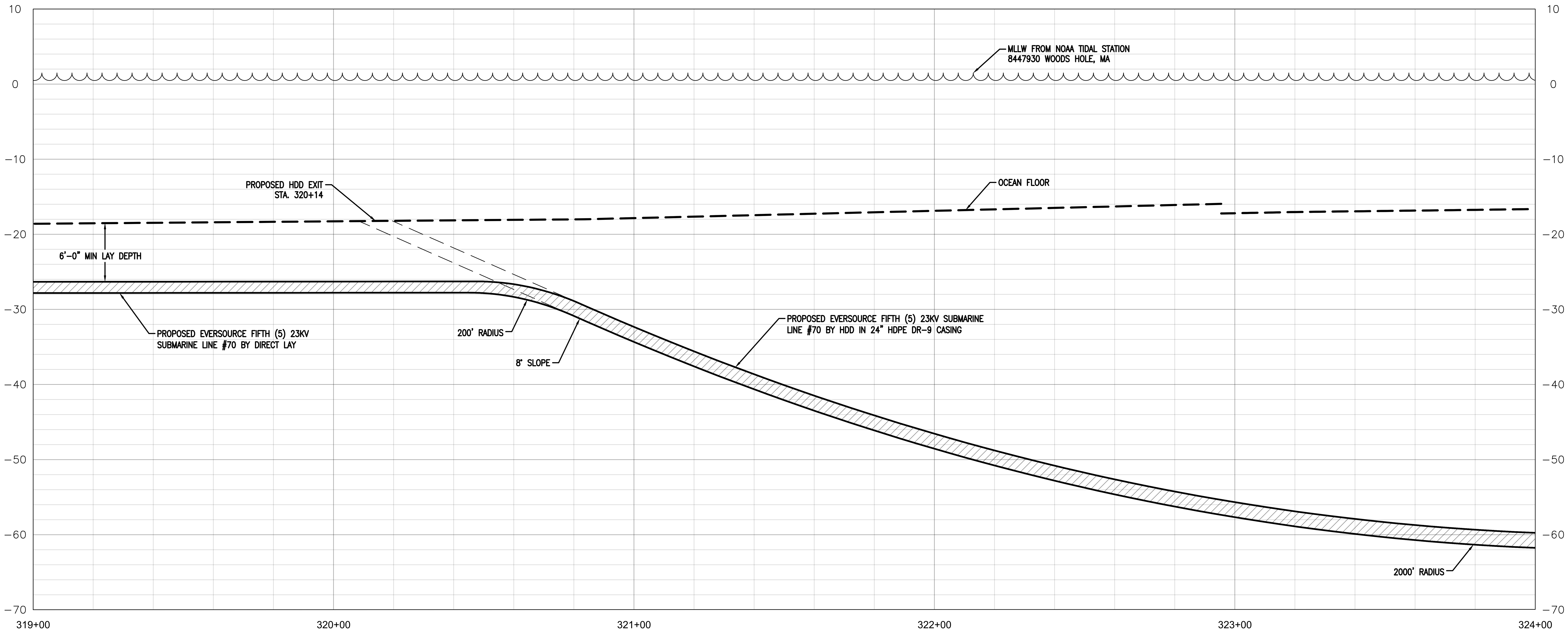
EVERSOURCE

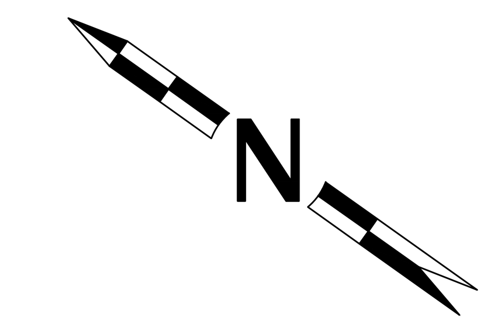
PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN VIEW STA. 262+00 TO 319+00

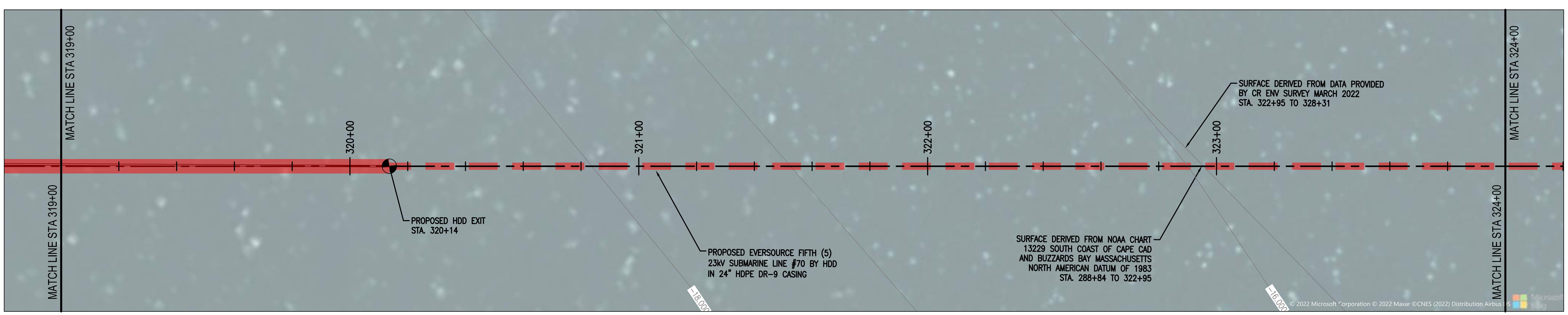
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 120'	15 OF 23	15

PROFILE VIEW





PLAN VIEW



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0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

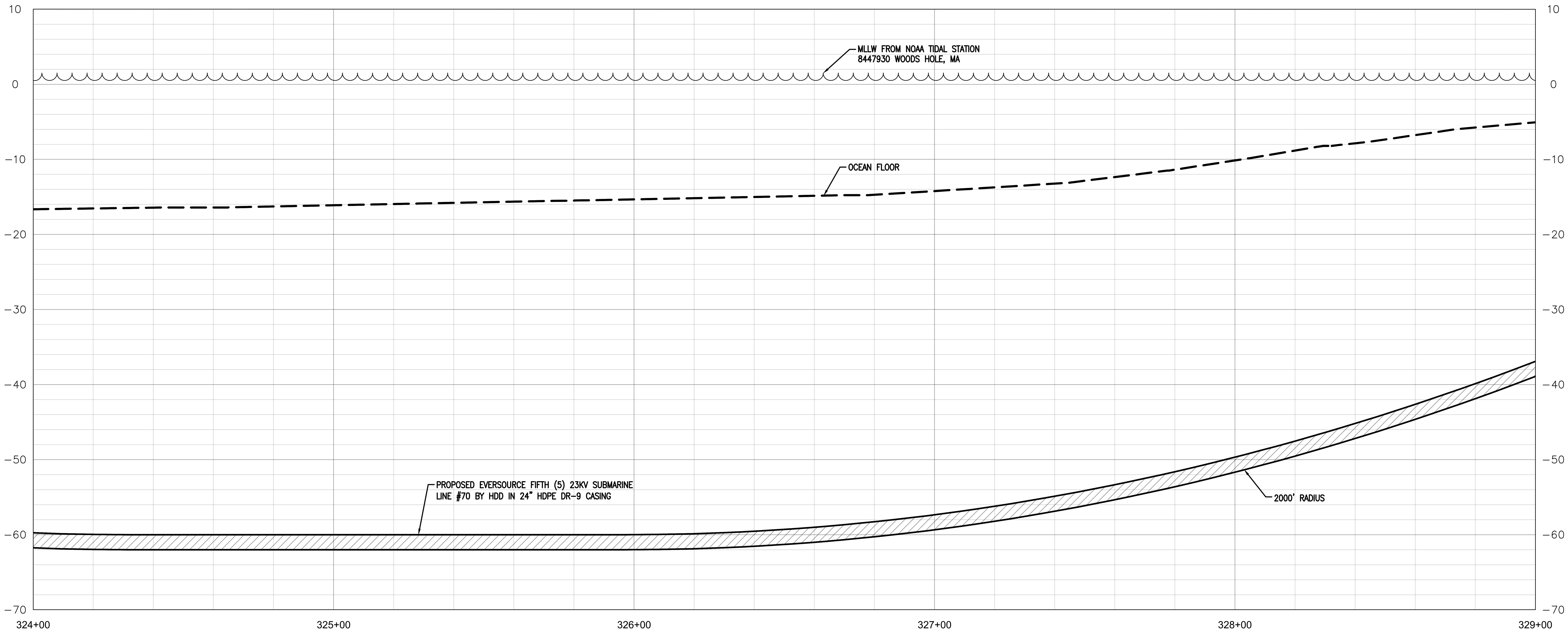
EVERSOURCE

PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

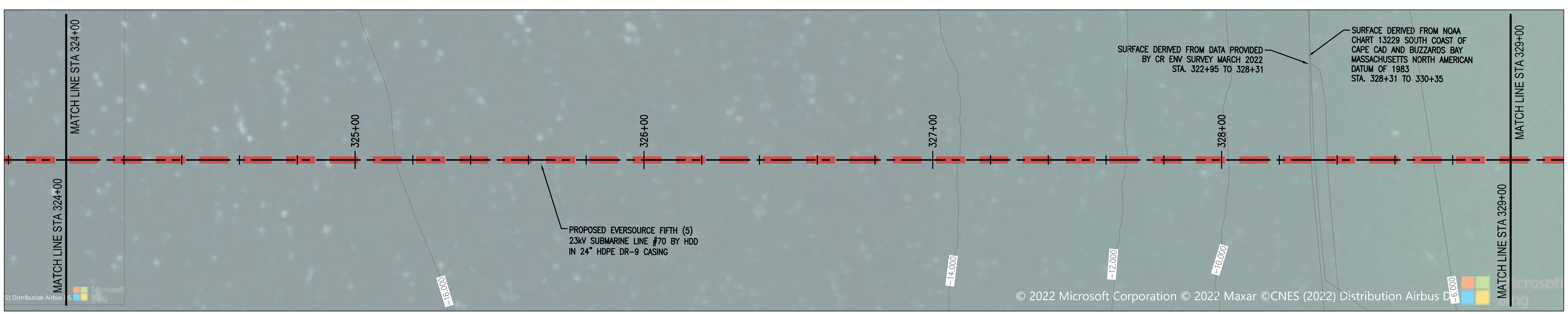
MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 319+00 TO 324+00

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	16 OF 23	16

PROFILE VIEW



PLAN VIEW



NOTES

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3. ALL PROFILE VERTICAL CURVES ARE 400' RADIUS UNLESS OTHERWISE NOTED.
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5. CONTRACTOR TO VERIFY SIZE AND LOCATION OF TARGETED ANOMALIES.

