Appendix F: USACE 404(b)(1) Analysis

The U.S. Environmental Protection Agency (EPA)'s Clean Water Act (CWA) Section 404(b)(1) guidelines can be found at 40 Code of Federal Regulations (CFR) Part 230 and apply to the U.S. Army Corps of Engineer (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 mark of a waterbody. The guidelines also address impacts on "special aquatic sites" 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 Mayflower 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 Mayflower Wind and will be analyzed according to the appropriate criteria in the guidelines.

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

Preferred Offshore Export Cable Route

The Preferred 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 309,028 linear feet, and there are no anticipated impacts on tidal waters, non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

The Preferred 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. Also, the selected route is the shortest of the three options assessed. Minimizing cable length is critical for reducing transmission losses and avoiding higher costs.

Alternative Offshore Cable Route 1

Falmouth 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. Alternative Offshore Cable Route 1 runs just east of the preferred offshore export cable route and is the easternmost option of the alternatives down-selected through Muskeget Channel.

This route would be 301,027 linear feet, and there are no impacts on tidal waters, non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Mayflower Wind deselected Falmouth Alternative Offshore Cable Route 1 because of its similarity to selected corridors, which provided the proposed Project with adequately differentiated options through Muskeget Channel and into Nantucket Sound.

Alternative Offshore Cable Route 2

Falmouth 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. Alternative Cable Route 2 follows the same route as Alternative Offshore Cable Rote 1; however, it diverts to the east and reconnects to Alternative 3 (discussed below).

This route would be 314,803 Linear Feet and will utilize horizontal directional drilling (HDD) for the sea-to-shore transition of export cables between the ocean and the land; therefore there are no impacts to Tidal Waters, Non-Tidal Waters, Wetlands, or other protected resource areas anticipated (Table F-1).

Mayflower Wind deselected Falmouth Alternative Offshore Cable Route 2 to avoid conflict with other proposed offshore wind projects and because of challenging seabed conditions 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 Project Design Envelope (PDE).

Alternative Offshore Cable Route 3

Falmouth 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. Alternative Offshore Cable Route 3 is further east compared to the preferred alternative and turns left parallel to the northernmost part of Martha's Vineyard.

This route would be 308,338 linear feet, and there are no impacts on tidal waters, non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Mayflower Wind deselected Falmouth Alternative Offshore Cable Route 3 to avoid conflict with other proposed offshore wind projects and because of challenging seabed conditions 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.

Alternative Offshore Cable Route 4

Falmouth 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 321,925 linear feet, and there are no impacts on tidal waters, non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-1).

Mayflower Wind deselected Falmouth 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 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 Preferred Onshore Substation Alternative

The preferred 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.

The preferred landfall would have no impacts on tidal waters. Due to HDD drilling activities, there is 0.22 acre of anticipated wetland impacts. There are no anticipated impacts on non-tidal waters 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 preferred because it has the overall shortest length and minimal impacts on protected resources. The Worcester Avenue landfall is 2.0 miles (3.3 kilometers) from the preferred 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 Preferred 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 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 tidal waters, 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 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 preferred 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 Alternate Onshore Substation Alternative

The Shore Street landfall site is west of the Central Park and Worcester Avenue landfall sites. It 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 Mayflower Wind to HDD underneath the existing cables in the approach to the landfall location.

Mayflower Wind will utilize HDD for the sea-to-shore transition of export cables between the ocean and the land; therefore, there are no anticipated impacts to tidal waters. Due to HDD drilling activities, there is 0.26 acre of anticipated wetland impacts. There is 0.01 acre of potential impacts on non-tidal waters due to a small stream crossing. 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.

Th 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 preferred Onshore Substation located at Lawrence Lynch and 6.4 miles (10.25 kilometers) from the alternate 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	Worcester Ave Landing to Preferred Onshore Substation	Central Park Landing to Preferred Onshore Substation	Shore Street Landing to Alternate Onshore Substation
Linear Foot of Cable [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
Amount of Dredge Material [c]	0 CY	1,227,786 CY	1,195,995 CY	1,250,729 CY	1,225,045 CY	1,279,025 CY	0 CY	0 CY	0 CY
Amount of Fill Material	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres
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
Wetland Impacts	0 acres	0 acres	0 acres	0 acres	0 acres	0 acres	.22 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 per cable (5 cables total). 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.

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) with Point of Interest at Brayton Point, with Portsmouth Route Options 1, 2, 2B, and 3

The preferred route alternative over Aquidneck Island via the Lee River 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 Boyd's 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 interest (POI) at Brayton Point in Somerset, Massachusetts.

