

Environmental Notification Form

Cape Cod Canal Pipeline Relocation Project

APRIL 2025

PREPARED FOR

Algonquin Gas Transmission, LLC

PREPARED BY

SWCA Environmental Consultants

Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only
EEA#:

MEPA Analyst:

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

| Project Name: Cape Cod Canal Pipeline Relocation Project | | | | |
|---|--------|---|--|--|
| Street Address: N/A – linear right-of-way project | | | | |
| Municipality: Bourne | | Watershed: Red Harbor-Cape Co | Brook-Onset Bay and Barnstable | |
| Universal Transverse Mercator Coordinates: Start: 19T 367929.74mE, 4626514.68mN End: 19T 369128.78mE, 4621520.52mN | | Latitude: Start: 4 Longitude: Start: | 1.779494, End: 41.734727 : -70.589214, -70.573692 | |
| Estimated commencement date: Q1 2027 | | Estimated comp | letion date: Q3 2029 | |
| Project Type: Utility | | Status of project | design: 30% complete | |
| Proponent: Algonquin Gas Transmission, LLC | (Algon | quin) | | |
| Street Address: 890 Winter Street, Suite 320 | | | | |
| Municipality: Waltham | | State: MA | Zip Code: 02451 | |
| Name of Contact Person: Katelyn Wheeler | | | | |
| Firm/Agency: SWCA Environmental Consultan | nts | Street Address: 8 | 3 Science Park Road | |
| Municipality: Scarborough | | State: Maine | Zip Code: 04074 | |
| Phone: 207-509-4386 F | ax: | | E-mail: katelyn.wheeler@swca.com | |
| Phone: 207-509-4386 I Pax: I E-mail: katelyn.wheeler@swca.com Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)? Image: Comparison of the comp | | | | |
| | | | | |

See Attachment 7 for a complete list of permits and approvals required from state agencies.

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

The Project would require new permanent right-of-way (ROW) and/or land acquisition on parts of the following Article 97 lands: Buzzards Bay Water District (G-31 pipeline), Sacrifice Rock Woods Conservation Area (G-31 pipeline), Southeast District HQ (G-31 pipeline), and the Camp Edwards WMA (G-31 and G-32 pipelines, permanent access road PAR G32-3.39, the Pave Paws Road M&R [metering and regulating] station). A total of 17.68 acres of Article 97 lands are within permanent easement of the 30% route. Algonquin continues to evaluate the route to determine the final land transfer proposed.

Temporary workspace, contractor yards, and/or access roads are also proposed on these Article 97 lands, as well as the Cape Cod Land Bank Acquisition property. See Attachment 2 for map locations of Article 97 lands.

| Summary of Project Size | Existing | Change | Total |
|--|--------------------------------------|---|--------------------------------------|
| & Environmental Impacts | | | |
| LAND | | | |
| Total site acreage | 125.12 | | |
| New acres of land altered | | 125.12 | |
| Acres of impervious area | 0.62 | +4.75 | 5.37 |
| Square feet of new bordering vegetated wetlands alteration | | 22,630 | |
| Square feet of new other wetland alteration | | Isolated Land Subject to Flooding: 9,583 | |
| Acres of new non-water dependent use of tidelands or waterways | | 0 acres – Pipeline to be installed under the Cape Cod Canal via horizontal direction drill | |
| STRUCTURES | | | |
| Gross square footage | 2,690 | +11,462 | 14,152 |
| Number of housing units | 0 | 0 | 0 |
| Maximum height (feet) | approximately 20 | Approximately +4.5 | 24.5 |
| TRANSPORTATION | | | |
| Vehicle trips per day (operation) | < 1 (occasional maintenance trip) | 0 | < 1 (occasional maintenance trip) |
| Vehicle trips per day (construction) | 0 | +180 | 180 (during construction only) |
| Parking spaces (operation) | ~ 4 (2 per station) | + 4 | ~ 8 (2 per station) |
| Parking spaces (construction) | 0 | +300 | 300 (during construction only) |
| WASTEWATER | | | |
| Water Use (Gallons per day) | 0 | TBD (hydrostatic test of new pipe; one-time event). | 0 |

| Water withdrawal (GPD) | 0 | TBD (hydrostatic test of new pipe; one-time event). | 0 | |
|---|---|---|---|--|
| Wastewater generation/treatment (GPD) | 0 | 0 | 0 | |
| Length of water mains (miles) | 0 | 0 | 0 | |
| Length of sewer mains (miles) | 0 | 0 | 0 | |
| Has this project been filed with MEPA before? Yes (EEA #) 	No Has any project on this site been filed with MEPA before? Yes (EEA #) 	No original construction: | | | | |

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

Algonquin Gas Transmission, LLC (Algonquin), is proposing the Cape Cod Canal Pipeline Relocation Project (Project), which involves modifications to Algonquin's existing interstate natural gas pipeline system facilities within the Town of Bourne, Massachusetts. The purpose of the Project is the result of the U.S. Army Corps of Engineers determination that gas line relocation is necessary to address the ongoing maintenance needs of the Bourne and Sagamore Bridges. This decision was made as part of the U.S. Army Corps of Engineers Final Major Rehabilitation Evaluation Report (MRER), issued March 2020, In addition, the U.S. Army Corps of Engineers MRER/Environmental Assessment and Finding of No Significant Impact, issued March 2022, prepared to comply with National Environmental Policy Act, concluded that the preferred alternative is the replacement of both the Bourne and Sagamore Bridges. The result of this conclusion was an agreement between U.S. Army Corps of Engineers and Massachusetts Department of Transportation that Massachusetts Department of Transportation would be the proponent in a program to replace both bridges; now known as the Cape Cod Bridges Program (CCBP).

Algonquin, along with other utilities, must relocate pipeline infrastructure while continuing to provide uninterrupted natural gas service to the National Grid distribution system on both sides of the Cape Cod Canal, which powers homes and businesses throughout Cape Cod. Algonquin's Project will satisfy this purpose and need with two primary actions as described below.

Natural gas supply is currently transported on the Algonquin interstate pipeline system to two existing National Grid delivery points in the Town of Bourne located on the "mainland" north of the Cape Cod Canal. One M&R station is located at the intersection of U.S. Route 6 and Massachusetts Route 25 at the Bourne Bridge (Bourne M&R Station), which supplies National Grid's Bourne Take Station. The second existing M&R station is located south of U.S. Route 6 and Massachusetts Route 25 at the Bourne M&R Station) and supplies National Grid's Sagamore Take Station. The second existing M&R station and supplies National Grid's Sagamore Take Station. These joint M&R/Take station sites must be relocated along with segments of connecting pipe because they are within the development area of the CCBP. In summary, Algonquin proposes to remove and relocate its existing pipelines and M&R stations to avoid conflicts with the CCBP development areas.

National Grid currently receives gas from Algonquin at the existing Bourne M&R Station and Sagamore M&R Station and transports it across the Cape Cod Canal to its customers via two high-pressure 10-inch diameter pipelines, each with operating pressures of 270 pounds per square inch ("psi") that are currently attached to the Bourne and Sagamore Bridges, respectively. As a result of the above noted decision by U.S. Army Corps of Engineers (USACE), National Grid's pipelines cannot remain on the existing bridges nor can they be installed on any new bridges. In response, MassDOT and Algonquin have entered into an agreement whereby Algonquin will construct two new replacement pipelines and associated facilities to supply gas to National Grid's distribution system on Cape Cod. Conditions within the Project area include existing maintained pipeline rights-of-way (ROWs) associated with four pipelines; two existing M&R stations located by the bridges; electric transmission overhead utility ROWs; forested, shrub, and herbaceous vegetative communities outside of the currently maintained ROWs; residential, recreational, and industrial lands; Joint Base Cape Cod military facility; and paved and dirt roads. The Project area includes Article

97 properties (i.e., Camp Edwards Wildlife Management Area), Massachusetts Natural Heritage and Endangered Species Program (NHESP)-mapped Estimated/Priority Habitat of Rare Species, the Herring River Area of Environmental Critical Concern (ACEC), and one Environmental Justice (EJ) community. No agricultural lands are crossed. Wetland resource areas in the Project area include the Cape Cod Canal, one bordering vegetated wetland (BVW), one isolated land subject to flooding (ILSF), and one isolated vegetated wetland (IVW).

As preliminarily designed, construction of the Project facilities will require the disturbance of approximately 125.12 acres of land and operation of the proposed Project facilities will permanently impact approximately 29.72 acres of land. The primary impacts on land use consist of clearing forested areas, temporary restrictions on existing land uses during construction, and restrictions on future land uses along the permanent ROW. Other workspace outside of the permanent ROW, such as additional temporary workspace (ATWS), will only be used as necessary during construction activities, then that land will undergo final restoration and stabilization in that particular area before the impacted lands are allowed to return to previous land use. The permanent ROW will be maintained in a generally herbaceous condition consistent with easement agreements following construction.

Algonquin has initiated the Pre-Filing Review Process with the Federal Energy Regulatory Commission (FERC) and Docket No. PF25-4-000 has been assigned to the Project.

Describe the proposed project and its programmatic and physical elements:

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

As preliminarily designed, the Project includes the installation of approximately 5.52 miles of new 16-inch and 18-inch diameter pipeline; the relocation of approximately 0.37 mile of existing pipeline; the removal of approximately 1.53 mile of existing pipeline; the relocation of two M&R stations; the installation of two new M&R stations; and installation of new aboveground facilities such as valve sites, launchers and receivers. It will also require the use of seven contractor laydown yards, four permanent access roads, and 18 temporary access roads. Attachment 1 – Figure 1 show the locations of these proposed Project facilities and their association with the existing Algonquin system on U.S. Geological Survey (USGS) topographic map base. Attachment 2 -Figure 2 contains specific Project mapping that shows the Project facilities, associated workspace, and state resource areas that are applicable to this MEPA review.

Pipeline Facilities

Approximately 5.52 miles of new pipeline is proposed to replace National Grid's two existing 10-inch diameter natural gas pipelines that are currently attached to the Bourne and Sagamore Bridges and supply National Grid's customers located in Bourne. The replacement facilities will cross the Cape Cod Canal in one location via horizonal direction drill (HDD), replacing the two crossings currently in place. The majority of the pipeline installation will be accomplished using conventional open trench method in a proposed construction ROW between 90 and 100 feet wide (50-foot permanent easement and a 40- to 50-foot temporary workspace).

- G-31 pipeline: Installation of approximately 2.2 miles of 18-inch diameter pipeline that would transport
 natural gas from an existing valve site located at the junction of Algonquin's G-8L, G-11, and G-24
 pipelines southeast across the Cape Cod Canal to its terminus at the proposed Pave Paws Road M&R
 Station. The G-31 pipeline crossing of the Cape Cod Canal will be constructed through HDD to avoid
 direct impacts to the Canal, associated state- and locally protected wetland resource areas, federal
 recreation lands, and forest land south of the canal crossing.
- G-32 pipeline: Installation of approximately 3.4 miles of 16-inch diameter pipeline that would transport natural gas from the proposed Pave Paws Road M&R Station to the proposed Bourne Rotary M&R Station. The G-32 pipeline installation includes an HDD through steep slopes.
- G-24 pipeline relocation: Relocation of approximately 0.37 mile of 18-inch diameter pipeline. The relocated segment of the G-24 pipeline that intersects the Sagamore Bridge overpass will be installed via HDD to avoid interference with the CCBP.
- G-11 pipeline removal: Removal of an approximately 750-foot segment of the existing 8-inch diameter pipeline between Algonquin's existing Sagamore M&R Station and the proposed launcher/receiver site described below.
- G-8C and G8L pipeline removal: Approximately 0.5 miles of Algonquin's existing 8-inch diameter G-8C pipeline and approximately 0.5 miles of its existing 8-inch diameter G-8L pipeline will be removed from Algonquin's existing ROW. These pipeline segments are required to be removed to avoid conflict with the

Aboveground Facilities

- Sagamore M&R Station: Algonquin's existing Sagamore M&R Station is located immediately adjacent to the Sagamore Bridge and will be relocated east of the Sagamore Bridge at the intersections of Scusset Beach Road and Williston.
- Bourne M&R Station: Algonquin's Bourne M&R Station is located immediately adjacent to the Bourne Bridge along U.S. Route 6 (Route 6) across from Nightingale Pond Road and will be relocated along Algonquin's existing 8-inch diameter pipelines G-8C and G-8L between Massachusetts Route 25 (Route 25) and Mirasol Drive.
- Pave Paws Road M&R Station: This new M&R station will be located west of Pave Paws Road at the eastern terminus of Algonquin proposed 18-inch diameter G-31 pipeline.
- Bourne Rotary M&R Station: This new M&R will be installed along Massachusetts Route 28 (Route 28) south of the Bourne Rotary, at the beginning of Algonquin's 16-inch diameter G-32 pipeline.
- Valve Sites: Mainline valves will be installed within areas already disturbed by pipeline construction and will be located completely within the permanent operation ROW.
- Launcher and Receiver Sites: A pipeline "pig" is an inline inspection device used to clean or inspect the
 pipeline. Pig launchers and receivers are aboveground facilities where pipeline pigs are inserted or
 retrieved from the pipeline. Pig launcher and receiver sites will be located completely within the permanent
 operation ROW. A new launcher and receiver facility is proposed at the start and end of both the G-31 and
 G-32 pipelines. New receiver facilities will also be required at the new terminus points for the G-11, G-8C,
 and G-8L pipelines.

Contractor Yards

Seven contractor ware yards have been identified along the proposed G-31 and G-32 pipelines to accommodate construction. The contractor ware yards are primarily on open land or land currently used for industrial purposes. Depending upon the condition of these yards and their current use, some surface grading, drainage improvements, placement of surface materials (e.g., crushed rock), and internal roadways may be required.

Access Roads

To the extent feasible, existing public and private road crossings along the proposed Project will be used as the primary means of accessing the ROW. Existing dirt and gravel access roads within the Project area created and frequently used by other utility companies will be used to the extent practicable. A total of 22 access roads will be utilized during construction of the Project. The majority of these access roads are existing gravel or dirt access roads utilized by other utility companies and/or the Joint Base Cape Cod personnel. The Project will utilize a total of 18 temporary access roads during construction activities and 4 permanent access roads will be required as part of the Project. The typical width utilized for the temporary access roads during construction will be 50 feet. During operation, permanent access roads will be maintained at 20 feet wide. Any improvements made to these roads (e.g., grading and installation of gravel, if necessary) will be maintained by Algonquin's operations personnel to provide continuing access to the ROW and M&R station sites in these locations.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

NOTE: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.

The overall purpose and need of the Project are to accommodate the replacement of the Bourne Bridge and

Sagamore Bridge by the CCBP while continuing to provide uninterrupted natural gas service to the National Grid distribution system on both sides of the Cape Cod Canal. Algonquin considered system alternatives, pipeline routing alternatives and variations, and aboveground facility siting alternatives in developing a project design that minimizes potential adverse effects on the natural and human environment while satisfying the Project's purpose and need. As the Project design is 30% complete, Algonquin is still in the process of evaluating siting options to further reduce impacts and has been focused on maximizing the collocation of the proposed pipeline routes adjacent to or within existing developed linear corridors, such as electric transmission lines and roads, to avoid and minimize potential impacts to landowners, existing and future land uses, and environmental resources.

In general, Algonquin evaluated the feasibility of various alternative pipeline and aboveground facility configurations, including the repurposing of Algonquin's existing G-24 pipeline to meet the Project purpose and need. Algonquin determined that the G-24 is not a feasible solution to replace the transportation capacity of the two National Grid high-pressure pipelines because there is not adequate capacity on this pipeline to fulfill gas entitlements for National Grid's two on-Cape markets while maintaining service to Algonquin's existing G-24 customers. In addition, National Grid prefers at least two natural gas transport feeds across the canal for redundancy and reliability purposes, which would include the existing G-24 pipeline and a new pipeline canal crossing as part of this Project. Therefore, any gas transportation solution to supply National Grid's on-Cape service area would require at least one new canal crossing.

Algonquin identified three overall siting criteria that must be met to satisfy the purpose and need of the Project.

- 1. Remove existing Algonquin pipelines and Bourne M&R Station to avoid conflicts with the CCBP's Bourne Bridge development area and reestablish service to National Grid at an alternate M&R station location.
- 2. Remove existing Algonquin pipelines and Sagamore M&R Station to avoid conflicts with the CCBP's Sagamore Bridge development area and reestablish service to National Grid at an alternate M&R station location.
- 3. Transport natural gas from the mainland across the Cape Cod Canal to service National Grid's existing distribution systems at the Bourne Bridge (Bourne-Cape system) and Sagamore Bridge (Sagamore-Cape system).

Using these three siting criteria, Algonquin has evaluated systems alternatives, pipeline routing alternatives and variations, and M&R station site alternatives, which are summarized below.

Systems Alternatives

System alternatives are alternatives to the proposed Project that would make use of other existing, modified, or proposed natural gas pipeline systems or existing compression facilities to meet the purpose and need. System alternatives involve the transportation of the equivalent amount of incremental natural gas volumes by the expansion of existing pipeline systems or by the construction and operation of other new pipeline systems.

Algonquin is the only interstate natural gas system servicing southeastern Massachusetts and Cape Cod. Accordingly, using the Algonquin system to satisfy the Project purpose and need is the only feasible system alternative for providing uninterrupted delivery of natural gas to National Grid's Cape Cod service area.

Replacement Pipeline Alternatives

Algonquin evaluated the feasibility of installing new pipelines under the Cape Cod Canal at alternate crossing locations to minimize environmental and land use impacts while continuing to provide natural gas supply to National Grid's Bourne-Cape and Sagamore-Cape systems. Algonquin considered four different routings scenarios:

- 1. Install one new pipeline in the mid-canal area that is collocated with an existing electric transmission line corridor (the Proposed Project).
- 2. Install one new pipeline in the mid-canal area and install pipelines to the north and south in Sandwich Road.
- 3. Install a new pipeline across the Cape Cod Canal in the vicinity of National Grid's high-pressure pipeline at the Bourne Bridge and a second pipeline at the Sagamore Bridge.
- 4. Install a new pipeline in the Sagamore-Cape area that ties into Algonquin's existing G-24 pipeline to supply National Grid's Bourne-Cape and Sagamore-Cape systems.

The Proposed Project solution to satisfy the purpose and need involves the construction of the G-31 and G-32 pipelines to transport natural gas from the mainland across the Cape Cod Canal to service National Grid's existing Bourne-Cape and Sagamore-Cape service areas via two new M&R stations. Algonquin considered separate crossings of the Cape Cod Canal in the vicinity of the Bourne and Sagamore Bridges but determined that these locations presented too many construction constraints and potential impacts to existing residents and businesses to serve as viable solutions to satisfy the purpose and need.

Route Variations

Algonquin has evaluated several route variations in site-specific locations where constraints have created routing challenges due to issues such as proximity to residences, parallel stream crossings, topography, utility structures, and other factors. Such variations include the following:

- G-31 Pipeline: Algonquin is evaluating a route variation that would place the G-31 pipeline on the southern edge of the electric transmission line corridor south of Bournedale Road to avoid crossing a freshwater wetland, avoid encroaching into a Zone 1 Wellhead Protection Area associated with the Town of Bourne Water District's Pump Station #4, and avoid clearing the wooded buffer of a Certified Vernal Pool.
- G-32 Pipeline: Algonquin has evaluated and adopted a route variation along the G-32 pipeline on the Joint Base Cape Cod (JBCC) property near the intersection of Jarvis Road and Summit Road. An early iteration of the design proposed to open trench construction across the steeply sloped terrain encountered along the overhead transmission line corridor that extends to the south through the JBCC across Gibbs Road. Algonquin has reconsidered their design and now proposes to avoid this steeply sloped terrain by constructing the G-32 pipeline beneath this area via HDD. This proposed HDD would also reduce the amount of tree clearing required in this area.

Removed and Relocated Pipeline Facility Alternatives

- G-8L/G-8C Pipelines: Algonquin proposes to remove portions of the G-8L and G-8C pipelines that are
 located within the CCBP's Bourne Bridge development area. Based on preliminary information obtained
 by Algonquin, current easement agreements do not allow Algonquin to abandon the pipelines in place.
 Therefore, the G-8L and G-8C pipelines that overlap with the CCBP's Bourne Bridge development area
 are proposed to be removed from the existing ROW, which will result in temporary earth disturbance
 within Route 6, as well as along the edge of Nightingale Pond and nearby wetlands.
- G-11 Pipeline: The CCBP is requiring Algonquin to remove a segment of the G-11 pipeline to avoid conflicts with the reconstruction of the Sagamore Bridge. To meet this requirement, Algonquin proposes to remove approximately 750 feet of the G-11 pipeline from the existing Sagamore M&R Station to the proposed launcher/receiver facility. Algonquin's current pipeline easement agreements do not allow for the G-11 pipeline to be abandoned in place; no feasible alternatives to the proposed removal of the segment of the G-11 pipeline to accommodate the CCBP development area have been identified.
- G-24 Pipeline: The CCBP is requiring Algonquin to remove a segment of the G-24 pipeline that passes beneath the Sagamore Bridge to avoid conflicts with the reconstruction of the bridge. To maintain service on the G-24 pipeline, Algonquin proposes to install a new segment of the G-24 pipeline to the north of the existing ROW. This pipe segment will be installed beneath the Route 6 approach to the Sagamore Bridge using open trench, bore, and/or HDD technology to achieve a burial depth that avoids bridge infrastructure. The area surrounding the G-24 pipeline at the Sagamore Bridge is densely developed with residential neighborhoods to the east, north, and west, commercial developments on Canal Street, and the Route 6/Massachusetts Route 3 interchange. Further, the Cape Cod Canal presents a significant constraint to the siting of a new pipeline. Accordingly, there are limited options available to relocate a pipeline in this area to avoid the CCBP Sagamore Bridge development area. Algonquin continues to evaluate the feasibility of siting the relocated G-24 pipeline closer to the commercial developments away from residential areas by conducting detailed engineering, biological, and cultural resources studies.

Relocated Aboveground Facilities Alternatives

 Bourne M&R Station: The existing Bourne M&R Station is located on a parcel of land southeast of the Route 28/Route 6 crossing and directly west and adjacent to the Town of Bourne Scenic Park. This M&R station must be removed to avoid the CCBP's Bourne Bridge development area. Algonquin's currently proposed Bourne M&R Station site is located approximately 0.6 mile north of the existing station along the G-8L/G-8C pipeline ROW. The site lies on undeveloped land situated directly east of a Route 25 offramp and west of Deseret Drive. Algonquin is currently evaluating additional land parcels in this area for suitability as an M&R station site.

 Sagamore M&R Station: The existing Sagamore M&R Station is located directly west and adjacent to the Route 6 approach to the Sagamore Bridge on the mainland. This M&R station must be removed and relocated to avoid the CCBP development area. Algonquin evaluated locations for the relocated Sagamore M&R Station site considering the CCBP development area and the available points of potential connection between the G-24 pipeline and National Grid's Sagamore-Mainland distribution system. Algonquin is conducting detailed engineering, biological, and cultural resource studies of alternate parcels located northeast of the intersection of Scusset Beach Road and Williston Road and in the vicinity of Meetinghouse Lane that met the interconnection criteria and the size criteria.

New Aboveground Facilities

- Pave Paws Road M&R Station: The G-31 pipeline will transport natural gas from Algonquin's G-System
 interconnect area across the canal to the proposed Pave Paws Road M&R Station. The Pave Paws Road
 M&R Station site is located on Joint Base Cape Cod property to the north of the intersection of the
 transmission line corridor with Pave Paws Road. This M&R station site is sufficiently buffered from
 residential areas and is collocated with an existing corridor. Better site alternatives to this proposed site
 have not been identified.
- Bourne Rotary M&R Station: This new M&R station will be located on undeveloped land east of Route 28. National Grid will install a new pipe segment from their high-pressure line under Route 28 to this new M&R station. Algonquin is currently in discussions with a private landowner regarding the acquisition of land interests for the M&R station. Available land for a new M&R station is limited in the vicinity of the Bourne Rotary because of the CCBP's Bourne Bridge development area and existing and future commercial development plans. The area is also constrained by existing schools, residential areas, and public open space and recreation lands.

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative: The preferred alternative will involve land use impacts on open upland, forestland, wetlands, residential lands, and industrial land (including roadways). Appropriate sediment controls and other best management practices, such as the installation of equipment matting in wetland areas, will be used to avoid and minimize impacts on wetland resource areas during construction. Following construction, the temporary construction ROW and ATWS will be restored and allowed to return to previous use. The construction ROW will be designed to affect only those areas necessary to safely construct the Project facilities. The permanent ROW will continue to be maintained in a generally herbaceous condition in accordance with Algonquin's *Erosion and Sedimentation Control Plan* (E&SCP) and the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and Waterbody Construction and Mitigation Procedures*. Algonquin's E&SCP is provided in Attachment 9.

Any impacts to residential areas will be restored to preconstruction conditions or as specified in written landowner agreements. Algonquin will reseed disturbed lawns with the appropriate lawn seed mixtures, unless other arrangements are specified in the landowner agreements. Ornamental shrubs and other landscape plantings will be restored as specified in landowner agreements. Landowners will continue to have use of the ROW provided it does not interfere with the easement rights granted to Algonquin for construction and operation of the pipeline system. The permanent pipeline easement will prohibit certain activities such as construction of permanent structures. If any damages result to residential property during the construction of the pipeline, Algonquin will repair the damaged property or provide compensation at fair market value.

As preliminarily designed, the Project will impact three wetland resource areas, require new permanent ROW on Article 97 lands and the Herring River Watershed ACEC, and involve habitat alterations within Priority Habitats of Rare Species. Algonquin will work with state regulatory agencies, including the Massachusetts Department of Environmental Protection (MassDEP) and NHESP, as well as local and regional agencies to develop appropriate mitigation for affected land resources. The Project will meet the requirements set forth in the Executive Office of Energy and Environmental Affairs (EEA) Article 97 Land Disposition Policy and Massachusetts General Laws (M.G.L.) c. 3, s. 5A which was established to ensure No Net Loss of public conservation lands under the ownership and control of the Commonwealth.

If the project is proposed to be constructed in phases, please describe each phase: No phasing is

anticipated for the Project. In order to facilitate the CCBP, Algonquin is planning to commence Project activities in January 2027 with all proposed facilities in service by Q4 2029.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

Yes (Specify): <u>Herring River Watershed ACEC (see Attachment 2 for map locations)</u>

if yes, does the ACEC have an approved Resource Management Plan? ____ Yes ____ No;

If yes, describe how the project complies with this plan.

Will there be stormwater runoff or discharge to the designated ACEC? ____ Yes ___X_No;

If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)

Yes (Specify): Priority Habitat Nos. 601 and 455. See Attachment 2 for mapped locations.

HISTORICAL /ARCHAEOLOGICAL RESOURCES:

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth? See HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION)
No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? Section

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? X Yes _____No; if yes, identify the ORW and its location. There is a certified vernal pool in the Herring River Watershed CEC within 0.5 mile of the Project. It is outside of the construction ROW.

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? <u>X</u>Yes <u>No;</u> if yes, identify the water body and pollutant(s) causing the impairment: <u>The only impaired water crossed by the Project is the Cape Cod Canal, which is impaired for Shellfish Harvesting due to the presence of fecal coliform. The Project will cross this waterbody by HDD. Other waters within 0.5 mile of the Project are Bourne Pond (degraded aquatic habitat), Queen Sewell Pond (algae), and an unnamed tributary to Cape Cod Canal (degraded aquatic habitat). These waters are impaired due to degraded aquatic habitat. The Project is not expected to contribute to the impairment of these or any other waters.</u>

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? <u>Yes X</u> No

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations: <u>The Project involves relocating two existing M&R stations and constructing two new M&R stations. The relocation and construction of these aboveground facilities will require demolition and removal of existing facilities, grading, and introduction of new impervious surfaces (i.e., concrete pads, equipment) and gravel cover. Algonquin will install necessary temporary stormwater erosion and sedimentation management controls per the E&SCP during construction. Postconstruction stormwater management controls would be installed in accordance with applicable provisions of the MassDEP's Stormwater Management Regulations to mitigate any increase in stormwater discharge rates and/or volumes.</u>

MASSACHUSETTS CONTINGENCY PLAN:

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts

Contingency Plan? Yes ____ No _X; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):____

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ____ No_X ; if yes, describe which portion of the site and how the project will be consistent with the AUL: _____.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes _____No _X_; if yes, please describe:______

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood: <u>Wastes generated by the Project's construction will include cut timber, removed steel pipe sections, and removed aboveground facilities materials and equipment. Algonquin will recycle these materials to the extent possible. Cut timber that is removed from the Project site (and not chipped) will likely be sold to timber mills. The steel pipe sections will be recycled. The aboveground facility materials and equipment, including gravel, will be utilized to construct the new M&R stations to the extent possible.</u>

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes <u>X</u> No ; Asbestos not confirmed, but Algonquin is assuming presence and planning accordingly. if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment: <u>Algonquin will</u> <u>utilize standard construction procedures to limit emissions, including no unnecessary idling.</u>

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ____ No_X; if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? Yes _____ No _____; if yes, specify name of river and designation: ______;

if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.

Yes ___ No ___

if yes, describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures <u>proposed</u>.

ATTACHMENTS:

- 1. List of all attachments to this document.
 - Attachment 1 Figure 1: Project Location Map
 - Attachment 2 Figure 2: Project MEPA ENF Map Set
 - Attachment 3 Figure 3: Project Location Maps Relative to EJ Populations within 1 mile and 5 miles of the Project Site
 - Attachment 4 Environmental Justice Screening Form and Distribution List
 - Attachment 5 RMAT Climate Resilience Design Standards Tool Output Report
 - Attachment 6 ENF Distribution List
 - Attachment 7 Permit and Consultation List
 - Attachment 8 Massachusetts Historical Commission Correspondence
 - Attachment 9 Algonquin's Erosion and Sedimentation Control Plan
- 2. U.S.G.S. map (good quality color copy, 8-1/2 x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries. See Attachment 1 for Figure 1: USGS Locus Map.
- Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities. See Attachment 2 for Figure 2: Project MEPA ENF Map Set.
- 4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts. See Attachment 2 for Figure 2: Project MEPA ENF Map Set.
- Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase). See Attachment 2 – Figure 2 for the Project MEPA ENF Map Set.
- List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2). See Attachment 6 for a Distribution List of all agencies and persons whom the ENF has been circulated, in accordance with 301 CMR 11.16(2). Attachment 6 includes the distribution list used for the Advanced Notification (See Attachment 4).
- 6. List of municipal and federal permits and reviews required by the project, as applicable. See Attachment 7 for a Permit and Consultation List.
- 7. Printout of output report from RMAT Climate Resilience Design Standards Tool, available <u>here</u>. See Attachment 5 for the RMAT Climate Resilience Design Standards Tool Output Report.
- Printout from the EEA <u>EJ Maps Viewer</u> showing the project location relative to Environmental Justice (EJ) Populations located in whole or in part within a 1-mile and 5-mile radius of the project site. See Attachment 3 for Figure 3: Environmental Justice Map.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)) <u>X</u> Yes ____ No; if yes, specify each threshold: (a) ENF and Mandatory EIR, for the Direct alteration of 50 or more acres of land.

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows: As preliminarily designed, construction of the Project facilities will require the disturbance of approximately 125.12 acres of land from the construction and operation of the proposed Project facilities will permanently impact approximately 29.72 acres of land. The primary impacts on land use consist of clearing forested areas, temporary restrictions on existing land uses during construction, and restrictions on future land uses along the permanent ROW.

| | Existing_ | <u>Change</u> | <u>Total</u> |
|--|-----------|---------------|--------------|
| Footprint of buildings | 0.06 | +0.26 | 0.32 |
| Parking, driveways, and other impervious | 0.26 | +4.5 | 5.05 |
| Other altered areas ² | TBD | TBD | _TBD |
| Undeveloped areas ³ | TBD | TBD | TBD |
| Total: Project Site Acreage ³ | 125.12 | 29.72 | 125.12 |

¹ Parking and other paved areas = Paved roads, other impervious lands

² Other altered areas = maintained pipeline corridor, other non-impervious altered lands

³ Undeveloped areas = forested uplands and wetlands

- B. Has any part of the project site been in active agricultural use in the last five years? ____Yes X___No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?
- C. Is any part of the project site currently or proposed to be in active forestry use? ____Yes X_No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation: Algonquin is not aware of any lands crossed by the Project that have a DCR-approved forest management plan. During normal project outreach, Algonquin will determine if individual property owners plan to implement their own forest management plans.
- D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? <u>X</u> Yes <u>No</u>; if yes, describe: <u>The Project would require new permanent ROW and/or land acquisition on parts of the following Article 97 lands: Buzzards Bay Water District (G-31 pipeline), Sacrifice Rock Woods Conservation Area (G-31 pipeline), Southeast District HQ (G-31 pipeline), and the Camp Edwards WMA (G-31 and G-32 pipelines, permanent access road PAR G32-3.39, the Pave Paws Road M&R station). Temporary workspace, contractor yards, and/or access roads are also proposed on these Article 97 lands, as well as the Cape Cod Land Bank Acquisition property. See Attachment 2 for map locations of Article 97 lands.</u>
- E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? <u>X</u> Yes No; if yes, does the project involve the release or modification of such restriction? Yes <u>TBD</u> No; if yes, describe: <u>Algonquin is currently evaluating any restrictions</u>.
- F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? _ Yes <u>X</u> No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ____ No <u>X</u>; if yes, describe:

III. Consistency

The overall purpose and need of the Project are to accommodate the replacement of the Bourne Bridge and Sagamore Bridge by the CCBP while continuing to provide uninterrupted natural gas service to the National Grid distribution system on the Cape Cod Canal. The Project's consistency with the economic development, infrastructure, and open space planning initiatives by the Town of Bourne and the Cape Cod Commission are summarized below.

A. Bourne

Title: Local Comprehensive Plan Date: Revised 2019

The following sections describe the project's consistency with the Bourne Comprehensive Plan, with specific regard to:

1. Economic Development:

The economic goal of the Bourne Local Comprehensive Plan envisions Bourne as an attractive location for a diverse business community that provides rewarding year-round employment to town residents at many levels of skill, education, and experience, while contributing to the town's economy and respecting its village structure and cultural heritage. It focuses on building and redeveloping properties and business ventures in Bourne. The Project will continue to provide uninterrupted natural gas supply to National Grid distribution system on both sides of the Cape Cod Canal. This gas supply is a vital source of energy for residents and businesses in Bourne and surrounding communities on Cape Cod, particularly for heating.

2. Adequacy of Infrastructure:

The capital facilities and infrastructure goal of the Bourne Local Comprehensive Plan is to identify needs and recommend means to provide adequate community facilities to meet Bourne's current and projected needs, without placing undue burdens on its financial resources. The Project is proposed to maintain uninterrupted gas supplies to National Grid's distribution system in response to the bridge relocations. Algonquin will receive no funding from local government to construct the Project, and its proposed/relocated gas facilities are not anticipated to require or place an undue burden on Bourne's community services during or after construction.