0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
C	12/19/2022	ISSUED FOR REVIEW – ADDED ENVIRONMENTAL LAYERS FROM EVS	LAS	TPB	TPB	TPB
B	11/18/2022	ISSUED FOR REVIEW – REVISED 30% PLAN	LAS	TPB	ASW	TPB
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

EVERSOURCE

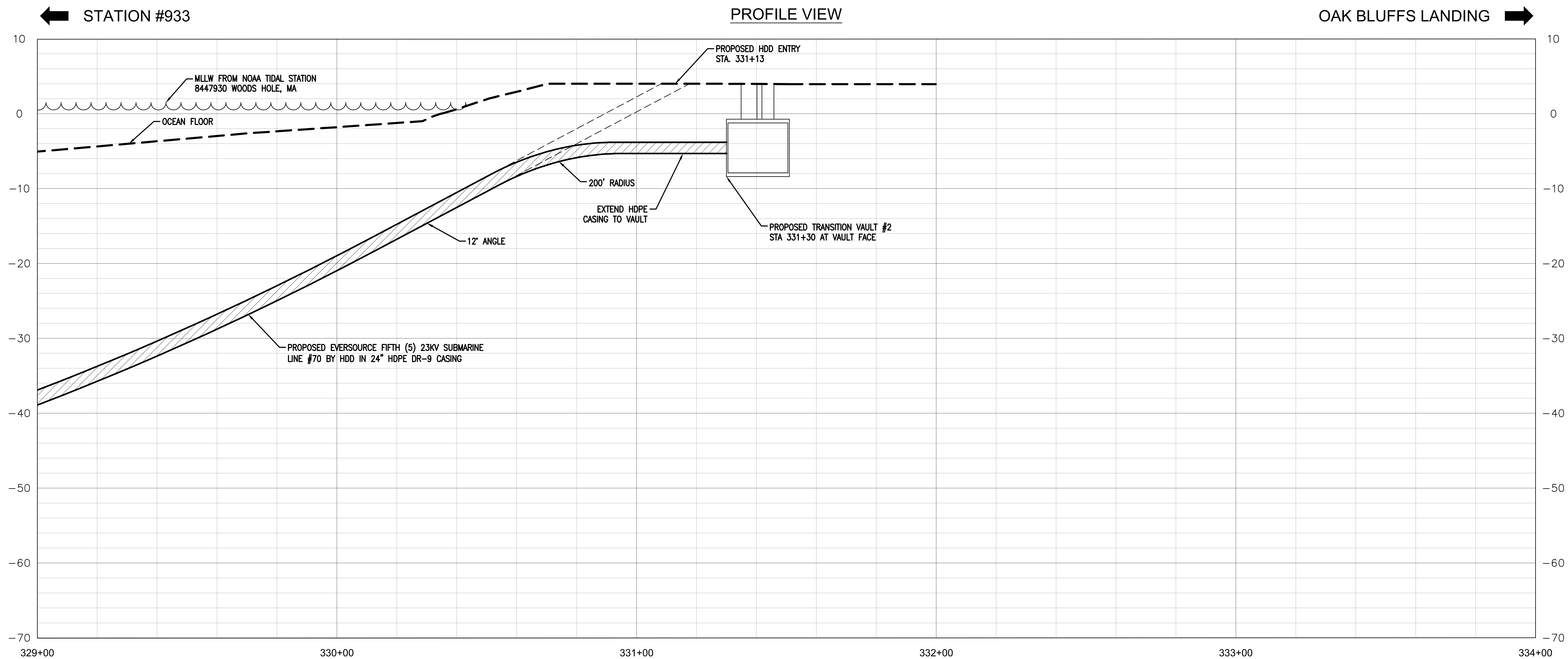
PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 324+00 TO 329+00

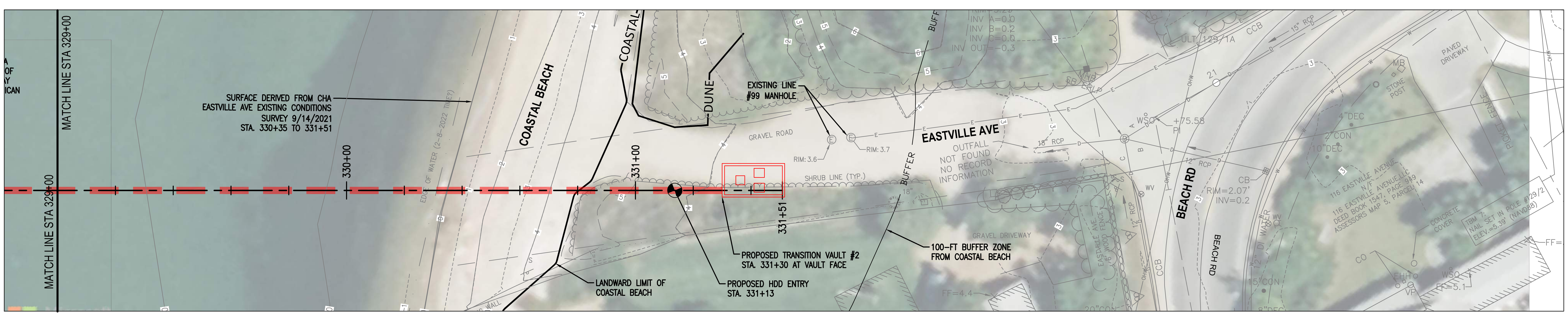
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	17 OF 23	17

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

PROFILE VIEW



PLAN VIEW



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0 10 20 40 60 FEET
HORIZONTAL SCALE: 1"= 20'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
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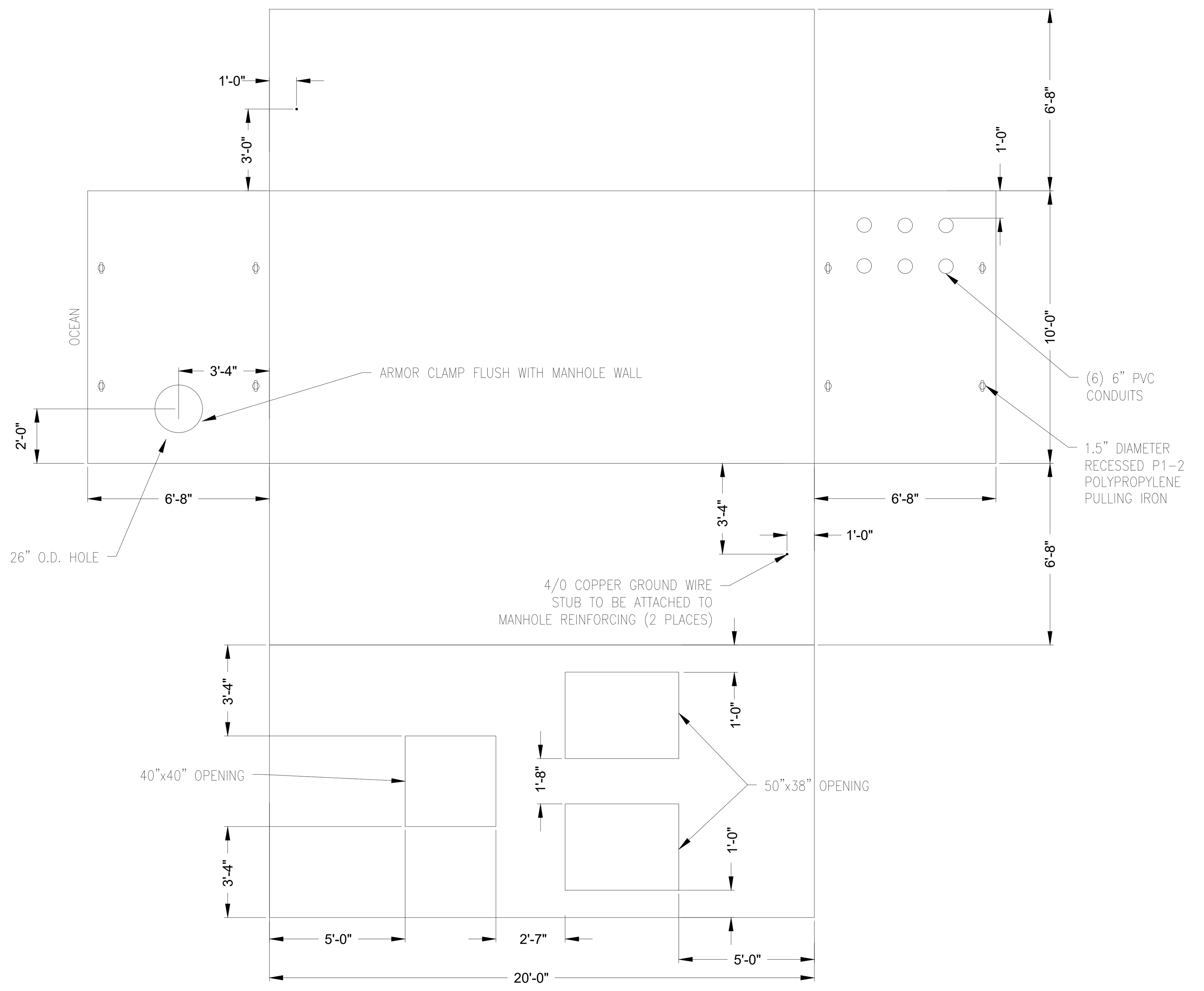
A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

