Attachment N

Draft Construction Management Plan

DRAFT

New England Wind 2 Connector

Construction Management Plan

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1.0 INTRODUCTION

This draft Construction Management Plan (CMP) outlines effective construction management procedures that will be used by the Proponent and its contractors during construction of the New England Wind 2 Connector Project (NE Wind 2 Connector, or "Project"). This draft CMP has been developed to ensure environmental protection and sound construction practices are implemented throughout construction of the Project. The draft CMP will be updated as necessary prior to and during construction and will reflect permitting updates and include relevant commitments made during environmental reviews and permitting processes as well as a verbatim listing of formal permit conditions.

2.0 CONSTRUCTION PERIOD SEQUENCE, METHODS, AND CONSIDERATIONS

The Project will be constructed using conventional, well proven techniques for the installation of underground cables, primarily during off-season, and construction of the onshore substation. This section describes the sequence of activities, methods proposed, and considerations taken for the construction of the various Project components (offshore cables, onshore cables, and onshore substation).

2.1 Offshore Cable Installation

The Proponent anticipates primarily using jetting techniques or mechanical plowing for laying and burying the three offshore export cables to a target burial depth of 5 to 8 ft (1.5 to 2.5 meters). These two most common methods are described below under "Typical Techniques." Other specialty techniques may be used in a limited fashion in certain areas to maximize the likelihood of achieving sufficient burial depth (such as in areas of coarser or more consolidated sediment, rocky bottom, or other difficult conditions, where the typical techniques may not be feasible for achieving sufficient cable burial depth), while minimizing the need for possible cable protection and accommodating varying weather conditions. These additional techniques are described below under "Other Possible Specialty Techniques."

While the actual offshore export cable installation method(s) will be determined by the cable installer based on site-specific environmental conditions and the goal of selecting the most appropriate tool for achieving adequate burial depth, the Proponent will prioritize the least environmentally impactful cable installation alternative(s) that is/are practicable for each segment of cable installation.

Typical Techniques

Jetting techniques (e.g., jet-plowing or jet-trenching): Jetting tools may be deployed using a seabed tractor, a sled, or directly suspended from a vessel. Jetting tools typically have one or two arms that extend into the seabed (or alternatively a plow share that runs through the seabed) equipped with nozzles which direct pressurized seawater into the seafloor. As the tool moves along the installation route, the pressurized seawater fluidizes the sediment allowing the cable to sink under its own weight to the appropriate depth or be lowered to depth by the tool. Once the arm or plow share moves on, the fluidized sediment naturally settles out of suspension, backfilling the narrow trench. Depending on the actual jet-plow equipment used, the width of the fluidized trench could vary between 1.3 and 3.3 ft (0.4 – 1 meters). While jet-plowing will fluidize a narrow swath of sediment, it is not expected to result in significant sidecast of materials from the trench. Offshore cable installation will therefore result in some temporary elevated turbidity, but sediment is expected to remain relatively close to the installation activities.

- **Mechanical plowing:** A mechanical plow is pulled by a vessel or barge and uses cutting edge(s) and moldboard, possibly with water jet assistance, to penetrate the seabed, while feeding the cable into the trench created by the plow. While the plow share itself would likely only be approximately 1.6 ft (0.5 meters) wide, a 3.3-ft (1 meter) wide trench disturbance is also conservatively assumed for this tool. This narrow trench will infill behind the tool, either by slumping of the trench walls or by natural infill, usually over a relatively short period of time.

Other Possible Specialty Techniques

- **Mechanical trenching:** Mechanical trenching is typically only used in more resistant sediments. A rotating chain or wheel with cutting teeth/blades cuts a trench into the seabed. The cable is laid into the trench behind the trencher and the trench collapses and backfills naturally over time.

- **Shallow-water cable installation vehicle:** While any of the above "Typical Techniques" could be used in shallow water, the Project also includes specialty shallow-water tools if needed. In this scenario, either of the Typical Techniques described above would be deployed from a vehicle that operates in shallow water where larger cable-laying vessels cannot efficiently operate. The cable is first laid on the seabed, and then a vehicle drives over or alongside the cable while operating an appropriate burial tool to complete installation. The vehicle is controlled and powered from a shallower draft vessel that holds equipment and operators above the waterline.

- **Pre-pass jetting:** Prior to cable installation, a pre-pass jetting run using a jet-plow or jet trencher may be conducted along targeted sections of the cable route with stiff or hard sediments. A pre-pass jetting run is an initial pass along the cable route by the cable installation tool to loosen sediments without installing the cable. A pre-pass jetting run maximizes the likelihood of achieving sufficient burial during the subsequent pass by the cable installation tool when the cable is installed. Impacts from the pre-pass jetting run are largely equivalent to cable installation impacts from jetting described under "Typical Techniques" above.

- **Pre-trenching:** Pre-trenching is typically used in areas of very stiff clays. A plow or other device is used to excavate a trench, the excavated sediment is placed next to the trench, and the cable is subsequently laid into the trench. Separately or simultaneously to laying the cable, the excavated sediment is returned to the trench to cover the cable. It is unlikely that the Proponent will use a pre-trench method because site conditions are generally not suitable (i.e., sandy sediments would simply fall back into the trench before the cable-laying could be completed). If needed, it would likely be necessary for only very limited areas.

- **Pre-lay plow:** In limited areas of resistant sediments or high concentrations of boulders, a larger tool may be necessary to achieve cable burial. One option is a robust mechanical plow that would push boulders aside, while cutting a trench into the seabed for subsequent cable burial and trench backfill. Similar to pre-trenching, if this tool is needed it would only be used in limited areas to achieve sufficient cable burial.

- **Precision installation:** In situations where a large tool is not able to operate, or where another specialized installation tool cannot complete installation, a diver, or Remotely Operated Vehicle (ROV) may be used to complete installation. The diver or ROV may use small jets and other small tools to complete installation.

- **Jetting by controlled flow excavation:** Jetting by controlled flow excavation uses a pressurized stream of water to push sediments to the side. The controlled flow excavation tool draws in seawater from the sides and then propels the water out from a vertical down pipe at a specified pressure and volume. The down pipe is positioned over the cable alignment, enabling the stream of water to fluidize the sediment around the cable, which allows the cable to settle into the trench. This process causes the top layer of sediments to be sidecast to either side of the trench. In this way, controlled flow excavation simultaneously removes the top of the sand wave and buries the cable. Typically, a number of passes are required to lower the cable to the minimum sufficient burial depth.

  This method will not be used as the conventional burial method for the offshore export cables, but may be used in limited locations, such as to bury cable joints or bury the cable deeper and minimize the need for cable protection where initial burial of a section of cable does not achieve sufficient depth. Controlled flow may require several passes to lower the cable to a sufficient burial depth, resulting in a wider disturbance than use of a jet-plow or mechanical plow. Jetting by controlled flow excavation is not to be confused with jet-plowing or jet trenching (a typical cable installation method described above). Jetting by controlled flow excavation can also be used for dredging small sand waves.

Any boulders identified along the final offshore export cable alignments may need to be relocated prior to cable installation, facilitating installation without any obstructions to the burial tool and better ensuring sufficient burial depth. Boulder relocation will be accomplished either by means of a grab tool suspended from a crane onboard a vessel that lifts individual boulders clear of the route, or by using a plow-like tool which is towed along the route to push boulders aside. Boulders will be shifted perpendicular to the cable route; no boulders will be removed from the site.

In accordance with normal industry practice, a pre-lay "grapnel run" will be completed. The prelay grapnel run will consist of a vessel towing equipment (i.e., a grapnel train) that hooks and recovers obstructions such as fishing gear, ropes, and wires from the seafloor. Depending on the size and type of debris, the debris will be either removed from the route or recovered and brought aboard the vessel deck. Any abandoned fishing gear recovered will be disposed of or returned to its owner in accordance with requirements of DMF and other relevant Massachusetts regulations.

The proposed offshore cables will be deployed from a turntable mechanism aboard a cable ship or cable barge and installed along a surveyed installation corridor. This installation corridor will be within the surveyed OECC to enable the avoidance or minimization of impacts. Impacts will be avoided and minimized by allowing the contractor to micro-site the cable inside the installation corridor such that localized areas of hard bottom or boulders, for example, may be avoided. This installation corridor, rather than a specific cable alignment, allows for optimal routing of the cables.

Cable burial tools (e.g., jet-plow, mechanical plow) can be mounted on a sled pulled by the cable-laying vessel or can also be mounted on a self-propelled underwater tracked vehicle. The tracked vehicle would run along the seafloor using a power feed from the cable-laying vessel. This type of vehicle is routinely used for wind energy cable projects in Europe and has proven effective in dynamic marine environments like the proposed Project route.

Although the Proponent is considering the use of Dynamic Positioning (DP) vessels, anchored cable laying vessels may be used along the entire length of the offshore export cables due to varying water depths throughout the OECC.

The Proponent’s preferred installation approach is to install the offshore export cables sequentially. The three sets of cables within the OECC (Vineyard Wind Connector’s two offshore export cables, NE Wind 1 Connector’s two offshore export cables, and NE Wind 2 Connector’s three offshore export cables) will typically be separated by a distance of 164 to 328 feet (50 to 100 m) to provide appropriate flexibility for routing, installation, and maintenance or repairs. This separation distance could be further adjusted, pending ongoing routing evaluation, to account for local conditions, such as deeper waters, micro-siting for sensitive habitat areas, or other environmental or technical reasons.

2.1.1 Cable Jointing

Due to the length of the offshore export cables and other considerations, each offshore export cable will likely require two or three splices (i.e., joints), at least one of which may be located in state waters. Upon reaching the jointing location, the end of the installed cable will be retrieved from the seabed and brought up to the surface and inside the cable-laying vessel or other specialized vessel (e.g., jack-up vessel). Inside a controlled environment (i.e., a jointing room) aboard the vessel, the two ends of the cable will be spliced together. Once cable jointing is completed, the offshore export cable will be lowered to the seafloor and buried (likely via controlled flow excavation). Depending on the design of the cable and joint, the jointing process may take several days, in part because the jointing process must be performed during good weather. Prior to retrieving the cable ends from the seabed for cable jointing, cable protection may be temporarily placed over the cable ends to protect them.

If a jack-up vessel is used for cable jointing operations, the vessel would impact approximately 0.15 acres (600 square meters) of seafloor each time the vessel jacks up. Any jacking-up needed to complete a splice within the OECC will occur within its surveyed boundaries.

2.1.2 Sand Waves and Potential Dredging

Multiple seasons of marine surveys have confirmed that segments of the OECC contain sand waves, and portions of these sand waves may be mobile over time. Therefore, the upper portions of the sand waves may need to be removed (i.e., dredged) so the cable laying equipment can achieve sufficient burial depth below the sand waves in the stable seabed.

A TSHD is the anticipated methodology for dredging given the heights of sand waves in the OECC, although jetting by controlled flow excavation could be used for smaller sand waves. Where a TSHD is used, it is anticipated that the TSHD would dredge along the cable alignment until the hopper is filled to an appropriate capacity. Perpendicular crossings of sand wave features will be avoided where feasible and safe. Then the TSHD would navigate several hundred meters away and deposit the dredged material within an area of the surveyed corridor that also contains sand waves. Such depositing of dredged material would be prohibited within areas identified as hard bottom. Dredging will be limited to the extent required to achieve adequate cable burial depth during cable installation. If sufficient burial cannot be achieved, some bottom areas may require cable protection in the form of rock placement, gabion rock bags, concrete mattresses, or half-shell protection.

