ATLANTIC BRIDGE PROJECT

RESOURCE REPORT 1
General Project Description

FERC Docket No. CP16-__-000

October 2015

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Filing Requirement	**Location in Environmental Report**
☒ Provide a detailed description and location map of the Project facilities (§ 380.12(c)(1)). – Include all pipeline and aboveground facilities. – Include support areas for construction or operation. – Identify facilities to be abandoned.	Sections 1.1, 1.3 Figure 1.1-1
☒ Describe any non-jurisdictional facilities that would be built in association with the Project (§ 380.12(c)(2)). – Include auxiliary facilities (see § 2.55(a)). – Describe the relationship to the jurisdictional facilities. – Include ownership, land requirements, gas consumption, megawatt size, construction status, and an update of the latest status of Federal, state, and local permits/approvals. – Include the length and diameter of any interconnecting pipeline. – Apply the four-factor test to each facility (see § 380.12(c)(2)(ii)).	Section 1.14
☒ Provide current, original United States Geological Survey (USGS) 7.5-minute series topographic maps with mileposts showing the Project facilities (§ 380.12(c)(3)). – Maps of equivalent details are acceptable if legible (check with staff). – Show locations of all linear project elements, and label them. – Show locations of all significant aboveground facilities, and label them.	Appendix 1A
☒ Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the Project facilities. (§ 380.12(c)(3)). – No more than one-year old. – Scale no smaller than 1:6,000.	Appendix 1A
☒ Provide plot/site plans of compressor stations showing the location of the nearest noise-sensitive areas (NSA) within one mile (§ 380.12(c)(3,4)). – Scale no smaller than 1:3,600. – Show reference to topographic maps and aerial alignments provided above.	See Appendix 1A and Appendix 9A in Resource Report 9
☒ Describe construction and restoration methods (§ 380.12(c)(6)).	Section 1.5
☒ Identify the permits required for construction across surface waters (§ 380.12(c)(9)). – Include the status of all permits. – For construction in the Federal offshore area, be sure to include consultation with the MMS. File with the MMS for rights-of-way grants at the same time or before you file with FERC.	Section 1.12
☒ Provide the names and addresses of all affected landowners as required and certify that all affected landowners will be notified. – Affected landowners are defined in § 157.6(d)(2). – Provide an electronic copy directly to the environmental staff.	Appendix 1D Privileged & Confidential

RESOURCE REPORT 1—GENERAL PROJECT DESCRIPTION		
	Filing Requirement	**Location in Environmental Report**
Additional Information Often Missing and Resulting in Data Requests		
☒	Describe all authorizations required to complete the proposed action and the status of applications for such authorizations.	Section 1.12 and Table 1.12-1
☒	Provide plot/site plans of all other aboveground facilities that are not completely within the right-of-way.	Appendix 1A
☒	Provide detailed typical construction right-of-way cross-section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent rights-of-way, and temporary construction rights-of-way. See Resource Report 8 – Land Use, Recreation, and Aesthetics.	Appendix 1A
☒	Summarize the total acreage of land affected by construction and operation of the Project.	Section 1.4
☒	If Resource Report 5 - Socioeconomics is not provided, provide the start and end dates of construction, the number of pipeline spreads that would be used, and the workforce per spread.	See Resource Report 5
☒	Send two (2) additional copies of topographic maps and aerial images/photographs directly to the environmental staff of the Office of Energy Projects (OEP).	Appendix 1A

RESPONSE TO FERC AUGUST 19, 2015 COMMENTS ON
ATLANTIC BRIDGE PROJECT RESOURCE REPORT 1 – GENERAL PROJECT DESCRIPTION

FERC COMMENTS ON DRAFT RESOURCE REPORT 1	LOCATION OR RESPONSE TO COMMENT
1. Explain why the Salem Pike Meter and Regulating (M&R) station needs to be completely rebuilt.	See Section 1.3.2.2 for a discussion of the need to rebuild the Salem Pike M&R Station.
2. Update table 1.4-2 to include any new realignments or variations, by milepost segments or range, where the new pipeline would not be installed in the "same ditch" as the existing pipeline.	Table 1.4-2 has been updated to reflect the two route variations where the new pipeline will not be installed in the same trench as the existing pipeline. These locations include the Taconic State Parkway HDD (MP 0.4 – 0.9) and the pipeline realignment at Tulip Drive to avoid Willow Pond (MP 3.0 – 3.1). The existing 26-inch mainline will be abandoned along these segments. Take-up and relay pipeline construction in all other areas will occur in approximately the same location as the existing pipeline ditch.
3. Confirm that the section of existing pipe to be replaced by the Taconic Parkway horizontal directional drill (HDD) is the only place the existing pipeline would be abandoned in place and verify that the existing pipeline to be replaced would be removed from all other road, railroad, wetland and waterbody crossings.	Abandonment of existing pipeline is described in Section 1.5.1.1. Two segments of pipeline will be abandoned during Project construction; all other pipeline will be removed.
4. Confirm that all removals of the existing pipeline from waterbodies would be conducted under "dry conditions" using either the dam and pump or flume method.	As described in Section 1.5.1.6, removal of existing pipeline will be conducted under dry conditions using the dam and pump method or the flume method.
5. Section 1.3.2.2 states that modifications at the existing M&R stations would occur primarily within the existing fenced sites. Table 1.4-3, however, indicates that only 2.1 acres of the 4.3 acres that would be temporarily affected during construction at the M&R stations would be within existing fenced areas. Clarify this discrepancy and confirm the acreages in the table.	The construction workspace area calculations for the M&R stations have been updated to reflect current Project information. Approximately 6.9 acres will be affected by construction activities at the M&R Stations. Of this amount, approximately 2.9 acres of construction workspace will be located within the existing fenced facilities. The remaining construction workspace area will be located outside the fence line adjacent to the station site in open areas.
6. Algonquin's Responses to FERC Comments Received on Initial Drafts of Resource Reports 1 and 10 states that "Projects included in the cumulative impact analysis are those located within the same counties directly affected by construction of the Atlantic Bridge Project". Update section 1.15 to include a description of this action area and to provide justification for the action area.	The cumulative impact assessment was not limited to the evaluation of actions only occurring within the same counties as the Project. Instead, the assessment focused on larger actions that have the potential to cause cumulative impacts (e.g., large infrastructure projects such as highways, bridges, major gas and electric lines, industrial facilities, and large commercial enterprises). In most cases, these larger projects occur within the same counties as the Atlantic Bridge Project facilities, but there are some located in other counties in the region.
7. Add a column to table 1.15-1 to include the resources that may be cumulatively affected by each project based on the defined specific impact area for each resource.	Table 1.15-1 has been updated to include a column detailing the resources that may be cumulatively impacted by each project.
8. Update the cumulative impact discussion and table 1.15.1 to include the Connecticut Power Ventures	A discussion of the Connecticut Power Ventures Towantic Energy Center is provided in Section 1.15.3, and Table

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FERC COMMENTS ON DRAFT RESOURCE REPORT 1	LOCATION OR RESPONSE TO COMMENT
Towantic Energy Center located near the Oxford Compressor Station.	1.15-1 has been updated to include the Towantic Energy Center.
9. Update the cumulative impact discussion to include a detailed analysis of cumulative impacts of the planned Access Northeast Project based on the current knowledge of project facilities.	The planned Access Northeast Project has been incorporated into the cumulative impacts discussion, and Table 1.15-1 has also been updated to include the Access Northeast Project.
10. Confirm that all of the land that would be affected by each of the M&R Stations is currently owned, leased, or under agreement to Algonquin or Maritimes Northeast. If not indicate the locations and amounts of new land that would need to be acquired.	As described in Section 1.4.2, all of the land affected by construction of the aboveground facilities is currently owned, leased, or under agreement to Algonquin or Maritimes.
11. Update and/or provide the aerial photography-based drawings for M&R Stations to: a. more clearly show the construction limits for the Pine Hills M&R Station; b. clearly show the existing fence line and 0.2 acre area outside of the existing 0.5 acre property that would be used to construct the Yorktown M&R Station c. clearly show the existing fence line at the Needham M&R Station. d. highlight the areas outside of the existing fence lines that would be impacted. e. highlight the 0.3 acre of new permanent land that would be used at the Salem Pike M&R Station; and f. provide and aerial photography-based drawing of the Westbrook M&R Station showing the limits of the construction area	The requested updates to the M&R station drawings have been incorporated. The M&R station drawings are located in Appendix 1A.
12. Algonquin noted several items that would be included in its September application. Provide the following information identified in the draft resource reports.	The requested information has been provided as described in items a – d below.

RESPONSE TO FERC AUGUST 19, 2015 COMMENTS ON
ATLANTIC BRIDGE PROJECT RESOURCE REPORT 1 – GENERAL PROJECT DESCRIPTION

FERC COMMENTS ON DRAFT RESOURCE REPORT 1	LOCATION OR RESPONSE TO COMMENT
a. Information on proposed temporary and permanent access roads needed for the Project including: i. access road name; ii. municipality, state location information; iii. approximate milepost; iv. use (permanent or temporary); v. existing road description; vi. approximate road length; and vii. acreage of disturbance for upgraded roads.	Information on proposed temporary and permanent access roads is provided in Section 1.4.3 and Table 1.4-4.
b. Information on proposed pipe and contractor ware yards including: i. locations of yards; ii. size (acres) of yards; and iii. existing land use.	Information on pipe and contractor ware yards is not being provided in the Certificate application. This information will be supplied to the FERC no later than December 31, 2015.
c. A description of the proposed modifications at the existing Westbrook M&R Station and updates to tables 1.4-3 and 1.12-1 regarding land requirements and any federal, state, or local permitting that would be required for the station modifications.	The Westbrook M&R Station modifications include the upsizing of piping and a series of valves from 12-inch to 24-inch. The Westbrook M&R Station is collocated with the Westbrook Compressor Station within the same fenced in site and all permanent facilities will be installed within the existing fence line adjacent to the existing metering building. Tables 1.4-3 and 1.12-1 have been updated with the Westbrook land requirements.
d. Updated alignment sheets, figures, and impact calculations once all field surveys are completed.	All alignment sheets, aboveground facility drawings and supporting figures have been updated to reflect the proposed Project scope.

ACRONYMS AND ABBREVIATIONS

Algonquin	Algonquin Gas Transmission, LLC
Applicants	Algonquin and Maritimes
AIM Project	Algonquin Incremental Market Project
ANE Project	Access Northeast Project
ATWS	additional temporary workspace
BDP Plan	Best Drilling Practices Plan & Monitoring and Clean-up of Horizontal Directional Drilling Inadvertent Returns
BMP	Best Management Practice
CFR	Code of Federal Regulations
CPV	Competitive Power Ventures
CTDEEP	Connecticut Department of Energy and Environmental Protection
Dth/d	Dekatherms per day
E&SCP	Erosion and Sediment Control Plan
EDR	Environmental Data Resources, Inc.
EI	Environmental Inspector
EJ	environmental justice
FERC or Commission	Federal Energy Regulatory Commission
FERC Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
FERC Procedures	Wetland and Waterbody Construction and Mitigation Procedures
HDD	horizontal directional drill
hp	horsepower
LDC	local distribution company
L_{dn}	day-night sound level in decibels
LNG	liquefied natural gas
M&R	metering and regulating
MADOER	Massachusetts Department of Energy Resources
MADPU	Massachusetts Department of Public Utilities
Maritimes	Maritimes & Northeast Pipeline, L.L.C.
MLV	Mainline Valve
MP	milepost
MW	megawatt
MWRA	Massachusetts Water Resources Authority
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NOI	Notice of Intent
NPU	Norwich Public Utilities
NSA	Noise Sensitive Area
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
O&M	operations and maintenance
PAR	permanent access road
ppm	parts per million
Project	Atlantic Bridge Project
Project Shippers	Heritage Gas Limited, Maine Natural Gas Company, NSTAR Gas Company d/b/a Eversource Energy, Exelon Generation Company, LLC (as assignee of Summit Natural Gas of Maine), Irving Oil Terminal Operations Inc., New England NG Supply Limited, and Norwich Public Utilities

psig	pounds per square inch gauge
ROW	right-of-way
SCFH	standard cubic feet per hour
SPCC Plan	Spill Prevention, Control and Countermeasures Plan
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Watershed Regulations	Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources

1.0 RESOURCE REPORT 1 - GENERAL PROJECT DESCRIPTION

1.1 Introduction

Algonquin Gas Transmission, LLC ("Algonquin") and Maritimes & Northeast Pipeline, L.L.C. ("Maritimes") (collectively, the "Applicants") are seeking authorization from the Federal Energy Regulatory Commission ("FERC" or the "Commission") pursuant to Section 7(c) of the Natural Gas Act[1] ("NGA") to construct, install, own, operate, and maintain the Atlantic Bridge Project ("Project"). The Applicants are also seeking authorization pursuant to Section 7(b) of the NGA[2] to abandon certain facilities as a related component of the Atlantic Bridge Project.

The Atlantic Bridge Project will create additional firm pipeline capacity necessary to deliver natural gas supplies that will meet supply and load growth requirements in the Northeast market area. The Project will create additional capacity between a receipt point on Algonquin's system at Mahwah in Bergen County, New Jersey and various delivery points on the Algonquin system, including at Beverly, Massachusetts for further transportation and deliveries on the Maritimes system. The Project capacity of up to 132,705 dekatherms per day ("Dth/d") will be created through pipeline take-up and relay facilities and additional compression on Algonquin's system. South-to-north transportation on Maritimes will be achieved through minor modifications to existing facilities to facilitate bi-directional flow on the existing Maritimes system. The target in-service date for the Atlantic Bridge Project is November 1, 2017.

The FERC will conduct a full review of the Atlantic Bridge Project under its regulations in compliance with the NGA and the National Environmental Policy Act ("NEPA"). On January 30, 2015, the Applicants requested approval from the FERC to initiate the Pre-filing review process for the Atlantic Bridge Project. The Pre-filing review process allows for active participation by interested stakeholders early on in project development while maintaining a coordinated schedule and helps to ensure the timely review and approval of the Certificate application. The Pre-filing review process also allows for open communication during the planning stages of the Project and greatly improves the FERC's ability to identify issues early and address them in the Environmental Report.

The FERC issued approval of the Atlantic Bridge Project Pre-filing request on February 20, 2015 under Docket No. PF15-12-000. As part of the Pre-filing review process, the Applicants filed initial drafts of Resource Report 1 (General Project Description) and Resource Report 10 (Alternatives) with the Commission on March 23, 2015, and held public open house meetings in the Project area during March 2015. On April 27, 2015, the FERC issued its "*Notice of Intent to Prepare an Environmental Assessment for the Planned Atlantic Bridge Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings"* for the Project ("NOI") announcing the opening of the scoping process. The NOI was sent to federal, state, and local government representatives and agencies, elected officials, Indian tribes, potentially affected landowners and other interested individuals and groups, newspapers, and libraries in the Project area. Three scoping meetings were held by the FERC in the Project area from May 11 through May 14, 2015, and the scoping period closed on June 11, 2015. On June 25, 2015, the Applicants filed responses to the public comments received during the scoping period. Since that filing, the Applicants have updated the final environmental resource reports to address additional public and agency comments and the comments received from the FERC on August 19, 2015. The Certificate application for the Atlantic Bridge Project includes a matrix at the front of each report that identifies the specific locations where the requested information is found.

[1] 15 U.S.C. § 717f(c) (2012).
[2] 15 U.S.C. § 717f(b) (2012).

The FERC's NEPA review process requires an applicant for a pipeline project to submit an Environmental Report consisting of 12 individual resource reports. Each resource report addresses a particular aspect of the environment in the Project area and evaluates the potential effects of the construction and operation of the Project on that particular aspect. Resource Report 1 (General Project Description) identifies the purpose and need for the proposed Project, the locations and descriptions of Project facilities, and the land requirements associated with the construction and operation of the proposed facilities. This report also discusses: the proposed construction procedures; construction schedule; work force, operation and maintenance procedures; potential plans for future expansion of the proposed facilities; agency consultation and landowner notification; permits and approvals required to construct and operate the Project; status of field surveys; proposed non-jurisdictional facilities; and an assessment of cumulative impacts from past, present, and reasonably foreseeable future actions.

A checklist showing the status of the FERC filing requirements for Resource Report 1 is included following the table of contents. Required drawings and maps showing the proposed Atlantic Bridge Project facilities are located in Appendix 1A. Refer to Figure 1.1-1 for a Project overview map that shows the location of all facilities involved in the Project and the proposed facilities in association with the Applicants' existing pipeline facilities.

1.1.1 Atlantic Bridge Project Scope Changes

The initial scope of the Atlantic Bridge Project was based on a capacity of up to 222,000 Dth/d, as described in the Applicants' preliminary Pre-filing drafts of Resource Reports 1 and 10, which were filed with the FERC on March 23, 2015. The Applicants subsequently reduced the Project scope from 222,000 Dth/d to 153,000 Dth/d in response to changes in customer need. This change in Project scope was described in the Applicants' April 2, 2015 monthly Pre-filing progress report filed with the FERC.

Algonquin further reduced the overall Project scope to reflect current expectations for customer participation in the Atlantic Bridge Project. The Project scope was reduced from 153,000 Dth/d to 132,705 Dth/d as described in the draft resource reports that were submitted to the FERC on July 1, 2015. Since filing the draft resource reports, the Applicants have made a few minor changes to the compressor station facilities, but the Project capacity remains the same at 132,705 Dth/d. The following sections provide additional details on the changes in facilities over the course of the Pre-filing period.

1.1.1.1 Pipeline Facilities

As previously reported in the July 1, 2015 Pre-filing draft resource reports, the total length of pipeline for the Project has been reduced from 36.6 miles with the 222,000 Dth/d scope to 6.3 miles with the 132,705 Dth/d scope (a pipeline reduction of approximately 30.3 miles). This reduction is the result of the removal of the Upstream Ramapo Take-up and Relay, Cromwell Discharge Loop, G-2 System Loop, Chaplin Discharge Loop, and the Q-1 System Loop from the Project scope. The remaining Project pipeline segments include the Stony Point Discharge Take-up and Relay in New York and the Southeast Discharge Take-up and Relay in Connecticut.

The overall pipeline length of 4.0 miles for the Stony Point Discharge Take-up and Relay has not changed since the July 1, 2015 Pre-filing draft resource reports. However, Algonquin has extended the end point of the Southeast Discharge Take-up and Relay pipeline by approximately 290 feet to avoid permanent impacts to wetlands from the construction of the aboveground launcher and receiver facility at milepost ("MP") 2.3. This extension results in a slightly longer pipe length, but the overall reported length of the Southeast Discharge Take-up and Relay pipeline is the same as the July 1, 2015 Pre-filing draft resource reports at 2.3 miles (because of rounding).

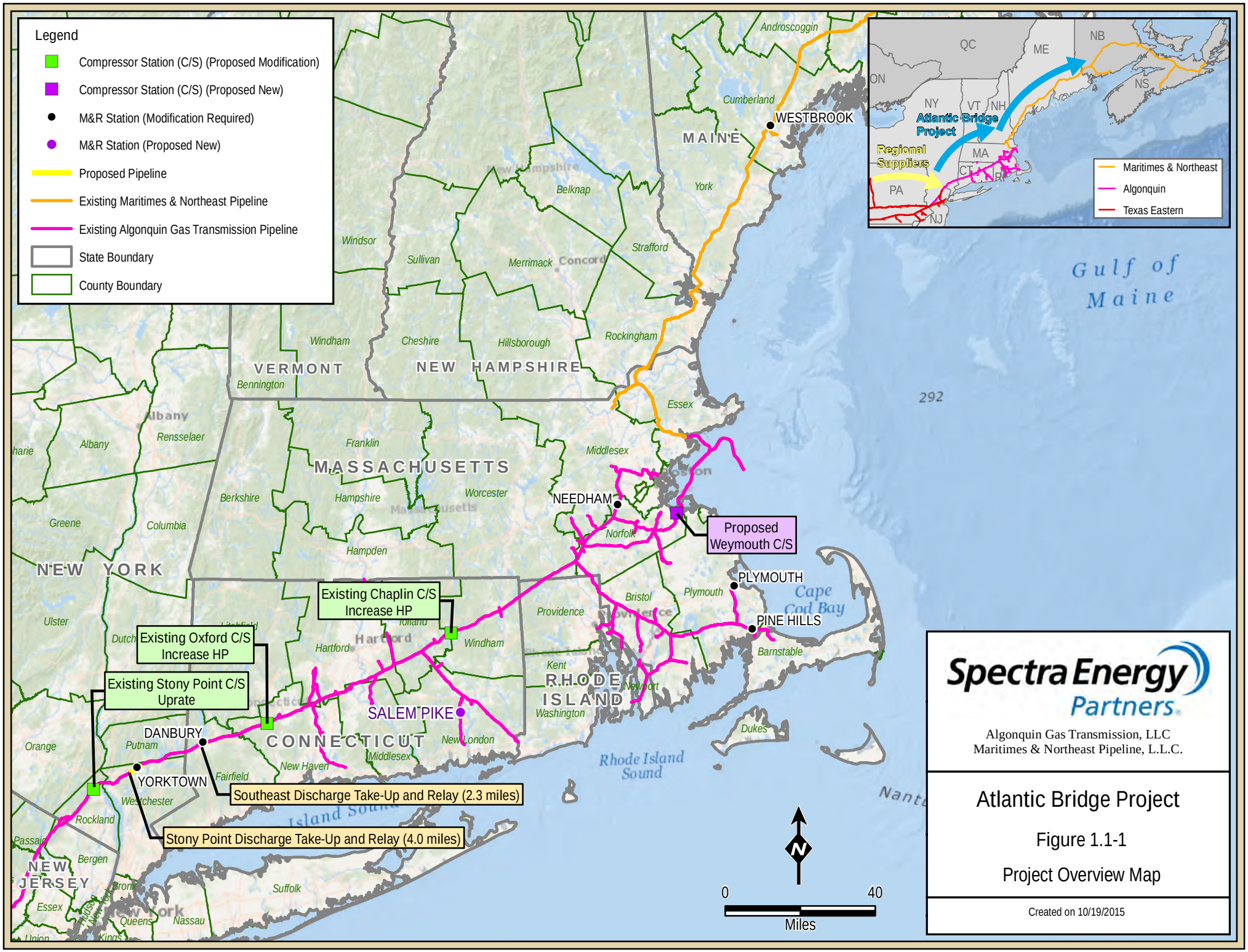
Legend
Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
M&R Station (Modification Required)
M&R Station (Proposed New)
Proposed Pipeline
Existing Maritimes & Northeast Pipeline
Existing Algonquin Gas Transmission Pipeline
State Boundary
County Boundary
Maritimes & Northeast
Algonquin
Texas Eastern
Atlantic Bridge Project
Regional Suppliers
WESTBROOK
Proposed Weymouth C/S
NEEDHAM
PLYMOUTH
PINE HILLS
Existing Chaplin C/S Increase HP
Existing Oxford C/S Increase HP
Existing Stony Point C/S Uprate
SALEM PIKE
DANBURY
YORKTOWN
Southeast Discharge Take-Up and Relay (2.3 miles)
Stony Point Discharge Take-Up and Relay (4.0 miles)
MAINE
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
NEW YORK
CONNECTICUT
RHODE ISLAND
NEW JERSEY
Gulf of Maine
Rhode Island Sound
Cape Cod Bay
0
40
Miles
Spectra Energy Partners
Algonquin Gas Transmission, LLC
Maritimes & Northeast Pipeline, L.L.C.
Atlantic Bridge Project
Figure 1.1-1
Project Overview Map
Created on 10/19/2015

Table 1.1-1 provides a side-by-side comparison of pipeline facilities associated with the original 222,000 Dth/d Project scope, the previously modified 153,000 Dth/d scope, the currently proposed 132,705 Dth/d scope as of July 1, 2015, and the proposed 132,705 Dth/d scope as of the date hereof.

TABLE 1.1-1

Atlantic Bridge Project Pipeline Facility Scope Changes during the Pre-Filing Period

Pipeline Facility	March 23, 2015 Initial Scope 222,000 Dth/d Pipeline Length (miles)	April 2, 2015 Previous Scope 153,000 Dth/d Pipeline Length (miles)	July 1, 2015 Previous Scope 132,705 Dth/d Pipeline Length (miles)	October 15, 2015 Proposed Scope 132,705 Dth/d Pipeline Length (miles)
Upstream Ramapo Take-up and Relay	1.3	1.3	Removed from scope	N/A
Stony Point Discharge Take-up and Relay	5.9	4.0	4.0	4.0 (no change)
Southeast Discharge Take-up and Relay	3.9	2.3	2.3	2.3 (no change) a/
Cromwell Discharge Loop	10.6	7.2	Removed from scope	N/A
Chaplin Discharge Loop	2.5	Removed from scope	Not Applicable ("N/A")	N/A
G-2 System Loop	2.2	Removed from scope	N/A	N/A
Q-1 System Loop	10.2	3.6	Removed from scope	N/A
Total:	**36.6**	**18.4**	**6.3**	**6.3 (no change)**

a/ Algonquin extended the end point of the Southeast Discharge Take-up and Relay pipeline by approximately 290 feet to avoid permanent impacts to wetlands from the construction of the aboveground launcher and receiver facility at MP 2.3. Because of rounding, this pipe extension did not result in a change to the overall length of the Southeast Discharge Take-up and Relay pipeline at 2.3 miles.

1.1.1.2 Aboveground Facilities

In addition to the pipeline changes, the compression horsepower ("hp") for the Project has been modified during the Pre-filing period. The original 222,000 Dth/d scope described in the March 23, 2015 preliminary Resource Report 1 filing included a total of 31,030 hp of new compression for the Project. On April 2, 2015, the Applicants reduced the Project capacity to 153,000 Dth/d, and reduced the Project compression to 23,000 hp in response to changes in customer need. On July 1, 2015, the Project capacity was further reduced to 132,705 Dth/d and the compression scope was increased to 29,630 hp. The Applicants have further refined the compression scope of the Project since the July 1, 2015 Pre-filing draft resource reports and now propose a total increase of 26,500 hp for the 132,705 Dth/d Project capacity described in the Certificate application.

Table 1.1-2 provides a side-by-side comparison of the compressor station facilities associated with the original 222,000 Dth/d Project scope, the previously modified 153,000 Dth/d scope, the currently proposed 132,705 Dth/d scope as of July 1, 2015, and the proposed 132,705 Dth/d scope as of the date hereof.

The scope of the metering and regulating ("M&R") station facilities has also been slightly modified during the Pre-filing process (*see* Table 1.1-2) between March 23, 2015 and July 1, 2015. During this period, Algonquin's Somers and Fall River M&R Stations were removed from the Project scope, and Maritimes' Westbrook M&R Station was added to the Project. No changes in the M&R station scope have been made since the July 1, 2015 Pre-filing resource reports. Table 1.1-2 provides a side-by-side comparison of the M&R station facilities associated with the previously proposed and current Project scopes.