- 3. Open Space: The open space goal of the Bourne Local Comprehensive Plan is to preserve key parcels of the remaining undeveloped land as open space for resource protection, wildlife habitat, recreation, and groundwater recharge; to maintain the esthetic beauty and character of the community; and to limit the visual and fiscal impacts of development. Algonquin has considered impacts to open spaces and measures have been taken to minimize impacts to the areas. However, some conversion from open lands to maintained ROW are anticipated. Algonquin will collaborate with landowners and agencies to avoid and minimize impacts, as well as mitigate for impacts if necessary. Due to the minimal amount of impervious surface proposed and the restoration of the majority of the workspace, the Project is not anticipated to affect groundwater recharge.
- 4. Compatibility with adjacent land uses: The Bourne Local Comprehensive Plan calls for action to preserve Bourne's cultural heritage by protecting historic sites and buildings from destruction and ensuring that new development is compatible with and complementary to historic development. To the extent practicable, Algonquin has designed the pipeline routes to be collocated with existing transportation and utility corridors to the extent possible. Algonquin is working closely with the Massachusetts Historical Commission regarding the Project and potential impacts to historical resources in the Project area.

B. <u>Cape Cod Commission</u> Title: Regional Policy Plan (RPP) Date: December 2018

The following sections describe the project's consistency with the RPP, with specific regard to:

- Economic Development: The RPP supports a sustainable regional economy comprised of a broad range of businesses providing employment opportunities to a diverse workforce. The Project supports these economic development initiatives by maintaining uninterrupted gas supplies to National Grid's distribution system available to the region's businesses. No businesses will be displaced by this Project, and without the Project, the natural gas supply to businesses would be at risk.
- 2. Adequacy of Infrastructure: The RPP promotes the development of capital facilities and infrastructure necessary to meet the region's needs while protecting regional resources. This Project is proposed to accommodate the replacement of the Bourne Bridge and Sagamore Bridge by the CCBP. Through its analysis of alternatives for pipeline routing, M&R station siting, workspace design, and consideration of available construction techniques, Algonquin is developing this Project to meet its purpose and need while minimizing impacts on regional resources to the extent possible. Algonquin continues to evaluate impacts to regional resources.
- 3. Open Space Impacts: The RPP recommends the conservation, preservation, or enhancement of a network of open space that contributes to the region's natural and community resources and systems Algonquin has considered impacts to open spaces and measures have been taken to minimize impacts to the areas. However, some conversion from open lands to maintained ROW are anticipated. Algonquin commits to working with local and regional stakeholders, such as the Cape Cod Commission.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? X Yes No; if yes, specify, in quantitative terms: <u>As preliminarily designed</u>, the Project will result in approximately 54.2 acres of forest conversion for construction activities and 20.4 acres of forest conversion for operation of the Project. Algonquin has initiated discussions with NHESP staff to discuss the Project's potential effects on protected state species.

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

- B. Does the project require any state permits related to rare species or habitat? X Yes No
- C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? X Yes No.
- D. If you answered "No" to <u>all</u> questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? X Yes No. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? <u>X</u>Yes ____No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? <u>Yes X</u>No; if yes, attach the letter of determination to this submission.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? <u>X</u> Yes <u>No</u>; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts: Based on preliminary consultation with NHESP, the Project is likely to result in a "Take" Determination and will require the filing of a Conservation Management Permit.

3. Which rare species are known to occur within the Priority or Estimated Habitat?

Based on correspondence received from the NHESP, the following rare species are known to occur in the Project area:

- Barrens dagger moth (Acronicta albarufa), threatened
- Melsheimer's sack-bearer (*Cicinnus melsheimeri*), threatened
- Eastern box turtle (Terrapene carolina), species of special concern
- Eastern whip-poor-will (Antrostomus vociferus), species of special concern
- Buck moth (Hemileuca maia), species of special concern
- Heath metarranthis (Metarranthis pilosaria), species of special concern
- Herodias underwing moth (Cataocala herodias), species of special concern
- Pine barrens speranza (Speranza exonerata), species of special concern
- Pine barrens zale (Zale lunifera), species of special concern
- Pink sallow moth (Psectraglaea carnosa), species of special concern
- Scrub euchlaena (Euchlaena madursaria), species of special concern
- Sender clearwing sphinx moth (*Hemaris gracilis*), species of special concern
- 4. Has the site been surveyed for rare species in accordance with the Massachusetts

Endangered Species Act? ____ Yes \underline{X} No.

Algonquin has completed wetland and preliminary habitat assessments of the Project area and continues to do so as it evaluates route variations and potential M&R station locations. Species-specific surveys will be done, as needed, in coordination with the NHESP.

4. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ____Yes _X__No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___Yes ___No. <u>A Notice of Intent (NOI) is planned to be filed with the Bourne Conservation Commission and MassDEP. A copy of the NOI will be filed with the NHESP.</u>

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? <u>X</u> Yes No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat: <u>Algonquin is coordinating with the NHESP to best mitigate potential impacts to state-listed species during construction activities. During operation, Algonquin will follow their NHESP-approved Operations and Maintenance Plan to mitigate potential impacts to state-listed species.</u>

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands**, **waterways**, and **tidelands** (see 301 CMR 11.03(3))? ____ Yes X ___ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands**, **waterways, or tidelands**? <u>X</u> Yes <u>No; if yes, specify which permit</u>:

- Local Order of Conditions under the Massachusetts Wetlands Protection Act
- DEP 401 Water Quality Certification

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

- A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? <u>X</u> Yes <u>No; if yes, has a Notice of Intent been filed?</u> Yes <u>X</u> No; if yes, list the date and MassDEP file number: <u>_____; if yes, has a local Order of Conditions been issued? <u>___ Yes ___ No; Was the Order of Conditions appealed?</u> Yes <u>___ No. Will the project require a Variance from the Wetlands regulations?</u> Yes <u>X</u> No.</u>
- B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

As preliminarily designed, construction of the Project will result in impacts to one BVW (W1), one ILSF (W5), and one IVW (W12). Specifically, approximately 0.23 acres of temporary impact and 0.29 acres of permanent impact to Wetland 1 and approximately 0.22 acres of temporary impact to Wetland W5 are anticipated for the construction on Pipeline G-31. An additional, approximate 0.004 acres of temporary impact to Wetland W12 is anticipated during the removal of Line G-8C/G-8L. Once construction is complete, temporary impacts to these resource areas will be restored to preconstruction conditions.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

| Coastal Wetlands | Area (square feet) or Length (linear feet) | Temporary or Permanent Impact? |
|---------------------------------------|---|-----------------------------------|
| Land Under the Ocean | 0 1/ | N/A |
| Designated Port Areas | 00 | N/A |
| Coastal Beaches | 0 | N/A |
| Coastal Dunes | 0 | N/A |
| Barrier Beaches | 00 | N/A |
| Coastal Banks | 0_1/ | N/A |
| Rocky Intertidal Shores | 0 | N/A |
| Salt Marshes | 0 | N/A |
| Land Under Salt Ponds | 0 | N/A |
| Land Containing Shellfish | 0 | N/A |
| Fish Runs | 0 | N/A |
| Land Subject to Coastal Storm Flowage | 0 | <u>N/A</u> |

¹/ Impact avoided by installation of the G-31 Pipeline under the Cape Cod Canal via HDD.

| Inland Wetlands | Area (square feet) or | Temporary or |
|-----------------|-----------------------|-------------------|
| | Length (linear feet) | Permanent Impact? |

| Bank (If) | 0 | N/A |
|------------------------------------|--------|------------------------------|
| Bordering Vegetated Wetlands | 22,630 | 9,945 (temp) & 12,685 (perm) |
| Isolated Vegetated Wetlands | 172 | Temporary |
| Land under Water | 0 | <u>N/A</u> |
| Isolated Land Subject to Flooding | 9,583 | Temporary |
| Bordering Land Subject to Flooding | 0 | <u>N/A</u> |
| Riverfront Area | 0 | N/A |

D. Is any part of the project:

- 1. proposed as a limited project? X Yes No; if yes, what is the area (in sf)? All of the Project wetland impacts qualified as a limited project under 310 CMR 10.53(3)(d).
- 2. the construction or alteration of a dam? ____ Yes X No; if yes, describe:
- 3. fill or structure in a velocity zone or regulatory floodway? ____ Yes X_ No
- 4. dredging or disposal of dredged material? ____ Yes X No; if yes, describe the volume of dredged material and the proposed disposal site:
- 5. a discharge to an Outstanding Resource Water (ORW) or an Area of Critical
- Environmental Concern (ACEC)? <u>X</u> Yes <u>No</u> 6. subject to a wetlands restriction order? <u>Yes X</u> No; if yes, identify the area (in sf):
- 7. located in buffer zones? X Yes No; if yes, how much (in sf): approximately 2,514 sf of temporary impacts
- E. Will the project:
 - 1. be subject to a local wetlands ordinance or bylaw? Yes X No
 - 2. alter any federally-protected wetlands not regulated under state law? X Yes No; if yes, what is the area (sf) 172

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? X Yes No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ____ Yes __TBD__ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands: Algonquin does not have a Chapter 91 License, however, they are evaluating if any additional local utilities have one within the Project Area.

- B. Does the project require a new or modified license or permit under M.G.L.c.91? _X_ Yes ____ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-waterdependent use? Current ____ Change ____ Total _0_ Project is considered waterdependent; therefore the non-water-dependent use sections are not applicable. If yes, how many square feet of solid fill or pile-supported structures (in sf)? 7,720 sf of HDD.
- C. For non-water-dependent use projects, indicate the following: N/A

Area of filled tidelands on the site: Area of filled tidelands covered by buildings: For portions of site on filled tidelands, list ground floor uses and area of each use:

Does the project include new non-water-dependent uses located over flowed tidelands? Yes No

Height of building on filled tidelands

Also show the following on a site plan: Mean High Water, Mean Low Water, Waterdependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

- D. Is the project located on landlocked tidelands? ____ Yes <u>X</u> No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:
- E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ____Yes ____No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:
- F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ____Yes _X____No;

(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? <u>X</u> Yes <u>No;</u> if yes, answer the following questions: What type of dredging? Improvement <u>X</u> Maintenance <u>Both</u> Maintenance <u>Mother Both</u> Maintenance <u>No;</u> Both <u>Mother Both</u> Maintenance <u>Mother Both</u> Mother Both <u>Mother Both</u> Maintenance <u>Mother Both</u> Mother Both <u>Mother Both</u> Maintenance <u>Mother Both</u> Maintenance <u>Mother Both</u> Mother Both <u>Mother Both</u> Mother Both <u>Mother Both</u> Maintenance <u>Mother Both</u> Mother Both <u>Mother Both</u> Moth

<u>N/A</u> depth (ft); <u>HDD depth ranges from 85 to 147 feet deep beneath the canal, not used in calculations.</u>

Will dredging impact the following resource areas?

Intertidal Yes___ No <u>X</u>; if yes, ___ sq ft

Outstanding Resource Waters Yes___ No_X; if yes, ____ sq ft

Other resource area (i.e. shellfish beds, eel grass beds) Yes_ No_X_; if yes __ sq ft

If yes to any of the above, have you evaluated appropriate and practicable steps

to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?

If no to any of the above, what information or documentation was used to support this determination? <u>HDD will be implemented to avoid all resource impacts</u>

Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis. <u>Algonquin will implement the HDD as the best management practice to effectively avoid impacts to the Cape Cod Canal.</u> Algonquin does not anticipate time of year restrictions, however, Algonquin will work with the Division of Fisheries and Wildlife to confirm recommendations. Site level alternative analysis is provided in the introduction section.

Sediment Characterization

Existing gradation analysis results? <u>Yes X</u>No: if yes, provide results. Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? Yes <u>X</u>No; if yes, provide results.

Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option. <u>N/A. The project does not meet the threshold for an Individual 401 Water Quality Certification for Dredging.</u>

Beach Nourishment ____ Unconfined Ocean Disposal ____ Confined Disposal: Confined Aquatic Disposal (CAD) ____ Confined Disposal Facility (CDF) ____ Landfill Reuse in accordance with COMM-97-001 ____ Shoreline Placement ____ Upland Material Reuse____ In-State landfill disposal____ Out-of-state landfill disposal _____ (NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? <u>X</u> Yes No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

The Project is consistent with the 2011 Massachusetts Coastal Program Policies related to coastal hazards, energy, coastal/marine habitat protection, ports and harbors, protected areas, public access, and water quality. Relocating the aboveground pipe sections that are currently attached is to the bridges underground via HDD is consistent with the policy's goal to reduce threats to public safety, property, and environmental resources that result from erosion, flooding, and storm damage. The Project does not involve work activities in coastal wetland resource areas protected by the Massachusetts Wetlands Protection Act; ports and harbors; ocean resources; state designated scenic rivers; or historic sites, or that would affect water-dependent uses or public access to coastal sites, or that would impair water quality. While pipeline construction is proposed within the Herring River Watershed ACEC, the Project does not involve any categorically prohibited activities (e.g., dredging, new industrial discharges) within the ACEC. The policies related to growth management are not applicable.

The Project is a FERC-regulated gas pipeline system and does not involve the use of public funds for its construction or operation. The siting of the proposed pipeline segments and M&R stations are the result of an ongoing alternatives analysis, which is part of both the FERC and MEPA review process. Algonquin anticipates qualification under the Coastal Zone Management blanket authorization for compliance through the issuance of coverage under a USACE General Permit Preconstruction Notification.

B. Is the project located within an area subject to a Municipal Harbor Plan? ____ Yes_X_ No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ____ **Yes** X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ____ Yes X__ No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

| | Existing | <u>Change</u> | Total |
|------------------------------------|----------|---------------|-------|
| Municipal or regional water supply | | | |
| Withdrawal from groundwater | | | |
| Withdrawal from surface water | | | |
| Interhasin transfer | | | |
| | | | |

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ____ Yes ____ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ____ Yes ____ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _____

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? _____Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? _____

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? _____Yes ____No. If yes, describe existing and proposed water supply facilities at the project site:

| | Permitted <u>Flow</u> | Existing Avg <u>Daily Flow</u> | Project Flow | <u>Total</u> |
|---|--------------------------|-----------------------------------|--------------|--------------|
| Capacity of water supply well(s) (gpd) Capacity of water treatment plant (gpd) | | | | |

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

- 1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ____ Yes ____ No
- 2. a Watershed Protection Act variance? ____ Yes ____ No; if yes, how many acres of alteration?
- 3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ____ Yes ____ No

III. Consistency Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ____ Yes X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ____ Yes X__ No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

| | Existing | <u>Change</u> | <u>Total</u> |
|--|----------|---------------|--------------|
| Discharge of sanitary wastewater Discharge of industrial wastewater TOTAL | | | |
| Discharge to groundwater | Existing | <u>Change</u> | <u>Total</u> |
| Discharge to outstanding resource water Discharge to surface water Discharge to municipal or regional wastewater | | | |
| facility | | | |

B. Is the existing collection system at or near its capacity? ____ Yes ____ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ____ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ____ Yes ____ No; if yes, describe as follows:

| | Permitted | Existing Avg <u>Daily Flow</u> | Project Flow | <u>Total</u> |
|--|-----------|-----------------------------------|--------------|--------------|
| Wastewater treatment plant capacity (in gallons per day) | | | | |

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ____ Yes ____ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? <u>Yes</u> No; if yes, what is the capacity (tons per day):

| | Existing | Change | Total |
|------------|----------|--------|-------|
| Storage | | | |
| Treatment | | | |
| Processing | | | |
| Combustion | | | |
| Disposal | | | |

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

- A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:
- B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ____ Yes ____ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ____ Yes X No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? <u>X</u> Yes No; if yes, specify which permit: <u>TBD</u>

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

| | Existing | <u>Change</u> | lotal |
|---------------------------------|--------------------|---------------|--|
| Number of parking spaces | <u>~ 4</u> | <u> </u> | <u>~8</u> |
| Number of vehicle trips per day | <u>_<1</u> | 0* | |
| ITE Land Use Code(s): | <u> 170 </u> | 0 | <u> 170 </u> |

*Less than one trip a day, for occasional maintenance currently exists, and is planned for during construction. Construction will have a temporary increase of 180 parking spaces and 300 trips per day.

B. What is the estimated average daily traffic on roadways serving the site?

| | <u>Roadway</u> | 0 | , | Existing | <u>Čhange</u> | <u>Total</u> |
|---|----------------|---|---|----------|---------------|--------------|
| 1 | <u>tbd*</u> | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |

*Exact routes for each portion of construction continue to be evaluated.

- C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement: <u>Will follow all recommendations and requirements determined through the permit process.</u>
- D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site? <u>Construction workers will be</u> <u>carpooling to reduce impacts to traffic.</u>
- C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ____ Yes __X_ No; if yes, describe if and how will the project will participate in the TMA:
- D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? <u>Yes X</u> No; if yes, generally describe:
- E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)? N/A

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services: The Project will have a traffic plan designed to comply with plans and policies, including but not limited

to acquisition of road permits, implementation of safety plans (flaggers, security, road closure signages), and will provide assistance to local staff and stakeholders to encourage use of public transport when feasible.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ____ Yes <u>X</u> No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? <u>X</u> Yes <u>No; if yes, specify which permit:</u> <u>TBD</u>

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Energy Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site: <u>The Project involves public road crossings in the Project area with some of these roads to be crossed several times, including Gibbs Road, Jarvis Road, and Jefferson Road. Interstate highways, as well as state and county roadways, will be used to transport heavy construction equipment to the pipeline ROW.</u>

B. Will the project involve any

| | | 2 | |
|----|---------------|--------------------|-------------------|
| 1. | Alteration of | of bank or terrain | (in linear feet)? |

| | | | | | • | | , | |
|----|---------|----|--------|--------|-------|-------|----------|----|
| 2. | Cutting | of | living | public | shade | trees | (number) |)? |

3. Elimination of stone wall (in linear feet)?

| _TBD_ | |
|-------|--|
| TBD | |
| TBD | |
| | |

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan: <u>The Project does not involve the operation of facilities post-construction that will affect traffic volumes, patterns or pedestrian use on area roadways, Construction across existing highways and other public roads will be performed in accordance with applicable permits and easement requirements. Traffic disruptions during construction will be minimized to the extent practicable, and appropriate traffic control measures such as flag persons, signs, barriers, and flashing lights will be used as necessary. At least one lane of traffic will be maintained where construction across a public road is required. Contractor ware yards have been strategically located throughout the Project area to minimize traffic disruptions from the movement of workers and equipment when working in a particular area.</u>

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? <u>X</u> Yes <u>No; if yes, specify, in quantitative terms: Construction of a new fuel pipeline five or</u> more miles in length. Approximately 5.52 new pipeline will be constructed and 1.36 removed.

B. Does the project require any state permits related to **energy**? <u>Yes X</u> No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

| | Existing | <u>Change</u> | Total |
|--|------------|---------------------|-------|
| Capacity of electric generating facility (megawatts) | | | |
| Length of fuel line (in miles) | <u>N/A</u> | <u>+5.52; -1.16</u> | 4.36 |
| Length of transmission lines (in miles) | | | |
| Capacity of transmission lines (in kilovolts) | | | |
| | | | |

B. If the project involves construction or expansion of an electric generating facility, what are: $\underline{N/A}$

- 1. the facility's current and proposed fuel source(s)?
- 2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? <u>Yes X</u>No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services: <u>Algonquin proposes to</u> relocate National Grid's existing pipelines and M&R stations to avoid conflicts with the CCBP development areas. This will allow uninterrupted natural gas service to existing customers to ensure reliable energy sources.

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

National Grid's Cape Cod customers utilize natural gas primarily for heating residential, commercial, institutional, and industrial buildings. National Grid currently serves approximately 125,000 customers in its Cape Cod service area. Approximately 92% are residential customers, 6% are commercial customers, and 2% are transportation or other customer types.

The Massachusetts Department of Public Utilities commissioned an independent consultant to examine the role of Massachusetts gas local distribution companies in helping the Commonwealth achieve its 2050 energy goals, while simultaneously safeguarding ratepayer interests and ensuring safe, reliable, and cost-effective natural gas service (Energy and Environmental Economics, Inc. [E3] 2022). The E3 (2022) report concluded that utilizing a diverse set of technologies and strategies, including a combination of gas and electric, is likely to be better able to manage the costs and feasibility risks than scenarios that rely more heavily on single technologies or strategies.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ____ Yes X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ____ Yes X__ No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Solid and Hazardous Waste** Section. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ____ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

| | <u>Existing</u> | <u>Change</u> | <u>Total</u> |
|--|-----------------|---------------|--------------|
| Particulate matter | | | |
| Carbon monoxide | | | |
| Sulfur dioxide | | | |
| Volatile organic compounds Oxides of nitrogen | | | |
| Lead | | | |
| Any hazardous air pollutant | | | |
| | | | |

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ____ Yes X_ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? ____ Yes <u>X</u> No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? <u>Yes</u> No; if yes, what is the volume (in tons per day) of the capacity:

| | Existing | <u>Change</u> | <u>Total</u> |
|-----------------------|----------|---------------|--------------|
| Storage | | | |
| Treatment, processing | | | |
| Disposal | | | |
| Dispusai | | | |

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ____ Yes ____ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

| | Existing | <u>Change</u> | Total |
|-----------|----------|---------------|-------|
| Storage | | | |
| Recycling | | | |
| Treatment | | | |
| Disposal | | | |

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

- D. If the project involves demolition, do any buildings to be demolished contain asbestos? ____ Yes ___ No
- E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? <u>X</u> Yes <u>No; if yes, attach correspondence</u>. (Attachment 8) For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? <u>X</u> Yes <u>No; if yes, attach correspondence</u>. (Attachment 8)

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? <u>X</u> Yes <u>No; if yes, does the project involve the demolition of all or any exterior part of such historic structure?</u> Yes <u>X</u> No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? <u>X</u> Yes No; if yes, does the project involve the destruction of all or any part of such archaeological site? <u>X</u> Yes <u>N</u>; if No; if yes, please describe: <u>See Section D</u>.

D. If you answered "No" to <u>all parts of both</u> questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to <u>any part of either</u> question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

On behalf of Algonquin, The Public Archaeology Laboratory, Inc. (PAL) is currently undertaking cultural resource investigations of the Project area. The initial phase of investigation involved an overview survey to gather information about previous cultural resource investigations and known archaeological sites and historic architectural properties within the Project area. This information was used to stratify the Project area into zones of high, moderate, and low archaeological sensitivity according to the potential for pre- or post-contact archaeological sites to be present. Following this assessment, PAL conducted a walkover survey to assess the integrity of the ground surfaces, collect data on the existing environmental conditions, and look for surface indications of archaeological sites in the Project. The results of the walkover survey were used to field verify and refine the archaeological sensitivity assessment.

PAL performed an intensive (locational) archaeological survey of the Project area from October 2023 to March 2024. The survey involved subsurface testing of the portions of the Project area that had been assessed and field verified as having high or moderate archaeological sensitivity; a total of 2,280 test pits were excavated during the survey. The survey resulted in the identification of ten precontact sites within the Project area: Deseret Drive Find Spot, Sagamore Bridge Ramp Find Spot, Moss Hill Site, Bournedale Road Find Spot 1, Bournedale Road Find Spot 2, Squeaky Tree Site, Jarvis Road Find Spot 1, Jarvis Road Find Spot 2, Jarvis Road Find Spot 3, and Deep Bottom Wetlands Site. Archaeological deposits associated with the previously identified Nightingale and Gas House sites were also recovered from the Project area and indicated that these two sites were actually one site with pre- and post-contact components (the Nightingale/Gas House Site). PAL recommended that the Moss Hill Site was potentially eligible for listing in the National Register of Historic Places.

PAL submitted a technical report on the intensive (locational) archaeological survey and an archaeological permit application to conduct a site examination for the potentially eligible Moss Hill Site to the MHC in December 2024. In a letter dated February 3, 2025, the MHC requested that PAL send a second copy of the report to finalize reporting on the intensive (locational) archaeological survey for the Project. PAL subsequently received information on changes to the Project area from Algonquin. PAL submitted a permit amendment request to the MHC on March 5, 2025, to conduct additional intensive (locational) archaeological survey to cover the added/shifted portions of the Project area. The MHC issued the permit amendment in a letter dated March 21, 2025. PAL is currently performing the survey of the added/shifted portions of the Project area and will update the

technical report on the intensive (locational) archaeological survey with the results of this testing once it has been completed.

Additionally, PAL completed an historic architectural reconnaissance survey for the Project in February 2025. PAL is currently preparing a report on this survey for submission to the MHC. Several properties that are listed or are eligible for listing in the National Register of Historic Places were identified in the vicinity of the Project area during the historic architectural reconnaissance survey, including the Bourne and Sagamore bridges and the Cape Cod Canal.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

As noted above, assessment of the Project's potential to adversely impact significant cultural resources is ongoing. Algonquin will continue to consult with the MHC and Native American Tribes to implement appropriate mitigation measures and continuing archaeological investigations.

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

Algonquin is coordinating with the FERC, the USACE, and the MHC to avoid adverse effects to historic and archaeological resources eligible for listing in the National Register of Historic Places, to the extent required by law. Pursuant to Section 106 of the National Historic Preservation Act, the FERC and USACE will also consult with Native American Tribes that express an interest in historic and archaeological resources that may be affected by the Project. On behalf of Algonquin, PAL is addressing the Section 106 concerns of the FERC and USACE and is seeking comments from the MHC and Native American Tribes. Algonquin will continue to consult with FERC, USACE, MHC, and Native American Tribes as the ongoing archaeological survey work continues and throughout the permitting process.

CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION

This section of the Environmental Notification Form (ENF) solicits information and disclosures related to climate change adaptation and resiliency, in accordance with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (the "MEPA Interim Protocol"), effective October 1, 2021. The Interim Protocol builds on the analysis and recommendations of the 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) and incorporates the efforts of the Resilient Massachusetts Action Team (RMAT), the inter-agency steering committee responsible for implementation, monitoring, and maintenance of the SHMCAP, including the "Climate Resilience Design Standards and Guidelines" project. The RMAT team recently released the RMAT Climate Resilience Design Standards Tool, which is available here.

The MEPA Interim Protocol is intended to gather project-level data in a standardized manner that will both inform the MEPA review process and assist the RMAT team in evaluating the accuracy and effectiveness of the RMAT Climate Resilience Design Standards Tool. Once this testing process is completed, the MEPA Office anticipates developing a formal Climate Change Adaptation and Resiliency Policy through a public stakeholder process. Questions about the RMAT Climate Resilience Design Standards Tool can be directed to <u>rmat@mass.gov</u>.

All Proponents must complete the following section, referencing as appropriate the results of the output report generated by the RMAT Climate Resilience Design Standards Tool and attached to the ENF. In completing this section, Proponents are encouraged, but not required at this time, to utilize the recommended design standards and associated Tier 1/2/3 methodologies outlined in the RMAT Climate Resilience Design Standards Tool to analyze the project design. However, Proponents are requested to respond to a respond to a user feedback survey on the RMAT website or to provide feedback to <u>rmat@mass.gov</u>, which will be used by the RMAT team to further refine the tool. Proponents are also encouraged to consult general guidance and best practices as described in the <u>RMAT Climate Resilience Design Guidelines</u>.

Climate Change Adaptation and Resiliency Strategies

I. Has the project taken measures to adapt to climate change for all of the climate parameters analyzed in the RMAT Climate Resilience Design Standards Tool (sea level rise/storm surge, extreme precipitation (urban or riverine flooding), extreme heat)? <u>X</u>Yes __No

Note: Climate adaptation and resiliency strategies include actions that seek to reduce vulnerability to anticipated climate risks and improve resiliency for future climate conditions. Examples of climate adaptation and resiliency strategies include flood barriers, increased stormwater infiltration, living shorelines, elevated infrastructure, increased tree canopy, etc. Projects should address any planning priorities identified by the affected municipality through the Municipal Vulnerability Preparedness (MVP) program or other planning efforts, and should consider a flexible adaptive pathways approach, an adaptation best practice that encourages design strategies that adapt over time to respond to changing climate conditions. General guidance and best practices for designing for climate risk are described in the RMAT Climate Resilience Design Guidelines.

- A. If no, explain why.
- B. If yes, describe the measures the project will take, including identifying the planning horizon and climate data used in designing project components. If applicable, specify the return period and design storm used (e.g., 100-year, 24-hour storm).

In general, the design of the U.S. pipeline network plays a major role in ensuring the reliable delivery of natural gas during extreme weather events and climatic change. The proposed Project involves installing the new pipeline sections belowground, with corrosion protection coatings and systems that protect the pipe from water. The four proposed M&R stations are also designed to operate in and withstand flooding events and are not affected by extreme cold or heat conditions. Algonquin will modify its equipment and O&M procedures, as

needed, in response to the operating environment in accordance with federal and state laws, and its own internal O&M policies and procedures.

Specifically for this Project, the removal of the existing National Grid pipelines on the Bridges and the installation of the underground pipelines will increase safety and protect the natural gas system from impacts of climate change, including storms and flooding events.

- C. Is the project contributing to regional adaptation strategies?__Yes <u>X</u> No; If yes, describe.
- II. Has the Proponent considered alternative locations for the project in light of climate change risks? _____Yes <u>X</u> No
 - A. If no, explain why.

The Project's general location is solely dictated by where existing facilities need to be relocated and tie into the existing National Grid gas distribution system. No alternate locations are feasible. Additional details regarding the full alternative analysis are located in the project description sections.

- B. If yes, describe alternatives considered.
- III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? <u>X</u> Yes <u>No</u>

If yes, describe how/whether proposed changes to the site's topography (including the addition of fill) will result in changes to floodwater flow paths and/or velocities that could impact adjacent properties or the functioning of the floodplain. General guidance on providing this analysis can be found in the CZM/MassDEP Coastal Wetlands Manual, available <u>here</u>.

The G-31 pipeline route crosses flood zone AE associated with the Cape Cod Canal. The G-31 pipeline will be installed below the canal bottom via HDD. Accordingly, no changes to the flood storage capacity of the Federal Emergency Management Agency (FEMA) flood zones will occur. The remaining Project facilities are outside of FEMA flood zones, including the four proposed new M&R stations. See Attachment 2 for the mapped flood zone locations.
ENVIRONMENTAL JUSTICE SECTION

I. Identifying Characteristics of EJ Populations

A. If an Environmental Justice (EJ) population has been identified as located in whole or in part within 5 miles of the project site, describe the characteristics of each EJ populations as identified in the EJ Maps Viewer (i.e., the census block group identification number and EJ characteristics of "Minority," "Minority and Income," etc.). Provide a breakdown of those EJ populations within 1 mile of the project site, and those within 5 miles of the site.

1-mile of the Project

- Block Group 1, Census Tract 141, Town of Bourne, Barnstable County, Massachusetts. Designated for minority population and income.
- Block Group 1, Census Tract 141, Town of Sandwich, Barnstable County, Massachusetts. Designated for minority population and income.

5-Mile of the Project

- Block Group 1, Census Tract 141, Town of Bourne, Barnstable County, Massachusetts. Designated for minority population and income.
- Block Group 1, Census Tract 141, Town of Sandwich, Barnstable County, Massachusetts. Designated for minority population and income.
- Block Group 1, Census Tract 139, Barnstable County, Massachusetts. Designated for income.
- Block Group 3, Census Tract 140.02, Barnstable County, Massachusetts. Designated for income.
- Block Group 1, Census Tract 5452, Plymouth County, Massachusetts. Designated for minority population.
- Block Group 1, Census Tract 5453, Plymouth County, Massachusetts. Designated for income.
- B. Identify all languages identified in the "Languages Spoken in Massachusetts" tab of the EJ Maps Viewer as spoken by 5 percent or more of the EJ population who also identify as not speaking English "very well." The languages should be identified for each census tract located in whole or in part within 1 mile and 5 miles of the project site, regardless of whether such census tract contains any designated EJ populations.

There are no languages within any census tracts located within 5 miles of the Project identified as spoken by 5% or more of the EJ population who also identify as not speaking English "very well."

C. If the list of languages identified under Section I.B. has been modified with approval of the EEA EJ Director, provide a list of approved languages that the project will use to provide public involvement opportunities during the course of MEPA review. If the list has been expanded by the Proponent (without input from the EEA EJ Director), provide a list of the additional languages that will be used to provide public involvement opportunities during the course of MEPA Public Involvement Protocol for Environmental Justice Populations ("MEPA EJ Public Involvement Protocol"). If the project is exempt from Part II of the protocol, please specify.

N/A

II. Potential Effects on EJ Populations

A. If an EJ population has been identified using the EJ Maps Viewer within 1 mile of the project site, describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

The construction and operation of the proposed G-31 and G-32 pipelines and the Pave Paws Road M&R Station, as well as the temporary use of several contractor ware yards and access roads, are in and within 1 mile of one EJ population census tract. No short-term or long-term environmental or public health impacts are expected to affect EJ populations. The pipeline sections are largely collocated with the existing utility ROWs and roadways, and none of the Project components are located near any residences or commercial buildings within the subject census tract. Overall, this Project will benefit the public health of the EJ population by ensuring the continued reliable delivery of natural gas to National Grid's gas distribution system. The Project is not anticipated to have disproportionate impacts on EJ communities.

- B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project: (i) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) ___ Yes X_ No; or (ii) generate150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. ___ Yes X_ No
- C. If you answered "Yes" to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

III. Public Involvement Activities

- A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:
 - 1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

The Environmental Justice Screening Form and a full list of all CBOs/Tribes contacted are provided in Attachment 4.

2. State how CBOs and tribes were informed of ways to request a community meeting, and if any meeting was requested. If public meetings were held, describe any issues of concern that were raised at such meetings, and any steps taken (including modifications to the project design) to address such concerns.

The EJ screening form, provided in Attachment 4, included information on how the CBOs and Tribes could request additional information, including an email address for the Algonquin representative and a Project Hotline phone number.

3. If the project is exempt from Part II of the protocol, please specify.

N/A

B. Provide below (or attach) a distribution list (if different from the list in Section III.A. above) of CBOs and tribes, or other individuals or entities the Proponent intends to maintain for the notice of the MEPA Site Visit and circulation of other materials and notices during the course of MEPA review.

N/A – no additional CBOs, tribes, or other EJ community individuals or entities were identified during the outreach program that would require continued notices during the course of MEPA review.

C. Describe (or submit as a separate document) the Proponent's plan to maintain the same level of community engagement throughout the MEPA review process, as conducted prior to filing.

Prior to the commencement of work, Algonquin representatives will contact Bourne municipal officials to advise them of the upcoming activities and provide for mitigation measures that can accommodated by the contractor.