2.1.3 Cable Crossings

No offshore cable crossings are currently anticipated based on the proposed construction schedule of this Project and publicly available information on other project schedules. In the unlikely event that such a crossing becomes necessary, that is, if another offshore cable is installed in the OECC prior to installation of the offshore export cables for the Project, the Proponent would coordinate closely with the other cable owner. If required, a cable crossing would likely include the following steps:

1. Perform a full desktop study of any as-built and post-construction survey data for the previously installed cable.
2. Upon identification of a suitable crossing point that is agreed to by the cable owner, perform a full survey and inspection of the proposed crossing location and the existing cable using an ROV, diver-held instrument, or similar.
3. Carefully remove any existing debris surrounding the crossing point.
4. Depending on the depth of the existing cable and cable owner’s requirements, there may be cable protection placed between the existing cable and NE Wind 2 Connector’s proposed cable. Alternately, if there is sufficient vertical distance between the existing cable and NE Wind 2 Connector’s proposed cable, there may be no manmade physical barrier between the cables.
5. During installation of an offshore export cable on approach to the crossing location, the cable will be graded out of burial with the cable installation tool. At this point, some form of cable protection (e.g., half-shell pipes or similar) will likely be applied to the cable when

it is surface-laid on the seabed across the cable crossing. Once NE Wind 2 Connector's cable has been laid over the existing cable and clears the crossing location, no further protection will be applied to the cable and cable burial methods will resume using the cable installation tool.

6. Soon after installing the cable at the crossing, the surface-laid section of NE Wind 2 Connector's cable would be protected with either additional concrete mattresses, controlled rock placement, or a similar physical barrier. Remedial post-lay burial of NE Wind 2 Connector's cable on either side of the crossing may be performed to lower the cable into the seabed to ensure its protection.
7. If necessary, additional cable protection will be carefully placed on and around the crossing.
8. A final as-built survey of the completed crossing will be undertaken to confirm the exact location of NE Wind 2 Connector's surface-laid cable and the cable protection laid over the crossing. As-built positions for the cable crossing will be shared with the existing cable's owner and provided to the NOAA for charting purposes.

Cable protection measures will be designed to protect the offshore export cables against mechanical impact from above and respect the vertical distance and physical barrier (if any) to the existing cable. The cable crossing will also be designed to minimize the risk of fouling or snagging of fishing equipment. The design of the crossing structure, as well as any survey at the crossing, will be defined, planned, executed, evaluated, and documented in agreement with the cable's owner.

2.1.4 Navigation and Vessel Traffic

The Proponent is not proposing any restrictions on navigation, fishing, or the placement of fixed or mobile fishing gear. However, construction and installation activities may temporarily affect navigation and/or fishing activities in the vicinity of construction and installation vessels. These impacts are temporary in nature and largely limited to the Project's construction and installation period. During cable installation, safety zones will be implemented around the cable installation as it proceeds and will not preclude activity along the entire route for the duration of construction. Safety zones will be determined by the USCG and are anticipated to be activity specific. The Proponent, through its fisheries liaison, will coordinate with fishermen while discussions with the USCG are underway.

During construction and installation, the Proponent will employ a Marine Coordinator to manage all construction vessel logistics and act as a liaison with the USCG, port authorities, state and local law enforcement, marine patrol, and port operators. The Marine Coordinator will keep informed of all planned vessel deployments and will manage the Project's marine logistics and vessel traffic coordination between the staging ports and offshore. The Proponent has also engaged with the Northeast Marine Pilots Association to coordinate construction and installation of vessel approaches to the Project region, as required by state and federal law, and to minimize impacts to commercial vessel traffic and navigation.

The Proponent is actively engaged with fisheries stakeholders and will continue building on engagement undertaken for the past several years. The Proponent has developed a Fisheries Communication Plan that will continue to be refined throughout permitting and development of the Project. As described in the Fisheries Communication Plan, the Proponent will employ both a Fisheries Liaison and Fisheries Representative to ensure effective communication and coordination between the Project and fishermen.

During cable preparation/installation, vessels will be used for route clearance (e.g., dredging sand waves, removing boulders, pre-construction surveys, and grapnel runs), cable-laying and burial, cable jointing, and installation of remedial protection, if required. Approximately four vessels will be used for route clearance, one or two vessels will be used for cable laying and burial, and one vessel will be used for the installation of remedial protection. Onboard Fisheries Liaisons (OFLs) will be on vessels whenever possible. OFLs will be able to identify local active fishing gear and will be able to relay positions to the survey captains/crews. In addition, at any given time during cable construction, a guard vessel may be used to monitor vessel activity around the construction area and a crew transfer vessel may be used to transport crew and supplies between shore and the installation vessels. The Proponent will utilize local fishing vessels and their crews as guard vessels whenever possible.

The Proponent will distribute Notices to Mariners to notify recreational and commercial vessels of their intended offshore operations. Local port communities and media will be notified and kept informed as the construction and installation process progresses. Upon request, the Proponent will provide portable digital media with electronic charts depicting locations of Project-related work to provide fishermen with accurate and precise information on work within the offshore Project area. The Project’s website will be updated regularly to provide information on the construction zone, scheduled activities, and specific Project information. The Proponent intends to deploy the WATERFRONT Application, which has the ability to provide real time streamlined marine updates and capabilities straight to mobile users and includes: offshore wind project information and newsletters, marine charts, marine hazard logs, and the capability to provide real-time feedback and/or gear interaction reports.

2.1.5 Summary of the Phases of Offshore Export Cable Installation

There are a number of components to the cable-laying process that will involve marine operations. They are categorized as Route Clearance, Cable Lay/Burial and jointing, and Remedial Protection:

- Route Clearance: This activity is required to prepare the cable alignment for the subsequent installation, and it involves dredging sand waves, relocating boulders, grapnel runs for debris, and survey work. The extent of the need for route clearance activities will be further refined as Project design advances and when a contractor is selected. An exclusion zone to be set by the USCG will be established around major cable installation vessels.

- Cable Laying: The cable laying itself is expected to proceed at a rate of approximately 230 to 650 feet (70 to 200 meters) per hour. During the cable-laying process, an exclusion zone to be defined by the USCG will be established around cable-laying vessels.

- Cable Jointing: Given the length of the OECC, each offshore export cable could require up to three joints (at least one of which may be located in state waters). Depending on the design of the cable and joint, the jointing process may take several days, in part because the jointing process must be performed during good weather.

- Remedial Protection: Any area of the cable that cannot be buried to adequate depth will be protected by the placement of rock, gabion rock bags, concrete mattresses, or halfshell protection. During the remedial protection process, an exclusion zone to be set by the USCG will be established around cable-laying vessels.

2.1.6 As-Built Survey

Post-construction offshore and nearshore geophysical surveys will be conducted to document as-built conditions. Geotechnical work would only be conducted in areas already cleared for archaeological resources. Any unanticipated discoveries of cultural resources will be reported and avoided during further on-site work, with review and recommendations by a qualified marine archaeologist and as agreed upon during the Section 106 consultation.

All surveys will use BMPs and industry-standard equipment that has been approved for use previously for offshore renewable energy work. Most of the surveys will entail use of geophysical systems 200 kHz or higher in frequency that do not require any special mitigation (e.g., multibeam echosounder, side scan sonar, and magnetometer) to avoid impacts to marine mammals. Standard operating conditions (e.g., vessel strike avoidance, separation distances from protected species, necessary notifications, marine trash, and debris prevention) for work will be observed.

For surveys using sonar equipment less than 200 kHz in frequency (sub-bottom profilers) and any bottom-disturbing investigations that have been previously cleared, in addition to the standard operating procedures identified above, the following mitigation measures will be employed to maintain a level of consistency with offshore project activities:

- Notifications when appropriate: national security and military organizations, USCG communication, tribal correspondence.

- Vessel strike avoidance measures, including speed restrictions in Dynamic Management Areas, Seasonal Management Areas, Slow Zones.

- Protected Species Observer (PSO) monitoring: PSOs will accompany survey vessels and follow standard monitoring protocols, actively observing an established exclusion zone around each vessel.

- Shut down and soft start procedures.

2.2 Transition from Offshore to Onshore

The proposed landfall site for the Project is within the approximately 2.5-acre paved parking lot located adjacent to Dowses Beach, a residents-only beach that is owned and managed by the Town of Barnstable. The landfall site is situated on a peninsula between East Bay and the Centerville Harbor away from nearby residences.

The offshore export cables will make landfall via horizontal directional drilling (HDD), a proven technology that will minimize Project-related impacts to the beach, intertidal zone, and nearshore areas, as well as ensuring that the cables remain sufficiently buried and permanently out of the human environment at the shoreline. HDD is a “trenchless” installation technique that will avoid disturbance to the shoreline by negating the need to open-excavate existing coastal wetland resource areas. The use of HDD as a construction technique will not preclude recreational use of the beach during installation, although portions of the parking lot may be partially occupied by staging and laydown during construction.

The average horizontal length of the three HDDs (one for each offshore export cable) will be approximately 2,250 feet. Although the HDD trajectory is still undergoing engineering refinement, it is estimated that the trajectory will result in the HDD passing at a depth of approximately 50 feet below the ground surface at MHW.

The transition from offshore to onshore export cables will be made in underground concrete transition joint bays (three total, one per offshore export cable) that will be installed within the paved parking lot at the landfall site. Each HDD process will begin with drilling a pilot hole originating at the onshore HDD staging area within the paved parking lot to an offshore HDD exit point approximately 0.5 miles from the shoreline. The hole diameter will be increased with progressively larger reaming passes until the required diameter is achieved. Once the borehole is completed, an HDPE conduit will be inserted for installation of the offshore export cable. To facilitate cable pull-in and expose the casing end, a shallow “pit” will be excavated at the offshore HDD exit point using techniques such as controlled flow excavation. The offshore export cable will be drawn from the vessel and pulled through the conduits toward land. The seaward end of each conduit will then be buried beneath the seafloor. Once each three-core offshore export cable is pulled into a transition bay, it will be spliced to three separate single-core onshore export cables. Each underground transition joint bay will be approximately 11 feet wide by 62 feet long and up to 8.5 feet tall, subject to further engineering refinement, and will be approximately two feet beneath the surface of the parking lot. Each underground concrete transition joint bay will be accessed via two manholes. The transition joint bay manhole covers will be the only visible components of Project infrastructure once construction is complete.

2.2.1 HDD and Other Landfall Site Construction Activity Sequencing

The selected contractor will be responsible for the specific construction means and methods and will be responsible to submit detailed site logistics, dewatering, drill fluid management, and spill response plans and procedures for the Proponent's approval. The anticipated construction sequence for installation of the export cables from offshore-to-onshore via HDD will consist of the following methods:

- **Surface Casing:** Approximately 100 feet of surface steel casing will be installed in the ground underneath the parking lot and will follow along the trajectory of the HDD to provide a stable, watertight corridor for downhole tooling and drilling fluid, and to ensure stability in the shallow section of the borehole immediately in front of the HDD rig. The surface casing will be removed upon completion of the HDD work.

- **Approach Pit:** Land-based HDD rigs are typically staged behind an approach pit that 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.

- **Pilot Hole:** A small pilot hole will be drilled from the approach pit to the pre-determined location offshore where the offshore cable will enter the HDPE conduit. The pilot hole will be drilled at an angle such that it arcs down beneath the nearshore coastal resources and extends to a depth of approximately 50 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 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 keep the hole stable and seal the bore's walls. The pilot bore's progress is continuously monitored via a steering system.