TABLE 1.1-2

Atlantic Bridge Project Aboveground Facility Scope Changes during the Pre-Filing Period

Project Facility	March 23, 2015 Initial Scope 222,000 Dth/d	April 2, 2015 Previously Modified Scope 153,000 Dth/d	July 1, 2015 Previously Modified Scope 132,705 Dth/d	October 15, 2015 Proposed Project Scope 132,705 Dth/d
Compressor Stations				
Stony Point Compressor Station Stony Point, NY	Not part of initial scope	Not part of modified scope	Not part of modified scope	Uprate existing Mars 100 compressor unit to utilize an additional 3,300 horsepower ("hp") of constructed but uncertificated horsepower capacity.
Oxford Compressor Station Oxford, CT	Add Taurus 70 (10,915 hp) gas plus cooling	Add Taurus 60 (7,700 hp) gas plus cooling	Add Taurus 70 (10,915 hp) gas plus cooling	Add Taurus 60 (7,700 hp) gas plus cooling
Chaplin Compressor Station Chaplin, CT	• Add Taurus 60 (7,700 hp) gas plus cooling, • Replace two existing 42-parts per million (ppm") NOx Taurus 60 gas fired compressor units (6,950 hp each) with two new 9-ppm NOx Taurus 60 gas fired compressor units (7,700 hp each)	• Add Centaur 50 (6,100 hp) gas plus cooling, • Replace two existing 42-ppm NOx Taurus 60 gas fired compressor units (6,950 hp each) with two new 9-ppm NOx Taurus 60 gas fired compressor units (7,700 hp each)	• Add Centaur 50 (6,300 hp) gas plus cooling • Replace two existing 42-ppm NOx Taurus 60 gas fired compressor units (6,950 hp each) with two new 9-ppm NOx Taurus 60 gas fired compressor units (7,700 hp each)	No change
Weymouth Compressor Station Weymouth, MA	Taurus 70 (10,915 hp) gas plus cooling	Add Taurus 60 (7,700 hp) gas plus cooling	Taurus 70 (10,915 hp) gas plus cooling	Taurus 60 (7,700 hp) gas plus cooling
Total Compression Increase:	31,030 hp	23,000 hp	29,630 hp	**26,500 hp**
Metering and Regulating Stations				
Yorktown M&R Station, Yorktown, NY	Install over pressure protection ("OPP") facilities for existing station	No change	No change	No change
Somers M&R Station Somers, NY	Install OPP facilities for existing M&R station	Removed from scope	Not applicable ("N/A")	N/A
Danbury M&R Station Danbury, CT	Install OPP facilities for existing station	No change	No change	No change
Salem Pike M&R Station Norwich, CT	Construct new M&R station to replace existing	No change	No change	No change
Needham Regulator Station Needham, MA	Modify existing regulator station	No change	No change	No change
Pine Hills M&R Station Plymouth, MA	Rebuild existing M&R station	No change	No change	No change
Plymouth M&R Station Plymouth, MA	Rebuild existing M&R station	No change	No change	No change
Fall River M&R Station Fall River, MA	Not part of original scope	Rebuild existing M&R station	Removed from scope	N/A
Westbrook M&R Station, Westbrook, ME	Existing M&R station under evaluation	No change	Modifications at the existing Westbrook M&R Station	No change

1.2 Purpose and Need

The purpose of the Atlantic Bridge Project is to economically provide the pipeline capacity necessary for the transportation of significant and diverse natural gas supplies from a receipt point at Mahwah, New Jersey to the Project Shippers' delivery points primarily in Massachusetts, Maine, and at the United States ("U.S.") – Canadian border. The Project will provide additional capacity on the Algonquin system and facilitate south-to-north flow on the Maritimes system in order to provide additional gas supply to New England and the Maritime provinces of Canada.

Demand is growing in the Northeast for increased utilization of natural gas - an economic source of fuel that is domestically produced, clean-burning, and efficient. Demand in this region is expected to continue to increase as more homes and commercial buildings convert heating units and appliances to natural gas and as more natural gas is used for industrial purposes. In addition, expanded access to the Northeast natural gas markets is critical to alleviate capacity constraints that have resulted in natural gas prices that are historically higher than neighboring markets.

The Applicants held an open season for the Atlantic Bridge Project from February 5, 2014 through March 31, 2014 and held a reverse open season from January 16, 2015 through January 26, 2015 (collectively, the "Open Seasons"). As a result of the Open Seasons, the Applicants have executed precedent agreements with seven shippers, serving four local distribution companies ("LDCs"), two manufacturing companies, and a municipal utility (collectively, "Project Shippers"). These agreements are for firm transportation service to deliver new natural gas supplies to the Project Shippers', or a Project Shipper's customer's, service areas or for their end use, as applicable, with a projected in-service date of November 1, 2017. The Project Shippers are Heritage Gas Limited, Maine Natural Gas Company, NSTAR Gas Company d/b/a Eversource Energy, Exelon Generation Company, LLC (as assignee and asset manager of Summit Natural Gas of Maine), Irving Oil Terminal Operations Inc., New England NG Supply Limited, and Norwich Public Utilities.

The Atlantic Bridge Project is specifically designed and scheduled to satisfy the operational and load demands of the Project Shippers and, as applicable, their retail customers in New England and the Maritime provinces of Canada. Specifically, the Project will increase Algonquin's mainline capacity by up to an additional 132,705 Dth/d and facilitate south-to-north flow on the Maritimes system, enhancing access to traditional and new supply sources for the New England States and Atlantic Canada. The strategic receipt point at Mahwah, New Jersey provides additional access to growing supply areas in the Northeast, which should furnish the Northeast markets with additional economic supplies of natural gas. The increased pipeline capacity along a significant portion of Algonquin's mainline will also partially alleviate existing system constraints, resulting in increased commodity price competition and reduced gas price volatility. Placing the Project facilities in service by November 1, 2017 will allow the Applicants to meet their contractual commitments to provide service as described in the precedent agreements for the Project and enable the LDCs to meet increased peak demand at the beginning of the traditional heating season and satisfy the industrial needs of other Project Shippers.

ICF International anticipates that the demand for natural gas in New England will increase by 13.5 percent by 2020.[3] Similarly, a recent report prepared for the Massachusetts Department of Energy Resources ("MADOER") found that electric generators will have an insufficient supply of natural gas from 2015 through 2019, which will result in spiking natural gas prices. Scarcity-driven high natural gas prices will force economic curtailment of natural gas-fired generators in favor of oil-fired units. Critical to this result is the assumption that winter peak hour gas shortages cannot be addressed using known measures (e.g. renewable energy, demand response, or the addition of new natural gas pipeline) in years 2015 through

[3] ICF Natural Gas Market Compass, July 2013.

2019 and, as a result, gas prices are expected to reflect an out-of-balance market in those years. According to the MADOER report, the electric sector will respond to these high prices by shifting dispatch from gas to oil generation in the peak hours, reducing reliance on natural gas.[4] In order to alleviate these shortages by 2020, the report determines that an additional 600 to 800 million cubic feet of additional pipeline capacity will be required.[5]

In a Policy Statement issued on December 5, 2013, the New England Governors committed their six states to an energy initiative designed to bring affordable, cleaner, and more reliable power to homes and businesses across the region. The Governors' initiative intended to accelerate regional cooperation on expanding renewable energy and energy infrastructure in New England, including natural gas pipelines. In a joint statement, the Governors committed to more thoughtful and strategic investments focused on expanding the region's energy portfolio. The Governors believed that regional expansion will bring New England lower electricity and heating costs, increased economic development, competitiveness and job growth, and improved air quality through a reduction in air emissions from the burning of coal and fuel oils.

In February 2015, the Governors of Massachusetts, Connecticut, and Rhode Island agreed on a partnership in order to consider natural gas capacity options for their states and to explore new clean energy resources to address the region's high energy costs and demands. In Massachusetts, Governor Baker subsequently directed the MADOER to file a request with the Massachusetts Department of Public Utilities ("MADPU") to begin considering ways to pursue new natural gas contracts that could improve the reliability of gas supply to the region and lower winter electricity costs.[6] The MADPU subsequently opened an investigation into the means by which new natural gas delivery capacity could be added to the New England market, including actions to be taken by the electric distribution companies. The matter was docketed as D.P.U. 15-37. In a decision issued on October 2, 2015, the MADPU concluded that increasing regional gas capacity will lead to lower wholesale gas and electricity prices for Massachusetts ratepayers.

The New England Governors recently announced their collective support for investment in new natural gas infrastructure as part of their plans for addressing inadequate energy infrastructure in the region. In a joint statement dated April 23, 2015, the New England Governors explained that "New England is challenged by a lack of natural gas pipeline infrastructure and is losing non-gas power plants, both of which threaten power system reliability."[7] Accordingly, the Governors pledged their support for investing in "new natural gas infrastructure." The New England Governors also released a six-state action plan, in which the Governors advised "that the region's economy is limited by existing natural gas pipeline capacity" and expressed their support for "regional efforts to expand natural gas capacity in New England to address reliability risks to the electric system and price impacts on electric consumers during the winter period." [8]

In Maine, the 2013 Maine Omnibus Energy Bill addressed the need to expand natural gas transmission capacity into Maine to decrease prices of electricity and natural gas for consumers in the state.[9] To that end, the law authorizes the Maine Public Utility Commission to execute agreements for up to 200 million cubic feet of interstate pipeline capacity. More recently, Governor LePage of Maine filed a letter with the

4 Massachusetts Low Gas Demand Analysis; Final Report at 2-3, Synapse Energy Economics, Inc. (Jan. 7, 2015) available at http://synapse-energy.com/project/massachusetts-low-demand-analysis

5 *Id*.

6 http://www.mass.gov/governor/press-office/press-releases/clean-energy-rfp-and-dpu-docket-on-natural-gas-expansion.html

7 http://www.ct.gov/deep/cwp/view.asp?Q=564676&A=4707

8 *Id*.

9 An Act To Reduce Energy Costs, Increase Energy Efficiency, Promote Electric System Reliability and Protect the Environment, § 1903 (July 2, 2013).

Commission in Docket No. CP14-96-000 stating that the Atlantic Bridge Project "is particularly critical for Maine's economic strategy and [encouraging] FERC to consider [Maine's] support as the equivalent to a precedent agreement when considering the project's imminent FERC filing."[10] Attached to that letter was a letter sent by Governor LePage to Spectra Energy stating that the Atlantic Bridge Project is a "critical project for the future of Maine and the region."[11]

The Administrator of the U.S. Environmental Protection Agency ("USEPA") has also called for additional investment in natural gas pipeline infrastructure. At an energy industry conference hosted by Barclays on September 2, 2014, Administrator McCarthy stated, "This industry needs investment in infrastructure that values the industry the way that I think this administration values this industry."[12]

The Atlantic Bridge Project also advances President Obama's Climate Action Plan.[13] On June 25, 2013, President Obama outlined a series of executive branch actions to address climate change. The Climate Action Plan builds on previous commitments to reduce U.S. greenhouse gas emissions by 17 percent below 2005 levels by 2020 and is founded on the following three "pillars":

1. Reduce carbon emissions (with an emphasis on emissions from power plants);
2. Mitigate domestic impacts of climate change; and
3. Lead international efforts to address climate change.

President Obama's remarks on his Climate Action Plan frame natural gas as a cleaner, domestic energy source that can help in the transition to a lower carbon economy, while ensuring America's national security and supporting the economy and job creation. The Climate Action Plan encourages investment in building and upgrading natural gas pipelines to help further reduce methane emissions – acknowledging investment as a source of jobs and stimulus for the economy.

1.3 Location and Description of Project Facilities

On the Algonquin system, the Project includes the construction of approximately 6.3 miles of take-up and relay pipeline facilities, construction at two existing compressor stations, construction of a new compressor station, the uprate of existing horsepower at one existing compressor station, construction at four existing M&R stations, construction at one existing regulator station, and construction of one new M&R station. These proposed Project facilities are located in New York, Connecticut, and Massachusetts. On the Maritimes system, the Project includes construction at one existing M&R station in Maine.

The proposed Project facilities are designed to create up to 132,705 Dth/d of additional firm natural gas transportation capacity from Algonquin's Mahwah interconnection to the delivery points requested by the Project Shippers while continuing to meet the contractual obligations of its existing customers. The maximum design capacity of the expanded Algonquin system will increase from approximately 3.0 to 3.1 billion cubic feet per day. The capacity of the Maritimes system will not change with the Atlantic Bridge Project.

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10 Letter to Chairman LeFleur dated September 23, 2014 at 2, Docket No. CP14-96-000 (filed September 25, 2014); see also Letter to Chairman LeFleur dated May 7, 2014, Docket No. CP14-96-000 (filed May 8, 2014) (stating that the "lack of gas infrastructure … is exacerbating already high business energy costs" and requesting the support of FERC to expand pipeline capacity in New England).

11 *Id*. at 3.

12 Bryan Schutt, *McCarthy Outlines EPA Methane Emissions Plans, Notes Delay in Fracking Study*, SNL DAILY GAS REPORT, Sept. 3, 2014., *available at* 2014 WLNR 24902152.

13 Available at: http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf.

The transportation path for the Atlantic Bridge Project encompasses a substantial portion of the Algonquin system from its receipt point at Mahwah, New Jersey, near the western end of the system, to Beverly, Massachusetts, near the eastern end, as well as a substantial portion of the Maritimes system. Given this path for the incremental capacity, additional facilities are required on both systems. The facilities proposed herein are a combination of increased compression and replacement of existing pipelines on the Algonquin system and piping modifications on the Maritimes system. The Atlantic Bridge Project will utilize, to the maximum extent feasible, existing facilities and existing right-of-way ("ROW") along the Algonquin and Maritimes systems.

A discussion of the proposed Project pipelines and aboveground facilities follows.

1.3.1 Pipeline Facilities

The proposed Atlantic Bridge Project includes approximately 6.3 miles of 42-inch diameter take-up and relay pipeline (*see* Table 1.3-1) in New York and Connecticut. Algonquin will install approximately 4.0 miles of new pipeline in the Towns of Yorktown and Somers in Westchester County, New York and 2.3 miles of pipeline in the City of Danbury, Fairfield County, Connecticut.

Construction of the take-up and relay pipe segments will occur within a portion of the existing Algonquin permanent pipeline ROWs. The take-up and relay work involves excavating a trench to remove (take-up) the existing 26-inch diameter pipe. Once the existing pipe is removed, the trench is re-excavated wider and deeper (as appropriate) to accommodate the new, larger 42-inch diameter pipe (relay). The replacement pipe will be installed at approximately the same location as the old pipe in the existing Algonquin ROW. However, minor field adjustments may be needed during construction based on site conditions.

Table 1.3-1 identifies the proposed Project pipelines and their approximate crossing lengths and pipe sizes. The locations of the pipelines are shown on the U.S. Geological Survey ("USGS") Quadrangle excerpts provided in Appendix 1A. Route variations along the proposed pipeline route are discussed in Resource Report 10.

TABLE 1.3-1

Atlantic Bridge Project Pipeline Facilities

Facility Name	Length of Proposed Facilities (miles)	Existing Pipe Removal (diameter)	New/ Replacement Pipe (diameter)	Maximum Allowable Operating Pressure (psig) a/	County, State (length in miles)	Municipalities (length in miles)
New York						
Stony Point Discharge Take-up and Relay	4.0	26-inch	42-inch	850	Westchester County, NY (4.0 Miles)	Yorktown (3.5 Miles) Somers (0.5 Miles)
Connecticut						
Southeast Discharge Take-up and Relay	2.3	26-inch	42-inch	850	Fairfield County, CT (2.3 Miles)	Danbury (2.3 Miles)
PROJECT TOTAL:	**6.3**					

a/ pounds per square inch gauge ("psig")

1.3.1.1 Stony Point Discharge Take-up and Relay – New York

Algonquin will take-up and relay approximately 4.0 miles of the 26-inch diameter mainline pipeline with 42-inch diameter pipeline through the Towns of Yorktown and Somers in Westchester County, New York (*Stony Point Discharge Take-up and Relay*). The take-up and relay segment will begin at mainline valve ("MLV") 15B located west of Stony Street in the Town of Yorktown (MP 0.0). From this point, the pipeline will extend north-northeast across the Taconic State Parkway, Woodlands Legacy Fields Park, Old Yorktown Road (State Route 132), Quinlan Street, Gomer Street, Tulip Drive, Willow Park, and Curry Street before entering the Town of Somers at MP 3.5. The pipeline will continue through Somers for approximately 0.5 mile to its terminus at MP 4.0, located south of Route 6 and west of the Muscoot River. The maximum allowable operating pressure of the 42-inch diameter pipeline will be 850 pounds per square inch gauge ("psig").

1.3.1.2 Southeast Discharge Take-up and Relay - Connecticut

Algonquin will take-up and relay approximately 2.3 miles of the 26-inch diameter mainline pipeline with 42-inch diameter pipeline in the City of Danbury in Fairfield County, Connecticut (*Southeast Discharge Take-up and Relay*). The take-up and relay work for this segment will begin at Algonquin's existing MLV 19 (MP 0.0) located approximately 180 feet east of State Route 39. From there, the pipeline will extend to the east through residential areas along Maple Ridge Road and Berkshire Drive before crossing Padanaram Brook and Route 37 (Padanaram Road). Following the Route 37 crossing, the pipeline will extend through parking lots associated with a commercial shopping development and additional residential areas along Oak Lane and Haddy Lane before intersecting with the existing Danbury M&R Station at East Pembroke Road. The pipeline will continue east across East Hayestown Road before heading southeast through another residential (condominium) area off of Glen Hill Road. As the pipeline approaches Interstate 84, it will change direction to the east maintaining a parallel configuration with the northern shoulder of the highway along Apple Blossom Lane and Carolyn Avenue. The take-up and relay segment will then cross Great Plain Road and Rockwell Road before terminating at MP 2.3 in Danbury. The maximum allowable operating pressure of the 42-inch diameter pipeline will be 850 psig.

1.3.1.3 Construction and Permanent Easements

Algonquin's construction ROW width for the Stony Point Discharge Take-up and Relay varies depending on the location along the pipeline. For example, in the area between Stony Street and the Taconic State Parkway horizontal directional drill ("HDD") site, Algonquin is proposing a construction ROW width of over 100 feet to accommodate the required HDD workspace in this area. However, further to the east after the crossing of Route 132, Algonquin has limited the proposed construction ROW width generally to 75 – 85 feet to minimize impacts in residential neighborhoods and the Croton Watershed. In most cases, Algonquin's proposed construction ROW width is greater than the FERC's standard construction ROW width of 75 feet. Algonquin needs this greater construction workspace width to permit the safe passage of equipment and materials associated with the construction of larger diameter pipeline (i.e., 42-inch diameter). Accordingly, Algonquin is requesting a modification of the FERC Plan (IV.A.2) to allow for this wider construction ROW. In most areas, the proposed construction ROW overlaps with a portion of Algonquin's existing 75-foot wide permanent pipeline ROW.

Algonquin's nominal construction workspace ROW width for the Southeast Discharge Take-up and Relay is 100 feet. The nominal 100-foot ROW width does not include special crossing areas such as wetlands, waterbodies, and residential areas where other construction ROW widths are employed. In most areas, the Southeast Discharge Take-up and Relay construction ROW width is greater than the FERC's standard construction ROW width of 75 feet. Again, the reason for this is the need for a larger construction

workspace width to permit the safe passage of equipment and materials associated with the construction of larger diameter pipeline (i.e., 42-inch diameter).

Algonquin also proposes three areas of new permanent ROW along the take-up and relay portions of the Project. One area of new permanent ROW is associated with the proposed HDD crossing of the Taconic State Parkway from MP 0.4 to MP 0.9 along the Stony Point Discharge Take-up and Relay. The proposed 42-inch diameter pipe will be routed outside of the existing permanent ROW in this area to facilitate the HDD pipeline crossing. Algonquin is seeking a new 10-foot wide permanent easement along the HDD alignment.

The second location of new permanent ROW is located at MP 0.5 on the Southeast Discharge Take-up and Relay. This small area of new permanent easement (approximately 1,400 square feet) is needed for the 42-inch diameter pipeline crossing of Padanaram Road (Route 37) in Danbury. The third location of new permanent ROW is located at MP 4.0 on the Southeast Discharge Take-up and Relay. This area of permanent ROW is needed for the new aboveground launcher and receiver facility that will be constructed at the end of the pipeline segment (MP 4.0).

1.3.1.4 Pipeline Construction Workspace Modifications

During the Pre-filing scoping period, the FERC requested that Algonquin review and implement a number of workspace reductions and adjustments to minimize impacts on residences and commercial properties along the pipeline alignments in New York and Connecticut. In response, Algonquin conducted a review of the entire pipeline route and addressed the FERC's requested changes as summarized in Table 1.3-2.

TABLE 1.3-2

Pipeline Construction Workspace Modifications

Alignment Sheet Number	FERC Comments from Scoping Site Visits	Algonquin Response
Stony Point Discharge Take-up and Relay		
A-1007	Justify workspaces along Maple Brook Court (MP1.4). Large wooded area with steep slope and local electric line. If needed, provide a tree planting and revegetation plan with more mature trees than typical saplings.	Workspace has been reduced at this location.
A-1007	Review and justify workspace angles in-street for crossing of Maple Brook Court.	Transition for change in working sides.
A-1007	Address landowner tree comment (231 Mallard Court).	Workspace limit is same as permanent easement.
A-1008	Justify extra workspace outside of 75' in wetlands.	Post-construction travel lane to access residential areas as required for spring cleanup activities without having to disturb the wetland a second time.
A-1008	Flare workspace by home (MP 1.7) to not box it in.	Workspace has been reduced at this location.
A-1010	Neck down to remove impacts to driveway off Quinlan Street (MP 2.1).	Workspace has been modified at this location.
A-1011	Plan for maintaining access to cul-de-sac.	Access will be maintained to this cul-de-sac.
A-1012	Try to keep Japanese Maples (2) at MP 2.8. Flare workspaces to avoid boxing in houses. Identify the "pad" structure at house with Japanese Maples (shed/foundation/planter?).	One tree is inside permanent easement and must be removed. The workspace has been "flared" and reduced as requested.

TABLE 1.3-2 Pipeline Construction Workspace Modifications		
Alignment Sheet Number	**FERC Comments from Scoping Site Visits**	**Algonquin Response**
A-1013	Prepare site specific plan for construction within park/pond including construction method across pond (dewatering?) timeframe for construction and revegetation.	Algonquin has implemented a reroute to avoid trenching within Willow Pond.
A-1018	Remove eastern portion of workspace that extends into wetland past the end of the pipeline or justify the need for the extra space.	Algonquin has removed this workspace.
	Rectify MP #s (3 different MP 4.0 appear on maps).	The applicable drawings have been corrected.
Southeast Discharge Take-up and Relay		
A-1000	Clarify/justify northwest corner of large workspace (appears to be large trees). If trees and not shrub, justify need for this portion of the space and extra tree clearing.	The vegetation in this workspace area is composed of shrubs.
A-1001 and 1002	Access plan for Maple Ridge Road and Berkshire Drive. Identify construction methods (stove pipe/drag/in street), repaving plans, safety fencing *etc.* Review potential for HDD in this area or provide a site specific plan.	Stove-pipe and in-street construction methods will be used in this area. Streets will be restored per City of Danbury specifications. HDD not feasible due to lack of suitable geometry (see Resource Report 10 for additional details).
A-1003	Access/supplemental parking for diner parking and business (F-48.01) across the street. Consider alignment shift in this area across the street.	Cannot shift alignment without negatively impacting other landowners.
A-1003	Justify workspace within street (Padanaram Road).	Workspace within Padanaram Road has been reduced.
A-1004	Flare workspaces around house (F52.A.3.01) and justify this extra workspace when a large workspace F-52/A-1004A) exists nearby.	Workspace has been reduced at this location.
A-1005	Flare workspaces around house (F-56) and Apple Blossom Drive access.	Workspace has been reduced at this location.
A-1006	Flare workspaces around condos and assisted living building.	Workspace has been modified at this location.
A-1007	Access for Apple Blossom Drive and Circle Drive West.	This area will be constructed utilizing the stove-pipe construction technique. Traffic will be detoured around work area as required.
A-1008	Access for Carolyn Ave and Great Plain Road.	This area will be constructed utilizing the stove-pipe construction technique. Traffic will be detoured around work area as required.
A-1010	Remove eastern portion of workspace that extends into wetland past the end of the pipeline or justify the need for the extra space.	The end point of the Southeast Discharge Take-up and Relay has been extended and the workspace has been modified at MP 2.3 to support the proposed pig launcher and receiver, regulator skids, and block valve.

In addition to the FERC's requested changes, Algonquin also implemented a number of other workspace modifications in New York to address specific construction concerns. The most significant changes occurred in the following locations:

- Algonquin needed to expand the construction workspace in the pipeline segment located east of Stony Street and west of the Taconic State Parkway HDD workspace between MP 0.1 to 0.4 on the southern and northern edges of the ROW. This change was necessary to accommodate the HDD pipeline pullback with the intent of limiting the number of pipe strings needed to complete the drill.
- Algonquin reduced the construction workspace area in nine different locations along the Stony Point Discharge Take-up and Relay starting at the Maple Brook Court area (MP 1.5) and running all the way to the end of the pipeline (MP 4.0). This reduction was made possible through the proposed use of the drag section/stove-pipe construction method throughout this area. As a result, the standard construction ROW width in these areas has been reduced to generally 75 feet to 85 feet.
    - MP 1.5 – 1.6 (Maple Brook Court)
    - MP 1.75 – 2.15 (Challinor Drive to Quinlan Street)
    - MP 2.2 (Quinlan Street)
    - MP 2.3 – 2.75 (Gomer Street)
    - MP 2.8
    - MP 2.85 – 3.0 (Katrina Drive to Tulip Drive)
    - MP 3.1 – 3.45 (Curry Street)
    - MP 3.5 – 3.9
    - MP 3.95 – 4.0

1.3.2 Aboveground Facilities

The proposed Atlantic Bridge Project aboveground facilities include modifications at three existing compressor stations, five existing M&R stations, and one existing regulator station, as well as the construction of one new compressor station and one new M&R station. A summary of the Project aboveground facilities is provided in the sections below and in Table 1.3-3.

TABLE 1.3-3

Summary of Atlantic Bridge Project Aboveground Facilities

Algonquin Facility Name	Proposed Work Summary	Location (Municipality, County, State)
COMPRESSOR STATIONS		
Stony Point Compressor Station	Uprate existing Mars 100 compressor unit to utilize an additional 3,300 hp of constructed but uncertificated horsepower capacity.	Town of Stony Point, Rockland, New York
Connecticut		
Chaplin Compressor Station	Add Centaur 50 (6,300 hp) gas-fired compressor unit plus cooling to existing station Replace two existing 42-ppm NOx Taurus 60 gas-fired compressor units (6,950 hp each) with two new 9-ppm NOx Taurus 60 gas-fired compressor units (7,700 hp each)	Town of Chaplin, Windham, CT
Oxford Compressor Station	Add Taurus 60 (7,700 hp) gas-fired compressor units plus cooling facilities to existing station	Town of Oxford, New Haven, CT
Massachusetts		
Weymouth Compressor Station	Construct new compressor station with gas-fired Taurus 60 (7,700 hp) compressor unit and cooling facilities	Town of Weymouth, Norfolk, MA

TABLE 1.3-3 Summary of Atlantic Bridge Project Aboveground Facilities		
Algonquin Facility Name	**Proposed Work Summary**	**Location (Municipality, County, State)**
METERING AND REGULATING STATIONS		
New York		
Yorktown M&R Station	Install over pressure protection facilities for existing M&R station	Town of Yorktown, Westchester, NY
Connecticut		
Danbury M&R Station	Install over pressure protection facilities for existing M&R station	City of Danbury, Fairfield, CT
Salem Pike M&R Station	Construct new M&R station to replace existing	City of Norwich, New London, CT
Massachusetts		
Needham Regulator Station	Modify existing regulator station	Town of Needham, Norfolk, MA
Pine Hills M&R Station	Rebuild existing M&R station	Town of Plymouth, Plymouth, MA
Plymouth M&R Station	Rebuild existing M&R station	Town of Plymouth, Plymouth, MA
Maine		
Westbrook M&R Station	Modify existing M&R station	City of Westbrook, Cumberland, ME

1.3.2.1 Compressor Stations

The existing Algonquin system does not have adequate unsubscribed capacity to accommodate the additional capacity required by the Project Shippers. Accordingly, the Algonquin system requires additional compressors to transport the Project gas volumes. The Atlantic Bridge Project will add 26,500 hp of compression to the Algonquin system through modifications at two existing compressor stations in Connecticut and the construction of a new compressor station in Massachusetts. A summary of the compressor station activities for the Project is provided below.