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

- Route Option 1 (133,187 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay. Because the route in its entirety would be HDD, there are no impacts on tidal waters, non-tidal waters, wetlands, or other protected resource areas anticipated (Table F-2).

- Route Option 2 (131,227 linear feet of cable): Route Option 2 would continue east onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction. Because the route utilizes mostly HDD installation methodology, there are minimal impacts expected. There is 0.07 acre of impact anticipated due to a stream crossing along the route. There are also 1.12 acres of fill in wetlands anticipated due to construction and HDD activities through the Aquidneck Land Trust. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 2B (131,389 linear feet of cable): Route Option 2B 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 utilizes mostly HDD installation methodology, there are minimal impacts expected. There is 0.07 acre of impacts anticipated due to a stream crossing along the route. There is also 0.03 acre of fill in wetlands anticipated due to construction and HDD activities on the Roger Williams University property. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 3 (133, 242 linear feet of cable): 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 utilizes mostly HDD

installation methodology, there are minimal impacts expected. There is 0.07 acre of impacts anticipated due to a stream crossing along the route. There is also 0.03 acre of fill in wetlands anticipated due to construction and HDD activities on the Montaup Country Club property. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

Mayflower Wind chose the preferred route alternative 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 channels, protected wildlife areas, and the U.S. Navy.

Proposed Action over Aquidneck Island via the Taunton River (Eastern Route) with Point of Interest at Brayton Point, with Portsmouth Route Options 1, 2, 2B, and 3

This route alternative over Aquidneck Island via the Taunton River 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 Boyd's 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 northeast through Mount Hope Bay to Brayton Point via the Taunton River and would connect to the 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 Boyd's Lane and Park Avenue on the east side of Boyd's Lane. From here, four onshore route variants are being considered:

- Route Option 1 (133,809 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, with HDD conducted on the east side of the Mount Hope Bridge into Mount Hope Bay. Because the route in its entirety would be HDD, there are minimal impacts on tidal waters, wetlands, and other protected resource areas anticipated. Due to a stream crossing with a culvert along the route, there is 0.04 acre of impact on non-tidal waters anticipated (Table F-2).

- Route Option 2 (131,849 linear feet of cable): Route Option 2 would continue east onto Anthony Road, turning north onto RIDEM/Aquidneck Land Trust, with HDD conducted in a northeasterly direction. Because the route utilizes mostly HDD installation methodology, there are minimal impacts expected. There is 0.07 acre of impact anticipated due to a stream crossing along the route. There are also 1.12 acres of fill in wetlands anticipated due to construction and HDD activities through the Aquidneck Land Trust. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 2B (132,011 linear feet of cable): Route Option 2B 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 utilizes mostly HDD installation methodology, there are minimal impacts expected. There is 0.07 acre of impact anticipated due to a stream crossing along

the route. There is also 0.03 acre of fill in wetlands anticipated due to construction and HDD activities on the Roger Williams University property. There are no other anticipated impacts on protected resources. See Table F-2 for an impact summary.

- Route Option 3 (133,864 linear feet of cable): 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 utilizes mostly HHD installation methodology, there are minimal impacts expected. There is 0.07 acre of impact anticipated due to a stream crossing along the route. There is also 0.03 acre of fill in wetlands anticipated due to construction and HDD activities on the Montaup Country Club property. There are no other anticipated impacts on protected resources.

This 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 was chosen because it 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.

Habitat Minimization Alternative C1 Western (Middletown/ Paradise Ave) via the Lee River (Western Route) with Point of Interest at Brayton Point with Portsmouth Route Options 1, 2, 2B, and 3:

Habitat 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, 2, 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 and would connect to the POI at Brayton Point in Somerset, Massachusetts.

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

- Route Option 1 (137,733 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, 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 0.12 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.01 acre 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 2 (135,773 linear feet of cable): Route Option 2 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 is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There are 1.12 acres of anticipated impacts 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 2B (135,935 linear feet of cable): Route Option 2B would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.09 acre 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 (137,788 linear feet of cable): 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 is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.04 acre of anticipated impacts on wetlands due to construction activities. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

Mayflower Wind does not prefer this route due to the additional length and impacts on sensitive environmental resources. 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 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.

Habitat Minimization Alternative C1 Western (Middletown/ Paradise Ave) via the Taunton River (Eastern Route) with Point of Interest at Brayton Point with Portsmouth Route Options 1, 2, 2B, and 3

Habitat 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, 2, 2B, and 3 discussed above and continuing offshore through Mount Hope Bay. The cables would then travel northeast through Mount Hope Bay to Brayton Point via the Taunton River and would connect to the POI at Brayton Point in Somerset, Massachusetts.

