Appendix F: Analysis of Alternatives to Inform the USACE's 404(b)(1) Alternatives Analysis

The purpose of this appendix is to help inform the U.S. Army Corps of Engineers' (USACE) 404(b)(1) Guidelines alternatives analysis and their selection of the Least Environmentally Damaging Practicable Alternative (LEDPA). This appendix describes alternatives that were considered and the reasons they were not carried forward.

The U.S. Environmental Protection Agency (EPA)'s Clean Water Act (CWA) Section 404(b)(1) guidelines (Guidelines) can be found at 40 Code of Federal Regulations (CFR) Part 230 and apply to the USACE's review of proposed discharges of dredged or fill material into waters of the United States regulated under CWA Section 404. In tidal waters, the shoreward limit of Section 404 jurisdiction is the high tide line, while the seaward limit is 3 nautical miles from the baseline of the territorial seas. In non-tidal waters, the Section 404 jurisdictional limit is the ordinary high water (OHW) mark of a waterbody. When adjacent wetlands are present, Section 404 jurisdiction extends beyond the OHW mark to the limit of the adjacent wetlands. The Guidelines also address impacts on "special aquatic sites," (defined at 40 CFR 230.3(m) and identified in 40 CFR 230 subpart E) which are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. Special aquatic sites include wetlands, sanctuaries and refuges, vegetated shallows (such as eelgrass), mud flats, coral reefs, and riffle and pool complexes.

Except as provided under CWA Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Where the activity associated with a discharge which is proposed for a special aquatic site does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not ''water dependent''), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

For the proposed SouthCoast Wind Project, USACE has determined that the basic project purpose is offshore wind energy generation, which is not "water dependent" per the Section 404(b)(1) Guidelines. The following information (including alternatives tables for Falmouth and Brayton Point) includes a description of alternatives considered that was provided by SouthCoast Wind and will be analyzed according to the appropriate criteria in the Guidelines.

The SouthCoast Wind proposed offshore export cable routes, SouthCoast Wind proposed landfall sites and onshore export cable routes, and BOEM alternative onshore routes for Alternative C-1 and Alternative C-2 routes are described below (Figure F-1, Figure F-2, Figure F-3, Figure F-4, Figure F-5, Figure F-6, and Figure F-7).