- **Surfacing of HDD Pilot Hole:** At the HDD exit point, a shallow "pit" will be excavated to expose the conduit end using techniques such as controlled flow excavation.

- **Reaming and HDPE Conduit Insertion:** After the pilot hole has been established, divers will replace the drilling head on the end of the drill shaft with a reaming head and swivel connection. The reaming head will enlarge the pilot hole through multiple passes with increasingly larger diameters, finishing at the diameter required for pull-back of the high density polyethylene (HDPE) conduit into the underground bore. HDPE pipe segments will be thermally fused and staged offshore and pulled to the HDD rig located onshore. The HDPE conduit will be pulled into the bore using equipment staged in the paved parking lot. Cuttings from the reaming/pull-back effort will be pumped from the HDD drill pit back to HDD settling tanks, then passed to a reclaim/cuttings separation tank. Any excess fluids remaining at the completion of HDD activities will be trucked off-site to an appropriate disposal site. Similarly, any waste drill cutting solids will be properly and legally disposed of as solid waste or landfill material.

- **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.

- **Cable Insertion and Transition:** Upon conclusion of the reaming and conduit pullback, the end of the conduit will remain exposed on the seafloor. The conduit will likely have a messenger wire passing through it with a cap on each end until the export cable is ready to be installed. The export cable will be drawn from the vessel offshore and pulled through the conduit to the onshore transition joint bays using equipment staged in the paved parking lot. The seaward end of the conduit will then be reburied beneath the seafloor.

- **Transition Joint Bays:** After each offshore export cable is pulled back through the conduit installed via HDD, it will be spliced with the onshore export cables in a proposed transition joint bay. Two manhole covers for each of the three transition joint bays will be the only visible components of Project infrastructure at the landfall site.

- **Site Restoration:** The work area will be restored to pre-construction grades and stabilized (re-paved) to match pre-construction conditions.

Throughout HDD operations, the Proponent will prioritize shore-side site safety, security, and traffic control, which will be coordinated with Town officials. As described in Section 2.2 and illustrated on Attachment P, HDD operations will be sequenced using a single HDD drill rig, and will maintain public access both to the paved parking lot at the landfall site as well as the jetty and fishing pier on the east end of the peninsula.

Assuming that a single HDD drill rig will be deployed, construction work at the landfall site is anticipated to require three (3) construction seasons as follows:

- Season 1: Construction of the northernmost and middle HDDs (HDD-North and HDD-Center as labeled on engineering plans in Attachment C3);

- Season 2: Construction of the southernmost HDD (HDD-South) and installation of the transition joint bays, as well as construction of duct bank in the paved parking lot and access road, including the culvert crossing; and

- Season 3: Cable pull-in for all three offshore export cables into HDD conduits, terminating in the transition joint bays (as shown on engineering plans provided in Attachment C8).

The preliminary estimated timeline for the three construction seasons at the landfall site is detailed in Table 2-1.

Table 2-1 Estimated Construction Timeline at the Landfall Site.

Construction Season	*Time (Weeks)*
Season 1	
HDD Mobilization & Set-Up	5
HDD North Installation	7
Restage Equipment from HDD-North to HDD-Center Site	4
HDD Center Installation	7
HDD Demobilization	2
Repave Parking Lot	1
Season 2	
HDD Mobilization & Set-Up	5
HDD South Installation	7
HDD Demobilization	2
Transition Joint Bay Installation	5
Causeway/Parking Lot Duct Bank Installation (temporary closure of access)	8
Repave Parking Lot	1
Season 3	
Offshore Export Cable Pull-Ins (3)	26
Repave Parking Lot	2

Basis/Assumptions:
1. All durations are approximate. Actual durations are predicated on contractor means and methods.
2. Single HDD Rig is deployed.
3. Six-day work week, 12 hours per day.
4. Five winter weather delays per season.

The Proponent will continue to optimize the construction schedule to prioritize access to the paved parking lot at the landfall site while balancing safety and the Project schedule. The Proponent is evaluating other sequencing options, including but not limited to, use of a second HDD drill rig to afford simultaneous drilling operations to shorten overall schedule. While this would reduce the number of construction seasons needed to complete work, it may reduce or eliminate public access to the parking lot during construction. Therefore, the Proponent will seek input from the Town and other stakeholders on the construction sequencing approach.

2.2.2 Management of Drilling Fluids

HDD is a well-known and commonly used installation technique for this type of project, and with proper construction management, the risk of drilling fluid release is very low. The Project will use a drilling fluid composed of bentonite clay or mud. This benign, naturally occurring material will pose no significant threat to water quality or ecological resources in the rare instance of seepage around the HDD operations. The HDD Contractor, once selected, will be required to develop a detailed contingency plan consistent with the general approach provided here.

The HDD installation method will produce a slurry of two co-mingled byproducts: drill cuttings and excess drill fluids (bentonite clay or mud). During drilling, this slurry will be collected from the reservoir pit and will be processed through a recycling system where drill cuttings (solids) will be separated from reusable drill fluids. Once the drilling fluid cannot be recycled any further, the non-reusable material consisting of drill cuttings and excess drill fluids will be trucked to an appropriate disposal site. This material is typically classified as clean fill, and it is anticipated that will be the case for this Project. The material may have an elevated water content, which could require transport to occur in sealed trucks. Typical disposal sites for this type of material include gravel pits or land farmed as upland field or pasture.

Effective construction management contingency plan procedures during HDD operations will minimize construction period disturbances for nearby land uses and will also minimize the already remote potential for seafloor disturbance through drilling fluid seepage (i.e., frac-out). Drilling fluid seepage can be caused by pressurization of the drill hole beyond the containment capacity of the overburden soil material. Providing adequate depth of cover for the HDD installation can substantially reduce this potential impact and the Project will use a drilling fluid composed of bentonite clay or mud that will pose little to no threat to water quality or ecological resources should seepage occur. Nonetheless, the Proponent will adhere to operational standards to minimize the chances of drilling fluid seepage.

The trajectory of the HDD installation has been a primary consideration for contingency planning and prevention of drilling fluid seepage. The HDD drill hole will descend from the HDD pit location to a depth of approximately 50 feet below the seafloor before curving toward the exit hole on the seafloor where installation will transition to the end of the HDD alignment. The geometry of the drill hole profile can also affect the potential for drilling fluid seepage. In a profile that makes compound or tight-radii turns, down-hole pressures can build, thus increasing the potential for drilling fluid seepage. The proposed drilling profile, with its smooth and gradual vertical curves, will avoid this potential effect.

The drilling crew will be responsible for executing the HDD operation, including actions for detecting and controlling drilling fluid seepage. The drilling contractor will also be required to have proper monitoring and response action plans in place. The process and actions of the drilling crew will be closely supervised. HDD is a technically advanced process, and the Proponent will ensure that the drill crews have the proper training and oversight to minimize the potential for drilling fluid seepage and to respond to seepage promptly and competently should it occur.

Detecting a potential seep prior to it actually occurring is dependent upon the skill and experience of the drilling crew. For this reason, the Project will utilize a specially assigned drill crew. The drilling crew will monitor certain aspects of the drilling operation to detect fluid loss, including but not necessarily limited to the following:

- Drilling pit returns, where a sudden loss of drilling fluid would indicate that fluid may be lost to geological materials or a release at the seafloor surface;
- Down-hole pressure, which will be compared to the calculated confining pressure during pilot hole drilling;
- Returning drilling fluid volumes and rates, which will be compared to the volumes and rates of drilling fluid pumped down-hole; and
- Pump pressures and flow rates.

The drill crew will be responsible for immediately notifying the Health, Safety, and Environmental (HSE) Manager and Site Manager if seepage occurs. The HSE Manager and Site Management Team will immediately assess the situation and estimate the quantity of drilling fluid lost and the square footage of area potentially affected. If drilling fluid seepage is detected, the drilling crew will take immediate corrective action and implement the project mitigation plan as appropriate. The primary factor causing seepage would be pressure from the drilling fluid pumps, so the most direct corrective action will be to stop the rig pumps. By stopping the pumps, pressure in the drill hole will quickly dissipate, and with no pressure in the hole seepage will cease. Pumps will be stopped as soon as seepage is suspected or detected. In the event of seepage, the Proponent will notify the client and appropriate regulatory agencies.

Corrective actions for conditioning the drill hole should seepage occur differ with specific issues encountered during a particular HDD operation. Common corrective actions include, but are not limited to:

- Transitioning the down-hole tooling in a drill hole closer to the entry or exit location to reestablish drilling fluid returns, and “swabbing” out the drill hole;
- Modifying drilling pressures and/or pumping rates to account for an unanticipated or changing soil formation;
- Pumping drilling fluid admixtures into the drill hole at the location of seepage to solidify or gel the soil; and
- Suspending drilling operations for a period of time to allow the drill hole to set up.

2.2.3 Construction Schedule Considerations

HDD activities at the landfall site will be performed during the non-summer months, or as otherwise permitted by the Town and relevant agencies. To minimize any disturbance to area residents or visitors, the Proponent plans to maintain beach access as much as possible, while keeping the safety of both construction crews and residents the top priority. The Proponent expects to maintain public access to the parking lot throughout HDD operations, and pedestrian access to the existing pier at the east end of the parking lot will also be maintained as shown in Attachment P. HDD construction layouts are shown in Attachment C3.

As discussed in Section 7.2, the NE Wind 2 Connector is located within rare species habitat for the Piping Plover and Least Tern. Based upon MESA consultation completed for the Vineyard Wind Connector 1 and NE Wind 1 Connector, the Proponent anticipates the need to repeat similar protective measures for the Piping Plover (and this time also the Least Tern) at the NE Wind 2 Connector landfall site. Specifically, NHESP's MESA Determinations for the NE Wind 1 Connector (NHESP File No.: 17-37398; 4/1/2022) and the Vineyard Wind Connector 1 (NHESP File No.: 17-37398; 5/14/2019) stated that, to avoid impacts to Piping Plovers and their habitats during the nesting season, all work and activities associated with the Project shall follow the protection measures and procedures outlined in the Draft Piping Plover Protection Plan, including, that all work associated with HDD cable installation shall not commence during April 1 — August 31, and that HDD work initiated in advance of April 1 may continue past April 1, provided the Piping Plover Protection Plan is fully implemented. Additional measures for Least Tern will be implemented in consultation with NHESP, as appropriate. The Proponent has assembled a draft Piping Plover and Least Tern Protection Plan, included as Attachment I, to avoid impacts to these species. No construction activities, unless otherwise authorized by NHESP, will be performed at the landfall site after May 1 and extending through the end of the nesting season (August 31).

2.3 Onshore Cable Installation

Installation of the onshore export cables will occur in two stages. The first stage will consist of installing the concrete splice vaults and duct bank that will house the onshore export cables and associated infrastructure. The second stage will consist of pulling/installing the cables through the duct bank conduits and completing splices and terminations.

Construction of the onshore export cable duct bank system will be performed via open trenching with equipment such as excavators and backhoes. The open trench will be supported by temporary trench boxes or other shoring as appropriate. Proposed trenching will occur within existing roadway layouts or existing utility right-of-way (ROW). All work will be performed in accordance with local, state, and federal safety standards, as well as any Project-specific local requirements.

All three circuits will be installed in a single, common underground concrete duct bank along the entire length of the onshore export cable route, which will include separate conduit for each onshore export cable and fiber optic cable. The conduit within the duct bank will be constructed of PVC or HDPE and encased in concrete. Spare conduits and grounding will also be installed within the duct bank. Final layout and configuration of the conduits within the duct bank will vary somewhat along the cable route, and the final layout and configuration is subject to final design and survey, including survey of existing utilities.