Additional pop-up events and open houses will be offered prior to the commencement of the work to inform both the EJ community involved, and the abutting landowners and residents along the corridors to provide up-to-date information on the Project. Communications tools, such as a website and phone hotline have been established to allow for direct communications from affected stakeholders to Algonquin and the Project team, allowing for quick mitigation of issues. Communities can request information such as additional meetings and accommodations such as translation services by calling the project hotline number at: (1 888) 331-6553. The Project website can be found here: www.enbridge.com/capecodcanal

Finally, a data management system will be maintained by Algonquin team members to catalogue questions, commitments and requests for future resolution.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

| (Name)_ The Enterprise | (Date) 4/18/2025 |
|------------------------|------------------|
| (Name) | (Date) |

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

| George McLachlan | KatityvWMa 4-22-2025 |
|---------------------------------------|------------------------------------|
| Date Signature of Responsible Officer | Date Signature of person preparing |
| or Proponent | ENF (if different from above) |
| George McLachlan | Katelyn Wheeler |
| Name (print or type) | Name (print or type) |
| Algonquin Gas Transmission, LLC | SWCA Environmental Consultants |
| Firm/Agency | Firm/Agency |
| 890 Winter Street, Suite 320 | 8 Science Park Road |
| Street | Street |
| Waltham. MA 02451 | Scarborough. ME 04074 |
| Municipality/State/Zip | Municipality/State/Zip |
| | |
| <u>888-331-6553</u> | (207) 295-0940 / 11077 |
| Phone | Phone |

ATTACHMENT 1 Figure 1: USGS Project Location Map



ATTACHMENT 2

Figure 2: MEPA Environmental Resource Maps









M&R Station

Parcel Boundary

Figure 2. Environmental **Resource Map**

Road

Article 97 Land

Delineated Isolated Land Subject to Flooding

SHEET 2 OF 16





Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7802°N 70.5302°W







| 4 | | | |
|---|--|--|--|
| | | | |
| | | | |





ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental Resource Map

SHEET 5 OF 16

Delineated Isolated Land Subject to Flooding

Road

Map Sheet

- Municipal Boundary

Parcel Boundary
Temporary Access Road

Bordering Land Subject to Flooding





Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7676°N 70.5703°W





ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental **Resource Map**

SHEET 6 OF 16

Milepost

--- 100-foot Buffer Zone Coastal Bank

-O. HDD

- Municipal Boundary

Pipeline Replacement

- Article 97 Land
- ATWS

Bordering Land Subject to Flooding Delineated Isolated Land Subject to Flooding

- Environmental Justice Population
- Herring River ACEC Map Sheet NHESP Priority Habitat Parcel Boundary XX Permanent Easement

Temporary Access Road



12

Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7695°N 70.5626°W





ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental Resource Map SHEET 7 OF 16







Parcel Boundary

Permanent Access Road
Permanent Easement
Temporary Access Road
TWS





Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7664°N 70.5519°W





ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental Resource Map

SHEET 8 OF 16

Article 97 Land

Road

Delineated Isolated Land Subject to Flooding

Environmental Justice Population

coding Temporary Access Road

TWS

NHESP Priority Habitat

Parcel Boundary



MAP

SHEET 8



Shawme-Crowell State Forest

ala A Artes

Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7654°N 70.5407°W





ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental **Resource Map**



-o. HDD

Pipeline Replacement Road

C Article 97 Land



Delineated Isolated Land Subject to Flooding XX Permanent Easement

- Environmental Justice Population
- Map Sheet
- NHESP Priority Habitat

- Parcel Boundary
- Temporary Access Road







Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7618°N 70.5582°W





Figure 2. Environmental **Resource Map**

SHEET 10 OF 16

Pipeline Replacement Road

C Article 97 Land

Environmental Justice Population

Map Sheet

NHESP Priority Habitat

Temporary Access Road TWS

Ware Yard









ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental Resource Map SHEET 11 OF 16

Milepost
 Pipeline Replacement
 Road
 Article 97 Land
 ATWS

Environmental Justice Population

NHESP Priority Habitat

Parcel Boundary

Permanent Easement
Temporary Access Road
TWS





Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7473°N 70.5692°W





| SHEET | 12 | OF | 16 |
|-------|----|----|----|
| ULLI | 12 | 0 | 10 |

Base Map: Esri ArcGIS Online, accessed April 2025 Layout: ENF ERM Sheets Aprx: 65956_CCRP_ENF

SWCA



ALGONQUIN GAS TRANSMISSION LLC CAPE COD CANAL BRIDGE RELOCATION PROJECT Figure 2. Environmental **Resource Map**

SHEET 13 OF 16

Article 97 Land

Bordering Land Subject to Flooding

Delineated Isolated Land Subject to Flooding
[] Ware Yard

Map Sheet

Parcel Boundary

Temporary Access Road



1 2

Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7445°N 70.5788°W







Bourne, MA USGS 7.5' Quadrangles: Sagamore and Pocasset NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet 41.7405°N 70.5817°W









Environmental **Resource Map**

- SHEET 16 OF 16
- Road
 - Article 97 Land

- Delineated Isolated Vegetated Wetland **Delineated Waterbody**
- Map Sheet

- - Permanent Access Road TWS







ATTACHMENT 3

Figure 3: Environment Justice Populations



Environmental Justice Populations in Massachusetts



ATTACHMENT 4

Environmental Justice Screening Form and Distribution List

Project-Specific EJ Distribution List

Populate this Project-Specific Distribution List with the appropriate contacts from all 4 tabs in the EJ Reference List workbook

Project Name: Cape Cod Canal Crossing

ENF/EENF

Project Address: _

MA Municipalities in Project's DGA: Bourne, Plymouth, Sandwich

Date Generated: 2/28/2025

Filing Type:

DEIR/FEIR SEIR Other

| First Name | Last Name | Title | Phone | Email | Affiliation | Contact Type (autopopulates) |
|---------------|------------------|--|------------------------|--|--|--|
| Claire | B.W. Muller | Movement Building Director | (508) 308-9261 | claire@uumassaction.org | Unitarian Universalist Mass Action Network | Statewide CBO |
| Julia | Blatt | Executive Director | (617) 714-4272 | - juliablatt@massriversalliance. org | Mass Rivers Alliance | Statewide CBO |
| Jodi | Valenta | Massachusetts State Director | (617) 367-6200 | Jodi.Valenta@tpl.org | The Trust for Public Land | Statewide CBO |
| Kerry | Bowie | Board President | Not Provided | kerry@msaadapartners.com | Browning the GreenSpace | Statewide CBO |
| Sylvia | Broude | Executive Director | (617) 292-4821 | sylvia@communityactionworks .org | Community Action Works | Statewide CBOLocal CBO |
| Heather | Clish | Director of Conservation & Recreation Policy | (617) 523-0655 | <u>hclish@outdoors.org</u> | Appalachian Mountain Club | Statewide CBO |
| Britteny | Jenkins | Vice President | Not Provided | Bjenkins@clf.org | Conservation Law Foundation | Statewide CBO |
| Alex | St. Pierre | Director of Communities & Toxics | Not Provided | aestpierre@clf.org | Conservation Law Foundation | Statewide CBO |
| Paulina | Muratore | Director of Transportation Justice and Infrastructure | Not Provided | pmuratore@clf.org | Conservation Law Foundation | Statewide CBO |
| Breanne | Frank | Associate Attorney | Not Provided | <u>bfrank@clf.org</u> | Conservation Law Foundation | Statewide CBO |
| Amy | Boyd Rabin | Vice President of Policy | (617) 221-8258 | aboydrabin@environmentalle ague.org | Environmental League of Massachusetts | Statewide CBO |
| Zahra | Saifee | Policy & Advocacy Coordinator | (435) 632-9482 | zsaifee@environmentalleague .org | Environmental League of Massachusetts | Statewide CBO |
| Ben | Hellerstein | MA State Director | (617) 747-4368 | ben@environmentmassachus etts.org | Environment Massachusetts | Statewide CBO |
| Robb | Johnson | Executive Director | (978) 443-2233 | robb@massland.org | Mass Land Trust Coalition | Statewide CBO |
| Cindy | Luppi | New England Director | (617) 338-8131 x208 | cluppi@cleanwater.org | Clean Water Action | Statewide CBO |
| Dálida | Rocha | Executive Director | Not Provided | dalida@n2nma.org | Neighbor to Neighbor Mass. | Statewide CBOLocal CBO |
| Lena Miles | Entin Gresham | Director of Individual Giving Campaign Director | Not Provided | Lena@N2NMa.org Miles@N2NMa.org | Neighbor to Neighbor Mass. | Statewide CBOLocal CBO |
| Rob | Moir | Executive Director | Not Provided | rob@oceanriver.org | Ocean River Institute | Statewide CBO |
| Vickash | Mohanka | Director, MA Chapter | Not Provided | vick.mohanka@sierraclub.org | Sierra Club MA | Statewide CBO |
| Heidi | Ricci | Director of Policy | Not Provided | hricci@massaudubon.org | Mass Audubon | Statewide CBO |
| Alma | Gordon | President | Not Provided | tribalcouncil@chappaquiddick | Chappaquiddick Tribe of the Wampanoag Nation | Indigenous Org |
| Cheryll | Toney Holley | Chair | (774) 317-9138 | crwritings@aol.com | Nipmuc Nation (Hassanamisco Nipmucs) | Indigenous Org |
| John | Peters, Jr. | Executive Director | (617) 573-1292 | john.peters@mass.gov | Massachusetts Commission on Indian Affairs (MCIA) | Indigenous Org |
| Melissa | Ferretti | Chair | (508) 304-5023 | melissa@herringpondtribe.org | Herring Pond Wampanoag Tribe | Indigenous Org |
| Patricia | D. Rocker | Council Chair | Not Provided | rockerpatriciad@verizon.net | Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan | Indigenous Org |
| Raquel | Halsey | Executive Director | (617) 232-0343 | rhalsey@naicob.org | North American Indian Center of Boston | Indigenous Org |

| Cora | Pierce | Not Provided | Not Provided | Coradot@yahoo.com | Pocassett Wampanoag Tribe | Indigenous Org |
|-----------|---------------|--|----------------|-----------------------------|--|------------------------|
| Elizabeth | Solomon | Not Provided | Not Provided | Solomon.Elizabeth@gmail.com | Massachusetts Tribe at Ponkapoag | Indigenous Org |
| Bettina | Washington | Tribal Historic Preservation Officer | (508) 560-9014 | thpo@wampanoagtribe-nsn.go | Wampanoag Tribe of Gay Head (Aquinnah) | Federal Tribe |
| Brian | Weeden | Chair | (774) 413-0520 | Brian.Weeden@mwtribe-nsn.g | Mashpee Wampanoag Tribe | Federal Tribe |
| David | Weeden | THPO/Director | (774) 327.0068 | David.Weeden@mwtribe-nsn.c | Mashpee Wampanoag Tribe | Federal Tribe |
| Nakia | Hendricks Jr. | Office Manager | Not Provided | 106Review@mwtribe-nsn.gov | Mashpee Wampanoag Tribe | Federal Tribe |
| Mireille | Bejjani | Energy Justice Director | Not Provided | mbejjani8@gmail.com | Community Action Works | Statewide CBOLocal CBO |
| Barry | Margolin | Chair, Policy & Program Committee | Not Provided | info@capecodclimate.org | Cape Cod Climate Change Collaborative | Local CBO |
| Kristina | Dower | Executive Director | (508) 771-1727 | info@cacci.cc | Community Action Committee of Cape Cod & Islands | Local CBO |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Environmental Justice Screening Form

| Project Name | Cape Cod Canal Bridge Relocation Project |
|--|---|
| Anticipated Date of MEPA Filing | April 21, 2025 |
| Proponent Name | Algonquin Gas Transmission, LLC (Algonquin) |
| Contact Information (e.g., consultant) | Katelyn Wheeler SWCA Environmental Consultants 8 Science Park Road Scarborough, ME 04074 Katelyn.Wheeler@swca.com |
| Public Website | www.enbridge.com/capecodcanal |
| Municipality | Bourne |
| Project Type | Energy Transmission |
| Is the project site within a mapped 100-year FEMA flood plain? | Yes |
| Estimated GHG emissions of conditioned spaces (click here for GHG Estimation tool) | No new conditioned spaces proposed. |

1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures.

Algonquin Gas Transmission, LLC (Algonquin), is proposing the Cape Cod Canal Bridge Relocation Project (Project), which involves modifications to Algonquin's existing interstate natural gas pipeline system facilities within the Town of Bourne, Massachusetts. The purpose of the Project is to accommodate the planned replacement of the Bourne Bridge and Sagamore Bridge by the Cape Cod Canal Bridges Program (CCCBP). National Grid currently receives gas from Algonquin at the existing Bourne Metering and Regulator (M&R) Station and Sagamore M&R Station and transports it across the Cape Cod Canal to its customers via two high-pressure 10-inch diameter pipelines, each with operating pressures of 270 pounds per square inch (psi) that are currently attached to the Bourne and Sagamore Bridges, respectively. The CCCBP will not allow National Grid to reattach pipelines to the newly constructed bridges.

As preliminarily designed, construction of the Project facilities will require the disturbance of approximately 125.12 acres of land and operation of the proposed Project facilities will permanently impact approximately 29.72 acres of land.

- 2. List anticipated MEPA review thresholds (301 CMR 11.03)
 - 301 CMR 11.03(1)(a)(1): Direct alteration of 50 or more acres of land.
 - 301 CMR 11.03(1)(b)(3): Disposition or change in use of land or an interest in land subject to Article 97 of the Amendments to the Constitution of the Commonwealth.
 - 301 CMR 311.03(2)(b)(2): Greater than 2 acres of disturbance to designated priority habitat that results in a take of a state-listed endangered or threatened species or species of special concern.
 - 301 CMR11.03(11)(b): Any project of 0.5 acres or more within a designated ACEC.
- 3. List all anticipated state, local and federal permits needed for the project

FEDERAL

Natural Gas Act, Section 7c – FERC Certificate of Public Convenience and Necessity

Section 404 of the Clean Water Act (CWA) USACE Permit

Section 401 of the CWA Certification

Section 10 of CWA Permit

USACE Real Estate Outgrant Permit

Section 408 of the CWA Permit

Section 7 of the Endangered Species Act Compliance

Section 106 of the National Historic Preservation Act Compliance

National Pollutant Discharge Elimination System ("NPDES") Construction General Permit

STATE

Article 97 Land Disposition and Public Lands Preservation Act

Coastal Zone Management Consistency Determination

MassDEP Asbestos, Construction & Demolition Inspection

MassDEP Chapter 91 License

Massachusetts Natural Heritage & Endangered Species Program Conservation and Management Permit

State Highway Access Permits

LOCAL

Bourne Order of Conditions under Wetlands Protection Act and Bourne Wetland Protection Bylaw

Town of Bourne Road Opening Permit

- 4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 5 miles of project site.
 - Block Group 1, Census Tract 139, Barnstable County, Massachusetts. Designated for income.
 - Block Group 3, Census Tract 140.02, Barnstable County, Massachusetts. Designated for income.

- Block Group 1, Census Tract 141, Barnstable County, Massachusetts. Designated for minority population and income.
- Block Group 1, Census Tract 141, Sandwich County, Massachusetts. Designated for minority population and income.
- Block Group 1, Census Tract 5452, Plymouth County, Massachusetts. Designated for minority population.
- Block Group 1, Census Tract 5453, Plymouth County, Massachusetts. Designated for income.
- Identify any municipality or census tract meeting the definition of "vulnerable health EJ criteria" in the <u>DPH EJ Tool</u> located in whole or in part within a 1 mile radius of the project site

Towns of Bourne and Plymouth meet the vulnerable health EJ Criteria for 'heart attack".

6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation.

The construction and operation of the proposed G-31 and G-32 pipelines and the Pave Paws Road M&R Station, as well as the temporary use of several ware yards and access roads, are in and within 1 mile of one EJ population census tract. The primary adverse impacts on communities associated with the construction of the Project include temporary increases in dust, noise, and traffic from Project construction. These potential impacts are not disproportionate to EJ communities and would be considered minor and short-term. No long-term environmental or public health impacts are expected to affect EJ populations. To minimize impacts, the pipeline sections are largely collocated with the existing utility ROWs and roadways, and none of the Project components are located near any residences or commercial buildings within the subject census tract.

 Identify project benefits, including "Environmental Benefits" as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population

Overall, this Project is anticipated to benefit the public health of the EJ population by ensuring the continued reliable delivery of natural gas to National Grid's gas distribution system.

8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting. Specify how to request other accommodations, including meetings after business hours and at locations near public transportation.

Algonquin outreach is enhanced to target EJ community members within 1-mile radius. This outreach allows for important feedback to appropriately evaluate any proposed adjustments to the plans based on feedback from the community. Invitations to virtual Open Houses and/or community group meetings will be sent to allow maximum participation. These events are expected to occur in April and May. While translation can be provided, is not anticipated to be needed as less than 5% of the EJ population identify as not speaking English "very well."

Communities can request additional meetings and accommodations such as translation services by calling the project hotline number at: (1 888) 331-6553.

ATTACHMENT 5

RMAT Climate Resilience Design Standards Tool Output

Climate Resilience Design Standards Tool Project Report

Cape Cod Canal Bridge Relocation Project

Date Created: 2/12/2025 7:03:07 AMCreatedDate Report Generated: 2/12/2025 1:24:05 PMTool VeProject Contact Information: Phil London (Plondon@SWCA.com)

Created By: Plondon666 Tool Version: Version 1.2

5000000.00 76 irironmental Justice Scores Low Scores High Exposure High Exposure High

Project Summary

Estimated Capital Cost: \$250000000.00 End of Useful Life Year: 2076 Project within mapped Environmental Justice neighborhood: Yes

| Ecosystem Service | Scores |
|--------------------------|----------|
| Benefits | |
| Project Score | Low |
| Exposure | Scores |
| Sea Level Rise/Storm | 📕 High |
| Surge | Exposure |
| Extreme Precipitation - | High |
| Urban Flooding | Exposure |
| Extreme Precipitation - | High |
| Riverine Flooding | Exposure |
| Extreme Heat | High |
| | Exposure |



Asset Preliminary Climate Risk Rating

Number of Assets: 2

Link to Project

Summary

| J | | | | |
|--|-------------------------------|--|---|--------------|
| Asset Risk | Sea Level Rise/Storm Surge | Extreme Precipitation - Urban Flooding | Extreme Precipitation - Riverine Flooding | Extreme Heat |
| New Pipelines (G-31, G-32, G-24)24, | High Risk | High Risk | High Risk | High Risk |
| New Meter Stations (Sagamore M&R Station, Bourne M&R Station, Pave Paws Road M&R, Bourne Rotary M&R Station) | High Risk | High Risk | High Risk | High Risk |

Climate Resilience Design Standards Summary

| - ··· ·· ·· · · · · · · · · | | | | | |
|---|----------------------------|----------------------------------|------------|---------------|--------|
| | Target Planning Horizon | Intermediate Planning Horizon | Percentile | Return Period | Tier |
| Sea Level Rise/Storm Surge | | | | | |
| New Pipelines (G-31, G-32, G-24)24, | 2070 | 2050 | | 200-yr (0.5%) | |
| New Meter Stations (Sagamore M&R Station, | 2070 | 2050 | | 200-yr (0.5%) | |
| Bourne M&R Station, Pave Paws Road M&R, | | | | | |
| Bourne Rotary M&R Station) | | | | | |
| Extreme Precipitation | | | | | |
| New Pipelines (G-31, G-32, G-24)24, | 2070 | | | 50-yr (2%) | Tier 3 |
| New Meter Stations (Sagamore M&R Station, | 2070 | | | 50-yr (2%) | Tier 3 |
| Bourne M&R Station, Pave Paws Road M&R, | | | | | |
| Bourne Rotary M&R Station) | | | | | |
| Extreme Heat | | | | | |
| New Pipelines (G-31, G-32, G-24)24, | 2070 | 90th | Tier 3 |
|---|------|------|--------|
| New Meter Stations (Sagamore M&R Station, | 2070 | 90th | Tier 3 |
| Bourne M&R Station, Pave Paws Road M&R, | | | |
| Bourne Rotary M&R Station) | | | |

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "High Exposure" because of the following:

- Located within the predicted mean high water shoreline by 2030
- Exposed to the 1% annual coastal flood event as early as 2030
- Located within the 0.1% annual coastal flood event within the project's useful life

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Increased impervious area
- · Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Part of the project is within a mapped FEMA floodplain, outside of the Massachusetts Coast Flood Risk Model (MC-FRM)
- No historic riverine flooding at project site
- Project is more than 500ft from a waterbody
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- Increased impervious area
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- 10 to 30 day increase in days over 90 deg. F within project's useful life
- Located within 100 ft of existing water body

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - New Pipelines (G-31, G-32, G-24)24,

Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million

• There are no hazardous materials in the asset

Asset - New Meter Stations (Sagamore M&R Station, Bourne M&R Station, Pave Paws Road M&R, Bourne Rotary M&R Station)

Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 10,000 people would be directly affected by the loss/inoperability of the asset
- The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Cost to replace is greater than \$100 million
- There are no hazardous materials in the asset

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: New Pipelines (G-31, G-32, G-24)24,

Sea Level Rise/Storm Surge

Target Planning Horizon: 2070 Intermediate Planning Horizon: 2050 Return Period: 200-yr (0.5%)

LIMITATIONS: The recommended Climate Resilience Design Standards for the Sea Level Rise / Storm Surge Design Criteria are based on the user drawn polygon and relationships as defined in the Supporting Documents. The projected values provided through the Tool are based on the Massachusetts Coast Flood Risk Model (MC-FRM) outputs as of 9/13/2021, which included GIS-based data for three planning horizons (2030, 2050, 2070) and six return periods (0.1%, 0.2%, 0.5%, 1%, 2%, 5%). These values are projections based on assumptions as defined in the model and the LiDAR used at the time. For additional information on the MC-FRM, review the additional resources provided on the Start Here page.

The projected values, Standards, and Guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence.

Applicable Design Criteria

Projected Tidal Datums: APPLICABLE

Note: The site is exposed to Sea Level Rise/Storm Surge, but projected Tidal Datums are not available within the site. Additional site-specific analyses are recommended to identify projected Tidal Datums for the recommended planning horizon. Consult a professional coastal engineer or modeler to estimate projected Tidal Datums based on the recommended Standards and additional outputs provided through this Tool.

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: APPLICABLE Methodology to Estimate Projected Values

Projected Design Flood Velocity: APPLICABLE Methodology to Estimate Projected Values

Projected Scour & Erosion: APPLICABLE Methodology to Estimate Projected Values

Extreme Precipitation

Target Planning Horizon: 2070 Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best

Page 4 of 10

High Risk

High Risk

Infrastructure

practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

| | | , , , | | |
|--|---------------------------------|---|---|--|
| Asset Name | Recommended Planning Horizon | Recommended Return Period (Design Storm) | Projected 24-hr Total Precipitation Depth (inches) | Step-by-Step Methodology for Peak Intensity |
| New Pipelines (G-31, G-32, G-24)24, | 2070 | 50-Year (2%) | 8.8 | Downloadable Methodology PDF |

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE

Methodology to Estimate Projected Values : Tier 3

Extreme Heat

Target Planning Horizon: 2070 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Heat Index: APPLICABLE Methodology to Estimate Projected Values : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Asset: New Meter Stations (Sagamore M&R Station, Bourne M&R

Station, Pave Paws Road M&R, Bourne Rotary M&R Station)

Sea Level Rise/Storm Surge

Target Planning Horizon: 2070 Intermediate Planning Horizon: 2050 Return Period: 200-yr (0.5%)

LIMITATIONS: The recommended Climate Resilience Design Standards for the Sea Level Rise / Storm Surge Design Criteria are based on the user drawn polygon and relationships as defined in the Supporting Documents. The projected values provided through the Tool are based on the Massachusetts Coast Flood Risk Model (MC-FRM) outputs as of 9/13/2021, which included GIS-based data for three planning horizons (2030, 2050, 2070) and six return periods (0.1%, 0.2%, 0.5%, 1%, 2%, 5%). These values are projections based on assumptions as defined in the model and the LiDAR used at the time. For additional information on the MC-FRM, review the additional resources provided on the Start Here page.

High Risk

High Risk

Page 5 of 10

The projected values, Standards, and Guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence.

Applicable Design Criteria

Projected Tidal Datums: APPLICABLE

Note: The site is exposed to Sea Level Rise/Storm Surge, but projected Tidal Datums are not available within the site. Additional site-specific analyses are recommended to identify projected Tidal Datums for the recommended planning horizon. Consult a professional coastal engineer or modeler to estimate projected Tidal Datums based on the recommended Standards and additional outputs provided through this Tool.

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: APPLICABLE Methodology to Estimate Projected Values

Projected Design Flood Velocity: APPLICABLE Methodology to Estimate Projected Values

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation

High Risk

Target Planning Horizon: 2070 Return Period: 50-yr (2%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

| Asset Name | Recommended Planning Horizon | Recommended Return Period (Design Storm) | Projected 24-hr Total Precipitation Depth (inches) | Step-by-Step Methodology for Peak Intensity |
|---|------------------------------------|--|--|---|
| New Meter Stations (Sagamore M&R Station, Bourne M&R Station, Pave Paws Road M&R, Bourne | 2070 | 50-Year (2%) | 8.8 | Downloadable |
| Rotary M&R Station) | | | | Methodology PDF |

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE

Methodology to Estimate Projected Values : Tier 3

Extreme Heat

Target Planning Horizon: 2070 Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Heat Index: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): APPLICABLE <u>Methodology to Estimate Projected Values</u> : Tier 3

Project Inputs

Core Project Information

Name:

Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)? Location of Project: Estimated Capital Cost: Who is the Submitting Entity?

Is this project being submitted as part of a state grant application? Which grant program?

What stage are you in your project lifecycle?

Is climate resiliency a core objective of this project?

Is this project being submitted as part of the state capital planning process?

Is this project being submitted as part of a regulatory review process or permitting? Brief Project Description: Cape Cod Canal Bridge Relocation Project 2076

Bourne \$250,000,000 Private Other SWCA Environmental Cosultants Phil London (Plondon@SWCA.com) No

Permitting No No

Yes

The Algonquin Gas Transmission, LLC ("Algonquin") is proposing the Cape Cod Canal Bridge Relocation Project ("Project"), which involves modifications to Algonquin's existing interstate natural gas pipeline system facilities within the Town of Bourne, Massachusetts. The purpose of the Project is to accommodate the planned replacement of the Bourne Bridge and Sagamore Bridge by the Cape Cod Canal Bridges Program (CCCBP). National Grid currently receives gas from Algonguin at the existing Bourne Metering and Regulator (M&R) Station and Sagamore M&R Station and transports it across the Cape Cod Canal to its customers via two high-pressure 10-inch diameter pipelines that are currently attached to the Bourne and Sagamore Bridges, respectively. The CCCBP will not allow National Grid to reattach pipelines to the newly constructed bridges. The Project will require various federal, state, and local permits, including a local Order of Conditions and Section 401 Water Quality Certification.

Project Submission Comments:

Project Ecosystem Service Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

- \checkmark Incorporate nature-based solutions that may provide flood protection
- \checkmark Incorporate nature-based solutions that may reduce storm damage
- ✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
- \checkmark Incorporate strategies that reduce carbon emissions
- ✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
- \checkmark Incorporate green infrastructure to filter stormwater
- \checkmark Incorporate nature-based solutions that improve water quality
- \checkmark Incorporate nature-based solutions that sequester carbon carbon
- √ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
- \checkmark Preserve, enhance, and/or restore coastal shellfish habitats
- ✓ Incorporate vegetation that provides pollinator habitat
- \checkmark Identify opportunities to remediate existing sources of pollution
- \checkmark Provide opportunities for passive and/or active recreation through open space
- \checkmark Increase plants, trees, and/or other vegetation to provide oxygen production
- ✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
- \checkmark Identify opportunities to prevent pollutants from impacting ecosystems
- \checkmark Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

| Proj | ject | Bene | efits | |
|------|------|------|-------|--|
| | | | | |

| Filters stormwater using green infrastructure | No |
|--|-----|
| Improves water quality | No |
| Promotes decarbonization | No |
| Enables carbon sequestration | No |
| Provides oxygen production | No |
| Improves air quality | No |
| Prevents pollution | No |
| Remediates existing sources of pollution | No |
| Protects fisheries, wildlife, and plant habitat | No |
| Protects land containing shellfish | No |
| Provides pollinator habitat | No |
| Provides recreation | No |
| Provides cultural resources/education | No |
| Project Climate Exposure | |
| Is the primary purpose of this project ecological restoration? | No |
| Does the project site have a history of coastal flooding? | No |
| Does the project site have a history of flooding during extreme precipitation events | No |
| Does the project site have a history of riverine flooding? | No |
| Does the project site have a history of riverine hooding: | Voc |
| Are existing trees being removed as part of the proposed project? | Yes |
| Project Assets | |
| Asset: New Pipelines (G-31, G-32, G-24)24, | |

Asset Type: Utility Infrastructure

Asset Sub-Type: Energy (electric, gas, petroleum, renewable)

Construction Type: New Construction

Construction Year: 2026

Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Infrastructure must be accessible/operable at all times, even during natural hazard event.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure. Greater than 100,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

The infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations. **Will the infrastructure reduce the risk of flooding?**

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials? There are no hazardous materials in the infrastructure

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects. No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

Reduced morale and public support

Asset: New Meter Stations (Sagamore M&R Station, Bourne M&R Station, Pave Paws Road M&R, Bourne Rotary M&R Station) Asset Type: Typically Unoccupied Asset Sub-Type: Other Construction Type: New Construction Construction Year: 2026

Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.

Building must be accessible/operable at all times, even during natural hazard event

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility. Greater than 10,000 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

The building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations. If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the building/facility would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials? There are no hazardous materials in the building/facility

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Significant - Inoperability is likely to impact other facilities, assets, or buildings and will likely affect their ability to operate

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to \$100 million

Is this a recreational facility which can be vacated during a natural hazard event? $\ensuremath{\mathsf{No}}$

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts? No alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?

Loss of building may reduce the ability to maintain some government services, while a majority of services will still exist.

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?

Reduced morale and public support

Report Comments

N/A

ATTACHMENT 6 ENF Distribution List

ENF Distribution List

| Agency/Organization | Email Address | Mailing Address |
|--|--|---|
| State | | |
| MA Environmental Policy Act (MEPA) Office | MEPA@mass.gov | MEPA Office 100 Cambridge Street, Suite 900 Boston, MA 02144 |
| MA Department of Environmental Protection (MassDEP), Boston Office | helena.boccadoro@mass.gov | Commissioner's Office One Winter Street Boston, MA 02108 |
| MassDEP – Southeast Regional Office | george.zoto@mass.gov jonathan.hobill@mass.gov | DEP/Southeast Regional Office Attn: MEPA Coordinator 20 Riverside Drive Lakeville, MA 02347 |
| MA Department of Transportation (MassDOT) - Boston | MassDOTPPDU@dot.state.ma.us | MassDOT Public/Private Development Unit 10 Park Plaza, Suite #4150 Boston, MA 02116 |
| MassDOT – District 5 Office | Cindy.McConarty@dot.state.ma.us | District #5 Attn: MEPA Coordinator 1000 County Street Taunton, MA 02780 |
| MA Historical Commission | N/A – hard copy only | The MA Archives Building 220 Morrissey Boulevard Boston, MA 02125 |
| MA Board of Underwater Archaeological Resources | david.s.robinson@mass.gov | Board of Underwater Archaeological Resources Attn: David S. Robinson, Director 100 Cambridge Street, Suite 900 Boston, MA 02114 |
| MEPA Office – EEA Environmental Justice Director | MEPA-EJ@mass.gov | MEPA Office Attn: EEA EJ Director 100 Cambridge Street, Suite 900 Boston, MA 02144 |
| MA Office of Coastal Zone Management | sean.duffey@mass.gov patrice.bordonaro@mass.gov | Coastal Zone Management Attn: Project Review Coordinator 100 Cambridge Street, Suite 900 Boston, MA 02144 |
| MA Division of Marine Fisheries | DMF.EnvReview-South@mass.gov | DMF – South Shore Attn: Environmental Reviewer 836 South Rodney French Blvd New Bedford, MA, 02744 |
| MA Natural Heritage and Endangered Species Program (NHESP) | melany.cheeseman@mass.gov emily.holt@mass.gov | NHESP Division of Fisheries & Wildlife 1 Rabbit Hill Road Westborough, MA 01581 |
| MA Division of Conservation and Recreation ((DCR) | ndy.backman@mass.gov | DCR Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114 |
| MA Energy Facilities Siting Board (EFSB) | andrew.greene@mass.gov smitha.divakar@mass.gov | Energy Facilities Siting Board Attn: MEPA Coordinator One South Station Boston, MA 02110 |

| Agency/Organization | Email Address | Mailing Address |
|--------------------------------------|---|--|
| MA Department of Energy Resources | paul.ormond@mass.gov | Department of Energy Resources Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114 |
| MA Division of Fish and Wildlife | Mass.Wildlife@mass.gov | Massachusetts Division of Fish and Wildlife, Headquarters Office 100 Cambridge Street, Floor 6 Boston, MA 02114 |
| MA Division of Fish and Wildlife | jason.zimmer@mass.gov | Massachusetts Division of Fish and Wildlife, Southeast District Office Attn: Jason Zimmer 195 Bournedale Road Buzzards Bay, MA 02532 |
| MA Department of Public Health | dphtoxicology@massmail.state.ma.us | Department of Public Health Director of Environmental Health 250 Washington Street Boston, MA 02115 |
| Regional | | |
| Cape Cod Commission | ksenatori@capecodcommission.org regulatory@capecodcommission.org | Cape Cod Commission P.O. Box 226 3225 Main St. Barnstable, MA 02630 |
| Local | | |
| Town of Bourne | N/A – hard copy only | Select Board Bourne Town Hall 24 Perry Avenue |
| | | Buzzards Bay, MA 02532-3441 |
| | N/A – hard copy only | Planning Board/Department Bourne Town Hall 24 Perry Avenue - Room 201 Buzzards Bay, MA 02532-3441 |
| | N/A – hard copy only | Conservation Commission Bourne Town Hall 24 Perry Avenue - Room 201 Buzzards Bay, MA 02532-3441 |
| | N/A – hard copy only | Board of Health Bourne Town Hall 24 Perry Avenue - Room 201 Buzzards Bay, MA 02532-3441 |
| | N/A – hard copy only | Buildings and Inspections Department Bourne Town Hall 24 Perry Avenue - Room 203 Buzzards Bay, MA 02532-3441 |
| | N/A – hard copy only | Jonathan Bourne Public Library 19 Sandwich Road Bourne, Massachusetts 02532 |
| Buzzards Bay Water District | N/A – hard copy only | Buzzards Bay Water District 15 Wallace Avenue PO Box 243 Buzzards Bay, MA 02532 |

| Agency/Organization | Email Address | Mailing Address |
|--|---|--|
| Barnstable Historical Commission | email@town.barnstable.ma.us | Barnstable Historical Commission Town Hall 367 Main Street Hyannis MA 02601 |
| Community Based Organization | ns, Indigenous Organizations, and Tribe | 2S |
| Unitarian Universalist Mass Action Network | claire@uumassaction.org | N/A – electronic copy only |
| Mass Rivers Alliance | juliablatt@massriversalliance.org | N/A – electronic copy only |
| The Trust for Public Land | Jodi.Valenta@tpl.org | N/A – electronic copy only |
| Browning the GreenSpace | kerry@msaadapartners.com | N/A – electronic copy only |
| Appalachian Mountain Club | hclish@outdoors.org | N/A – electronic copy only |
| Conservation Law Foundation | Bjenkins@clf.org aestpierre@clf.org pmuratore@clf.org bfrank@clf.org | N/A – electronic copy only |
| Environmental League of Massachusetts | aboydrabin@environmentalleague.org zsaifee@environmentalleague.org | N/A – electronic copy only |
| Environment Massachusetts | ben@environmentmassachusetts.org | N/A – electronic copy only |
| Mass Land Trust Coalition | robb@massland.org | N/A – electronic copy only |
| Clean Water Action | cluppi@cleanwater.org | N/A – electronic copy only |
| Neighbor to Neighbor Mass. | <u>dalida@n2nma.org</u> Lena@N2NMa.org <u>Miles@N2NMa.org</u> | N/A – electronic copy only |
| Ocean River Institute | rob@oceanriver.org | N/A – electronic copy only |
| Sierra Club MA | vick.mohanka@sierraclub.org | N/A – electronic copy only |
| Mass Audubon | hricci@massaudubon.org | N/A – electronic copy only |
| Chappaquiddick Tribe of the Wampanoag Nation | tribalcouncil@chappaquiddickwampan oag.org | N/A – electronic copy only |
| Nipmuc Nation (Hassanamisco Nipmucs) | crwritings@aol.com | N/A – electronic copy only |
| Massachusetts Commission on Indian Affairs (MCIA) | john.peters@mass.gov | N/A – electronic copy only |

| Agency/Organization | Email Address | Mailing Address |
|--|---|---|
| Herring Pond Wampanoag Tribe | melissa@herringpondtribe.org | N/A – electronic copy only |
| Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan | rockerpatriciad@verizon.net | N/A – electronic copy only |
| North American Indian Center of Boston | rhalsey@naicob.org | N/A – electronic copy only |
| Pocassett Wampanoag Tribe | Coradot@yahoo.com | N/A – electronic copy only |
| Massachusetts Tribe at Ponkapoag | Solomon.Elizabeth@gmail.com | N/A – electronic copy only |
| Wampanoag Tribe of Gay Head Aquinnah | THPO@wampanoagtribe-nsn.gov | Bettina M. Washington Tribal Historic Preservation Officer Wampanoag Tribe of Gay Head Aquinnah 20 Black Brook Road Aquinnah, Massachusetts 02535- 9701 |
| Mashpee Wampanoag Indian Tribe | David.Weeden@mwtribe-NSN.gov Brian.Weeden@mwtribe-nsn.gov 106Review@mwtribe-nsn.gov | Mashpee Wampanoag Indian Tribe Madaket Place Office A 3766 Falmouth Road, Mashpee, Massachusetts 02649 |
| Community Action Works | sylvia@communityactionworks.org mbejjani8@gmail.com | N/A – electronic copy only |
| Cape Cod Climate Change Collaborative | info@capecodclimate.org | N/A – electronic copy only |
| Community Action Committee of Cape Cod & Islands | info@cacci.cc | N/A – electronic copy only |