EVERSOURCE

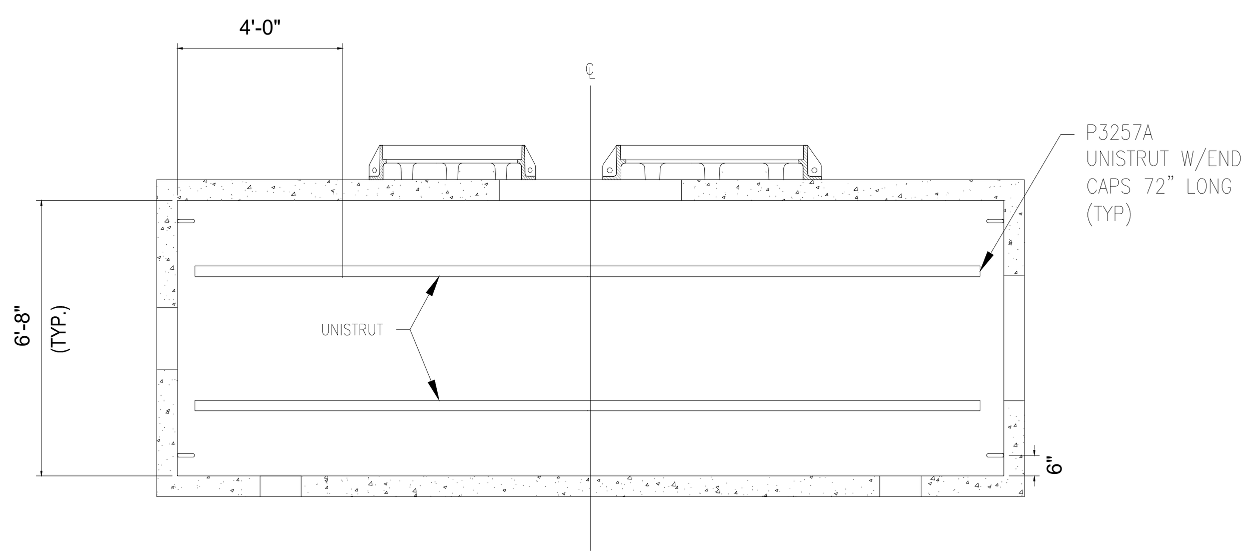
PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
PLAN & PROFILE STA. 329+00 TO 331+30

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	18 OF 23	18



TRANSITION MANHOLE DEVELOPMENT PLAN 1 SH 19
N.T.S.



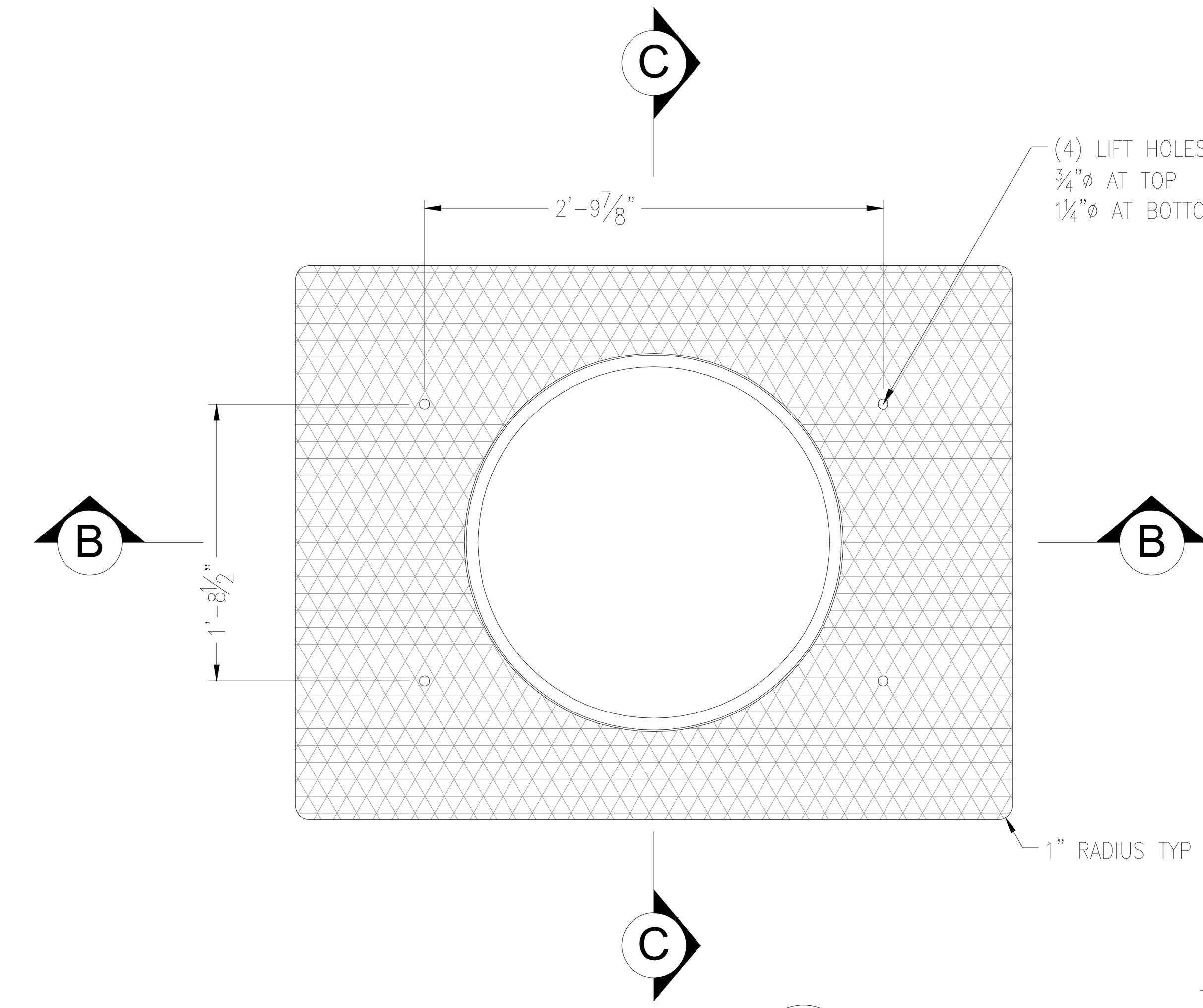
ELEVATION 2 SH 19
N.T.S.

NOTES

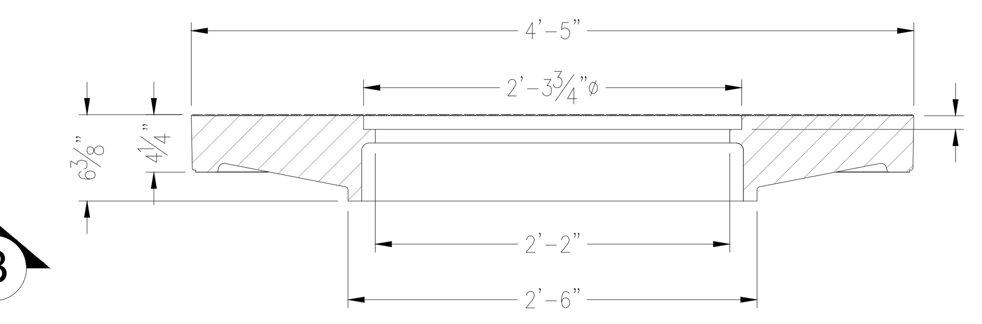
1. VAULT DIMENSIONS SHOWN ARE INSIDE DIMENSIONS. VAULT WALL THICKNESS IS TYPICALLY 8-10".
2. THE FABRICATOR SHALL DESIGN THE PRECAST CONCRETE VAULT IN ACCORDANCE WITH ACI 318 AND AASHTO LOAD FACTOR DESIGN METHOD.
3. ALL VAULT DESIGNS SHALL BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF MASSACHUSETTS.
4. CONCRETE SHALL BE A MINIMUM STRENGTH OF 5000 PSI AT 28 DAYS.
5. REINFORCING STEEL SHALL BE ASTM A 615 GRADE 60.
6. THE VAULT SHALL BE FABRICATED IN TWO PIECES FOR FIELD ASSEMBLY. ALL JOINTS SHALL INCLUDE A WATERTIGHT SEAL DESIGN.
7. DESIGN ASSUMPTIONS SHALL BE AS FOLLOWS:

GROUNDWATER DEPTH:	2'-0" BELOW FINISHED GRADE
EARTH COVER:	3' MAX, 1½' MIN BELOW FINISH GRADE
COEFFICIENT OF EARTH AT REST:	TO BE PROPOSED BY FABRICATOR
DRY EARTH DENSITY:	TO BE PROPOSED BY FABRICATOR
SATURATED EARTH DENSITY:	TO BE PROPOSED BY FABRICATOR
DESIGN TRUCK:	AASHTO H20-S16

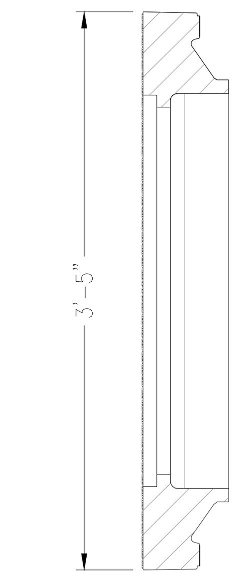
8. VAULT SHALL HAVE POSITIVE RESTRAINT FOR WATER FLOATATION.
9. THE EXTERIOR SURFACES OF THE VAULT SHALL BE COVERED WITH A DAMPROOFING COATING.
10. TWO PIECE PRECAST VAULT SHALL BE INSTALLED IN ACCORDANCE WITH FABRICATOR'S DRAWINGS AND INSTRUCTIONS.
11. THE JOINT BETWEEN VAULT SECTIONS SHALL BE SEALED WATERTIGHT.
12. STANDARD VAULT DEPTH SHALL INCLUDE SPACE FOR A TWO BRICK COLLAR. WHERE DEPTHS MUST BE GREATER, THE HEIGHT OF THE BRICK COLLAR SHALL BE INCREASED OR A CONCRETE CHIMNEY INSTALLED.