The Proponent anticipates that the three-circuit duct bank will be arranged three conduits wide by four conduits deep for the majority of the onshore export cable route. The duct bank dimensions will be approximately 8 feet wide and 4.5 feet tall, set at a depth of 8 feet or, in discrete locations where the duct bank crosses under utilities or other obstructions, it will be approximately 11.5 feet wide and 4.5 feet tall, set at a depth of 11.5 feet. Fluidized thermal backfill will likely be placed over the duct bank for both scenarios. The duct bank will have a typical (minimum) depth of cover of 3.5 feet; however, if required due to existing conditions (e.g., at certain utility crossings), the depth of cover will be 7 feet. When crossing the box culvert in the paved causeway leading to the landfall site, the circuits will be arranged in a twelve conduit wide by one conduit deep configuration.

Staggered splice vaults will be installed every 1,500 to 3,000 feet or more along the duct bank alignment. Each splice vault will be approximately 6 feet wide by 26 feet long and up to 8 feet deep (interior dimensions) and will be fitted with two manholes, subject to further engineering. Splice vaults are typically two-piece (top and bottom) pre-formed concrete chambers with penetrations at both ends to connect with the duct bank conduits and admit the cables. After the splice vaults and duct bank are installed and backfilled, the cables will be pulled via underground splice vault manholes.

Installation of the in-road underground duct bank and onshore export cables within public roadway layouts will be performed during the off-season, or as otherwise permitted by the Town and/or MassDOT, to minimize traffic disruption. Upon Project completion, the affected roads will be restored in accordance with the DPU's "Standards to be Employed by Public Utility Operators When Restoring and of the Streets, Lanes and Highways in Municipalities" (D.T.E. 98-22) ("Repaving Standards") and applicable municipal standards. Off-road areas will be restored to pre-construction conditions or better, in compliance with applicable state and local standards, permit requirements, and/or landowner agreements.

During construction, traffic will be managed in accordance with approved Traffic Management Plans (TMPs). Draft TMPs for the onshore export cable route are included in Attachment C1. The Proponent will work closely with the Town of Barnstable and the MassDOT, where applicable, on TMPs for construction, including submittal of the TMPs for review and approval by appropriate authorities (typically DPW/Town Engineer and Police). In addition, the Proponent will work with community members, including local business owners, to minimize construction period traffic related impacts.

2.3.1 Duct Bank Sequence and Timing

The onshore construction sequence includes survey/marking underground utilities, installation of erosion controls and traffic management signage/controls, pavement marking, saw cutting of pavement, pavement excavation/removal, trench excavation and removal of excess excavate, trench shoring, placement of ducts and spacers, placement of concrete around the ducts, backfill, temporary repaving, and cleanup. Open-trench work areas will be kept to a minimum, and any open trench will be covered with heavy steel plates at the end of each day.

The typical duct bank construction sequence will include the following steps:

- Survey and mark splice vault and duct bank locations.
- Set up erosion and siltation controls, including silt sacks or similar protection for existing storm drains.
- Set up traffic management measures in coordination with local police and public works officials.
- Conduit will be delivered on flatbed trucks, stockpiled in a local staging area or within the roadway layout if space is available, and advanced ahead of the trench.
- Trench excavation and removal of excess material for recycling or disposal in accordance with state regulations.
- The PVC or HDPE conduits will be fused, placed in the excavation, and secured with spacers to establish the duct bank array.
- After the duct bank conduit array is secure, concrete trucks will backfill the array in place.
- Trench areas that are not backfilled by day's end will be secured with steel plates set in place to cover and protect the trench overnight. Openings in the shoulder will be protected and barricaded to ensure traffic and pedestrian safety.
- While new trench excavation advances, backfill will be placed above new concrete-encased sections from the prior day's work. Backfill will be brought to required grade, and the trench will be secured with steel plates again overnight.
- Subject to local permit conditions, temporary pavement will be placed at completed trench sections as soon as there is enough work to occupy a paving crew for a full day's work.
- Final roadway restoration will be performed in accordance with the DPU's "Repaving Standards" and municipal standards. Off-road areas will be restored to pre-construction conditions or better, in compliance with applicable state and local standards, permit requirements, and/or landowner agreements.
- The work area will be cleaned up and erosion controls will be removed.

All work associated with roadway restoration will conform to applicable MassDOT and Town specifications for new road construction. The construction crews involved in trench excavation are expected to progress at an average rate of approximately 80 to 200 feet.

This cycle of trench work will proceed up to any given vault (vaults will be installed prior to duct bank trench work, staggered to minimize roadway impacts). For vault installations, a separate, but similar, sequence or work will be performed by a separate crew, while trench work advances:

- Vault locations will be excavated to required grade, and a base of leveling stone will be set in place.
- The vault (pre-delivered sections) waiting nearby will be set in place by a crane and fully assembled, including required manway risers.
- Conduit connections to the vault will then be made from trench ducts in place on each side of the vault.
- When all exterior connections are complete, the vault area will be fully backfilled and compacted to grade.
- Temporary pavement will be placed when vault work is complete, as described under the duct bank construction sequence above.
- If dewatering is required for vault installation, then procedures as described in Section 2.3.2 will be employed.

2.3.2 Dewatering

Prior to the commencement of construction activities, the Contractor shall submit for review and approval a detailed dewatering and drainage design plan. The plan shall be designed and stamped by a Professional Engineer with a current license in the Commonwealth of Massachusetts and at least 10 years of dewatering design experience for similar scopes of work.

Dewatering of the duct bank trench may be necessary in areas where groundwater is encountered, where soils are saturated, or at times when the trench is affected by stormwater. Dewatering will likely be necessary in areas where the onshore export cable route is adjacent to wetlands, streams, or other bodies of water. Standard erosion control practices will be employed as necessary to minimize erosion during trenching operations and construction activities in general. Areas where groundwater may be encountered will be identified as part of the pre-construction environmental investigation of soils.

Trench dewatering is the process of removing excess runoff and groundwater that has accumulated and is occupying the trench line to allow for the installation of the duct bank and dry backfilling of the trench. Trench dewatering management will be accomplished using a combination of BMPs that will be tailored to the site-specific conditions for each dewatering operation. Water found in all excavations must be assessed for obvious signs of contamination (e.g., discoloration, odor, signs of oil) prior to discharge. Water exhibiting signs of contamination cannot be pumped to the ground, catch basin, storm drains, sewer system, or surface water; such water will typically need to be pumped by a waste management contractor for proper off-site disposal. If the assessment shows no evidence of contamination, BMPs must be followed to avoid pumping sediment-laden water from the excavation.

If high groundwater conditions are encountered, then groundwater will be pumped from a series of sumps within the trench or vault excavation. Each sump will have a submersible pump surrounded by clean crushed stone and will discharge groundwater to filter bags for further filtration prior to release. Water released from the filter bags will flow through a series of floc-log check dams to an appropriate nearby Town catch basin or drainage way.

2.3.3 Onshore Cable Installation and Testing

Prior to cable installation, each conduit within the installed duct bank will be tested and cleaned by pulling a mandrel (a close-fitting cylinder designed to conform to a conduit's shape and size) and swab through each of the conduits. 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" splice vault and a cable puller will be set up at the "pull-out" splice vault. Following the initial pulling of the mandrel and pulling line through each conduit, a hydraulic cable-pulling winch and tensioner will be used to individually pull cable from the pull-in to the pull-out splice vaults via the manholes. This process will be repeated until all cables have been installed.

Once adjacent cable sections are installed, they will be spliced together inside the vaults. Splices will be performed for straight joints, whereby two cable ends will be joined and then encapsulated with a heat-shrinking material to protect the splice. Cable sheath grounding will be either single- or cross-bonded. The splicing operation requires a splicing van and a generator. The splicing van contains all equipment and materials needed to make a complete splice. An air conditioning unit may be used at times to control the moisture content in the manhole. A portable generator will provide the electrical power for the splicing van and air conditioning unit, and 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 substation. At the completion of successful testing, the line will be energized.

During Project operation, the Proponent will conduct routine maintenance per a preventative maintenance schedule based on the cable manufacturer's recommended maintenance schedules and best industry management practice. This will include visual inspection of the splice vault and associated cabling, splice joints, grounding cable connections, and link boxes. The fiber optic splice boxes will also be visually inspected for signs of moisture and corrosion. Inspection of and access to manholes within roadways will be scheduled with Town departments for permission and implementation of any required traffic management mitigation measures. Entering a manhole will be in full compliance with the Project's safety management system and work permit practices.

2.3.4 Restoration

Where the trench location requires cutting of pavement, pavement restoration will be carried out in compliance with Section 9.0 of the DPU Street Restoration Standards (D.T.E. 98-22). Generally, all pavement excavations will be repaired with same-day permanent patches unless specifically agreed to by the Town. Typically, temporary patches are only permitted for work between December 1 and March 31, when bituminous concrete is not available, or if the excavation must be reopened within five working days (e.g., to continue work after a weekend). In general, the length of new excavation completed each day will equal the length of duct bank installed, backfilled, and compacted.

If, at the end of any given day, construction is not complete along an active section, all open trenches or excavations will be covered with steel plates and marked with drums and yellow flashers until pavement patching is accomplished. During active construction any openings in the shoulder will be properly protected and barricaded to ensure traffic and pedestrian safety.

The final backfill in roadway areas will be town- and/or state-required road sub-base graded material upon which base course and finish course pavements are placed. All affected public roadways will be repaved to as-new condition after construction is complete. In landscaped areas, the final backfill above the fluidized thermal backfill (FTB) will typically be a sandy loam which can be seeded. The shoulder will be graded to its pre-existing contours, with slight mounding to allow for settlement. Any disturbed vegetated areas will be loamed and seeded to match pre-existing vegetation. Any lawn-edge that has been affected by construction activities will be hand-dressed, seeded, and mulched.

Depending on final duct bank design, some vegetation clearing as well as selective tree removal and/or trimming may be required along the onshore export cable route. Vegetation clearing, tree trimming, and selective tree removal will be minimized to the extent feasible. Any disturbed vegetated areas will be loamed and seeded to match pre-existing vegetation and the vegetation would be allowed to grow back. Any vegetation removal would be completed in accordance with all applicable state and local laws and regulations.

2.3.5 Tree Clearing

The exact alignment of the onshore duct bank has not yet been developed but it is likely that installation along the identified public ways will require the removal of some public shade trees where construction along road shoulders is required. As per M.G.L. Chapter 87 (MGL c. 87), public shade trees are defined as any tree located within a public way or on the boundaries thereof. Public shade trees are subject to protection under MGL c. 87, which is administered by locally-appointed Tree Wardens in each municipality when located within public roadways or by

MassDOT when located within state-controlled roadways. Each municipality's Tree Warden is responsible for the care, control, protection, and maintenance of all public shade trees (except those within a state highway) and enforces all provisions of law for the preservation of such trees. M.G.L. c. 87 further specifies that public shade trees shall not be cut, trimmed, or removed by any person other than the tree warden or his deputy except upon a permit in writing from said tree warden issued following a properly-noticed public hearing before the tree warden.