ATTACHMENT 7 Permit and Consultation List

Permits and Consultations

| Permit/Approval | Administering Agency |
|--|---|
| FEDERAL AND TRIBES | |
| Natural Gas Act, Section 7c - Certificate of Public Convenience and Necessity | Federal Energy Regulatory Commission |
| National Environmental Policy Act ("NEPA") – Environmental Assessment Review | Federal Energy Regulatory Commission |
| Section 404/10 Permit | U.S. Army Corps of Engineers New England District |
| Real Estate Outgrant Permit | U.S. Army Corps of Engineers New England District |
| Section 408 Permit | U.S. Army Corps of Engineers New England District |
| Section 7 Clearance | U.S. Fish and Wildlife Service |
| Section 7 Clearance | National Marine Fisheries Service |
| National Pollutant Discharge Elimination System ("NPDES") Construction General Permit | U.S. Environmental Protection Agency - Region 1 (New England) |
| Section 106 Clearance | MA Historical Commission |
| Section 106 Clearance | MA Board of Underwater Archaeological Resources |
| Section 106 Clearance | Barnstable Historical Commission |
| Section 106 Clearance | Mashpee Wampanoag Indian Tribe THPO |
| Section 106 Clearance | Narragansett Indian Tribe THPO |
| Section 106 Clearance | Wampanoag Tribe of Gay Head Aquinnah THPO |
| STATE | |
| Commentor on FERC-regulated pipeline projects in Massachusetts – no approval needed. | MA Energy Facilities Siting Board |
| MEPA ENF Certificate | MA Executive Office of Environmental Affairs |
| MEPA DEIR Certificate | MA Executive Office of Environmental Affairs |
| MEPA FEIR Certificate | MA Executive Office of Environmental Affairs |
| Article 97 Land Disposition and Public Lands Preservation Act | MA Executive Office of Environmental Affairs |
| Consistency Determination | MA Office of Coastal Zone Management |
| 401 Water Quality Certification for Fill | MA Department of Environmental Protection – Southeast Region |
| Asbestos, Construction & Demolition Inspection | MA Department of Environmental Protection – Southeast Region |

| Permit/Approval | Administering Agency |
|--|---|
| Chapter 91 License – WW01 – Water-Dependent License | MA Department of Environmental Protection – Boston Office |
| MESA Project Review | MA Natural Heritage & Endangered Species Program |
| Conservation and Management Permit | MA Natural Heritage & Endangered Species Program |
| State Highway Access Permits | MA Department of Transportation – District 5 Office |
| Article 97 Land Disposition and Public Lands Preservation Act | MA Executive Office of Environmental Affairs |
| Compliance with Cape Edwards Wildlife Management Area managed by MA Military Reservation | MA Division of Fisheries and Wildlife |
| Chapter 47 of the Acts of 2002 | Joint Base Environmental Management Commission |
| LOCAL | |
| Order of Conditions under Wetlands Protection Act and Bourne Wetland Protection Bylaw | Bourne Conservation Commission |
| Road Opening Permit | Bourne Department of Building and Inspection |

ATTACHMENT 8

Massachusetts Historical Commission Correspondence



August 29, 2023

Brona Simon State Archaeologist, Executive Director State Historic Preservation Officer Massachusetts Historical Commission 220 Morrissey Boulevard Boston, Massachusetts 02125

Re: Algonquin Gas Transmission, LLC Proposed Cape Cod Canal Crossing Project – Bourne, Massachusetts PAL #4594

Dear Ms. Simon:

Algonquin Gas Transmission, LLC (Algonquin), an Enbridge Energy, Inc. (Enbridge) company, is an interstate natural gas transmission company that maintains and operates interstate pipelines throughout the Northeast. Algonquin is planning to modify its existing pipeline system in the Town of Bourne to accommodate future planned road and bridge construction activities. As part of this effort, Algonquin will remove and re-install portions of its existing pipelines as well as certain aboveground facilities along the pipeline routes. The Project referred to herein as the Cape Cod Canal Crossing Project.

The proposed Project involves the following facilities:

- remove the existing Bourne Mainland Meter Station and approximately 0.5 miles of existing pipeline along the G-8L and G-8C System right-of-way (ROW) leading to the meter station;
- install a new Bourne Mainland Meter Station;
- remove the existing Sagamore Mainland Meter Station and relocate approximately 0.17 miles of existing G-24 System pipeline adjacent to the Sagamore Bridge;
- install a new valve site and the new Sagamore Mainland Meter Station to the west and east of the Sagamore Bridge, respectively;
- install approximately 2.1 miles of new 16-inch pipeline from an existing valve site near the Bourne/Plymouth town line to a new Sagamore Cape Meter Station within the Massachusetts National Guard Joint Base Cape Cod (JBCC), including a horizontal directional drill (HDD) segment under the Cape Cod Canal; and
- install approximately 3.1 miles of new 16-inch pipeline through JBCC to a new Bourne Cape Meter Station off Route 28, to the south of the Bourne Rotary.

PAL recognizes that the proposed Algonquin Project area overlaps with portions of the Massachusetts Department of Transportation (MassDOT) Cape Cod Canal Bridges Project that is also currently under review by the MHC (Review #RC.66038; PAL #4567). The assigned PAL Principal Investigators for each respective project are coordinating review of data to ensure that assessments and recommendations for each project are consistent with one another.

In the second half of 2024, Algonquin intends to file an application for review and approval from the Federal Energy Regulatory Commission (FERC), and numerous other agencies as referenced in the enclosed Project Notification Form (PNF). The permit proceedings, which will be conducted by these agencies, will provide an opportunity for public input and involvement. All other federal program applications are planned to be filed prior

Simon, Massachusetts SHPO Algonquin Gas Transmission, LLC Cape Cod Canal Crossing Project August 29, 2023

Page | 2

to or in a similar timeframe. The Public Archaeology Laboratory, Inc. (PAL) has been contracted by Algonquin to assist the FERC meet their obligations in complying with Section 106 of the National Historic Preservation Act of 1966, as amended, as well as coordinate with Massachusetts Historical Commission, office of the State Historic Preservation Officer (SHPO), American Indian tribes (Tribes), and other interested stakeholders. On behalf of Algonquin, and pursuant to the Section 106 process, PAL is presenting the information herein as a means to formally notify your office and solicit comments on the proposed Project.

On behalf of Algonquin, please find enclosed a PNF and an application for a permit to conduct an intensive (locational) archaeological survey for the Project. The Project right-of-way referenced in the permit application is on the Sagamore, Massachusetts USGS quadrangle.

If you have any questions or require additional information, please do not hesitate to contact John Kelly, Principal Investigator, or me, at your convenience. We would like to begin the field investigations as soon as possible. We appreciate your time and attention to this matter.

Sincerely,

Gregory R. Doch

Gregory R. Dubell, RPA Energy Projects Manager

Enclosures

cc: George A. McLachlan, Algonquin (w/encl. – via email) Michael Lychwala, SWCA (w/encl. – via email) Kathy Murphy, SWCA (w/encl. – via email) David Robinson, MBUAR (w/encl. – via email) John A. Peters, Jr., Massachusetts Commission on Indian Affairs (w/encl. – via email) David Weeden, Mashpee Wampanoag Tribe (w/encl – via email) Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) Mark Andrews, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) John Brown, III, Narragansett Indian Tribe (w/encl. – via email) Cora Peirce, Narragansett Indian Tribe (w/encl. – via email) Melissa Ferretti, Herring Pond Wampanoag Tribe (w/encl. – via email) Carl Georgeson, Chair, Bourne Historical Commission (w/encl. – via email)

950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

A. General Information

Pursuant to Section 27(c) of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

- 1. Name(s): John M. Kelly 2. Institution: The Public Archaeology Laboratory, Inc. Address: 26 Main Street Pawtucket, Rhode Island 02860 3. Project Location: Cape Cod Canal Crossing Project see attached proposal 4. Town(s): Bourne
- 5. Attach a copy of a USGS quadrangle with the project area clearly marked.

see attached

- 6. Property Owner(s): Algonquin Gas Transmission, LLC
- 7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.
- 8. The proposed field investigation is for a(n):
 - a. Reconnaissance Survey

b. Intensive Survey

- c. Site Examination
- d. Data Recovery

B. Professional Qualifications

Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b). 1.

a. Personnel

| Principal Investigator(s): | John M. Kelly |
|----------------------------|---------------|
| Project Archaeologist(s): | Andrew Polta |
| Field Crew: | TBD |

b. Schedule

| Fieldwork: | October 2023 – May 2024 |
|-------------|-------------------------|
| Laboratory: | June 2024 |
| Report: | July 2024 |

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

C. Research Design

Attach a narrative description of the proposed Research Design according to the require-1. ments of 950 CMR 70.11.

The Applicant agrees to perform the field investigations according to the standards outlined 2. in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: October 2024

The specimens recovered during performance of the proposed field investigation will be 4. curated at:

> The Public Archaeology Laboratory, Inc. 26 Main Street Pawtucket, Rhode Island 02860

SIGNATURE APPLICANT(S)

8/29/22

DATE

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

<u>APPENDIX A</u> MASSACHUSETTS HISTORICAL COMMISSION 220 MORRISSEY BOULEVARD BOSTON, MASS 02125 617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

| Project Name: | Algonquin Gas Transmission, LLC Cape Cod Canal Crossing Project |
|--------------------------|--|
| Location / Address: | Various |
| City / Town: | Bourne, MA |
| Project Proponent | |
| Name: | Algonquin Gas Transmission, LLC |
| Address: | 890 Winter Street, Suite 330 |
| City/Town/Zip/Telephone: | Waltham, Massachusetts 02451 |

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

| Agency Name: | Type of License or funding (specify) |
|---|--|
| Federal Energy Regulatory Commission | Section 7c Certificate of Public Convenience and Necessity |
| U.S. Army Corps of Engineers | Section 10 Rivers and Harbors Act |
| | Section 404 Clean Water Act |
| | Real Estate Outgrant Permit |
| | Section 408 Permit |
| U.S. Environmental Protection Agency | NPDES Construction General Permit and SWPPP |
| Massachusetts Energy Facilities Siting Board | Consultation |
| MA Executive Office of Energy and Environmental Affairs | MEPA Certificate |
| | Article 97 Process |
| MA Office of Coastal Zone Management | CZM Consistency |
| MassDEP | Individual 401 Water Quality Certification |
| | Chapter 91 License (Exemption, TBD) |
| Cape Cod Commission | Review and Decision |
| Town of Bourne | Order of Conditions |
| Other | TBD – see FERC Application in 2024 |

Project Description (narrative):

Algonquin is planning to modify its existing pipeline system in the Town of Bourne to accommodate future planned road and bridge construction activities. As part of this effort, Algonquin will remove and re-install portions of its existing pipelines as well as certain aboveground facilities along the pipeline routes. The Project herein is referred to as the Cape Cod Canal Crossing Project.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Algonquin plans to demolish and remove portions of its existing natural gas pipeline system including existing pipeline and aboveground metering and regulating stations that conflict with proposed road and bridge improvements.

Does the project include rehabilitation of any existing building? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

No rehabilitation of existing buildings is proposed.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

See enclosed overview map. Detailed project maps are in development and will be submitted to the MHC when they are available in 2024.

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

Algonquin's cultural resource consultant, The Public Archaeology Laboratory, Inc. (PAL) has performed a cultural resource due diligence and has prepared a State Archaeologist's permit application to perform intensive (locational) archaeological surveys for proposed Project. PAL will also perform historic architectural property reconnaissance survey and effects assessment to evaluate the potential for the proposed Project to have any effects on aboveground historic properties.

PAL is currently working with Algonquin to identify specific landowners and will prepare an Archaeological Resource Protection Act (ARPA) permit, to be submitted the USACE, if necessary.

What is the total acreage of the project area? TBD

| acres |
|-------|
| acres |
| acres |
| acres |
| acres |
| |

| Productive Resources: | |
|-----------------------|-------|
| Agriculture | acres |
| Forestry | acres |
| Mining | acres |
| Total Project Acreage | acres |
| | |

What is the acreage of the proposed new construction? TBD

What is the present land use of the project area?

Areas within and immediately adjacent to existing natural gas pipeline and/or electrical transmission ROWs and underneath the existing Cape Cod Canal.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

See attached.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

| Signature of Person submitting this form | Date: 8/29/2023 |
|---|-----------------|
| Name: The Public Archaeology Laboratory, Inc. | |
| Address: 26 Main Street | |
| City / Town: Pawtucket, Rhode Island 02860 | |
| Telephone: 401-728-8780 | |

REGULATORY AUTHORITY

930CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St.1988, c.254.







The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number4307Date of IssueSeptember 21, 2023Expiration DateSeptember 21, 2024

PAL

is hereby

authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

Algonquin Gas Transmission, LLC Cape Cod Canal Crossing Project, Bourne Project Location

Brona Simon, State Archaeologist Massachusetts Historical Commission

> 220 Morrissey Boulevard, Boston, Massachusetts 02125 (617) 727-8470 • Fax: (617) 727-5128 www.state.ma.us/sec/mhc



October 23, 2023

Brona Simon State Archaeologist Executive Director and State Historic Preservation Officer Massachusetts Historical Commission 220 Morrissey Boulevard Boston, Massachusetts 02125

Re: Cape Cod Canal Crossing Project, Bourne, Massachusetts Amendment to Intensive (Locational) Archaeological Survey Permit PAL #4594

Dear Ms. Simon:

On behalf of Algonquin Gas Transmission, LLC (Algonquin), The Public Archaeology Laboratory, Inc. (PAL) is requesting an amendment to State Archaeologist's Permit #4307 to conduct an intensive (locational) archaeological survey for the proposed Cape Cod Canal Crossing Project. Algonquin revised the proposed Project study area after PAL's original permit request on August 29, 2023; the revised study area includes additional workspace along the proposed pipeline route and access road improvement areas. PAL proposes to excavate approximately 600 test pits to cover these additional survey areas; it is estimated that approximately 2,000 total test pits will be necessary to adequately test the archaeologically sensitive portions of the entire Project area.

Enclosed please find Project mapping that shows the revised study area and its assessed archaeological sensitivity. The intensive survey will be completed in accordance with the methodologies presented in the permit application for this Project, and results will be presented in a technical report that will include the results of testing completed under the original permit. We will include maps depicting all the archaeological testing in the technical report.

If you have any questions or need further information, please do not hesitate to contact John Kelly, Principal Investigator, or me, at your convenience.

Sincerely,

Gregory R. Lobert

Gregory R. Dubell, RPA Energy Projects Manager

Enclosure

cc: George A. McLachlan, Algonquin (w/encl. – via email) Michael Lychwala, SWCA (w/encl. - via email) Kathy Murphy, SWCA (w/encl. – via email) David Robinson, MBUAR (w/encl. – via email) John A. Peters, Jr., Massachusetts Commission on Indian Affairs (w/encl. – via email) Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) Mark Andrews, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) David Weeden, Mashpee Wampanoag Tribe (w/encl. – via email) John Brown, III, Narragansett Indian Tribe (w/encl. – via email) Cora Peirce, Narragansett Indian Tribe (w/encl. – via email) Melissa Ferretti, Herring Pond Wampanoag Tribe (w/encl. – via email) Carl Georgeson, Chair, Bourne Historical Commission (w/encl. – via email)



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth Massachusetts Historical Commission

November 9, 2023

Deborah C. Cox PAL 26 Main St. Pawtucket. RI 02860

RE: Cape Cod Canal Crossing Algonquin Gas Pipeline, Bourne, MA. MHC # RC.73723. **PAL # 4594.**

Dear Deborah:

Thank you for your request to amend SAP.4307 for the intensive (locational) archaeological survey of the proposed project referenced above. The project has been revised to include additional workspace along the proposed pipeline route and access road improvement areas.

State Archaeologist's Permit #4307 is hereby amended and extended to expire on November 9, 2024. I look forward to reviewing the results of the survey.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 70). If you have any questions or need further information, please feel free to contact me.

Sincerely,

Brona Sim

Brona Simon State Archaeologist State Historic Preservation Officer Executive Director Massachusetts Historical Commission

> 220 Morrissey Boulevard, Boston, Massachusetts 02125 (617) 727-8470 • Fax: (617) 727-5128 www.state.ma.us/sec/mhc



December 20, 2024

Brona Simon State Archaeologist Executive Director and State Historic Preservation Officer Massachusetts Historical Commission 220 Morrissey Boulevard Boston, Massachusetts 02125

Re: Cape Cod Canal Crossing Project, Bourne, Massachusetts Intensive (Locational) Archaeological Survey Technical Report State Archaeologist's Permit Application and Technical Proposal Archaeological Site Examination MHC #RC.73723; PAL #4594.01

Dear Ms. Simon:

As you know, Algonquin Gas Transmission, LLC (Algonquin) is planning to seek a Certificate of Public Convenience and Necessity to construct and operate the Cape Cod Canal Crossing Project through the modification of its existing pipeline system in the Town of Bourne to accommodate future planned road and bridge construction activities associated with the Cape Cod Bridges Program. The Public Archaeology Laboratory, Inc. (PAL) has been in contact with the Massachusetts Historical Commission, office of the State Historic Preservation Officer (SHPO), regarding various aspects of the Project since August 2023, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). On behalf of the Algonquin, please find enclosed the following documentation regarding the proposed Project:

Technical Report, Intensive (Locational) Archaeological Survey, Cape Cod Canal Crossing Project, Bourne, Massachusetts – December 2024; and

Technical Proposal, Archaeological Examination of Moss Hill Site, Cape Cod Canal Crossing Project: Bourne, Massachusetts – December 13, 2024.

By copy of this letter, PAL is providing copies of the enclosed documentation to Indian Tribes and consulting parties for their concurrent review. If you have any questions or require additional information, please do not hesitate to contact John Kelly, Principal Investigator, or me, at your convenience. We appreciate your time and attention to this matter.

Sincerely,

Jregory R. Dobel

Gregory R. Dubell, RPA Energy Projects Manager

Enclosures

cc: see attached list

Simon, MHC Algonquin Gas Transmission, LLC – Cape Cod Canal Crossing Project December 20, 2024

 $Page \mid 2$

cc: George A. McLachlan, Algonquin (w/encl. – via email) Katelyn Wheeler, SWCA (w/encl. - via email) David Robinson, MBUAR (w/encl. – via email) Keith J. Driscoll, MA Army National Guard, Joint Base Cape Cod (w/encl. – via email) John A. Peters, Jr., Massachusetts Commission on Indian Affairs (w/encl. – via email) Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) David Weeden, Mashpee Wampanoag Tribe (w/encl. – via email) Nakia Hendricks, Jr., Mashpee Wampanoag Tribe (w/encl. – via email) John Brown, III, Narragansett Indian Tribe (w/encl. – via email) Cora Peirce, Narragansett Indian Tribe (w/encl. – via email) Mark Andrews, Narragansett Indian Tribe (w/encl. – via email) Melissa Ferretti, Herring Pond Wampanoag Tribe (w/encl. – via email) Neil F. Langille, Chair, Bourne Historical Commission (w/encl. – via email)

950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

A. General Information

Pursuant to Section 27(c) of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

- Name(s): John M. Kelly 1. The Public Archaeology Laboratory, Inc. 2. Institution: Address: 26 Main Street Pawtucket, Rhode Island 02860 Cape Cod Canal Crossing Project 3. Project Location: see attached proposal Town(s): Bourne 4.
- 5. Attach a copy of a USGS quadrangle with the project area clearly marked.

see attached

- 6. Property Owner(s): New Algonquin Gas Transmission Easement at 64 Williston Road
- 7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.
- 8. The proposed field investigation is for a(n):
 - a. Reconnaissance Survey
 - b. Intensive Survey
 - c. Site Examination
 - d. Data Recovery

B. Professional Qualifications

- 1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).
 - a. Personnel

| Principal Investigator(s): | John M. Kelly |
|----------------------------|---------------|
| Project Archaeologist(s): | Andrew Polta |
| Field Crew: | TBD |

b. Schedule

| Fieldwork: | January 2025 |
|-------------|---------------|
| Laboratory: | February 2025 |
| Report: | March 2025 |

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

C. Research Design

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.

2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: June 2025

4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc. 26 Main Street Pawtucket, Rhode Island 02860

SIGNATURE

APPLICANT(S)

12/13/24

DATE



The Commonwealth of Massachusetts William Francis Galvin, Secretary of the Commonwealth

Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number4391Date of IssueFebruary 4, 2025Expiration DateFebruary 4, 2026

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PAL

is hereby

authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

Moss Hill Site Examination, Cape Cod Canal Crossing Project, Bourne Project Location

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220 Morrissey Boulevard, Boston, Massachusetts 02125 (617) 727-8470 • Fax: (617) 727-5128 www.state.ma.us/sec/mhc



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the CommonwealthFebruary 3, 2025Massachusetts Historical Commission

Deborah Cox PAL 26 Main St. Pawtucket, RI 02860

RE: Cape Cod Canal Crossing Project, Bourne, MA. MHC #RC.73723; PAL #4594.01

Dear Deborah:

Thank you for submitting a copy of the archaeological report for the project referenced above, which was received at this office on January 3, 2025. Please submit the following items:

Site forms for the prehistoric or historic sites identified in the project area.

Second copy of the report



 \checkmark

 \checkmark

V

Two copies of the final report

A copy of the bibliographic entry and abstract on a CD for the report.

Please submit these items as soon as possible so that we may update MHC's files. Thank you in advance for your consideration.

If you have any questions, please feel free to call me.

Sincerely,

Brona

Brona Simon State Archaeologist Executive Director State Historic Preservation Officer Massachusetts Historical Commission



March 5, 2025

Brona Simon State Archaeologist Executive Director and State Historic Preservation Officer Massachusetts Historical Commission 220 Morrissey Boulevard Boston, Massachusetts 02125

Re: Cape Cod Canal Bridge Relocation Project, Bourne, Massachusetts Request to Amend Permit #4307 FERC Docket #PF25-4-000; MHC #RC.73723; PAL #4594.01

Dear Ms. Simon:

As you know, Algonquin Gas Transmission, LLC (Algonquin) has filed a request with the Federal Energy Regulatory Commission (FERC) to use the Pre-filing application process to seek a Certificate of Public Convenience and Necessity to construct and operate the Cape Cod Canal Bridge Relocation Project (also referred to as the Cape Cod Canal Crossing Project in previous documentation prepared by The Public Archaeology Laboratory, Inc. [PAL] to the Massachusetts Historical Commission [MHC]). PAL has been in contact with the MHC, office of the State Historic Preservation Officer (SHPO), regarding various aspects of the Project since August 2023, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800).

Algonquin is in the processes of refining the proposed Project routing, adjusting proposed workspace, and siting proposed new metering and regulating stations and has requested that PAL consult with MHC to identify any significant archaeological resources within the updated Project study area. The revised study area includes alterations to workspace along the proposed pipeline route, additional access road improvement areas, and adjustments to the proposed locations of the Bourne Mainland Meter Station, the Sagamore Mainland Meter Station, and the Bourne Cape Meter Station.

Enclosed please find Project mapping that shows the revised study area and its assessed archaeological sensitivity. PAL is requesting an amendment to State Archaeologist's Permit #4307 to conduct intensive (locational) archaeological survey for the additional survey areas shown on the revised Project mapping. PAL proposes to excavate approximately 450 test pits to cover the additional survey areas that have been assessed with high and moderate archaeological sensitivity. The intensive survey will be completed in accordance with the methodologies presented in the original permit application for the Project, and the results will be presented in an updated technical report that will detail the results of all the testing conducted for the survey. We will include maps depicting all the archaeological testing in the updated technical report.

Algonquin is evaluating alternative locations for the Sagamore Mainland Meter Station and has requested that PAL postpone the archaeological site examination investigation under State Archaeologist's Permit #4391. In the event PAL does not advance the archaeological fieldwork for that location and Algonquin determines that an alternative meter station will be advanced in Algonquin's Certificate application to the FERC, PAL will submit a request to withdraw that permit.
Simon, MHC Cape Cod Canal Bridge Relocation Project Request to State Archaeologist's Permit #4307 March 5, 2025

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Additionally, please note that PAL is in the process of performing an historic architectural reconnaissance survey and effects assessment and will submit a report to the MHC and consulting parties in a similar timeframe as the updated intensive (locational) archaeological survey report.

In the meantime, if you have any questions or need further information, please do not hesitate to contact John M. Kelly, Principal Investigator, or me, at your convenience. We would like to begin investigations as soon as possible, weather conditions permitting. Thank you for your attention to this matter.

Sincerely,

(regory R. Lobert

Gregory R. Dubell, RPA Energy Projects Manager

Enclosure

cc: George A. McLachlan, Algonquin (w/encl. – via email) Katelyn Wheeler, SWCA (w/encl. – via email) David Robinson, MBUAR (w/encl. – via email) Keith J. Driscoll, MA Army National Guard, Joint Base Cape Cod (w/encl. – via email) John A. Peters, Jr., Massachusetts Commission on Indian Affairs (w/encl. – via email) Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah) (w/encl. – via email) David Weeden, Mashpee Wampanoag Tribe (w/encl. – via email) Nakia Hendricks, Jr., Mashpee Wampanoag Tribe (w/encl. – via email) John Brown, III, Narragansett Indian Tribe (w/encl. – via email) Mark Andrews, Narragansett Indian Tribe (w/encl. – via email) Cora Peirce, Narragansett Indian Tribe (w/encl. – via email) Melissa Ferretti, Herring Pond Wampanoag Tribe (w/encl. – via email) Neil F. Langille, Chair, Bourne Historical Commission (w/encl. – via email)



The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth Massachusetts Historical Commission

March 21, 2025

Deborah C. Cox PAL 26 Main St. Pawtucket. RI 02860

RE: Cape Cod Canal Crossing Algonquin Gas Pipeline, Bourne, MA. MHC # RC.73723. **PAL # 4594.**

Dear Deborah:

Thank you for your request to amend SAP.4307 for the intensive (locational) archaeological survey of the proposed project referenced above. The project has been revised to include additional survey areas as shown on the revised project map you submitted.

State Archaeologist's Permit #4307 is hereby amended and extended to expire on March 21, 2026. I look forward to reviewing the results of the survey.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800) and Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 70). If you have any questions or need further information, please feel free to contact me.

Sincerely,

Brona Surion

Brona Simon State Archaeologist State Historic Preservation Officer Executive Director Massachusetts Historical Commission

> 220 Morrissey Boulevard, Boston, Massachusetts 02125 (617) 727-8470 • Fax: (617) 727-5128 www.state.ma.us/sec/mhc

ATTACHMENT 9

Algonquin's Erosion and Sedimentation Control Plan



Erosion and Sedimentation Control Plan

Effective June 6, 2014 Revised: December 2024

Table of Contents

| 1. | INTRODUCTION | 1 |
|----|---|----------|
| | 1.1 PURPOSE OF THIS PLAN | 1 |
| | 1.2 GUIDELINES AND REQUIREMENTS | 2 |
| | 1.3 SURVEYS, PERMITS & NOTIFICATIONS | 2 |
| | 1.4 INQUIRIES | 2 |
| | | |
| 2 | SUDEDVISION AND INSDECTION | 3 |
| 2. | | J |
| | | |
| | | |
| n | <u>CONCTRUCTION ΤΕ CUMUOUES FOR ΝΑΤΗΡΑΙ CAS FACILTIES</u> | 6 |
| з. | | 0 |
| | 3.1 I YPICAL ROW REQUIREMENTS | b |
| | 3.2 ALLESS RUADS & ALLESS PUINTS | 0 0 |
| | 3.3 PIPE AND CONTRACTOR WARETARDS | ð |
| | | 8 |
| | 3.5 CONSTRUCTION SEQUENCE FOR PIPELINE INSTALLATION | 9 |
| | 3.5.1 Clearing & Flagging | 10 |
| | 3.5.2 Temporary Sediment Barriers | |
| | 3.5.3 Grading | |
| | 3.5.4 Temporary Slope Breakers | |
| | 3.5.5 Trenching | |
| | 3.5.6 Trench & Site Dewatering | |
| | 3.5.7 Pipe Installation | 15 |
| | 3.5.8 Backfilling | 16 |
| | 3.5.8.1 Permanent Trench Breakers | 17 |
| | 3.5.9 Hydrostatic Testing | 17 |
| | 3.5.10 Pipeline Abandonment and Removal | 19 |
| | 3.6 ROW RESTORATION & FINAL CLEANUP | 19 |
| | 3.6.1 Permanent Erosion Control | 20 |
| | 3.6.2 Revegetation and Seeding | 22 |
| | 3.6.3 Mulch | 23 |
| | 3.6.4 Frozen Conditions & Winter Construction | 24 |
| | 3.6.5 Unauthorized Vehicle Access to ROW | 24 |
| | 3.7 ABOVEGROUND FACILITY CONSTRUCTION | 24 |
| | | |
| 4. | SPECIAL CONSTRUCTION METHODS | 27 |
| | 4.1 AGRICULTURAL AREAS | 27 |
| | 4.1.1 Drain Tiles | 27 |
| | 4.1.2 Irrigation | 27 |
| | 4.1.3 Soil Compaction Mitigation & Restoration | 27 |
| | 4.2 ROAD CROSSINGS | 28 |
| | 4.3 RESIDENTIAL AREAS | 28 |
| | 4.3.1 Stove Pipe Technique | 29 |
| | 4.3.2 Drag Section Technique | 29 |
| | 4.3.3 Residential Area Cleanup and Restoration | 29 |

| | 4.4 | HORIZONTAL DIRECTIONAL DRILL METHOD | |
|----|---------|--|----|
| 5. | WATERBO | DDY CROSSINGS | |
| | 5.1 | GENERAL WATERBODY PROCEDURES | |
| | 5.1.1 | Time Windows for Instream Work | |
| | 5.1.2 | Equipment Bridges | |
| | 5.1.3 | Clearing and Grading near Waterbodies | 34 |
| | 5.1.4 | Temporary Erosion and Sediment Controls at Waterbodies | |
| | 5.2 | TYPES OF WATERBODY CROSSING METHODS | 35 |
| | 5.2.1 | Flume Crossing | 35 |
| | 5.2.2 | Dam-and-Pump Crossing | |
| | 5.2.3 | Wet Crossing | |
| | 5.3 | FERC WATERBODY CLASSIFICATIONS | |
| | 5.3.1 | Minor Waterbodies | |
| | 5.3.2 | Intermediate Waterbodies | |
| | 5.3.3 | Major Waterbodies | |
| | 5.4 | Restoration | |

| 6. | WETLAN | D CROSSINGS | 40 |
|----|--------|--|----|
| | 6.1 | General Wetland Procedures | 40 |
| | 6.2 | Clearing and Grading at Wetlands | 41 |
| | 6.3 | Temporary Erosion & Sediment Control at Wetlands | 42 |
| | 6.4 | Wetland Crossing Procedure | 42 |
| | 6.4. | 1 Push-pull Technique | 43 |
| | 6.5 | Wetland Cleanup and Restoration | 43 |
| | | | |

| 7. | SPILL PR | REVENTION & RESPONSE | |
|----|----------|---------------------------|----|
| | 7.1 | SPCC / PPC Plan | 45 |
| | 7.2 | Spill Prevention Measures | 45 |
| | 7.3 | Spill Cleanup & Response | |
| | | | |

| 8. | POST-CONSTRUCTION ACTIVITIES | 47 |
|----|-----------------------------------|----|
| | 8.1 POST-CONSTRUCTION MONITORING | 47 |
| | 8.2 POST-CONSTRUCTION MAINTENANCE | |
| | 8.2.1 Uplands | |
| | 8.2.2 Waterbodies and Wetlands | |
| | 8.3 REPORTING | |
| | | |

APPENDIX A – E&SCP FIGURES APPENDIX B – WATERBODY REFERENCE CITING FERC REQUIREMENTS APPENDIX C – SEED MIX RECOMMENDATIONS

LIST OF FIGURES

| Figure Number | CATEGORY ABBREVIATION / Figure Name | | |
|------------------|--|--|--|
| | CONSTRUCTION WORK AREAS (CW) | | |
| CW-1 | Typical Trench Detail | | |
| CW-2 | Right-of-Way Topsoil Segregation Techniques | | |
| CW-3 | Typical Construction Widths Acquiring New Permanent Right-of-Way | | |
| CW-4 | Typical Construction Widths Not Acquiring New Permanent Right-of-Way (Single Line System) | | |
| CW-5 | Typical Construction Widths Not Acquiring New Permanent Right-of-Way (Multiple Line System) | | |
| ACCESS ROAD | S & ROAD CROSSINGS (RD) | | |
| RD-1 | Access Road Cross Section | | |
| RD-2 | Rock Access Pad | | |
| RD-3 | Typical Temporary Access Road Through Wetlands | | |
| RD-4 | Typical Paved Road Crossing Control Measures (Open Cut) | | |
| RD-5 | Typical Paved Road Crossing Control Measures (Bored) | | |
| EROSION CON | TROLS (EC) | | |
| EC-1 | Silt Fence Detail | | |
| EC-2 | Straw Bale Detail | | |
| EC-3 | Straw Bale Check Dam in a Drainageway | | |
| EC-4 | Rock-lined Drainage Swale | | |
| EC-5 | Storm Drain Inlet Protection | | |
| EC-6 | Temporary Trench Plug Options | | |
| EC-7 | Temporary Slope Breaker | | |
| EC-8 | Permanent Slope Breaker | | |
| EC-9 | Chevron Slope Breaker | | |
| EC-10 | Trench Breaker Detail (Sack) | | |
| EC-11 | Trench Breaker Detail (Foam) | | |
| EC-12 | Permanent Trench Breaker Options | | |
| EC-13 | Erosion Control Fabric/Blanket Installation | | |
| EC-14 | Typical Erosion Control Blankets on Slopes | | |

LIST OF FIGURES, continued

| Figure Number | CATEGORY ABBREVIATION / Figure Name | | |
|------------------|--|--|--|
| WATER DISCHA | WATER DISCHARGES (WD) | | |
| WD-1 | Filter Bag | | |
| WD-2 | Discharge Structure for Hydrostatic Test Water | | |
| WD-2 | Options for Small Water Discharges | | |
| WD-3 | Discharge of Hydrostatic Test Water to a Surface Water | | |
| BRIDGES (BR) | BRIDGES (BR) | | |
| BR-1 | Temporary Equipment Bridge (Equipment Pads with or without Culverts) | | |
| BR-2 | Temporary Equipment Bridge (Crushed Stone with Culverts) | | |
| BR-3 | Temporary Equipment Bridge (Flexi-float or Portable Bridge) | | |
| WATERBODY & | WATERBODY & WETLAND CROSSINGS (WC) | | |
| WC-1 | Typical Standard Wetland Crossing | | |
| WC-2 | Typical Wet Waterbody Crossing | | |
| WC-3 | Typical Flume Waterbody Crossing | | |
| WC-4 | Typical Dam-and-Pump Waterbody Crossing | | |
| WC-5 | Typical Erosion Control Blankets on Streambanks | | |
| WC-6 | Typical Rip-Rap Placement | | |
| SPECIAL USE / | AGRICULTURAL & RESIDENTIAL AREAS (SU) | | |
| SU-1 | Drain Tile Repair Procedure | | |

DEFINITIONS

7(c) – Activities authorized under a project-specific Certificate of Public Convenience and Necessity from the Federal Energy Regulatory Commission (FERC), pursuant to Section 7(c) of the Natural Gas Act, to transport or sell natural gas, as well as construct, acquire, extend, alter or operate specific natural gas facilities that provide natural gas service.