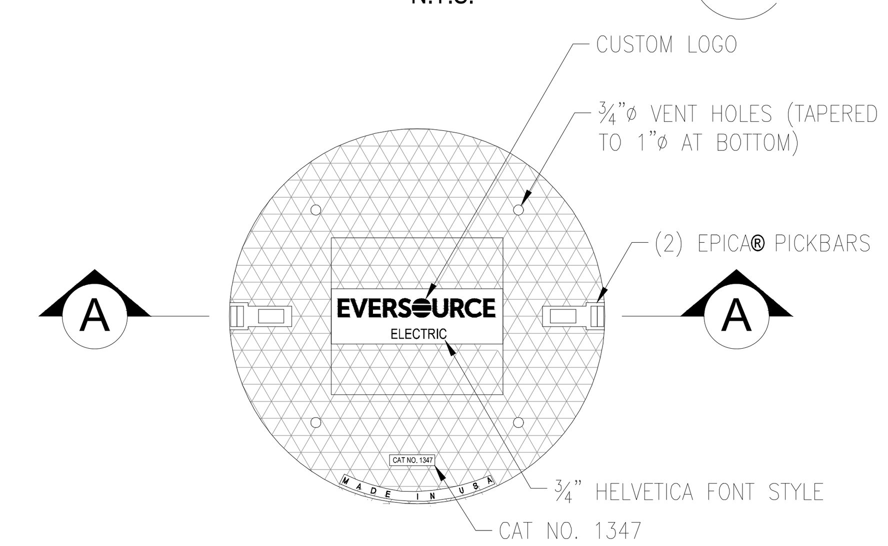
VAULT COVER 2273E 4 SH 19
N.T.S.



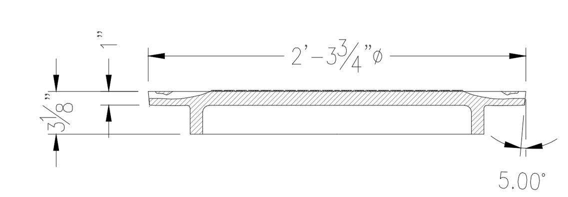
VAULT COVER 2273E SECTION B-B
N.T.S.



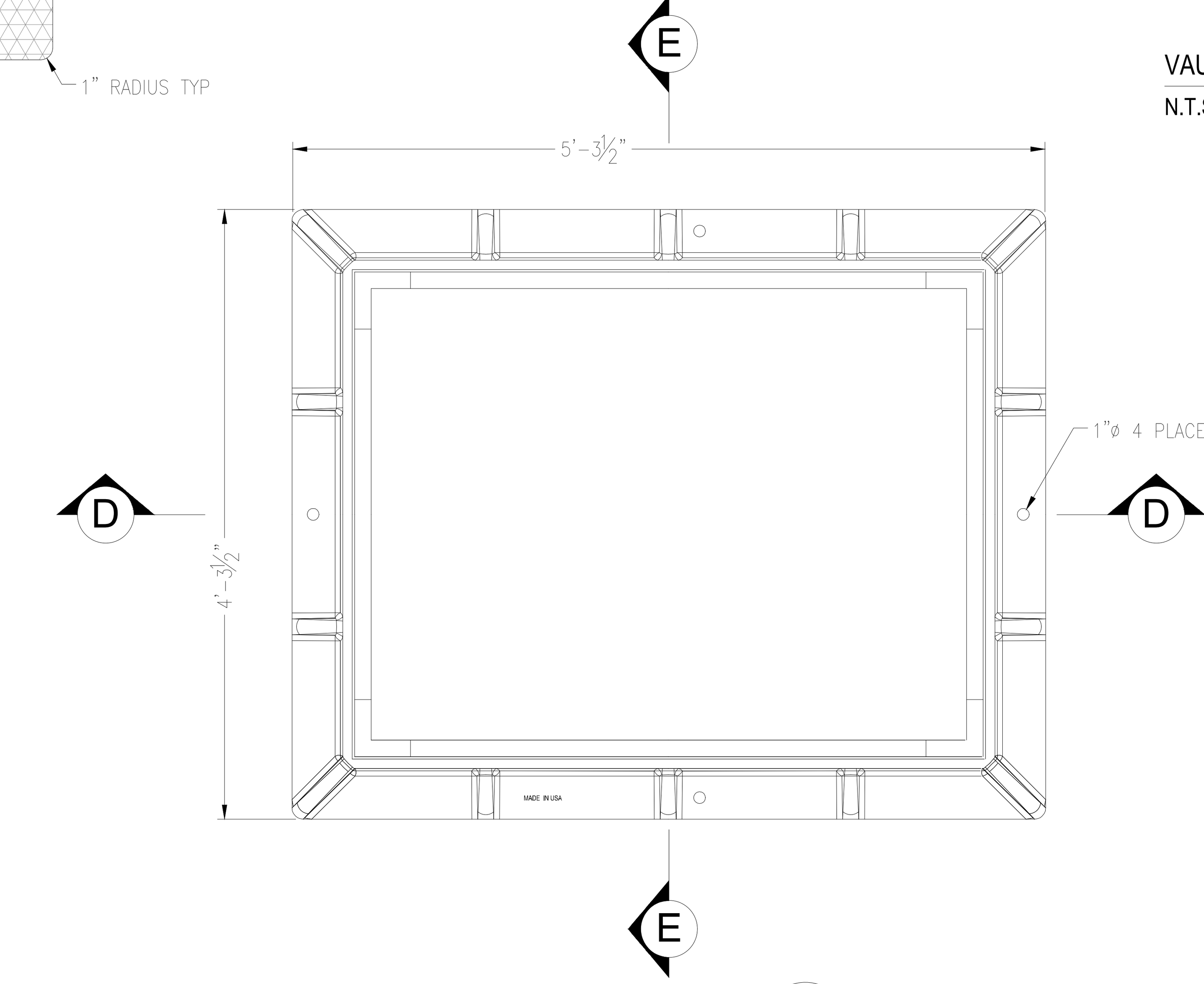
VAULT COVER 2273E SECTION C-C
N.T.S.



VAULT COVER 2272C2 3 SH 19
N.T.S.

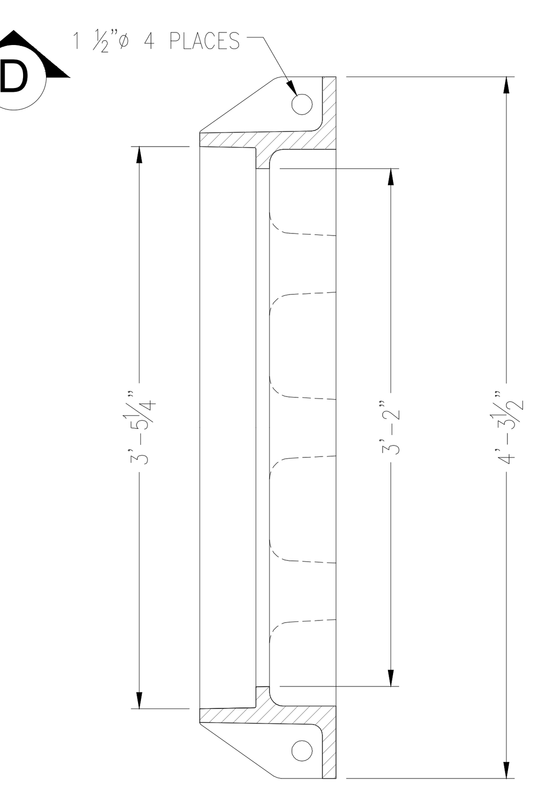


VAULT COVER 2272C2 SECTION A-A
N.T.S.

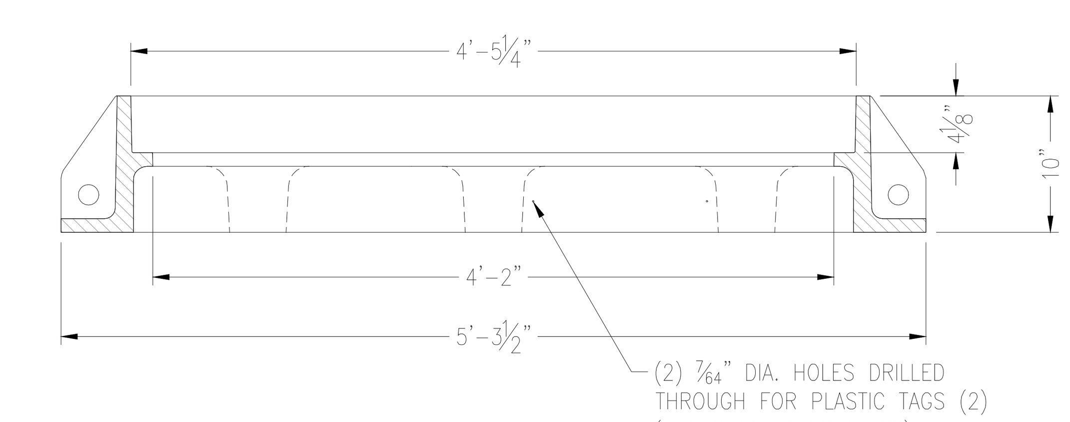


VAULT FRAME 2273Z2 5 SH 19
N.T.S.

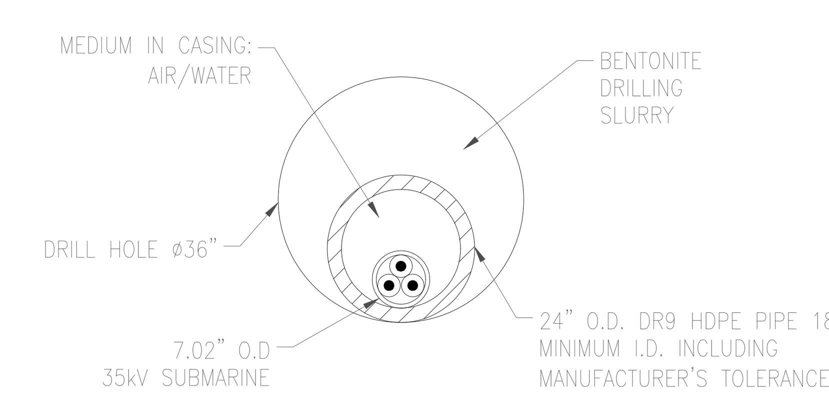
VAULT COVER NOTES (ALL PARTS):
MATERIAL:
1. IRON (CL35B), DESIGN LOAD – HEAVY DUTY
2. COLOR: GRAY
3. COATING – UNDIPPED



VAULT FRAME 2273Z2 SECTION E-E
N.T.S.