Within the Town of Barnstable, public shade trees are further protected under Chapters 180 (Scenic Roads) and 221 (Trees) of the municipal bylaw, which require that a valid work permit be obtained from the Barnstable tree warden prior to the trimming or removal of any shade trees located within the boundaries of public roadways. Chapter 180 addresses tree removals within the layouts of designated scenic roads and requires approval of the tree warden and municipal planning board at a properly noticed public hearing for removal of more than three shade trees per 200 feet of right-of-way. Chapter 221 reaffirms the requirement for a public hearing for public shade tree removals and further specifies pruning and trimming standards as well as requirements for tree replacements and maintenance. These standards include a provision that grants the tree warden the authority to either assess a replacement fee based on the monetary value of the trees being removed or require the applicant to replant a sufficient number of trees of equivalent value to those being removed.

The Proponent has completed an inventory of public shade trees along the Preferred Route and Noticed Alternative Route, which includes the precise locations of each shade tree. As design of the onshore duct bank advances, it will be possible to identify all public shade trees that will be impacted by the Project. Prior to construction, the Proponent will meet with the Town of Barnstable Tree Warden and/or MassDOT to confirm the location and condition of trees along the onshore duct bank route relative to construction work areas. As required, the Proponent will obtain permits from the Tree Warden and MassDOT and work with both to identify appropriate mitigation. Mitigation measures may include, but are not limited to, tree protection, temporary fencing, and excavation by means other than mechanical excavation techniques. If impacts to trees and vegetation along the duct bank route cannot be avoided, appropriate mitigation measures will be identified as needed. Land and tree clearing will be minimized to the extent practicable.

The timing of clearing ~~of~~ trees (greater than 3 inches diameter at breast height) may be affected by the U.S. Fish and Wildlife Service rule regarding protections for the northern long-eared bat. The Proponent will comply with federal protections for the species and is consulting with the U.S. Fish and Wildlife Service so Project activities avoid any "take". Time-of-year restrictions are discussed in Section 12.7.2.

The Proponent will work with the tree removal contractor to ensure that any suitable wood will be recycled for production of lumber, wood pellets, or for use as wood chips and mulch. Pine trees will be limbed and sold for milling. Hardwood trees, depending on species, will be limbed and sold for milling. Hardwoods that cannot be sold for milling will be corded for firewood. Wood that cannot be sent to a mill or cut into cordwood will be chipped. Chipped wood may be sent to wood-fired power plants as a fuel or may be otherwise used as ground cover (mulch) or for potential use onsite for erosion control.

2.4 Substation

The Project requires a new onshore substation to step up power from 275-kV to 345-kV for interconnection with the regional power grid at the existing 345-kV West Barnstable Substation. The Project's new onshore substation is proposed west of Oak Street near the Oak Street Bridge overpass of Route 6, approximately 0.25 miles west of the interconnection location at the existing Eversource West Barnstable Substation.

The Proponent will coordinate with the Town of Barnstable, the Barnstable Fire District, and the DCR to ensure the construction of the new onshore substation and improvements to the private way (including any construction of an underground duct bank within the private way) do not adversely interfere with access to their respective parcels.

Construction of the substation will include the following steps over an approximately 26-month construction period:

- Widen/resurface the substation access road;
- Clear trees (see Section 12.3.7);
- Install perimeter construction fencing and security gate, install initial erosion controls;
- Prepare the site for construction, which entails clearing and grading the site (installing additional erosion controls where needed) and excavating required drainage swales and basins required for site drainage;
- Install the Route 6 trenchless crossing;
- Excavate areas required for major component foundations and full volume containment sumps;
- Form and pour major foundations/containment sumps;
- Excavate areas required for spread footings, form, and pour footings;
- Deliver and place major equipment (e.g., transformers, reactors) using appropriate heavy load vehicles and equipment (transformers are filled with dielectric fluid later in the construction sequence);
- Trench areas for underground cabling, install duct bank, and backfill;
- Install ground grid and place crushed stone in yard area;
- Construct Gas Insulated Switchgear (GIS) buildings;

- Deliver and place GIS and other equipment in the GIS buildings, complete buswork, begin cabling, including bringing 275-kV transmission into the site and 345-kV cabling to the West Barnstable Substation;
- Complete cabling, control wiring, and installation of protection systems;
- Test and commission;
- Install permanent perimeter security fencing and screening;
- Restore site; and
- Remove construction stage erosion controls.

The Contractor will identify laydown/staging areas necessary to complete construction. A temporary parking area has been incorporated into the design along the western limits of the substation. This area will be restored with loam and seed prior to installation of permanent perimeter fencing. Staging and laydown areas shall be located within the limits of the final perimeter fencing. No staging shall be located along Oak Street or the private access road. It is anticipated that the existing residence will be utilized as a Project office until it needs to be razed to complete site construction. Existing cleared areas around the existing residence may be utilized for staging, if the Contractor chooses to do so. These specific locations, and any others that have not yet been identified, will not be located within 100 feet of any wetland resource areas, within 100 feet of known private or community potable wells, within 200 feet of perennial waterways, or within the Zone I area of any public water supply wells along the route.

Prior to construction, the Project will obtain coverage under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Stormwater Discharges from Construction Activities from the U.S. Environmental Protection Agency (EPA).

Handling and management of trees removed at the substation site will mirror the management described in Section 12.3.7.

2.5 Construction Hours and Schedule

The Proponent anticipates that construction of the Project including the duct bank and onshore substation will begin in 2025 and, under the current schedule, commercial operations are expected to commence in 2028. More details regarding construction hours and time-of-year restrictions are provided below.

2.5.1 Construction Hours

For the installation of the onshore duct bank and cables, construction is anticipated to occur during typical work hours (7:00 AM to 6:00 PM) on Monday through Friday, though in specific instances at some locations, or at the request of the Barnstable DPW or MassDOT, the Proponent may seek municipal approval to work at night or on weekends. Nighttime work will be minimized and performed only on an as-needed basis, such as when crossing a busy road, and will be coordinated with the Town.

For work at the landfall site, the Proponent's proposed HDD construction schedule is from 7:00 AM to 7:00 PM on Monday through Saturday, though during cable pull-in the contractor will likely need to work around the clock since once that process is started it cannot be stopped. Should the Proponent need to extend construction work beyond those hours and/or days (i.e., on Sunday), with the exception of emergency circumstances on a given day that necessitate extended hours, the Proponent will seek prior permission from the Town of Barnstable.

With respect to work at the new onshore substation site, construction is anticipated to occur during typical construction work hours (7:00 AM to 7:00 PM) on Monday through Saturday.

2.5.2 Time-of-Year Restrictions

The Proponent will be adhering to the general summer limitations on construction activities on Cape Cod, which the Proponent has reflected in the Project schedule for construction at the landfall site and along the onshore export cable route, where the route follows public roadway layouts. Activities at the landfall site, where the cables will transition from offshore-to-onshore, are not expected to be performed during the summer unless authorized by the Town. Activities along the onshore export cable route (particularly where the route follows public roadway layouts) will also likely be subject to significant construction limitations from Memorial Day through Labor Day unless authorized by the Town, but could extend through June 15 subject to consent from the Town. The Proponent will consult with the Town of Barnstable and MassDOT regarding the construction schedule.

The NE Wind 2 Connector includes the offshore components located within state waters. The Proponent has consulted with NHESP to discuss survey and other technical evaluations relating to listed species in state waters and has included that information in both state and federal permit filings. For context, portions of the Commonwealth Wind project located in federal waters include areas that potentially serve as habitat for species listed in the federal Endangered Species Act. Potential impacts on those species will be reviewed through the BOEM federal permitting process. It is anticipated that state agencies and other interested parties will participate in this federal review, either directly or through the CZM consistency process. The Proponent will continue to communicate with NHESP throughout the permit review process.

When considering the timing of export cable installation and potential TOY restrictions, there are three critical schedule considerations for the Project:

1. Cable-laying vessels can only safely operate in certain wave conditions. To ensure the safety of the cable during installation and welfare of the vessel and its crew, NE Wind 2 Connector will only start to conduct cable-laying if the upcoming weather forecasts show high probability of obtaining the required weather conditions during the installation

activity. An extensive analysis of historic weather conditions indicates it is statistically likely to obtain the safest weather conditions for cable-laying during the period of approximately May to October. Scheduling work within safe weather conditions where possible is a target for the Project because, if weather conditions exceed the limiting operational conditions for the cable and safe working limits for the vessel, then the crew may have to undertake a controlled abandonment of the cable, whereby the cable will be cut and placed on the seabed so the vessel can seek refuge. In this instance, the cable would then have to be spliced. Such a repair joint would take approximately six days to complete, which would then seriously compromise the progress of the operation since it would require a favorable weather window both for the repair joint and the remaining cable-laying activity.

2. Sequencing the Project to begin to deliver powerby the expected operational date requires offshore export cable installation and WTG commissioning (which is partially dependent on having power from the offshore export cable(s). Project schedule is described in greater detail in Section 1.5.

3. The full installation process for each of the three offshore export cable nearshore sections will take a significant amount of time (several months), and this timing must account for delays due to adverse weather. The following export cable installation work cannot start until the vast majority of works are complete for the preceding cable, and each of the cable installation phases cannot start unless there is high confidence that the works will be complete within any proposed TOY restrictions, including contingency time. As such, any TOY restrictions are highly likely to force the works to take place over additional seasons and/or years.

In summary, in addition to environmental considerations, TOY restrictions, if any, for export cable installation should take into consideration the safe operational conditions for cable-laying vessels, the need to provide power on schedule, and minimizing the time required to install the cables.

The Proponent will continue to consult with federal and state agencies regarding relevant TOY restrictions for all aspects of Project construction. The Proponent is proposing the following TOY restrictions at this time:

- HDD activities at the landfall site will begin in advance of April 1 and will be complete by May 1, to avoid and minimize noise impacts to Piping Plover and Least Tern during the breeding season (see Attachment I for a draft Piping Plover and Least Tern Protection Plan). No construction activities, unless otherwise authorized by NHESP, will be performed at the landfall site after May 1 and extending through the end of the nesting season (August 31).

In addition, the Proponent will comply with federal protections for the northern long-eared bat and is consulting with the U.S. Fish and Wildlife Service so Project activities avoid any “take”.

3.0 CONSTRUCTION IMPACTS AND MITIGATION

3.1 Traffic Management

The Proponent will work with the local police and emergency service departments prior to commencement of any work and will formulate a comprehensive traffic plan for each phase of the upland works.

During construction, traffic will be managed in accordance with Traffic Management Plans (TMPs) finalized during permitting. The Proponent will work closely with the Town of Barnstable on the TMP for construction including submittal of the TMPs for review and approval by appropriate municipal authorities (typically DPW/Town Engineer and Police). A TMP will also be prepared and submitted to MassDOT for work on roadways under MassDOT jurisdiction. The TMP will be a living document such that any unanticipated change in construction location, timing, or method previously identified will result in revision of the TMP and approval by the appropriate authorities before any construction changes are implemented.

The Proponent will work closely with the Barnstable DPW and MassDOT District 5 traffic engineers to develop a series of temporary TMPs that include the following mitigation measures:

- Use of Advanced Warning Signs and Changeable Message Boards to alert motorists of “Road Work Ahead” and Alternate Routes.
- Use of Construction Signage to alert motorists of construction activities in the “Work Zone.”
- Use of One Lane Road (Bi-directional) traffic control with police details in the “Work Zone.”
- Use of Detour plans around the “Work Zone” for short-duration road closures during daylight construction activities.
- Use of Traffic Control Devices such as traffic cones, reflectorized drums, and barricades for delineation of travel ways and walkways.
- Use of defined hours of operation.
- Reasonable limits on the length of trench the contractor may have open at any given time.
- Use of Road Plates to cover trench work in progress to restore two-way traffic during nonworking hours or to allow access to local streets and driveways.
- Use of Designated Staging and Laydown Areas to minimize impacts to pedestrian and vehicular traffic.