Stony Point Compressor Station

Algonquin is proposing to uprate an existing Mars 100 compressor unit (Unit 7) at the Stony Point Compressor Station in New York to utilize an additional 3,300 hp of constructed and Clean Air Act-permitted, but yet uncertificated, horsepower of that unit. The uprate simply requires the removal of a software control, installed previously to limit the horsepower output to the Mars 90 level (12,600 hp). As a result, the uprate will not require any facility construction or ground disturbance, and there will be no additional impacts relating to such activities. The proposed uprate in this proceeding may result, however, in additional operational emissions due to the unit operating at a higher horsepower. Regardless, any air impacts associated with any such additional emissions have been previously addressed and accounted for, because the new unit was Clean Air Act-permitted at its fully rated horsepower when the unit was installed. Moreover, although the compressor unit was limited to the Mars 90 level when installed pursuant to Section 2.55(b) (Docket No. CP15-487), the environmental analysis completed for the Stony Point Compressor Station as part of the AIM Project certificate application and AIM Project authorization included the potential impacts of the Mars 100 compressor unit operating at its full horsepower capability (15,900 hp).[14]

[14] Emissions from Unit 7 are included in the Potential Operational Emissions for the Stony Point Compressor Station summarized in Table 4.11.1-7 of the AIM Project FEIS and are based on operating at maximum capacity, as are the modeling results presented in Table 4.11.1-14 of the FEIS. The air permit application materials, including the associated modeling, were provided during consideration of the AIM Project.

As a result, any additional emissions from the unit operating at a higher horsepower have already been considered by the FERC.

Oxford Compressor Station

Algonquin's existing Oxford Compressor Station is located along the Algonquin Mainline/Line 30B ROW in the Town of Oxford in New Haven County, Connecticut. The station site is accessed from Woodruff Hill Road and Prokop Road, which are both south of the station. The existing fenced compressor station footprint occupies approximately 9.1 acres within an approximately 77-acre parcel owned by Algonquin. The Oxford Compressor Station currently contains a compressor building housing three compressor units along with associated office/warehouse, auxiliary, fuel gas, garage, and products storage buildings. For the Atlantic Bridge Project, Algonquin proposes to install one new Solar Taurus 60 gas-fired compressor unit providing an additional 7,700 hp in a stand-alone building and an electrical controls building.

Chaplin Compressor Station

Algonquin's existing Chaplin Compressor Station is located along the Algonquin Mainline/Line 30B/Line 36B ROW in the Town of Chaplin in Windham County, Connecticut. The station site is accessed from Tower Hill Road, which lies to the northeast of the station. The existing fenced compressor station footprint occupies approximately 1.2 acres within an approximately 104-acre parcel owned by Algonquin. The Chaplin Compressor Station currently contains two compressor buildings (one housing two compressor units and the other a single unit in an expandable building) and an office/warehouse building. For the Atlantic Bridge Project, Algonquin proposes to install one new Centaur 50 gas-fired compressor unit providing an additional 6,300 hp in the expandable compressor building and an electrical controls building. Algonquin will also replace two existing 42-parts per million NOx Taurus 60 gas fired compressor units (6,950 hp each) with two new 9-parts per million NOx Taurus 60 gas fired compressor units (7,700 hp each).

Weymouth Compressor Station

Algonquin proposes to construct a new compressor station in the Town of Weymouth in Norfolk County, Massachusetts. The new Weymouth Compressor Station will be located on an approximately 16.2-acre parcel of land adjacent to the Fore River, a coastal waterbody. The station will be located in an area currently and formerly used for industrial activities. The Massachusetts Water Resources Authority sewage pumping station and sewage trunk line leading across the Fore River to the Deer Island Wastewater Treatment Facility is located to the north. South of the site (just south of Route 3A) is the 787-MW Calpine Fore River Energy Center, LLC electric generating facility, while Algonquin's existing M&R 00332 Station and I-10 gas pipeline are located to the west. The parcel for the proposed Weymouth Compressor Station was historically used for coal storage, coal unloading, and oil storage.

The new compressor station will interconnect with Algonquin's existing I-10 pipeline system located on the western portion of the property. Algonquin proposes to install one Solar Taurus 60 gas-fired compressor unit providing an additional 7,700 hp. The station will be fenced and is expected to occupy an approximately 4.3-acre footprint within the 16.2-acre parcel. The property will be accessed from Bridge Street (Route 3A) via a driveway off the power plant loop road and the Massachusetts Water Resources Authority access road.

The locations of the three compressor station sites are shown on the USGS Quadrangle excerpts provided in Appendix 1A.

1.3.2.2 M&R Stations

Modifications to Existing M&R Stations

The Atlantic Bridge Project will include modifications to four existing Algonquin M&R stations, one existing Algonquin regulator station, and one existing Maritimes M&R station to accept the new gas flows associated with the Project (*see* Table 1.3-3). These stations include:

- Yorktown M&R Station, Yorktown, NY;
- Danbury M&R Station, Danbury, CT;
- Plymouth M&R Station, Plymouth, MA;
- Pine Hills M&R Station, Plymouth, MA;
- Needham Regulator Station, Needham, MA; and
- Westbrook M&R Station, Westbrook, ME.

Modification work at the existing stations will include replacing existing heaters, piping, and metering and regulating facilities, installing over-pressure protection facilities, and facility uprates. This new equipment will be located within the existing fenced station sites and will not require any expansion of the stations. In most cases, the Applicants will also need to use open land immediately surrounding the stations as temporary workspace during the work on the M&R stations. The M&R and regulator station locations are shown on the USGS Quadrangle excerpts provided in Appendix 1A.

In addition to the stations shown in Table 1.3-3, the Atlantic Bridge Project will also increase gas flow to two existing Algonquin M&R stations located in Massachusetts (Assonet M&R Station and Mystic M&R Station). However, this increase in gas flow will not require any station modifications, and no pressure testing or uprating will be required at these M&R stations. Therefore, they have not been included in Table 1.3-3 and are not described in any of the Environmental Reports.

Replacement of Existing M&R Station

The Atlantic Bridge Project also includes the replacement of one existing Algonquin M&R station with a new station in the City of Norwich in New London County, Connecticut. Based on design and operational considerations, the existing Salem Pike M&R Station must be completely rebuilt at a new, nearby location to accept the new gas flows associated with the Project. The new proposed station site is located approximately 300 feet from the existing Salem Pike M&R Station directly across Briar Hill Road on Algonquin's E-3 Lateral System. The parcel where the new M&R station will be located is owned by Norwich Public Utilities ("NPU"), which is one of the Project Shippers.

The existing Salem Pike M&R Station is limited in flow by the existing 2-inch and 4-inch station piping, which is sized for approximately 138,000 standard cubic feet per hour ("SCFH"). NPU is seeking to achieve up to 263,000 SCFH with the build-out of the Atlantic Bridge Project. Algonquin and NPU have determined that the current station site is inadequate to install the equipment required to reach up to 263,000 SCFH and that a new station site is needed. The existing station is built on the same footprint as the Algonquin mainlines so it severely limits siting options inside the current footprint for installing the necessary upgrades. Additionally, NPU's system planning requires uninterruptable service to the Salem Pike M&R Station, so the existing station cannot be taken out of service to install the necessary upgrades. This issue is addressed by keeping the existing station in-service to maintain the existing flow while the new station is being constructed to achieve NPU's higher requested volume.

Given that a new station site is necessary, the best option for Algonquin and NPU is to construct the new site directly across the street from the existing station on NPU-owned property. The proximity of the proposed station site will minimize the need for additional piping and station infrastructure. Once the new station is constructed and in-service, the existing station will be demolished.

The location of the new M&R station is shown on the USGS Quadrangle excerpts provided in Appendix 1A.

1.3.2.3 Additional Aboveground Facilities

As part of the Project, Algonquin will modify facilities at existing MLV sites and "pig"[15] launcher and receiver sites, as well as construct new launcher and receiver sites within the Project pipeline permanent ROWs. These facilities are identified and described in Table 1.3-4, and their locations are shown on the USGS Quadrangle excerpts provided in Appendix 1A. Algonquin will install these facilities along the proposed pipeline and within areas disturbed by pipeline construction and the permanent operational ROW.

At the eastern end of the Stony Point Discharge Take-up and Relay (MP 4.0), Algonquin will install the relocated 42-inch receiver and 26-inch launcher, a new 30-inch block valve and crossover piping, and the relocated regulator skids. This equipment will be installed on a fenced-in gravel pad that will be located within Algonquin's existing 75-foot permanent ROW and on Algonquin-owned property located directly adjacent and south of the pipeline ROW. The total fenced-in, gravel pad area will be approximately 0.64-acre in size and is shown on drawing Ston-G-1020 in Appendix 1A.

Algonquin will also be installing the relocated 42-inch pig receiver, 26-inch pig launcher, and regulator skids and a new 30-inch block valve and crossover piping at the terminus of the Southeast Discharge Take-up and Relay at MP 2.3. This equipment will be located within a new fenced-in area on a gravel pad that overlaps Algonquin's existing permanent easement. The fenced-in graveled area will be approximately 0.84-acre in size. Algonquin will be obtaining additional property at this location to site the facility outside of the permanent ROW.

TABLE 1.3-4

Summary of Atlantic Bridge Project Additional Aboveground Facilities

Milepost Location	Proposed Work Summary	Municipality/County/ State
NEW YORK		
Stony Point Discharge Take-up and Relay		
0.0	• Remove and relocate existing 42-inch receiver, 26-inch launcher, and two regulator skids • Remove and retire cross-over piping	Town of Yorktown, Westchester County, NY
2.7	• Yorktown M&R Station - Install side tap off of new 42-inch diameter pipeline to replace the 26-inch line tap that is being removed as part of the Project	Town of Yorktown, Westchester County, NY
2.75	• Install new 42-inch MLV and cross-over assembly at existing valve site 16-1	Town of Yorktown, Westchester County, NY
4.0	• Install relocated 42-inch receiver and 26-inch launcher • Install new 30-inch block valve on Line 30B and crossover piping • Install relocated regulator skids	Town of Somers Westchester County, NY

[15] A pipeline "pig" is a device to clean or inspect the pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted into or retrieved from the pipeline.

TABLE 1.3-4 Summary of Atlantic Bridge Project Additional Aboveground Facilities		
Milepost Location	**Proposed Work Summary**	**Municipality/County/ State**
CONNECTICUT		
Southeast Discharge Take-up and Relay		
0.0	• Remove and relocate existing 42-inch receiver and 26-inch launcher and two regulator skids • Remove and retire cross-over piping	City of Danbury Fairfield County, CT
1.0	• Danbury M&R Station - Install side tap off of new 42-inch diameter pipeline to replace the 26-inch line tap that is being removed as part of the Project	City of Danbury Fairfield County, CT
2.3	• Install relocated 42-inch receiver and 26-inch launcher and regulator skids • Install new 30-inch block valve on L30B and crossover piping	City of Danbury Fairfield County, CT

1.4 Project Land Requirements

The Atlantic Bridge Project will temporarily disturb 122.7 acres of land during construction of the proposed facilities, including 81.5 acres for the pipeline facilities, 34.3 acres for the compressor stations, and 6.9 acres for the M&R stations. Following the completion of construction, approximately 8.0 acres of new land will be permanently maintained for operations and maintenance ("O&M") of the Atlantic Bridge Project facilities. This amount includes approximately 1.3 acres of new land permanently affected for the new pipeline ROW, 6.4 acres of new land permanently affected for the compressor stations and 0.3 acre of land for the M&R stations.

Pipeline land requirements are discussed in Section 1.4.1, land requirements for the aboveground facilities are discussed in Section 1.4.2, and land requirements for access roads are discussed in Section 1.4.3.

1.4.1 Pipeline Land Requirements

Table 1.4-1 identifies the estimated land requirements for pipeline construction and O&M.

TABLE 1.4-1 Land Requirements for the Atlantic Bridge Project Pipeline Facilities				
Facility	**Length (miles)**	**Nominal Construction ROW Width (feet) a/**	**Land Affected Temporarily During Construction (acres) b/**	**New Land Affected Permanently For O&M (acres) c/**
NEW YORK				
Stony Point Discharge Take-up and Relay	4.0	100	50.6	0.34
CONNECTICUT				
Southeast Discharge Take-up and Relay	2.3	100	30.9	1.0
PROJECT TOTAL e/:	**6.3**		81.5 d/	1.34 d/

TABLE 1.4-1

Land Requirements for the Atlantic Bridge Project Pipeline Facilities

Facility	Length (miles)	Nominal Construction ROW Width (feet) a/	Land Affected Temporarily During Construction (acres) b/	New Land Affected Permanently For O&M (acres) c/

a/ The construction ROW width represents the typical width for each pipeline segment. These widths do not reflect special crossings such as wetlands and residential areas.
b/ The acreage shown consists of all construction workspace as proposed including the existing permanent ROW and the new land area that will be permanently affected by O&M.
c/ The acreage shown includes only the new permanent ROW, not the existing permanent easement.
d/ This includes the new 10-foot wide permanent ROW along the Stony Point Discharge Take-up and Relay Taconic State Parkway HDD in New York and the two areas of new permanent easement on the Southeast Discharge Take-up and Relay in Connecticut.
e/ Minor discrepancies in totals are due to rounding.

1.4.1.1 Collocation with Existing Corridors

All of the proposed Atlantic Bridge Project pipeline facilities will be located within or adjacent to existing easements and corridors including Algonquin's pipeline ROWs and public roadways. Table 1.4-2 identifies locations by MP where the Project pipeline segments will be collocated with existing ROWs, the extent of overlap with existing ROWs, and the general distance and direction of the proposed pipeline from the existing facility.

TABLE 1.4-2

Pipeline ROW Orientation Table

Municipality	MP Start	MP End	Length Adjacent to or Within Existing ROW (miles)	Overlap of Proposed Project Area with Existing ROW	Existing Adjacent Facility ROW	General Distance and Direction of Proposed Pipeline to Existing Facility
NEW YORK						
Stony Point Discharge Take-up and Relay, Westchester County (4.0 miles)						
Yorktown	0.0	0.4	0.4	55 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; North/Northwest
Yorktown	0.4	0.9	-	-	Taconic Parkway HDD Crossing ***a/***	-
Yorktown	0.9	1.2	0.3	55 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; Northwest
Yorktown	1.2	1.4	0.2	55 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; North/Northwest
					Strang Boulevard	58 feet; South/Southeast
Yorktown	1.4	1.6	0.2	55 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; North/Northwest
					Maple Brook Court	42 feet; South/Southeast
Yorktown	1.6	3.0	1.9	55 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; North/Northwest
Yorktown	3.0	3.1 ***b/***	-	-	Algonquin Mainline	32-52 feet; Southeast

TABLE 1.4-2

Pipeline ROW Orientation Table

Municipality	MP Start	MP End	Length Adjacent to or Within Existing ROW (miles)	Overlap of Proposed Project Area with Existing ROW	Existing Adjacent Facility ROW	General Distance and Direction of Proposed Pipeline to Existing Facility
					Algonquin L30B	10-28 feet; Southeast
					Tulip Drive	0-35 feet; Northwest
Somers	3.1	4.0	0.5	65 feet	Algonquin Mainline	N/A
					Algonquin L30B	22 feet; South/Southeast/East
CONNECTICUT						
Southeast Discharge Take-up and Relay, Fairfield County (2.3 miles)						
Danbury	0.0	0.2	0.2	50 feet	Algonquin Mainline	N/A
					Maple Ridge Road	18 feet; Northwest
Danbury	0.2	0.5	0.3	50 feet	Algonquin Mainline	N/A
					Berkshire Drive	13 feet; North
Danbury	0.5	0.8	0.3	50 feet	Algonquin Mainline	N/A
Danbury	0.8	1.5	0.7	50 feet	Algonquin Mainline	N/A
					Algonquin L30B	13-25 feet; Northwest/North/East
Danbury	1.5	1.6	0.1	75 feet	Algonquin Mainline	N/A
					Algonquin L30B	18 feet; South
					Apple Blossom Lane	44 feet; South
Danbury	1.6	1.7	0.1	75 feet	Algonquin Mainline	N/A
					Algonquin L30B	18 feet; South/Southeast
					Circle Drive West	44 feet; South/Southeast
Danbury	1.7	1.9	0.2	62-75 feet	Algonquin Mainline	N/A
					Algonquin L30B	18-30 feet; South/Southeast
					Carolyn Avenue	50-68 feet; South/Southeast
Danbury	1.9	2.3	0.4	50 feet	Algonquin Mainline	N/A
					Algonquin L30B	18-25 feet; North/Northwest

a/ This segment of pipeline (0.5 mile) is located along a greenfield alignment and will be abandoned due to the HDD crossing of the Taconic State Parkway.

b/ This segment of pipeline (0.1 mile) is a variation from the existing pipeline route. The existing pipeline will be abandoned to avoid construction workspace within the pond located at MP 3.03.

1.4.1.2 Additional Temporary Workspace

Algonquin has identified additional temporary workspace ("ATWS") and staging areas that are required to construct the pipeline in a safe and environmentally responsible manner. The locations of the proposed ATWS and staging areas are depicted on the Alignment Sheets in Appendix 1A. An ATWS is typically required when any of the following conditions are encountered:

- Utility crossovers and existing pipeline crossovers;
- Wetland crossings;
- River/stream crossings;
- Topsoil segregation;

- Extra depth trench required;
- Shallow bedrock along location of trench;
- Road crossings;
- Parking areas;
- Disposal of excess blast rock;
- Severe side slopes and vertical slopes;
- Spread move-arounds; and
- Other site-specific constraints.

The extent of ATWS is determined on a site-specific basis. The additional work area is restricted to the minimum size necessary to safely construct the pipeline. In the case of wetlands and waterbodies, Algonquin has attempted to locate the ATWS in accordance with the setback requirements contained in the FERC *Wetland and Waterbody Construction and Mitigation Procedures, May 2013 Version* ("FERC Procedures") and in consultation with other federal and state agencies. Algonquin has, however, identified some areas where setbacks from wetlands and waterbodies cannot be maintained due to site-specific construction constraints. The purpose and justifications for each of these locations is provided in Table 2F-1 of Resource Report 2. A complete list of ATWS is provided in Table 8B-1 of Resource Report 8.

1.4.2 Aboveground Facility Land Requirements

The Atlantic Bridge Project will use approximately 41.2 acres of temporary workspace for the construction activities associated with the compressor station and M&R station facilities, and approximately 6.7 acres of new land will be permanently maintained for operations. With the exception of the Weymouth Compressor Station and Salem Pike M&R Station, all of the land impacted by construction of the compressor station and M&R station facilities is currently owned, leased, or under agreement to Algonquin or Maritimes. The aboveground facilities are described in more detail in the following section. There are no land requirements for the proposed horsepower uprate at the Stony Point Compressor Station.

Oxford Compressor Station

Algonquin will use approximately 13.7 acres of temporary workspace to modify the Oxford Compressor Station. Temporary workspace areas include the existing developed station yards and access roads, as well as some open land and wooded areas immediately surrounding the developed station site within Algonquin's property. Approximately 7.4 acres of this construction workspace will be located within the existing fence line of the facility, and the remaining 6.3 acres will be located outside of the existing fence line. Following construction, the existing, developed station footprint will be expanded by approximately 1.2 acres for O&M.

Chaplin Compressor Station

Algonquin will use approximately 10.6 acres of temporary workspace to modify the Chaplin Compressor Station. Temporary workspace areas include the existing developed station yards and access roads, as well as some open land immediately surrounding the developed station site within Algonquin's property. The entire fenced-in facility (approximately 1.2 acres) will be used as temporary workspace during construction. Following construction, the existing, developed station footprint will be expanded by approximately 0.9 acre for O&M.

Weymouth Compressor Station

Algonquin is in the process of securing approximately 16.2 acres of industrial land for the Weymouth Compressor Station. Approximately 10.0 acres of this property will be used during construction, and approximately 4.3 acres of the parcel will be permanently fenced for operation of the compressor station. The site is currently open land, and no tree clearing is proposed. The property will be accessed from Bridge Street (Route 3A) via a driveway off the power plant loop road and Massachusetts Water Resources Authority access road.

M&R Stations

The Applicants will use approximately 6.9 acres of temporary workspace during construction at the existing and new M&R stations and regulator station. For the existing M&R stations, Algonquin will use the developed station yards, and in some cases, adjacent pipeline ROWs, and open land will be used for temporary workspace. Approximately 2.9 acres of this temporary workspace area is located within the fence line or permanent structure at these existing stations. Approximately 0.3 acre of new land will be permanently affected as part of the operation of the new Salem Pike M&R Station.

Table 1.4-3 summarizes the land requirements for existing and new aboveground facilities where changes will occur.

TABLE 1.4-3

Land Requirements for the Atlantic Bridge Project Aboveground Facilities

Facility Name	Existing Property Size (acres)	Total Land Area Temporarily Affected During Construction (acres) a/	Temporary Construction Workspace Area Located within Existing Fence Line (acres)	New Land Permanently Affected For O&M (acres) a/
COMPRESSOR STATIONS				
Connecticut				
Oxford Compressor Station (existing)	77	13.7	7.4	1.2
Chaplin Compressor Station (existing)	104	10.6	1.2	0.9
Massachusetts				
Weymouth Compressor Station (new)	16.2	10.0	--	4.3
Subtotal b/:		**34.3**	**8.6**	**6.4**
M&R STATIONS				
New York				
Yorktown M&R Station (existing)	0.5	0.9	0.1	0.0
Connecticut				
Danbury M&R Station (existing)	0.2	0.9	0.1	0.0
Salem Pike M&R Station (new)	1.4	1.3	0.3	0.3
Massachusetts				
Needham Regulator Station (existing)	1.0	0.3	0.3	0.0
Pine Hills M&R Station (existing)	9.8	1.0	0.6	0.0

TABLE 1.4-3 Land Requirements for the Atlantic Bridge Project Aboveground Facilities				
Facility Name	**Existing Property Size (acres)**	**Total Land Area Temporarily Affected During Construction (acres) a/**	**Temporary Construction Workspace Area Located within Existing Fence Line (acres)**	**New Land Permanently Affected For O&M (acres) a/**
Plymouth M&R Station (existing)	0.4	1.1	0.2	0.0
Maine				
Westbrook M&R Station (existing)	4.8	1.4	1.34	0.0
Subtotal b/:		**6.9**	**2.9**	**0.3**
PROJECT TOTAL b/		**41.2**	**12.0**	**6.7**

a/ This table does not include affected land calculations for valves and receiver and launcher facilities that will be constructed on the pipelines because the land requirements for the valves are within the land requirements for the pipeline facilities shown in Table 1.4-1.
b/ Minor discrepancies in totals are due to rounding.

Additional Aboveground Facilities

The proposed launcher and receiver site at MP 4.0 on the Stony Point Discharge Take-up and Relay will be installed on a fenced-in gravel pad that will be located within Algonquin's existing 75-foot permanent ROW and on Algonquin-owned property located directly adjacent to and south of the pipeline ROW. The total fenced-in, gravel pad area will be approximately 0.64-acre in size. No additional permanent easement is required as this facility will be located within the existing pipeline easement and on Algonquin-owned property.

The proposed launcher and receiver site at the terminus of the Southeast Discharge Take-up and Relay (MP 2.3) will also be located within a new fenced-in area on a gravel pad that overlaps Algonquin's existing 75-foot wide permanent easement. The fenced-in graveled area will be approximately 0.84-acre in size, and Algonquin will be obtaining additional property at this location to site the facility outside of the permanent ROW. This area is included as part of the land impact area reported in Table 1.4-1 for the Southeast Discharge Take-up and Relay pipeline.

1.4.3 Access Roads

To the extent feasible, existing public and private roads along the proposed Atlantic Bridge Project routes will be used as the primary means of accessing pipeline ROWs and aboveground facilities. In addition to the existing access available by the use of public roads, the Applicants have identified five permanent access roads ("PARs") that will be used for access on the Atlantic Bridge Project. With one exception, all of these access roads are existing roads comprised of paved roads and access ways, gravel roads, and unimproved dirt roads (*see* Table 1.4-4). The exception is PAR 3.35, which will consist of a minor extension off an existing dead end residential road to access the ROW.

Although Algonquin will use existing roads for permanent and temporary access, four of the five roads will require minor upgrades and/or widening (by 10 to 20 feet) for use during pipeline construction.

TABLE 1.4-4

Proposed Access Roads for the Atlantic Bridge Project

Access Road Name a/	Municipality	Approx. MP	Permanent or Temporary	Existing Road Description	Approx. Road Length (feet)	Road Upgrades or Improvements Proposed	Width of Upgraded Road (feet)	Area of Upgraded Road (acres)
NEW YORK								
Stony Point Discharge Take-up and Relay								
PAR 0.85	Yorktown	0.85	Permanent	Paved road (Strang Boulevard) providing access to Woodlands Legacy Field Park in Yorktown	1,640	No	N/A	N/A
PAR 1.90	Yorktown	1.90	Permanent	Dirt access road to existing Algonquin ROW along electric transmission line corridor	430	Yes	20	0.2
PAR 3.35	Yorktown	3.35	Permanent	Located at the end of Campfire Road (a dead end residential road)	65	Yes	20	0.03
PAR 4.00	Somers	4.00	Permanent	Gravel access road to Algonquin Somers M&R Station	765	Grade and gravel as required	20	0.35
CONNECTICUT								
Southeast Discharge Take-up and Relay								
PAR 2.20	Danbury	2.20	Permanent	Gravel access road	600	Yes	10 (existing) 10 (upgrade)	0.14

a/ Existing permanent access roads currently used by Algonquin's Pipeline Operations Department at existing M&R station and compressor station facilities are not shown on this table or described in the resource reports

1.4.4 Pipe Yards and Contractor Ware Yards

Pipe yards and contractor yards for the Atlantic Bridge Project are currently under review. Information regarding pipe yards and contractor ware yards will be provided to the FERC by December 31, 2015.

1.5 Construction Procedures

1.5.1 Pipeline Facilities

The Atlantic Bridge Project pipeline facilities will be located in a variety of land use settings including residential areas, commercial districts, urban areas, and undeveloped open space. Given the variety of land use types in the Project area, several construction techniques will be utilized as described in the following sections.

1.5.1.1 Conventional Construction and Restoration Techniques

The Atlantic Bridge Project will be constructed in compliance with applicable federal regulations and guidelines and the specific requirements of the necessary permits (*see* Section 1.12, Permits and Approvals). Key federal requirements and guidelines include:

- 18 Code of Federal Regulations ("CFR") Part 380 – The FERC's Regulations Implementing the National Environmental Policy Act (including § 380.15 - Siting and Maintenance Requirements);
- 49 CFR Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards; and
- The Federal Energy Regulatory Commission *Upland Erosion Control, Revegetation, and Maintenance Plan* ("FERC Plan," May 2013 Version) and the FERC Procedures, May 2013 Version.

Algonquin will construct the Project in accordance with the *Atlantic Bridge Project Erosion and Sediment Control Plan* ("E&SCP") provided in Appendix 1B. The E&SCP has been prepared for use by Algonquin and its contractors as a guidance manual for minimizing erosion of disturbed soils and transportation of sediments off the ROW and into sensitive resources (wetlands, streams, and residential areas) during natural gas pipeline construction. The procedures developed in the E&SCP, which represent Algonquin's best management practices ("BMPs"), are designed to accommodate varying field conditions while maintaining rigid minimum standards for the protection of environmentally sensitive areas. The E&SCP is consistent with the FERC Plan and the FERC Procedures.

Although the E&SCP is based on the FERC Plan and the FERC Procedures, a few modifications are proposed in response to site-specific conditions and construction constraints. These modifications are summarized in Table 1.5-1.

TABLE 1.5-1

Proposed Modifications to the FERC Plan and the FERC Procedures

Section	Proposed Modification	Discussion
Modifications to the FERC Plan		
IV.A.2	Algonquin proposes a modification of the requirement not to exceed a construction ROW width of 75 feet for all proposed pipeline facilities.	See Section 1.3.1.3 for additional information.
Modifications to the FERC Procedures		
V.B.2.a	Algonquin proposes a modification of the requirement to	Specific locations and justifications provided in

TABLE 1.5-1 Proposed Modifications to the FERC Plan and the FERC Procedures		
Section	**Proposed Modification**	**Discussion**
	locate additional temporary workspace areas (such as staging areas and additional spoil storage areas) at least 50 feet way from specific waterbodies.	Section 2.3.6 and Table 2F-1 in Resource Report 2.
VI.B.1.a	Algonquin proposes a modification of the requirement to locate additional temporary workspace areas (such as staging areas and additional spoil storage areas) at least 50 feet way from specific wetland boundaries.	See Section 2.4.3 and Table 2F-1 in Resource Report 2 for additional information on this modification request including specific locations and justification.
VI.A.3	Algonquin proposes a modification of the requirement to limit the width of the construction ROW in wetlands to 75 feet or less.	See Section 2.4.3 and Table 2F-1 in Resource Report 2 for additional information on this modification request.