VAULT FRAME 2273Z2 SECTION D-D
N.T.S.



PROPOSED BORE 6 SH 19
N.T.S.

AUTOCAD FILE NAME: 0237849_0000-MV 70 Cable-Details.dwg

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EVERSOURCE

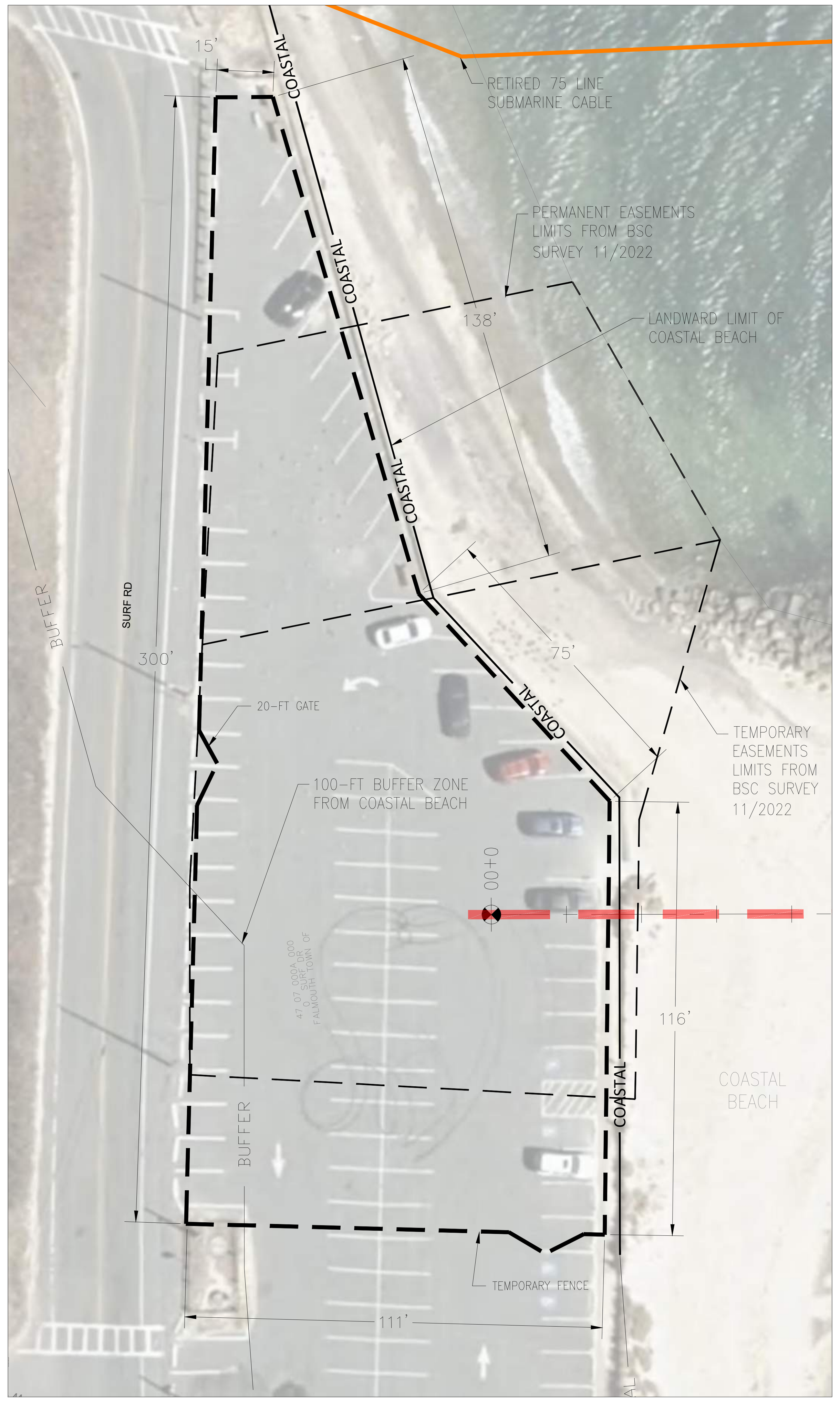
PROJ # 0237849_0000
WORK # 80047133

DRAWN	LAS
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

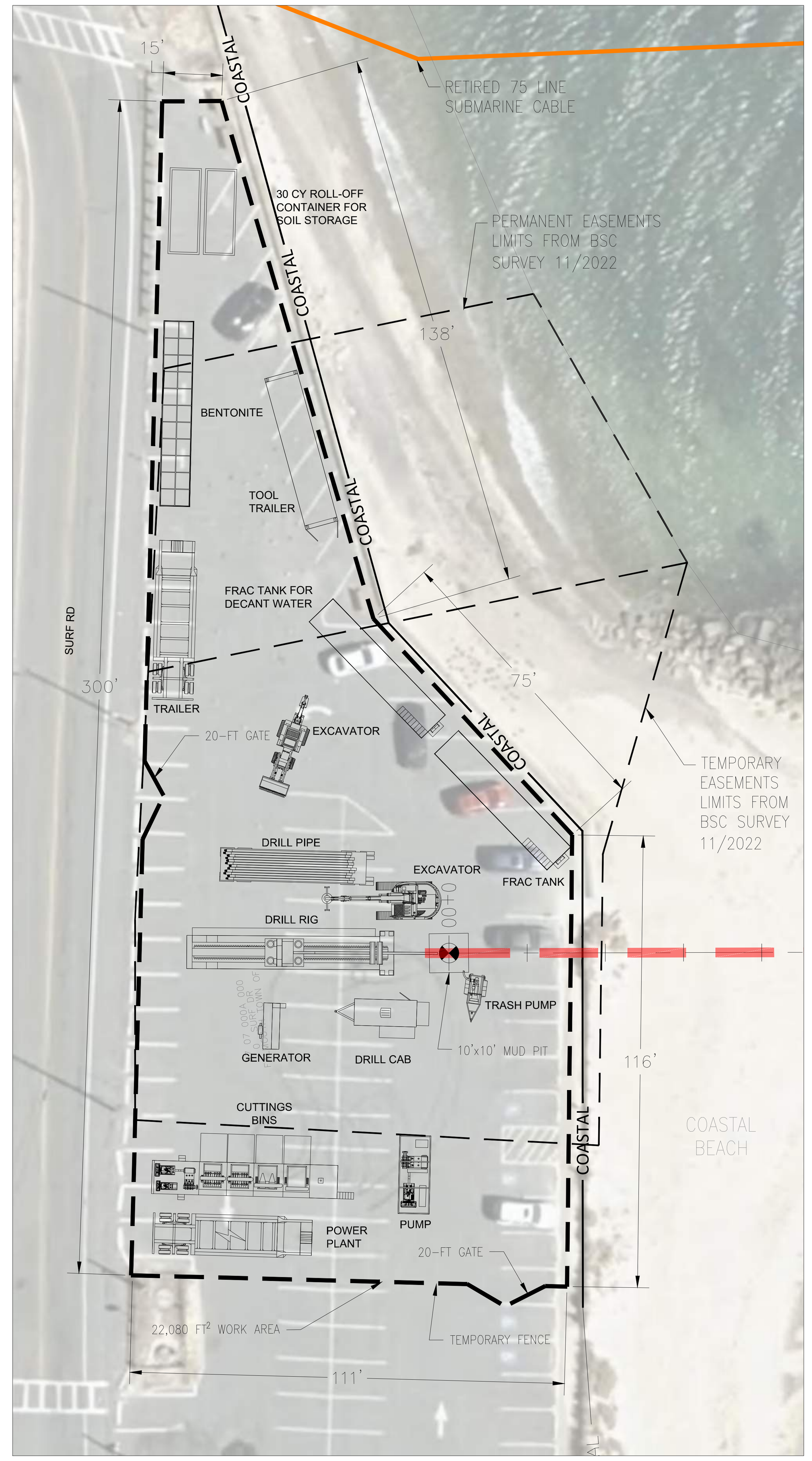
MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
DETAILS