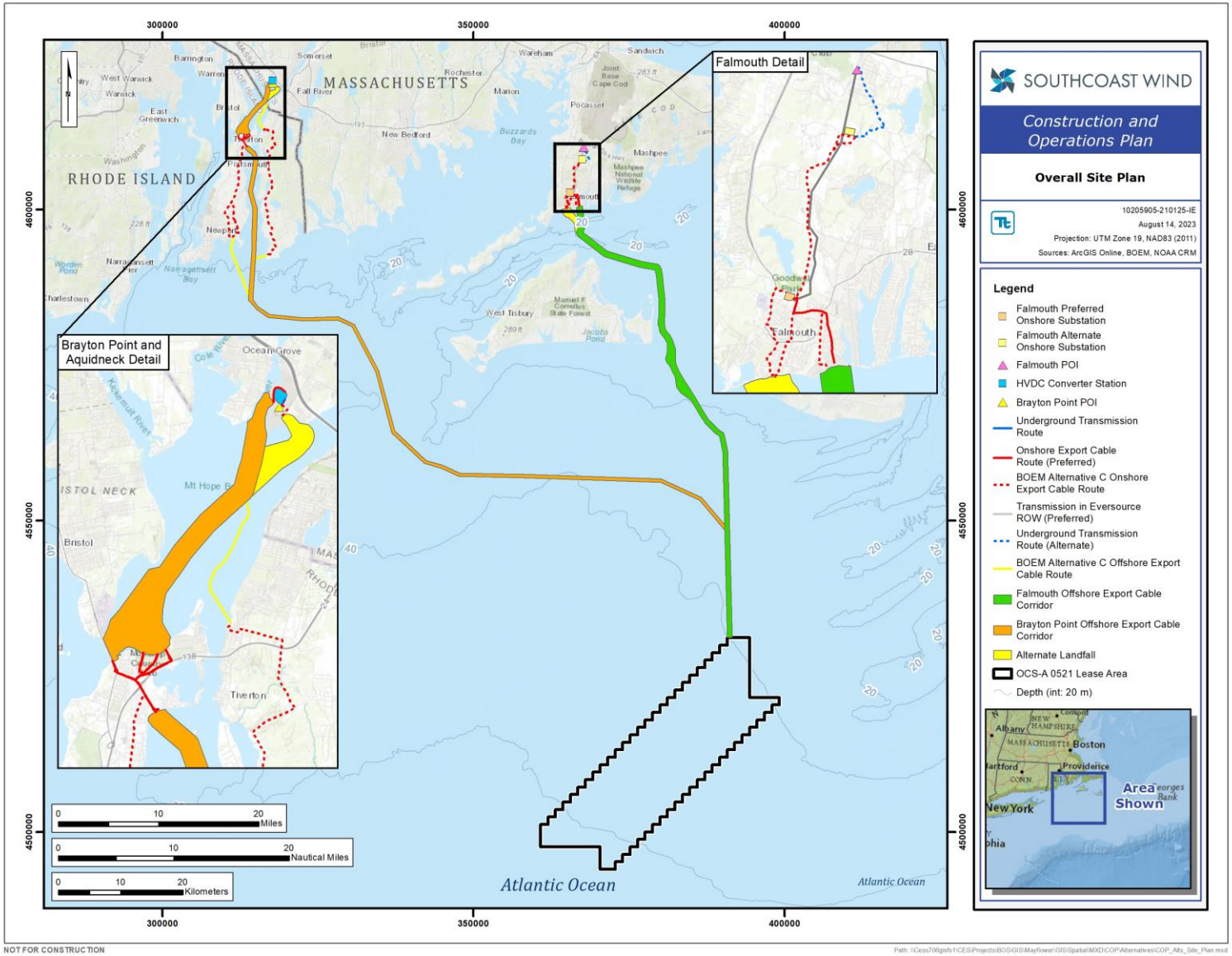

Figure F-1 Proposed Offshore Export Cable Routes

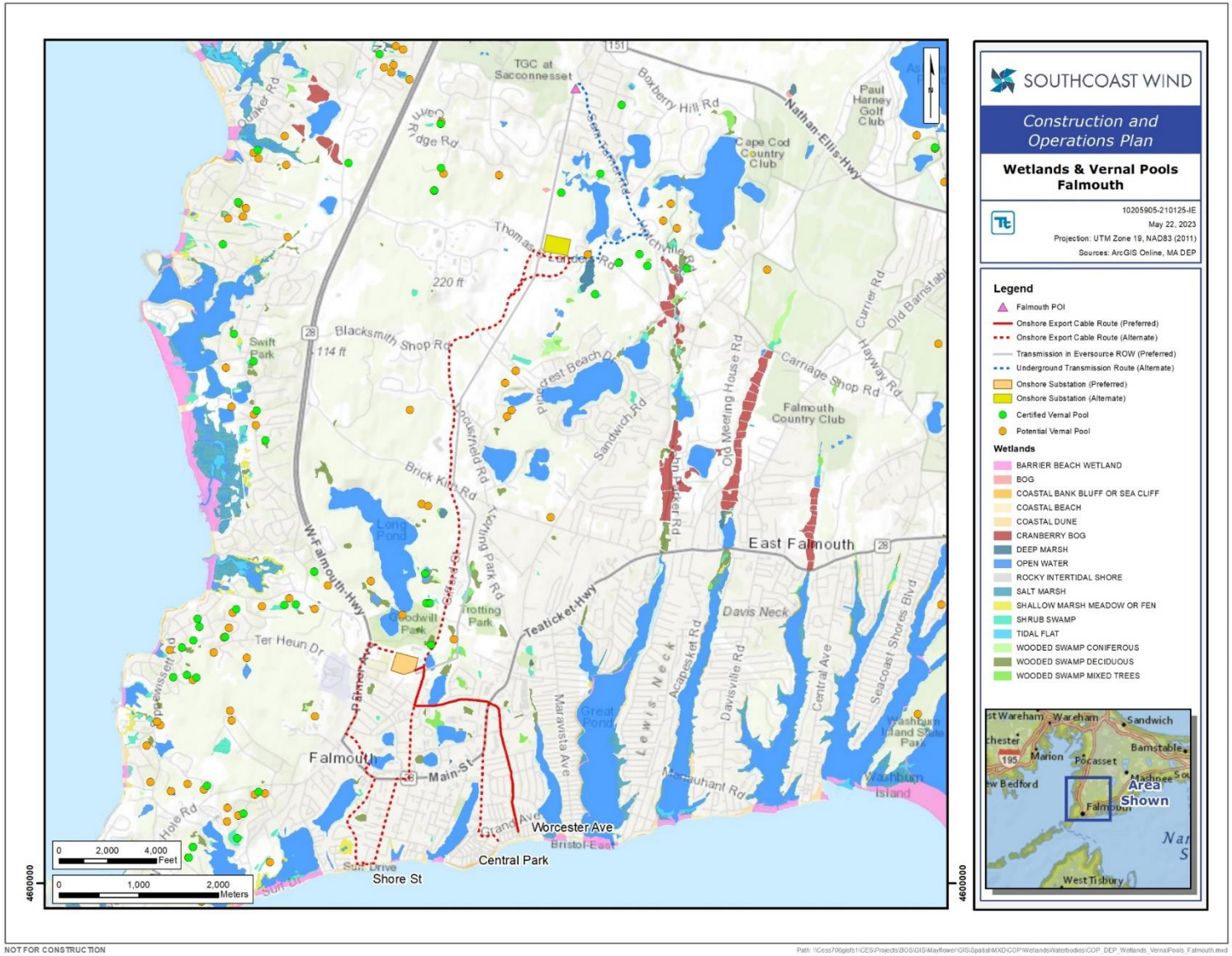

Figure F-2 Proposed Landfall Sites and Onshore Export Cables – Falmouth Variant

F.1 Falmouth Variant Alternatives (see Table F-1 for quantitative summary)

Proposed Action Offshore Export Cable Route

The Proposed Action Offshore Export Cable Route would run from the Lease Area in federal waters through Muskeget Channel and into Nantucket Sound in Massachusetts state waters, to make landfall in Falmouth, Massachusetts.

This route would be 137,442 linear feet of offshore cable in state waters, and there are no anticipated impacts on non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Impacts to tidal waters are anticipated from horizontal directional drilling (HDD) exit pits, cable protection, and seabed preparation. Approximately 0.40 acres will be disturbed for HDD exit pits. A small portion of this route is estimated to require cable protection (Table F-1). Seabed preparation includes boulder field clearance where necessary, utilizing a boulder plow as well as local boulder removal via boulder grabs in other locations (Table F-1). Boulder field clearance is expected to be needed primarily in areas of this route traversing Muskeget Channel and Nantucket Sound.

The Proposed Action Offshore Export Cable Route follows the westernmost route option through Muskeget Channel. The western route has fewer areas of high risk related to extremely shallow water depths than the other options. The western route avoids ultra-shallow sections of the Muskeget Channel that would pose significant navigational hazards (even to a shallow-draft cable lay barge) during cable installation and (if needed) repair. It has a greater length proximate to or co-located with the Vineyard Wind 1 cables, which may reduce the cumulative impact area of both projects.

Proposed Alternative Offshore Export Cable Route 1

Falmouth Proposed Alternative Offshore Cable Route 1 would run from the Lease Area in federal waters through Muskeget Channel and into Nantucket Sound in Massachusetts state waters, to make landfall in Falmouth, Massachusetts. Proposed Alternative Offshore Cable Route 1 runs just east of the proposed offshore export cable route and is the easternmost option of the alternatives down-selected through Muskeget Channel.

This route would be 134,515 linear feet of offshore cable in state waters, and there are no impacts on non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Impacts to tidal waters are anticipated from HDD exit pits, cable protection, and seabed preparation. Approximately 0.40 acres will be disturbed for HDD exit pits. A small portion of this route is estimated to require cable protection (Table F-1). Seabed preparation includes boulder field clearance where necessary, utilizing a boulder plow as well as local boulder removal via boulder grabs in other locations (Table F-1). Boulder field clearance is expected to be needed primarily in areas of this route traversing Muskeget Channel and Nantucket Sound.

SouthCoast Wind deselected Falmouth Proposed Alternative Offshore Cable Route 1 as it was deemed redundant due to its similarity to the Proposed Action Offshore Export Cable Route through Muskeget Channel and into Nantucket Sound.

Proposed Alternative Offshore Export Cable Route 2

Falmouth Proposed Alternative Offshore Cable Route 2 would run from the Lease Area in federal waters through Muskeget Channel and into Nantucket Sound in Massachusetts state waters, to make landfall in Falmouth, Massachusetts. Proposed Alternative Cable Route 2 follows the same route as Proposed Alternative Offshore Cable Route 1; however, it diverts to the east and reconnects to Alternative 3 (discussed below).

This route would be 147,259 linear feet of offshore cable in state waters and would utilize HDD for the sea-to-shore transition of export cables between the ocean and the land; therefore, there are no impacts to non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Impacts to tidal waters are anticipated from HDD exit pits, cable protection, and seabed preparation. Approximately 0.40 acres will be disturbed for HDD exit pits. A small portion of this route is estimated to require cable protection (Table F-1). Seabed preparation includes boulder field clearance where necessary, utilizing a boulder plow as well as local boulder removal via boulder grabs in other locations (Table F-1). Boulder field clearance is expected to be needed primarily in areas of this route traversing Muskeget Channel and Nantucket Sound.

SouthCoast Wind deselected Falmouth Proposed Alternative Offshore Cable Route 2 to avoid overlap with other proposed offshore wind projects and because of challenging seabed conditions within Muskeget Channel, including expected high sediment mobility, very shallow bathymetry, and high seabed slopes, that were identified during reconnaissance and site characterization surveys completed in 2020. The resulting level of technical risk was too high to carry these corridors through for the Project Design Envelope (PDE).

Proposed Alternative Offshore Export Cable Route 3

Falmouth Proposed Alternative Offshore Cable Route 3 would run from the Lease Area in federal waters through Muskeget Channel and into Nantucket Sound in Massachusetts state waters, to make landfall in Falmouth, Massachusetts. Proposed Alternative Offshore Cable Route 3 is farther east compared to the proposed alternative and turns left parallel to the northernmost part of Martha's Vineyard.

This route would be 113,989 linear feet of offshore cable in state waters, and there are no impacts on non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Impacts to tidal waters are anticipated from HDD exit pits, cable protection, and seabed preparation. Approximately 0.40 acres will be disturbed for HDD exit pits. A small portion of this route is estimated to require cable protection (Table F-1). Seabed preparation includes boulder field clearance where necessary, utilizing a boulder plow as well as local boulder removal via boulder grabs in other locations (Table F-1). Boulder field clearance is expected to be needed primarily in areas of this route traversing Muskeget Channel and Nantucket Sound.

SouthCoast Wind deselected Falmouth Proposed Alternative Offshore Cable Route 3 to avoid overlap with other proposed offshore wind projects and because of challenging seabed conditions, including expected high sediment mobility, very shallow bathymetry, and high seabed slopes within Muskeget Channel that were identified during reconnaissance and site characterization surveys completed in 2020. The resulting level of technical risk was too high to carry these corridors through for the PDE.

Proposed Alternative Offshore Export Cable Route 4

Falmouth Proposed Alternative Offshore Cable Route 4 would run from the Lease Area in federal waters through Muskeget Channel and into Nantucket Sound in Massachusetts state waters, to make landfall in Falmouth, Massachusetts. Alternative 4 is the easternmost cable route, closest to Nantucket, that heads to the east then curves west to rejoin the Alternative Offshore Cable Route 3 proposed corridor.