- Use of public communications media to inform the public of current and future construction activities and how they may affect local traffic conditions.

- Use of uniformed police officers and/or certified flaggers.

Traffic management will always be coordinated with Town officials. The traffic mitigation measures will be in accordance with the *Manual of Uniform Traffic Control Devices* (2009 Edition with Revision Numbers 1, 2, and 3, dated July 2022) and the MassDOT *Work Zone Safety Guidelines*. These manuals and guidance documents provide detailed national and state standards for the application of traffic control devices for temporary roadway modifications that the Proponent will implement in the Project construction zone, including necessary lane widths, lane tapers, size, type and color of warning signs, and similar provisions that ensure safe travel through the construction zone.

In addition, the Proponent will work with community members, including local business owners and sensitive receptors to minimize construction period traffic-related impacts. The Proponent will utilize various methods of public outreach prior to and during the construction phase to keep residents, business owners, and officials updated on the Project construction schedules, vehicular access to abutting properties, lane closures, detours, and other traffic management information, local parking availability, emergency vehicle access, construction crew movement and parking, laydown areas, staging, equipment delivery, nighttime or weekend construction, and road repaving. Because the Project will maintain continuous access to businesses, the Proponent does not expect significant impacts on businesses. Furthermore, any in-road construction will occur outside the busy summer season, or as otherwise permitted by the Town or relevant agency. The Proponent believes the most effective approach to mitigation will be to communicate directly with each business that might be affected by the Project to determine if there are specific timing concerns such as hours of operation, deliveries, high-traffic periods, or other constraints. The Proponent will work with businesses located along the route to minimize any impacts to these businesses.

In terms of parking accommodations for construction workers, for similar types of construction past practice has been to utilize off-site commercial locations such as large existing parking lots or contractors' yards for satellite parking. Employees are then "shuttled" to the project site in Proponent-supplied passenger vans. The Proponent will coordinate any required parking with the local police and town departments, as necessary. There are several areas near the onshore cable and grid interconnection routes where off-site parking could potentially be utilized, and employees shuttled to the work sites. Installation of the in-road underground duct bank and onshore export cables within public roadway layouts will be performed during the off-season, or as otherwise permitted by the Town or relevant agency, to minimize traffic disruption.

3.2 Soil Management

The proposed trench will be excavated using a "clean trench" technique, where soil will be loaded directly into a dump truck for temporary off-site stockpiling or hauling to an off-site facility for recycling, re-use, or disposal should it not be required for backfilling the trench. The soil will not be stockpiled along the edge of the roadway, thus reducing the size of the required work area, and reducing the potential for sedimentation and nuisance dust.

The Proponent's objective is to minimize the potential for erosion and sedimentation impacts during construction, and to restore any disturbed areas. The Proponent will meet these objectives by implementing the erosion and sediment control measures described in Section 12.5.2.

When considering the onshore export cable routes from the landfall site to the proposed onshore substation site, no Tier-Classified Chapter 21E or MassDEP Tier Classified oil and/or hazardous material disposal sites or AUL sites were identified within 300 feet of any Project elements. If there are suspected contaminated soil, contaminated groundwater, or other regulated materials encountered along the route, soils/groundwater will be managed under the Utility-Related Abatement Measure (URAM) provisions of the MCP. The Proponent will contract with a third-party Licensed Site Professional (LSP) as necessitated by conditions encountered along the route, consistent with the requirements of the MCP at 310 CMR 40.0460 et seq.

The selected contractor will be required to identify suitable locations for any temporary storage of stockpiled soil, if required. All soil stockpiles will be controlled and maintained using appropriate BMPs. Any excess soils which cannot be reused will be taken to a licensed receiving facility in accordance with all applicate regulatory requirements.

3.3 Construction-Period Air Quality

During construction of the Project, there will be air emissions from vessels, construction equipment, aircraft (e.g., helicopters), generators, and vehicles, as well as some fugitive emissions. Construction emissions will occur temporarily in portions of the offshore wind energy generation facility, OECC, and onshore facilities under active construction and during vessel transits to and from ports; these construction emissions will be quickly offset by reductions in emissions from the electric grid during the operational period.

3.3.1 Offshore Construction

The Project will minimize sulfur dioxide (SO_2) and PM emissions through the use of clean, low-sulfur fuels in compliance with the air pollution control requirements. Annex VI of the International Maritime Organization's International Convention for the Prevention of Pollution from Ships (MARPOL) treaty is the main international treaty that addresses air pollution from marine vessels. In the U.S., MARPOL Annex VI is implemented through the *Act to Prevent Pollution from Ships* (33 U.S.C. §§ 1901-1905) and *Control of NO_x, SO_x, and PM Emissions from Marine Engines and Vessels Subject to the MARPOL Protocol* (40 CFR Part 1043). Under MARPOL Annex

VI and EPA's corresponding regulations, any foreign and domestic vessel used during the Project will comply with the fuel oil sulfur content limit of 1,000 parts per million (ppm). Applicable non-road engines (e.g., generators used offshore) will comply with the non-road diesel fuel sulfur limit of 15 ppm under *Regulations of Fuels, Fuel Additives, and Regulated Blendstocks* (40 CFR Part 1090).

The engines and generators used during construction of the Project will be certified by the manufacturer to meet or emit less than the applicable non-road and marine engine emission standards for NOx, CO, VOCs (as hydrocarbons), and PM, which include:

- **MARPOL Annex VI:** Annex VI of the MARPOL treaty establishes global limits on the sulfur content of fuel oil used aboard any foreign or domestic vessel and NOx emissions limits from foreign vessels built after 2000 with engine sizes greater than 130 Kilowatts (kW) (~174 horsepower).

- **40 CFR Part 1039, Control of Emissions from New And In-Use Nonroad Compression-Ignition Engines:** 40 CFR § 1039 sets emission standards and certification requirements for non-road diesel engines.

- **40 CFR Part 1042, Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels:** 40 CFR § 1042 sets emission standards and certification requirements for domestic marine diesel engines.

EPA's emission standards for marine and non-road compression-ignition internal combustion engines contained in the above regulations are structured as a tiered progression, with each tier of emission standards becoming increasingly stringent. These standards are primarily a function of the size, engine displacement, and age of the diesel engine. Each tier phased in over several years (by categories of engine size).

In addition to the regulations above, the Project's emissions on the Outer Continental Shelf (OCS) (i.e., federal waters) are regulated through the EPA's OCS Air Permit process under the Outer Continental Shelf Air Regulations (40 CFR Part 55). The OCS Air Regulations, which implement Section 328(a)(1) of the CAA, establish federal air pollution control requirements for OCS Sources located beyond a state's seaward boundaries. An OCS source is defined as "any equipment, activity, or facility which—(i) emits or has the potential to emit any air pollutant, (ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. 1331 et seq.], and (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf." Per 40 CFR Part 55.2, vessels are only considered OCS sources when they are: "(1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing, or producing resources therefrom, within the meaning of section 4(a)(1) of Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. § 1331 et seq.); or (2) Physically attached to an OCS facility, in which case only the stationary sources aspects of the vessels will be regulated." The

Project's activities and equipment that meet the definition of an OCS source are expected to include engines and equipment on the WTGs, ESP(s), and certain vessels (e.g., jack-up vessels, stationary anchored vessels) operating within the lease area.

Under 40 CFR Part 55, OCS sources located within 25 miles beyond a state's seaward boundary are also required to comply with the air quality requirements of the Corresponding Onshore Area (COA). Massachusetts has been designated as the COA. Therefore, the Project's OCS sources will be required to comply with the applicable Massachusetts air quality regulations including Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) under 310 CMR § 7.00. The Proponent expects to meet LAER and BACT for vessels that operate as an OCS source by using vessels with engines meeting or emitting less than the highest EPA and/or MARPOL Annex VI Tier emission standards that are available at the time of deployment, operating engines efficiently, using good combustion practices, and using clean fuels.

The Proponent's OCS Air Permit will contain, at a minimum, emission limitations, monitoring, testing, and reporting requirements for OCS sources. Additionally, it is expected that the OCS Air Permit will require the Proponent to offset applicable NOx and VOC operational emissions by acquiring emissions offsets or other means acceptable to EPA.

At this time, the specific construction equipment, and vessels (and hence, engines) that will be used for the Project are unknown; all vessel and equipment specifications are highly speculative at this stage of the development process and are subject to change. The Project requires the flexibility to use OCS source vessels with the highest tiered engines that are available *at the time of deployment* for numerous reasons. There are a limited number of vessels globally that are capable of supporting offshore wind energy project construction and operation, which must be shared by an exponentially increasing number of projects world-wide. This pool of suitable vessels is further limited by the Jones Act, the Passenger Vessel Services Act, the Proponent's contractual agreements, and Project-specific criteria regarding vessel size, power, and other characteristics. The Project cannot tolerate delays in its construction schedule to wait for cleaner vessels that are capable of the required task; otherwise, the Project risks missing key weather windows, having installation processes run up against TOY restrictions for important species, and incurring knock-on effects to other parts of the Project's installation and commissioning, all of which introduce significant risks for timely completion of the Project and could result in higher overall Project-wide emissions. For similar reasons, it is technically infeasible for the Proponent to retrofit or replace specific marine engines on vessels used during the Project. The Proponent expects to use third-party vessels and does not have the ability to direct vessels owned and operated by others to be taken out of service to be upgraded or retrofitted.

3.3.2 Onshore Construction

No stationary source air permit is anticipated to be needed from MassDEP. The Proponent will require all construction to be performed in accordance with applicable sections of the MassDEP Air Pollution Control Regulations at 310 CMR 7.00. During Project construction, temporary impacts to air quality from vehicle and construction equipment emissions as well as dust generated by construction activities will be minimized and mitigated.

The Proponent will require its contractors to use ultra-low sulfur diesel (ULSD) with a maximum sulfur content of 15 ppm in all diesel-powered vehicles and non-road engines used onshore, in accordance with 40 CFR Part 1090. The Proponent will also comply with the requirements of the MassDEP Diesel Retrofit Program. The Diesel Retrofit Program originated as an air quality mitigation measure for the Central Artery/Tunnel Project. The program encourages users of diesel construction equipment to install exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines. MassDEP requires participation in the Diesel Retrofit Program by municipalities applying for funding under the State Revolving Fund for water and wastewater projects. There is no MassDEP requirement for participation by other project proponents; nevertheless, the Proponent is voluntarily committing to comply with the Diesel Retrofit Program requirements.

Consistent with the Diesel Retrofit Program, all onshore diesel-powered non-road construction equipment over 50 horsepower to be used for 30 or more days over the course of Project construction will either be EPA Tier 4–compliant or will have EPA-verified (or equivalent) emissions control devices, such as oxidation catalysts or particulate filters (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. The Proponent will require its contractors to maintain a list of all engines being used for onshore construction of the Project at 50 horsepower or greater, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment.

In accordance with Massachusetts' anti-idling law (G.L. c. 90, § 16A, c. 111, §§ 142A–142M) and MassDEP's corresponding regulations at 310 CMR 7.11, the Proponent and its contractors will limit vehicle idling time to five minutes except when engine power is necessary for the delivery of materials, to service vehicles, or to operate accessories to the vehicle (e.g., power lifts). To reduce idling times, the Proponent's pre-construction environmental training will include training on vehicle idling times, the environmental inspector and site supervisors will be required to periodically inspect and monitor for vehicle idling times, and anti-idling signage will be posted in Project construction trailers and at other potentially appropriate locations.