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	N.T.S.	19 OF 23	19

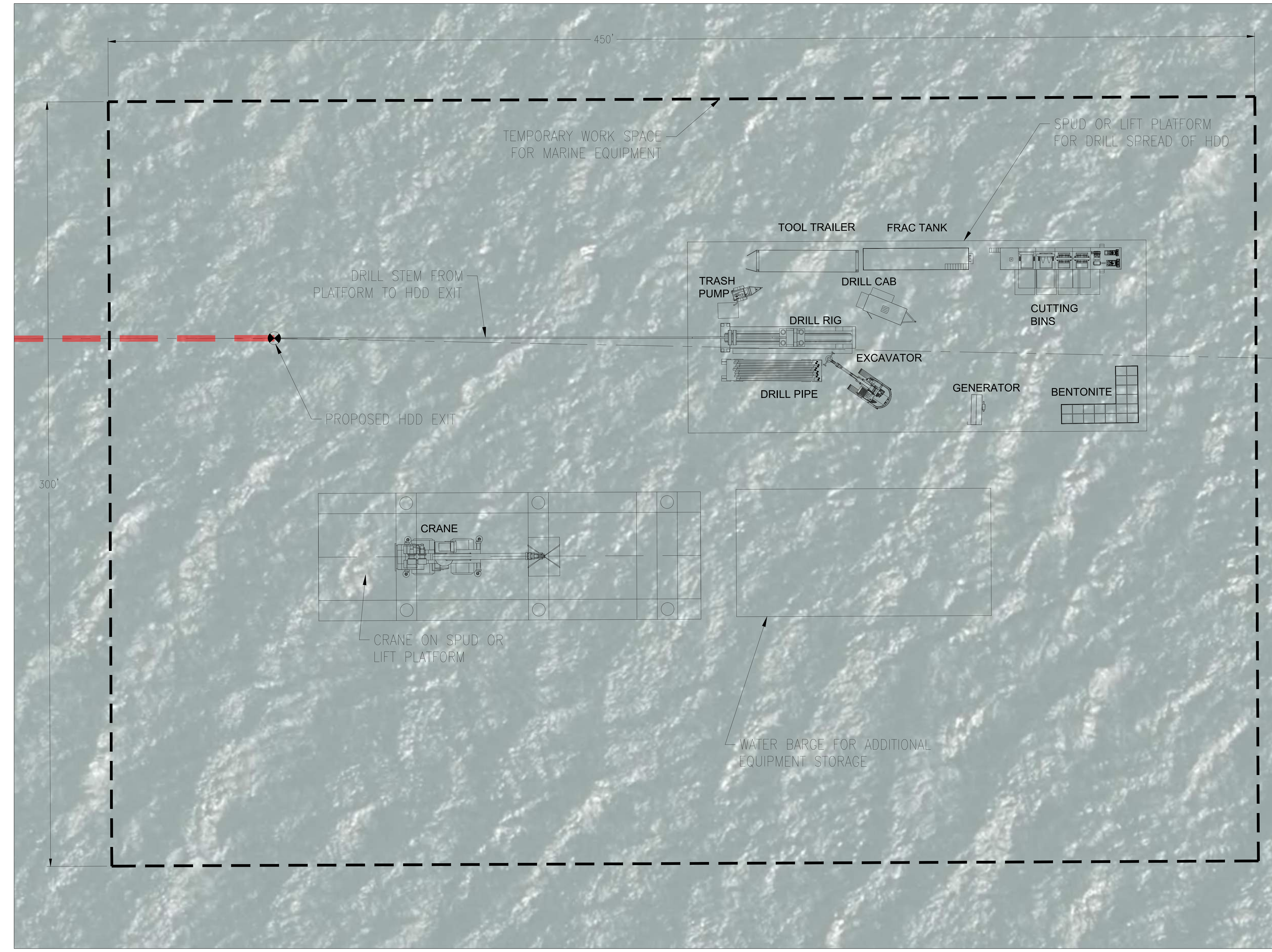
N



HDD ENTRY - ENVIRONMENTAL LAYERS



HDD ENTRY - EQUIPMENT WITH ENVIRONMENTAL LAYERS



HDD EXIT

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0 15 30 60 90 FEET
HORIZONTAL SCALE: 1"= 30'

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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POWER ENGINEERS

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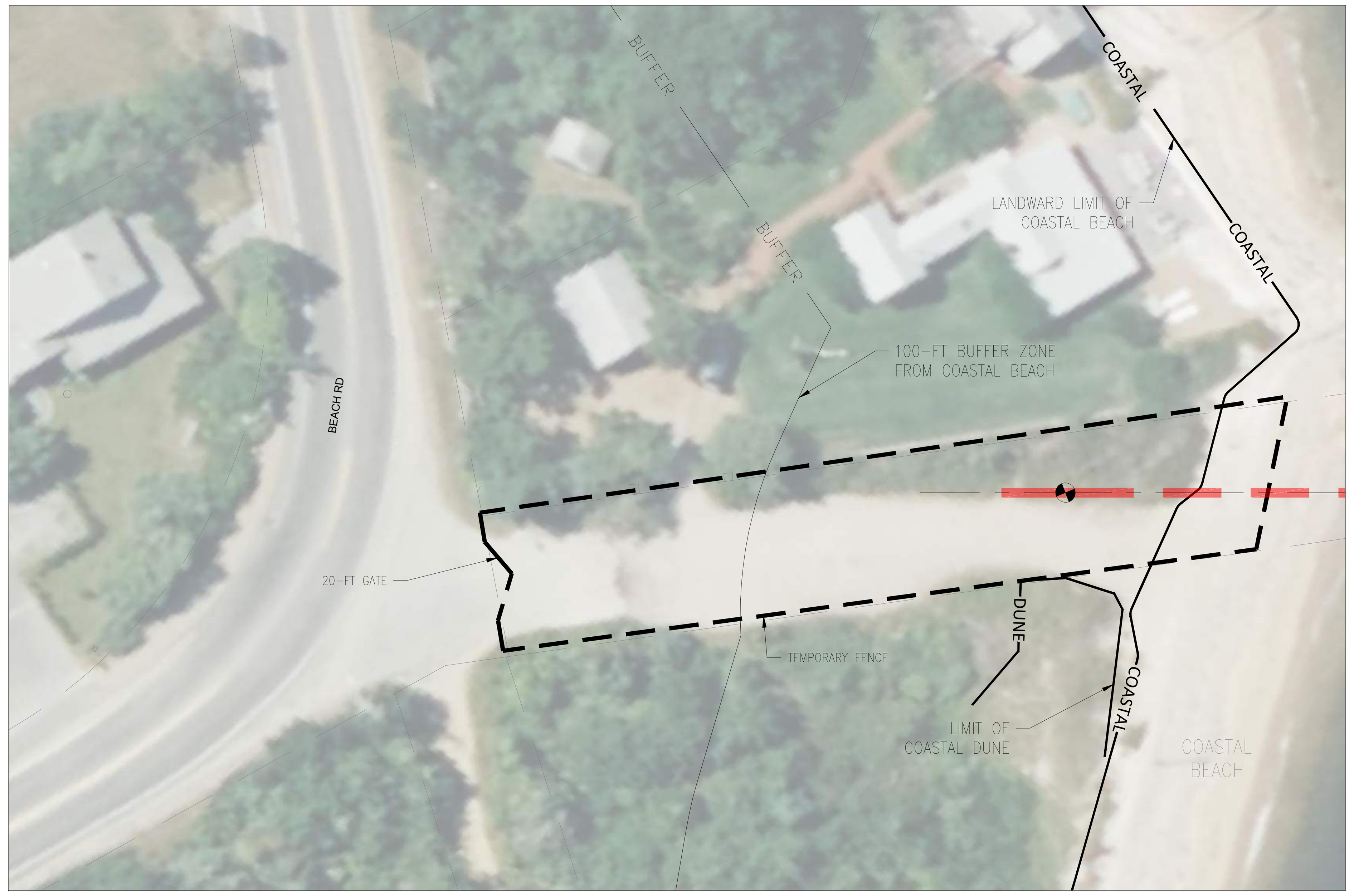
EVERSOURCE

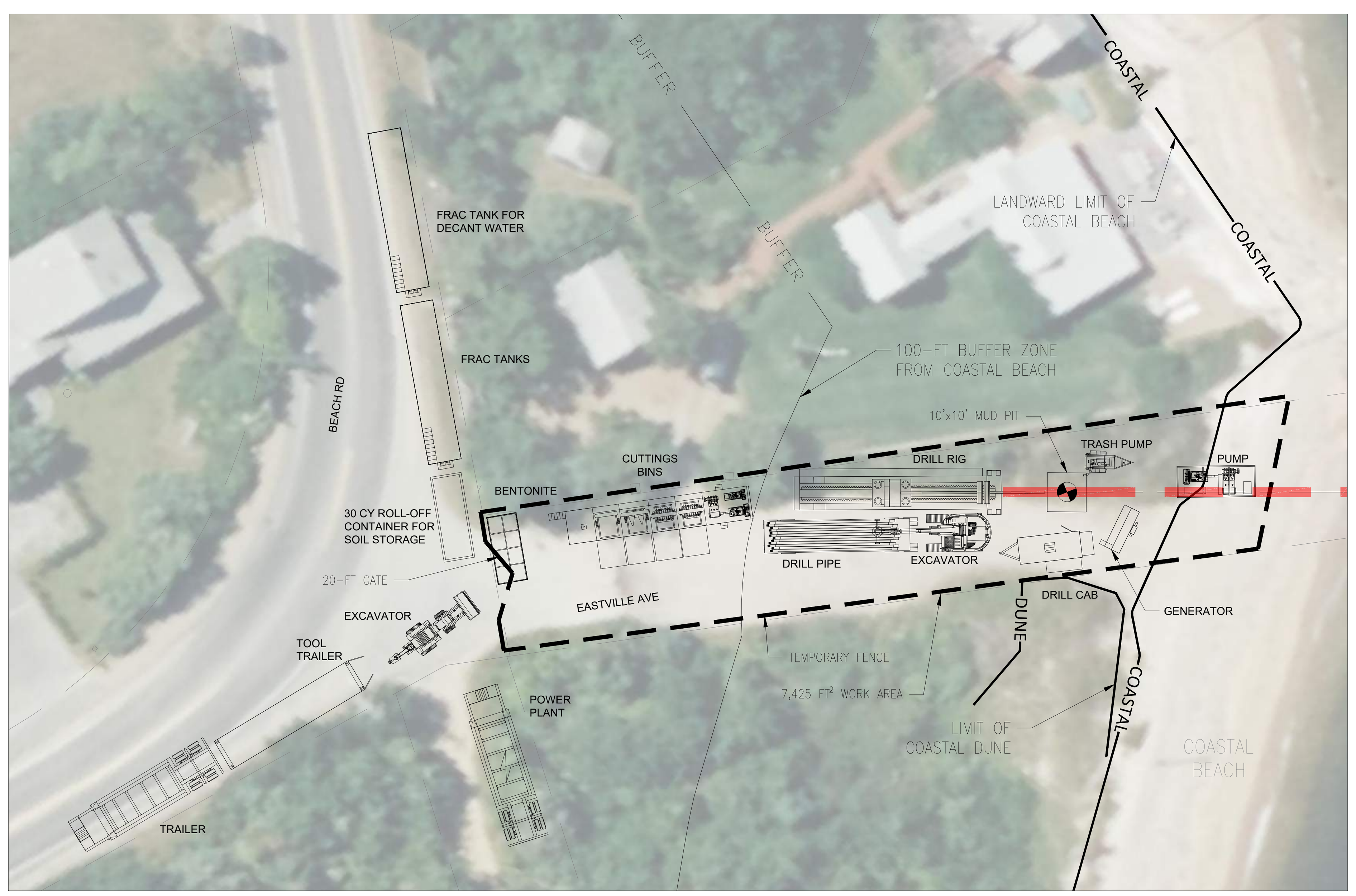
PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
FALMOUTH EQUIPMENT LAYOUT