The following sections identify the general construction procedures for routine pipeline construction, as well as the specific construction techniques that will be utilized in environmentally sensitive areas for the Project:

- Clearing operations, where required;
- Installation and maintenance of erosion control devices;
- ROW and temporary construction workspace grading;
- Removal and abandonment of existing pipeline;
- Trench excavation;
- Blasting, where required;
- Stringing;
- Bending;
- Welding;
- Nondestructive weld inspection;
- Coating application, inspection, and repair;
- Lowering-in;
- Tie-ins;
- Backfilling;
- Cleaning;
- Hydrostatic testing; and
- Restoration and revegetation.

Surveying

Algonquin will survey and stake the outside limits of the construction work areas, centerline location of the pipeline, road crossings, and any temporary extra workspace, such as lay down areas or stream crossings. The "One Call" system of each state will be contacted, and underground utilities (e.g., cables, conduits, and pipelines) will be located and flagged. Affected landowners that requested prior notification will be notified prior to surveying and staking of the centerline and workspaces.

Clearing Operations

In general, clearing will be minimized for Project construction since existing pipeline ROWs, roadways, utility ROWs, and other industrial and commercial sites will be used for a significant portion of the construction ROW. The primary clearing work for the Project will occur in the temporary construction workspace beyond Algonquin's existing maintained ROW. Initial clearing operations will include the

removal of vegetation within the pipeline ROW and the temporary construction workspace either by mechanical or hand cutting. Clearing limits will be identified and flagged in the field prior to beginning any clearing operations. In wetlands, trees and brush will either be cut with rubber-tired and/or tracked equipment or hand-cut. Unless grading is required for safety reasons, wetland vegetation will be cut at ground level, leaving existing root systems intact, and aboveground vegetation will be removed from the wetlands for chipping or disposal. In uplands, tree stumps and rootstock will be left in the temporary workspace wherever possible to encourage natural revegetation. Stumps will be removed from the ROW to approved disposal locations, and brush and tree limbs will be chipped and removed from the ROW for approved disposal.

The cleared width within the ROW and temporary construction workspace will be kept to the minimum that will allow for spoil storage, staging, assembly of materials, and all other activities required to safely construct the pipeline. Following clearing and before grading activities, erosion controls will be installed at the required locations as outlined in the Atlantic Bridge Project E&SCP (*see* Appendix 1B).

ROW and Temporary Construction Workspace Grading

The entire width of the construction ROW, including the temporary construction workspace, will be rough graded as necessary to allow for safe passage of equipment and to prepare a work surface for pipeline installation activities. Typically, ROW grading will be completed with bulldozers. Backhoes will be used in conjunction with bulldozers in areas where boulders and tree stumps require removal. A travel lane or traffic control will be maintained to allow for the passage of daily traffic.

The mainline take-up and relay pipeline facilities will cross numerous residential properties. At these locations, topsoil will be stripped and stockpiled separately from the subsoil during grading. There may be some areas where the construction ROW is limited and topsoil will need to be stockpiled offsite. Topsoil will be replaced with appropriate imported material as required. Mixing topsoil with subsoil will be minimized by using topsoil segregation construction methods in wetlands (except when standing water or saturated soils are present).

Removal (Take-up) of Existing Pipeline

The Atlantic Bridge Project will replace 6.3 miles of existing 26-inch diameter pipeline with a larger 42-inch diameter pipeline using the take-up and relay method. Generally, this process will consist of excavating a trench to remove the existing pipe, followed by pipe removal. All pipe excavated for removal will be wrapped with black UV 120 gauge stretch wrap, shrink wrap or equivalent to protect the pipe coating during transportation and storage. Wrapping of the pipe and or pipe components shall occur once the pipe is excavated and cut into lengths less than 40 feet, but prior to loading on trucks to transport to the designated Project pipe yard. The removed pipe will then be transported away from the construction work area and disposed of properly.

Abandonment of Existing Pipeline

Along the Stony Point Discharge Take-up and Relay segment, the existing 26-inch diameter mainline pipeline across the Taconic State Parkway will be abandoned in place following the HDD installation of the new 42-inch diameter pipeline (approximately 3,000-foot segment). This abandoned pipe segment will first be inspected for liquids, and if present, all free flowing liquids will be removed and disposed of in accordance with all federal and state requirements. Wipe samples will then be taken at each end of the pipe to check for residual polychlorinated biphenyls. Each end will then be capped using a steel plate with a threaded fitting. The pipe will then be filled with cement grout, and each end will be permanently closed

using threaded plugs. Considering the 26-inch diameter mainline is in the same ROW as the existing 30-inch pipeline, Algonquin will continue to maintain the ROW.

Another segment of the existing 26-inch diameter mainline pipeline along the Stony Point Discharge Take-up and Relay will also be abandoned in place during construction to avoid the workspace crossing a small pond. Approximately 315 feet of pipeline will be abandoned between MP 3.0 and 3.1. The same procedures described above for the pipe abandonment at the Taconic State Parkway will be followed for this pipeline segment.

With the exception of these two segments of abandoned pipeline, all other existing pipeline will be removed.

Trench Excavation

Once the existing pipe is removed, the trench will be re-excavated wider and deeper (as appropriate) to accommodate the new, larger diameter pipeline. The pipe installation and replacement will occur at approximately the same location as the existing pipe using standard construction methods. Where the pipeline to be removed is in the proposed construction ROW for the new pipeline, the defined construction ROW will not be exceeded during removal.

A trench will be excavated with a backhoe to the depth necessary for burying the pipe. The trench will be at least seven feet deep for the 42-inch diameter pipeline to provide for a minimum of 3 feet of cover over the pipelines as required by 49 CFR Part 192 of the U.S. Department of Transportation ("USDOT") regulations. Deeper burial may be required in specific areas. The excavated material will be placed next to the trench or trucked offsite so as to avoid unnecessary movement of machinery across the terrain.

Dewatering the pipeline trench may be required in areas with a high water table or after a heavy rain. All trench water will be discharged into well-vegetated upland areas or properly constructed dewatering structures to allow the water to infiltrate back into the ground. If trench dewatering is necessary in or near a waterbody, the removed trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure. The device will be located away from the water's edge to prevent heavily silt-laden water from flowing into nearby waterbodies in accordance with the E&SCP and all applicable permits.

Contaminated Soil or Groundwater

Algonquin conducted field and database research to identify, to the extent feasible, properties within 0.25 miles of the Project facilities potentially impacted with oil and/or hazardous materials. A search completed by Environmental Data Resources, Inc. ("EDR") queried various types of potential and actual sources of contamination to nearby soil and groundwater resources near the proposed Project facilities. Information from the EDR report is a compilation of a variety of available federal, state, and local government databases (*see* Resource Reports 2, 7, and 8 for further details regarding contaminated soils and groundwater).

Based on the EDR search, Algonquin does not anticipate any potential concerns associated with hazardous materials during construction and operation of the Project pipeline facilities or existing aboveground facilities. Should any hazardous materials be encountered during pipeline construction, measures will be implemented to ensure hazardous materials are managed in accordance with applicable regulations. Accidental release of hazardous materials during construction will be avoided through the implementation and strict adherence to Algonquin's Spill Prevention, Control and Countermeasure Plan ("SPCC Plan") (*see* Appendix 1B).

Algonquin has confirmed the presence of elevated levels of arsenic in the soil samples collected as part of the geotechnical survey program conducted at the Weymouth Compressor Station site in 2015. Algonquin will prepare a Utility-Related Abatement Measure Plan for the Weymouth Compressor Station site in accordance with 310 CMR 40.0460 of the Massachusetts Contingency Plan to handle these soils during construction.

Blasting

Algonquin anticipates that rock removal will be required at certain points along the Atlantic Bridge Project pipeline facilities. In the event that unrippable subsurface rock is encountered, blasting for ditch excavation may be necessary. As an alternative to blasting, Algonquin will consider removing rock with hoe rams or other similar non-explosive means when viable. In these areas, care will be taken to prevent damage to underground structures (e.g., cables, conduits, septic systems, and foundations, *etc.*), aboveground structures (e.g., homes, buildings, and utility structures, *etc.*), or water sources. If blasting is necessary, pre-blast and post-blast inspections by Algonquin will be performed as necessary. Blasting mats or soil cover will be used as necessary to prevent the scattering of loose rock. Blasting will be conducted during daylight hours and will not begin until occupants of nearby buildings, stores, residences, and places of business have been notified. Algonquin will comply with applicable regulations applying to blasting and blast vibration limits with regard to structures and underground utilities. Rock removal and blasting are further discussed in Section 1.5.1.4 below and in the Rock Removal Plan provided in Resource Report 6.

Stringing

Once the trench is excavated, the next process in conventional pipeline construction is stringing the pipe along the trench. Stringing involves initially hauling the pipe by tractor-trailer, generally in 40-foot lengths, from the pipe storage yard onto the ROW. The pipe will be off-loaded from trucks and placed next to the trench using a sideboom tractor. The pipe joints will be lined up end-to-end to allow for welding into continuous lengths known as strings. For pipe construction in urban areas, Algonquin may use mini-crews where the pipe will be hauled to the work site daily. Some pipe may be stockpiled on the ROW and will be fenced and stabilized if left overnight.

Bending

Once the sections of pipe have been placed on the ROW, the pipe will be bent as necessary so the pipe fits the horizontal and vertical contours of the excavated trench. The bending engineer will survey the trench to determine the location and amount of each field bend. This information will be marked on each piece of pipe so that the bending foreman can make the appropriate pipe bends. Pipe is usually bent with a hydraulic pipe-bending machine.

Welding

All welding will be performed in accordance with Algonquin's specifications. The individual joints of pipe will be welded together in two steps. The front-end welding crew, or pipe gang, will perform the first step. This crew will clean and align the pipe bevels in preparation for welding and place at least the first two passes in the welding process. The firing line, or back-end welders, will perform the second step, completing the welds started by the front-end welders. The pipe will be welded into long strings to minimize the number of welds that have to be made in the trench (tie-in welds). Gaps in the pipe welding process are often left by the welding crews at water/wetland crossings, road crossings, and other locations where access across the work area is required or when the pipe will be installed later in the construction process.

Non-Destructive Weld Inspection

After welding, each weld will be inspected by an independent certified Non-Destruction Test technician to ensure its structural integrity is consistent with 49 CFR Part 192 of the USDOT's regulations. X-Ray or ultrasonic images will be taken and processed on site for virtually instantaneous results. Those welds that do not meet the requirements established by the Applicants' specifications will be repaired or replaced and re-inspected.

Coating Inspection and Repair

To prevent corrosion, the pipe lengths will be coated (usually with a heat-applied epoxy) at a coating mill prior to being delivered to the Project. The ends of each piece will be left bare to allow for welding. Once each weld has been inspected and accepted, the weld area will be field coated by the coating crew. Pipeline coatings are electrically insulating; therefore, the coating will be inspected using equipment that emits an electric charge to ensure there are no locations on the pipeline with a defect in the coating.

Lowering-In

After a pipe string has been coated and inspected, the trench will be prepared for pipeline installation. The trench will be cleared of loose rock and debris. If water exists in the trench, the water will be pumped out into a well-vegetated upland area and/or into an approved filter with the exception of wetland areas where the "push pull" installation may be required. In sandy soils, the trench will be shaped to support the pipe. In areas where the trench contains bedrock, a sand bedding will be placed on the bottom of the trench, and/or pads made of sandbags and/or clay will be placed at regular intervals along the trench bottom to support the pipe. The lowering-in crew will place the pipeline in the trench, a process that is usually completed with sideboom tractors.

Tie-Ins

Once the sections of pipe are lowered-in, the tie-in crew will make the final welds in the trench. Additional excavations as needed, lowering in, lining up, welding, weld non-destructive inspection, and coating the final welds will be accomplished by this crew.

Backfilling

All suitable material excavated during trenching will be redeposited into the trench. Where excavated material is unsuitable for backfilling, additional select fill may be required. If the soil is rocky, the pipe is padded with relatively rock-free material placed immediately around the pipe. This material may be obtained from commercial borrow areas in the region. Where suitable, the subsoil may be mechanically screened to produce suitable padding material. Padding of the pipe is usually performed with backhoes. If padding is obtained from an offsite source, it is normally placed in the trench by front-end loaders. Topsoil will not be used as padding material. Once the pipe is padded, the trench will be backfilled with suitable excavated subsoil material. Prior to the completion of backfilling 12-inches below natural grade, 24-inch wide bright yellow warning tape will be installed designating the location of the pipeline below. The tape will have a warning notice indicating the presence of a high pressure natural gas pipeline and will provide the Applicants' toll free number for contact. The top of the trench may be slightly crowned to compensate for settling except for paved areas, where standard compaction methods and/or flowable fill will be employed. The topsoil will then be spread across the graded construction ROW when applicable. The soil will be inspected for compaction and scarified as necessary. In-street construction methods are described in Section 1.5.1.2.

Cleaning

Once the pipeline tie-ins are completed, it will be internally cleaned with pipeline "pigs." A manifold will be installed on one end of the long pipeline section, and a pig will be propelled by compressed air through the pipeline into an open pig catcher to remove any dirt, water, or debris that was inadvertently collected within the pipeline during installation.

Hydrostatic Testing

After cleaning, the pipeline will be hydrostatically tested in accordance with Algonquin's requirements to ensure its integrity. Water for pressure testing is normally obtained from water sources crossed by the pipeline, including available municipal supply lines. All hydrostatic test water will be discharged within suitable vegetated upland areas in accordance with the Atlantic Bridge Project E&SCP and all applicable federal and state permits.

In hydrostatic testing, water propels a pig through the pipeline in a manner that fills the pipeline with water. Test pressure is obtained by adding water to the test section of the pipeline with a high-pressure pump. At the completion of the hydrostatic test, the pressure is removed from the section and the water is released from the test section by propelling the pig with air, which forces the water from the pipeline. Additional "drying" pig runs are made, if necessary, to remove any residual water from the pipeline.

Restoration and Revegetation

The cleanup crew will complete restoration and revegetation of the ROW and temporary construction workspace. Final cleanup (including final grading) and installation of permanent erosion control measures will be completed within 20 days after the trench is backfilled, weather and soil conditions permitting. In conjunction with backfilling operations, any woody material and construction debris will be removed from the ROW. The ROW will be fine-graded to prepare for restoration. Permanent slope breakers or diversion berms will be constructed and maintained in accordance with the E&SCP. Fences, sidewalks, driveways, stone walls, and other structures will be restored or repaired as necessary.

Revegetation will be completed in accordance with the E&SCP, state and municipal requirements (where applicable), and written recommendations on seeding mixes, rates, and dates obtained from the local soil conservation authority or other duly authorized agency. The ROW will be seeded within six working days following final grading, weather and soil conditions permitting. Alternative seed mixes specifically requested by the landowner or required by agencies may be used. Any soil disturbance that occurs outside the permanent seeding season or any bare soil left unstabilized by vegetation will be mulched in accordance with the E&SCP. For restoration procedures in streets, see Section 1.5.1.2 below.

Table 1.5-2 provides a listing of construction methods described below (e.g., HDD and stove pipe, drag-section, *etc.*) by pipeline segment and milepost.

TABLE 1.5-2 Construction Methods to be used along the Pipeline				
State, County, Municipality	**MP Start**	**MP End**	**Length (miles) a/**	**Construction Method**
NEW YORK				
Stony Point Discharge Take-up and Relay				
Westchester County				
Yorktown	0.0	0.4	0.4	drag-section or stove-pipe methods
	0.4	0.9	0.5	Taconic State Parkway HDD
	0.9	3.5	2.6	drag-section or stove-pipe methods
Somers	3.5	4.0	0.5	drag-section or stove-pipe methods
CONNECTICUT				
Southeast Discharge Take-up and Relay				
Fairfield County				
Danbury	0.0	2.3	2.3	drag-section or stove-pipe methods
a/ Minor discrepancies in totals are due to rounding.				

1.5.1.2 In-Street Conventional Construction Methods

Constructing the Project within and across public and private roadways, using either conventional open cut or road bore methods, will be based on site conditions and any applicable road opening permit requirements. Roadway opening permits will be sought from applicable state and local agencies. Permit conditions of any such permits will determine the day-to-day construction activities at road crossings.

Prior to construction, the "Call Before You Dig" or "One Call" system, or state or local utility operators, will be contacted so they can mark their facilities that may intersect, or be in close proximity to, the proposed pipeline. The Contractor may elect to expose the utilities to confirm their location.

Construction will be scheduled for work within roadways and specific crossings to minimize impacts to commuter traffic. Appropriate traffic management and signage will be implemented and necessary safety measures will be developed in compliance with applicable permits for work in the public roadway. Arrangements will be made with local officials to have traffic safety personnel or qualified and trained flaggers available during periods of construction. Provisions will be made for detours or otherwise to permit traffic flow if needed.

Roadway crossing construction will generally occur using one of the following methods:

- Open Cut – This method is used on driveways, parking lots, and roads with low traffic densities where pipeline installation activities will not adversely impact the general public. The first step is to install the proper traffic control devices. Traffic will be detoured around the open trench during the installation process. The pipeline crossing is installed one lane at a time. As the pipe is installed, successive lanes are alternately taken out of service for pipe installation until the crossing is completed. Another option is to detour traffic around the work area through the use of adjacent roadways.

If the roadway surface is paved, pavement over the proposed trench is cut, removed, and properly disposed. The trench is excavated using a combination of a backhoe and hand shoveling around existing utilities once the ditch is completed and the pipe is installed (welded, inspected, and coated). All existing utilities exposed during excavation will be supported at their existing elevation to avoid damage. Support will be maintained until backfill of the pipeline ditch and the exposed utility are completed. The trench is then backfilled. A 15:1 sand to concrete mix called flowable fill, or Controlled Density Fill, may be used as backfill material to one foot over the pipeline. The additional backfill must be compacted to reduce stresses on the pipeline and to ensure the roadway supports the traffic load without settling. The existing trench subsoil may be used in the backfill if it can be compacted and is authorized by the permitting agency. In those cases where existing trench material is not used, backfill material will be obtained from an outside source and hauled in. The material used and methods of placement will comply with the requirements of the permitting agency. If the roadway surface was paved, the paving will be restored in accordance with the permit requirements.

- Bored – On roads with higher traffic densities and for railroads where service must be maintained, the pipeline may be installed by boring a hole under the road or railway. Specialized boring equipment is used. The soil and/or rock are bored by a drill that contains a cutting head which cuts through the soil. Dummy casing, which is slightly larger in diameter than the pipeline, may be installed immediately behind the cutting head. An auger is placed inside the pipe to remove the cuttings. When completed, the bored hole is slightly larger than the outside diameter of the pipeline to be installed. Once the bore is completed, the pipeline section is welded to the boring pipe and pulled into place as the boring pipe is removed. Any voids between the pipeline and the subsoil are filled with grout (a sand-cement mix) to prevent settlement of the roadway surface or railroad track. This method allows the road or railroad to remain in service while the installation process takes place and minimizes the potential for trench settlement.

- Cased – The procedure for a cased crossing is similar to a bored crossing with one exception. A section of steel casing pipe, which is several inches in diameter greater than the pipeline, is bored into place. Casing sections are welded together to ensure the casing length is sufficient to cross the entire roadway. Once the casing pipe has been installed, the pipeline is pulled through the casing. To prevent potential corrosion of the pipeline due to contact between the pipeline and the casing, the pipeline is insulated from the casing pipe; usually the pipeline is coated with a layer of concrete. To prevent water from entering the casing, the ends of the casing are sealed with rubber or polyethylene seals. The space between the casing and the pipeline is vented to the atmosphere using sections of small diameter pipe (vent pipe), which are welded to the casing ends and run from the casing to several feet above the surface of the ground. Casing pipe is installed when required by permit or when there is a likelihood of encountering rock during the boring. Generally, crossings of major federal and state highways and certain railroads are installed using casings.

- Hammer Technique – In addition to the boring techniques described above, pipeline contractors sometimes use another technique to complete road crossings. This technique consists of driving casing pipe that is slightly larger in diameter than the proposed pipeline under the roadway with a horizontal air-operated reciprocating hammer. The casing pipe is placed against the end of the trench near the edge of the roadway and driven under the paved road. Once in place, the material inside the casing is augured out and the pipe is installed through the casing. The casing pipe is then removed while grout is placed around the pipeline. Where required, the casing pipe may be left in place.

- In-Street Construction – The first step for this method is to install the traffic control devices. Traffic will be detoured around the construction area during the installation process. The working area along any street will be limited to areas designated in applicable road opening permits. All construction activities will be limited to this section, and this work area will move along the street as construction advances. Pavement over the proposed trench is cut, removed, and properly disposed. The trench is excavated using a backhoe and the pipe is installed (welded, radiographed, and coated). Excavation of the trench will proceed ahead of pipe installation to provide the contractor information regarding the existing utilities that will have to be crossed and to make vertical or horizontal adjustments in the alignment of the pipeline. The trench is then backfilled. No trench will be left unprotected overnight, as the trench will be backfilled or plated to ensure public safety. A 15:1 sand to concrete mix called flowable fill, or Controlled Density Fill, may be used. The backfill must be compacted to reduce stresses on the pipeline and to ensure the roadway supports the traffic load without settling. The existing trench subsoil may be used in the backfill if it can be compacted and is authorized by the appropriate permitting agency. In most cases, backfill material will be obtained from an outside source. The material used and methods of placement will comply with the requirements of the appropriate permitting agency. If the roadway surface was paved, the paving will be properly restored in accordance with the applicable permit requirements.

Expanded workspace at road intersections will be based on the size of the road crossing and other construction constraints.

Crossings of private roadways will be coordinated with landowners to minimize access impacts. In those areas where the excavation of a longer length of trench will not pose a safety problem, the pipeline will be installed using the standard open trench method. Open trenches will either be backfilled or covered with steel plates during all non-working hours. Steel plates will be kept on site at each crossing so that a temporary crossing can be placed across the trench as required (e.g., emergency vehicles).

For in-street work and road crossings, the contractor will install and maintain a temporary patch in the excavated areas once the ditch line is backfilled. Final paving of existing roadways will be completed in accordance with applicable state and municipal requirements. With appropriate approvals, final paving may be accomplished the year following pipeline construction to allow for potential settlement of the ditch line in the road surface. Roadway markings and striping will be added as necessary. As required by the USDOT, pipeline markers will be placed adjacent to local roadways, and decals will be placed on paved areas identifying the presence of a pipeline below the surface of the pavement.

An Access Management Plan has been created for the Atlantic Bridge Project for areas where in-street construction is anticipated to occur (*see* Appendix 5A of Resource Report 5).

1.5.1.3 Construction in Residential and Commercial Areas

Construction in high-density residential, commercial, and industrial areas will be accomplished by implementing specialized construction methods such as the drag-section or stove-pipe methods. These specialized methods reduce the amount of workspace needed for construction, the duration of construction activity in the immediate vicinity of high-density urban areas, and the time the trench is left open. The pipeline trench will be excavated as the pipeline section is fabricated, inspected, and prepared for installation.

For the drag-section method, several sections of pipe are prefabricated, the trench is dug to accommodate only the distance that can be installed and backfilled, and the prefabricated pipeline segments (or drag sections) are placed into the trench and backfilled. For the stove-pipe method, one short section of trench is dug, a section of pipe is laid in the trench and welded into place, and that section of the trench is backfilled.

Prior to the completion of backfilling 12-inches below natural grade, 24-inch wide bright yellow warning tape will be installed designating the location of the pipeline below. The tape will have a warning notice indicating the presence of a high pressure natural gas pipeline and will provide the Applicants' toll free number for contact.

Algonquin conducted field surveys and reviewed aerial photographs to identify existing structures and buildings within 50 feet of the proposed pipeline construction ROWs and workspace areas. Based on this evaluation, Algonquin has identified the following:

- New York – 35 residences, 48 residential structures, and 2 non-residential structures located within 50 feet of the edge of the Atlantic Bridge Project pipeline construction ROWs and workspace areas in New York; and
- Connecticut – 90 residences, 23 residential structures, and 6 non-residential structures located within 50 feet of the edge of the Atlantic Bridge Project pipeline construction ROWs and workspace areas in Connecticut.

See Table 8C-1 in Appendix 8C of Resource Report 8 for a complete list of residential structures located within 50 feet of the proposed pipeline construction ROWs including location, type of structure, and approximate distance from the construction work area. Efforts will be undertaken in residential areas to minimize neighborhood and traffic disruption and to control noise and dust to the extent practicable.

In general, the following measures will be taken on residential properties:

(i) Notify landowners 72 hours in advance of construction activities;
(ii) Fence the construction work area boundary to ensure construction equipment, materials, and spoil remain in the construction ROW;
(iii) Preserve all mature trees and landscaping where practical, consistent with construction safety;
(iv) Ensure piping is welded and installed as quickly as reasonably possible consistent with prudent pipeline construction practices to minimize construction time affecting a neighborhood;
(v) Backfill the trench as soon as the pipe is laid, otherwise temporarily steel plate the trench; and
(vi) Complete final cleanup (including final grading) and installation of permanent erosion control measures within 10 days after the trench is backfilled, weather conditions permitting.

For the residences within 50 feet of the construction workspace, Algonquin has developed draft Residential Construction Plans noting special construction techniques and mitigation measures. Special attention in these areas will ensure the safety and convenience of residents in the Project area. These plans are provided in Appendix 8C of Resource Report 8 – Land Use, Recreation, and Aesthetics. In addition, a Traffic Management Plan for the Project is contained within the Access Management Plan provided in Appendix 5A of Resource Report 5.

1.5.1.4 Rock Removal and Blasting

Given the presence of surface rock in some portions of the Project area, Algonquin anticipates that blasting for rock removal may be required during construction of the Atlantic Bridge Project. Rock encountered during trenching will be removed using one of the techniques listed below. The technique selected will be dependent on the relative hardness, fracture susceptibility, and expected volume of the material. Techniques include:

- Conventional excavation with a backhoe;
- Ripping with a dozer followed by backhoe excavation;

- Hammering with a pointed backhoe attachment followed by backhoe excavation; or
- A combination of drilling holes to weaken the rock and hammering or ripping to fragment the rock.

If it is determined that the bedrock cannot be removed by conventional techniques, blasting options may include:

- Blasting followed by backhoe excavation; or
- Blasting surface rock prior to excavation.

If blasting is required for the Project, it will be conducted in accordance with applicable state blasting codes and any local blasting requirements. All blasting activity will be performed by state-licensed professionals according to strict guidelines designed to control energy release. Proper safeguards will be taken to protect personnel and property in the area, including conducting preconstruction surveys of homes and businesses, as approved by the landowner. Algonquin has developed a list of potential shallow bedrock locations based on U.S. Department of Agriculture – Natural Resources Conservation Service gridded Soil Survey Geographic Database soils data. This information is provided in the Atlantic Bridge Project Rock Removal Plan located in Appendix 6B of Resource Report 6 (Geological Resources).

1.5.1.5 Rugged Topography

During construction activities in steep and rugged terrain, temporary and permanent erosion controls are necessary to minimize erosion and sedimentation. Temporary slope breakers are intended to reduce the runoff velocity and divert water off of the ROW. Temporary trench breakers may be used in conjunction with the temporary slope breakers to adequately channel the surface flow off of the ROW. In terrain with slopes too steep to safely and adequately construct the temporary slope breakers and temporary trench plugs, they may be placed where practicable, at the discretion of the Environmental Inspector ("EI").

Permanent trench breakers consisting of sandbags, gravel, cement, or cement-filled sacks will be installed when the trench is backfilled in ditches over and around the pipe in sloped areas with erosion potential. Temporary trench plugs, usually composed of compacted earth or other suitable low-permeable material, will be used to isolate waterbodies and wet areas to minimize channeling of groundwater along the ditch line during construction.

If side slopes requiring special construction are encountered, the techniques detailed below will be used. During grading, the upslope side of the pipeline ROW will be cut. The material removed from the cut will be used to fill the downslope edge of the ROW to provide a safe and level surface from which to operate the heavy equipment (two-tone construction). Side hills may require ATWS downslope to accommodate the fill material. During grade restoration, the spoil will be placed back in the cut and compacted. Any springs or seeps found in the cut will be carried downslope through PVC pipe and/or gravel French drains installed as part of the cut restoration.