Abandonment – Permanent reduction in the availability for service of a FERC jurisdictional facility, including facility modifications which would result in changes to certificated parameters (e.g., permanently operating compressors at lower than certificated horsepower or pipelines at lower than certificated design pressures) as well as changes in operating status (e.g., abandoned-in-place, idled and not maintained, decommissioned or removed facilities). Abandonment of pipe or facilities may be authorized under the blanket certificate or a project-specific Order of Abandonment by FERC, in accordance with Section 7(b) of the Natural Gas Act.

Agricultural Land – Actively cultivated and rotated land used for the production of crops including but not limited to corn, grains, orchards, vineyards and hayfields.

Blanket Certificate Project – Blanket certificate authorization is obtained from FERC by the Company and allows the Company to construct, modify, acquire, operate, and abandon a limited set of natural gas facilities, and offer a set of services without the need for further activity-specific certificate authorizations. Regulations for FERC's Blanket Certificate program are provided under Title 18 CFR Part 157, Subpart F. Examples of these projects include, but is not limited to, pipe replacements requiring new permanent right-of-way (ROW) or temporary workspace outside of the original construction footprint, miscellaneous pipe rearrangements, new receipt and delivery points, abandonments, temporary compression facilities, underground storage field remediation and maintenance activities, and underground storage testing and development activities.

Chief Inspector – Person, designated by the Company, responsible for the quality assurance of construction activities on a project by managing on-site project inspection staff and ensuring the construction contractor meets the requirements of the Company's construction specifications, permits, and any plans and drawings related to specific construction activities. All inspectors on the project report to the Chief Inspector and the Chief Inspector reports to the Company's Construction Superintendent.

Project Clearance Package – The project clearance package is issued through the Encompass Pacman module. It contains all the necessary permits, clearances, plans and other requirements specific to a project.

Deviation – A change to the placement of work limits, structures specified in the construction drawings, or changes in the design of control measures as set forth in the E&SCP, with the exception of minor variations from specifications in the typical E&SCP figures (refer to Appendix A) that are required due to site-specific conditions and which are designed to achieve an equivalent or greater degree of environmental protection.

Environmental Inspector (EI) – On-site Company representative responsible for inspecting and verifying site compliance with environmental conditions identified in the E&SCP as well as project-specific terms and conditions contained within the Project Clearance Package. The environmental inspector will perform the duties that are outlined in Section 2.1 of this plan.

Ephemeral stream – Waterbody which flows water only during precipitation events in a typical year and for a short duration after the events. Runoff from rainfall is the primary source of water for stream flow. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream.

Intermediate waterbody – Defined by FERC as a waterbody greater than 10 feet wide but less than or equal to 100 feet wide, measured from water's edge to water's edge at the time of construction.

Intermittent stream – Waterbody which flows during certain times of the year when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Line List – A list prepared by the Company of project-specific instructions for all properties affected by the project, specifying each property owner, the length of crossing, and any special instructions or restrictions for construction crew(s).

Major waterbody – Defined by FERC as a waterbody greater than 100 feet wide, measured at the water's edge at the time of construction.

Minor waterbody – Defined by FERC as a waterbody less than or equal to 10 feet wide, measured at the water's edge at the time of construction.

Pasture – Non-forested land used for grazing of domesticated livestock (horses, cattle, sheep, etc.). Pasture receives periodic renovation and treatments such as tillage, fertilization, mowing, weed control, and may be irrigated. Typical vegetation consists primarily of grasses, herbaceous plants, legumes, and forbs.

Perennial stream – Waterbody which flows water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow and runoff from rainfall is a supplemental source of water for stream flow.

Riparian area – Ecosystems that occupy the transitional zone between terrestrial and aquatic ecosystems. Typical examples of riparian areas include floodplains, streambanks, and lakeshores.

Spill Prevention, Control and Countermeasure Plan /

Preparedness, Prevention and Contingency Plan for Construction Projects (SPCC / PPC Plan) – Company document that contains measures to prevent or reduce the risk of spills or accidental exposure of oil or hazardous materials associated with construction activities, as well as procedures to be employed in the event of a spill, including measures that provide for prompt and effective cleanup of spills, notifications and proper disposal of waste generated during cleanup.

State-designated waterbody – Waterbodies specifically identified or recognized by the States or authorized Indian Tribe for water use, value or quality. Designations take into consideration the protection and propagation fish, shellfish and wildlife, as well as use and value for public water supplies, agricultural, industrial, recreational and other purposes, such as navigation. FERC's Procedures contain specific requirements with regards to state-designated fisheries.

Sensitive resource area – Areas (defined by FERC) that include wetlands, waterbodies, cultural resource sites, or sensitive species habitats.

Take up-and-Relay Pipeline Construction – Also called "lift and relay", Company construction terminology for the removal of existing pipe and installation of new pipe at the same alignment within the existing permanent easement.

Wetland – Areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support and, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Types of wetlands include swamps, marshes, bogs, sloughs, wet meadows, mudflats and natural ponds.

Waterbody – Any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing during construction, as well as other permanent waterbodies such as ponds and lakes.



1. INTRODUCTION

1.1 PURPOSE OF THIS PLAN

This Erosion and Sedimentation Control Plan (E&SCP) has been prepared for use by the Company and its contractors as a guidance manual for minimizing erosion of disturbed soils and transportation of sediments off the construction ROW and into sensitive resource and residential areas during natural gas construction projects. The procedures developed in this plan, which represent the Company's best management practices, are designed to accommodate varying field conditions while achieving compliance with regulatory requirements and protecting environmentally sensitive areas.

This E&SCP is designed to provide guidelines, best management practices and typical techniques for the installation and implementation of soil erosion and sediment control measures while permitting adequate flexibility to use the most appropriate best management practice measures based on site-specific conditions. The intent of the E&SCP is to provide general information on the pipeline construction process and sequence, and to describe specific measures that will be employed during and following construction to minimize impacts to the environment.

Figures provided in Appendix A of this plan illustrate typical and minimum requirements of best management practices for design and utilization of construction workspace areas, access roads and erosion controls, as well as construction methods for special use areas (e.g., agricultural and residential land) and crossing of features during pipeline construction, including wetlands, waterbodies and roads. References to specific figure numbers provided in Appendix A are indicated throughout the E&SCP.

The goal of the E&SCP is to preserve the integrity of environmentally sensitive areas and to maintain existing water quality by:

- Minimizing the extent and duration of disturbance;
- Diverting runoff to stabilized areas;
- Installing temporary and permanent erosion control measures; and
- Establishing an effective inspection and maintenance program.

The E&SCP is intended to be used on Company projects that have been authorized by Federal Energy Regulatory Commission (FERC) pursuant to Section 7(b) and/or 7(c) of the Natural Gas Act to construct, acquire, alter, abandon or operate gas facilities or to provide gas services. This plan is also intended to be used for projects that are conducted under Company's blanket certificate which are regulated under 18 CFR Part 157, Subpart F. All blanket certificate projects that involve ground disturbance or changes to operational air and noise emissions are subject to the FERC's standard environmental conditions, including adherence to FERC's *Upland Erosion Control, Revegetation and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures), May 2013 Version.



1.2 GUIDELINES AND REQUIREMENTS

The measures described in this E&SCP have been developed based on guidelines from the FERC, United States Army Corps of Engineers (COE), the United States Fish and Wildlife Service, the United States Department of Agriculture, the Natural Resource Conservation Service, and various state agencies as well as from the Company's significant experience and practical knowledge of pipeline construction and effective environmental protection measures. Lessons and insights gained during pipeline construction projects and comments from agency representatives are also incorporated into this E&SCP.

In accordance with FERC regulations, projects under the jurisdiction of Section 7 or the Company's blanket certificate are required to comply with the FERC's Plan and Procedures unless written approval to deviate from the Plan or Procedures is received from the Director of the Office of Energy Projects and the appropriate state agency. This revised version of the E&SCP is consistent with the requirements of FERC's Plan and Procedures (May 2013 version).

If conflicts or differences occur between project-specific conditions of appropriate federal and state agencies and the best management practices described in this E&SCP, consult with the Project Environment Lead (PEL). The more stringent or site-specific requirement is typically applicable unless otherwise approved by PEL. With the exception of minor variations from the typical figures that may be required due to site-specific conditions and are designed to achieve an equivalent or greater degree of environmental protection, any deviations from the construction drawings or changes in the design of control measures as set forth in this E&SCP must be approved by the Company's PEL Lead and the appropriate permitting agency prior to implementation. Measures and practices identified within this plan are to be implemented during construction unless otherwise specified by project-specific permit conditions.

1.3 SURVEYS, PERMITS & NOTIFICATIONS

The Company shall perform the required environmental field surveys and acquire the necessary environmental permits, clearances and authorizations prior to start of construction of the project. The Company shall notify the appropriate federal, state, and local agencies prior to, during, and/or subsequent to the construction of the project, as identified in the Project Clearance Package.

1.4 INQUIRIES

Reach out to the PEL for any inquiries regarding this E&SCP. For field conditions requiring an immediate response, contact the on-site construction lead, Environmental Inspector or PEL.



2. SUPERVISION AND INSPECTION

To effectively mitigate project-related impacts, the E&SCP must be properly implemented in the field. Quick and appropriate decisions in the field regarding critical issues such as stream and wetland crossings, placement of erosion controls, trench dewatering, spoil containment, and other construction-related items are essential.

To ensure that the E&SCP is properly implemented, Environmental Inspector(s) (EI) will be assigned by the Company for active construction or restoration activities. Enbridge will typically employ an Environmental Inspector for large work activities which could affect environmental resources, such as wetlands and waterbodies. For small work activities with no resource impacts (i.e., integrity dig with no waterbody crossings, etc.) the Construction Site Inspector may take on the Environmental Inspector role. They are a resource to provide environmental compliance assurance, assist with planning and execution, respond to workers who may have questions and perform the duties that are outlined in Section 2.1 below.

2.1 ROLE & RESPONSIBILITIES OF THE ENVIRONMENTAL INSPECTOR

Designated Els, in addition to the on-site construction lead, have the authority to stop any activities that could violate the environmental conditions of the FERC's Orders (if applicable), stipulations of other environmental permits or approvals, or landowner easement agreements, as well as order appropriate corrective action.

The EI will have peer status with all other activity inspectors and will report directly to the Chief Inspector who has overall authority on the construction spread or project.

The number and experience of EIs assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected. On 7(c) and other large construction projects, the person designated as the EI will typically be a dedicated role for each construction spread. On blanket certificate projects and any other small construction activities carried out under this E&SCP, the EI role may be carried out by the Chief Inspector or another designated and properly trained Company Inspector on site, at the discretion of the Company. In such instances, the Company may employ additional periodic oversight of the EI by an environmental specialist.

At a minimum, the EI shall be responsible for:

- Inspecting construction activities for compliance with the requirements of this E&SCP, the construction drawings, the environmental conditions of the FERC's Orders (if applicable), proposed mitigation measures, other federal or state and local (if applicable) environmental permits and approvals, and environmental requirements in landowner easement agreements;
- Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
- Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;



- Verifying the location of signs and/or highly visible flagging marking the boundaries of sensitive resource areas, including waterbodies and wetlands, or areas with special requirements along the construction work area;
- 5. Identifying erosion/sediment control and soil stabilization needs in all areas;
- Ensuring that the design of slope breakers will not cause erosion or direct water into sensitive resource areas, including cultural resource sites, wetlands, waterbodies and sensitive species habitats;
- 7. Verifying that dewatering activities are properly monitored and do not result in the deposition of sand, silt, and/or sediment into sensitive resource areas, including wetlands, waterbodies, cultural resource sites, and sensitive species habitat; stopping dewatering activities if such deposition is occurring and ensuring the design of the discharge is changed to prevent reoccurrence; and verifying that dewatering structures are removed after completion of dewatering activities;
- 8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
- Advising the Chief Inspector when environmental conditions (such as wet weather, severe storm events or frozen soils) make it advisable to restrict or delay construction activities to avoid topsoil mixing excessive compaction;
- 10. Ensuring restoration of contours and topsoil;
- 11. Verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner, and is considered clean and free of hazardous materials;
- 12. Ensuring that the appropriate erosion/sediment control and stabilization needs are implemented in all areas, including ensuring that erosion and sediment controls are properly installed and maintained daily to prevent sediment flow into sensitive resource areas (e.g., wetlands, waterbodies, cultural resource sites, and sensitive species habitats) and onto roads, and determining the need for additional erosion control devices;
- 13. Inspecting and ensuring the maintenance of temporary erosion and sediment control measures at least:
 - a. On a daily basis in areas of active construction or equipment operation;
 - b. On a weekly basis in areas with no construction or equipment operation; and
 - c. Within 24 hours of each 0.5 inch of rainfall.
- 14. Ensuring the repair of all ineffective temporary erosion and sediment control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts;
- 15. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase;



- 16. Ensuring proper seed mixes, rates and restoration methods are used, and obtaining documentation;
- 17. Ensuring that the Contractor implements and complies with the Company's *Spill Prevention, Control and Countermeasure Plan & Preparedness, Prevention and Contingency Plan for Construction Projects* (SPCC/PPC Plan), the Company's *Waste Management Plan*, and other Company environmental documents and standard operating procedures;
- 18. Verifying that locations for any disposal of excess construction materials for beneficial reuse comply with this E&SCP and any applicable permits / clearances; and,
- 19. Keeping records of compliance with the environmental conditions of the FERC's Orders and the mitigation measures proposed by the Company in the application submitted to the FERC (if applicable), and other federal or state environmental permits during active construction and restoration. Records should include photo documentation.

2.2 ENVIRONMENTAL TRAINING FOR CONSTRUCTION

Environmental training will be given to both the Company personnel and contractor personnel whose activities have the potential to impact the environment during construction. All construction personnel from the Chief Inspector, El, craft inspectors, contractor job superintendent to loggers, welders, equipment operators, and laborers will be given some form of environmental training. The level of training will be commensurate with the type of duties of the personnel. At the discretion of the Company, environmental training for personnel may also be required on projects where it is not required by FERC.

Training will be given prior to the start of construction and throughout the construction process, as needed, and will cover the following issues:

- Specifics of this E&SCP and other Company plans;
- Job or activity specific permit requirements;
- Company policies and commitments;
- Cultural resource procedures and restrictions;
- Threatened and endangered species procedures and restrictions; and
- Any other pertinent information related to the job.

In addition to the EI, all other construction personnel are expected to play an important role in maintaining strict compliance with all permit conditions, and to promptly report any conditions that are perceived as having the potential to threaten environmental protection to the appropriate inspector during construction.



3. CONSTRUCTION TECHNIQUES FOR NATURAL GAS FACILTIES

3.1 TYPICAL ROW REQUIREMENTS

Pipeline construction workspace requirements are a function of pipe diameter, equipment size, topography, geological rock formations, location of construction such as at road crossings or river crossings, pipeline crossovers, methods of construction such as boring or open-cut construction, or existing soil conditions encountered during construction. As the diameter of the pipeline being installed increases, so does the depth of trench, excavated spoil material, equipment size, and ultimately the amount of construction work space that will be required to construct a project. See Figure CW-1 for a detail of a typical trench and Figures CW-3, CW-4 and CW-5 for typical construction ROW widths. All workspace locations for a given project will be shown on the construction drawings.

Additional construction ROW may be required at specific locations including, but not limited to, steep side or vertical slopes, road crossings, pipeline crossovers, areas requiring supplemental topsoil segregation, and staging areas associated with wetland and waterbody crossings. In particular, as shown on the construction drawings, the construction ROW width may be expanded up to 25 feet for the following situations / areas without approval from the FERC, however, prior approval is required from the EI or PEL:

- Accommodate full construction ROW topsoil segregation;
- Ensure safe construction where topographic conditions, such as side-slopes, or soil limitations exist; and
- Facilitate truck turn-arounds where no reasonable alternative access exists in limited, upland, nonriparian or non-forested areas.

All construction activities, including staging areas and additional spoil storage areas, are restricted to the construction ROW limits identified on the construction drawings, except for specific activities in limited, non-wetland and non-riparian areas that are allowed by the FERC Plan and Procedures (i.e. slope breakers, energy-dissipating devices, dewatering structures, and drain tile system repairs). Use of these limited areas is subject to landowner or land management agency approval and compliance with all applicable survey, permit, and reporting requirements; therefore, prior Company approval is required to use these areas. In some cases, federal, state and local permits and authorizations may require additional approvals.

Minor field realignments and workspace shifts per landowner needs and requirements are only allowed if construction activities remain within the environmental field survey area, comply with project-specific environmental permits and landowner easements, and do not affect new landowners or sensitive resource areas.

3.2 ACCESS ROADS & ACCESS POINTS

To the extent practical, all access to the construction ROW will be limited to existing roads and will be minimized in wetlands. However, additional access roads to the construction ROW may be required at various points along the project where other road crossings (paved or gravel state/local roads) do not exist. Examples of types of access used include pipeline ROWs, abandoned town roads, railroad ROWs, power line service



roads, logging roads and farm roads. Improvements to access roads (i.e., grading, placing gravel, replacing/installing culverts, and trimming overhanging vegetation) may be required due to the size and nature of the equipment that would utilize the road (Figure RD-1). The following conditions apply to the use of all access roads:

- During construction and restoration activities, access to the ROW is limited to the use of new or existing access roads identified in the Project Clerance Package.
- 2. The only access roads that can be used in wetlands, other than the construction ROW, are those existing roads requiring no modification or improvements, other than routine repair, and posing no impact on the wetland.
- 3. The construction ROW may be used for access across wetlands when the wetland soil is firm enough to avoid rutting or the construction ROW has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats). However, access is not allowed through wetlands that are specifically being avoided by HDD or would not otherwise be impacted by the project.
- 4. In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction ROW.
- 5. Blanket certificate projects may not have construction drawings available in which case access to the ROW will be identified in the Project Clearance Package.
- 6. Maintain safe and accessible conditions at all road crossings and access points during construction and restoration. Access road maintenance through the construction sequence may include grading and the addition of gravel or stone when necessary.
- Maintain access roads in a stable manner to prevent off-ROW impacts, including impacts to adjacent and/or nearby sensitive resource areas, and implement all appropriate erosion and sediment control measures for construction/improvement of access roads.
- 8. Minimize the use of tracked equipment on public roadways.
- 9. Remove any soil or gravel spilled or tracked onto roadways daily or more frequent as necessary to maintain safe road conditions.
- 10. Repair any damages to roadway surfaces, shoulders, and bar ditches.
- 11. If crushed stone/rock access pads are used in residential or agricultural areas, stone shall be placed on synthetic, nonwoven geotextile fabric to facilitate removal after construction (Figure RD-2).
- 12. All access roads across a waterbody must use an equipment bridge in accordance with Section 5.1.2.



- 13. For access through a saturated wetland, use timber mats or an equivalent, unless otherwise authorized by agency permits (Figure RD-3).
- 14. Limit construction equipment operating in wetland areas to that needed to clear the ROW, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction ROW. All other construction equipment shall use access roads located in upland areas to the maximum extent practical.

3.3 PIPE AND CONTRACTOR WAREYARDS

Pipe and contractor wareyards are required for storing and staging equipment, pipe, fuel, oil, pipe fabrication, and other construction-related materials and preparations. The Contractor shall perform the following measures at pipe and contractor wareyards:

- 1. Strip and segregate topsoil in agricultural lands;
- Install erosion and sediment control structures as directed by the EI or identified in the Project Clearance Package construction drawings, and as outlined in this E&SCP and the SPCC/PPC Plan. Maintain controls throughout construction and restoration activities;
- 3. Implement and comply with the SPCC/PPC Plan and the Waste Management Plan, including the completion of any required site-specific forms and attachments; and,
- 4. Restore and revegetate all disturbed areas in accordance with the measures outlined in this E&SCP, landowner agreements and/or as directed by the EI. At a minimum, the area must be returned to preconstruction contours and stabilized prior to contractor demobilization.

3.4 OFF-ROW DISTURBANCE

All construction activities are restricted to the construction ROW limits identified in the Project Clearance Package construction drawings, except for specific activities in limited, non-wetland and non-riparian areas that are allowed by the FERC Plan and Procedures. Activities allowed to occur off-ROW are limited to the installation of slope breakers, energy- dissipating devices and dewatering structures, as well as repairs to drain tile. Minor field realignment and workspace shifts per landowner needs and requirements are only allowed if construction activities remain within the environmental field survey area, maintain compliance with project-specific environmental permits and landowner easements, do not affect new landowners or environmental resources, and do not require the operation of heavy equipment off ROW. In the event that inadvertent off-ROW disturbance occurs, the following measures will be implemented:

- 1. The EI will immediately report the occurrence to the Chief Inspector and ROW Agent;
- 2. The conditions that caused the disturbance will be evaluated by the Chief Inspector and the EI, and they will determine whether work at the location can proceed under those conditions; and
- 3. If determined to be necessary by the Chief Inspector and EI, one or more of the following corrective actions will be taken: immediate restoration of the preconstruction contours, seeding and mulching of the disturbed area, and/or installation of erosion or sediment control devices, conduct additional tailgate or employee/contractor training, and investigation of the issue to develop lessons learned for



future issue prevention.

4. The Company's Project Environment Lead will be notified.

3.5 CONSTRUCTION SEQUENCE FOR PIPELINE INSTALLATION

Natural gas pipelines are installed using conventional overland buried pipeline construction techniques. These activities are necessary for the installation of a stable, safe, and reliable transmission facility consistent with U.S. Department of Transportation (U.S.DOT) requirements and regulations. This section provides an overview of the equipment and operations necessary for the installation of a natural gas pipeline, describes potential impacts that may occur from each operation, and identifies the measures that will be implemented to control these potential impacts. This section also discusses in detail the erosion and sediment control techniques that typically apply to each construction activity including clearing, grading, trenching, lowering-in of pipe, backfilling, and hydrostatic testing. Pipe abandonment in-place or removal, which may be associated with a pipeline replacement activity or occur as an independent activity on an existing pipeline, are also covered at the end of this section. ROW restoration is the final step in the typical construction sequence and will be addressed in Section 3.6.

Installation of the pipeline typically proceeds in a linear manner from one end of the construction spread to the other in an assembly line or "mainline" fashion. However, different stages may be running in parallel on different physical segments of the project. In some cases, this means that full completion of one of the construction sequence stages described below may not occur before the next construction sequence stage is initiated. Construction sequencing should be planned to limit the amount and duration of open trench sections, as necessary, to prevent excessive erosion or sediment flow into sensitive environmental resource areas. This is due to the Company's effort to adhere to strict construction schedules in order to minimize safety concerns, landowner effects, and environmental disturbance. The spacing between the individual crews responsible for each interdependent activity is based on anticipated rate of linear progress. The activities listed below are typically performed in the following sequence:

- Surveying and flagging the ROW;
- Clearing the ROW;
- Installing temporary sediment barriers;
- Grading the ROW;
- Installing temporary slope breakers;
- Trenching/excavating the trench;
- Pipe stringing and bending;
- Welding and weld inspection;
- Lowering the pipe into the trench;
- Backfilling the trench;
- Hydrostatic testing of pipe; and
- ROW restoration and clean-up.

Obstacles to the mainline technique are often encountered and are not considered to be out of the ordinary. These obstacles, which include side hill crossings, rock, wetlands, streams, roads and residential areas, do not normally interrupt the assembly line flow.



Clearing & Flagging

Clearing operations include the removal of vegetation within the construction ROW. Various clearing methods are employed depending on tree size, contour of the land, and the ability of the ground to support clearing equipment. Vegetative clearing can be accomplished either by hand or by cutting equipment. The following procedures will be standard practice during clearing:

- 1. Prior to beginning the removal of vegetation,
 - a. The limits of clearing will be established and visibly marked before clearing;
 - Signs and/or highly visible flagging will also be used to mark the boundaries of sensitive resource areas, including waterbodies and wetlands, and/or areas with special requirements along the construction work area, in accordance with the construction drawings;
 - c. Flagging or marking shall be maintained throughout construction;
 - Trees to be protected per landowner requests or as otherwise directed will be clearly marked;
- 2. All construction activities and ground disturbance will be confined to within the construction ROW shown in the Project Clearance Package construction drawings (with the limited exception of compliance activities described above in Section 3.4);
- All brush and trees will be felled into the construction ROW to minimize damage to trees and structures adjacent to the ROW. Trees that inadvertently fall beyond the edge of the ROW will be immediately moved onto the ROW and disturbed areas will be immediately stabilized, per landowner approval;
- Trees will be chipped and removed or cut into lengths identified by the landowner and then stacked at the edge of the ROW or removed. Trees may be burned depending on local and state restrictions, applicable permits, construction Line List stipulations, and landowner agreements;
- 5. Brush and limbs may be disposed of in one or more of the following ways depending on local restrictions, applicable permits, construction Line List stipulations, and landowner agreements:
 - a. Stockpiled along the edge of the ROW;
 - b. Burned;
 - c. Chipped, spread across the ROW in upland areas, and plowed in at the discretion of the Chief Inspector or EI (excess material must be removed);
 - d. Used as part of erosion control mix material; or
 - e. Hauled off site to a Company-approved location.
- 6. Existing surface drainage patterns shall not be altered by the placement of timber or brush piles at the edge of the construction ROW.



3.5.2 Temporary Sediment Barriers

Sediment barriers, which are temporary sediment controls intended to minimize the flow and deposition of sediment beyond approved workspaces or into sensitive resource areas, shall be installed following vegetative clearing operations. They may be constructed of materials such as silt fence, staked straw bales, compacted earth (e.g., drivable berms across travel lanes), sand bags, or other appropriate materials (Figures EC-1, EC-2, EC-3 and EC-5). Where allowed by regulatory agencies, hay bales may be used in lieu of straw bales with the following restrictions: hay bales shall not be used for mulching and the Contractor is responsible for their removal and disposal.

- 1. Install temporary sediment barriers at the base of slopes greater than 5% where the base of the slope is less than 50 feet from a road crossing, waterbody and/or wetland in accordance with Sections 5.1.4 and 6.3 respectively.
- 2. Do not stake or trench in place straw bales used on equipment bridges or on mats across the travel lane.
- 3. Inspect temporary sediment barriers daily in areas of active construction to ensure proper functioning and maintenance. In other areas with no construction or equipment operation, sediment barriers will be inspected and maintained on a weekly basis throughout construction, and within 24 hours of each 0.5 inch of rainfall. Conduct an inspection within 24 hours once a storm event has produced 0.5 inch of rainfall, even if the storm event is still continuing.
- 4. Maintain all temporary sediment barriers in place until permanent revegetation measures are successful or the upland areas adjacent to wetlands, waterbodies, or roads are stabilized.
- Remove temporary sediment barriers from an area when replaced by permanent erosion or sediment control measures or when the area has been successfully restored as specified in Section 8.1.

3.5.3 Grading

The construction ROW will be graded as needed to provide a level workspace for safe operation of heavy equipment used in pipeline construction. The following procedures will be standard practice during grading:

3.5.3.1 Topsoil Segregation

During construction, topsoil and subsoil will be disturbed by grading of the right-of-way, trench excavation, and by heavy equipment moving along the right-of-way. Implementation of proper topsoil segregation is intended to mitigate these construction impacts and promote or facilitate post-construction revegetation success.

Topsoil segregation methods will be used in all residential areas (except where the topsoil is being replaced), wetlands (except areas where standing water is present or soils are saturated), cultivated or rotated croplands, managed pastures, hayfields, and other areas at the landowner's or land managing agency's request. Either the "ditch plus spoil side" or the "full right-of-way" segregation method will be used, as illustrated in Figure CW-2.



- a. Prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area ("ditch plus spoil side" method) as stipulated in the Construction Contract or Line List.
- Segregate at least 12 inches of topsoil in deep soils with more than 12 inches of topsoil.
 In soils with less than 12 inches of topsoil, make every effort to segregate the entire topsoil layer.
- c. Within wetlands, segregate the top 12 inches of topsoil within the trenchline, except in areas where standing water is present or soils are saturated.
- d. In residential areas, importation of topsoil (i.e. topsoil replacement) is an acceptable alternative to topsoil segregation, if approved by the landowner and Chief Inspector.
- e. Maintain separation of salvaged topsoil and subsoil throughout all construction activities.
- f. Leave gaps in the topsoil piles and spoil piles for the installation of temporary slope breakers to allow water to be diverted off the construction ROW.
- g. Never use topsoil for padding the pipe, constructing temporary slope breakers, trench breakers or trench plugs, improving or maintaining roads, or as a fill material.
- h. Stabilize topsoil piles and minimize loss due to wind and water erosion with use of sediment barriers, mulch, temporary seeding, tackifiers, or functional equivalents, where necessary and per the FERC Plan and Procedures or permit conditions.
- 3.5.3.2 Tree Stump Removal and Disposal
 - a. Remove tree stumps in upland areas along the entire width of the permanent ROW to allow adequate clearance for the safe operation of vehicles and equipment. Stumps within the temporary ROW will be removed or ground below the surface in accordance with Company construction specifications to allow the safe passage of equipment, as determined by the Chief Inspector or EI.
 - b. In wetlands, limit pulling of tree stumps and grading activities to directly over the trenchline.
 - c. Dispose of stumps by one of the following methods with the approval of the Chief Inspector and the landowner and in accordance with regulatory requirements:
 - Buried at a Company-approved off-site location (except in wetlands and agricultural areas);
 - Burned on construction ROW;
 - Chipped, spread across the construction ROW in upland areas, and plowed in;
 - Used as erosion control mix material;
 - Ground to grade in wetlands, excess chips will be removed for proper disposal; or



- Hauled off-site.
- d. Grading operations and tree stump removal in wetland areas will be conducted in accordance with Section 6.2.

3.5.3.3 Rock Management

Rock, including blast rock, will be used, removed or disposed of in one of the following ways:

- a. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. (Rock that is not returned to the trench shall be considered construction material or waste, unless approved for use as mulch or for some other use on the construction work areas by the land owner or land managing agency.);
- b. Windrowed per written landowner agreement with the Company;
- c. Removed and disposed of at a Company-approved landfill; or
- d. Used as riprap for streambank stabilization as allowed by applicable regulatory agency(ies) and provided the rock is uncontaminated and free of soil and other debris (Figure WC-6).

3.5.4 Temporary Slope Breakers

Temporary slope breakers, also called interceptor dikes, are temporary erosion control measures intended to reduce runoff velocity and divert water off the construction ROW. Temporary slope breakers may be constructed of materials such as compacted soil, silt fence, staked straw bales, or sand bags. Segregated topsoil may not be used for constructing temporary slope breakers. If permitted by regulatory agency(ies), hay bales may be used in lieu of straw bales except for mulching. If hay bales are used, the Contractor is responsible for their removal and Company-approved disposal.

 Install temporary slope breakers on all disturbed areas as necessary following grading operations (Figure EC-7) to avoid excessive erosion. Unless otherwise specified by permit conditions, temporary slope breakers must be installed on slopes greater than 5% at the recommended spacing interval indicated below (Closer spacing should be used if necessary):

| <u>Slope</u> (%) | Spacing (feet) |
|------------------|----------------|
| < 5 | No structure |
| 5 – 15 | 300 |
| > 15 – 30 | 200 |
| > 30 | 100 |

- Direct the outfall of each slope breaker to a stable, well vegetated area or construct an energydissipating device (silt fence, staked straw bales, erosion control fabric) at the end of the slope breaker.
- 3. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive resource areas.



- Install temporary slope breakers across the entire construction ROW along slopes greater than 5 % where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings.
- 5. Inspect temporary slope breakers daily in areas of active construction to insure proper functioning and maintenance. In other areas, the slope breakers will be inspected and maintained on a weekly basis throughout construction, and within 24 hours of each 0.5 inch of rainfall. Repairs should be made within 24 hours of identification, if possible.

Drivable berms, which are smaller versions of slope breakers constructed of compacted soil or sand bags, may be used in place of staked straw bales at the entrances and exits of travel lanes at road crossings, waterbodies, and wetlands. They are installed across the width of the travel lane at the start of the equipment crossing and made low enough to allow equipment and other vehicles to pass. Yet, they should function to reduce and divert water runoff from sensitive resource areas.

3.5.5 Trenching

The trench centerline will be staked after the construction ROW has been prepared. In general, a trench will be excavated to a depth that will permit burial of the pipe with a minimum of 3 feet of cover (Figure CW-1). Overland trenching may be accomplished using a conventional backhoe or a rotary wheel-ditching machine. In shale or rocky areas where the use of the conventional excavation equipment is limited, a tractor-drawn ripper or rock hammer may be employed to break and loosen hard substratum material. In areas where rock cannot be ripped or hammered, drilling and blasting may be required. A backhoe may then be used to remove rock and soil from the ditch.