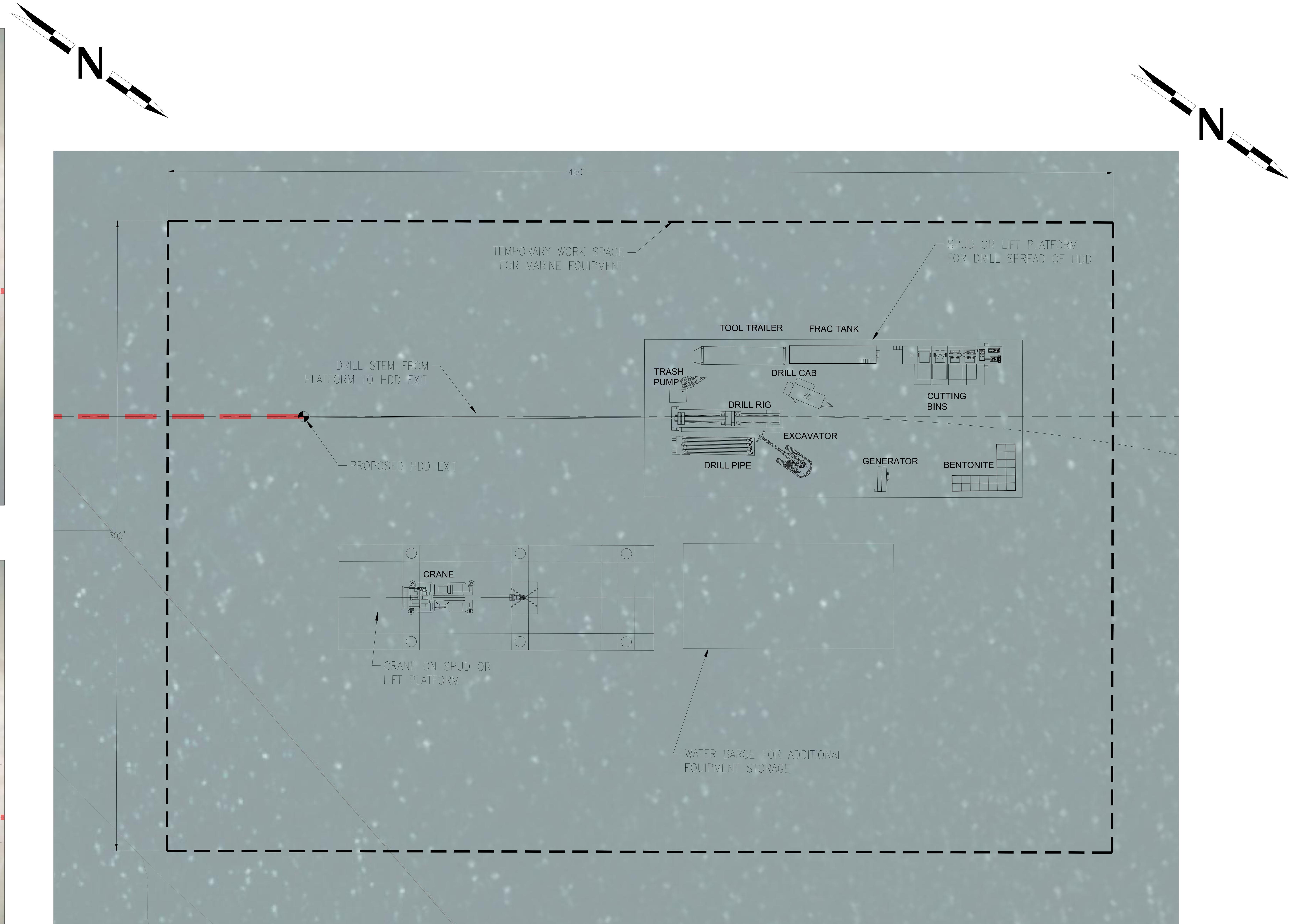
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	20 OF 23	20



HDD ENTRY - ENVIRONMENTAL LAYERS



HDD ENTRY - EQUIPMENT WITH ENVIRONMENTAL LAYERS



HDD EXIT

0 15 30 60 90 FEET
HORIZONTAL SCALE: 1"= 30'

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AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

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A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	ASW	TPB	TPB	TPB

EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133
DRAWN DRC
CHECKED TPB
DESIGN ENG ASW
DESIGN SUPV TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
OAK BLUFFS EQUIPMENT LAYOUT

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	1" = 20'	21 OF 23	21

STATION #933 | PLAN VIEW | OAK BLUFFS LANDING

PLAN VIEW

0 150 300 600 900 FEET

HORIZONTAL SCALE: 1"= 300'

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ENVIRONMENTAL LAYERS PROVIDED BY EVERSOURCE 12-02-2022

- HARD COMPLEX BOTTOM
- EELGRASS

ELECTRIC LINE LEGEND

- PROPOSED FIFTH (5) 23kV SUBMARINE LINE #70
- EXISTING NSTAR/COMCAST 75 LINE
- RETIRED 75 LINE
- EXISTING 99 LINE
- RETIRED 100 LINE

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A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

EVERSOURCE

PROJ # 0237849_0000
WORK # 80047133

DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
MARINE ENVIRONMENTAL OVERVIEW

DATE	SCALE	SHEET	SHEET NAME
2022-11-11	AS NOTED	22 OF 23	22

AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

STATION #933 — PLAN VIEW — OAK BLUFFS LANDING

PLAN VIEW

0 150 300 600 900 FEET

HORIZONTAL SCALE: 1"= 300'

NOTES

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- HARD COMPLEX BOTTOM
- EELGRASS

ELECTRIC LINE LEGEND

- PROPOSED FIFTH (5) 23kV SUBMARINE LINE #70
- EXISTING NSTAR/COMCAST 75 LINE
- RETIRED 75 LINE
- EXISTING 99 LINE
- RETIRED 100 LINE

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POWER ENGINEERS

No	DATE	REVISION	BY	CHKD	ENGR	SUPV
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A	11/11/2022	ISSUED FOR REVIEW – 30% PLAN	LAS	TPB	TPB	TPB

EVERSOURCE

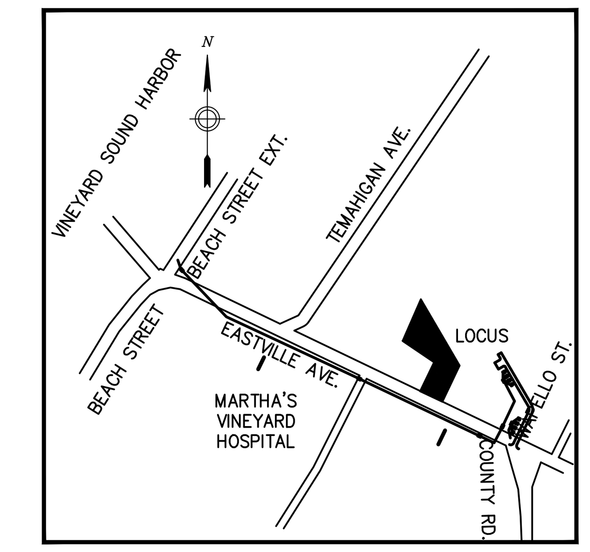
PROJ #	0237849_0000
WORK #	80047133
DRAWN	DRC
CHECKED	TPB
DESIGN ENG	ASW
DESIGN SUPV	TPB

MARTHA'S VINEYARD SUBMARINE LINE #70
FALMOUTH TO MARTHA'S VINEYARD, MA
MARINE ENVIRONMENTAL OVERVIEW

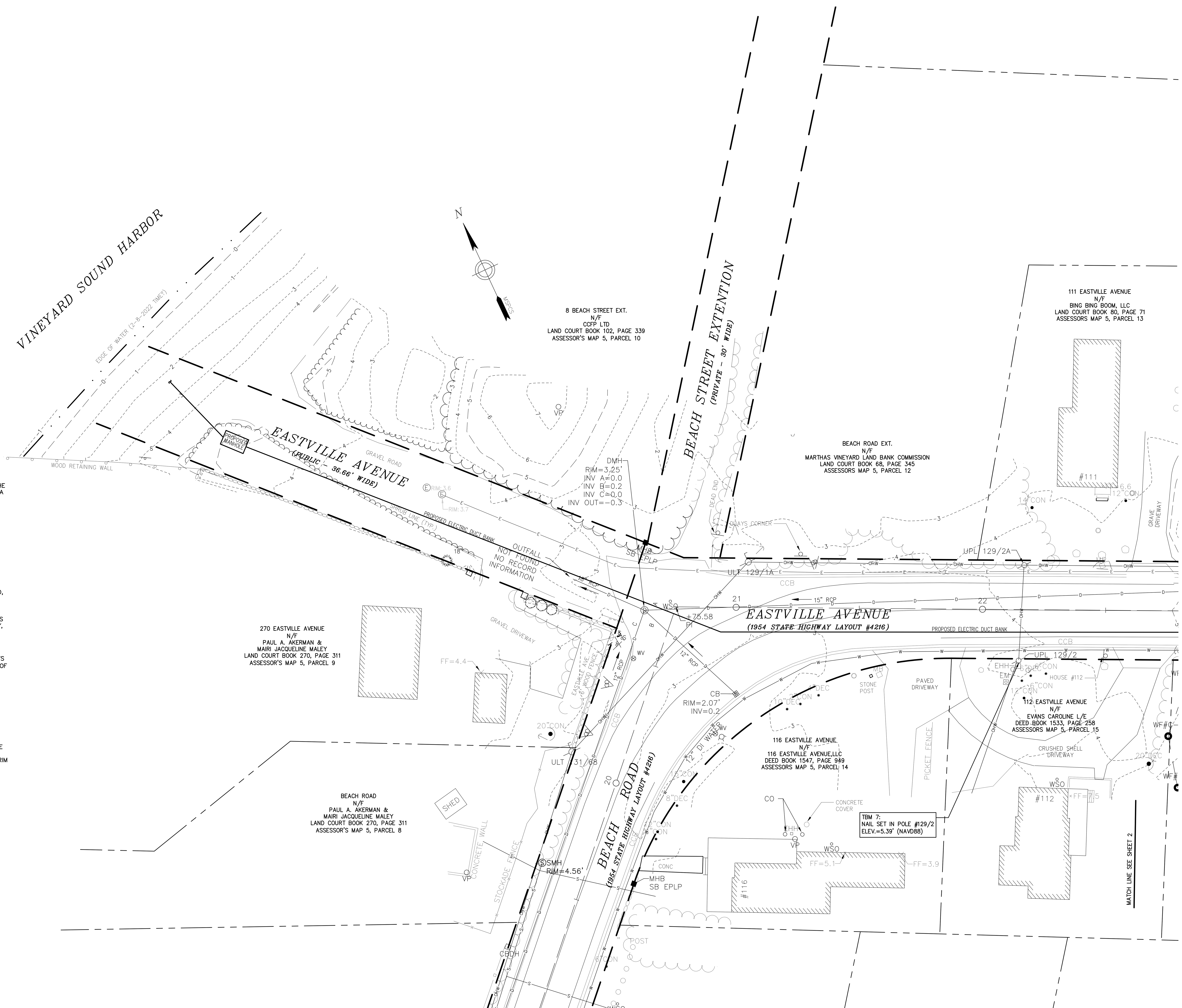
DATE	SCALE	SHEET	SHEET NAME
2022-11-11	AS NOTED	23 OF 23	23