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

- Route Option 1 (138,355 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, 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 0.12 acre of impact anticipated to non-tidal waters due to a stream crossing along the route.

There is 0.01 acre 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 2 (136,395 linear feet of cable): Route Option 2 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 is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There are 1.12 acres of anticipated impacts 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 2B (136,557 linear feet of cable): Route Option 2B would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.09 acre of anticipated impacts 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 (138,410 linear feet of cable): 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 is 0.15 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.04 acre 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.

Mayflower Wind does not prefer this route due to the additional length and potential impacts on sensitive environmental resources. 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 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 miles of the route along with ten archaeological sites along the route.

Habitat Minimization Alternative C1 Eastern (Middletown/ Mitchell's Lane) via the Lee River (Western Route) with Point of Interest at Brayton Point with Portsmouth Route Options 1, 2, 2B, and 3

Habitat 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 Habitat 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, 2, 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 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 Sachest Point National Wildlife Refuge.

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

- Route Option 1 (137,538 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, 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 is 0.19 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There are no anticipated impacts on wetlands, eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2 (135,578 linear feet of cable): Route Option 2 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 is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There would be 1.12 acres of impact on wetlands due to construction activities under the Aquidneck Land Trust. There are no anticipated impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2B (135,740 linear feet of cable): Route Option 2B would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.8 acre of anticipated impact on wetlands due to construction activities. There would be no impacts on eelgrass or mudflats. Route Option 2B would also pass through several protected resource areas including the Norman Bird Sanctuary and the Sachest Point National Wildlife Refuge. See Table F-2 for an impact summary.

- Route Option 3 (137,593 linear feet of cable): 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 is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.03 acre 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.

Mayflower Wind does not prefer this route due to the additional length and potential impacts on sensitive environmental resources. 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.

Habitat Minimization Alternative C1 Eastern (Middletown/ Mitchell's Lane) via the Taunton River (Eastern Route) with Point of Interest at Brayton Point with Portsmouth Route Options 1, 2, 2B, and 3

Habitat 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 Habitat 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, 2, 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 Taunton River and would connect to the POI at Brayton Point in Somerset, Massachusetts.

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

- Route Option 1 (138,160 total linear feet of cable): Route Option 1 would continue north on Boyd's Lane to the roundabout, 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 is 0.19 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There are no anticipated impacts on wetlands, eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2 (136,200 linear feet of cable): Route Option 2 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 is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There would be 1.12 acres of impact on wetlands due to construction activities under the Aquidneck Land Trust. There are no anticipated impacts on eelgrass or mudflats. See Table F-2 for an impact summary.

- Route Option 2B (136,362 linear feet of cable): Route Option 2B would continue east onto Anthony Road and onto Roger Williams University property, with HDD conducted in a northeasterly direction toward Mount Hope Bay. There is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.8 acre of anticipated impacts 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 (138,215 linear feet of cable): 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 is 0.21 acre of impact anticipated to non-tidal waters due to a stream crossing along the route. There is 0.03 acre 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.

Mayflower Wind does not prefer this route due to the additional length and potential impacts on sensitive environmental resources. This onshore route passes through multiple residential areas, and 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.

Habitat Minimization Alternative C2 via the Lee River (Western Route) with Point of Interest at Brayton Point

Habitat Minimization Route C2 via the Lee River 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.

This route would be 146,661 linear feet, and because the route utilizes mostly HHD installation methodology, there are minimal expected impacts on tidal waters. There is 0.44 acre of non-tidal impacts anticipated due to a stream crossing along the route. There is also 0.05 acre of fill in wetlands anticipated due to construction. There would be no impacts on eelgrass or mudflats. See Table F-2 for an impact summary. Alternative C2 via the Lee River would also pass through several protected resource areas including USACE National Channel Framework, the Nature Conservancy Pocasset Ridge Conservation Area, and the Audubon Emilie Ruecker Wildlife Sanctuary.

Mayflower Wind does not prefer this route due to 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. 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-wa, which would require a trenchless installation method.

Habitat Minimization Alternative C2 via the Taunton River (Eastern Route) with Point of Interest at Brayton Point

Habitat Minimization Route C2 via the Taunton River 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 cables would then travel northeast through Mount Hope Bay to Brayton Point via the Taunton River and would connect to the POI at Brayton Point in Somerset, Massachusetts.