Permanent slope breakers will be constructed in coordination with the placement of the trench breakers in accordance with the E&SCP. During restoration, seed will be applied at an increased application rate to increase the probability of establishment and rapid stabilization. In rugged terrain, additional types of temporary erosion controls such as super silt fence, erosion control matting, and hydro-mulching may be used during construction and restoration activities.

1.5.1.6 Waterbody Construction Methods

To minimize potential impacts, waterbodies, streams, and rivers will be crossed as quickly and as safely as possible. Adherence to the construction procedures will ensure stream flow will be maintained throughout construction. Flowing waterbodies will be crossed by the pipeline facilities using conventional backhoe type equipment and dry crossing techniques to isolate the work area.

The dry crossing method will be used to remove existing pipeline and to install new pipeline at all waterbody crossing locations if there is flowing water at the time of construction. The dry crossing of waterbodies will be accomplished primarily with the dam and pump method prior to trenching to divert the stream flow over the construction area and allow trenching of the stream crossing in drier conditions isolated from the stream flow. 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 move the water across the disturbed area and back into the stream further downstream. Another dry crossing method (i.e., flume crossing) may be employed as a potential alternative method at some waterbody crossings. The flume pipe(s) installed across the trench will be sized to accommodate anticipated stream flows.

These two dry crossing methods are applicable to waterbodies up to 30 feet wide at the water's edge at the time of construction. Spoil removed during the trenching will be stored away from the water's edge and protected by sediment containment structures. Pipe strings will be fabricated on one bank and either pulled across the stream bottom to the opposite bank or carried into place and lowered into the trench. Where these methods are employed, ATWS areas will be required for assembly of the pipe strings and spoil storage areas.

The open-cut crossing method will involve excavating the pipeline trench across the waterbody, removing the existing pipe and installing the new pipeline, and backfilling the trench with no effort to isolate flow from construction activities. This method will only be used at stream crossings where there is no perceptible water flow at the time of construction. Use of the open-cut crossing method on any waterbodies will be confirmed during the federal and state permitting processes. Excavation and backfilling of the trench will be accomplished using backhoes or other excavation equipment working from the banks of the waterbody. Trench spoil will be stored at least 10 feet from the banks (topographic conditions permitting). A section of pipe sufficient in length to span the entire crossing will be fabricated on one bank and pulled across the bottom to the opposite bank. The trench will then be backfilled, and the bottom of the channel and banks will be restored and stabilized. Sediment barriers, such as silt fencing, staked straw bales, or trench plugs will be installed to prevent spoil and sediment-laden water from entering the waterbody from adjacent upland areas.

Except where reasonable alternative access is available, temporary construction equipment crossings will be installed across all waterbodies to gain access along the ROW for construction operations. Equipment crossings will be installed after clearing to minimize streambed disturbance and downstream siltation. Only the equipment required for clearing and installing equipment bridges will cross waterbodies prior to bridge installation. Where culverts are used, devices will also be placed at the outlet to prevent scouring of the stream bottom. After such equipment crossings are established, construction equipment will not be permitted to drive through the waterbody for access, and the equipment crossings will be removed once access in the area is no longer needed. After clearing activities, construction equipment must cross waterbodies on bridges consisting of one of the following devices:

- Clean rock fill and culverts;
- Equipment pads, wooden mats, and/or culverts; or
- Flexi-float or portable bridge.

To facilitate pipeline construction across waterbodies, ATWS may be needed adjacent to the waterbody to assemble and fabricate the length of pipe necessary to complete the crossing. This work area is in addition to the standard construction ROW and will be located at least 50 feet away from the stream banks in cleared areas. If topographic conditions do not permit a 50-foot setback, then these areas will be located at least 10 feet away from the water's edge. Algonquin has identified three locations where ATWS areas are located closer than 50 feet from a waterbody. Algonquin proposes a modification to the FERC Procedures for these locations. Table 2F-1 in Resource Report 2 identifies the locations where ATWS modifications to the FERC Procedures for waterbody setbacks are proposed along the Atlantic Bridge Project pipeline segments.

Vegetation will not be cleared, except over the pipeline trench, in the area within 10 feet of a waterbody unless root structure disturbance results in an unsafe work condition. The work area will be limited in size to the minimum area necessary to safely construct the waterbody crossing and to accommodate any stockpile of excavated material from the trench and the prefabricated pipeline crossing section.

Typically, for extra workspace on minor and intermediate stream crossings, 50 feet of additional width may be used for a length of 100 feet on either side of the waterbody starting at the edge of the 50-foot setback. However, the size of ATWS areas can vary based on site-specific conditions and length of the pipe section for the crossing.

Following in-stream construction, Algonquin will restore the stream channel and banks to preconstruction conditions in accordance with the E&SCP and federal and state permit requirements. Specifically, Algonquin will:

- Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring.
- Use clean gravel or native cobbles for the upper 12 inches of trench backfill in all waterbodies identified as coldwater fisheries.
- Install erosion control fabric along waterbodies with low flow conditions.
- Revegetate disturbed riparian areas with conservation grasses and legumes in accordance with the recommended seed mixes.
- Remove all temporary sediment barriers when replaced by permanent erosion controls or when restoration of adjacent upland areas is successful as specified in the E&SCP.
- Install a permanent interceptor dike and a trench plug at the base of slopes near each waterbody crossed. Locate the trench plug immediately upslope of the interceptor dike.

1.5.1.7 Horizontal Directional Drilling

The HDD method is a trenchless installation process by which the pipeline is installed beneath obstacles or sensitive areas using equipment and techniques derived from oil well drilling technology. HDD construction results in the least disturbance to the existing environment in the HDD alignment relative to any conventional open trench operations. The HDD method will involve establishing land-based staging areas along both sides of the proposed crossing. The process will commence with boring a pilot hole beneath the waterbody or road and then enlarging the hole with one or more passes of a reamer until the hole is the necessary diameter to facilitate the pull-back (installation) of the pipeline. Once the reaming passes are completed, a prefabricated pipe segment will then be pulled through the hole to complete the crossing.

Algonquin evaluated the geotechnical feasibility of utilizing the HDD method to install Project pipeline at one location in Yorktown, New York along the Stony Point Discharge Take-up and Relay pipeline segment from MP 0.4 to MP 0.9. The proposed HDD crossing will be approximately 3,000 feet long and will be

used to avoid the Taconic State Parkway and a Town of Yorktown park. The HDD entry side is currently proposed at MP 0.9 east of the Taconic State Parkway in the park, and the exit point is located at MP 0.4 west of the Taconic State Parkway. Algonquin has prepared a site-specific crossing plan for the proposed Taconic State Parkway HDD (*see* Appendix 1A). The results of the geotechnical investigation and a HDD feasibility report are provided in Appendix 6C of Resource Report 6.

While the HDD method is a proven technology, there are certain impacts that could occur as a result of the drilling such as the inadvertent release of drilling fluid, which is a slurry of bentonite clay and water that is classified as non-toxic to the aquatic environment and is a non-hazardous substance. Accordingly, Algonquin has developed a *Best Drilling Practices Plan & Monitoring and Clean-up of Horizontal Directional Drilling Inadvertent Returns* ("BDP Plan") for monitoring the HDD program for the Atlantic Bridge Project. This BDP Plan will be kept on-site at the drill site and will be available and implemented by all proposed personnel described in the BDP Plan. The BDP Plan is provided in Appendix 2D of Resource Report 2.

1.5.1.8 Wetland Construction Methods

Algonquin had originally requested modifications to Sections VI.B.2.b and VI.B.2.d of the FERC Procedures as described in its July 1, 2015 Pre-filing Draft Resource Report 1. However, after further evaluation of the Project pipeline construction methods in the New York Croton Watershed combined with the limited number of wetland crossings in Danbury, Connecticut, Algonquin has determined that construction in these locations can be conducted in accordance with these two sections of the procedures and no modification is needed.

According to Section VI.B.2.b of the FERC Procedures, the pipeline must be assembled in an upland area unless the wetland is dry enough to adequately support skids and pipe. Algonquin has evaluated the field survey data for each proposed wetland crossing to classify saturated wetlands and non-saturated wetlands in Resource Report 2. Algonquin proposes to assemble the pipeline in uplands for all saturated wetland crossings and have the option to assemble the pipeline in wetlands for all non-saturated crossings (as defined in Table 2E-1 of Resource Report 2).

The goal of Section VI.B.2.d of the FERC Procedures is to minimize the length of time that wetland topsoil is segregated and the trench is open by delaying the excavating of the trench in wetlands until the pipeline is assembled and ready for lowering in. Algonquin has reviewed its construction practices for New York and Connecticut and, given the use of special construction techniques (i.e., stove pipe/drag-section techniques) and the limited wetlands in Connecticut, will be able to meet this requirement. As such, no modification is being requested.

The pipeline work for this Project involves replacing the existing pipeline with a larger diameter pipeline. This will involve excavating a trench to remove the existing pipe followed by the removal of the pipe. In all wetland areas regardless of type, the existing pipeline must be removed first using wetland crossing procedures (e.g., topsoil/subsoil segregation, use of mats, *etc.*). As a result, consistent with the FERC's findings for other similar projects in the Project area (e.g., Algonquin Incremental Market Project), Algonquin is requesting that the FERC confirm that section VI.B.2.d does not apply to the Project since the pipeline work involves take-up and relay. As a measure of additional environmental protection, Algonquin's EIs will inspect all erosion control devices and sediment barriers on a daily basis along wetlands for the take-up and relay segments, even when active construction and/or equipment operation is not occurring at a specific wetland location. In addition, Algonquin will be using the stove-pipe/drag-section construction method in most locations in New York, which will limit the duration of open trench in individual wetlands.

Construction methods will minimize the extent and time that construction equipment operates in wetland areas. When wetland soils are inundated or saturated to the surface, the pipeline trench will be excavated across the wetland by equipment supported on wooden swamp mats to minimize the disturbance to wetland soils. In wetlands that have firm substrates, are unsaturated, and are not frozen, the top 12 inches of wetland soil over the trench line will be segregated. Trench spoil will be temporarily piled in a ridge along the pipeline trench. Gaps in the spoil pile will occur at appropriate intervals to provide for natural circulation or drainage of water. While the trench is excavated, the pipeline will be assembled in a staging site located in an upland area, where practicable. If dry conditions exist within the wetland, the pipe fabrication will occur in the wetland. For inundated or saturated wetland conditions, pipe strings will be fabricated on one bank and either pulled across the excavated trench in the wetland, floated across the wetland, or carried into place and submerged into the trench. After the pipeline is lowered into the trench, wide track bulldozers or backhoes supported on swamp mats will be used for backfill, grading, and final cleanup. This method will minimize the amount of equipment and travel in wetland areas. If conditions allow, such as low flow or unsaturated soils, normal cross-country construction practices will be used in wetlands. A complete description of construction methods can be found in the E&SCP, included as Appendix 1B.

ATWS may be needed adjacent to specific wetlands to facilitate the pipeline crossing. The staging areas are in addition to the typical construction ROW and may be used for the assembly and fabrication of the pipe section that will cross the wetland area. These work areas will be located at least 50 feet away from the wetland edge, topographic and other site-specific conditions permitting. If topographic conditions do not permit a 50-foot setback, these areas will be located at least 10 feet away from the wetland. In some instances, maintaining setbacks will not be possible due to construction limitations, such as slope and road crossing requirements. In those cases, Algonquin is requesting a modification of the FERC Procedures. A list of ATWS within 50 feet of a wetland and associated purposes is included in Table 2F-1 in Resource Report 2.

The size of ATWS required at wetland crossings is based on the wetland size, water content of wetland soils (or presence of standing water), and other construction constraints. Under no circumstances will vegetation be cleared between the ATWS areas and the wetland boundary. The work area will be limited to the minimum size necessary to safely construct the wetland crossing. Restricting the work area in this manner will minimize wetland impacts associated with pipeline construction.

Algonquin has prepared an SPCC Plan to address the handling of construction fuel and other materials. The SPCC Plan provides a set of minimum requirements to be used by the contractor in developing the Project-specific SPCC Plan. The SPCC Plan is included in Appendix 1B. Except in circumstances specified in the SPCC Plan, potential impacts to water quality will be avoided while work is being performed in wetlands and other waterbodies by implementing the following measures:

- Construction materials, fuels, *etc.* will not be stored within wetlands or within 100 feet of any stream or wetland system, except under limited, highly controlled circumstances;
- Construction equipment will not be refueled within wetlands or within 100 feet of any stream or wetland system, except under limited, highly controlled circumstances and under direct supervision of the EI;
- Construction equipment will not be washed in any wetland or watercourse; and
- Equipment will be properly maintained and checked regularly for leaks.

1.5.1.9 New York State Construction Procedures

The Stony Point Discharge Take-up and Relay is located entirely within Westchester County, New York, which lies within Region 3 of the New York State Department of Environmental Conservation

("NYSDEC"). Algonquin is currently working to address anticipated NYSDEC construction requirements for the Project associated with wetland and stream impacts under the Section 401 Water Quality Certification review and overall land disturbance under the State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity. In response to these state requirements, Algonquin is conducting a site-specific analysis of state-protected wetlands and streams in support of its proposed pipeline installation techniques. The results of this analysis, along with other construction BMPs, will be incorporated into Algonquin's state permit application to be filed with the NYSDEC.

The Stony Point Discharge Take-up and Relay also lies within the Croton Watershed, which is part of the public water supply system of New York City. Stormwater discharges from construction activities in the Croton Watershed are subject to the "Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources" ("Watershed Regulations"). The Watershed Regulations require that a stormwater pollution prevention plan ("SWPPP") be reviewed and approved by the New York City Department of Environmental Protection ("NYCDEP") before certain activities may commence. Resource Report 2 provides additional details on the Croton Watershed area in New York. Algonquin is currently evaluating and designing appropriate BMPs in accordance with the Watershed Regulations for incorporation into the SWPPP for the Stony Point Discharge Take-up and Relay, which will be reviewed by the NYCDEP.

1.5.2 Aboveground Facility Construction

The Project aboveground facilities will be constructed in compliance with the same federal regulations and guidelines as the pipeline facilities and in accordance with the specific requirements of applicable federal and state approvals. The construction and restoration methods and procedures in the E&SCP will be followed, as applicable, for the aboveground facilities as well. Generally, aboveground facilities will be sited to avoid cultural and natural resource impacts to the greatest extent feasible. The following is a typical sequence of construction activities at the proposed compressor station sites.

1. Delineate project boundary limits, clearly marking all pertinent features in the field. Pertinent features shall include marking all underground utilities, identification of clearing limits required for construction of erosion control devices, and staking of proposed erosion control devices.
2. Install stabilized construction entrances, temporary erosion control structures, catch basin inlet protection, and silt fence for staging and stockpile areas.
3. Construct proposed drainage pipes, manholes, and catch basins, as applicable.
4. Conduct demolition/retirement, as applicable.
5. Form and pour concrete foundations for new compressor units, buildings, equipment foundations, *etc.*
6. Place new compressor units on foundations.
7. Place skidded buildings and equipment on foundations.
8. Construct compressor building around unit.
9. Run main gas pipe, small pipe, conduits, and cables above and below ground.
10. Finish painting, trim, minor electrical and plumbing connections for buildings and equipment. Touch up painting and coating, where required.
11. Finish grading, cleanup site, and remove construction machinery and containers.
12. Return site to finished conditions.

13. Seed and mulch disturbed areas.
14. Unit start up and commissioning.
15. Remove erosion and sediment controls once site has stabilized.

1.6 Environmental Training and Inspection for Construction

Consistent with the FERC guidelines, environmental training will be given to Algonquin's personnel and to contractor personnel whose activities may impact the environment during pipeline and aboveground facility construction (training protocol and content are outlined in the E&SCP). The level of training will be commensurate with the type of duties performed by the personnel. All construction personnel from the chief inspector, EI, craft inspectors, and contractor job superintendent to loggers, welders, equipment operators, and laborers will be given the appropriate level of environmental training. Training will occur prior to the start of construction and throughout the construction process, as needed. The training program will cover the FERC Plan and the FERC Procedures, job-specific permit conditions, contaminated sediment and groundwater management, health and safety, company policies, cultural resource procedures, threatened and endangered species restrictions, the E&SCP, the SPCC Plan, National Pollutant Discharge Elimination System Stormwater Plan, and any other pertinent information related to the job. The EIs and all other construction personnel are expected to play an important role in maintaining strict compliance with all permit conditions to protect the environment during construction.

As outlined in the E&SCP (*see* Appendix 1B), full time EIs will be designated by Algonquin during active construction or restoration. The EIs will have peer status with all other activity inspectors and will report directly to the Resident Engineer/Chief Inspector who has overall authority on the construction spread. The EIs will have the authority to stop activities that violate the environmental conditions of the FERC Certificate (if applicable), other federal and state permits, or landowner requirements and to order corrective action.

Although there will be sufficient qualified EIs available to implement the environmental inspection program, Algonquin anticipates that the FERC will require funding of a third-party environmental monitoring program to independently document environmental compliance.

1.7 Construction Schedule

The projected in-service date of the Atlantic Bridge Project is November 1, 2017. Algonquin anticipates receiving all permit and approvals by November-December 2016 so that winter clearing operations can be conducted between January and March 2017 for the Project facilities in New York. In Connecticut, tree clearing is expected to occur during April and May 2017. Algonquin anticipates starting the Taconic State Parkway HDD operation in January 2017. Construction of other pipeline facilities and aboveground facilities is anticipated to begin in March 2017 and end in October 2017.

1.8 Operation and Maintenance

Algonquin will operate and maintain the newly constructed pipeline facilities in the same manner as its existing system, although additional measures will be considered in certain areas. Aerial patrols of the pipeline will be performed on a weekly basis by personnel well-qualified to perform both emergency and routine maintenance on interstate pipeline facilities. Patrol personnel will handle emergencies and maintenance related to:

- Erosion and wash-outs along the ROW;
- Settling, undermining, or degradation of repaired ditch line in streets or parking lots;
- Performance of water control devices such as diversions;
- Condition of banks at stream and river crossings;
- Third-party activity along the pipeline ROW; and
- Any other conditions that could threaten the integrity of the pipeline.

The applicable local operations supervisors will be notified of any conditions that need attention. Significant conditions will be reported to the pipeline owners, and corrective measures will be performed as needed.

1.9 Future Plans and Abandonment

Although the Applicants are considering other potential projects, including the Access Northeast Project, the Applicants have not made any commitments for future expansion or abandonment of the facilities proposed in this docket. If additional demand for natural gas requires future expansion, the Applicants will seek the appropriate authorizations from the FERC. When and if an application is filed, the environmental impact of the new proposed facilities will be examined at that time.

1.10 Stakeholder Outreach

The Applicants have made significant efforts to inform the public, particularly landowners and public officials, about the proposed Atlantic Bridge Project. The Applicants' objective in implementing a comprehensive stakeholder outreach strategy has been to identify and potentially resolve issues raised by stakeholders in a timely fashion. To that end, the Applicants began meeting with governmental stakeholders in February 2014 when the Atlantic Bridge Project Open Season was announced. In July 2014, the Applicants commenced landowner notifications in New York, Connecticut and Massachusetts. As discussed herein, the Applicants have been interacting with and informing the public and receiving feedback on the Project through public meetings, landowner informational meetings, one-on-one discussions, written materials, and other means of communication. Copies of sample Project correspondence and presentation materials used to inform the public and other stakeholders are provided in Appendix 1C. A Project line list of affected landowners is provided in Appendix 1D.

Recognizing that the Project's stakeholder outreach program will need to continue well beyond the conclusion of the Project's construction activities, key components of the strategy include:

- The development of a consistent project message concerning scope and need;
- Timely notification to state, municipal, and county officials, state legislative and congressional delegation members, and leaders of tribal nations in advance of or nearly simultaneously with notification to affected landowners to ensure that all stakeholders have access to Project information in a timely fashion;
- Active coordination among all specialties within the Project team to facilitate information exchange and dissemination to interested stakeholders; and
- Ongoing communication with interested parties as facility designs were/are modified based on the response to the Applicants' Open Season and stakeholder feedback.

Prior to notifying affected landowners along the pipeline route, the government relations specialists on the Project team met with elected officials at the municipal level or city/town managers, as appropriate, county leadership, state constitutional offices and executive branch agencies, state legislative delegation members, congressional representatives and/or members of their staff, and tribal leadership of sovereign tribal nations

to apprise them of the Project. Project representatives prepared local maps that indicated the facilities proposed for that particular jurisdiction. Project representatives solicited their input and evaluated the design of Project facilities based on this feedback in order to address local concerns and minimize impacts while still meeting customer needs.

The Applicants have proposed facilities that seek to balance landowner and community concerns, environmental resource issues, and Project requirements. In accordance with the guidelines adopted by the FERC, the Applicants have encouraged landowners, municipal, county, state, and federal government officials, environmental groups, and other stakeholders to discuss their concerns with the Applicants, as well as the FERC, and to provide input on the most appropriate locations for the M&R stations, pipeline segments, the new compressor station in Weymouth, and related facilities associated with the Project.

During meetings, telephone conversations, and in correspondence, the Applicants provided information on the Open Season, the proposed facilities, the status of the requests to landowners for survey permission, the timing and permitting process for the Project, and the FERC's Pre-filing review process. A table of public officials and other stakeholders contacted to date is provided in Appendix 1C.

In September and October 2014, the Applicants hosted landowner informational meetings for affected landowners in New York, Connecticut and Massachusetts to acquaint landowners and public officials with the Project and begin to answer questions and gather input. Additional landowner informational meetings were also conducted in late January 2015 in Quincy and Weymouth, Massachusetts. Letters of invitation for the landowner informational meetings were sent directly to landowners potentially affected by the proposed facilities. In addition, municipal, county, state, and federal elected officials and other state governmental stakeholders were invited to the same meetings just prior to notifying landowners. This was done to provide those governmental stakeholders with advance notice should they receive inquiries from the public. Many elected officials or their designees also attended the meetings. The dates and locations of the landowner informational meetings are provided below:

- September 17, 2014 – Glastonbury, CT
- September 18, 2014 – Chaplin, CT
- September 22, 2014 – Walpole, MA
- September 23, 2014 – Norfolk, MA
- September 29, 2014 – Yorktown, NY
- September 30, 2014 – Suffern, NY
- October 1, 2014 – Danbury, CT
- October 2, 2104 – Southbury, CT
- October 6, 2014 – Norwich, CT
- October 7, 2014 – Franklin, MA
- October 8, 2014 – Bourne, MA
- January 28, 2015 – Quincy, MA
- January 29, 2015 – Weymouth, MA

In addition, the Applicants have been conducting a municipal consultation process to identify and resolve issues of local concern. The Applicants will continue their consultations with each of the municipalities affected by the proposed facilities to ensure that there is an appropriate process at the local level for identifying and responding to issues of concern.

In conjunction with the Pre-filing review process, the Applicants also sponsored public Open House meetings in March 2015. The purpose of these Open House meetings was to provide landowners, public officials and other stakeholders with additional information concerning the Project that was based on the

survey activities accomplished to date. Project representatives, as well as representatives from the FERC, were available at the Open Houses to respond to questions. The dates and locations of the Open Houses are provided below.

- March 2, 2015 – Danbury, CT
- March 3, 2015 – Suffern, NY
- March 4, 2015 – Norwich, CT
- March 5, 2015 – Southbury, CT
- March 9, 2015 – Glastonbury, CT
- March 10, 2015 – Chaplin, CT
- March 11, 2015 – Yorktown, NY
- March 16, 2015 – Franklin, MA
- March 17, 2015 – Norfolk, MA
- March 19, 2015 – Weymouth, MA
- March 25, 2015 – Walpole, MA
- March 26, 2015 – Quincy, MA

Following the Open Houses in March, the FERC issued its NOI to Prepare an Environmental Assessment for the Atlantic Bridge Project on April 27, 2015. The FERC's notice announced the opening of the scoping process, which the Commission uses to gather input from the public and interested agencies on the Project. Three scoping meetings were held in the Atlantic Bridge Project area during the week of May 11, 2015, and the scoping period closed on June 11, 2015. The locations and dates of the scoping meetings were as follows:

- May 11, 2015 – Town of Yorktown, NY
- May 12, 2015 – Town of Glastonbury, CT
- May 13, 2015 – Town of Weymouth, MA

The Applicants continue to update their Project web page[16], as needed, to provide the public with the most recent information, including a project overview, map of the proposed facilities, frequently asked questions, Project contacts, and public meeting announcements. The Applicants plan to continue their efforts to keep landowners, public officials, and the relevant permitting agencies fully informed of developments on the Project. The Applicants' Public and Agency Participation Plan is provided in Appendix 1C.

1.11 Agency Consultations

In addition to stakeholder outreach efforts with landowners and public officials, the Applicants have been consulting with federal, state, county, and local regulatory agencies. The Applicants began contacting federal and state regulatory agencies in New York, Connecticut, and Massachusetts in the summer of 2014 to discuss the relevant permitting requirements for the Project. Since that time, the Applicants have continued their outreach efforts with the key permitting agencies. The consultations involve briefings, meetings, letter requests for resource information, telephone discussions, and emails.

The Applicants expect to file for federal and the majority of state authorizations by November 2015 shortly after submitting the Certificate application to the Commission. The Applicants will work with Commission staff and the affected federal and state agencies to develop a schedule for issuance of applicable

[16] Atlantic Bridge Project Web Page: http://www.spectraenergy.com/Operations/New-Projects-and-Our-Process/New-Projects-in-US/Atlantic-Bridge/

environmental clearances and approvals. Copies of correspondence and related information regarding threatened or endangered species and sensitive habitats are provided in Appendix 1E.

1.12 Permits and Approvals

Construction contractor(s) engaged by Algonquin will be required to observe and comply with all applicable federal, state, and local laws, ordinances, and regulations. Contractors will also be required to comply with the Minimum Federal Safety Standards adopted by the USDOT under the Natural Gas Pipeline Safety Act of 1968, as amended, Occupational Safety and Health Administration guidelines, and Algonquin's own internal standards.

Other safety construction codes and regulations may be enacted or adopted by duly constituted government agencies and bodies having jurisdiction over the locations where the work is to be performed. The contractor(s) will be required to observe and abide by all provisions that are applicable.

The construction, operation, and maintenance of the Project will require multiple permits and regulatory approvals from various federal, state, and local agencies, as well as consultations by the FERC and Algonquin with some federal resource agencies, federally recognized Indian tribes, and other interested parties. Algonquin has been consulting with key federal and state permitting and resource agencies including:

- U.S. Army Corps of Engineers - New York and New England Districts;
- U.S. Fish and Wildlife Service ("USFWS") - New York and New England Field Offices;
- U.S. Environmental Protection Agency - Regions 1 and 2;
- NYSDEC;
- Connecticut Department of Energy and Environmental Protection ("CTDEEP"); and
- Massachusetts Department of Environmental Protection.

Consultations with these and other agencies will continue throughout the Project review and permitting period. The applicable federal, state, and local permits and approvals, responsible agencies, and the filing status and schedule for these permits and approvals are summarized in Table 1.12-1.