The following procedures will be standard practice during ditching:

- · Flag drainage tiles damaged during ditching activities for repair;
- Place spoil in additional extra work areas or at least 10 feet away from the waterbody's edge in the construction ROW. Spoil will be contained with erosion and sediment control devices to prevent spoil materials or sediment-laden water from transferring into waterbodies and wetlands or off of the ROW; and,
- If temporary erosion or sediment controls are damaged or removed during trenching, they shall be repaired and/or replaced before the end of the work day.

3.5.5.1 Temporary Trench Plugs

Temporary trench plugs are barriers within the ditch that are intended to segment the continuous open trench prior to backfill. They typically consist of unexcavated portions of the ditch (hard plug), compacted subsoil or sandbags (soft plug) placed across the ditch, or some functional equivalent. Along steep slopes, they serve to reduce erosion and sedimentation in the trench and minimize dewatering problems at the base of slopes where sensitive environments such as waterbodies and wetlands are frequently located. In addition, they provide access across the trench for wildlife and livestock.

a. Do not use topsoil for constructing trench plugs.



- b. Coordinate with the landowner to identify optimal locations for the placement of temporary hard plugs designed to provide access for livestock.
- c. Temporary trench plugs may be used in conjunction with slope breakers to prevent water in the trench from overflowing into sensitive resource areas (Figure EC-6). Attempt to divert trench overflow to a well-vegetated off-ROW location or construct an energy-dissipating device.
- d. Position temporary trench plugs, as necessary, to reduce trenchline erosion and minimize the volume and velocity of trench water flow at the base of slopes.

3.5.6 Trench & Site Dewatering

Dewatering may be periodically conducted to remove accumulated groundwater or precipitation from the construction ROW, including from within the trenchline. The need for erosion controls as well as the type of control used will vary depending on the type and amount of sediment within the water, and volume and rate of discharge.

- 1. Conduct dewatering (on or off the construction ROW) in such a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody or wetland.
- 2. Elevate and screen the intake of each hose used to withdraw the water from the trench to minimize pumping of deposited sediments.
- 3. Water may be discharged into areas where adequate vegetation is present adjacent to the construction ROW to function as a filter medium.
- 4. Where vegetation is absent or in the vicinity of waterbody / wetland areas, water will be pumped into a discharge structure that accommodates the anticipated discharge volumes as well as type and amount of sediment within the water being discharged, including
 - a. a filter bag, as illustrated in Figure WD-1, or
 - a structure composed of sediment barriers (Options for these types of controls are illustrated in Figure WD-2 and WD-3.).

A structure that is more typically used for discharges of hydrostatic test water, as illustrated in Figure WD-2, may be necessary for large volumes of water.

- 5. When using filter bags, secure the discharge hose to the bag with a clamp.
- 6. Remove dewatering structures as soon as practicable after the completion of dewatering activities.

3.5.7 Pipe Installation

During all phases of the pipe installation process, ensure that all roadway crossings and access points are safe and accessible conditions. Repair damaged temporary erosion controls by the end of the work day. If portions of slope breakers are removed from the travel lane to facilitate safe work conditions, they shall be restored prior to the end of the work day.



3.5.7.1 Stringing and Bending

Following trench excavation, pipe sections will be delivered to the construction site by truck or tracked vehicle, and strung out along the trench. Individual pipe sections will be placed on temporary supports or wooden skids and staggered to allow room for work on the exposed ends. Certain pipe sections will be bent, as necessary, to conform to changes in slope and direction of the trench.

All rope bands should be collected and disposed of properly.

3.5.7.2 Welding

Once the bending operation is complete, the pipe sections will be welded together on supports using approved welding procedures that comply with Company welding specifications. After welding, the welds will be inspected radiographically or ultrasonically to ensure their structural integrity.

3.5.7.3 Lowering-in and Tie-ins

Lowering-in consists of placing the completed pipeline sections into the trench typically using two or more sideboom tractors acting in unison and spaced so as not to buckle or otherwise damage the pipe. The pipeline will be lifted from the supports, swung out over the trench, and lowered directly into the trench. The equipment uses a "leap frogging" technique requiring sufficient area to safely move around other tractors within the construction ROW to gain an advanced position on the pipe. The unwelded ends of the completed pipeline segments (typically present at road crossings, stream crossings, etc.) are then welded together or "tied-in" by specialized tie-in crews.

3.5.8 Backfilling

Backfilling consists of covering the pipe with the earth removed from the trench or with other fill material hauled to the site when the existing trench spoil is not adequate for backfill. Backfilling will follow lowering-in of the pipeline as close as is practical.

In areas where the trench bottom is irregularly shaped due to consolidated rock or where the excavated spoil materials are unacceptable for backfilling around the pipe, padding material may be required to prevent damage to the pipe. This padding material will generally consist of sand or screened spoil materials from trench excavation.

- 1. Under no circumstances shall topsoil be used as padding material.
- Excess rock, including blast rock, may be used to backfill the trench only to the top of the existing bedrock profile in accordance with Company specifications. Rock that is not used to backfill the trench will be managed as described in Section 3.5.3.3.
- 3. Any excess material will be spread within the ROW in upland areas and land contours will be roughed-in to match adjacent topography.



- 4. The trench may be backfilled with a crown over the pipe to compensate for compaction and settling. Openings will be left in the completed trench crown to restore pre-construction drainage patterns. Crowning shall not be used in wetland areas.
- 3.5.8.1 Permanent Trench Breakers

Permanent trench breakers are intended to slow subsurface water flow and erosion along the trench and around the pipe in sloping terrain. An engineer or similarly qualified professional shall determine the need for and spacing of permanent trench breakers. However, trench breakers will not be installed within a wetland.

Permanent trench breakers will be constructed with sand bags, polyurethane foam, or an equivalent as identified in the permit requirements (Figure EC-10 and EC-11). Topsoil shall not be used to construct trench breakers. Sakrete may be used at the discretion of the Chief Inspector on severe slopes greater than 30 percent.

Permanent trench breakers, which are used in conjunction with slope breakers, shall be installed at the locations shown on the construction drawings, at the same spacing interval as and upslope of permanent slope breakers, or as otherwise determined by an engineer or similarly qualified professional, such as the EI (Figure EC-12). At a minimum, install trench breakers:

- a. At the base of slopes greater than 5% where the base of the slope is less than 50 feet from a waterbody or wetland;
- b. Where needed to avoid draining of a resource, including at wetland boundaries where the pipeline trench may drain a wetland, and/or seal the trench bottom as necessary to maintain the original wetland hydrology; and,
- c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.

3.5.9 Hydrostatic Testing

Once the pipeline is completed and before it is placed into service, it will be hydrostatically tested for structural integrity. Hydrostatic testing involves filling the pipeline with clean water and maintaining a test pressure in excess of normal operating pressures for a specified period of time (typically 8 hours). The testing procedure involves filling the pipeline with water, performing the pressure test, and discharging the test water.

The following general hydrostatic testing procedures shall be adhered to for all projects. Environmental conditions for hydrostatic testing activities are also addressed in the project-specific Hydrostatic Test Clearance Package that is issued by the PEL if permits are required for water appropriation and/or discharge. During planning and permitting of test events:

1. Identify the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. Use only the water sources identified in the Project Clearance Package.



- a. Do not use water from or discharge into state-designated exceptional value waters, waterbodies that provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission.
- Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.
- 3. Attempt to locate discharge sites in a well-vegetated and stabilized area, if practical, at least 50-feet from adjacent waterbody/wetland areas.
- 4. Apply for and obtain state-issued water withdrawal permits and National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.

During preparation for testing, including appropriation of source water and preparing discharge/outfall site:

- 1. At least 48 hours before testing activities, the EI shall notify appropriate state agencies (as identified in the relevant permit for hydrostatic test discharges) of the intent to use specific test water sources (unless waived in writing).
- 2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, the use of secondary containment, operation and refueling of those pumps will be addressed and conducted in accordance with the SPCC/PPC Plan.
- 3. Screen the intake hose to minimize the potential for entrainment of fish and other aquatic life.
- 4. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.
- 5. Install all discharge structures in a well-vegetated and stabilized area, if practical, and attempt to maintain at least a 50-foot vegetated buffer from adjacent waterbody/wetland areas. If an adequate buffer is not available, sediment barriers or similar sediment control measure must be installed.

During the discharge of hydrostatic test water on-site:

- Discharge water only at the locations shown on the construction drawings or locations identified in the Project Clearance Package or Environment's Hydrostatic Test Clearance Package.
- Regulate rate of discharge water and use energy dissipation device(s) and sediment barriers, as necessary, to prevent erosion, streambed scour to aquatic resources, sedimentation, flooding or excessive stream flow (Figures WD-2 and WD-3).
- Use absorbent booms as necessary during discharge from existing pipe or as stipulated by the applicable NPDES permit.
- 4. The test water may be discharged through an appropriate filtration system including holding tanks or frac tanks and/or carbon filters if needed to meet effluent limitations or conditions stipulated in the NPDES permit.



- 5. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.
- 6. The EI or appropriate designee shall sample and test the source water and discharge water in accordance with the permit requirements.

3.5.10 Pipeline Abandonment and Removal

Pipeline abandonment and removal activities may occur when gas service is no longer needed, such as the abandonment of a lateral to a customer receipt or delivery point. Removal or in-place abandonment of pipe can also be conducted as part of an expansion or maintenance project, such as the lift-and-relay of existing pipe, the replacement or relocation of an existing pipeline due to road or highway modifications, or activities required to maintain compliance with U.S.DOT requirements.

Abandonment approval from FERC, such as project-specific Section 7(b) Order or blanket certificate authorization, is required prior to abandoning facilities or services. Abandonment of FERC-regulated natural gas pipelines or storage facilities, either in place or by removal, must follow FERC's regulations.

Where removal of a section of existing pipeline is required, construction activities typically proceed in a construction sequence similar to what has been described above in Section 3.5, except that instead of the pipeline installation step, the existing pipeline would be cut and removed from the trench. If the pipeline removal is associated with a lift-and-relay project or a replacement, then the new pipeline installation would follow the removal of the old pipe. Pipe that is abandoned by removal will be handled, taken off-site and properly disposed of or recycled in accordance with Company procedures.

When a pipeline is abandoned in place, typically work involves only relatively small excavations to remove above-ground appurtenances and meters, as well as expose the pipe in certain locations, cut it, fill with grout or blanket gas and cap the ends of the pipe, in accordance with agency and Company requirements.

Mitigation measures for pipeline abandonment and removal activities, such as erosion control measures, will follow the same requirements outlined within the E&SCP for pipeline installation in order to minimize erosion and enhance revegetation, as well as mitigate the extent and duration of project-related disturbance to wetlands and waterbodies.

3.6 ROW RESTORATION & FINAL CLEANUP

Restoration of the ROW will begin after pipeline construction activities have been completed. Restoration measures include the re-establishment of final grades and drainage patterns as well as the installation of permanent erosion and sediment control devices to minimize post-construction erosion. Residential areas will be restored in accordance with Section 4.3.3. Property shall be restored as close to its preconstruction condition as practical unless otherwise specified by the landowner.



- The Contractor shall make every reasonable effort to complete final cleanup of an area (including final grading, topsoil replacement and installation of permanent erosion control structures) within 20 days after backfilling the trench in that area (within 10 days in residential areas). If seasonal or other weather conditions prevent compliance with these timeframes, continue to inspect and maintain temporary erosion and sediment controls (i.e. temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup. If construction or restoration unexpectedly continues into the winter season, follow the requirements of Frozen Conditions & Winter Construction, Section 3.6.4.
- 2. Seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting.
- 3. If construction or restoration unexpectedly cannot be completed and is delayed until the next recommended growing season, the winter stabilization measures shall be followed.
- 4. Grade the ROW to pre-construction contours, with the exception of the installation of any permanent measures required herein.
- 5. Spread segregated topsoil back across the graded ROW to its original profile.
- 6. Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction ROW shall be similar to adjacent areas not disturbed by construction. The landowner or land managing agency may approve other provisions in writing.
- 7. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion and sediment control structures are installed, regularly inspected and maintained. When access is no longer required, the travel lane must be removed and the ROW restored.
- Remove all construction debris (used filter bags, skids, trash, etc.) from all construction work areas unless the landowner or land managing agency approves leaving material onsite for beneficial reuse, stabilization, or habitat restoration. Grade or till the ROW to leave the soil in the proper condition for planting.

3.6.1 Permanent Erosion Control

3.6.1.1 Permanent Slope Breakers

Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction ROW, and prevent sediment deposition into sensitive resources. Permanent slope breakers will be constructed of compacted soil (Figure EC-8). Stone or some functional equivalent may be used when approved by the Company.

a. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, unless requested by the landowner, at the locations shown on the construction drawings.



b. Use spacing recommendations obtained from the local soil conservation authority or land managing agency. If not shown on the construction drawings or in the absence of written recommendations, use the following spacing (same as temporary slope breaker spacing) unless closer spacing is necessary to avoid excessive erosion on the construction ROW:

| <u>Slope</u> (%) | Spacing (feet) |
|------------------|----------------|
| < 5 | No structure |
| 5 – 15 | 300 |
| > 15 – 30 | 200 |
| > 30 | 100 |

- c. A permanent trench breaker will be located immediately upslope of the slope breaker.
- d. Install permanent slope breakers across the construction ROW at the base of slopes adjacent to roads. When the ROW parallels an existing utility ROW, permanent slope breakers may be installed to match existing slope breakers on the adjacent undisturbed utility ROW.
- e. Install permanent slope breakers across the construction ROW at the base of slopes greater than 5% that are less than 50 feet from a wetland or waterbody, or as needed to prevent sediment transport into a wetland or waterbody.
- f. Construct slope breakers with a 2 to 8 percent outslope to divert surface flow to a stable vegetative area without causing water to pool or erode behind the slope breaker. In the absence of a stable vegetative area, install an energy-dissipating device at the end of the slope breaker.
- g. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction ROW to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction ROW, they are subject to compliance with all applicable survey and permit requirements.
- h. Install chevron-style slope breakers on slopes as appropriate (Figure EC-9).
- Where drainage is insufficient in upland areas, install a rock-lined drainage swale as approved by the EI. The drainage swale is generally 8 feet wide and a maximum of 18-24 inches deep (Figure EC-4).

3.6.1.2 Erosion Control Fabric / Blankets

Erosion control fabric or blankets are used during restoration, including as mulch, to slow down stormwater and stabilize soil until vegetation becomes established. Examples of these erosion controls include jute thatching or bonded fiber blankets. Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat, unless the product is specifically designed to minimize harm to wildlife.



Install erosion control fabric or blankets where necessary or as recommended by the EI

- a. at slope breaker outlets and drainage swales (Figure EC-7, EC-8 and EC-4);
- b. on slopes adjacent to roads or waterbodies (Figure EC-14); and
- c. on waterbody banks at the time of final bank recontouring (Figure WC-5).

Anchor the erosion control fabric or blanket with staples or other appropriate devices in accordance with the manufacturers' recommendations (Figure EC-13). Evaluate flow conditions to determine if erosion control fabric is suitable as an effective vegetation stabilization technique on waterbody banks. High-velocity erosion control fabric should be used on the swale side of permanent slope breakers.

3.6.2 Revegetation and Seeding

Successful revegetation of soils disturbed by project-related activities is essential. Seeding will be conducted using the following requirements:

- Fertilize and add soil pH modifiers in accordance with the recommendations in Appendix C. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as practicable after application;
- Seed all disturbed areas within 6 working days of final grading, weather and soil conditions permitting;
- 3. Prepare seedbed in disturbed areas to a depth of 3 to 4 inches to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed;
- 4. Seed disturbed areas in accordance with the seed mixes, rates, and dates in Appendix C, except in upland areas where landowners or a land management agency may request alternative seed mixes, however, seeding is not required in cultivated croplands unless requested by the landowner;
- 5. Perform seeding of permanent vegetation within the recommended seeding dates as outlined in Appendix C. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in Section 3.5.2 and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Dormant seeding or temporary seeding of annual species may also be used, if necessary, to establish cover, as approved by the EI. Mulch in accordance with Section 3.6.3. Lawns may be seeded on a schedule established with the landowner;
- 6. Base seeding rates on Pure Live Seed (PLS);
- 7. Use seed within 12 months of seed testing;



- Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydroseeding); and,
- 9. Uniformly apply and cover seed in accordance with the appropriate seed mix from Appendix C, in the absence of any recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary.
 - a. A seed drill equipped with a cultipacker is preferred for application but, where permitted by regulatory agencies, broadcast or hydroseeding can be used at double the recommended seeding rates.
 - b. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding.
 - c. In rocky soils, or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the EI.

3.6.3 Mulch

Mulch is intended to stabilize the soil surface and shall consist of weed-free straw, wood fiber hydromulch, erosion control fabric or some functional equivalent as approved by the EI and Chief Inspector.

- 1. Mulch all disturbed upland areas (except cultivated cropland) before seeding if:
 - a. Final cleanup, including final grading and installation of permanent erosion control measures, is not completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas); or
 - b. Construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.

NOTE: When mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.

- Apply mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary, to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the ROW at a rate of 2 tons/acre of straw or equivalent.
- Mulch with woodchips only under the following conditions with prior approval from the Chief Inspector or the EI:
 - a. Do not use more than 1 ton/acre; and
 - b. Add the equivalent of 11 lbs/acre available nitrogen (at least 50% of which is slow release).
- 4. Ensure that mulch is anchored to minimize loss by wind and water. Anchoring may be achieved by wet soil conditions, when approved by the EI, mechanical means, or use of liquid mulch binders.



- 5. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands and waterbodies, except where the product is certified environmentally non-toxic by the appropriate state or federal agency or independent standards-setting organization.
- 6. If used, install erosion control fabric or blankets in accordance with Section 3.6.1.2.
- 3.6.4 Frozen Conditions & Winter Construction

Winter weather may not provide suitable conditions for soil handling or restoration of disturbed areas. In the event that the construction occurs too late in the year for cleanup activities to adequately proceed or if construction is planned to occur during winter weather conditions, the Company will develop a project-specific Winter Construction Plan that addresses:

- Winter construction procedures (e.g., snow handling and removal, access road construction and maintenance, soil handling under saturated or frozen conditions, topsoil stripping);
- Stabilization and monitoring procedures if ground conditions will delay restoration until the following spring (e.g., mulching and erosion controls, inspection and reporting, stormwater control during spring thaw conditions); and,
- Final restoration procedures (e.g., subsidence and compaction repair, topsoil replacement, seeding).

The Winter Construction Plan will be provided within the Project Clearance Package. Section 7(c) and prior notice projects are required to file the Winter Construction Plan for the review and written approval by the FERC. (The requirement to file a plan does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.)

3.6.5 Unauthorized Vehicle Access to ROW

The Company will offer to install and maintain measures to control unauthorized vehicle access to the ROW based on requests by the manager or owner of forested lands. These measures may include:

- Signs;
- Fences with locking gates;
- Permanent access roads;
- Slash and timber barriers, pipe barriers, or a line of boulders across the ROW; or
- Conifers or other appropriate shrubs with a mature height of 4 feet or less across the ROW.

3.7 ABOVEGROUND FACILITY CONSTRUCTION

Construction at aboveground facilities, including compressor stations, meter stations, valve sites, and other facilities, will follow the same best management practices identified for pipeline installation and removal on the ROW. Work activities in this category can include installation of new aboveground facilities, modification



or relocation of facilities at existing compressor station sites, upgrades or installations at existing meter station sites, construction of new receipt or delivery points, and a variety of other activities. Certain project types covered in this section may trigger additional stormwater permitting. Check with the PEL Lead to ensure that all stormwater requirements are met prior to construction.

- 1. Aboveground facilities shall not be located in any wetland, except as permitted or where the location of such facilities outside of wetlands would prohibit compliance with U.S.DOT regulations.
- 2. Install temporary sediment barriers at the base of slopes adjacent to roads and at waterbodies and wetlands in accordance with Sections 5.1.4 and 6.3 respectively.
- 3. Inspect temporary sediment barriers daily in areas of active construction to ensure proper functioning and maintenance. In other areas with no construction or equipment operation, sediment barriers will be inspected and maintained on a weekly basis throughout construction, and within 24 hours of each 0.5 inch of rainfall. Conduct an inspection within 24 hours once a storm event has produced 0.5 inch of rainfall, even if the storm event is still continuing.
- 4. If a waterbody is present on or immediately adjacent to an existing facility property where work is being conducted, install sediment barriers as necessary along the edge of the construction area to contain spoil and sediment within the work area.
- 5. All extra work areas should be located at least 50 feet away from the water's edge of a waterbody or a wetland, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. FERC approval is necessary for the use of work areas if these setback conditions cannot be met.
- 6. Wetland boundaries and buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and /or highly visible flagging until construction-related ground disturbing activities are complete.
- 7. When work is required within a wetland at an existing facility, and standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment or operate normal equipment on timber riprap, prefabricated equipment mats or terra mats. Do not use more than two layers of timber riprap to stabilize the work area.
- 8. Maintain all temporary sediment barriers in place until permanent revegetation measures are successful or the upland areas adjacent to wetlands, waterbodies and roads are stabilized.
- 9. Remove temporary sediment barriers from an area when replaced by permanent erosion or sediment control measures or when the area has been successfully restored as specified in Section 8.1.
- 10. Temporary slope breakers are to be installed on all disturbed areas as necessary to avoid excessive erosion as described in Section 3.5.4.
- 11. Where required for work in wetlands (except areas where standing water is present or soils are saturated) segregate topsoil as described in Section 3.5.3.1.


- 12. Place spoil at least 10 feet upgradient from the edge of waterbodies or as indicated on construction drawings. Spoil will be contained with erosion and sediment control devices to prevent spoil materials or silt-laden water from transferring into waterbodies and wetlands or off of the facility property.
- 13. If required, dewatering should be conducted as described in Section 3.5.6.
- 14. The Contractor shall make every reasonable effort to complete final cleanup of an area (including final grading and installation of permanent erosion control structures) within 20 days after ground disturbing activities are completed. If seasonal or other weather conditions prevent compliance with these time frames, continue to inspect and maintain temporary erosion and sediment controls (temporary slope breakers and sediment barriers) until conditions allow completion of cleanup. Cleanup shall be conducted in accordance with Section 3.6 of this document.
- 15. Grade to contours shown on construction drawings or site plans or return grade to pre-construction contours.
- 16. New gravel, stone and paving at the site shall be placed in accordance with construction drawings. No additional gravel, stone, or paving shall be added without prior approval by PEL.
- 17. Install permanent erosion controls and post-construction stormwater measures at the locations shown on the construction drawings.
- 18. Disturbed soils will be seeded within 6 working days of final grading, weather and soil conditions permitting, unless permit conditions indicate otherwise.
- 19. Remove all timber riprap and prefabricated equipment mats in any wetlands upon completion of construction.



4. SPECIAL CONSTRUCTION METHODS

The Company will utilize the following specialized construction procedures for agricultural areas, road crossings, and residential areas along the pipeline project, when applicable. The project construction drawings, Line Lists, and Construction Contract will indicate the locations where specialized construction methods will be used.

4.1 AGRICULTURAL AREAS

The following sections identify construction procedures and best practices for activities within actively cultivated or rotated land used for the production of crops including but not limited to corn, grains, orchards, vineyards and hayfields.

4.1.1 Drain Tiles

Develop procedures for constructing through drain-tiled areas and repairing drain tiles after construction. Engage qualified drain tile specialists, as needed, to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialist from the project area, if available.

- 1. Attempt to locate existing drain tiles.
- 2. Probe all drainage tile systems within the area of disturbance to check for damage.
- Ensure that the depth of cover over the new pipeline is sufficient to avoid interference with drain tile systems (existing or proposed). For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).
- Repair damaged drain tiles to their original or better condition (Figure SU-1). Filter-covered drain tiles may not be used unless the local soil conservation authorities and the landowner agree in writing prior to construction.

4.1.2 Irrigation

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties. Repair any damage to irrigation systems as soon as practical.

4.1.3 Soil Compaction Mitigation & Restoration

The following measures are to be employed during decompaction and restoration of soil within agricultural areas disturbed by construction activities:

- In agricultural areas, test topsoil and subsoil disturbed by construction activities for compaction at regular intervals. Use penetrometers or other appropriate devices to conduct tests. In order to approximate preconstruction conditions, conduct tests on the same soil type under similar moisture conditions in undisturbed areas.
- 2. Plow severely compacted soils with a paraplow or other deep tillage implement;
 - a. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.
 - b. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.



- 3. Soils imported for use within agricultural areas are to be certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner.
- 4. Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.

4.2 ROAD CROSSINGS

The "open cut" method is typically used when installing the pipeline across small roads (Figure RD-4). Traffic is diverted while the trench is excavated across the road and the pipeline is installed. An open cut crossing may involve closing the road to all traffic and constructing an adequate detour around the crossing area, or excavating one-half of the road at a time allowing through traffic to be maintained. Any detour constructed around the crossing area must remain within the approved construction workspace. After completing the crossing, all backfill is compacted, the road bed is repaired and the road surface is replaced.

Bores are often used to install the pipeline across highways, major roads with heavy traffic, and railroads (Figure RD-5), unless the crossing permit allows an open cut crossing. Similar to a directional drill, as discussed in Section 4.4, the road bore is accomplished with a horizontal drill rig or boring machine. The boring machine drills a hole under the road to allow insertion of the pipe. Typically, a dummy pipe section is pulled through which is welded to the line pipe. The dummy pipe is pulled back through placing the line pipe in the crossing. In some instances, a casing (another larger pipe) is installed in the hole and the pipeline is inserted inside the casing. Casings typically are not installed today, although some states require casings on rail crossings. Casings also may be used in soils where it is difficult to pull pipe. The benefit of the road bore is that it allows installation of the pipeline without disrupting traffic.

Access roads shall be used and maintained in accordance with Section 3.2.

4.3 RESIDENTIAL AREAS

Specialized construction procedures will be utilized in areas of heavy residential or commercial/ industrial congestion where residences or business establishments lie within 50 feet from the edge of the construction ROW.

- 1. Install safety fence at the edge of the construction ROW for a distance of 100 feet on either side of the residence or business establishment.
- 2. For a distance of 100 feet on either side any residence or business establishment, maintain a minimum distance of 25 feet between any structure and the edge of the construction work area. If a distance of 25 feet cannot be maintained, refer to Section 4.3.2.
- 3. If crushed stone/rock access pads are used in residential areas, rock shall be placed on nonwoven synthetic geotextile fabric to facilitate rock removal after construction.
- 4. Attempt to leave mature trees and landscaping intact within the construction work area unless the trees and landscaping interfere with the installation techniques or present unsafe working conditions, or as specified in landowner agreements.



5. Prevent the mixing of subsoil and topsoil by implementing segregation methods in all residential areas, except where the topsoil is being replaced, as stipulated in Section 3.5.3.1, unless the landowner or land managing agency specifically approves otherwise.

In addition to the aforementioned specialized procedures, smaller "spreads" of labor and equipment, operating independent of the mainline work force, will utilize either the stove pipe or drag section pipeline construction techniques in those areas of congestion where a minimum distance of 25 feet cannot be maintained between the residence (or business establishment) and the edge of the construction work area. In no case shall the temporary work area be located within 10 feet of a residence unless the landowner agrees in writing, or the area is within the existing maintained ROW.

The following techniques shall be utilized for a distance of 100 feet on either side of the residence or business establishment at the locations identified in the Company Construction Contract and/or Line List. Refer to site-specific residential construction plans, as applicable.

4.3.1 Stove Pipe Technique

The stove pipe construction technique is a less efficient alternative to the mainline method of construction, typically used when the pipeline is to be installed in very close proximity to an existing structure or when an open trench would adversely impact a commercial/industrial establishment. The technique involves installing one joint of pipe at a time whereby the welding, weld inspection, and coating activities are all performed in the open trench. At the end of each day after the pipe is lowered-in, the trench is backfilled and/or covered with steel plates or timber mats. The length of excavation performed each day cannot exceed the amount of pipe installed.

4.3.2 Drag Section Technique

The drag section construction technique, while less efficient than the mainline method, is normally preferred over the stove pipe alternative. This technique involves the trenching, installation, and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day after the pipe is lowered-in, the trench is backfilled and/or covered with steel plates or timber mats. Use of the drag section technique will typically require adequate staging areas outside of the residential and/or commercial/industrial congestion for assembly of the prefabricated sections.

4.3.3 Residential Area Cleanup and Restoration

Restore all lawn areas and landscaping immediately following cleanup operations, or as specified in landowner agreements, including

- 1. Perform appropriate soil compaction mitigation in severely compacted residential areas.
- Remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields. The size, density, and distribution of rock on the construction work area shall be similar to adjacent areas not disturbed by construction. The landowner or land management agency may approve other provisions in writing.



- Importation of topsoil is an acceptable alternative to topsoil segregation. Soils imported for use within residential areas are to be certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner.
- 4. Reseed all disturbed lawns with a seed mixture acceptable to landowner or comparable to the adjoining lawn.

In residential areas, complete final grading, topsoil replacement, and installation of permanent erosion control structures within 10 days after backfilling the trench. Mulch all disturbed areas before seeding if final grading and installation of permanent erosion control measures will not be completed within 10 days after the trench in that area is backfilled in residential areas. If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (i.e., temporary slope breakers, sediment barriers, and mulch) until conditions allow completion of cleanup.

Landowners shall be compensated for damages in a fair and reasonable manner, and as specified in the damage provision within the controlling easement on each property.

4.4 HORIZONTAL DIRECTIONAL DRILL METHOD

Horizontal Directional Drilling (HDD) is a trenchless crossing method that can help avoid direct impacts to sensitive resources (e.g., waterbodies and wetlands) or infrastructure (e.g., roads and railways) by directionally drilling beneath them. HDD installation typically is carried out in three stages:

- 1. Directional drilling of a small diameter pilot hole;
- 2. Enlarging the pilot hole to a sufficient diameter to accommodate the pipeline; and,
- 3. Pulling the prefabricated pipeline, or pull string, into the enlarged bore hole.

For each waterbody or wetland that would be crossed using the HDD method, the Company will prepare a project-specific HDD Plan that includes:

- Site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- Justification that disturbed areas are limited to the minimum needed to construct the crossing;
- Identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;
- A description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- A contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

The HDD Plan will be provided within the Project Clearance Package.

Section 7(c) and prior notice projects are required to file HDD plans for the review and written approval by the FERC. (This requirement to file a plan does not apply to projects constructed under the automatic



authorization provisions in the FERC's regulations.)

During post-construction maintenance activities, do not conduct any routine vegetation mowing or clearing in riparian areas or wetlands that are between HDD entry and exit points.



5. WATERBODY CROSSINGS

The intent of these procedures is to minimize the extent and duration of project related disturbances within waterbodies. The following section describes the construction procedures and mitigation measures that will be used for pipeline installations at waterbodies. The length of the crossing, the sensitivity of the area, existing conditions at the time of the crossing, and permit requirements will determine the most appropriate measures to be used.

The *Waterbody Reference Citing FERC Requirements* in Appendix B summarizes general waterbody crossing methods and requirements identified in the FERC Procedures. These tables provide a brief reference of the restrictions on construction techniques for waterbody crossings; equipment bridges; construction time windows. However, as more stringent agency specific requirements may exist, refer to the Project Clearance Package for project-specific requirements.

5.1 GENERAL WATERBODY PROCEDURES

Pipeline construction across waterbody channels may result in short term water quality impacts. The following general procedures are to be followed to minimize or avoid impacts at waterbody crossings:

- Crossings of waterbodies may proceed using standard upland construction techniques when they are dry or frozen and not flowing provided that the EI verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, all applicable requirements of Section 5 must be followed.
- 2. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
- Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
- 4. Perform mobilization of construction equipment, trench excavation, and backfilling in a manner that will minimize the potential for erosion and sedimentation within the waterbody channel.
- 5. Locate all extra work areas, such as staging and additional spoil storage areas, at least 50 feet away from water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. Site-specific written approval by FERC is required for all extra work areas with a less than 50-foot setback and associated measures to be used to ensure the waterbody is adequately protected.
- 6. Implement erosion control measures to confine water quality impacts within the immediate construction area and to minimize impacts to downstream areas.
- 7. Place all spoil from the waterbody within the construction ROW at least 10 feet from the water's edge or in the extra work areas shown on the construction drawings.
- 8. Maintain adequate flow rates to protect aquatic life and prevent the interruption of existing downstream uses.
- 9. Dewater trench in accordance with the procedures described in Section 3.5.6.



5.1.1 Time Windows for Instream Work

Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work must occur during the following time windows:

- Coldwater fisheries June 1 through September 30; and
- Coolwater and warmwater fisheries June 1 through November 30.

Installation or removal of equipment bridges above the top of bank is not subject to the aforementioned time windows.

5.1.2 Equipment Bridges

Equipment bridges may be installed and used where needed to allow equipment access across waterbodies.

- Until the equipment bridge is installed, only clearing equipment and equipment necessary for installation of equipment bridges may cross the waterbody, and the number of crossings shall be limited to one crossing per piece of equipment, unless otherwise authorized by the appropriate permitting agency. El approval is required prior to equipment crossing a waterbody without an equipment bridge.
- Construct and maintain equipment bridges that allow unrestricted flow and prevent sediment from entering the waterbody. The Construction Contract agreement and/or permit conditions may specify the type of bridge to be used. Examples of bridges are provided below:
 - a. Equipment pads with or without culvert(s), as illustrated in Figure BR-1;
 - b. Clean crushed stone and culvert(s), as illustrated in Figure BR-2;
 - c. Flexi-float or portable bridges, as illustrated in Figure BR-3;
 - d. Double equipment pads, geotextile fabric and sideboards with or without culvert(s); or
 - e. Railroad car bridges without culverts.
- Design and maintain each equipment bridge to withstand the highest flows that would occur. Align culverts/flumes to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of culverts.
- 4. Do not use soil to construct or stabilize equipment bridges.
- 5. Design and maintain equipment bridges to prevent sediment from entering the waterbody.
- 6. Remove temporary equipment bridges as soon as practicable after permanent seeding.
- 7. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the ROW is available, remove temporary equipment bridges as soon as practicable after final cleanup.