This route would be 147,283 linear feet, and because the route utilizes mostly HDD installation methodology, there are minimal expected impacts on tidal waters. There is 0.44 acre of non-tidal impacts anticipated due to a stream crossing along the route. There is also 0.05 acre of fill in wetlands anticipated due to construction. There would be no impacts on eelgrass or mudflats. See Table F-2 for impact summary. Alternative C2 via the Taunton River would also pass through several protected resource areas including USACE National Channel Framework, the Nature Conservancy Pocasset Ridge Conservation Area, and the Audubon Emilie Ruecker Wildlife Sanctuary.

Mayflower Wind does not prefer this route due to 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. 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 ft of Nonquit Pond and through the Tiverton Four Corners Historic District.

Before entering Mt. 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 the residential Village at Mt. Hope Bay. 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 2 over Aquidneck Island and Western Landfall	Proposed Action with Route Option 2B 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 2 over Aquidneck Island and Eastern Landfall	Proposed Action with Route Option 2B over Aquidneck Island and Eastern Landfall	Proposed Action with Route Option 3 over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 western with Route Option 1 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 western with Route Option 2 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 western with Route Option 3 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 western with Route Option 1 over Aquidneck Island and Eastern Landfall
Linear Feet of Cable (LF)	0	133,187	131,227	131,389	133,242	133,809	131,849	132,011	133,864	137,733	135,773	135,935	138,355
Dredge Material (acres)	0	0	0	0	0	0	0	0	0	0	0	0	0
Amount of Fill in Tidal Waters (Cable Protection) (acres)*	0	0	0	0	0	0	0	0	0	0	0	0	0
Amount of Fill in Non-tidal Waters (stream crossings) (acres)	0	0	0.07	0.07	0.07	0.04	0.07	0.07	0.07	0.12	0.15	0.15	0.12
Amount of Fill in Wetlands (acres)	0	0	1.12	0.03	0.03	0.00	1.12	0.03	0.03	0.01	1.12	0.09	0.01
Impacts to Other SAS (Eelgrass, Mudflat) (acres)	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	Middletown Cemetery, Middletown Historical Society Property	Middletown Cemetery, Middletown Historical Society Property	Middletown Cemetery, Middletown Historical Society Property
										Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge

Table B

	Habitat Minimization Alternative C1 western with Route Option 2 over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 western with Route Option 2B over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 western with Route Option 3 over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 eastern with Route Option 1 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 eastern with Route Option 2 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 eastern with Route Option 2B over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 eastern with Route Option 3 over Aquidneck Island and Western Landfall	Habitat Minimization Alternative C1 eastern with Route Option 1 over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 eastern with Route Option 2 over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C1 eastern with Route Option 2B over Aquidneck Island and Eastern Landfall	Habitat Minimization Alternative C2 and Western Landfall	Habitat Minimization Alternative C2 and Eastern Landfall
Linear Feet of Cable (LF)	136,395	136,557	138,410	137,538	135,578	135,740	137,593	138,160	136,200	136,362	146,661	147,283
Dredge Material (acres)	0	0	0	0	0	0	0	0	0	0	0	0
Amount of Fill in Tidal Waters (Cable Protection) (acres)	0	0	0	0	0	0	0	0	0	0	0	0
Amount of Fill in Non-tidal Waters (stream crossings) (acres)	0.15	0.15	0.15	0.19	0.21	0.21	0.21	0.19	0.21	0.21	0.44	0.44
Amount of Fill in Wetlands (acres)	1.12	0.09	0.04	0.00	1.12	0.80	0.03	0.00	1.12	0.80	0.05	0.05
Impacts to Other SAS (Eelgrass, Mudflat) (acres)	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	National Channel Framework - USACE	National Channel Framework - USACE
	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest Point Nat'l Wildlife Refuge	Sachest 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:
PDE max from the COP was used for the width of the corridor for calculations (40 feet; 12 meters) (6 cables).
HDD installation of the cables will be utilized and were specifically designed to avoid wetlands and sensitive areas to the extent practicable.

F.3 Summary

Based on the analysis performed, Mayflower Wind undertook a thorough route selection process for both offshore and onshore components of the Project. Mayflower Wind identified various routes and installation techniques as potential alternatives to satisfy the regional need for the Project to provide renewable clean energy from offshore wind generation. Mayflower Wind compared possible routes and route variants based upon reasonable criteria to evaluate the environmental impacts, social impacts, costs, and long-term maintainability 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 such as the Clean Energy Resource 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 preferred site in Falmouth was evaluated and chosen based on land availability and proximity to potential landfall locations. Subsequently, Mayflower Wind ruled out locations with greater environmental impacts. Sites were rejected for being too small to house all of the necessary equipment for the preferred 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 preferred onshore and offshore route variants would enable Mayflower 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, Mayflower 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.

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