TABLE 1.12-1

Permit Summary

Agency	Permits and Consultations	Anticipated Permit Submittal Date	Anticipated Permit Receipt Date
FEDERAL			
Federal Energy Regulatory Commission ("FERC") o Office of Energy Projects	*Required Permit:* o Certificate of Public Convenience and Necessity o National Environmental Policy Act ("NEPA")Review o Pipeline abandonment under Section 7(b) of the Natural Gas Act	Initiate Pre-Filing – Feb. 20, 2015 File Formal FERC Application – October 2015	Receive FERC Certificate – August 2016
U.S. Army Corps of Engineers ("USACE") o New England District – Regulatory Division o New York District – Regulatory Division	*Required Permit:* o Section 404 Clean Water Act (CWA)	November 2015	November 2016

TABLE 1.12-1 Permit Summary			
Agency	**Permits and Consultations**	**Anticipated Permit Submittal Date**	**Anticipated Permit Receipt Date**
U.S. Environmental Protection Agency ("USEPA") o Region 1 (New England) o Region 2 (New York)	*Consultations:* o Wetland review during USACE Section 404 permit process o Consultation during NEPA review and oversight of air permits o SIP Conformity o General Permit for Discharges from Construction Activities	No USEPA approval required. Consultation through the USACE permitting process.	N/A
U.S. Fish and Wildlife Service ("USFWS") o New England Field Office o New York Field Office	*Consultations:* o Federal Endangered Species Act o Migratory Bird Treaty Act o Fish and Wildlife Coordination Act	Ongoing consultation	September/ October 2016
NEW YORK STATE			
New York State Department of Environmental Conservation ("NYSDEC") o Division of Environmental Permits o Division of Fish, Wildlife & Marine Resources ▪ Bureau of Water Permits ▪ Bureau of Habitat (Freshwater Wetlands Program)	*Required Permits:* o Section 401 Water Quality Certification pursuant to Section 401 of the CWA o Freshwater Wetland Permit o State Pollution Discharge Elimination System Hydrostatic Test Water o Protection of Waters Permit o Construction Stormwater General Permit - Stormwater Pollution Prevention Plan	November 2015	November 2016
NYSDEC o Bureau of Wildlife/Fisheries o New York Natural Heritage Program	*Consultation:* o State-listed threatened and endangered species consultations	Ongoing consultation	Review concurrent with above and USFWS surveys
New York State Office of Parks, Recreation & Historic Preservation o State Historic Preservation Office	*Consultation:* o Review and consultation regarding Section 106, National Historic Preservation Act o Review and consultation regarding potential encroachment across state lands	Ongoing consultation	November 2016
New York City Department of Environmental Protection, Bureau of Environmental Planning and Assessment	*Required Permits:* o Stormwater Pollution Prevention Plan for Croton Watershed	January 2016	September 2016
Municipal Agencies, New York	*Consultation:* o Other municipal requirements related to pipeline construction, including steep slope, erosion control, tree clearing, stream conservation and stormwater programs, air quality, impacts to agricultural districts	Ongoing consultation	N/A
STATE OF CONNECTICUT			
Connecticut Department of Energy and Environmental Protection ("CTDEEP") **Public Utilities Regulatory Authority** **Connecticut Siting Council**	*Consultation:* o Review and certification of energy facilities through the FERC process	Begin consultations June 2015	September 2016
CTDEEP o Bureau of Water Protection and Land Reuse	*Required Permits:* o 401 Water Quality Certification o Inland Wetlands and Watercourses o Water Diversion Permit (Non-consumptive Use)	November 2015	November 2016

TABLE 1.12-1 Permit Summary			
Agency	**Permits and Consultations**	**Anticipated Permit Submittal Date**	**Anticipated Permit Receipt Date**
CTDEEP o Bureau of Materials Management and Compliance Assurance - Water Permitting & Enforcement Division	*Required Permits:* o General Permit for discharges of hydrostatic test water o Stormwater and Dewatering Wastewaters from Construction	July 2016	September 2016
CTDEEP o Bureau of Natural Resources - Wildlife Division - Natural Diversity Data Base	*Consultation:* o State-listed threatened and endangered species consultations	Ongoing consultation	N/A
CTDEEP o Inland Fisheries Division	*Consultation:* o Fisheries consultations	Ongoing consultation	N/A
CTDEEP o Bureau of Air Management	*Required Permits:* o State New Source Review Permits (Oxford and Chaplin Compressor Stations)	October 2015	September 2016
Connecticut Department of Economic and Community Development o State Historic Preservation Office	*Consultation:* o Review and consultation under Section 106 of the National Historic Preservation Act	Ongoing consultation	November 2016
Connecticut Indian Affairs Council	*Consultation:* o Review and consultation under Section 106 of the National Historic Preservation Act	Ongoing consultation	N/A
Municipal Inland Wetlands and Watercourse Agencies	*Consultation:* o Inland Wetlands and Watercourses	Ongoing consultation	N/A
COMMONWEALTH OF MASSACHUSETTS			
Massachusetts Executive Office of Energy and Environmental Affairs o MEPA Office	*Consultation:* o MEPA Certificate	Consultation, no ENF required	N/A
Massachusetts Executive Office of Energy and Environmental Affairs o Massachusetts Office of Coastal Zone Management ("CZM")	*Consistency Determination* o CZM Consistency Concurrence	October 2015	October 2016
Massachusetts Department of Environmental Protection o Southeast Region Office	*Required Permit:* o Chapter 91 Waterways License	November 2015	October 2016
Massachusetts Department of Environmental Protection Southeast Region Office	*Required Permit:* o State Comprehensive Air Plan Approval (Weymouth Compressor Station)	October 2015	October 2016
Massachusetts Energy Facilities Siting Board	*Consultation:* o Review and comment on FERC-regulated energy projects	Ongoing consultation	N/A
Massachusetts Division of Wildlife and Fisheries o Natural Heritage & Endangered Species Program	*Consultation:* o Massachusetts Endangered Species Act	Consultation complete	
Massachusetts Historical Commission	*Consultation:* o Section 106, National Historic Preservation Act	Ongoing consultation	November 2016
Massachusetts Commission on Indian Affairs o State Historic Preservation Office	*Consultation:* o Section 106, National Historic Preservation Act	Ongoing consultation	N/A

TABLE 1.12-1 Permit Summary			
Agency	**Permits and Consultations**	**Anticipated Permit Submittal Date**	**Anticipated Permit Receipt Date**
Municipal Conservation Commissions	*Required Permit:* o Order of Conditions – Massachusetts Wetlands Protection Act	March 2016	September 2016
Municipal Historical Commissions	*Consultations:* o Section 106, National Historic Preservation Act (16 USC § 470f)	Ongoing consultation	N/A
Massachusetts Board of Underwater Archaeological Resources	*Consultations:* o Section 106, National Historic Preservation Act	Ongoing consultation	December 2016
STATE OF MAINE			
Maine Department of Inland Fisheries and Wildlife	*Consultation:* o State-listed endangered, threatened, and special concern species and designated Essential or Significant Wildlife Habitat consultations	Consultation complete	N/A
Maine Natural Areas Program	*Consultation:* o State-protected species, critical habitats, and significant natural communities consultations	Consultation complete	N/A
Maine Historic Preservation Commission	*Consultation:* o Section 106, National Historic Preservation Act	Ongoing consultation	November 2016
INDIAN TRIBES			
Federally Recognized o Wampanoag Tribe of Gay Head (Aquinnah) o Mashpee Wampanoag Indian Tribe o Narragansett Indian Tribe o Mohegan Indian Tribe o Mashantucket Pequot Tribal Nation o Delaware Nation of Oklahoma o Delaware Tribe of Indians o St. Regis Mohawk Tribe o Stockbridge-Munsee Community Band of Mohican Indians	*Consultations:* o Section 106, National Historic Preservation Act	Ongoing consultation	N/A
Non-Federally Recognized o Ramapough Lenape Indian Nation o Golden Hill Tribe of the Paugussett Indian Nation o Schaghticoke Tribal Nation o Eastern Pequot Tribal Nation o Massachusetts Ponkapoag Tribe	*Consultations:* o Section 106, National Historic Preservation Act	Ongoing consultation	N/A

Notwithstanding anything to the contrary set forth in this application, nothing stated herein shall be construed to indicate that any state, regional, or local agency referred to has the power to impose any requirement inconsistent with Federal law or to refuse to issue or to unreasonably delay the issuance or processing of any state, regional, or local permit, license, certificate, approval, review, or other requirement: nor shall this document be construed to limit Algonquin's legal rights and remedies under the Natural Gas

Act (15 U.S.C. § 717, et seq.), Pipeline Safety Act (49 U.S.C. § 60101, et seq.), or the United States Constitution, including, but not limited to, the Supremacy Clause and Commerce Clause.

1.13 Status of Field Surveys

A summary of the field survey status is presented below.

1.13.1 Civil Surveys

Civil surveys for the Atlantic Bridge Project commenced in July 2014 and are ongoing. Algonquin has completed about 95 percent of the centerline survey for the Project pipelines, and about 90 percent of the detailed pipeline survey has been completed for available properties. Algonquin is in the process of obtaining survey permission for the remaining parcels that have not yet been surveyed or, where such permission cannot be secured, obtaining other lawful access. Algonquin has also completed approximately 95 percent of the civil surveys required for the aboveground facilities for the Atlantic Bridge Project.

1.13.2 Geotechnical Borings for HDD Feasibility

Algonquin has completed its geotechnical survey to recover rock core samples to document existing subsurface conditions and bedrock properties along the proposed Taconic State Parkway HDD alignment in Yorktown, New York. The geotechnical survey report is provided in Appendix 6C of Resource Report 6.

1.13.3 Biological Field Surveys and Consultations

The wetland and waterbody field surveys for the Atlantic Bridge Project commenced in May 2014 and were completed in June 2015 for all properties where landowner access has been obtained. Algonquin has conducted informal consultations with federal and state resource agencies to update the known locations of federal- or state-listed threatened or endangered species and species of special concern that could potentially be affected by construction or operation of the Project. Algonquin has been consulting with the USFWS, NYSDEC, CTDEEP, and state Natural Heritage Programs regarding the presence of protected animal and plant species. Based on agency feedback, Algonquin completed field surveys for federally listed threatened and endangered species in the spring and summer of 2015 for the Project facilities.

1.13.4 Cultural Resources Field Surveys

The cultural resources identification field surveys for the Project (including informal communication with Indian tribes) resumed in May 2015 where landowner access has been obtained. Archaeological site evaluations also commenced in May 2015 along the Stony Point Discharge Take-up and Relay and the historic architectural properties identification survey started in June 2015. Cultural resource identification survey fieldwork progress is shown in Table 1.13-1.

TABLE 1.13-1

Cultural Resource Survey Progress

Atlantic Bridge Project Facility	Archaeological Identification Survey Fieldwork Progress	Archaeological Site Evaluation Fieldwork Progress	Aboveground Resource Identification Survey Fieldwork Progress
Stony Point Discharge Take-up and Relay	88%	100% (for known sites)	0%
Southeast Discharge Take-up and Relay	91%	To Be Determined	0%

TABLE 1.13-1 Cultural Resource Survey Progress			
Atlantic Bridge Project Facility	**Archaeological Identification Survey Fieldwork Progress**	**Archaeological Site Evaluation Fieldwork Progress**	**Aboveground Resource Identification Survey Fieldwork Progress**
NY Aboveground Facilities	100%	N/A	0%
CT Aboveground Facilities	100%	N/A	0%
MA Aboveground Facilities	N/A	N/A	0%
ME Aboveground Facilities	N/A	N/A	N/A

1.14 Non-Jurisdictional Facilities

The Applicants have determined that there are no non-jurisdictional facilities associated with the Project.

1.15 Cumulative Impacts

Cumulative impacts may result when the environmental effects associated with a proposed action are added to temporary (construction-related) or permanent (operations-related) impacts associated with other past, present, or reasonably foreseeable future actions. Although the individual impact of each separate action might not be significant, the additive or synergistic effects of multiple actions could be significant.

The purpose of this analysis is to identify and describe cumulative impacts that would potentially result from implementation of the proposed Atlantic Bridge Project along with other projects in the vicinity that could affect the same resources in the same approximate timeframe. Other projects considered in this cumulative impact analysis may differ from the proposed Project in type, magnitude, and duration but occur in or near the areas affected by the Project. Additionally, other projects included in this analysis are based on the likelihood of completion, and only recently completed projects, those with ongoing impacts, or those that are "reasonably foreseeable" future actions are included. To ensure that this analysis focused on relevant projects and potentially significant impacts, the actions considered in the cumulative impact analysis included projects that:

(1) impact a resource area potentially affected by the projects;

(2) impact a resource area within all or part of the same geographical area affected by the projects, which takes into account the resource being discussed within a region of influence where the projects could contribute to cumulative impacts on that particular resource; and,

(3) impact a resource within all, or part of, the time span encompassed by the proposed or reasonably expected construction or operation schedule of the projects.

Current and reasonably foreseeable future actions were identified from internet research of projects under review at federal, state, and local agencies. Many of the proposed actions were small (e.g., individual homes, septic tanks, sewer systems, docks, and other miscellaneous small projects). Due to the small size of these actions, the potential for any substantial cumulative impact is very unlikely, and no cumulative impacts are assumed for this group. Instead, the assessment focused on larger actions that have the potential to cause cumulative impacts (e.g., large infrastructure projects such as highways, bridges, major gas and electric lines, industrial facilities, and large commercial enterprises). In most cases, these larger projects occur within the same counties as the Atlantic Bridge Project facilities, but there are some located in other counties in the region. Table 1.15-1 provides information on these major actions including: project name, location, description, and approximate distance from the Atlantic Bridge Project. Figure 1.15-1 shows the

general locations of these actions relative to the Atlantic Bridge Project. The referenced table and figure indicate that most of the identified actions do not overlap with the Atlantic Bridge Project.

In response to comments and input received from the FERC and stakeholders, the Applicants have developed detailed descriptions of certain ongoing or future planned energy projects in the Atlantic Bridge Project area that overlap in geography and/or construction period. These projects include the Algonquin Incremental Market ("AIM") Project, the Access Northeast Project, and the Towantic Energy Center Project (*see* Section 1.15.1 through Section 1.15.3). Following these descriptions, the Applicants provide a discussion of cumulative impacts to specific environmental resources (e.g., wetlands, vegetation, *etc.*) in Section 1.15.4.

1.15.1 AIM Project

As a starting point, the Applicants evaluated the potential cumulative environmental effects associated with the AIM Project, which is a stand-alone natural gas pipeline project that is proceeding under a Certificate of Public Convenience and Necessity issued by the FERC on March 3, 2015.

The purpose of the AIM Project is to provide 10 New England shippers with 342,000 Dth/d of additional natural gas supply to meet immediate and future load growth demands and to reduce volatility in natural gas pricing. The AIM Project is designed to enable Algonquin to provide 342,000 Dth/d of firm transportation service from Algonquin's existing receipt point in Ramapo, New York to various Algonquin city gate delivery points in southern New England, including Connecticut, Rhode Island, and Massachusetts. The AIM Project shippers include eight LDCs and two municipal utilities that need the transportation capacity to provide natural gas distribution service to end users in southern New England. State regulatory proceedings or municipal meetings for each of the AIM Project shippers addressed the need for the AIM Project to provide access to supply in order to meet market demand in southern New England beginning in November 2016. On March 3, 2015, the FERC issued a Certificate of Public Convenience and Necessity for the AIM Project, and construction is well underway, with an in-service date expected by November 2016.

The AIM Project includes the construction of approximately 37.6 miles of take-up and relay, loop and lateral pipeline facilities, modifications to six existing compressor stations resulting in the addition of 81,620 hp of compression, modifications to 24 existing M&R stations, the removal of one existing M&R station, and the construction of three new M&R stations. These AIM Project facilities are located in New York, Connecticut, Rhode Island, and Massachusetts.

While the AIM Project and the Atlantic Bridge Project both include upgrades to Algonquin's mainline pipeline system in New York, Connecticut, and Massachusetts, the 342,000 Dth/d of gas from the AIM Project will supply different Project Shippers at different locations than those Project Shippers who will be receiving natural gas capacity from the Atlantic Bridge Project[17]. Specifically, the Atlantic Bridge Project is specifically designed and scheduled to satisfy the operational and load demands of the Project Shippers and, as applicable, their retail customers in southern and northern New England and the Maritime provinces

[17] The Applicants held an open season for the Atlantic Bridge Project from February 5, 2014 through March 31, 2014 and held a reverse open season from January 16, 2015 through January 26, 2015. As a result of the Open Seasons, the Applicants have executed precedent agreements with seven shippers for firm transportation service to deliver new natural gas supplies to the Project Shippers' service areas or to their end use, as applicable, with a projected in-service date of November 1, 2017. The Project Shippers are Heritage Gas Limited, Maine Natural Gas Company, NSTAR Gas Company d/b/a Eversource Energy, Exelon Generation Company, LLC (as assignee of Summit Natural Gas of Maine), Irving Oil Terminal Operations Inc., New England NG Supply Limited, and Norwich Public Utilities.

of Canada. The Project will also increase Algonquin's mainline capacity by up to an additional 132,705 Dth/d, facilitating south-to-north flow on the Maritimes system to provide New England and the Maritime provinces of Canada with greater access to traditional and new supply sources in the U.S.

The proposed take-up and relay pipeline for the Atlantic Bridge Project in New York (Stony Point Discharge Take-up and Relay) and Connecticut (Southeast Discharge Take-up and Relay) are directly adjacent to the planned AIM Project pipeline facilities (*see* Table 1.15-1 and Figure 1.15-1). There are two areas of construction workspace overlap where the AIM Project pipeline facilities end and the Atlantic Bridge Project facilities begin. Construction workspace for the Atlantic Bridge Project Stony Point Discharge Take-up and Relay overlaps with the construction workspace area for the AIM Project Stony Point Lift and Relay segment west of Stony Street in Yorktown, New York. The second overlap area is found at the eastern end of the AIM Project Southeast Lift and Relay pipeline segment and the starting point of the Atlantic Bridge Project Southeast Discharge Take-up and Relay at MLV Site 19 in Danbury, Connecticut. The Atlantic Bridge Project includes work at the existing Oxford and Chaplin Compressor Stations in Connecticut, which are also part of the AIM Project scope. Work associated with the Atlantic Bridge Project at these stations will occur at least a year after the AIM Project activities and, as is the case with the pipeline work, will provide natural gas supplies to a different set of Project Shippers.

Although there is a very small overlap in construction workspace between the two projects in a limited area, the Atlantic Bridge Project represents separate facilities that are being constructed on a different schedule (clearing starting in January 2017 and construction starting in March 2017) with a separate scheduled in-service date (November 2017). Construction of AIM Project facilities will be completed and in-service in this area before any construction work for the Atlantic Bridge Project starts. Nevertheless, all environmental impacts and necessary mitigation has been adequately addressed for each project, and Algonquin anticipates no cumulative impacts for these sites as result of the lack of any temporal overlap.

1.15.2 Access Northeast Project

The Applicants also evaluated the potential cumulative environmental effects associated with the Access Northeast ("ANE") Project, which is still in the early stages of development and currently contemplates the development of pipeline facilities in New York, Connecticut, Rhode Island, and Massachusetts. The ANE Project also would include construction of a peak-shaving liquefied natural gas ("LNG") storage facility in Acushnet, Massachusetts. While Algonquin will be the lead company involved in the Project, affiliates of Eversource Energy and National Grid will have ownership interests in the ANE Project. The ANE Project is independent from Algonquin's AIM and Atlantic Bridge projects. The purpose of the ANE Project is to maximize direct pipeline interconnects to up to 60 percent of ISO-New England's power plants and advance a customized solution to New England's energy challenge. More than 90 percent of the solution will utilize Algonquin's existing pipeline and utility corridors and natural gas infrastructure, thus minimizing environmental and community effects. The ANE Project will provide critically needed natural gas pipeline capacity and market area storage to ensure grid stability and reliability of New England's power generation fleet, especially on peak power demand days. The pipeline expansions associated with the ANE Project will be available in increments of 200 million cubic feet per day, up to 900 million cubic feet per day, with some Project facilities expected to be in service by November 2018. The construction of the overall ANE Project will be phased through 2020.

An open season was held for the ANE Project from February 18, 2015 through May 1, 2015. As a result of the Open Season, Algonquin has executed memoranda of understanding with the electric distribution units of Eversource Energy and National Grid to advance the ANE Project and seek all regulatory approvals in an effort to lower electricity costs and enhance reliability. Algonquin is also discussing the proposed service with other regional electric distribution companies.

The ANE Project currently contemplates the construction of approximately 127.5 miles of various pipeline facilities, modifications at seven existing compressor stations, the construction of one new compressor station, associated pipeline facilities including M&R stations and the construction of an LNG peaking facility.

In the Town of Somers, New York, the eastern terminus (MP 4.0) of the Stony Point Discharge Take-up and Relay pipeline for the Atlantic Bridge Project will end where the Somers to Southeast Take-up and Relay for the ANE Project will begin. In this area, there would likely be construction workspace overlap where the Atlantic Bridge Project pipeline facilities end and the ANE Project facilities begin. However, these construction periods would not occur at the same time and would be separated by at least one year. In the City of Danbury, Connecticut, there could be pipeline and construction workspace overlap between MP 2.1 and 2.3 of the Southeast Discharge Take-up and Relay for the Atlantic Bridge Project and MP 0.0 to 0.15 of the Danbury to Oxford Take-up and Relay for the proposed ANE Project (*see* Table 1.15-1 and Figure 1.15-1). As with the New York facilities, construction of these Connecticut pipelines would occur at least a year apart.

The Atlantic Bridge Project also includes work at the existing Oxford and Chaplin Compressor Stations in Connecticut and construction of a new compressor station in Weymouth, Massachusetts. Work (i.e., increases in horsepower) at each of these compressor stations is also part of the ANE Project scope. However, work at these stations for the ANE Project will occur following completion of Atlantic Bridge Project construction activities. Each of these increases in horsepower will involve increases in potential emissions but will not create or significantly contribute to any exceedances of applicable air quality control requirements (*see* Section 1.15.4.9). The work associated with the LNG storage facility for the ANE Project will be located in Acushnet, Massachusetts and will not affect the Atlantic Bridge Project.

1.15.3 Competitive Power Ventures Towantic Energy Center Project

Competitive Power Ventures ("CPV") proposes to construct and operate a state-of-the-art 805 megawatt ("MW") natural gas-powered, combined cycle, electric generating facility in the Town of Oxford in New Haven County, Connecticut. The CPV Towantic Energy Center will be located on a 26-acre parcel of land in the Woodruff Hill Industrial Park, which is adjacent to Algonquin's existing Oxford Compressor Station. The project will be fueled by natural gas and state-of-the-art technology, including two combustion turbines, two heat recovery steam generators, and one steam turbine capable of producing electricity.

The fuel required for the CPV Towantic Energy Center will be obtained from Algonquin's existing pipeline system, and it will use ultra-low sulfur diesel fuel for emergency backup. An electrical interconnection will be required with the Connecticut Light and Power Company 115-kilovolt circuit between Baldwin Junction and Beacon Falls. While the Nameplate Capacity of the CPV Towantic Energy Center is 805 MW, actual operating capacity will be lower.

The Oxford Compressor Station is located along the Algonquin Mainline/Line 30B ROW. The Oxford Compressor Station currently contains a compressor building housing three compressor units, along with associated office/warehouse, auxiliary, fuel gas, garage, and products storage building. The Atlantic Bridge Project will involve modifications at the Oxford Compressor Station, consisting of the installation of one new Solar Taurus 60 gas-fired compressor unit providing an additional 7,700 hp in a stand-alone building. Station modifications associated with the Atlantic Bridge Project will occur concurrently with the construction of the CPV Towantic Energy Center. Construction of the CPV Towantic Energy Center Project is expected to take 28 to 30 months, with the facility online in 2018.

1.15.4 Potential Cumulative Impact on Specific Resources within the Atlantic Bridge Project Area

Algonquin will coordinate, if necessary, with the developers and sponsors of the projects referred to in Table 1.15-1 to avoid or minimize cumulative impacts from construction-related air, noise, and traffic impacts resulting from the Atlantic Bridge Project. The following is a discussion of additional resources and the measures that are in place to minimize cumulative impacts.

1.15.4.1 Geology, Soils, and Sediments

Construction of the facilities associated with the Atlantic Bridge Project are expected to have a temporary but direct impact on near surface geology, soils, and sediments. Clearing and grading associated with construction of the Atlantic Bridge Project and the other projects listed in Table 1.15-1 could accelerate the soil erosion process. Without adequate protection, these activities could result in the discharge of sediment to adjacent waterbodies and wetlands. However, cumulative impacts on geology, soils, and sediments are not expected as the direct effects will be localized and limited primarily to the period of construction. Additionally, the Project will adhere to the E&SCP to minimize the potential of soil erosion, and other projects will likewise have to comply with applicable soil erosion regulations.

The proposed Weymouth Compressor Station site will be located on an industrially zoned parcel formerly and currently owned and used for utility purposes and within an industrialized area. Cumulative impacts on soils at the Weymouth Compressor Station site are not anticipated given the previously developed condition of the property as an industrial site and the presence of fill material. Algonquin will employ BMPs to avoid discharges of soils off-site during construction activities. In addition, Algonquin has collected on-site geotechnical coring data that is being incorporated into the engineering design of the new station to avoid impacts to the station from existing subsurface geology and to also avoid impacts to nearby infrastructure from the construction of the compressor station. Although the compressor station site is near the Fore River Bridge Project, no cumulative impacts to geology, soils, or sediments are anticipated from the construction or operation of the compressor station.

The AIM Project is being constructed from 2015 through 2016, the Atlantic Bridge Project is proposed for construction in 2017, and construction of the ANE Project is currently expected to begin in early 2018 and extend through 2020. Therefore, the construction schedules of these three projects are not expected to overlap. The AIM Project will be constructed and the ROW substantially restored before potential construction commences on the Atlantic Bridge Project, and the Atlantic Bridge Project construction will be completed and the ROW restored before construction on the 2018 components of the ANE Project commence. As with the AIM and ANE projects, Algonquin will implement the FERC Plan for the Atlantic Bridge Project to establish a baseline for minimizing the potential for erosion as a result of water or wind action and to aid in reestablishing vegetation after construction of each project. In addition, disturbance associated with construction activities will be minimized and mitigated through the application of BMPs that are incorporated in the Atlantic Bridge Project E&SCP. Should hazardous materials or contaminated soils and/or sediments be encountered during construction, such materials will be disposed of at fully-licensed and permitted disposal facilities in accordance with applicable state and federal laws and regulations. As a result, any cumulative effects on geological resources, soils, and sediments from the AIM and ANE projects and Atlantic Bridge Project are expected to be temporary and minor. Further information on soils within the Project area is provided in Resource Report 7.

1.15.4.2 Water Resources and Wetlands

Construction of the Atlantic Bridge Project facilities will not result in any permanent loss of wetland acreage. Significant adverse cumulative impacts on water resources and wetlands are not expected as the direct effects of the Project will be localized and limited primarily to the period of construction. The

Atlantic Bridge Project has also been designed to avoid and minimize impacts to wetlands and waterbodies. One such minimization strategy is using the dry crossing method at waterbody crossings to avoid potential impacts. Water resources and wetlands associated with the Project are further described in Resource Report 2.

Each project listed in Table 1.15-1 that affects wetlands will be required to provide compensatory mitigation for unavoidable wetland impacts based on the terms and conditions of their respective Section 404 permits. These projects will also be required to minimize wetland impacts by implementing wetland and waterbody construction and mitigation measures and erosion control measures by complying with applicable federal and state permit requirements. Based on the minimal water resource and wetland impacts resulting from the Atlantic Bridge Project, combined with any required mitigation from other projects in the area, no cumulative impacts on water resources or wetlands are expected to occur as a result of the Project.

The proposed Weymouth Compressor Station site is bordered by the Fore River to the north/northwest and Kings Cove to the east. The proposed compressor station is also in close proximity to the Fore River Bridge Project. However, cumulative impacts to water resources and wetlands at the Weymouth Compressor Station are not expected as there are no wetlands or waterbodies that will be affected by construction on the site. Additionally, the Project E&SCP will be followed during construction to prevent the discharge of sediment from the site and into adjacent waterbodies. The SPCC Plan will also be implemented at the compressor station site to reduce the risk of spills or accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The ANE Project would also follow and implement its project E&SCP and SPCC Plan during construction at the proposed Weymouth Compressor Station site.

The Atlantic Bridge Project is located within some of the same watersheds crossed by the AIM and ANE projects and could potentially result in impacts on wetlands and surface waters. Therefore, there is the potential that cumulative impacts could result if the Atlantic Bridge Project were constructed in addition to the AIM and ANE projects; however, the Atlantic Bridge Project will contribute little to the long-term cumulative impacts on wetlands and waterbodies. Impacts on surface waters resulting from project construction will end shortly after pipeline installation, and impacts on wetlands will also be of short duration. The Atlantic Bridge Project will not result in any permanent wetland losses or conversions. It is anticipated that most of the affected wetlands will be restored and most are expected to return to a pre-construction state over time. The Atlantic Bridge Project will also be subject to all federal and state regulatory requirements, including wetland and waterbody construction and mitigation measures to minimize impacts to wetlands and waterbodies.