- 8. Obtain any necessary approval or authorization from the COE and/or the appropriate state agency for temporary and permanent bridges.
- 5.1.3 Clearing and Grading near Waterbodies
 - 1. Confine construction activities and ground disturbance to the construction ROW boundaries, as shown on the construction drawings. Restrict extra work areas (such as staging areas and additional spoil storage areas) to only those shown on the construction drawings.
 - 2. If the pipeline parallels a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the ROW except where maintaining this offset will result in greater environmental impact.
 - Clear the ROW adjacent to all waterbodies up to the high water bank (where discernible). Within 10 feet of the high water bank, trees shall be cut to ground level and with little to no ground disturbance. Do not grub this 10-foot vegetative strip with equipment.
 - 4. Immediately remove all cut trees and branches that inadvertently fall into a waterbody and stockpile in an upland area within the construction ROW for disposal.
 - 5. Grade the ROW adjacent to waterbodies *up to within 10 feet of the high water bank*, leaving an ungrubbed vegetative strip intact.
 - Clearing and grading operations may proceed through the 10-foot vegetative strip only on the working side of the ROW in order to install the equipment bridge and travel lane. Use temporary sediment barriers to prevent the flow of bank spoil into the waterbody.
- 5.1.4 Temporary Erosion and Sediment Controls at Waterbodies

Install sediment barriers immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and repaired or reinstalled as necessary (such as after backfilling of the trench), until replacement by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in Section 3.5, however, the following specific measures must be implemented at stream crossings:

- 1. Install sediment barriers across the entire construction ROW at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody.
- Install sediment barriers along the edge of the construction ROW as necessary to contain spoil
 within the construction ROW and prevent sediment flow into the waterbody where waterbodies
 are adjacent to the construction ROW or parallel to the construction ROW and the ROW slopes
 toward the waterbody.
- 3. Removable or temporary sediment barriers, such as slope breakers or drivable berms as described in Section 3.5.4, may be used in lieu of sediment barriers in front of equipment bridges or timber mats across the travel lane. Removable sediment barriers can be removed during the



construction day, but must be reinstalled after construction has stopped for the day or whenever heavy precipitation is imminent.

4. Use temporary trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody. Trench plugs shall be of sufficient size to withstand upslope water pressure.

5.2 TYPES OF WATERBODY CROSSING METHODS

Waterbody crossing techniques allowed for use on a project will be determined by agency consultations and permits. Construction at waterbodies will be conducted using two principal crossing methods, a "dry" crossing and a "wet" crossing. The "dry" or "dry-ditch" crossing procedure is further divided into a flume crossing and a dam-and-pump crossing methods. These methods are designed to maintain downstream flow <u>at all times</u> and to isolate the construction zone from the stream flow by channeling the water flow through a flume pipe or by damming the flow and pumping the water around the construction area. The overall objective is to minimize siltation of the waterbody and to facilitate trench excavation of saturated spoil. The two "dry" crossings are further described below in Sections 5.2.1 and 5.2.2.

The "wet" or "open-cut" crossing method involves trenching in the waterbody without isolating the construction zone from the stream flow. The objective of this method is to complete the waterbody crossing as quickly as practical in order to minimize the duration of impacts to aquatic resources. The wet crossing method is further described below in Section 5.2.3.

All streams, their classifications, timing windows, applicable permits and crossing procedures will be identified in the Project Clearance Packageconstruction drawings. Unless approved otherwise by the appropriate federal or state agency, pipeline construction and installation must occur using one of the two "dry" crossing methods for waterbodies state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally designated as critical habitat. The flume and dam-and-pump crossing methods are applicable to waterbodies up to 30 feet wide (possibly wider depending on flow volume and rate) at the water's edge at the time of construction.

5.2.1 Flume Crossing

The flume crossing method utilizes a flume pipe(s) to transport stream flow across the disturbed area and allows trenching to be done in drier conditions (Figure WC-3). The flume pipe(s) installed across the trench will be sized to accommodate anticipated stream flows. Flumes are generally not recommended for use on a waterbody with a broad unconfined channel, unstable banks, a permeable substrate, excessive stream flow, or where the installation and construction of the flume crossing will adversely affect the bed or banks of the stream.

The flume waterbody crossing shall be installed as follows:

- Install flume pipe(s) after blasting and other rock breaking measures (if required), but before trenching;
- 2. Properly align flume pipe(s) to prevent bank erosion and streambed scour;



- 3. Use sand bags or equivalent dam diversion structure to provide a seal at either end of the flume to channel water flow (some modifications to the stream bottom may be required to achieve an effective seal);
- 4. **Do not remove flume pipe** during trenching, pipe laying (thread pipe underneath the flume pipe(s)), or backfilling activities, or initial streambed restoration efforts, except for crossings where a dam-and-pump method (as described in Section 5.2.2 below) has been established as an alternative measure to redirect stream flow; and
- 5. Remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

5.2.2 Dam-and-Pump Crossing

The dam-and-pump crossing method is presented as an alternative dry crossing procedure to the flume crossing (in limited cases, it may be used in combination with a flume crossing). The damand-pump method is accomplished by utilizing pumps to transport stream flow across the disturbed area (Figure WC-4). This method involves placing sandbags across the existing stream channel upstream from the proposed crossing to stop water flow and downstream from the crossing to isolate the work area. Pumps are used to pump the water across the disturbed area and back into the stream further downstream.

The dam-and-pump procedure allows for more space and flexibility during trenching and pipe installation, which shortens the duration of time spent at the waterbody. The dam-and-pump method may be used for crossings of waterbodies where pumps can adequately transfer stream flow volumes around the work area, and where there are no concerns about sensitive species passage.

The dam-and-pump crossing method shall be installed as follows:

- 1. Install and properly seal sandbags at the upstream and downstream location of the crossing;
- 2. Create an in-stream sump using sandbags if a natural sump is unavailable for the intake hose;
- 3. Initiate pumping of the stream around the work area prior to excavating the trench;
- Monitor dam and pumps <u>at all times</u> to ensure proper operation until the waterbody crossing is completed; and,
- 5. Remove the sandbag dams, pumps and hoses and return normal flow back to the waterbody following installation and restoration of the streambed.

Implementation of the dam-and-pump crossing method will meet the following performance criteria:

- Use sufficient pumps, including onsite backup pumps, to maintain downstream flows;
- Construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
- Screen all intake hoses to minimize the entrainment of fish and other aquatic life
- Prevent streambed scour at pump discharge; and



• Continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

5.2.3 Wet Crossing

Open-cut crossings involve excavating a trench for the pipeline across the bottom of the waterbody to be crossed (Figure WC-2). Depending on the depth of the water, construction equipment may be placed on barges or other floating platforms to excavate the pipe trench.

This construction technique is typically used to cross waterbodies that are not state-designated, such as ephemeral drainage ditches, and ephemeral and intermittent streams, as well as intermediate and major waterbodies with substantial flows that cannot be effectively flumed or pumped around the construction zone using one of the dry crossing techniques.

5.3 FERC WATERBODY CLASSIFICATIONS

In the FERC Procedures, a "waterbody" is defined to include any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. Waterbodies have been further divided into three classifications by FERC depending on the width of the feature, which dictate construction limitations or requirements.

5.3.1 Minor Waterbodies

FERC defines a "minor waterbody" as a waterbody less than or equal to 10 feet wide at the water's edge at the time of crossing. Minor waterbodies shall be crossed in accordance with the following requirements:

- 1. All spoil from minor waterbody crossings must be placed in the construction ROW at least 10 feet from the water's edge or in additional extra work areas as described above in Section 5.1.
- Unless approved otherwise by the appropriate federal or state agency, utilize a dry crossing construction technique to install crossings at all minor waterbodies that are state-designated fisheries or federally designated as critical habitat, as identified in the Project Clearance Package (Figures WC-3 or WC-4).
 - a. All construction equipment must use an equipment bridge to cross state-designated fisheries as specified in Section 5.1.2.
- 3. Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the wet crossing method, with the following restrictions:
 - Except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;
 - b. Limit use of equipment operating in the waterbody to that needed to construct the crossing;



- c. If a flume is installed within the waterbody during mainline activities, it can be removed just prior to lowering in the pipeline (The 24-hour timeframe starts as soon as the flume is removed.); and,
- d. Equipment bridges are not required at minor waterbodies that do not have a statedesignated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in Section 5.1.2.

5.3.2 Intermediate Waterbodies

FERC defines an "intermediate waterbody" as a waterbody greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing. Intermediate waterbodies shall be crossed in accordance with the following requirements:

- All spoil from intermediate waterbody crossings must be placed in the construction ROW at least 10 feet from the water's edge or in additional extra work areas as described above in Section 5.1.
- 2. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using a dry crossing method for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are
 - a. state-designated as either coldwater or significant coolwater or warmwater fisheries, or
 - b. federally designated as critical habitat.
- 3. Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the wet crossing method, with the following restrictions:
 - Complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
 - b. Limit use of equipment operating in the waterbody to that needed to construct the crossing; and,
 - c. All other construction equipment must cross on an equipment bridge as specified in Section 5.1.2.

5.3.3 Major Waterbodies

FERC defines a "major waterbody" as a waterbody greater than 100 feet wide at the water's edge at the time of crossing. Before construction, the Company shall prepare and file for the review and written approval by the FERC a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing, however the scaled drawings are not required for any offshore portions of pipeline projects. (The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.) This site-specific plan must be developed in



consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues.

Upland spoil from major waterbody crossings must be placed in the construction ROW at least 10 feet from the water's edge or in additional extra work areas as described in Section 5.2.

5.4 Restoration

Restore and stabilize the waterbody banks and channel in accordance with this section.

- Return all waterbody banks to preconstruction contours or to stable angle of repose as approved by the EI.
- Use clean gravel or native cobbles for the upper 12 inches of trench backfill in all waterbodies identified in the Project Clearance Package as coldwater fisheries, unless otherwise specified by state-specific agency recommendations or permit conditions.
- 3. For wet crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing the crossing.
- 4. For dry crossings, complete bank stabilization before returning flow to the waterbody channel.
- 5. Limit the use of rock riprap to areas where flow conditions preclude effective vegetation stabilization techniques such as seeding and erosion control fabric, unless otherwise specified by COE and state permits. Limit the placement of rock riprap to the slopes along the disturbed waterbody crossing. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
- 6. Install erosion control fabric, in accordance with Section 3.6.1.2, or a functional equivalent on waterbody banks at the time of final bank contouring (Figure EC-13, WC-5). Do not use synthetic monofilament mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife.
- 7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes and woody species similar in density to adjacent undisturbed lands.
- 8. In the event that final cleanup is deferred more than 20 days after the trench is backfilled, all slopes within 100 feet of waterbodies shall be mulched with 3 tons/acre of straw.
- 9. Remove all temporary sediment barriers when replaced by permanent erosion controls or when restoration of adjacent upland areas is successful as specified in Section 8.1.
- 10. Install a permanent slope breaker and a trench breaker at the base of slopes greater than 5% that are less than 50 feet from each waterbody crossed.



6. WETLAND CROSSINGS

The term "wetland" as used in this plan includes any area that satisfies the requirements of the current federal methodology for identifying and delineating wetlands. The requirements outlined below do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoil segregation requirements, apply to these agricultural wetlands.

Wetland boundaries are identified on the construction drawings and within the Project Clearance Package. Wetlands are delineated prior to construction using current federal methodology and summarized within a wetland delineation report, which identifies the following information for all wetlands that would be affected by the construction ROW:

- Location, including pipeline milepost if crossed by centerline;
- National Wetland Inventory (NWI) classification;
- Crossing length in feet;
- Area of permanent and temporary disturbance that would occur in each wetland, sorted by NWI classification type.

6.1 General Wetland Procedures

Crossing procedures are to comply with COE, or its delegated agency, permit terms and conditions. Projectspecific permits or authorizations issued by the COE or other appropriate agenc(ies) are provided in the Project Clearance Package. Implement the following general requirements during planning and construction near or across wetlands:

- 1. Route the pipeline to avoid wetland areas to the maximum extent possible.
- 2. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
- 3. Identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.
- 4. Limit construction activity and ground disturbance in wetland areas to a construction ROW width of 75 feet or as shown on the construction drawings. Only with prior written approval from the FERC, construction ROW width within the boundaries of federally delineated wetlands may be expanded beyond 75 feet if required by site-specific topographic conditions or soil limitations.
- 5. All extra work areas must be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. Only with prior written approval from the FERC, the Company can locate extra work areas closer than 50 feet from the wetland if site-specific conditions justify a less than 50-foot setback.



- 6. Aboveground facilities shall not be located in any wetland, except as permitted or where the location of such facilities outside of wetlands would prohibit compliance with U.S.DOT regulations.
- 7. In the event a waterbody crossing is located within or adjacent to a wetland crossing, the Company must file a site-specific crossing plan for review and obtain written approval by the FERC before construction if all measures of Sections V. and VI. of the FERC Procedures cannot be met.
- 8. Limit construction equipment operating in wetland areas to that needed to clear the ROW, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction ROW. All other construction equipment shall use access roads located in upland areas to the maximum extent practical. Refer to Section 3.2 for other requirements and restrictions pertaining to access to the construction ROW or use of roads across wetlands.
- 6.2 Clearing and Grading at Wetlands
 - 1. Wetland boundaries and buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and /or highly visible flagging until construction-related ground disturbing activities are complete.
 - If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment or operate normal equipment on timber riprap, prefabricated equipment mats or terra mats on the working side of the ROW during clearing operations.
 - 3. Attempt to use no more than two layers of timber riprap to stabilize the ROW. If approved by the COE, woody debris can be burned in wetlands as long as it is in accordance with state and local regulations, ensuring that all woody debris is removed for disposal.
 - 4. Cut vegetation just above ground level and grind stumps to ground level, leaving existing root systems in place and remove any excess vegetation (e.g., wood chips). Immediately remove all cut trees, limbs and branches from the wetland and stockpile in an upland area on ROW for disposal.
 - 5. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction ROW in wetlands unless the Chief Inspector and EI determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction ROW.
 - 6. Do not cut trees outside of the construction ROW to obtain timber for riprap or equipment mats.
 - 7. Cleared materials, such as slash, logs, brush, and wood chips, shall not be permanently placed within wetland areas.



6.3 Temporary Erosion & Sediment Control at Wetlands

Install sediment barriers immediately after initial ground disturbance at the following locations:

- Within the ROW at the edge of the boundary between wetland and upland;
- At the base of slopes greater than 5% where the base of the slope is less than 50 feet from a wetland;
- Across the entire ROW immediately upslope of the wetland boundary to contain spoil within the construction ROW and prevent sediment flow into the wetland;
- Along the edge of the ROW, where the ROW slopes toward the wetland, to protect adjacent, off ROW wetland; and
- Along the edge of the ROW as necessary to contain spoil and prevent sediment from migrating outside the construction ROW in areas where a wetland is both within and adjacent to the construction ROW.

Maintain all sediment barriers throughout construction and reinstall as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete in accordance with Section 8.1. Remove the sediment barriers during right-of-way cleanup.

6.4 Wetland Crossing Procedure

Procedures used to install a pipeline across wetlands vary depending on the level of soil stability and saturation encountered during construction. The following best management practices are to be employed during standard wetland crossings:

- 1. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the ROW.
- Perform topsoil segregation in accordance with Section 3.5.3.1, including segregating the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location.
- 4. If required, dewatering should be conducted as described in Section 3.5.6.
- 5. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering-in.
- 6. Use "push-pull" or "float" construction techniques to place the pipe in the trench where water and other site conditions allow (Refer to Section 6.4.1 below).
- 7. Install permanent trench breakers at the wetland boundaries and/or seal the trench bottom as



necessary to maintain the original wetland hydrology at locations where the pipeline trench may drain a wetland.

- 8. Install a permanent slope breaker and a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas for each wetland crossed.
- 9. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5% where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In some areas, with the approval of the EI, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
- 10. Restore segregated topsoil to its original position after backfilling is complete. When required, additional fill material imported from off the ROW must be approved by the EI.
- 11. Preconstruction wetland contours and flow regimes will be restored to the extent practical.

6.4.1 Push-pull Technique

The "push-pull" or "float" or "drag section" method may be utilized during wetland crossings if conditions are suitable at the time of construction. Sufficient, naturally present groundwater volumes that fill the excavated trench are required to facilitate this installation method. This method may be used to install the pipeline if the wetland to be crossed contains standing water or saturated and/or unstable soils.

- Trenching equipment will excavate a trench across the wetland, either using low-groundweight equipment or working on timber matting.
- While the trench is being excavated, the pipeline crossing sections will be assembled and welded together in uplands.
- Prefabricated pipeline crossing sections will then be pushed or pulled into the trench; floated across the wetland and released into the trench if the trench is filled with water; <u>or</u>, carried into position with sideboom tractors supported on equipment mats.
- The excavating equipment will "walk through" the wetland by carrying timber mats and repositioning the mats as it operates from one mat to the next through the wetland during trenching, backfilling, and cleanup activities.

6.5 Wetland Cleanup and Restoration

- 1. Restore pre-construction wetland contours to maintain the wetland hydrology.
- Revegetate the ROW with annual ryegrass at 40 lbs/acre PLS or with the recommended Wetland Seed Mix in Appendix C or project-specific seed mix where applicable, unless standing water is present or unless prohibited by state or land management agency.
- 3. **Do not use lime, mulch or fertilizer in wetland areas** unless required in writing by the appropriate federal or state agency, as identified in the Project Clearance Package.
- 4. In the event that final cleanup is deferred more than 20 days after the trench is backfilled, all slopes adjacent to wetlands shall be mulched with 3 tons/acre of straw for a minimum of 100 feet on each side



of the crossing.

- 5. Remove all project-related material used to support equipment on the construction ROW, including timber riprap and prefabricated equipment mats, upon completion of construction.
- 6. Develop specific procedures in coordination with the appropriate federal or state agency, where necessary, to prevent the invasion or spread of invasive vegetation (such as purple loosestrife and phragmites).
- 7. Ensure that all disturbed areas permanently revegetate in accordance with Section 8.1.
- 8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are successful as specified in Section 8.1.



7. SPILL PREVENTION & RESPONSE

7.1 SPCC / PPC Plan

The Company and Contractor shall adhere to the SPCC/PPC Plan at all times. This plan has been prepared to meet the requirements of several federal regulations and guidelines: the FERC's Plan and Procedures; Oil Pollution Act; Federal Water Pollution Control Act; Comprehensive Environmental Response, Compensation and Liability Act of 1980; the Resource Conservation and Recovery Act; Toxic Substances Control Act; and, the Clean Water Act.

The purpose of the SPCC/PPC Plan is to reduce the probability and risk of a potential spill or release of oil or hazardous materials during construction-related activities. The objectives of this plan are to identify and address:

- The type and quantity of material handled, stored, or used on site during construction;
- Measures to be taken for spill preparedness and prevention;
- Emergency response procedures;
- Spill incident reporting/notification procedures; and
- Local emergency response team arrangements.

7.2 Spill Prevention Measures

Structure operations in a manner that reduce the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. At a minimum,

- 1. All employees handling fuels and other hazardous materials are to be properly trained.
- 2. All equipment shall be in good operating order and inspected on a regular basis.
- 3. Fuel trucks transporting fuel to on-site equipment should travel only on approved access roads.
- 4. All equipment is to be parked overnight and/or fueled at least 100 feet from any wetland or waterbody. These activities can occur closer only if the EI determines that there is no reasonable alternative, and appropriate steps have been taken (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill.
- 5. Do not store hazardous materials, including chemicals, fuels, and lubricating oils within 100 feet of a wetland, waterbody or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas. If the 100-foot setback cannot be met, this activity can be performed within the 100-foot setback, with EI approval, if done in accordance with the SPCC/PPC Plan.
- 6. Do not perform fondu or concrete coating activities within 100 feet of any wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. If the 100-foot setback cannot be met, these activities can be performed within the 100-foot setback, if the EI



determines that there is no reasonable alternative and appropriate steps have been taken (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill.

- 7. Pumps operating within 100 feet of a waterbody or wetland boundary shall utilize appropriate secondary containment systems to prevent spills; and
- 8. Bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.

7.3 Spill Cleanup & Response

Structure operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum,

- Ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination;
- 2. Ensure that each construction crew has on hand sufficient tools and material to stop leaks; and,
- 3. Know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.



8. POST-CONSTRUCTION ACTIVITIES

8.1 POST-CONSTRUCTION MONITORING

Projects conducted under the blanket certificate or a project-specific Section 7 Order, shall meet the monitoring requirements set forth in this section. Company personnel shall perform the following:

- 1. Establish and implement a program to monitor the success of restoration upon completion of construction and restoration activities.
- Conduct follow-up inspections of all disturbed upland areas as necessary, to determine the success
 of revegetation and address landowner concerns. At a minimum, conduct inspections after the first
 and second growing seasons.
- 3. In nonagricultural upland areas, revegetation shall be considered successful if the vegetative cover is sufficient to prevent the erosion of soils on the disturbed ROW and density and cover are similar to that in adjacent undisturbed area. Sufficient coverage in upland areas is defined when vegetation has a uniform 70 percent vegetative coverage.
- 4. In agricultural areas, revegetation shall be considered successful when upon visual survey, growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise.
- 5. In wetlands, monitor and record the success of revegetation annually, until wetland revegetation is successful:
 - a. Wetland revegetation will be considered successful when the affected wetland satisfies the current federal definition for a wetland (i.e. soils, hydrology, and vegetation);
 - Vegetation should be at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;
 - c. If natural rather than active revegetation was used, the plant species composition must be consistent with early successional wetland plant communities in the affected ecoregion;
 - d. Invasive species and noxious weeds should be absent unless they are abundant in adjacent areas that were not disturbed by construction; and,
 - e. For any wetland where revegetation is not successful at the end of 3 years after construction, the Company shall develop and implement (in consultation with a professional wetland ecologist) a remedial plan to actively revegetate the wetland.
- Inspect all remaining temporary erosion and sediment controls during routine patrols to ensure proper functioning. Any deficiencies found will be reported and corrected as needed. Once the area has revegetated and stabilized, the erosion controls will be removed.
- 7. Revegetation efforts (such as fertilizing or reseeding) will continue until revegetation is successful.



- 8. Restoration shall be considered successful if the ROW surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored.
- 9. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful.
- 10. Make efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

8.2 POST-CONSTRUCTION MAINTENANCE

Routine maintenance of the ROW is required to allow continued access for routine pipeline patrols, maintaining access in the event of emergency repairs, and visibility during aerial patrols. Where the newly established pipeline ROW is located on other existing ROWs not affiliated with the Company, the easement holder or owner will continue to maintain their ROWs using procedures specified in their vegetative management programs.

Projects conducted under this E&SCP and subject to the FERC Plan and Procedures, shall meet the maintenance requirements set forth in this section. The following requirements restrict the amount of vegetation maintenance that can occur within new ROW.

8.2.1 Uplands

In upland areas, maintenance of the ROW will involve clearing the entire ROW of woody vegetation.

- Routine vegetation mowing or clearing over the full width of the permanent ROW in uplands shall be conducted no more frequently than <u>once every 3 years</u>. However, to facilitate periodic corrosion and leak surveys, a 10-foot wide corridor centered on the pipeline may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state.
- Routine vegetation mowing or clearing shall not occur between April 15 and August 1 of any year unless specifically approved in writing by the responsible land management agency of the U.S. Fish and Wildlife Service.

8.2.2 Waterbodies and Wetlands

- 1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent ROW in wetlands or riparian areas.
 - a. Limit routine vegetation mowing or clearing practices adjacent to waterbodies to allow a riparian strip that measures 25 feet back from the waterbody's mean high water mark. This riparian strip will be allowed to permanently revegetate with native plant species across the entire construction ROW.
 - b. To facilitate periodic corrosion and leak surveys within wetlands and the 25-foot-wide riparian strip adjacent to waterbodies, a corridor up to 10 feet wide centered on the pipeline



may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state.

- c. Trees located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent ROW.
- 2. Do not conduct any routine vegetation mowing or clearing in riparian areas or wetlands that are between HDD entry and exit points.
- 3. Herbicides or pesticides shall not be used in or within 100 feet of a wetland or waterbody, except as specified by the federal or state agency.
- Time of year restrictions apply to routine mowing as well as selective clearing of trees within riparian or wetland areas. These activities are prohibited between April 15 – August 1 of any year.

8.3 REPORTING

The Company shall maintain records that identify by milepost:

- 1. Method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
- 2. Acreage treated;
- 3. Dates of backfilling and seeding;
- 4. The location of any subsurface drainage repairs or improvements made during restoration;
- 5. Names of landowners requesting special seeding treatment and a description of the follow-up actions; and
- 6. Any problem areas and how they were addressed.

The Contractor is responsible for providing the EI with the information and documentation on applications, rates, and types of fertilizer, pH modifying agents, seed and mulch that are used during a project.

For the FERC-authorized projects, other than projects conducted under the blanket certificate, the Company will file quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for <u>at least 2 years</u> following construction.

A wetland revegetation monitoring report identifying the status of the wetland revegetation efforts will be filed at the end of 3 years following construction, and annually thereafter documenting progress within the wetland until revegetation is successful. The requirements to file wetland restoration reports with FERC does not apply to projects authorized under the blanket certificate (i.e. automatic and prior notice) or advanced notice provisions in the FERC regulations.



APPENDIX A

E&SCP FIGURES

| FIGURE | STANDARD NUMBER | DRAWING TITLE | |
|--------------------|-----------------------------|--|---------------------------|
| CONSTRUCTION WO | RKAREAS (CW) | | |
| CW-1 | ES-0001 | TYPICAL TRENCH DETAIL | |
| CW-2 | ES-0002 | RIGHT-OF-WAY TOPSOIL SEGREGATION TECHNIQUES | 3 |
| CW-3 | ES-0003 | TYPICAL CONSTRUCTION WIDTHS ACQUIRING NEW P | 'ERMANENT RIGHT-OF-WAY |
| CW-4 | ES-0004 | TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NE (SINGLE LINE SYSTEM) | EW PERMANENT RIGHT-OF-WAY |
| CW-5 | ES-0005 | TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NE (MULTIPLE LINE SYSTEM) | EW PERMANENT RIGHT-OF-WAY |
| ACCESS ROADS & RO | OAD CROSSINGS (| RD) | |
| RD-1 | ES-0006 | ACCESS ROAD CROSS SECTION | |
| RD-2 | ES-0007 | ROCK ACCESS PAD | |
| RD-3 | ES-0008 | TYPICAL TEMPORARY ACCESS ROAD THROUGH WETI | LANDS |
| RD-4 | ES-0009 | TYPICAL PAVED ROAD CROSSING CONTROL MEASUR | RES (OPEN CUT) |
| RD-5 | ES-0010 | TYPICAL PAVED ROAD CROSSING CONTROL MEASUR | RES (BORED) |
| EROSION CONTROLS | S (EC) | | |
| EC-1 | ES-0011 | SILT FENCE DETAIL | |
| EC-2 | ES-0012 | STRAW BALE DETAIL | |
| EC-3 | ES-0013 | STRAW BALE CHECK DAM IN A DRAINAGEWAY | |
| EC-4 | ES-0014 | ROCK-LINED DRAINAGE SWALE | |
| EC-5 | ES-0015 | STORM DRAIN INLET PROTECTION | |
| EC-6 | ES-0016 | TEMPORARY TRENCH PLUG OPTIONS | |
| EC-7 | ES-0017 | TEMPORARY SI OPE BREAKERS | |
| EC-8 | ES-0018 | | |
| EC-9 | ES-0010 | | |
| EC.10 | | | |
| EC.11 | ES-0020 | | |
| EU-11 | ES-0021 | | |
| EG-12 | ES-0022 | | |
| EC-13 | ES-0023 | | |
| EC-14 | ES-0024 | TYPICAL EROSION CONTROL BLANKETS ON SLOPES | |
| WATER DISCHARGES | 3 (WD) | | |
| WD-1 | ES-0025 | FILTER BAG | |
| WD-2 | ES-0026 | DISCHARGE STRUCTURE FOR HYDROSTATIC TEST W/ | /ATER |
| WD-3 | ES-0027 | OPTIONS FOR SMALL WATER DISCHARGES | |
| WD-4 | ES-0028 | DISCHARGE OF HYDROSTATIC TEST WATER TO A SUF | RFACE WATER |
| BRIDGES (BR) | | | |
| BR-1 | ES-0029 | TEMPORARY EQUIPMENT BRIDGE (EQUIPMENT PADS | WITH OR WITHOUT CULVERTS) |
| BR-2 | ES-0030 | TEMPORARY EQUIPMENT BRIDGE (CRUSHED STONE | WITH CULVERTS) |
| BR-3 | ES-0031 | TEMPORARY EQUIPMENT BRIDGE (FLEXI-FLOAT OR P | ORTABLE BRIDGE) |
| WATERBODY AND W | ETLAND CROSSIN [/] | GS (WC) | |
| WC-1 | ES-0032 | TYPICAL STANDARD WETLAND CROSSING | |
| WC-2 | ES-0033 | TYPICAL WET WATERBODY CROSSING | |
| WC-3 | ES-0034 | TYPICAL FLUME WATERBODY CROSSING | |
| WC-4 | ES-0035 | TYPICAL DAM-AND-PUMP WATERBODY CROSSING | |
| WC-5 | ES-0036 | TYPICAL EROSION CONTROL BLANKETS ON STREAME | BANKS |
| WC-6 | ES-0037 | TYPICAL RIP-RAP PLACEMENT | |
| SPECIAL USE / AGRI | CULTURAL AREAS | (SU) | |
| SU-1 | ES-0038 | DRAIN TILE REPAIR PROCEDURE | |
| | | | APPENDIX A |
| | | INDEX OF FIGURES | |

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| PIPE DIAMETER | SPOIL SIDE (FT.) | WORKING SIDE (FT.) | CONSTRUCTION R.O.W. (FT.) |
|------------------|---------------------|-----------------------|------------------------------|
| 12" OR LESS | 25 | 50 | 75 |
| 14" - 30" | 35 | 50 | 85 |
| 36" - 42" | 35 | 65 | 100 |
| WETLANDS | 25 | 50 | 75 |

NOTES:

- 1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
- 2. TOPSOIL SEGREGATION METHODS WILL BE USED IN ALL RESIDENTIAL AREAS AND WHEN THE CONSTRUCTION ROW IS WIDER THAN 30 FEET IN CULTIVATED OR ROTATED AGRICULTURAL LANDS, MANAGED PASTURES, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGEMENT AGENCY'S REQUEST. FOR WETLANDS, SEGREGATE THE TOP 12 INCHES OF TOPSOIL WITHIN THE DITCH LINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED.

| 1.G. ES0003.DWG | TOPSOIL WITHIN THE DITCH LINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED. | | | | | |
|-----------------|--|---------------------------------------|-------------|---------|------|--|
| | | TYPICAL CONSTRUCTION WIDTHS ACQUIRING | FIGURE CW-3 | | | |
| | | NEW PERMANENT RIGHT-OF-WAY | DWG. | ES-0003 | REV. | |



| PIPE DIAMETER | SPOIL SIDE (FT.) | WORKING SIDE (FT.) | CONSTRUCTION R.O.W. (FT.) |
|------------------|---------------------|-----------------------|------------------------------|
| 12" OR LESS | 25 | 25 | 50 |
| 14" - 30" | 25 | 50 | 75 |
| 36" - 42" | 25 | 50 | 75 |
| WETLANDS | 25 | 50 | 75 |

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- 1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
- 2. TOPSOIL SEGREGATION METHODS WILL BE USED IN ALL RESIDENTIAL AREAS AND WHEN THE CONSTRUCTION ROW IS WIDER THAN 30 FEET IN CULTIVATED OR ROTATED AGRICULTURAL LANDS, MANAGED PASTURES, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGEMENT AGENCY'S REQUEST. FOR WETLANDS, SEGREGATE THE TOP 12 INCHES OF TOPSOIL WITHIN THE DITCH LINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED.
- 3. IF THE WORKING SIDE MUST BE GREATER THAN THE VALUES SHOWN IN THE TABLE, COMPANY MUST REQUEST APPROVAL FROM THE F.E.R.C.

| ES0004 | TYPICAL CONSTRUCTION WIDTHS NOT | FIGURE CW-4 | | | |
|--------|---------------------------------|-------------|---------|------|--|
| I.G. | (SINGLE LINE SYSTEM) | DWG. | ES-0004 | REV. | |



| 12" OR LESS | 25 | 50 | |
|-------------|----|----|--|
| 14" - 30" | 35 | 50 | |
| 36" - 42" | 35 | 50 | |
| WETLANDS | 25 | 50 | |
| | | | |

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NOTES:

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DWG

- ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE MAXIMUM WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE AS SHOWN IN THE TABLE FOR THE APPROPRIATE PIPE DIAMETER.
- 2. TOPSOIL SEGREGATION METHODS WILL BE USED IN ALL RESIDENTIAL AREAS AND WHEN THE CONSTRUCTION ROW IS WIDER THAN 30 FEET IN CULTIVATED OR ROTATED AGRICULTURAL LANDS, MANAGED PASTURES, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGEMENT AGENCY'S REQUEST. FOR WETLANDS, SEGREGATE THE TOP 12 INCHES OF TOPSOIL WITHIN THE DITCH LINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED.