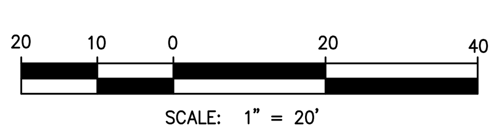
AUTOCAD FILE NAME: 0237849-0000 – MV 70 Combined Plan & Profile horizontal bend.dwg

Eastville Avenue Oak Bluffs, MA (3 Sheets)



LOCUS MAP:
SCALE: 1" = 500'





LEGEND:

PARCEL BOUNDARY LINE
EASEMENT LINE
ADJOINING PARCEL LINE
STREET/HIGHWAY LINE
ELECTRIC LINE
SEWER LINE
DRAINAGE LINE
WATER LINE
OVERHEAD UTILITY LINE
TREE LINE

MHB — MASS. HIGHWAY BOUND
CBDH — CONCRETE BOUND WITH DRILL HOLE
RB — REBAR
X 100.0 — SPOT GRADE
SIGN
SIGN - DOUBLE POST
WG — WATER GATE
WSO — WATER SHUTOFF
WF# — WETLAND FLAG
CB — CATCH BASIN
SEWER MANHOLE
DRAINAGE MANHOLE
EHH — ELECTRIC HAND HOLE
ELECTRIC MANHOLE
TREE — PINE TREE
TREE — DECIDUOUS TREE
22"M — TREE
ULT# — UTILITY POLE W/ LIGHT
GUY WIRE
VP — VENT PIPE
MB — MAIL BOX

GENERAL NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN HEREON IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA CONSULTING, INC. IN SEPTEMBER OF 2021 AND FEBRUARY OF 2022.
2. ALL DEED REFERENCES ARE TO DUKES COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.
3. TOPOGRAPHY, CONTOURS AND BENCHMARKS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). TEMPORARY BENCHMARKS, REFERENCED TO THE DATUM ARE INDICATED ON THE SURVEY.
4. IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.
5. THE PROJECT AREA IS LOCATED IN FLOOD ZONE "X & AE" AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DUKES COUNTY, COMMUNITY PANEL NUMBER 25007C0104J, EFFECTIVE DATE JULY 20, 2016.
6. THE LOCUS PARCEL IS LOCATED IN THE TOWN OF OAK BLUFFS RESIDENTIAL R-1 DISTRICT (R-1) AS DEFINED BY THE TOWN OF OAK BLUFFS ZONING MAP.
7. MINIMUM SETBACK REQUIREMENTS ARE:

   FRONT SETBACK:...............20'
   SIDE SETBACK:..................20'
   REAR SETBACK:.................20'

8. LOCATION OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE AND ADDITIONAL UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. LOCATIONS ARE COMPILED FROM UTILITY PLANS OF RECORD AND DIG-SAFE FIELD MARKINGS. RIM AND INVERT INFORMATION HAS BEEN COMPILED AND FIELD VERIFIED WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. PRIOR TO ANY CONSTRUCTION, CONTACT DIG-SAFE (1-800-344-7233) TO FIELD VERIFY LOCATION OF ALL UTILITIES.
9. PLAN REFERENCES:

   PLAN CASE FILE No. 365
   PLAN CASE FILE No. 224
   PLAN CASE FILE No. 113
   PLAN BOOK 17 PAGE 117

10 COASTAL DCPC INLAND ZONE LINES WERE COMPILED FROM DUKES COUNTY GIS MAPS.

11. RECORD OWNER

   ASSESSORS MAP 4 LOT 147-1
   EASTVILLE AVENUE
   NSTAR ELECTRIC COMPANY
   DEED BOOK 537 PAGE 213
   LOT 1 - PLAN CASE FILE NO. 224

CHA
141 Longwater Drive - Suite 104
Norwell, MA 02061
781.982.5400 • www.chacompanies.com

PROGRESS PRINT
FEBRUARY 10, 2022

EVERSOURCE ENERGY
247 Station Drive, SE270 Westwood, MA 02090

EXISTING CONDITIONS PLAN
EASTVILLE AVENUE
OAK BLUFFS, MASSACHUSETTS

DRAWN BY: MWC	CHKD: CDE	APP: WJD	APP:
DATE: 02/10/2022	DATE:	DATE:	DATE:
H-SCALE: 1"=20'	SIZE: ARCH D	SURVEY JOB No.: S22627	
V-SCALE: N.T.S.	V.S.:	R.E.DWG.:	
R.E. PROJ. NUMBER:	SHEET 1 OF 3	CHA PROJECT #073038	

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20 10 0 20 40
SCALE: 1" = 20'

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EASTVILLE AVENUE
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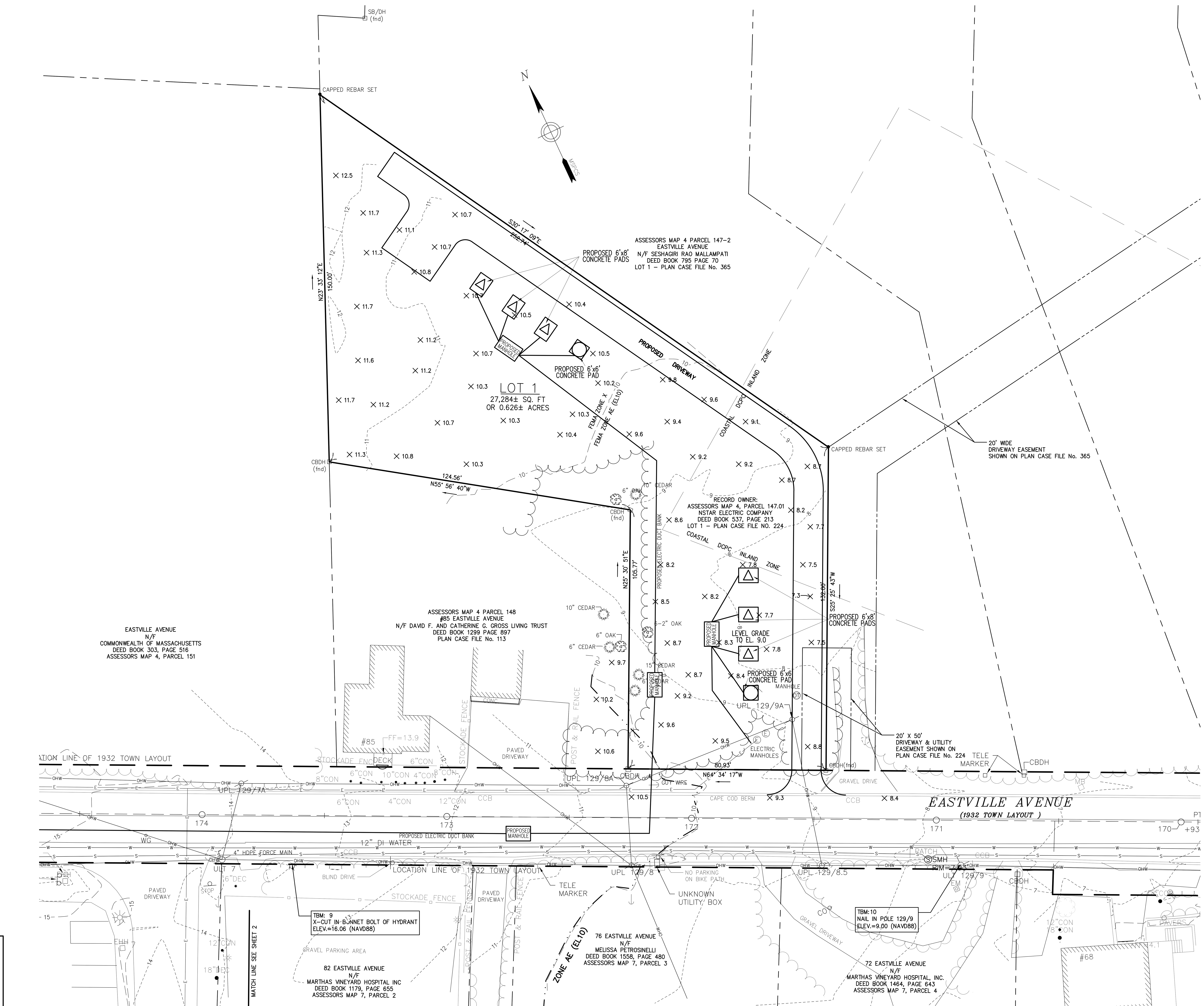
V-SCALE: N.T.S.	V.S.:	R.E.DWG.:	
R.E. PROJ. NUMBER:	SHEET 2 OF 3	CHA PROJECT #073038	



20 10 0 20 40

SCALE: 1" = 20'

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