The Atlantic Bridge Project and AIM and ANE projects include pipeline facilities within the New York City Watershed and, as such, are subject to additional requirements provided for in a SWPPP. The SWPPPs must be approved by the NYCDEP, ensuring construction is completed in a manner that protects the Watershed and does not result in significant cumulative impacts to the Watershed. Therefore, the cumulative effect on waterbodies and wetlands from the Atlantic Bridge Project and AIM and ANE projects will be temporary and minor.

1.15.4.3 Vegetation and Wildlife

When projects are constructed at or near the same time, the combination of construction activities could have a cumulative impact on vegetation and wildlife in the immediate area. Clearing, grading, and other construction activities associated with the projects will result in the removal of vegetation, alteration of wildlife habitat, displacement of wildlife, and other secondary effects such as forest fragmentation and establishment of invasive plant species. The direct effects of the Atlantic Bridge Project will be localized and limited primarily to the period of construction, as vegetated areas disturbed for temporary workspace and pipeline take-up and relay will be replanted and restored; therefore, significant adverse cumulative

impacts on vegetation and wildlife are not expected. Additionally, the proposed Atlantic Bridge Project pipeline facilities will be located within or adjacent to existing easements and corridors including Algonquin's pipeline ROWs, public roadways, and electric transmission line corridors, thereby minimizing impacts on vegetation and wildlife. Vegetation and wildlife associated with the Atlantic Bridge Project area are described in Resource Report 3.

Wildlife cumulative impacts specifically related to the proposed Weymouth Compressor Station as a result of the Atlantic Bridge Project and the ANE Project are anticipated to be minimal. The Weymouth Compressor Station site is located in an industrial area and is surrounded by development. Given the spatial surroundings and existing site conditions, this parcel does not provide high quality wildlife habitat, and impacts to wildlife at this site are not expected. However, it is possible that direct mortality to smaller mammals and birds that are less mobile could occur during clearing and grading operations associated with construction of the facility, but these impacts are not anticipated to be significant. Similar mortality could also occur at the nearby Fore River Bridge Project, though such mortality events would be temporary and would not result in significant negative impacts to wildlife populations in the area.

The Weymouth Compressor Station will be constructed on a site that currently consists of an open, previously developed industrial parcel with limited value in terms of the vegetation present on the site. Permanent vegetation impacts associated with construction of the compressor station for the Atlantic Bridge Project will consist of approximately 4.3 acres of open upland. The remainder of the parcel for the Atlantic Bridge Project will be undeveloped and maintained as a buffer between the surrounding water and the compressor station. Because the Weymouth Compressor Station site is located on industrial land, any modifications to the site for the ANE Project are expected to result in minimal impacts on vegetation. The Fore River Bridge Project involves replacing an existing structure; thus, vegetation impacts are expected to be inconsequential. Given the minimal vegetation affected by the proposed compressor station and the Fore River Bridge Project, cumulative impacts to vegetation in the area are not expected.

As part of each project's permit conditions, mitigation measures will be implemented to minimize the potential for erosion, such as revegetating disturbed areas to increase site stabilization and controlling the spread of noxious weeds. These mitigation measures will minimize the degree and duration of cumulative impacts on vegetation and wildlife from these projects. Given the minimal impacts to vegetation and wildlife anticipated as a result of the Atlantic Bridge Project and ANE Project, combined with any required mitigation from other projects in the area, no significant adverse cumulative impacts to vegetation or wildlife are expected to occur as a result of the Atlantic Bridge Project.

A significant portion of the proposed pipeline facilities for both the Atlantic Bridge Project and AIM and ANE projects will be within Algonquin's existing pipeline ROWs, public roadways, and/or other utility ROWs, thereby minimizing impacts on vegetation and wildlife. Therefore, while the cumulative effect on vegetation and wildlife from the AIM and ANE projects and the Atlantic Bridge Project could result in some time delay in the restoration of impacted vegetated areas where construction of the projects are located in the same affected resource area within a span of several years, the overall impact is temporary and is expected to be minor.

1.15.4.4 Cultural Resources

Past disturbances to cultural resources in the Project area are typically related to urban development, accidental disturbances, intentional destruction or vandalism, lack of awareness of historic value, and construction, maintenance, and operations associated with existing infrastructure. Federal actions must consider mitigation measures designed to avoid or minimize adverse effects on cultural resources. Non-federal actions will need to comply with any identification procedures and mitigation measures required by New York, Connecticut, Massachusetts, and Maine.

Algonquin has developed Project-specific plans to address unanticipated discoveries of cultural resources and human remains in the event they are encountered during construction. Cumulative impacts on cultural resources are not anticipated as the potential for cultural resource impacts will be localized and limited primarily to the period of construction. Furthermore, because the Atlantic Bridge Project consists of take-up and relay of existing pipeline, it is unlikely that a cultural resource discovery would occur along the pipeline segments, as the areas have previously been excavated.

As has occurred for the AIM Project, the Atlantic Bridge Project and the ANE Project would be subject to review under Section 106 of the National Historic Preservation Act, which requires consultation with State Historic Preservation Officers and Indian Tribes to ensure efforts are made to minimize impacts to historic properties and archaeological resources, including properties listed or eligible for listing on the National Register of Historic Places. Accordingly, it is not expected that the AIM Project, Atlantic Bridge Project, or ANE Project would result in significant cumulative impacts to cultural resources, particularly since the Atlantic Bridge Project will be constructed generally within existing disturbed ROW. Resource Report 4 describes cultural resources in relation to the Atlantic Bridge Project.

Cumulative impacts on cultural resources at the proposed Weymouth Compressor Station are not expected as a result of the Atlantic Bridge Project or ANE Project. An archaeological assessment of the compressor station site was conducted, including a background research investigation and a physical inspection of the site. Background research and field reconnaissance surveys established that the proposed workspace associated with the Weymouth Compressor Station was previously surveyed for archaeological resources as part of the Algonquin HubLine Project (Docket No. CP01-5-000) and was previously assessed as having no/low archaeological sensitivity. Given the results of the archaeological assessment at the proposed compressor station site, combined with the fact that the nearby Fore River Bridge Project involves replacing existing infrastructure, cumulative impacts to cultural resources are unlikely.

1.15.4.5 Socioeconomics

The Atlantic Bridge Project and the projects listed in Table 1.15-1 will generate temporary construction jobs. The local supply of construction workers needed for these projects may be derived from workers employed in the area, providing a direct economic benefit to those individuals and the communities in which they reside. Positive cumulative economic benefits will be generated from these projects, including an increase in annual tax revenue from project operations and an increase in permanent employment with the cumulative benefit of potentially lowering local unemployment rates. Non-local laborers could increase the total population in the Project area; however, the potentially vacant rental units available in the Project area will provide adequate housing opportunities for non-local workers. In addition, the Atlantic Bridge Project counties have the necessary infrastructure to provide public services and utilities to support the projects.

Construction work would occur generally within existing ROWs in areas representing different economic and ethnic backgrounds. The USEPA defines “environmental justice” (“EJ”) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The Atlantic Bridge Project pipeline facilities are not located in any EJ areas as defined by federal or state EJ policies designating such areas based on minority and low income populations. The pipeline facilities consist of the take-up and relay of pipeline within or adjacent to existing utility ROWs and will not involve greenfield development or result in significant impacts on environmental or community resources or economics.

As described in detail in Resource Report 5, there are six census tracts composed of 15 block groups within a one mile radius of the proposed Weymouth Compressor Station site. Within this one mile radius, there

are two census tracts composed of six block groups that meet the criteria for an EJ population based on minority, income, and minority and income populations. Both of these EJ census tracts (including the six block groups) are located in the City of Quincy and are part of the Germantown and Quincy Point neighborhoods. These neighborhoods are located north and west of the compressor station site across the Fore River. Four of the six block groups are located beyond the half-mile radius from the site where the first half mile is industrialized land (the Fore River Shipyard). The other two block groups compose the Germantown neighborhood and are in both the half mile and one-mile radius from the site. None of the six tracts is in Braintree or Weymouth. The Applicants have consulted with local officials, the Massachusetts Environmental Policy Act Director, and the EPA and have initiated steps to recognize the EJ communities (*see* Resource Report 5).

The Weymouth Compressor Station will be located on an existing industrial site with a long history of industrial uses including electric power generation. Located immediately adjacent to the proposed site is the Fore River Power Plant, the Massachusetts Water Resources Sewer Pumping Station, Calpine Electric, and the Algonquin M&R Station #00332. The general site area also contains other industrial sites such as the Citgo Marine Petroleum Terminal, Twin Rivers Technologies (Oleochemical producers), and a sewage pelletizing plant. In addition, the Town of Weymouth zoning classification for the proposed compressor station parcel is General Industrial (Town of Weymouth, June 4, 2014). As such, the proposed use of this parcel as a new compressor station is consistent with past, present and future land use on the site and its vicinity. It will not add to industrialization of the vicinity in any meaningful sense.

The Atlantic Bridge Project and ANE Project are not expected to result in disproportionate impacts on the health, social conditions, or economic conditions of minority or low income communities. The primary adverse impacts associated with the construction of the Project facilities will be temporary noise, dust, and traffic impacts. None of these impacts are considered significant given the temporary nature of the impacts and measures that will be implemented to minimize such impacts. These impacts will occur in areas with a variety of socioeconomic backgrounds. The Project facilities, including the Weymouth Compressor Station, will be designed and operated in compliance with the national ambient air quality standards and the FERC noise standards and will be designed, constructed, operated, and maintained in accordance with or exceeding the USDOT Pipeline and Hazardous Materials Safety Administration minimum federal safety standards. The Atlantic Bridge Project and ANE Project will also bring economic benefits to the region via added tax revenues and jobs associated with construction and operation.

1.15.4.6 Land Use

The Atlantic Bridge Project and several other projects listed in Table 1.15-1 will result in both temporary and permanent changes to current land uses. The proposed work at aboveground facilities will occur at existing Algonquin facilities with the exception of one new compressor station and the replacement of an existing M&R station at a nearby site. Accordingly, it is anticipated that only a minimal area within the total aboveground construction workspace will be maintained as new permanently affected land for operation of aboveground facilities. The proposed Atlantic Bridge Project pipeline facilities will be located within or adjacent to existing easements and corridors including Algonquin's pipeline ROWs, public roadways, and electric transmission line corridors, thereby minimizing impacts on existing land use within the Project area. Construction of the Atlantic Bridge Project will be short-term, and a minimal amount of land will be converted to another land use type; therefore, the cumulative effect on land use will be temporary and minor. Land use associated with the Atlantic Bridge Project is detailed in Resource Report 8.

With regards to the proposed Weymouth Compressor Station, approximately 10 acres of temporary construction workspace will be required for the Atlantic Bridge Project, all of which is classified as industrial land. Following construction, the station will occupy approximately 4.3 acres of industrial land

for the Atlantic Bridge Project, which is consistent with current zoning. The temporary construction workspace that will be required at the Weymouth Compressor Station for the ANE Project is currently unknown. The nearby Fore River Bridge Project will not result in any conversion of land use because it is an infrastructure replacement project. Therefore, the proposed Weymouth Compressor Station is not anticipated to contribute to cumulative impacts to land use.

1.15.4.7 Traffic, Parking, and Transit

There is potential for cumulative traffic, parking, and transit impacts if projects listed in Table 1.15-1 are scheduled to occur concurrently and within the same area as the Atlantic Bridge Project. Several factors will minimize the potential for cumulative traffic impacts, including the total distance of the Atlantic Bridge Project, the linear nature of the Project, and the tendency for construction workers to carpool and to travel to and from work during non-peak traffic hours. Construction will be scheduled for work within roadways and specific crossings so as to avoid commuter traffic and schedules for school buses and local city transit buses to the greatest extent practical. To minimize traffic delays at open-cut road crossings, Algonquin will establish detours before excavating within these roads. If no reasonable detours are feasible, at least one traffic lane of the road will be left open, except for brief periods when road closure will be required to lay the pipeline. Appropriate traffic management and signage will be set up, and necessary safety measures will be developed in compliance with applicable permits for work in the public roadway. Traffic safety personnel will be on-hand during periods of construction. Provisions will be made for detours, or otherwise, to permit traffic flow. On-street parking may also be temporarily impacted during construction. Construction of the Atlantic Bridge Project is expected to occur over a 10-month period. Given the Project's short duration of construction activities, its contribution to cumulative impacts on traffic, parking, and transit will be temporary and minimal. Additionally, a Traffic Management Plan has been developed for the New York and Connecticut pipeline segments of the Atlantic Bridge Project (*see* Appendix 5A of Resource Report 5).

Cumulative traffic and transit impacts from the proposed Weymouth Compressor Station are possible during construction. As noted in Table 1.15-1, the Fore River Bridge is currently being replaced by the MassDOT, with an anticipated construction end date in the winter of 2017. Construction of the Atlantic Bridge Project is proposed for construction in early 2017, and construction of the ANE Project is expected to begin in early 2018. As part of the ANE Project, the Weymouth Compressor Station will be modified to satisfy additional ANE Project requirements. Because the Weymouth Compressor will be constructed as part of the Atlantic Bridge Project and will be operational at the time of the ANE Project modifications, there will be no construction overlap at this site as a result of the two projects. It is possible that the timing of the Weymouth Compressor Station construction could overlap with the Fore River Bridge Project.

A Traffic Management Plan has been developed for the Atlantic Bridge Project and is provided in Appendix 5A of Resource Report 5. The Traffic Management Plan includes a summary of existing traffic conditions specifically along Washington and Bridge Streets (Route 3A including the Fore River Bridge) and surrounding roadways where construction occurs, as well as information regarding general traffic management strategies. The plan also summarizes the currently proposed construction schedule, hours of operation, and provides representative traffic management plans that will be implemented during construction. Implementation of the Traffic Management Plan will minimize any potential impacts to traffic and transit resulting from the Weymouth Compressor Station. Furthermore, the strategies developed by the MassDOT to minimize traffic impacts associated with the Fore River Bridge Project combined with the traffic management strategies developed by Algonquin, as stated above (along with those identified in the Traffic Management Plan) will limit the cumulative impacts to traffic and transit in the area.

There is little potential for cumulative traffic, parking, and transit impacts from the AIM Project and the ANE Project pipeline facilities since they are not scheduled to occur at the same time as the Atlantic Bridge

Project. However, some landowners, that are located adjacent or in proximity to work areas that involve pipeline construction, modifications to compressor stations, or modifications to M&R stations for the AIM and ANE projects and the Atlantic Bridge Project will notice construction, along with the temporary traffic and parking impacts described above, over the planned construction periods. While the cumulative impact of the projects will result in some additional impact related to the duration of the construction period for work on the interstate natural gas pipeline system, construction during each of these periods for the projects is overall relatively short and thus will not result in significant cumulative adverse impacts due to construction traffic and parking. Similarly, some municipalities will notice additional construction vehicles using municipal roads over two construction periods, but the number of construction vehicles will be small overall for each project and thus will also not result in significant adverse cumulative impacts. Given each project's short duration of construction activities, cumulative impacts on traffic, parking, and transit will be temporary and minimal.

1.15.4.8 Infrastructure and Public Services

The cumulative impact of the Atlantic Bridge Project and other projects on infrastructure and public services may depend on the number of projects simultaneously under construction and the specific services required for each project. Operation of the Atlantic Bridge Project will not have a major impact on public services since construction of new public roads or extensive new sewer or water systems will not be required, and the Project will not result in significant changes in local population levels. Any minimal impacts to public services associated with the operation of Project facilities will be adequately off-set by the revenues accruing to state and local governments from the Project. Once the pipeline is in-service, there will be minimal draw on the municipalities' services (e.g., schools, water, *etc.*). Construction activities will be located in or near large metropolitan areas that have sufficient capability and capacity to manage the temporary influx of personnel without affecting the level of service provided to the current population. Primary impacts to public services will include temporary increases in demand for retail, recreation, and related services.

The proposed Weymouth Compressor Station for the Atlantic Bridge Project and ANE Project is not expected to result in cumulative impacts to infrastructure and public services. Given the presence of existing natural gas infrastructure in proximity of the Weymouth Compressor Station site, the anticipated demand for police, fire, and medical services is not expected to exceed the existing capability of infrastructure in the vicinity of the Weymouth Compressor Station, as these services are expected to be used only in emergencies. There are 30 police departments in Norfolk County, Massachusetts. Several police departments are located in close proximity to the proposed Weymouth Compressor Station, including the Weymouth Police Department, as well as police stations in Quincy, Braintree, Holbrook, and Randolph. There are also numerous fire and rescue departments in Norfolk County that are located in the vicinity of the Weymouth Compressor Station, including Weymouth, Quincy, Braintree, Holbrook, Randolph, and Avon (*see* Resource Report 5). Given the level of infrastructure and available public services in the area surrounding the Weymouth Compressor Station, combined with the fact that local population levels will not increase, the compressor station is not anticipated to contribute significantly to adverse cumulative impacts to infrastructure and public services in the area affected.

1.15.4.9 Air and Noise

The cumulative impact of the Atlantic Bridge Project on air quality and noise will depend on the number of projects undergoing simultaneous construction and the proximity of construction activities. Construction activities have the potential to produce noise levels that may disturb nearby residents. In addition, construction equipment and vehicles emit air pollutants in the immediate vicinity of the construction area, and fugitive dust emissions are generated by soil excavation and other construction activities.

Although construction will result in temporary air emissions from mobile sources and soil excavation, these emissions are not likely to significantly affect long-term air quality in the region. During construction, elevated levels of ambient pollutants will occur in the immediate vicinity of the Project. Because pipeline construction moves through an area quickly, air emissions associated with construction will be intermittent and short-term. Construction of the Fore River Bridge Project and the Weymouth Compressor Station will result in cumulative impacts for a short period in the event that all projects have mobile construction equipment operating at the same time. Each of the projects would need to comply with applicable federal, state, and local air regulations during construction.

Construction activities for the Atlantic Bridge Project along different sections of the pipeline route will be temporary and will only result in short-term air and noise impacts to nearby residents and businesses; therefore, construction activities for the Project, along with the other projects listed in Table 1.15-1, are not expected to result in significant adverse air quality or noise impacts.

Both the AIM and ANE projects and the Atlantic Bridge Project will have short-term impacts on air quality related to construction activities. Such activities will result in combustion emissions from the operation of construction equipment, commuting construction workers, and equipment delivery vehicles, as well as fugitive dust emissions from soil excavation and other construction activities. However, the AIM Project is being constructed from 2015 through 2016, the Atlantic Bridge Project is proposed for construction in 2017, and construction of the ANE Project is currently expected to begin in early 2018. Therefore, the construction schedules of these three projects are not expected to overlap. As discussed above, some landowners that are located in close proximity to the AIM and ANE projects and the Atlantic Bridge Project will notice increased emissions and fugitive dust and noise during two construction years. As occurred for the AIM Project, Algonquin is required to examine construction emissions pursuant to Clean Air Act General Conformity regulations for the Atlantic Bridge Project and the ANE Project. Moreover, Algonquin has developed a Fugitive Dust Control Plan for the Atlantic Bridge Project as was required for the AIM Project. A Fugitive Dust Control Plan will also be developed for the ANE Project. Moreover, work is expected to occur during the day and not during nighttime hours, and construction must be in compliance with the FERC noise standards. Thus, it is not expected that landowners and other individuals located near the AIM and ANE projects and the Atlantic Bridge Project work areas will be subject to cumulative impacts on air or noise quality from construction activities.

The AIM and ANE projects and the Atlantic Bridge Project will also result in air quality impacts from ongoing operation of the pipeline and aboveground facilities. With the exception of the Oxford, Chaplin, and Weymouth Compressor Stations, all proposed work for the projects will occur at facilities that are miles away from each other and thus do not result in cumulative impacts to air quality. The work proposed at the Oxford Compressor Station for the Atlantic Bridge Project will not result in any cumulative impacts to air quality from operation of the ANE Project or the AIM Project. The Chaplin Compressor Station will result in additional impacts to air quality from operations of the AIM, the ANE, and the Atlantic Bridge Projects. Additionally, the Weymouth Compressor Station will also result in additional impacts to air quality from operations of the proposed ANE Project and the Atlantic Bridge Project. Work proposed for the projects at the Oxford, Chaplin, and Weymouth Compressor Stations is subject to applicable federal and state air quality regulations. These regulations include comprehensive permitting requirements for the proposed new sources of emissions at the compressor station and restrictions on the emission of air pollutants. Successful completion of the applicable permitting process and compliance with the provisions of the air permits will ensure that the projects do not create or significantly contribute to any exceedances of applicable air quality standards or other adverse impacts on air quality. Federal and state ambient air quality standards are promulgated to protect public health and the environment.

The noise impact and noise contribution of construction-related activities at the Weymouth Compressor Station for the Atlantic Bridge Project and ANE Project are not expected to exceed the noise levels

associated with the Fore River Bridge Project. Consequently, site construction noise associated with the compressor station should have a negligible impact on the nearby noise sensitive areas ("NSAs"), noting that construction will be primarily limited to daytime hours. The most prevalent sound source during construction will be internal combustion engines used to power construction equipment. Construction related to new facilities will consist of some earth work (e.g., site grading related to construction of any buildings and installation of equipment). Construction activities will be performed with standard heavy equipment such as a track-excavator, backhoe, and limited use of a bulldozer, dump truck(s), and concrete trucks. Many construction machines operate intermittently, and the types of machines in use at a construction site change with the construction phase.

If necessary, proactive measures will be used to further reduce noise levels during construction so that the estimated maximum construction-related sound levels at the nearest NSAs will be less than 55 A-weighted decibels day-night sound level in decibels ("Ldn"). For these reasons, it is not anticipated that construction-type noise at the compressor station will have significant impacts on the surrounding environment. The noise from construction of the compressor station should not be significant, and aboveground facility construction activities will only occur during daytime hours; therefore, the cumulative noise impact at the nearby NSAs (i.e., cumulative sound level during simultaneous construction activities at the Weymouth Compressor Station for the Atlantic Bridge Project and the Fore River Bridge Project) is not expected to be significant. Cumulative noise impacts from the operation of the Weymouth Compressor Station following the Atlantic Bridge Project and ANE Project are not expected to be significant as the station must comply with the FERC's 55 A-weighted decibels noise limit.

In addition, both federal and state air quality improvement policies and regulations acknowledge and support the increased use of natural gas as an important step in improvement of air quality on a local and regional basis. To the extent that the new gas supplies are used to displace the use of other, more polluting fossil fuels, the cumulative effect from the AIM, the ANE, and the Atlantic Bridge Projects is expected to have a net positive impact on air quality. Resource Report 9 discusses air and noise quality within the Atlantic Bridge Project area.

1.15.5 Conclusion

The majority of cumulative impacts from the Atlantic Bridge Project will be temporary and minor when considered in combination with other past, present, and reasonably foreseeable future actions. The primary factors associated with the Project that will minimize its contribution to cumulative impacts are as follows:

- The impacts resulting from the Atlantic Bridge Project will primarily be short-term and temporary impacts associated with construction;
- The proposed Project pipeline facilities will be located within or adjacent to existing easements and corridors including Algonquin's pipeline ROWs, public roadways, and electric transmission line corridors, thereby minimizing impacts associated with construction;
- The Atlantic Bridge Project will minimize impacts by replacing all existing pipeline with larger diameter pipeline (take-up and relay);
- The proposed Project has been designed to avoid and minimize impacts to the extent practicable and will implement various plans and techniques to ensure potential impacts are further minimized (e.g., E&SCP, SPCC Plan); and,
- The proposed Weymouth Compressor Station will be constructed on an industrially zoned parcel formerly and currently owned and used for utility purposes and within an industrialized area.

Cumulative impacts that could occur on wetland and upland vegetation and associated wildlife habitats are expected to be minor given that most of the construction work will occur along existing ROWs.

Furthermore, over time, impacts to wetland and vegetated areas will primarily be restored to pre-construction condition. Some landowners and municipalities could also be affected by construction over three different construction periods, but overall construction for each project is expected to be for a short duration at any one location along the Algonquin system.

The Chaplin Compressor Station will result in cumulative impacts to air quality from operations of the AIM, the ANE, and the Atlantic Bridge Projects. Additionally, the Weymouth Compressor Station will also result in cumulative impacts to air quality from operations of the proposed ANE Project and the Atlantic Bridge Project. Work proposed for the projects at the Oxford, Chaplin, and Weymouth Compressor Stations is subject to applicable federal and state air quality regulations. These regulations include comprehensive permitting requirements for the proposed new sources of emissions at the compressor station and restrictions on the emission of air pollutants. Successful completion of the applicable permitting process and compliance with the provisions of the air permits will ensure that the projects do not create or significantly contribute to a violation of ambient air quality standards or other adverse impacts on air quality. Federal and state ambient air quality standards are promulgated to protect the public.

Some positive cumulative benefits to the community would also be realized from increased tax revenues. Short-term cumulative benefits could also be realized through jobs and wages and purchases of goods and materials.