Although fugitive dust may be generated during construction activities, the relatively short duration of construction at any single location for this Project makes it unlikely that the migration of dust will cause off-site impacts. Furthermore, soil excavation does not typically generate dust due to the natural moisture content of subsurface soils. Nonetheless, the Proponent will require its contractors to implement dust control measures during active construction, as needed and in accordance with 310 CMR 7.09. These measures are expected to include:

- Mechanical street sweeping of construction areas and surrounding streets and sidewalks, as necessary;
- Using track out pads to prevent off-site migration of soils, as appropriate;
- Minimizing stockpiling of materials and storage of construction waste on-site;
- Minimizing the duration that soils are left exposed;
- Wetting and/or covering exposed soils and stockpiles to prevent and control dust generation; and
- Removing soil and construction waste in covered or enclosed trailers.

Pavement will be cut with a pavement saw, which cuts a trench line in the pavement and across driveways and any intersecting roadways. Pavement will then be removed, trucked away, and disposed of in accordance with applicable regulations. No pavement crushing will occur on-site.

3.4 Construction-Period Noise

While intermittent increases in noise levels are expected during construction activities, the Proponent is committed to minimizing these impacts. The Proponent will mitigate noise from construction equipment along the route near sensitive locations such as residences. The distance between the construction equipment and the sensitive locations will vary along the route. Mitigation equipment may include temporary noise barriers.

The Proponent will require that construction equipment be operated such that construction-related noise levels will comply with applicable sections of the MassDEP Air Quality Regulations at 310 CMR 7.10, particularly subsections (1) and (2), which pertain to the use of sound-emitting equipment in a considerate manner as to reduce unnecessary noise. The Project will make every reasonable effort to minimize noise impacts from construction. The Town of Barnstable does not have a bylaw applicable to construction-related noise.

Noise mitigation measures expected to be incorporated into the Project include:

- Minimizing the amount of work conducted outside of typical construction hours;
- Ensuring that appropriate mufflers are installed and maintained on construction equipment;
- Ensuring appropriate maintenance and lubrication of construction equipment to provide the quietest performance;
- Requiring muffling enclosures on continuously operating equipment such as air compressors and welding generators;
- Turning off construction equipment when not in use and minimizing idling times; and
- Mitigating the impact of noisy equipment on sensitive locations by using shielding or buffering distance to the extent practical.

Blasting is not anticipated, nor is construction expected to result in noticeable vibrations.

Specific to the HDD operation at the landfall site, a primary noise mitigation technique that could be implemented is installation of a temporary sound barrier between the HDD activity and residences. The sound barrier would be an acoustical (i.e., sound-absorbing or blocking) blanket installed on the construction fence or as a free-standing barrier that could function as a substitute to the construction fence. Conductor sleeve installation will be the loudest component of the HDD operation. Such a barrier would likely need to be approximately 16 feet high such that the line-of-sight is broken between the conductor sleeve installation and the second story of the nearest residences. This temporary barrier would be expected to reduce sound levels from conductor sleeve installation, and all subsequent construction activity, by about 5 to 10 dBA. The Proponent would determine whether to use an acoustical blanket based on whether its use would be expected to significantly reduce sound levels at occupied residences during the scheduled construction activity.

To further reduce potential impacts, conductor sleeve drilling will be consistent with the work hours described in Section 2.2.3 unless otherwise coordinated with the Town, and the HDD schedule will avoid the summer season.

3.5 Water Quality, Drainage, and Water Supply Protection

3.5.1 Refueling

Procedures for refueling construction equipment will be finalized during consultations with the Cape Cod Commission to ensure safety and spill prevention. Nearly all vehicle fueling and all major equipment maintenance will be performed off-site at commercial service stations or a contractor’s yard. A few pieces of large, less mobile equipment (e.g., excavators, paving equipment) will be refueled as necessary on-site. Any such field refueling will not be performed within 100 feet of wetlands or waterways, or within 100 feet of known private or community potable wells, or within any Town water supply Zone I area. The fuel transfer operation will be conducted by a competent person knowledgeable about the equipment, the location, and the use of the work zone spill kit. Proper spill containment gear and absorption materials will be maintained for immediate use in the event of any inadvertent spills or leaks. All operators will be trained in the use and deployment of such spill prevention equipment. During construction, equipment will be inspected for incidental leaks (e.g., hydraulic fluid, diesel fuel, gasoline, anti-freeze) prior to site access and on a daily basis at the commencement of each work shift. The Proponent will require its contractor to document the daily inspections as part of the approved means and methods. Small pieces of powered equipment such as generators and pavement saws will be placed in containment bins or on absorbent blankets or pads to contain any accidental fuel spills or leaks. In addition, under no circumstances shall fuel or oils of any kind be stored or brought into any duct bank vault, nor shall there be any re-fueling of equipment either inside a vault or within 100 feet of any vault.

Further, the contractor will ensure that all refueling is performed consistent with the requirements described above, and that impact minimization measures and equipment will be sufficient to prevent discharged fluids from leaving the construction zone or reaching wetlands or waterbodies, and be readily available for use. Minimization measures and equipment will include some combination of the following:

(a) dikes, berms or retaining walls sufficiently impervious to contain spilled oil;

(b) sorbent and barrier materials in quantities determined by the contractor to be sufficient to capture the largest reasonably foreseeable spill;

(c) drums or containers suitable for holding and transporting contaminated materials;

(d) curbing;

(e) culverts, gutters, or other drainage systems;

(f) weirs, booms, or other barriers;

(g) spill diversion or retention ponds;

(h) sumps and collection systems;

(i) secondary containment of non-mobile pumps;

(j) The contractor will prepare a list of the type, quantity, and storage location of containment and clean up equipment to be used during construction, and the Proponent will review this list prior to construction;

(k) All spills will be cleaned up immediately. Containment equipment will not be used for storing contaminated material; and

(l) Date and location of refueling activities will be documented and maintained by the contractor and made available to the Proponent for review.

The Proponent will prohibit its contractors from refueling machinery or storing oil and/or hazardous materials within Zone I areas and will require its contractors to regularly inspect construction equipment for leaks. Construction equipment not in use will not be stored within Zone I areas. Spill containment equipment will be immediately available throughout construction in the unlikely event of a leak. In addition, under no circumstances will fuel or oils of any kind be stored or brought into any duct bank vault, nor will there be any re-fueling of equipment either inside a vault or within 100 feet of any vault.

During operations and maintenance, there will be no on-site refueling of vehicles within Zone I areas or within 100 feet of vaults.

3.5.2 Groundwater

High groundwater levels are not expected along the onshore cable installation route, although depending on the relative elevation of proposed duct bank, dewatering may be necessary in the trench during construction and if affected by stormwater. Construction-period dewatering procedures are described in greater detail in Section 2.3.2. Standard erosion control practices will be employed to minimize erosion during trenching and construction activities, as described in further detail in Section 3.6.

Onshore routing options pass through Zone I and Zone II protection areas. As per MassDEP regulation, Zone I is the protective radius required around a public water supply well or wellfield and Zone II is an area identified as the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation). Project construction is not expected to result in impacts to any of these water supply protection areas.

Storage areas for hazardous materials such as oils, greases, and fuels will be provided with secondary containment to ensure that no spills reach stormwater or other wetlands or waters. Contingencies for the proper disposal of contaminated soils shall be established (e.g., use of a licensed hauler and approved landfill) early in the construction period. The Proponent will develop a Spill Prevention Control and Countermeasure (SPCC) Plan which will be overseen by the contractor’s environmental compliance manager. The contractor’s responsibilities will include:

- Monitoring waste collection and disposal;
- Preparing a pre-job inventory of lubricants, fuels, and other materials that could potential be discharged;
- Consulting with the Proponent to determine reportable spill quantities for materials identified in the inventory;
- Classifying each material on the pre-job inventory as hazardous or non-hazardous waste;
- Identifying the approved waste transporters and disposal sites for both hazardous and non-hazardous wastes;
- Approving the contractor's list of equipment and spill procedures and impact minimization measures;
- Defining the duties and coordinating the responses of all persons involved in cleaning up a spill;
- Maintaining, with support from the Proponent, an up-to-date list of names, addresses, and phone numbers of all persons to be contacted in case of a spill; and

- Conducting training for spill prevention and impact minimization.

- Conduct pre-planning meetings and trainings with foremen and crews for any work within 100 feet of wetlands waterways, or within 100 feet of known private or community potable wells, or when working within the Zone 1 of any Town wells.

3.5.3 Turbidity

Installation of the proposed offshore export cables will have localized and temporary effects on water quality, primarily related to trenching and limited dredging where sand waves are encountered. Temporary sediment disturbance associated with Project activities will cause minor, short-term, and localized increases in total suspended solids (TSS) along the OECC. Jet-plowing and minimizing the amount of sand wave dredging will minimize sediment disturbance.

During HDD operations at the landfall site, little to no turbidity is expected as the drill head reaches the surface of the seafloor. Although not anticipated, a small amount of bentonite clay could be released at the exit point of the HDD operation, and the contractor may install silt curtains at the exit point; alternatively, where the pilot hole exits the seafloor, the contractor may lower a gravity cell that would capture any incidental bentonite drilling fluid released from the end of the HDD drill. 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.

3.5.4 Spill Prevention Control and Countermeasures Plan

A variety of offshore vessels will be used for Project construction and will require refueling. The environmental risks associated with such refueling are small and will be minimized using appropriate best practices, compliance with all applicable requirements, and effective advanced planning. Smaller vessels will likely refuel in port. Offshore refueling of large installation vessels may occur. The method of refueling will be dependent on the final selection of contractors, their vessel spread, the type of fuel used by those vessels, and fuel availability. In the case of offshore refueling, a Jones Act-compliant bunker barge or vessel would likely be used. The offshore refueling process would consist of the following three steps: (1) mooring the bunker barge/vessel to the installation vessel; (2) pumping the fuel from the bunker barge/vessel to the installation vessel; and (3) de-mooring the bunker barge/vessel. Vessels may need to travel to a more sheltered location (i.e., an area with more quiescent seas) before refueling can take place.

Vessel fuel spills are not expected. Nonetheless, the Proponent is drafting an Oil Spill Response Plan (OSRP) in accordance with the requirements of 30 Code of Federal Regulations (CFR) Part 254, Subpart B, Oil Spill Response Plans for Outer Continental Shelf Facilities that will pertain to construction activities. In accordance with 30 CFR 254, the OSRP will demonstrate that the Proponent can respond effectively in the unlikely event that oil is discharged from the Project.

The OSRP will provide for rapid spill response, clean up, and other measures that would minimize any potential impact to affected resources from spills or accidental releases, including spills resulting from catastrophic events. Routine training and exercises regarding the content of the OSRP will be carried out regularly to prepare personnel to respond to emergencies should they occur. Secondary containment systems will be provided at operating areas more prone to spillage.

In the event of a spill or incident, the vessels' and construction firms' plans will be used to contain and/or stop an incident in compliance with requirements of the Project's OSRP. As such, these plans will be checked and reviewed by the Proponent to make sure that they are in accordance with regulatory and Project requirements and that a spill plan is in place.