3. IF THE WORKING SIDE MUST BE GREATER THAN 50 FEET (i.e. TEMPORARY WORKSPACE IS GREATER THAN 25 FEET), COMPANY MUST REQUEST APPROVAL FROM THE F.E.R.C.

| ES0005 | | TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (MULTIPLE LINE SYSTEM) | FIGURE CW-5 | | | |
|--------|--|---|-------------|---------|------|--|
| I.G. | | | DWG. | ES-0005 | REV. | |

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| | Image: display displa |
|------------------------------|---|
| 50007.dwg | PLAN VIEW CULVERT (AS REQ'D.) |
| vAutoCAD\Final\es | 50 FT. TYPICAL |
| <pre>\SPE\2013-200.00\</pre> | FABRIC (IF REQUIRED) |
| VG 6/9/2014 4:01 PM Qi | CONSTRUCTION SPECIFICATIONS: 1. STONE SIZE = 4" - 6" AVG, DIAMETER 2. ALL STONE MUST BE PLACED ON NON-WOVEN GEOTEXILE FABRIC IF USED IN RESIDENTIAL OR AGRICULTURAL AREAS. 3. LENGTH = FIFTY (50) FOOT TYPICAL (IF SITE CONDITIONS ALLOW) 4. WIDTH = TWENTY (20) FOOT TYPICAL. 5. THICKNESS = SIX (6) INCHES MINIMUM. 6. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A DRIVEABLE BERM OR OTHER TEMPORARY EROSION CONTROL DEVICE CAN BE USED. 7. THE ENTRANCE SHALL BE PERIODICALLY INSPECTED AND MAINTAINED IN A CONDITION THAT MINIMIZES TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS. MAINTENANCE MAY INCLUDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE REPAIR / CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ANY SEDIMENT THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO ROADWAYS MUST BE REMOVED AS SOON AS PRACTICAL. |
| 5. ES0007.D | ROCK ACCESS PAD |
| Ľ | |

- 50 FT. TYPICAL -

SAND BAG HEADWALL

EXISTING -GROUND





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ES0009.DWG 5/28/

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| | l | | | !2 | | i | | |
|---|---|--------------------------|---------------------------------------|--------------------------|---|--|---|------------|
| | · / | | , , , , , , , , , , , , , , , , , , , | | ATWS | | | |
| | SPOIL PILE — | | | | |) – SAFETY FEI (TYP.) | NCING) — PIPELINE TRE | |
| gwb | | | | | | | | - <u> </u> |
| Q:/S-U/SPE/2013-200.00/AutoCAD/Final/es0010.0 | LET | X X X X | | | SEDI (AS N SILT/ TEMF (AS N ROCH USE S FUNN THE I | MENT BARRI NECESSARY ATION ON RO PORARY CUL NECESSARY F CACCESS PA SAND BAGS T NEL WATER IN FLUME PIPE | ER TO PREVENT VAD) VERT FOR DRAINAGE) | |
| | ADDITIONA | AL TEMPORARY RKSPACE | | · | ATWS | | | |
| | i(| ATWS) | | | ငူ DIT | сн | | |
| 5 | | | | ≪ | —— ТҮР. МА | JOR ROAD | | |
| Wayne Sicora 2/28/2014 2:07 Ph | NOTES: | BE DICTATED BY SITE-SPEC | CIFIC CONDITIO AND/OR STRAW | NS (E.G. SC BALES, OR | DIL TYPE, WID ⁻ OTHER APPR | TH OF ROAD, OPRIATE MA | DEPTH OF COV TERIALS. | 'ER). |
| 010.DW | | | | | | FIC | | 5 |
| .G. ES(| | TYPICAL PAV CONTROL M | ED ROAD IEASURES | CROSSI (BOREI | NG D) | dwg. ES- | -0010 | REV. |


Wayne Sicora 6/5/2014 8:38 ES0011.DWG

| TWO 2"x2" STA ANGLE FIRST STAKE TOWARD PREVIOUSLY LAID BALE – ENDS OF BARRIERS TURNED UP SLOPE TO CONTAIN SEDII (2 BALES MINIMUM) | AKES PER BALE | SECURELY TIED BALES PLACED ALONG THE CONTOUR BALES TIGHTLY ABUTTED |
|---|---|---|
| FILTE RUN | RED IOFF | STAKED AND ENTRENCHED STRAW BALE SEDIMENT LADEN RUNOFF COMPACTED SOIL TO ANCHOR TOE OR PLACE ONE ROW OF SAND BAGS |
| | CROSS-SECTION | N |
| INSTALLATION REQUIR WHEN USING STRAW BALE WITH THEIR ENDS TIGHT SOIL A TYPICAL OF 4". BETWEEN DISTURBED A RESOURCE AREAS. AT THE BASE OF ALL SLI WATERBODIES, AND RO AT THE INLET AND OUTL APPROXIMATELY 6 FEET GIVE THE SEDIMENT RO KEY IN THE BOTTOM OF TH FEASIBLE TO TRENCH IT IN ROOTS, ETC.), USE NATIVE BALE OR PLACE ONE ROW DO NOT STAKE OR TRENCH BRIDGES OR ON MATS ACF IF USED IN CONJUNCTION Y DOWNSLOPE / UPSLOPE O TRENCHED IN. | EMENTS: S, PLACE THEM: TLY ABUTTING AND EMBEDDED IN THE REAS AND DOWN-SLOPE ENVIRONMENTAL OPES NEXT TO WETLANDS, DAD CROSSINGS LET OF OPEN DRAINAGE STRUCTURES. T BEYOND THE TOE OF THE SLOPE TO YOM TO COLLECT. HE BALE, IN AREAS WHERE IT IS NOT I (LEDGES, ROCKY SOIL, LARGE TREE E SOIL AS BACKFILL UP-SLOPE OF THE OF SAND BAGS. H IN PLACE STRAW BALES USED ON EQUIPMENT ROSS THE TRAVEL LANE. WITH SILT FENCE, BALES ARE PLACED F THE SILT FENCE AND DO NOT NEED TO BE | MAINTENANCE REQUIREMENTS: INSPECT BALES: DAILY IN AREAS OF ACTIVE CONSTRUCTION. WEEKLY IN AREAS WITH NO CONSTRUCTION. WITHIN 24 HOURS FOLLOWING EACH RAINFALL EVENT OF ≥ 0.5 INCH. REPAIR OR REPLACE BALES AS NEEDED. REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA AS NEEDED. |
| | STRAW BALE DETA | IL FIGURE EC-2 |

I.G. ES0012.DWG Vayne Sicora 5/29/2014 7:30 AM



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INSTALLATION REQUIREMENTS:

SMOOTHLY BLEND CONTACT AREA

1. RIPRAP CHANNELS CAN BE CONSTRUCTED WITH GRASS-LINED SLOPES WHERE SITE CONDITIONS WARRANT.

2. STABILIZE CHANNEL INLET POINTS AND INSTALL OUTLET PROTECTION (AS NEEDED) DURING CHANNEL INSTALLATION.

8 FEET (TYP.)

DEPTH OF 18" - 24"

3. INSTALL ENERGY DISSIPATING DEVICE (AS NEEDED) TO PREVENT SCOUR TO THE RECEIVING OUTLET.

4. REMOVE ALL TREES, BRUSH, AND OTHER OBJECTIONABLE MATERIAL FROM THE CHANNEL.

5. INSTALL FILTER FABRIC OR GRAVEL LAYER TO PREVENT PIPING (AS REQUIRED)

MAINTENANCE REQUIREMENTS:

1. INSPECT CHANNEL DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.

2. KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.

FIGURE EC-4

DWG. ES-0014

4" - 6" ROCK

RIPRAP

FILTER FABRIC OR AGGREGATE FILTER (AS REQUIRED)

REV.



ES0015.DWG 5/29/2014 8:23 AM

| | | NO NO NO NO NO NO SOFT PLUG NO S | | | | |
|---|---|--|--|--|--|--|
| NOTES: | | | | | | |
| 1. TEMPORARY TRENCH PLUG SUBSOIL OR SANDBAGS PI DEPICTED ABOVE. DO NO | MATERIALS MAY CONSIST OF UNEXCAVATED PORTIONS OF THE TACED ACROSS THE DITCH (SOFT PLUG), OR SOME FUNCTIONAL ECUSE TOPSOIL FOR TRENCH PLUGS. | RENCH (HARD PLUG), COMPACTED QUIVALENT. THESE OPTIONS ARE | | | | |
| 2. POSITION TEMPORARY TRI VELOCITY OF TRENCH WA | ENCH PLUGS, AS NECESSARY, TO REDUCE TRENCHLINE EROSION / FER FLOW AT THE BASE OF SLOPES. | AND MINIMIZE THE VOLUME AND | | | | |
| 3. TEMPORARY TRENCH PLU AND PREVENT OVERFLOW | TEMPORARY TRENCH PLUGS MAY BE USED IN CONJUNCTION WITH SLOPE BREAKERS TO DIVERT TRENCH WATER OVERFLOW AND PREVENT OVERFLOW INTO SENSITIVE RESOURCE AREAS. | | | | | |
| 4. DIVERT TRENCH OVERFLO DEVICE. | DIVERT TRENCH OVERFLOW TO A WELL-VEGETATED OFF-R.O.W. LOCATION OR INSTALL APPROPRIATE ENERGY DISSIPATING DEVICE. | | | | | |
| 5. USE TEMPORARY TRENCH | PLUGS AT WATERBODY CROSSINGS, AS NECESSARY. | | | | | |
| | TEMPORARY TRENCH PLUG OPTIONS | FIGURE EC-6 | | | | |
| | | | | | | |

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ES0017.DWG Wayne Sicora 6/3/2014 11:09 AM



ES0018.DWG

| COMP | ACTED EARTH — | | | |
|---|---|---|---|-------|
| FLOV | | 18" TYP. HEIGHT | * | |
| | | <u>ON</u> | | |
| | - the statement was | | | |
| | | | 2 | |
| With C | | | | |
| | OUTLET TO WELL VEG | ETATED | - SLOPE BREAKER | 4. M |
| INSTALLATION REQUIREMENTS | AREA OR ENERGY DIS DEVICE | SIPATING | | |
| INSTALL IN ALL AREAS EXC (UNLESS AUTHORIZED BY I AGENCY). | EPT RESIDENTIAL OR AGRICULTURAL LANDOWNER OR LAND MANAGING | MAINTENANCE REQU | JIREMENTS: | |
| CONSTRUCT USING EARTH FOR TEMPORARY OR COMI PERMANENT. | I FILLED SACKS OR STAKED STRAW BALES PACTED EARTH AND ROCK FOR | INSPECT DURIN CONSTRUCTION KEEP THE CHAN | G AND FOLLOWING I AND MAKE REPAIRS AS NEE INEL FREE OF DEBRIS AND | EDED. |
| INSTALL WITH A 2-8% OU FOR TEMPORARY CHEVRO TO PREVENT SEDIMENT DI MUTERDODIES | JTFALL ANGLE. N SLOPE BREAKERS, POSITION OUTFALL SCHARGE INTO WETLANDS, | SEED AND MULC FOLLOWING CO | CH PERMANENT SLOPE BREA NSTRUCTION. | AKERS |
| FILTER RUN-OFF WATER B' ENERGY DISSIPATING DEV CONTROL FABRIC), AS APP INSPECTOR. | Y CONSTRUCTING AN OUTLET USING AN ICE (SILT FENCE, STRAW BALES, EROSION PROVED BY THE ENVIRONMENTAL | | | |
| | CHEVRON SLOPE BR | REAKER | FIGURE EC | -9 |
| | | | DWG. ES-0019 | REV. |

I.G. ES0019.DWG 5/29/2014 10:44 AM





| A AND | PERMANENT SLOPE BREA | - FOAM TRENCH BR | EAKER | |
|---|--|--|--|--------------|
| | PIPELINE | - SAND BAG TRENCH BR DPE BREAKER SLOPE (%) 5 - 15 > 15 - 30 > 30 | EAKER MINIMUM SPAC SPACING (F 300 200 100 | XING T) |
| NOTES: 1. PERMANENT TRENCH BREAI EQUIVALENT PLACED ACRO BREAKERS. THESE OPTION | KER MATERIALS WILL CONSIST OF SAND BAGS, POLYURETHANE F SS THE DITCH AS IDENTIFIED IN PERMIT REQUIREMENTS. DO NO S ARE DEPICTED ABOVE. | OAM OR SOM | IE FUNCTIONAL |] - |
| 2. PERMANENT TRENCH BREA LOCATIONS SHOWN ON THE | KERS, WHICH ARE USED IN CONJUNCTION WITH SLOPE BREAKER CONSTRUCTION DRAWINGS OR AS DETERMINED IN THE FIELD B | S, SHALL BE I Y THE ENVIRC | NSTALLED AT T DNMENTAL INSF | HE ECTOR. |
| 3. AT A MINIMUM, INSTALL A TF SLOPE IS LESS THAN 50 FEE WETLAND. | RENCH BREAKER AT THE BASE OF SLOPES GREATER THAN 5 PER T FROM A WATERBODY OR WETLAND AND WHERE NEEDED TO A | CENT WHERE /OID DRAININ | THE BASE OF ⁻ G A WATERBOD | ГНЕ ЭY OR |
| 4. INSTALL TRENCH BREAKERS ORIGINAL WETLAND HYDRO | S AT WETLAND BOUNDARIES AND/OR SEAL THE TRENCH BOTTOM LOGY. DO NOT INSTALL TRENCH BREAKERS WITHIN A WETLAND. | AS NECESSA | RY TO MAINTAI | N THE |
| 5. IN AGRICULTURAL FIELDS A BREAKERS AT THE SAME SF | ND RESIDENTIAL AREAS WHERE SLOPE BREAKERS ARE NOT TYPI ACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED. | CALLY REQU | RED, INSTALL 1 | RENCH |
| | PERMANENT TRENCH | FIC | GURE EC- | -12 |
| | | dwg. ES | -0022 | REV. |

I.G. ES0022.DWG 6/3/2014 11:13 AM



Wayne Sicora 5/29/2014 12:06 PM

| | | | EDGE TO EDGE OVERLAP ANCHOR AT TOP OF HILL EDGE TO EDGE OVERLAP |
|--|--|--|--|
| NOTES: | | | |
| 1. EROSION CONTROL BLANKETS ENVIRONMENTAL INSPECTOR. | ら (FABRIC) SHALL BE USED AT L | OCATIONS IDENTIFIED IN THE PLA | N AND/OR AS DIRECTED BY THE |
| 2. EROSION CONTROL BLANKETS | SHALL MEET THE REQUIREME | ENTS SPECIFIED IN THE PLAN AND/ | OR AS DIRECTED BY THE |
| 3. STAPLES SHALL BE MADE OF GROUND FOR THE FULL LENG | 11 GAUGE WIRE, U-SHAPED WIT TH OF THE STAPLE LEGS. | TH 6" LEGS AND A 1" CROWN. STAF | LES SHALL BE DRIVEN INTO THE |
| 4. BLANKETS SHALL BE INSTALLE | ED ACCORDING TO MANUFACTU | JRER SPECIFICATIONS OR AS STAT | TED BELOW: |
| • EXTEND TOP OF BLANKET 3 | FEET PAST THE UPPER EDGE C | DF THE SLOPE. | |
| ANCHOR ("KEY") THE UPPER DOWN THE HILL. DOUBLE ST | EDGE OF THE BLANKET INTO T FAPLE EVERY 12" BEFORE BACH | THE SLOPE USING A 6" DEEP TRENO (FILLING AND COMPACTING TRENO | CH AND ROLL THE BLANKET CH. |
| ● INSTALL LOOSELY ON SLOPI | E AND AVOID STRETCHING ER | OSION CONTROL BLANKETS DURIN | G INSTALLATION. |
| BRING ROLL BACK OVER THE BLANKETS EXIT THE TRENCH | E TOP OF THE TRENCH AND CO H AT THE TOP OF THE SLOPE. | NTINUE TO ROLL DOWN SLOPE. ST | APLE EVERY 12" WHERE |
| WHEN BLANKETS ARE SPLIC SHALL BE PLACED OVER THI OVERLAPPED AREA EVERY | ED DOWN-SLOPE TO ADJOININ E LOWER (SHINGLE STYLE) WIT 12". | G BLANKETS (SLOPE OR STREAMB H APPROXIMATELY 6" OF OVERLAF | ANK MATS), THE UPPER BLANKET 2. STAPLE THROUGH THE |
| OVERLAP ADJACENT BLANKI | ETS 6". STAPLE EDGES OF BLAM | NKETS AND CENTER EVERY 36". | |
| 5. IN LIVESTOCK AREAS WHERE NECESSARY TO EXCLUDE LIVE | EROSION CONTROL BLANKETS ESTOCK, WITH PERMISSION OF | ARE APPLIED TO THE SLOPES, FEI THE LANDOWNER. | NCING WILL BE USED IF |
| 6. MONITOR WASHOUTS, STAPLE | INTEGRITY OR BLANKET MOVE | EMENT. REPLACE OR REPAIR AS N | IECESSARY. |
| 7. DO NOT USE SYNTHETIC MON UNLESS THE PRODUCT IS SPE | OFILAMENT MESH / NETTED MA CIFICALLY DESIGNED TO MININ | TERIALS IN AREAS DESIGNATED A IIZE HARM TO WILDLIFE. | S SENSITIVE WILDLIFE HABITAT, |
| | | | FIGURE EC-14 |
| | BLANKET | S ON SLOPES | dwg. ES-0024 rev. |
| | | | _ |

1.G. ES0024.DWG Wayne Sicora 6/10/2014 10:30 AM



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ES0025.DWG

| ABSORD | ENT BOOMS | | | DISCHARGE PIF | ΡE |
|---|--|---|-----------------------------|--------------------------|-----|
| | | | / GEO | TEXTILE FILTER | 2 |
| | OPTION 1 CROSS SECTION | OPTIC VIEWS | DN 2 | | |
| NOTES: | | | | | |
| 1. SIZE AND DIMENSION OF DE STAGGER PLACEMENT OF S | EWATERING STRUCTURE WILL VARY DEP STRAW BALES WHEN TWO ROWS ARE US | ENDING ON THE VOLUME A ED. | ND RATE OF | DISCHARGE. | |
| 2. COVER THE BASE OF THE E (OPTION 2). | SCHARGE STRUCTURE EITHER WITH ST | RAW BALES (OPTION 1) OR | LINE WITH G | EOTEXTILE FAB | RIC |
| 3. PROVIDE SUPPORT TO ENS | URE THAT DISCHARGE PIPE DOES NOT R | EST ON STRAW BALES. | | | |
| 4. PLASTIC SHEETING, WOOD INSPECTOR, TO PREVENT E | EN MATS OR STEEL PLATES MAY ALSO BE ROSION, STREAMBED SCOUR, SUSPENS | E USED, AS DIRECTED BY T ION OF SEDIMENTS OR EXC | HE ENVIRONI CESSIVE STRI | MENTAL EAMFLOW. | |
| 5. ABSORBENT BOOMS MUST REQUIREMENTS. | BE USED DURING DISCHARGES FROM EX | ISTING / USED PIPE OR AS | DIRECTED BY | PERMIT | |
| 6. PREVENT EROSION, STREA STRUCTURE, REGULATING SEDIMENT BARRIERS, AS N | MBED SCOUR, SUSPENSION OF SEDIMEN THE WATER DISCHARGE RATE AS WELL / ECESSARY. | ITS AND EXCESSIVE STREA AS USE OF ENERGY DISSIP | MFLOW BY P ATION DEVIC | ROPER DESIGN E(S) AND | OF |
| | | | FIG | URE WD. | -2 |
| | dwg. ES | -0026 | REV. | | |

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ES0027.DWG



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ES0029.DWG

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| Q:\S-U\SPE\2013-200.00\AutoCAD\Final\es0031.dwg | P | DRTABLE BRIDGE | | |
|---|---|--|------------|---|
| Wayne Sicora 5/29/2014 5:13 PM | <u>NOTES:</u> 1. STABILIZE EDGES WITH S 2. REMOVE BRIDGE DURING | ANDBAGS OR STONE. CLEANUP. | | |
| ES0031.DWG | | TEMPORARY EQUIPMENT BRIDGE (FLEXI-FLOAT OR PORTABLE BRIDGE) | FIGURE BR- | 3 |



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ES0032.DWG

| | F | LOWWATER'S EDGE | | |
|---|---|--|--|-------------------|
| Q:\S-U\SPE\2013-200.00\AutoCAD\Final\es0033.dwg | TEMPORARY TRENCH PLUG (IF NECESSARY) TEMPORARY EROSION CONTROL (DRIVEABLE BERMS, STRAW BALES) ADDITIONAL TEMPORARY WORKSPACE (ATWS) 50' MIN. | SB TEMPORARY BRIDGE EQU CF CF (TRA 50' MIN. SB ATWS | EQUIPMENT COSSING VEL LANE) | |
| 33.DWG 2/29/2014 5/28 PM | NOTES: 1. (5B) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND 2. FOR MINOR WATERBODIES, COMPLETE TRENCHING AND OR OTHER ROCK BREAKING MEASURES) WITHIN 24 CONT WATERBODY DURING MAINLINE ACTIVITIES, IT CAN BE RE 24-HOUR TIMEFRAME STARTS AS SOON AS THE FLUME IS 3. FOR INTERMEDIATE WATERBODIES (>10 FEET TO 100 FEET TRENCHING AND BACKFILLING IN THE WATERBODY (NOT I WITHIN 48 CONTINUOUS HOURS, UNLESS SITE-SPECIFIC O | VOR STRAW BALES, OR APPROPRIATE BACKFILLING IN THE WATERBODY (NO INUOUS HOURS. IF A FLUME IS INSTA MOVED JUST PRIOR TO LOWERING IN REMOVED. T WIDE MEASURED WATER'S EDGE TO INCLUDING BLASTING OR OTHER ROC CONDITIONS MAKE COMPLETION WITH | E MATERIALS. DT INCLUDING BLASTING LLED WITHIN THE I THE PIPELINE. THE D EDGE), COMPLETE K BREAKING MEASURES) HIN 48 HOURS INFEASIBLE. | |
| .c. ES003 | TYPI WATERBO | ICAL WET DDY CROSSING | FIGURE WC | -2 REV. |

| | SAND BAGS T STF | O CHANNEL | FLOW | WATER'S EDGE | | | |
|--|---|--|---|---|---|---|----------|
| LIMITS OF CONSTRUCTION RIGHT-OF-WAY | TEMPOF TRENCH F (IF NECESS SANDBAG CHANNEL STF FLOW (AS NECESS) TEMPORARY ERO CONTROL (DRIVE/ BERMS, STRAW BA | SB 10' MI SARY PLUG ARY) STO ARY) SION ABLE LES) CONCERNING CONCERNIN CONCERNING CONCERNIN CONCERNIN CONCERNIN CONCERNIN | | SB TEMPORAR (IF INSTALL EQUIPMENT 4" - 6" CRUS OR TIMBER EQUIPMENT 4" - 6" CRUS OR TIMBER | ME PIPE ME PIPE ED AS F F BRIDG SHED ST MATS | POIL PILE OPEN PIPELINE TRENCH L CULVERT PART OF TEMPORARY IE) TONE T IE) | <i>(</i> |
| | TEMPOF EQUIPMENT BR ATWS | RARY | / <i>%</i> /- | 50' MIN. ADDITIONAL TE WORKSP, (ATWS | MPORA ACE) | RY | |
| NOTES: 1. (SB) 2. SANE 3. ENSL 4. ALIGI 5. CONI PLAC | TEMPORARY SEDIMEN D BAGS MUST BE FILLEI JRE SANDBAGS ARE IN N FLUME(S) TO PREVEN DUCT ALL IN-STREAM A E. FLUME PIPE(S) MAY | WATER'S EDGE T BARRIER OF SILT FENCE D WITH SAND FREE OF SILT STALLED BEFORE PLACING NT BANK EROSION AND STR CTIVITY (EXCEPT BLASTING 'NOT BE REMOVED FOR LO | AND/ O , ORGA FLUME REAM SC G OR OT WERING | R STRAW BALES, OR OTHER APPI INICS, AND OTHER MATERIAL. PIPE. COUR. THER ROCK BREAKING MEASURES G IN PIPE OR INITIAL STREAMBED | ROPRIA) WITH RESTOI | TE MATERIALS. THE FLUME(S) IN RATION EFFORTS. | |
| 6. THE I | ENDS OF THE FLUME A | ND CULVERT MUST EXTEN | D TO AN | UNDISTURBED AREA. | | | |
| 7. CONT WIDT | TRACTOR TO DETERMII | NE ACTUAL NUMBER AND S RATE AT THE TIME OF CRO | IZE OF I SSING. | FLUMES AND CULVERTS REQUIRE | D BASE | D ON STREAM | |
| 8. WATE PRIO | ER ACCUMULATING WIT R TO DISCHARGING IN | THIN THE WORK AREA SHAI TO ANY SURFACE WATER. | L BE PU | JMPED TO A FILTER BAG OR DEW/ | ATERIN | G STRUCTURE | |
| | | TYF | PICAL | FLUME | | FIGURE WC | -3 |
| | | WATER | ROD/ | CROSSING | DWG. | ES-0034 | REV. |

I.G. ES0034.DWG 6/3/2014 11:38 AM

| W UP | INTAKE HOSE ATER'S EDGE STREAM DAM | FLOW | PUMP AND SEC SPILL CONTAIN DEVICE | ONDARY MENT SPARE PUMP |
|----------------------------|--|-------------------|---|---|
| NOTES: | STREAM DAM | | | SPARE PUMP SPOIL PILE OPEN PIPELINE TRENCH |
| 2. INSTALL AND SEAL SANDBA | AGS UPSTREAM AND DOWN | STREAM OF T | HE CROSSING. | |
| 3. CREATE AN UPSTREAM SU | MP USING SANDBAGS IF NA | | IS UNAVAILABLE FOR THE IN | ITAKE HOSE. |
| 5. DO NOT REFUEL OR STORE | EFUEL WITHIN 100 FEET OF | THE WATERB | BODY. IF NOT FEASIBLE, ALT | ERNATIVE METHODS |
| MUST BE APPROVED BY EN | IVIRONMENTAL INSPECTOR | R. SSING PROCE | DURE. | |
| 7. (D) USE SUFFICIENT PUMF | PS, INCLUDING ONSITE BAC | KUP PUMPS, | TO MAINTAIN DOWNSTREAM | / FLOW. |
| 8. SCREEN PUMP INTAKES. P | REVENT SCOURING WITHIN | I WATERBODY | Y BY HOSE DISCHARGE. | |
| | TYPICA | L DAM-AN | ID-PUMP | FIGURE WC-4 |
| | WATER | BODA CE | ROSSING | dwg. ES-0035 rev. |

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1.G. ES0035.DWG 6/3/2014 11:41 AM

| inal/es0036.dwg | The state to slope with staples | END TO END OVERLAP (6" MIN.) | DOUBLE STAPLES | ι.) | | | | | |
|---|--|--|----------------------------------|---------|--|--|--|--|--|
| CADNF | NOTES: | | | | | | | | |
| Auto(| 1. EROSION CONTROL BLANKETS (FABRIC) SHALL BE PLACED OF REMOVED OR AS DIRECTED BY THE ENVIRONMENTAL INSPEC | 1. EROSION CONTROL BLANKETS (FABRIC) SHALL BE PLACED ON THE BANKS OF FLOWING STREAMS WHERE VEGETATION HAS BEEN REMOVED OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR. | | | | | | | |
| 00'00 | 2. EROSION CONTROL BLANKETS SHALL MEET THE REQUIREMENTS SPECIFIED IN THE E&S PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR | | | | | | | | |
| \2013-2(| STAPLES SHALL BE MADE OF 11 GAUGE WIRE, U-SHAPED WITH 6" LEGS AND A 1" CROWN. STAPLES SHALL BE DRIVEN INTO THE GROUND FOR THE FULL LENGTH OF THE STAPLE LEGS. ALTERNATELY 1" WOODEN PEGS 6" LONG AND BEVELED TO SECURE MATTING | | | | | | | | |
| \SPE | 4. BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTU | IRER SPECIFICATIONS OR AS STATE | ED BELOW: | | | | | | |
| N-S/ | EXTEND TOP OF BLANKET 2 FEET PAST THE UPPER EDG PRESENT ON THE APPROACH SLOPE, BEGIN THE BLAN | GE OF THE HIGH WATER MARK. IF A KET ON THE UPHILL SIDE OF THE SI | SLOPE BREAKER IS OPE BREAKER. | | | | | | |
| Ø | • INSTALL BLANKET(S) ACROSS THE SLOPE IN THE DIREC | TION OF THE WATER FLOW. | | | | | | | |
| | ANCHOR ("KEY") THE UPSTREAM EDGE OF THE BLANKE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPAC | T(S) INTO THE SLOPE USING A 6" DE TING TRENCH | EP TRENCH. DOUBLE | | | | | | |
| | OVERLAP THE EDGES OF PARALLEL BLANKETS A MINIM (SHINGLE STYLE) AND STAPLE EVERY 12" ALONG THE L | UM OF 6". PLACE THE UPPER BLAN ENGTH OF THE EDGE. | KET OVER THE LOWER BLAN | KET | | | | | |
| | WHEN BLANKET ENDS ARE ADJOINED, PLACE THE UPS (SHINGLE STYLE) WITH ADDROVIMATELY 6" OF OVERLAND | | STREAM BLANKET | | | | | | |
| Ъ | STAPLE DOWN THE CENTER OF THE BLANKET(S). THRE | E STAPLES IN EVERY SQUARE YAR | D. | | | | | | |
| oro 4:33 | 5. IN LIVESTOCK AREAS WHERE EROSION CONTROL BLANKETS ARE APPLIED TO THE STREAMBANKS, FENCING MAY BE USED IF | | | | | | | | |
| 014 v | NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER. | | | | | | | | |
| 7. DO NOT USE SYNTHETIC MONOFILAMENT MESH / NETTED MATERIALS IN AREAS DESIGNATED AS SENSITIVE WILDLIFE HA | | | | | | | | | |
| <u>ں ح</u> | UNLESS THE PRODUCT IS SPECIFICALLY DESIGNED TO MINIM | IZE MARIVI I U WILULIFE. | | | | | | | |
|).DWG | | | NOT TC |) SCALE | | | | | |
| ES0036 | TYPICAL ERO | SION CONTROL | FIGURE WC | -5 | | | | | |
| I.G. | BLANKETS ON | STREAMBANKS | dwg. ES-0036 | REV. | | | | | |



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APPENDIX B

WATERBODY REFERENCE CITING FERC REQUIREMENTS



APPENDIX B: Waterbody Reference Citing FERC Requirements

Waterbodies may be specifically identified or recognized by the States or authorized Indian Tribe for water use, value or quality, such as fisheries. FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) contain specific requirements with regards to state-designated fisheries which are summarized in the table below. This table is a general reference of waterbody construction techniques and restrictions required by the FERC Procedures, 2013 version. Project-specific permits obtained for a given project may be more restrictive and must be followed (Refer to project-specific Clearance Package/Permit Book).

| FERC Waterbody Type ^a | Crossing Width ^b | Construction Crossing Method ^c | Seasonal Timing Restriction ^d | Waterbody Construction Duration ^e | | |
|-------------------------------------|-----------------------------|--|---|--|--|--|
| Not Designated Fisheries | | | | | | |
| MINOR | ≤ 10 feet | Dry or Wet | No | 24 hours | | |
| INTERMEDIATE | > 10 feet but ≤ 100 feet | Dry or Wet | No | 48 hours | | |
| MAJOR | > 100 feet | Refer to site-specific plan | No | N/A | | |
| Designated Fisheries | | | | | | |
| MINOR | ≤ 10 feet | Dry only | Yes | N/A | | |
| INTERMEDIATE | > 10 feet but ≤ 100 feet | Dry or Wet | Yes | N/A | | |
| MAJOR | > 100 feet | Refer to site-specific plan | Yes | N/A | | |

^{a)} Waterbody types or classifications as defined in the FERC Procedures. Refer to Section 5.3 of E&SCP.

^{b)} Measured from the water's edge at the time of crossing.

" "Dry" = Dry crossing includes dam-and-pump or flume crossing methods where the stream flow is isolated from the construction area. A dry crossing is generally required for crossings up to 30 feet wide for state designated fisheries or federally designated critical habitat.

"Wet" = Wet crossing generally refers to the open-cut method that allows continuous flow of the stream across the construction area.

"Refer to site-specific plan" = A plan is required for each major crossing as well as each waterbody or wetland that would be crossed using the HDD method requires a project-specific HDD Plan (refer to Section 4.4).

- ⁾ For designated fisheries, instream work must occur during the following seasonal time windows, unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis:
 - coldwater fisheries construction must occur from June 1 through September 30.
 - coolwater and warmwater fisheries construction must occur from June 1 through November 30.

NOTE: project-specific waterbody crossings may have other federal and state agency timing restrictions. Seasonal timing windows will be indicated within the project-specific waterbody crossing table and/or within the Environmental Clearance/Permit Book for the project. The FERC seasonal timing window restrictions do not apply to the installation or removal of equipment bridges.

^{e)} The construction duration of the crossing officially begins with in-stream activities, including in-stream trenching, pipe installation, backfill, and restoration of the streambed contours. Duration does not apply to in-stream work for dry crossings, and does not apply to blasting activities.





APPENDIX C

SEED MIX RECOMMENDATIONS



SEED MIX RECOMMENDATIONS: "NORTHERN ZONE"

The Northern Zone is generally defined as areas north of the northern borders of Arkansas and Tennessee.

UPLAND AREAS

| Lime | 4.0 tons/acre |
|---------------------|---------------------------|
| Fertilizer | 1000 lbs./acre (10-20-20) |
| Mulch (Wheat Straw) | 3.0 tons/acre |

| Upland Seed Mix | | 75 lbs./acre Pure Live Seed (PLS) |
|---|----------|-----------------------------------|
| Kentucky Bluegrass | | 20% |
| Red Fescue ¹ | 20% | |
| Kentucky 31 Tall Fescue ¹ | | 15% |
| Redtop | | 10% |
| Perennial ryegrass | | 20% |
| White clover | 5% | |
| Birdsfoot Trefoil (Minimum 20% hard seed) | | 10% |
| ¹ Fescue must be endophyte-free. | | |
| Pasture Mix | 20 lbs | s./acre PLS |
| (For use only in disturbed pasture areas with l | andowner | r's permission.) |
| Kentucky Bluegrass | | 31% |
| Medium Red clover | | 26% |
| Norcen Trefoil | | 17% |
| Poly Perennial Rye | | 26% |

Recommended Seeding Dates

(For the establishment of temporary or permanent vegetation.)Spring: March 15 - May 30Fall: August 1 - October 15

WINTER STABILIZATION

If restoration does not occur prior to October 15, seed the construction ROW with 1.5 bushels per acre of winter rye or similar variety of rye as requested by the landowner. Mulch the construction ROW at 3.0 tons per acre with wheat straw, including areas adjacent to streams and wetland crossings. Seed segregated topsoil piles with winter rye and mulch at a rate of 3.0 tons per acre.

WETLAND AREAS

DO NOT USE LIME OR FERTILIZER !!!

Do not use fertilizer, lime, or mulch within wetlands unless required in writing by the appropriate federal or state agency (as identified in the Clearance Package/Permit Book). Mulch consists of weed-free straw, wood fiber hydromulch or some functional equivalent as approved by the EI and Chief Inspector. When used, apply mulch (wheat straw) at a rate of 3.0 tons/acre.

Wetland Seed Mix Annual Ryegrass

40 lbs./acre PLS



SEED MIX RECOMMENDATIONS: "SOUTHERN ZONE"

The Southern Zone is generally defined as areas south of the northern borders of Arkansas and Tennessee.

UPLAND AREAS

Lime (agricultural limestone) Fertilizer (6-12-12) Mulch (Oats, Wheat or Bermudagrass Straw) 2.5 tons/acre 950 lbs./acre 3.0 tons/acre

Seed Mixture¹

| Sorghum, Sudangrass, or Sudangrass Hybrids ² | 40 lbs/acre Pure Live Seed (PLS) |
|---|----------------------------------|
| Kentucky 31 Tall Fescue ³ | 10 lbs/acre PLS |
| Big Bluestem | 10 lbs/acre PLS |
| Indiangrass | 10 lbs/acre PLS |
| Bermudagrass | 10 lbs/acre PLS |
| Sericea Lespedeza ⁴ | 10 lbs/acre PLS |
| White Clover ⁴ | 5 lbs/acre PLS |
| Birdsfoot Trefoil ⁴ | 10 lbs/acre PLS |

¹ An alternative seed mixture may be requested by the landowner(s).

² These species may be sold under the following trade names: DeKalb SX17, Greentreat II, Greentreat III, Tastemaker DR, Tastemaker III, FFR202, or Sordan 79.

³ Fescue must be endophyte-free.

⁴ Legumes should be treated with a species specific inoculate prior to seeding. Legume seed and soil should be scarified.

Recommended seeding dates

(For establishment of temporary or permanent vegetation.) Spring: March 15 - May 30 Fall: August 1 - October 15

WINTER STABILIZATION

If restoration does not occur prior to October 15, seed the construction ROW with 1.5 bushels per acre of winter rye or similar variety of rye as requested by the landowner. Mulch construction ROW at 3.0 tons per acre with wheat straw, including areas adjacent to stream and wetland crossings. Seed segregated topsoil piles with winter rye and mulch at a rate of 3.0 tons per acre.

WETLAND AREAS

DO NOT USE LIME OR FERTILIZER !!!

Do not use fertilizer, lime, or mulch within wetlands unless required in writing by the appropriate federal or state agency (as identified in the Clearance Package/Permit Book). Mulch consists of weed-free straw, wood fiber hydromulch or some functional equivalent as approved by the EI and Chief Inspector. When used, apply mulch (Oats, Wheat, or Bermudagrass straw) at a rate of 3.0 tons/acre.

Wetland Seed Mix: Annual Ryegrass