This route would be 119,779 linear feet of offshore cable in state waters, and there are no impacts on non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Impacts to tidal waters are anticipated from HDD exit pits, cable protection, and seabed preparation. Approximately 0.40 acres will be disturbed for HDD exit pits. A small portion of this route is estimated to require cable protection (Table F-1). Seabed preparation includes boulder field clearance where necessary utilizing a boulder plow, as well as local boulder removal via boulder grabs in other locations (Table F-1). Boulder field clearance is expected to be needed primarily in areas of this route traversing Muskeget Channel and Nantucket Sound.

SouthCoast Wind deselected Falmouth Proposed Alternative Offshore Cable 4 because of challenging seabed conditions that were identified in a desktop assessment, amounting to a high level of technical risk, especially near Muskeget Island and Nantucket. For Falmouth Proposed Alternative Offshore Cable Routes 2 through 4, these challenging seabed conditions include expected high sediment mobility, very shallow bathymetry, and high seabed slopes.

Worcester Ave Landing to Proposed Onshore Substation Alternative

The proposed landfall is the easternmost potential landfall site located at Worcester Avenue. This location is protected by a short seawall, a broad beach, and Surf Drive. This landfall site would be located on a previously disturbed, off-road grassy median strip (also known as Worcester Park) that runs between the two lanes of Worcester Avenue. Residences and a hotel are adjacent to this landfall site but are buffered from the open green space by Worcester Avenue on either side. A paved parking lot located nearby could be used for construction staging operations. There are no known existing submarine cables that make landfall at Worcester Avenue and this landfall would avoid the need to cross any existing submarine cables between Martha's Vineyard and Falmouth, Massachusetts.

There are no anticipated impacts on non-tidal waters, wetlands, or other special aquatic sites. This location is within northern long-eared bat habitat range, but due to no tree clearing, impacts are not anticipated. See Table F-1 for an impact summary.

The Worcester Avenue landfall is the Proposed Action because it has the overall shortest length to the substation and minimal impacts on protected resources. The Worcester Avenue landfall is 2.0 miles (3.3 kilometers) from the proposed Onshore Substation located at Lawrence Lynch and 5.9 miles (9.4 kilometers) from the alternate Onshore Substation located at Cape Cod Aggregates.

Central Park Landing to the Proposed Onshore Substation Alternative

The Central Park landing is approximately 700 feet (213 meters) west of the Worcester Avenue landfall location, situated at Central Park on Falmouth Heights Beach north of Grand Avenue. This landfall site is proposed, yet not preferred, by SouthCoast Wind, and would occur at a public recreational park with a baseball diamond and basketball court. The park is flanked on the southern side by paved parking spaces, which could be used for construction staging operations. There are no known existing submarine cables that make landfall at Central Park and this landfall would avoid the need to cross any existing submarine cables between Martha's Vineyard and Falmouth, Massachusetts.

The Central Park landing and onshore cable route to the substation would have no impacts on non-tidal waters, wetlands, or other special aquatic sites (Table F-1). This location is within northern long-eared bat habitat range, but due to no tree clearing, impacts are not anticipated.

The Central Park landing and cable route to the substation is not preferred by SouthCoast Wind, due to its longer length and potential interference with activities at Central Park. The Central Park landfall is 2.2 miles (3.5 kilometers) from the proposed Onshore Substation located at Lawrence Lynch and 6.1 miles (9.8 kilometers) from the alternate Onshore Substation located at Cape Cod Aggregates.

Shore Street Landing to Proposed Onshore Substation Alternative

The Shore Street landfall site is west of the Central Park and Worcester Avenue landfall sites. This landfall site is proposed, yet not preferred, by SouthCoast Wind that is located on Surf Drive Beach at the intersection of Surf Drive and Shore Street. An existing seawall and nearby rock jetties protect this landfall site. The Shore Street location has a large, over 2 acres (0.8 hectare) public parking lot that could be used to site the cable transition joint bays and accommodate vehicles and equipment during installation operations. The Shore Street landfall location involves the potential crossing of two existing submarine cables that also make landfall at Shore Street. The existing arrangement may allow SouthCoast Wind to HDD underneath the existing cables in the approach to the landfall location.

SouthCoast Wind will utilize HDD for the sea-to-shore transition of export cables between the ocean and the land. Due to HDD drilling activities, there is 0.26 acre of anticipated temporary wetland impact. There is 0.01 acre of potential impacts on non-tidal waters due to a small stream crossing. This stream will be crossed by running over or under the existing culvert and would not result in permanent impacts. There are no anticipated impacts on other special aquatic sites. This location is within northern long-eared bat habitat range, but due to no tree clearing, impacts are not anticipated. See Table F-1 for an impact summary.

The Shore Street landing and cable route to the onshore alternate substation is not preferred due to its potential to cross existing submarine cables, and also due to its length. The Shore Street landfall is 2.3 miles (3.6 kilometers) from the proposed Onshore Substation located at Lawrence Lynch and 6.4 miles (10.25 kilometers) from the proposed alternative Onshore Substation located at Cape Cod Aggregates.

Table F-1. Clean Water Act Section 404(b)(1) alternatives analysis table – Falmouth

Factors	No Action Alternative	Preferred Offshore Cable Route	Alternative Offshore Cable Route 1 from COP	Alternative Offshore Cable Route 2 from COP	Alternative Offshore Cable Route 3 from COP	Alternative Offshore Cable Route 4 from COP	Preferred Worcester Ave Landing to Preferred Onshore Substation	Central Park Landing to Preferred Onshore Substation	Shore Street Landing to Alternate Onshore Substation
Linear Feet of Cable (entire route) [a,b]	0 LF	309,028 LF	301,027 LF	314,803 LF	308,338 LF	321,925 LF	N/A	N/A	N/A
Linear Feet of Cable (state waters)[a,b]	0 LF	137,442 LF	134,515 LF	147,259 LF	113,989 LF	119,779 LF	N/A	N/A	N/A
Amount of Dredge Material (entire route)	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY
Amount of Dredge Material (state waters)	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY	0 CY
HDD Exit Pits Area of Disturbance	0 acres	0.40 acres	0.40 acres	0.40 acres	0.40 acres	0.40 acres	N/A	N/A	N/A
Cable Protection (entire route)	0 acres	135 acres	135 acres	135 acres	135 acres	135 acres	N/A	N/A	N/A
Cable Protection (state waters)	0 acres	39 acres	39 acres	39 acres	39 acres	39 acres	N/A	N/A	N/A
Amount of Fill Material (entire route) [c]	0 CY	2,088,954 CY	1,865,625 CY	2,118,576 CY	2,072,737 CY	1,952,548 CY	0 CY	0 CY	0 CY

Amount of Fill Material (state waters) [c]	0 CY	653,494 CY	482,634 CY	484,320 CY	474,466 CY	474,112 CY	0 CY	0 CY	0 CY
Non-Tidal Waters (e.g., streams, ponds)	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	.01 acres
Temporary Wetland Impacts	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	.26 acres
Impacts on Other Special Aquatic Sites	0	0	0	0	0	0	0	0	0
Other Resources of Concern	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	NLEB [d]	NLEB [d]	NLEB [d]

[a] Excludes onshore export cable segments (i.e., export cable segments landward of the landfall).

[b] Distances reported in linear feet are inclusive of all export cable circuits.

[c] These numbers were achieved assuming the PDE max of 3-meter cable burial depth and 1-meter wide corridor. This is representative of one cable. The Falmouth export cable corridor will contain up to five cables. Anticipated cable burial depth for the construction of the Project is 1.2 meters.

[d] Within northern long-eared bat habitat range; impacts on northern long-eared bat habitat are not anticipated.