3.6 Erosion and Sediment Control

The Proponent's objective is to minimize the potential for erosion and sedimentation impact during Project construction, and to effectively restore any disturbed areas. The Proponent will meet these objectives by implementing the erosion and sediment control measures described below. In general, the measures are designed to minimize erosion and sedimentation by:

- Minimizing the quantity and duration of soil exposure;
- Protecting areas of critical concern during construction by redirecting and reducing the velocity of runoff;
- Installing and maintaining erosion and sediment control measures during construction;
- Establishing vegetation where required as soon as possible following final grading; and
- Inspecting construction work areas and maintaining erosion and sediment controls as necessary until final stabilization is achieved and final inspections completed.

A Stormwater Pollution Prevention Plan (SWPPP) will be developed and maintained for the Project that will identify controls to be implemented to mitigate the potential for erosion and sedimentation from soil disturbance during construction. The SWPPP will be adhered to by the contractor(s) during all phases of Project construction in accordance with the conditions prescribed in the EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) for Stormwater Discharges from Construction Activities. It will be the responsibility of the contractor to implement and maintain erosion and sediment control measures during construction, and such measures will be overseen by the contractor's environmental compliance manager.

The sections below include erosion and sediment control techniques that apply to all areas of onshore construction. Erosion and sedimentation controls will be maintained until disturbed areas are stabilized. The Proponent anticipates that all upland areas affected by construction will be fully restored within two growing seasons.

As for offshore construction, the OECC is located in high-energy, coarse-grained areas such that turbidity generation is expected to be minor and short-term.

3.6.1 Temporary Erosion Control Barriers

Hay/straw bales and silt fences are interchangeable, except where noted below. Temporary erosion control barriers will be installed prior to initial disturbance of soil and maintained as described below:

- At the outlet of a slope break when existing vegetation is not adequate to control erosion;
- Down slope of any stockpiled soil in the vicinity of waterbodies and vegetated wetlands;
- At sideslope and downslope boundaries of the construction area where run-off is not otherwise directed by a slope break;
- Maintained throughout construction and remain in place until permanent revegetation has been judged successful, upon which they will be removed;
- At boundaries between wetlands and adjacent disturbed onshore areas;
- As necessary to prevent siltation of ponds, wetlands, or other waterbodies adjacent to/downslope of the Project;
- At the edge of the construction area as needed to contain soil and sediment; and
- Catch basins along the work area will be protected using “silt sacks” and perimeter hay bales. The silt sacks and hay bales will be installed before pavement removal and trench excavation begins and will remain in place until the area is repaired and the shoulder repaved and revegetated.

Temporary erosion control barriers will be inspected on a daily basis in areas of active construction or equipment operation, on a weekly basis in areas with no construction or equipment operation, and within 24 hours of a storm event that is 0.5 inches or greater.

In addition, the following provisions will be made as part of erosion control:

- A water truck will be present on-site and used as necessary to minimize fugitive dust during demolition of existing pavement, or during excavation for trenches, vaults, foundations, and general construction processes.
- Although stockpiling of soils will be discouraged, any stockpiled soils located in staging areas (topsoil, special structural fill, etc.) are to be covered to minimize fugitive dust and erosion.
- All exposed slopes are to be stabilized with erosion control netting and/or temporary plantings.
- A covered dumpster will be maintained on or near the active construction site to minimize windblown debris from littering neighborhood and resource areas.

- Regular road sweeping will be conducted if any soil is tracked onto the pavement at the Oak Street intersection with the grid interconnection route/access road.

3.6.2 Silt Fence Installation and Maintenance

Any silt fence used as a construction-period control will be installed as directed by the manufacturer and applicable permit conditions. Accumulated sediment will be removed and the fence inspected to ensure it remains embedded in the soil as directed. Sufficient silt fence will be stockpiled on-site for emergency use and maintenance.

3.6.3 Hay/Straw Bale Installation and Maintenance

Hay/straw bale installation and maintenance will be performed as follows:

- Hay/straw bales will be anchored in place with at least two properly sized wooden stakes;
- Bindings on bales will be horizontal;
- Bales shall be replaced if damaged or allowing water to flow underneath;
- Damaged bales will be replaced with new bales as deemed necessary by the environmental compliance manager;
- A sufficient supply of bales will be maintained on-site for emergency use;
- Bales bound with wire or plastic will not be used; and
- Properly placed and staked straw wattles or fiber rolls may be used in lieu of hay bales in certain circumstances. Such substitutions will be approved by the environmental compliance manager in advance.

3.7 Hazardous Materials Storage

The contractor will ensure that bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils will have appropriate secondary containment systems. Storage areas will not have drains unless such drains lead to a containment area or vessel where the entire spill can be recovered. No petroleum products or refueling equipment will be stored within 100 feet of a waterbody, wetland, or Wellhead Protection Area. The containment area shall have a capacity of at least 1.5 times the maximum volume of the largest container. A berm or other suitable containment device will be installed around any storage shed housing potentially environmentally hazardous materials. The Environmental Monitor will designate specific areas where fuel trucks, mobile tanks, and lubricating vehicles will be parked when not in use.

3.8 Safety and Protection of Existing Utilities

During construction and installation of the proposed duct bank, the work area will be cordoned off to prevent unauthorized or accidental access. At the end of the day, if construction is not complete along an active section of trenching, any street openings will be covered with steel plates and marked with drums and yellow flashers until pavement patching is accomplished. Openings in the shoulder will be protected and barricaded to ensure traffic and pedestrian safety.

Final engineered drawings will be based on the most recent underground utility location information available. Contractors will comply with all Dig-safe regulations and protocols. The Proponent will also ensure their contractors are in strict compliance with the local town road opening requirements and work closely with the applicable department of public works and local utilities. Some existing utilities (storm drain, water etc.) may need to be relocated in accordance with utility Proponent requirements. Other existing utilities may need to be "supported" (often times use of nylon straps attached to fix points such as jersey barriers to hang pipes) during excavations in accordance with utility Proponent requirements. The work will be performed in a cautious manner, physical barriers, protection devices and hand digging may be required when in close proximity to anticipated utilities.

Construction at the proposed onshore substation will be contained within a secured fence line.

3.9 Solid Waste Management and Recycling

Since the Project will involve open trenching through existing roadways, there will be asphalt and possibly concrete waste generated during construction. Asphalt and concrete will be handled separately from soil to allow for recycling at an asphalt batching plant and/or recycling facility. Waste materials generated during installation of the Project will be promptly removed for recycling or proper disposal of at a suitable facility.

Packing crates and wood from equipment shipments will be reused or recycled to the extent practicable or will be disposed of appropriately.

Rubble generated by the demolition of the existing residential structure on the proposed substation site will be handled in accordance with MassDEP's Solid Waste Regulations.

4.0 ENVIRONMENTAL MONITORING, TRAINING, AND INSPECTIONS

The Proponent will engage the services of a qualified Environmental Compliance Manager to manage/conduct the environmental inspection program. Working with the Proponent's construction management team, the Environmental Compliance Manager will help ensure that the CMP is carried out by the construction Contractor(s) as described in this document, and to ensure that construction activities will be in compliance with requirements of applicable federal, state, and local environmental permits and approvals. The Environmental Compliance Manager will be independent of the construction Contractor(s) and will report directly to Proponent. The Environmental Compliance Manager will have immediate access to the Proponent's Chief Monitor and will have "stop work" authority relative to significant environmental non-compliance. The Environmental Compliance Manager will also be present during offshore construction activities. The specific responsibilities of the onshore Environmental Compliance Manager include reviewing all relevant Project documents (e.g., right-of-way, descriptions, permits and permit conditions, mitigation commitments, alignment sheets and other relevant plans, and environmental best management practices [BMPs]) prior to construction. Other responsibilities include:

4.1 Erosion and Sediment Control; Right-of-Way Restoration

The Environmental Compliance Manager will be responsible for oversight of the construction Contractor's implementation and proper maintenance of erosion and sedimentation control. Specific responsibilities of the Contractor to be monitored and inspected by the Environmental Compliance Manager include:

- Ensuring that construction activities occur only within authorized work areas;
- In addition to areas identified on the Project plans, use site inspections to identify additional areas that may require stabilization;
- Ensuring erosion and sedimentation control devices are installed and maintained properly;
- Ensuring erosion and sedimentation control devices are inspected at least weekly, and also within 24 hours of any rainfall of 0.5 inches or greater;
- Ensuring the repair of ineffective erosion control measures within 24 hours of identification;
- Locating dewatering structures to ensure that water is not directed into known cultural sites or locations of sensitive species;
- Ensuring that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment, near the point of discharge, into a wetland or waterbody;
- For work in wetlands resource areas, ensuring that the soil profile is restored as required; and
- Monitoring restoration and revegetation of upland areas, waterbodies and wetlands.

4.2 Spill Prevention Control

The Environmental Compliance Manger will ensure the Contractor develops and implements a Spill Prevention Control and Countermeasure Plan (SPCC Plan). The Environmental Compliance Manager will ensure that the SPCC Plan is developed in advance of the start of construction. The Environmental Compliance Manager will ensure that the SPCC Plan is kept on-site at all times when construction activities are being performed. The Environmental Compliance Manager or experienced personnel will conduct training for spill prevention and impact minimization. In addition, the Environmental Compliance Manager will conduct pre-planning meetings and trainings with foremen and crews for any work within 100 feet of wetlands or waterways, or within 100 feet of known private or community potable wells, or when working within the Zone I of any Town wells.

The Contractor's responsibilities will include:

- Preparing a pre-job inventory of lubricants, fuels, and other materials that could be discharged;
- Consulting with the Proponent to determine reportable spill quantities for materials identified in the inventory;
- Classifying each material on the pre-job inventory as hazardous or non-hazardous waste;
- Identifying the approved waste transporters and disposal sites for both hazardous and non-hazardous wastes;
- Monitoring waste collection and disposal;
- Defining the duties and coordinating the responses of all persons involved in cleaning up a spill; and
- Maintaining, with support from the Proponent, an up-to-date list of names, addresses, and phone numbers of all persons to be contacted in case of a spill.

During all construction activities:

- Spill containment kits shall be located on-site and available for immediate use, if needed.
- Any operator of equipment or contractor will be made aware of the location(s) of spill kits and proper use.
- The contractor will take all reasonable precautions to prevent the release of pollutants during work on the Project.
- Construction refuse, and debris shall be contained and shall be disposed of promptly and properly.

- All spills of oil and/or hazardous materials shall be immediately stopped and contained, if it is safe to do so.

- The Proponent's Construction Supervisor and the Environmental Monitor shall be immediately notified of any spill or release.

- For releases of oils or hazardous materials owned by a contractor, the contractor is responsible to ensure proper response to the release.

- The contractor is also responsible for hiring contractors for the cleanup of these releases.

The Proponent will make all required notifications to appropriate regulatory agencies.

4.3 Training

The Environmental Compliance Manager will oversee the training provided by the construction Contractor(s) as new personnel begin working on construction activities. The Environmental Compliance Manager will train/educate other environmental monitors on Project-specific environmental concerns.

4.4 Record and Documentation Control

The Environmental Compliance Manager will be responsible for inspecting construction-related activities to verify and document that the construction Contractor(s) is complying with the CMP as well as applicable federal, state, regional, and local requirements. The Manager's efforts in this respect will include:

- Photo-documenting sensitive areas and workspaces before, during, and after construction;

- Documenting activities with daily logs, weekly reports and other required documentation depending on inspection frequency;

- Identifying potential problems and initiating proactive actions prior to occurrence;

- Updating Project alignment drawings to illustrate the locations of additional temporary and permanent erosion controls; and

- Providing notification of construction activities to agencies as required in permits.

In concert with the Proponent construction management team, the Environmental Compliance Manager shall maintain and update the CMP as necessary while construction proceeds.