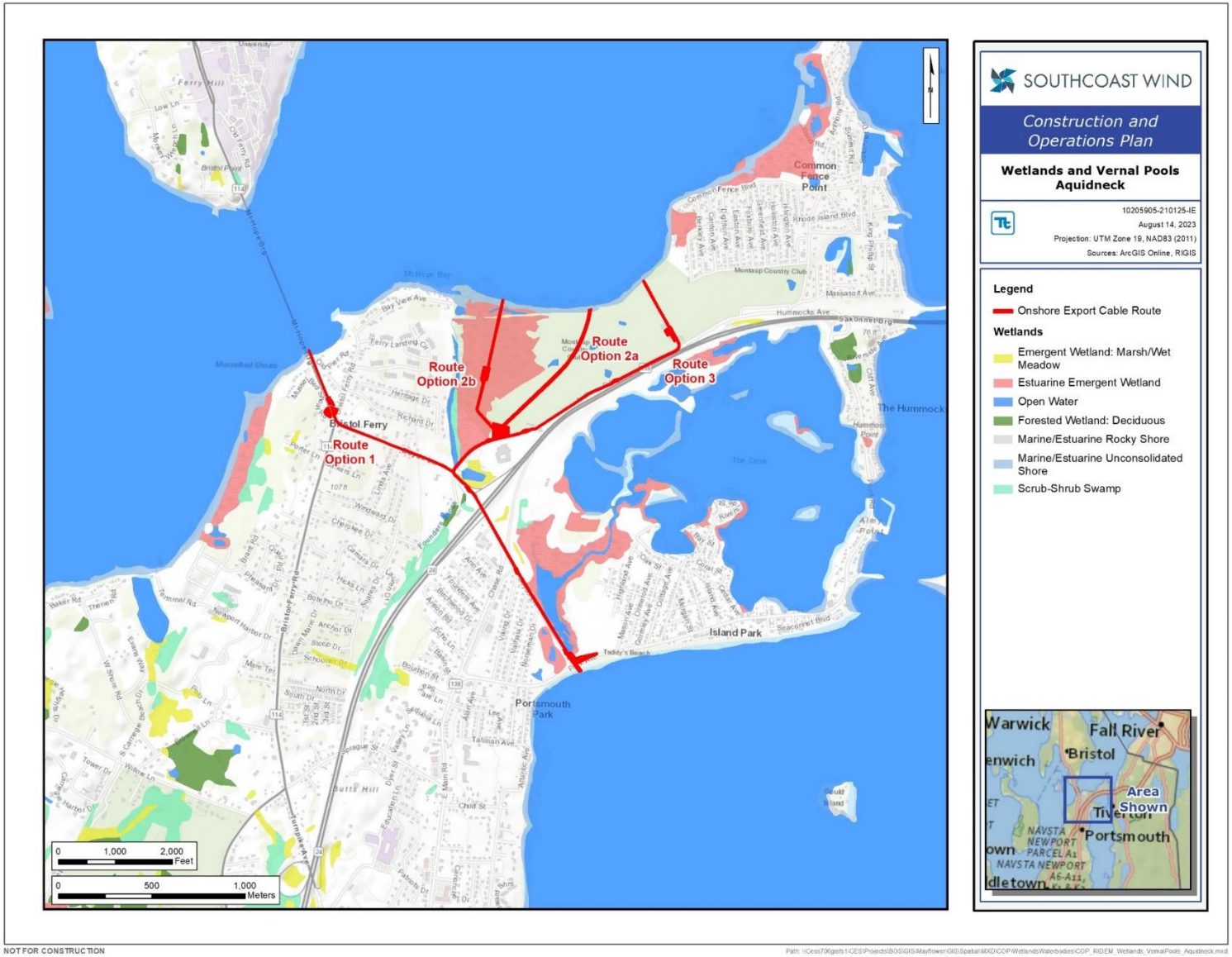

Figure F-3 Proposed Landfall Sites and Onshore Export Cables – Aquidneck Island

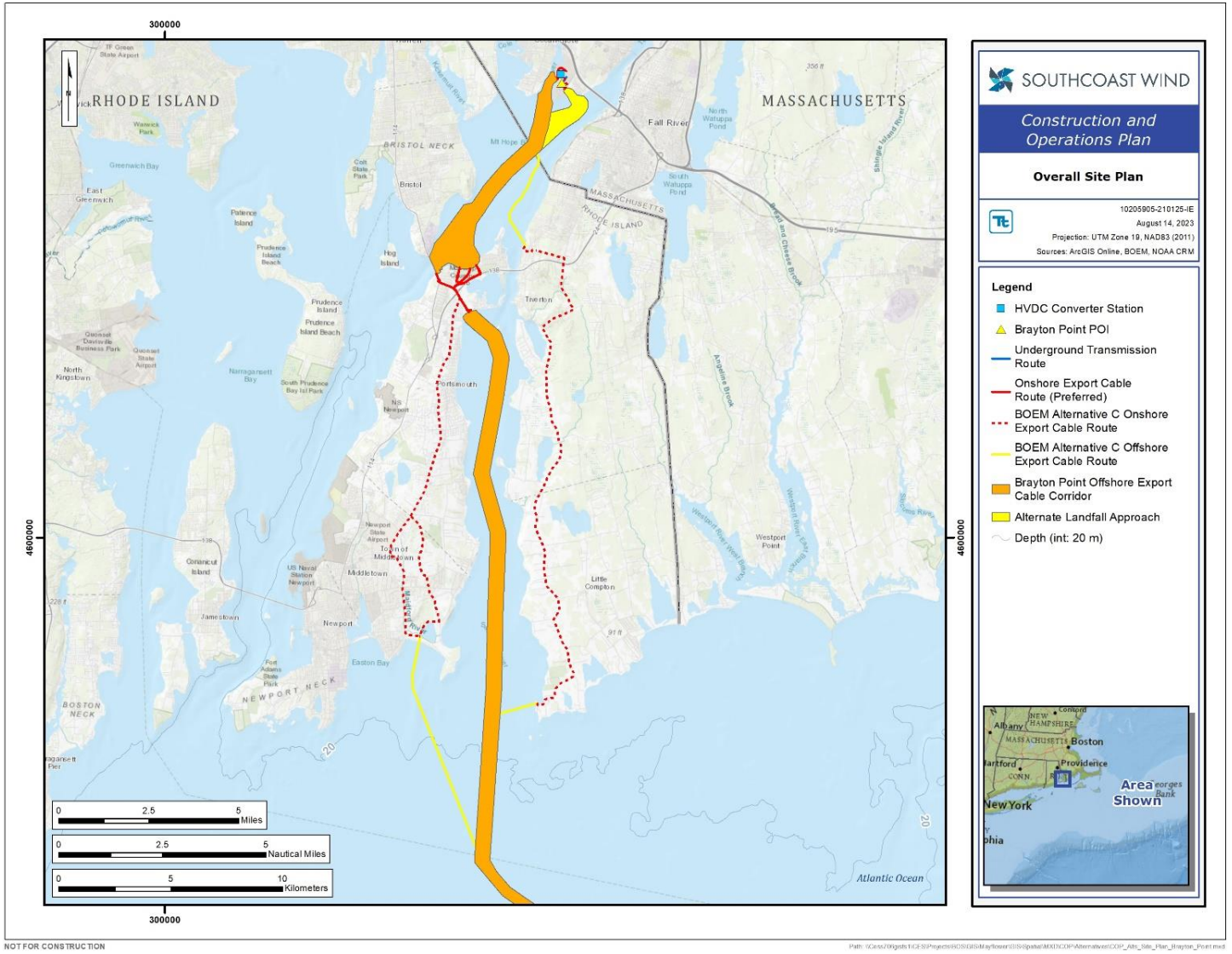

Figure F-4 BOEM Alternative Landfall Sites and Onshore Export Cables – Brayton Point (inclusive of BOEM Alternative C-1 and Alternative C-2 routes)

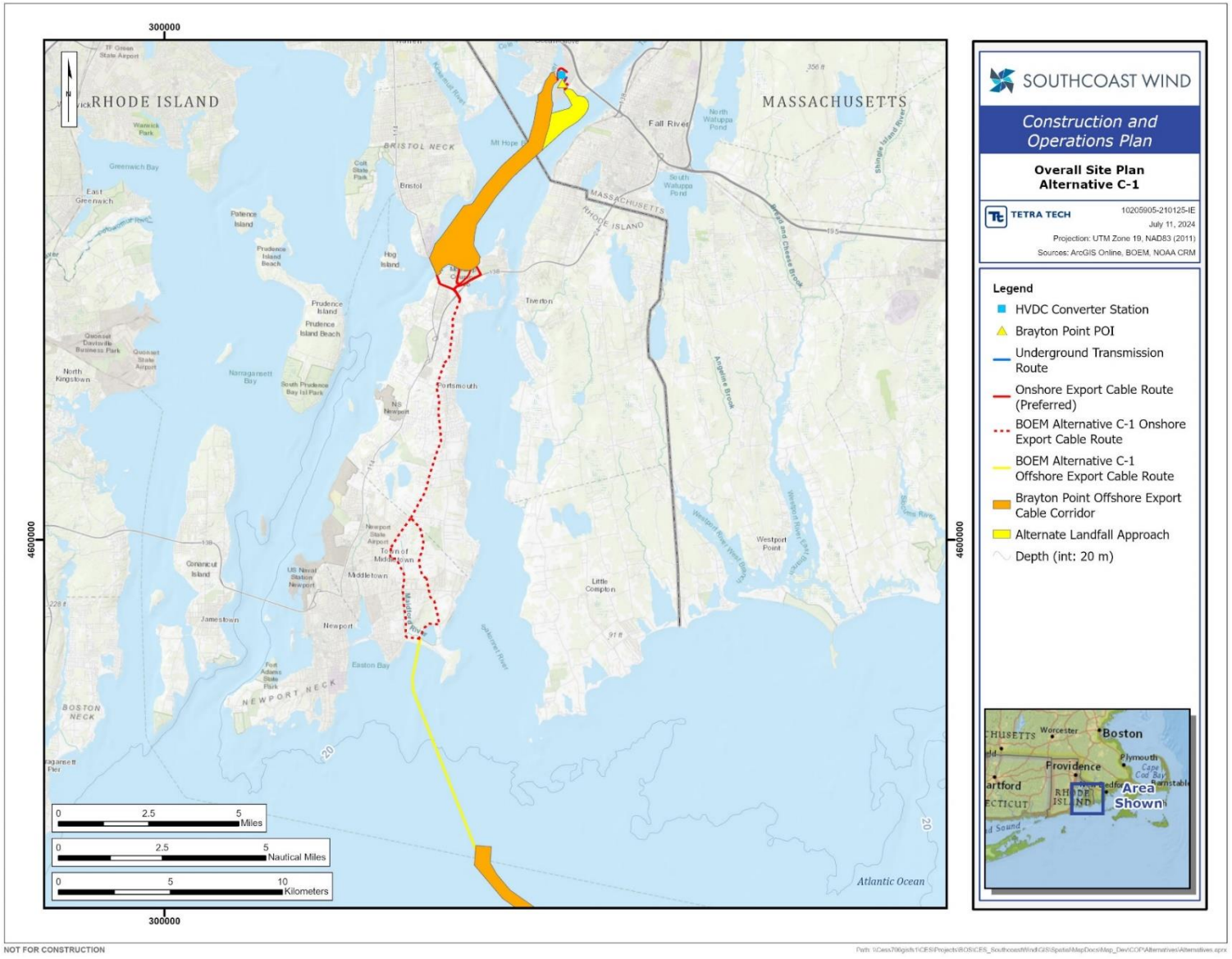

Figure F-5 BOEM Alternative C-1 Route (Eastern and Western)

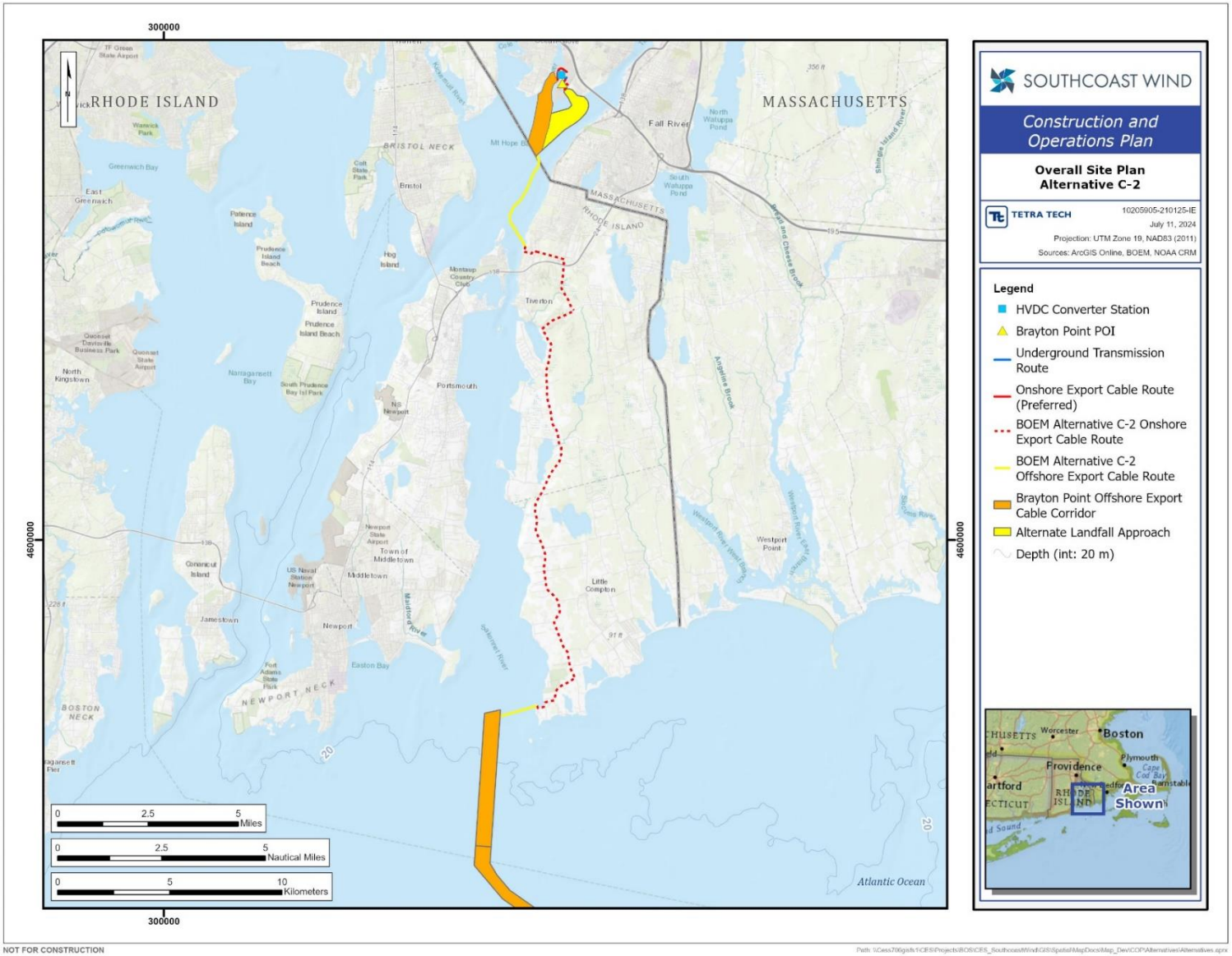

Figure F-6 BOEM Alternative C-2 Route

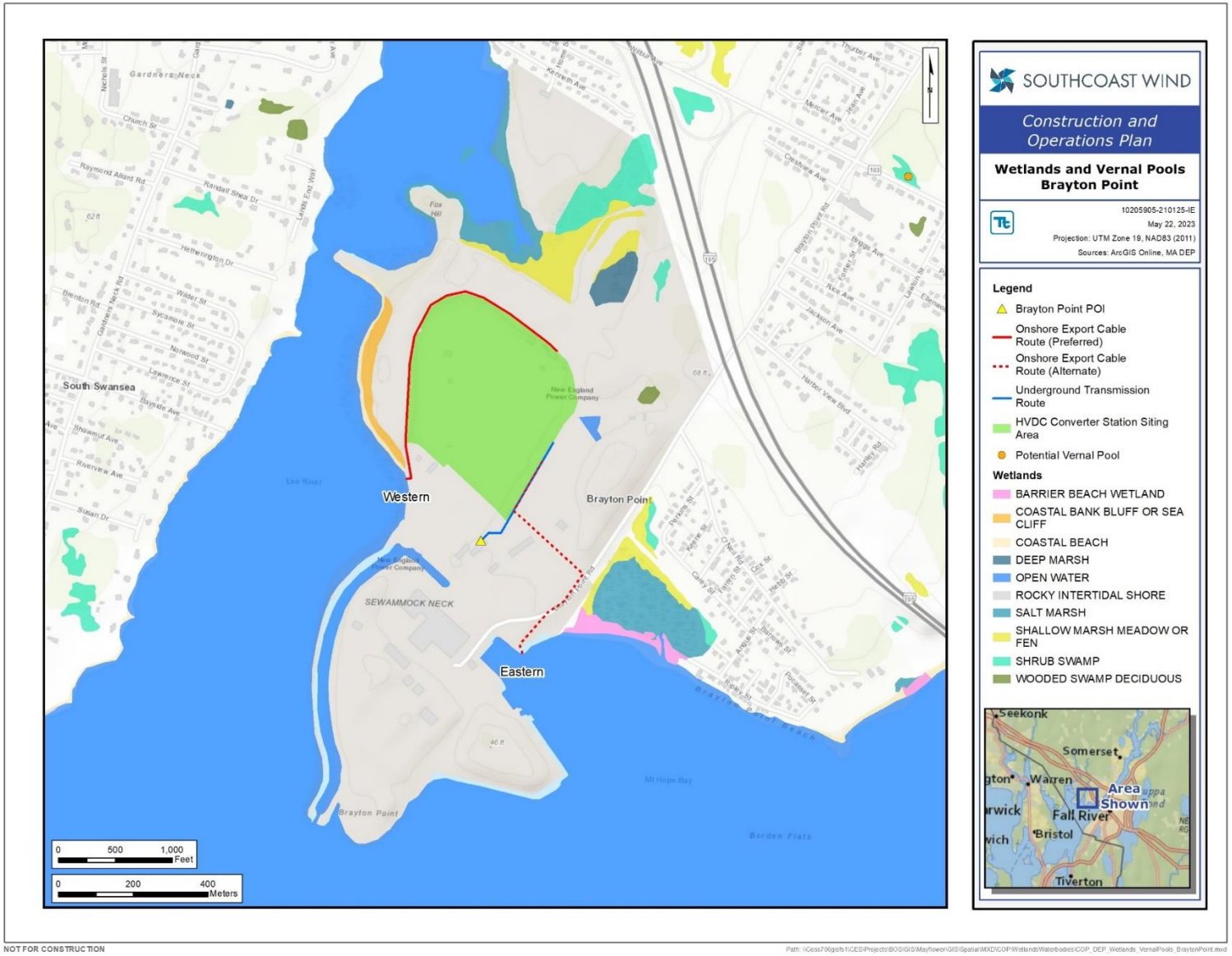

Figure F-7 Proposed Landfall Sites and Onshore Export Cables – Brayton Point

F.2 Brayton Point (see Table F-2 – Table A and B for quantitative summary)

Proposed Action over Aquidneck Island via the Lee River (Western Route) or via the Taunton River (Eastern Route) with Point of Interconnection at Brayton Point, with Portsmouth Route Options 1, 2A, 2B, and 3 (Figure F-1)

The Proposed route alternative over Aquidneck Island would traverse north from the Lease Area up the Sakonnet River. The offshore export cables would come ashore from the Sakonnet River to Portsmouth, Rhode Island at the northeast corner of Boyds Lane and Park Avenue. Landfall would be accomplished using HDD technology to drill below the beach, seawall, and Park Avenue. This selected alternative includes an intermediate, onshore underground crossing of Aquidneck Island, through Portsmouth (route options and impacts described in further detail below), continuing offshore through Mount Hope Bay. The cables would then travel northwest through Mount Hope Bay to Brayton Point via the Lee River and would connect to the point of interconnection (POI) at Brayton Point in Somerset, Massachusetts.

Approximately 2.0 miles (3.4 kilometers) of onshore, underground export cable would be routed north through Portsmouth from the intersection of Boyds Lane and Park Avenue on the east side of Boyds Lane. From here, four onshore route variants are being considered:

- Route Option 1 (121,065.7 total linear feet of offshore cable in state waters): Route Option 1 would continue north on Boyds Lane to the area around the Mount Hope Bridge access ramps, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay. Because the route uses HDD for the sea-to-shore transitions, there are no impacts on tidal waters, or other protected resource areas anticipated (Table F-2). Due to a stream crossing with a culvert along the route, there are 0.04 acres of temporary impacts on non-tidal waters anticipated (Table F-2). Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.012 acres of temporary wetlands impacts anticipated due to construction activities.

- Route Option 2B (118,991.3 linear feet of offshore cable in state waters): Route Option 2B would continue east onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction. Because the route uses HDD for sea-to-shore transitions, there are no impacts on tidal waters, or other protected resource areas anticipated. Due to multiple stream crossings with culverts along the route, there are 0.08 acres of temporary impacts on non-tidal waters anticipated (Table F-2). Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.012 acres of temporary wetlands impacts anticipated due to construction activities. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 2A (119,075.5 linear feet of offshore cable in state waters): Route Option 2A would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. Because the route uses HDD for the sea-to-shore transitions, there are no impacts on tidal waters, or other protected resource areas anticipated. Due to multiple stream crossings with culverts along the route, there are 0.08 acres of

temporary impacts on non-tidal waters anticipated (Table F-2). Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.012 acres of temporary wetlands impacts anticipated due to construction activities. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 3 (118,945.2 linear feet of offshore cable in state waters): Route Option 3 would continue east onto Anthony Road to the entrance of Montaup Country Club, with HDD headed northwest to Mount Hope Bay conducted from the Montaup Country Club parking area. Because the route uses HDD for the sea-to-shore transitions, there are no impacts on tidal waters, or other protected resource areas anticipated. Due to multiple stream crossings with culverts along the route, there are 0.08 acres of temporary impacts on non-tidal waters anticipated (Table F-2). Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.012 acres of temporary wetlands impacts anticipated due to construction activities. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

After the onshore route over Aquidneck Island, the Proposed Action would then make landfall at Brayton Point via the Lee River (Western Route) or the Taunton River (Eastern Route). The Western Route is the preferred route alternative.

SouthCoast Wind chose the Western Route as the preferred route alternative over Aquidneck Island via the Lee River because it has a shorter, more direct route length relative to the other routes and avoids or minimizes potential conflicts with other marine stakeholders including recreational vessel users, federally maintained shipping channel (USACE Fall River Harbor Federal Navigation Project), protected wildlife areas, and the U.S. Naval Station (NAVSTA) Newport facility which encompasses approximately 1,000 acres on the west shore of Aquidneck Island, facing the east passage of Narragansett Bay, located in the towns of Portsmouth, Middletown, and Newport, Rhode Island. The alternative route with the eastern landfall via the Taunton River is the alternate to the preferred route due to a slightly longer route length. This alternative route avoids or minimizes potential conflicts with other marine stakeholders including recreational vessel users, federally maintained shipping channels, protected wildlife areas, and the U.S. Navy.

Fisheries Habitat Impact Minimization Alternative C1 Western (Middletown/ Paradise Ave) with Point of Interconnection at Brayton Point with Portsmouth Route Options 1, 2A, 2B, and 3 (Figure F-5)

Fisheries Habitat Impact Minimization Alternative C1 Western would make landfall at the parking lot for Second Beach in Middletown via HDD under the municipal public beach from Sachuest Bay. From the landfall, the approximately 11-mile (17.7-kilometer) onshore route would proceed inland through Middletown via Paradise Avenue and Route 138, crossing into Portsmouth to join Route Options 1, 2A, 2B, and 3 discussed above and continuing offshore through Mount Hope Bay. The cables would then travel northwest through Mount Hope Bay to Brayton Point via the Lee River (Western Route) or the Taunton River (Eastern Route) and would connect to the POI at Brayton Point in Somerset, Massachusetts.

Route Options 1, 2A, 2B and 3 are discussed in further detail below:

- Route Option 1 (72,860 total linear feet of offshore cable in state waters): Route Option 1 would continue north on Boyds Lane to the area around the Mount Hope Bridge access ramps, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.18 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.497 acres of temporary wetlands impacts anticipated due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2B (72,399 linear feet of offshore cable in state waters): Route Option 2B would continue east onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.22 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.497 acres of temporary wetlands impacts anticipated due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2A (70,876.6 linear feet of offshore cable in state waters): Route Option 2A would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There are 0.22 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.497 acres of anticipated impact on wetlands due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 3 (70,746 linear feet of offshore cable in state waters): Route Option 3 would continue east onto Anthony Road to the entrance of Montaup Country Club, with HDD headed northwest to Mount Hope Bay conducted from the Montaup Country Club parking area. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.22 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.497 acres of temporary wetlands impacts anticipated due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

The additional length and impacts on sensitive environmental resources and historic resources are greater, as compared to the Proposed Action. Second Beach, where this alternative would make landfall, is a dynamic beach system with mobile sediments, surrounded by wetlands, parks, and natural heritage. The Second Beach landfall site and routing also abuts the Norman Bird Sanctuary, a 325-acre bird sanctuary, nature preserve, environmental education center, and museum. To the west is Newport, a popular, year-round tourist destination and a designated Rhode Island historic district. In addition, this

route passes through multiple residential areas, and also through High Value/High Vulnerability Habitat[1] and Natural Heritage Areas. Paradise School, a historic property, is located along the route. There are also ten National Register-eligible resources within 0.5 mile of the route along with ten archaeological sites along the route.

Fisheries Habitat Impact Minimization Alternative C1 Eastern (Middletown/ Mitchell's Lane) with Point of Interconnection at Brayton Point with Portsmouth Route Options 1, 2A, 2B, and 3 (Figure F-5)

Fisheries Habitat Impact Minimization Alternative C1 Eastern would make landfall at the parking lot for Second Beach in Middletown via HDD under the municipal public beach from Sachuest Bay, similar to Fisheries Habitat Impact Minimization Alternative C1 Western. From the landfall, the approximately 11-mile (17.7-kilometer) onshore route would head east along Hanging Rock Road, then travel via Mitchell's Lane to Route 138, crossing into Portsmouth to join Route Options 1, 2A, 2B, and 3 discussed above and continuing offshore through Mount Hope Bay. The cables would then travel northwest through Mount Hope Bay to Brayton Point via the Lee River (Western Route) or the Taunton River (Eastern Route) and would connect to the POI at Brayton Point in Somerset, Massachusetts. Alternative C1 Eastern would also pass through several protected resource areas, including Normans Bird Sanctuary and the Sachuest Point National Wildlife Refuge.

Route Options 1, 2A, 2B, and 3 are discussed in further detail below:

- Route Option 1 (74,026 total linear feet of offshore cable in state waters): Route Option 1 would continue north on Boyds Lane to the area around the Mount Hope Bridge access ramps, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.13 acres of temporary impact anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.492 acres of temporary wetlands impacts anticipated due to construction activities. There are no anticipated impacts on eelgrass or mudflats. See Table F-2 for an impact summary.
- Route Option 2B (71,785 linear feet of offshore cable in state waters): Route Option 2B would continue east onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.17 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.492 acres of temporary wetlands impacts anticipated due to

[1] Categorized by Rhode Island Department of Environmental Management by the following: Includes flood plain forest, hemlock/hardwood forest, northern hardwood forest, pitch pine/barrens, mud flat, inland sand barren, salt marsh, wet meadow, coastal streams, tidal marsh, rocky shore, sand flat, sea level fen, brackish sub-aquatic beds, brackish marsh, and Atlantic white cedar swamp.

construction activities. There are no anticipated impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2A (70,935 linear feet of offshore cable in state waters): Route Option 2A would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There are 0.17 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.492 acres of anticipated temporary impacts on wetlands due to construction activities. There would be no impacts on eelgrass or mudflats.

- Route Option 3 (70,808 linear feet of offshore cable in state waters): Route Option 3 would continue east onto Anthony Road to the entrance of Montaup Country Club, with HDD headed northwest to Mount Hope Bay conducted from the Montaup Country Club parking area. Due to HDD construction, there are no anticipated impacts on tidal waters. There are 0.17 acres of temporary impacts anticipated to non-tidal waters due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are 0.492 acres of temporary wetlands impacts anticipated due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

The additional length and potential impacts on sensitive environmental resources are greater, as compared to the Proposed Action. This onshore route passes through multiple residential areas, and also through High Value/High Vulnerability Habitat and Natural Heritage Areas 237, 216, and 209 according to RIDEM and RIGIS mapping. This route also passes Gardiner Pond, a City of Newport drinking water supply area, and Paradise Brook. Historic properties along the route include Gardiner Pond Shell Midden and Union Church and Southernmost Schoolhouse. Additional sensitive receptors abut this alternative including wetlands, parks, reserves, emergency and rescue services facilities, schools, and government facilities.

Fisheries Habitat Impact Minimization Alternative C2 with Point of Interconnection at Brayton Point (Figure F-6)

Fisheries Habitat Impact Minimization Route C2 would make intermediate landfall at Sakonnet Point in Little Compton in a 0.9-acre parking lot across from the Sakonnet Harbor. The 15.8-mile (25.4-kilometer) route would then head east and turns north, following Route 77 along the Sakonnet River coast through Little Compton and into Tiverton. Once in Tiverton, the route turns east onto Route 177. The route heads north on Fish Road and then turns northwest on Souza Road. Souza Road turns into Schooner Drive, which is a steep access road to the dense residential Village at Mount Hope Bay and Boat House Waterfront Dining Restaurant. The route then re-enters the water from private property near where Mount Hope Bay and the Sakonnet River meet, north of the State Route 24 Bridge. The export cables would then travel northwest through Mount Hope Bay to Brayton Point via the Lee River and would connect to the POI at Brayton Point in Somerset, Massachusetts. Once the export cables enter into

Mount Hope Bay from the HDD area in Tiverton, they traverse under the USACE Fall River Harbor Federal Navigation Project (FNP).

This route would be 59,621.29 linear feet of offshore cable in state waters, and because the route utilizes mostly HDD installation methodology, there are minimal expected impacts on tidal waters. There are 0.41 acres of temporary non-tidal impacts anticipated due to a stream crossing along the route. Streams will be crossed by installing the cable either over or under the existing culvert. There are also 0.12 acres of temporary wetlands impacts anticipated due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary. Alternative C2 would also pass through several protected resource areas including USACE Fall River Harbor Federal Navigation Project, the Nature Conservancy Pocasset Ridge Conservation Area, and the Audubon Emilie Ruecker Wildlife Sanctuary.

The extended duration of construction, use conflicts, potential for effects on the local economy, lack of sufficient space on small roads, and potential effects on sensitive environmental, historic, and cultural areas are greater, as compared to the Proposed Action. After landfall the route passes by a public boat ramp that construction activities would temporarily restrict access to at Sakonnet Point. It also abuts the Haffenreffer Wildlife refuge, which is a destination for birding.

Both Route 77 and Route 177 are busy two-lane roads with minimal paved shoulders that pass through a high prevalence of protected natural, historical, and agricultural areas. In Tiverton, Route 77 passes within 500 feet of Nonquit Pond and through the Tiverton Four Corners Historic District.

Before entering Mount Hope Bay, the route also travels along Schooner Drive which serves the dense residential Village at Mount Hope Bay and Boat House Waterfront Dining Restaurant. Schooner Drive is the only access route for the Boat House Waterfront Dining Restaurant and residential Village at Mount Hope Bay, meaning that construction activities would impact not only the commercial operations at the Boat House but also the residents of the Village at Mount Hope Bay, particularly if there is a road closure. Schooner Drive also includes a bridge over an abandoned railroad right-of-way, which would require a trenchless installation method.

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Table F-2. Clean Water Act Section 404(b)(1) alternatives analysis table – Brayton Point

Table A

	No Action	Proposed Action with Route Option 1 over Aquidneck Island and Western Landfall	Proposed Action with Route Option 2B over Aquidneck Island and Western Landfall	Proposed Action with Route Option 2A over Aquidneck Island and Western Landfall	Proposed Action with Route Option 3 over Aquidneck Island and Western Landfall	Proposed Action with Route Option 1 over Aquidneck Island and Eastern Landfall	Proposed Action with Route Option 2B over Aquidneck Island and Eastern Landfall	Proposed Action with Route Option 2A over Aquidneck Island and Eastern Landfall	Proposed Action with Route Option 3 over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 1 over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 2B over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 2A over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 3 over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 1 over Aquidneck Island and Eastern Landfall
Linear Feet of Cable (LF, entire route)	0	496,139	494,774	495,531	496,438	499,503	498,142	498,899	499,781	501,984	499,339	505,640	506,407	505,400
Linear Feet of Cable (LF, state waters)	0	121,065.7	118,991.3	119,075.5	118,945.2	124,429.9	122,358.6	122,442.9	122,288.4	72,860	72,399	70,876.6	70,746	70,207
Dredge Material (acres, entire route)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dredge Material (acres, state waters)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cable Protection (acres, entire route)	0	112	112	112	112	112	112	112	112	99	99	99	99	99
Cable Protection (acres, state waters)	0	30	30	30	30	30	30	30	30	17	17	17	17	17
Amount of Fill Material (CY, entire route)	0	29,321,984	29,213,758	29,197,962	29,193,216	29,328,740	29,207,275	29,218,016	29,213,140	7,136,657	7,135,554	6,831,912	7,078,168	7,072,096
Amount of Fill Material (CY, state waters)	0	1,410,552	1,398,682	1,397,556	1,396,324	1,788,431	1,872,997	1,997,111	1,996,763	-205,095	–178,600	177,469	191,997	201,776
Temporary Stream Crossings (acres)	0	0.04	0.08	0.08	0.08	0.04	0.08	0.08	0.08	0.18	0.22	0.22	0.22	0.18
Temporary Wetlands Impacts (acres)	0	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.497	0.497	0.497	0.497	0.497
Impacts to Other SAS (Eelgrass, Mudflat) (acres)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Resource Concerns	0	0	0	0	0	0	0	0	0	Middletown Cemetery, Middletown Historical Society Property Sachuest Point Nat'l Wildlife Refuge	Middletown Cemetery, Middletown Historical Society Property Sachuest Point Nat'l Wildlife Refuge	Middletown Cemetery, Middletown Historical Society Property Sachuest Point Nat'l Wildlife Refuge	Middletown Cemetery, Middletown Historical Society Property Sachuest Point Nat'l Wildlife Refuge	Middletown Cemetery, Middletown Historical Society Property Sachuest Point Nat'l Wildlife Refuge

Table B

	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 2B over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 2A over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 western with Route Option 3 over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 1 over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 2B over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 2A over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 3 over Aquidneck Island and Western Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 1 over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 2B over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C1 eastern with Route Option 2A over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 eastern with Route Option 3 over Aquidneck Island and Eastern Landfall	Fisheries Habitat Impact Minimization Alternative C2 and Western Landfall	Fisheries Habitat Impact Minimization Alternative C2 and Eastern Landfall
Linear Feet of Cable (LF, entire route) [a,b]	502,684	501,985	509,802	503,089	500,357	501,037	501,992	506,550	501,926	504,459	505,400	509,440	510,807
Linear Feet of Cable (LF, state waters) [a,b]	73,178	87,910	77,906	74,026	71,785	70,935	70,808	77,409	73,435	75,136	68,458	59,621.29	60,909.21
Dredge Material (acres, entire route)	0	0	0	0	0	0	0	0	0	0	0	0	0
Dredge Material (acres, state waters)	0	0	0	0	0	0	0	0	0	0	0	0	0
Cable Protection(acres, entire route)	99	99	99	99	99	99	99	99	99	99	99	95	95
Cable Protection (acres, state waters)	17	17	17	17	17	17	17	17	17	17	17	13	13
Amount of Fill Material (CY, entire route) [c]	5,136,699	5,135,346	5,444,812	5,398,002	5,166,913	5,146,347	5,200,112	5,191,491	5,193,557	5,192,889	5,188,224	5,487,134	5,489,922
Amount of Fill Material (CY, state waters) [c]	179,533	178,222	165,546	163,908	160,916	159,231	159,150	164.447	162,009	165,095	159, 663	150,982	160,136
Temporary Stream Crossings (acres)	0.22	0.22	0.22	0.13	0.17	0.17	0.17	0.13	0.17	0.17	0.17	0.41	0.41
Temporary Wetlands Impacts (acres)	0.497	0.497	0.497	0.492	0.492	0.492	0.492	0.492	0.492	0.492	0.492	0.12	0.12
Impacts to Other SAS (Eelgrass, Mudflat) (acres)	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Resource Concerns	Middletown Cemetery, Middletown Historical Society Property	Middletown Cemetery, Middletown Historical Society Property	Middletown Cemetery, Middletown Historical Society Property	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Norman Bird Sanctuary	Federal Navigation Project	Federal Navigation Project
	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Sachuest Point Nat'l Wildlife Refuge	Nature Conversancy Pocasset Ridge Conservation Area	Nature Conversancy Pocasset Ridge Conservation Area
												Audubon Emilie Ruecker Wildlife Sanctuary	Audubon Emilie Ruecker Wildlife Sanctuary

Notes:
[a] Excludes onshore export cable segments (i.e., export cable segments landward of the landfall).
[b] Distances reported in linear feet are inclusive of all export cable circuits.
[c] A 2-meter wide by 2-meter deep corridor was used for offshore route calculations. Route calculations are representative of one cable bundle. The Brayton Point offshore export cable corridor contains up to two cable bundles.

F.3 Summary

Based on the analysis performed, SouthCoast Wind undertook a thorough route analysis and selection process for both offshore and onshore components of the Project. SouthCoast Wind identified various routes as potential alternatives to satisfy the regional need for the Project to provide renewable clean energy from offshore wind generation. SouthCoast Wind compared possible routes and route variants based upon reasonable criteria to evaluate the environmental impacts and social impacts to deliver energy from the Lease Area to the regional transmission system at Brayton Point and in Falmouth.

Brayton Point is an ideal site for the interconnection of offshore wind for several reasons, including, among others: (i) the robust 345-kilovolt regional transmission infrastructure available there, (ii) the brownfields legacy of the site, which both reduces impacts on the natural environment and provides an opportunity to revitalize it for clean energy uses and for the benefit of the community, including environmental justice populations within 1 mile of the Project location, (iii) its waterfront location, and (iv) its lack of residential abutters.

The proposed onshore substation site in Falmouth was evaluated and chosen based on land availability and proximity to potential landfall locations. Subsequently, SouthCoast Wind ruled out locations with greater environmental impacts. Sites were rejected for being too small to house all of the necessary equipment for the proposed onshore substation configuration or due to unnecessary environmental/social impacts which were apparent, such as required tree clearing, wetland and watershed resource disruption, or close proximity to residential neighborhoods.

The onshore and offshore route variants would enable SouthCoast Wind to achieve the best balance between reasonable cost and not causing unacceptable harm to the social and natural environment. Based on the foregoing analysis, SouthCoast Wind has determined the proposed routes for Brayton Point and Falmouth would result in the least impacts and would allow for safe, practical, and long-term cable installation, maintenance, and operation as compared to the alternatives considered. Construction of the Project, as proposed, will provide access to a major renewable clean energy resource, and will not cause unacceptable harm to the environment.