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
New York – Pipeline: Stony Point Discharge Take-up and Relay								
2	0 mile from MP 0 of the Stony Point Discharge Take-up and Relay	Haverstraw, Stony Point, Cortlandt, Peekskill, Yorktown, and Southeast	Rockland, Westchester, and Putnam, NY	Algonquin Incremental Market (AIM) Project (Haverstraw to Stony Point Take-up and Relay; Stony Point to Yorktown Take-up and Relay)	The AIM Project will replace 3.3 miles of natural gas pipeline from Haverstraw to Stony Point and will construct 12.3 miles of mainline pipeline in Stony Point, Cortlandt, Peekskill, and Yorktown. Approximately 0.1 mile of pipeline will be replaced in the Town of Southeast. The AIM Project will also include modifications to two existing compressor stations (Stony Point and Southeast) and modifications to three existing metering and regulating stations (Stony Point, Peekskill, and Cortlandt).	Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
2	0.07 mile from MP 4.0 of the Stony Point Discharge Take-up and Relay	Somers, Carmel, and Southeast	Westchester and Putnam, NY	Access Northeast ("ANE") Project Somers to Southeast Take-up and Relay	The ANE Project will replace 12.7 miles of natural gas pipeline from Somers to Southeast. Approximately 4.7 miles of pipeline will be replaced in Somers, 1.4 miles in Carmel, and 6.5 miles in Southeast.	Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
2	1.1 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Yorktown	Westchester, NY	Costco Wholesale Store and Fueling Facility	Construction of a 151,092 square foot Costco Wholesale Store with a 12 dispenser fueling facility supported by 610 onsite parking spaces. The development will disturb approximately 14.6 acres of the 18.8-acre parcel.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	The Yorktown Planning Board issued a Findings Statement on December 15, 2014. Construction is expected to take 14 months and be completed in November 2016.	15
2	1.4 miles from MP 4.0 of the Stony Point Discharge Take-up and Relay	Somers and Carmel	Westchester and Putnam, NY	Route 6 Intersection Improvement Project (No. 839202)	To address traffic volumes at the intersections of Route 6 with Route 118, Union Valley Road, and Miller Road, the project will realign and construct additional turn lanes and widen the roadway.	Soils and Sediments	Construction is expected to be complete in July 2016.	2

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
2	2.7 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Cortlandt and Peekskill	Westchester, NY	Bear Mountain Parkway /Route 6 Interchange (No. 800402)	Reconstruction of the Bear Mountain State Parkway interchange with US Route 6.	No resources expected to be cumulatively affected given the extended construction timeframe.	Construction expected to occur between summer of 2020 and fall of 2021.	2
2	6.0 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Athens to Cortlandt	Westchester, NY	West Point Partners, LLC	West Point Partners is proposing to construct a new transmission line from Leeds Substation in Athens, NY to a substation located in the Village of Buchanan in the Town of Cortlandt, NY. The line will be buried in the Hudson River for 74 miles and make landfall in the Hamlet of Verplanck, NY where it will be buried underground for approximately 1.5 miles before interconnecting with the existing Buchanan North Substation in the Village of Buchanan. West Point Partners also proposes to construct a converter station that will occupy about 3.8 acres on a 105-acre parcel owned by Con Edison in the Hamlet of Verplanck located in the Town of Cortlandt.	No resources expected to be cumulatively affected given the unknown construction timeframe.	An application was submitted to the Public Service Commission of the State of New York in 2013. The proceeding was temporarily suspended pending a review of alternative converter sites. Therefore, the date of construction is unknown.	3
2	6.4 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Buchanan	Westchester, NY	Indian Point Nuclear Plant Cooling Water Intake Structure Project	Potential modification of existing cooling systems. State regulators are pushing the plant to erect two sets of cooling towers, consisting of a cluster of 88 structures, each of which would be about 90 feet tall.	No resources expected to be cumulatively affected given the unknown construction timeframe.	Unknown. A decision on the requirements at the facility is expected in late 2015, at the earliest.	4

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
2	6.5 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Cortlandt	Westchester, NY	NYSDOT Route 9 over Furnace Brook (No. 801074)	Rehabilitation of the bridge carrying Route 9 over Furnace Brook.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Spring 2016 to fall 2017.	2
1	14.6 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Mount Pleasant	Westchester, NY	Summit Estates Subdivision	Subdivision of 25.13 acres of land into 26 lots for the construction of 26 single-family detached residences and a new site access roadway off Summit Lake Drive. Application ID: 3-5534-00366/00001.	Water Resources and Wetlands, Vegetation and Wildlife	Construction anticipated to begin in the spring of 2015 with full build out by summer of 2017.	5
1	16.6 miles from MP 4 of the Stony Point Discharge Take-up and Relay	Numerous	Rockland and Westchester, NY	Boundless Energy NE, LLC Proposed Projects	Boundless Energy filed a Statement of Intent with the New York Public Service Commission for four distinct transmission projects to strengthen the State's electric power grid.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	Project in service dates range from 2016 to 2018	6
1	19.0 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Purchase	Westchester, NY	SUNY Purchase Adventure Park	Disturbance to DEC FW G-3 (class 2) and its 100-foot adjacent area for creation of a trail including installation of bridges and boardwalk sections over wetland, and installation of an electric conduit. Application ID: 3-5528-00138/00001.	No resources expected to be cumulatively affected given the unknown construction timeframe.	Unknown (public comment period ended 2/26/2015).	5

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
1	19.3 miles from MP 4 of the Stony Point Discharge Take-up and Relay	Stamford	Fairfield, CT	CT DOT - Rehabilitation of the Merritt Parkway.	This project will upgrade the Parkway from the Greenwich / Stamford town line easterly approximately 6.5 miles to just beyond the South Street overpass in New Canaan. This project involves resurfacing the Parkway, rehabilitating and/or restoring the bridges, providing various safety improvements and landscape improvements.	Vegetation and Wildlife	The cross-slope correction phase of the project is complete. Phase 1 operations reconstructing the right shoulder of the Parkway and installing drainage improvements are underway. The project is scheduled for completion in the fall of 2015.	7
1	21.9 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Hudson	Westchester, NY	NYSDOT Ravensdale Ave/ Saw Mill River Parkway (No. 875476)	Replacement of the existing bridge carrying Ravensdale Avenue over the Saw Mill River Parkway.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Winter 2018/2019 to spring 2020.	2
1	27.5 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Pelham	Westchester, NY	NYSDOT East Third Street over Hutchinson River Parkway (No. 8BOW24)	Replacement of the structure carrying East Third Street over the Hutchinson River Parkway.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Winter 2014/2015 to fall 2015.	2

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
1	25.1 miles from MP 0 of the Stony Point Discharge Take-up and Relay	Mamaroneck	Westchester, NY	NYSDOT Route 1 over Mamaroneck River (No. 847314)	Replacement of the existing bridge that carries Route 1 over the Mamaroneck River.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Spring 2018 to fall 2019.	2
Connecticut – Pipeline: Southeast Discharge Take-up and Relay								
3	0 mile from MP 0 of the Southeast Discharge Take-up and Relay	Danbury	Fairfield, CT	AIM Project (Southeast to MLV-19 Take-up and Relay)	The AIM Project will take-up and relay a 26-inch diameter natural gas pipeline segment with 42-inch diameter pipeline from the Town of Southeast, NY to the City of Danbury, CT. Approximately 4.4 miles of pipeline will be replaced in Danbury. The AIM Project will also include modifications to an existing compressor station in Southeast and existing M&R station in Danbury.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
3	0 mile between MPs 2.1 to 2.3 of the Southeast Discharge Take-up and Relay	Danbury, Bethel, Brookfield, Newtown, Southbury, and Oxford	Fairfield and New Haven, CT	ANE Project Danbury to Oxford Take-up and Relay	The ANE Project will replace 17.6 miles of natural gas pipeline from Danbury to Southbury. Approximately 1.6 miles of pipeline will be replaced in Danbury, 0.6 mile in Bethel, 1.5 miles in Brookfield, 5.3 miles in Newtown, 6.6 miles in Southbury, and 1.9 miles in Oxford.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
3	0.5 mile from MP 0 of the Southeast Discharge Take-up and Relay	Danbury	Fairfield, CT	Kennedy Flats	Greystar, a national development firm, is constructing a 375-unit apartment complex off Main Street in Danbury (near the intersection of Kennedy Avenue and Rose Street).	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	The development is currently under construction with an expected completion of Fall 2016.	8
3	10.1 miles from MP 0 of the Southeast Discharge Take-up and Relay	Bedford, New Castle, North Castle, Patterson, Southeast, and Yorktown	Westchester, NY	SFY 14/15 Stormwater Retrofit (MS4) East of Hudson (No. 881175)	Retrofit existing drainage systems and construct new facilities to reduce stormwater pollution (i.e., phosphorus) from state highways in the NYC East of Hudson Watershed. Project sites are in Putnam and Westchester Counties.	Water Resources and Wetlands	Construction completion is expected for spring of 2016.	2
1	21.5 miles from MP 0 of the Southeast Discharge Take-up and Relay	Norwalk	Fairfield, CT	CT DOT - Operational improvements on I-95.	The I-95 exit 14, 15, and US Route 1 Improvement Project will provide an Operational Lane on I-95 between the interchanges. As part of the widening, three bridges will be replaced and widened over I-95: Fairfield Avenue, Cedar Street, and Taylor Avenue. This project will also increase the drainage throughout the area and improve Route 1 including widening, paving, drainage, and traffic signal upgrades.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction commenced in June of 2012; the project is scheduled for completion in June of 2015.	9
Connecticut - Aboveground Facilities								
Oxford Compressor Station								
4	0 mile from the Oxford Compressor Station	Oxford	New Haven, CT	AIM Project	As part of the AIM Project, the existing Oxford Compressor Station will be modified to facilitate the transportation of additional gas volumes resulting from the AIM Project.	Air and Noise	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1

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Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
4	0 mile from the Oxford Compressor Station	Oxford	New Haven, CT	Competitive Power Ventures ("CPV") Towantic Energy Center	CPV proposes to construct and operate a state-of-the-art 805 megawatt ("MW") natural gas-powered, combined cycle, electric generating facility on a 26-acre site in the Woodruff Hill Industrial Park.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife, Air and Noise	On May 14, 2015 the Connecticut Siting Council Approved CPV's proposed 785-MW Nameplate Capacity CPV Towantic Energy Center. CPV has since increased the Nameplate Capacity to 805 MW and plans to have the facility online in 2018. Construction is expected to take 28 to 30 months.	14
4	0 mile from the Oxford Compressor Station	Oxford	New Haven, CT	ANE Project	As part of the ANE Project, the existing Oxford Compressor Station will be modified to facilitate the transportation of additional gas volumes resulting from the ANE Project.	Air and Noise	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
4	0 mile from MP 17.6 to the Oxford Compressor Station	Danbury, Bethel, Brookfield, Newtown, Southbury, and Oxford	Fairfield and New Haven, CT	ANE Project Danbury to Oxford Take-up and Relay	The ANE Project will replace 17.6 miles of natural gas pipeline from Danbury to Southbury. Approximately 1.6 miles of pipeline will be replaced in Danbury, 0.6 mile in Bethel, 1.5 miles in Brookfield, 5.3 miles in Newtown, 6.6 miles in Southbury, and 1.9 miles in Oxford.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
4	0 mile from MP 0 to the Oxford Compressor Station	Oxford, Middlebury, Naugatuck, Prospect, Waterbury, and Cheshire	New Haven and Hartford, CT	ANE Project Oxford to Cheshire Take-up and Relay	The ANE Project will replace 13.6 miles of natural gas pipeline from Oxford to Southington. Approximately 0.6 miles of pipeline will be replaced in Oxford, 0.3 mile in Middlebury, 5.0 miles in Naugatuck, 2.6 miles in Prospect, 0.2 mile in Waterbury, and 5.0 miles in Cheshire.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
4	6.3 miles from Oxford Compressor Station	Waterbury	Fairfield, CT	CT DOT - Reconstruction and expansion of the I-84 corridor.	The project involves the full reconstruction of a 2.7-mile section of I-84 from the Hamilton Avenue (Route 69) overpass to the Austin Road interchange (Exit 25A) in Waterbury.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Full construction will begin in the spring of 2015; construction completion is anticipated for 2019.	10
1	19.3 miles from the Oxford Compressor Station	Stratford	Fairfield, CT	CT DOT - Replacement of the Moses Wheeler Bridge (I-95).	The CT DOT is replacing the Moses Wheeler Bridge along the I-95 corridor. The project will expand the existing bridge from 92 feet in width to 136 feet in width.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Phase 1 construction has been completed; Phase 2 construction is expected to be complete by summer of 2016.	11
Chaplin Compressor Station								
5	0 mile from the Chaplin Compressor Station	Chaplin	Windham, CT	AIM Project	As part of the AIM Project, the existing Chaplin Compressor Station will be modified to facilitate the transportation of additional gas volumes resulting from the AIM Project.	Air and Noise	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
5	0 mile from the Chaplin Compressor Station	Chaplin	Windham, CT	ANE Project	As part of the ANE Project, the existing Chaplin Compressor Station will be modified to facilitate the transportation of additional gas volumes resulting from the ANE Project.	Air and Noise	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
5	3.1 miles from MP 0 to the Chaplin Compressor Station	Eastford and Pomfret	Windham, CT	ANE Project Eastford to Pomfret Loop Extension	The ANE Project will loop 9.4 miles of natural gas pipeline from Eastford to Pomfret. Approximately 3.2 miles of pipeline will be constructed in Eastford and 6.2 miles in Pomfret.	Geology, Soils, and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
5	4.4 miles from the Chaplin Compressor Station	Mansfield	Tolland, CT	Storrs Center, Phase 3	Phase 3 of the Storrs Center Project will include the construction of eight residential townhouse buildings, one residential mid-rise building, and one clubhouse building located on Wilbur Cross Way in Mansfield.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction is expected to begin in 2015.	17
5	5.6 miles from the Chaplin Compressor Station	Mansfield	Tolland, CT	Four Corners Sewer and Water Project	The Four Corners Sewer and Water Project encompasses approximately 500 acres. The sewer and water system will serve 61 properties and will include the installation of approximately 22,000 feet of sewer piping.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	A public scoping meeting was held on March 18, 2015. Project completion is expected in the fall of 2016.	18

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
Salem Pike M&R Station								
6	0 mile from the Salem Pike M&R Station	Norwich	New London, CT	AIM Project	As part of the AIM Project, the existing Salem Pike M&R Station will be modified to accept the new gas flows associated with the AIM Project.	Water Resources and Wetlands, Vegetation and Wildlife	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
6	1.5 miles from the Salem Pike M&R Station	Montville	New London, CT	AIM Project (E-1 System Lateral Loop)	The AIM Project will extend the existing Line-E-1L natural gas pipeline with approximately 1.3 miles of additional pipeline loop along the existing E-1 System Lateral in the Town of Montville. The AIM Project will also include the construction of a new M&R station in the City of Norwich and modifications to an existing M&R station in Montville.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
6	4.7 miles from the Salem Pike M&R Station	Lebanon, Franklin, and Norwich	New London, CT	AIM Project (E-1 System Take-up and Relay)	The AIM Project will take-up and relay approximately 9.1 miles of 6-inch diameter natural gas pipeline with 16-inch diameter pipeline along its existing E-1 System Lateral. The AIM Project will also include modifications to an existing launcher/receiver facility in the Town of Franklin.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
Massachusetts - Aboveground Facilities								
Needham Regulator Station								
7	0 mile from the Needham Regulator Station	Needham	Norfolk, MA	AIM Project	As part of the AIM Project, the existing Needham Regulator Station will be modified to accept new gas flows associated with the AIM Project.	No resources expected to be cumulatively affected given work will occur at an existing station site.	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
7	2.6 miles from Needham Regulator Station	Needham and Wellesley	Norfolk, MA	Needham-Wellesley Rehab and Bridge Replacements Project (No. 603711)	The Project includes six bridge replacements and approximately 3.25 miles of I-95 roadway reconstruction.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Fall of 2014 through spring of 2019.	12
7	3.7 miles from the Needham Regulator Station	Dedham and Westwood	Norfolk, MA	Blue Hill Drive / University Street Ramp Construction (No. 606086)	Reconstruction of the I-95 southbound off-ramp to Blue Hill Drive/University Avenue and associated construction activities.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction is expected to be complete in the fall of 2015.	12

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
7	3.8 miles from the Needham Regulator Station	Dedham and Needham	Norfolk, MA	Dedham-Needham Route 128 Bridge Replacement Project (No. 603206)	Replacement of the Route 109, 135, Charles River, and Great Plain Avenue bridges and roadway work that consists of adding a new 12-foot travel lane and 10-foot shoulder toward the median in both directions. The total length of project is approximately 4.0 miles of I-95/Route 128 roadway.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction is expected to be complete in the summer of 2015.	12
7	6.0 miles from the Needham Regulator Station	Westwood, Dedham, and Boston	Norfolk, MA	AIM Project (West Roxbury Lateral)	The AIM Project will install approximately 4.9 miles of new pipeline lateral off of its existing I-4 System Lateral. The AIM Project will also include construction of a new launcher facility in Westwood and a new M&R station in Boston.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	On March 3, 2015, FERC issued a Certificate of Public Convenience and Necessity. Project completion is expected for November of 2016.	1
7	11.0 miles from MP 10.0 to the Needham Regulator Station	Franklin, Medway, Millis, Norfolk, Walpole, Sharon, Canton, and Stoughton	Norfolk, MA	ANE Project Q-1 System 30-inch Loop	The ANE Project will loop 21.2 miles of existing natural gas pipeline from Medway to Canton. Approximately 0.6 mile of pipeline will be constructed in Medway, 0.2 mile in Bellingham, 2.9 miles in Franklin, 0.7 mile in Medway, 0.8 mile in Millis, 3.2 miles in Norfolk, 3.5 miles in Walpole, 4.6 miles in Sharon, 4.4 miles in Canton, and 0.4 mile in Stoughton.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
7	13.8 miles from MP 0.0 to the Needham Regulator Station	Medway, Milford, Upton, Grafton, Sutton, Millbury, Shrewsbury, Boylston, and West Boylston	Norfolk and Worcester, MA	ANE Project West Boylston Lateral	The ANE Project will construct 26.7 miles of 16-inch diameter natural gas pipeline in Norfolk and Worcester Counties. Of this amount, approximately 1.6 miles will be in the Town of Medway, Norfolk County. The remaining 25.1 miles will be in Worcester County between the Towns of Milford and West Boylston.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
Pine Hills M&R Station								
8	3.4 miles from Pine Hills M&R Station	Bourne	Barnstable, MA	Bourne Community Solar Farm	The Bourne Community Solar Farm will consist of a ground-mounted solar array constructed on a 25-acre parcel located off of Route 28. The solar farm is expected to generate 1.6 million kilowatt-hours per year, with a total of 4,200 solar panels on approximately seven acres.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction began in June of 2015.	16
Weymouth Compressor Station								
9	0 mile from the Weymouth Compressor Station	Weymouth	Norfolk, MA	ANE Project	As part of the ANE Project, the Weymouth Compressor Station, proposed for the Atlantic Bridge Project, will be modified to satisfy additional ANE Project requirements.	Air and Noise	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
9	0.2 mile from the Weymouth Compressor Station	Quincy and Weymouth	Norfolk, MA	Fore River Bridge Replacement Project (No. 604382)	The project includes the replacement of the Fore River Bridge (State Route 3A) over the Fore River in Quincy and Weymouth. The new bridge will be a double leaf bascule or vertical lift bridge. The project also includes approach roadway work and possible intersection improvements/improved geometrics.	Traffic, Parking, and Transit, Infrastructure and Public Services	Construction is expected to be completed in winter of 2016/2017.	12
9	3.0 miles from the Weymouth Compressor Station	Weymouth and Braintree	Norfolk, MA	Route 3 Resurfacing Project (No. 606639)	Resurfacing approximately 4.1 miles of Route 3 in Weymouth and Braintree.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Expected completion date of late fall 2015.	12
9	7.6 miles from MP 21.7 to the Weymouth Compressor Station	Medway, Bellingham, Franklin, Medway, Millis, Norfolk, Walpole, Sharon, Canton, and Stoughton	Norfolk, MA	ANE Project Q-1 System 30-inch Loop	The ANE Project will loop 21.2 miles of existing natural gas pipeline from Medway to Canton. Approximately 0.6 mile of pipeline will be constructed in Medway, 0.2 mile in Bellingham, 2.9 miles in Franklin, 0.7 mile in Medway, 0.8 mile in Millis, 3.2 miles in Norfolk, 3.5 miles in Walpole, 4.6 miles in Sharon, 4.4 miles in Canton, and 0.4 mile in Stoughton.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13
9	0 mile from MP 4.2 to the Weymouth Compressor Station	Braintree and Weymouth	Norfolk, MA	ANE Project I-8 System 30-inch Loop	The ANE Project will install 4.0 miles of natural gas pipeline from Braintree to Weymouth. Approximately 0.7 mile of pipeline will be constructed in Braintree and 3.3 miles in Weymouth.	Soils and Sediments, Water Resources and Wetlands, Vegetation and Wildlife	ANE plans to pre-file with FERC late in 2015 and file its FERC 7c application in late in 2016. Project construction is expected to begin in 2018 and extend through 2020.	13

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source
9	6.0 miles from the Weymouth Compressor Station	Weymouth and Abington	Norfolk, MA	Route 18 Reconstruction Project (No. 601630)	Reconstruction and widening of a 4-mile segment of Route 18 (Main Street) from Highland Place to Route 139 and replacing the bridge that carries Route 18 over the MBTA railroad in Weymouth.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction is expected to begin in the winter of 2016/2017.	12
9	7.5 miles from the Weymouth Compressor Station	Canton, Norwood, and Westwood	Norfolk, MA	Canton Street / Dedham Street Project (No. 606146)	The project consists of the construction of an off-ramp from I-95 northbound to Dedham Street and improvements to the Dedham Street/Canton Street corridor. This roadway reconstruction will require the bridges over AMTRAK and the Neponset River to be widened and the bridge over I-95 to be replaced.	No resources expected to be cumulatively affected given the localized effects that would not contribute significantly to cumulative impacts in the Project area.	Construction is expected to begin in the winter of 2015/2016.	12

Internet Sources:

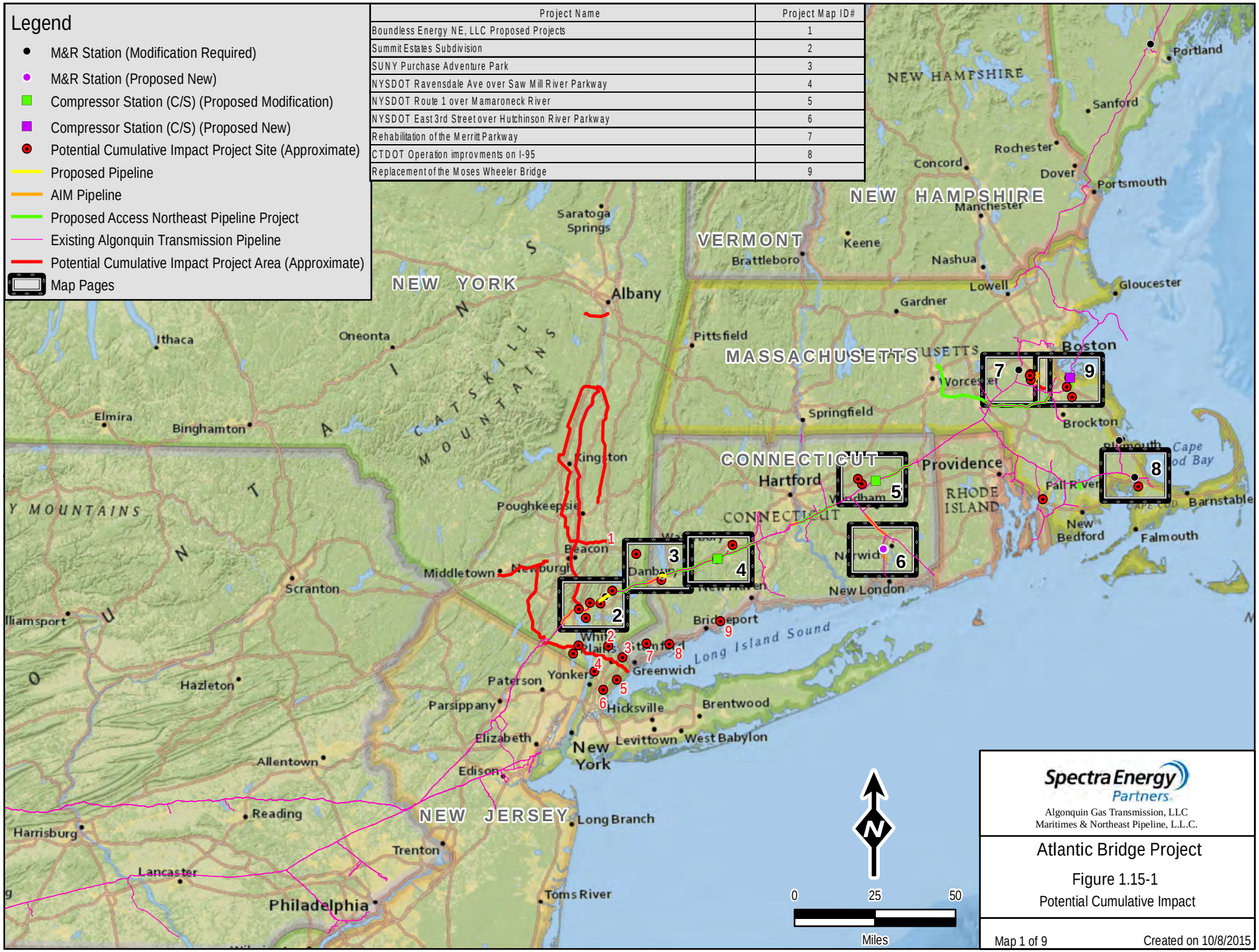
1 Spectra Energy. Algonquin Incremental Market (AIM) Project. Accessed May 1, 2015 at: http://www.spectraenergy.com/Operations/New-Projects-and-Our-Process/New-Projects-in-US/Algonquin-Incremental-Market-AIM-Project/.
2 New York State Department of Transportation. Projects in Your Neighborhood. Accessed online March 26, 2015 at: https://www.dot.ny.gov/projects.
3 West Point Transmission. Accessed April 20, 2015 at: http://westpointproject.com/about/.
4 New York State, Indian Point Nuclear Plant Operator Clash Over Fate of Fish. Accessed April 20, 2015 at: http://www.wsj.com/articles/new-york-state-indian-point-nuclear- plant-operator-clash-over-fate-of-fish-1410918098.
5 New York State Department of Environmental Conservation. 2015. ENB Current and Archives for January - December 2015. Accessed online March 26, 2015 at: http://www.dec.ny.gov/enb/100181.html.
6 Boundless Energy NE, LLC - Statement of Intent. Accessed April 20, 2015 at: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BE9B50316-69E6-4FAD-BDC9-DAEA818E077D%7D.
7 CTDOT Merritt Parkway Improvement Projects. Accessed April 20, 2015 at: http://www.ct.gov/dot/cwp/view.asp?a=4109&q=468254&PM=1.
8 City of Danbury, Connecticut. Office of Economic Development. Accessed May 8, 2015 at: http://www.ci.danbury.ct.us/content/22097/21099/default.aspx.
9 I-95 Exit 14, 15, & US1 Improvement Project. Accessed April 20, 2015 at: http://www.i95norwalk.com/Home.html.

TABLE 1.15-1

Projects with Potential Cumulative Impacts on Resources Within the General Atlantic Bridge Project Area

Map Number	Distance from Nearest Atlantic Bridge Facility (miles)	Project Location (town)	County, State	Project Name	Description	Potential Resources Cumulatively Affected in the Project area	Project Status	Source

10 CTDOT Bids Opened for I-84 Widening Project in Danbury. Accessed April 20, 2015 at: http://www.ct.gov/dot/cwp/view.asp?A=2135&Q=555450.3 New York State Department of Environmental Conservation. 2015. ENB Current and Archives for January - December 2015. Accessed online March 26, 2015 at: http://www.dec.ny.gov/enb/100181.html.
11 CTDOT Moses Wheeler Bridge. Accessed April 20, 2015 at: http://www.moseswheelerbridge.com/projoverview/.
12 Massachusetts Department of Transportation. Project Data Look-Up. Accessed March 26, 2015 at: http://www.massdot.state.ma.us/highway/HighlightedProjects.
13 Spectra Energy. Access Northeast (ANE) Project. Accessed July 30, 2015 at: http://accessnortheastenergy.com/.
14 About the CPV Towantic Energy Center. Accessed August 25, 2015 at: http://www.cpvtowantic.com/about.html.
15 Town of Yorktown, Costco Wholesale Club Site Plan Application SEQRA Page. Accessed September 25, 2015 at: http://www.yorktownny.org/planning/costco-wholesale-club-site-plan-application-seqra-page.
16 Cape Cod Times. Accessed October 8, 2015 at: http://www.capecodtimes.com/article/20150611/NEWS/150619816.
17 Town of Mansfield Planning Documents. Accessed October 8, 2015 at: http://www.mansfieldct.gov/scplanningdocs.
18 Town of Mansfield Four Corners Sewer and Water Project. Accessed October 8, 2015 at: http://www.mansfieldct.gov/FourCorners.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M&R Station (Proposed New)
Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
Potential Cumulative Impact Project Site (Approximate)
Proposed Pipeline
AIM Pipeline
Proposed Access Northeast Pipeline Project
Existing Algonquin Transmission Pipeline
Potential Cumulative Impact Project Area (Approximate)
Map Pages
Project Name | Project Map ID#
Boundless Energy NE, LLC Proposed Projects | 1
Summit Estates Subdivision | 2
SUNY Purchase Adventure Park | 3
NYSDOT Ravensdale Ave over Saw Mill River Parkway | 4
NYSDOT Route 1 over Mamaroneck River | 5
NYSDOT East 3rd Street over Hutchinson River Parkway | 6
Rehabilitation of the Merritt Parkway | 7
CTDOT Operation improvments on I-95 | 8
Replacement of the Moses Wheeler Bridge | 9
NEW YORK
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
NEW JERSEY
Albany
Saratoga Springs
Brattleboro
Keene
Nashua
Manchester
Portland
Sanford
Rochester
Concord
Dover
Portsmouth
Lowell
Gloucester
Gardner
Pittsfield
Springfield
Boston
Brockton
Providence
Hartford
New London
Bridgeport
Greenwich
Stamford
Yonkers
Paterson
Parsippany
Hicksville
Brentwood
Levittown
West Babylon
New York
Elizabeth
Edison
Long Branch
Toms River
Trenton
Philadelphia
Allentown
Reading
Harrisburg
Lancaster
Hazleton
Scranton
Binghamton
Elmira
Ithaca
Oneonta
Poughkeepsie
Middletown
Beacon
Long Island Sound
Cape Cod Bay
Barnstable
Falmouth
New Bedford
Fall River
0
25
50
Miles
N
Spectra Energy Partners
Algonquin Gas Transmission, LLC
Maritimes & Northeast Pipeline, L.L.C.
Atlantic Bridge Project
Figure 1.15-1
Potential Cumulative Impact
Map 1 of 9
Created on 10/8/2015

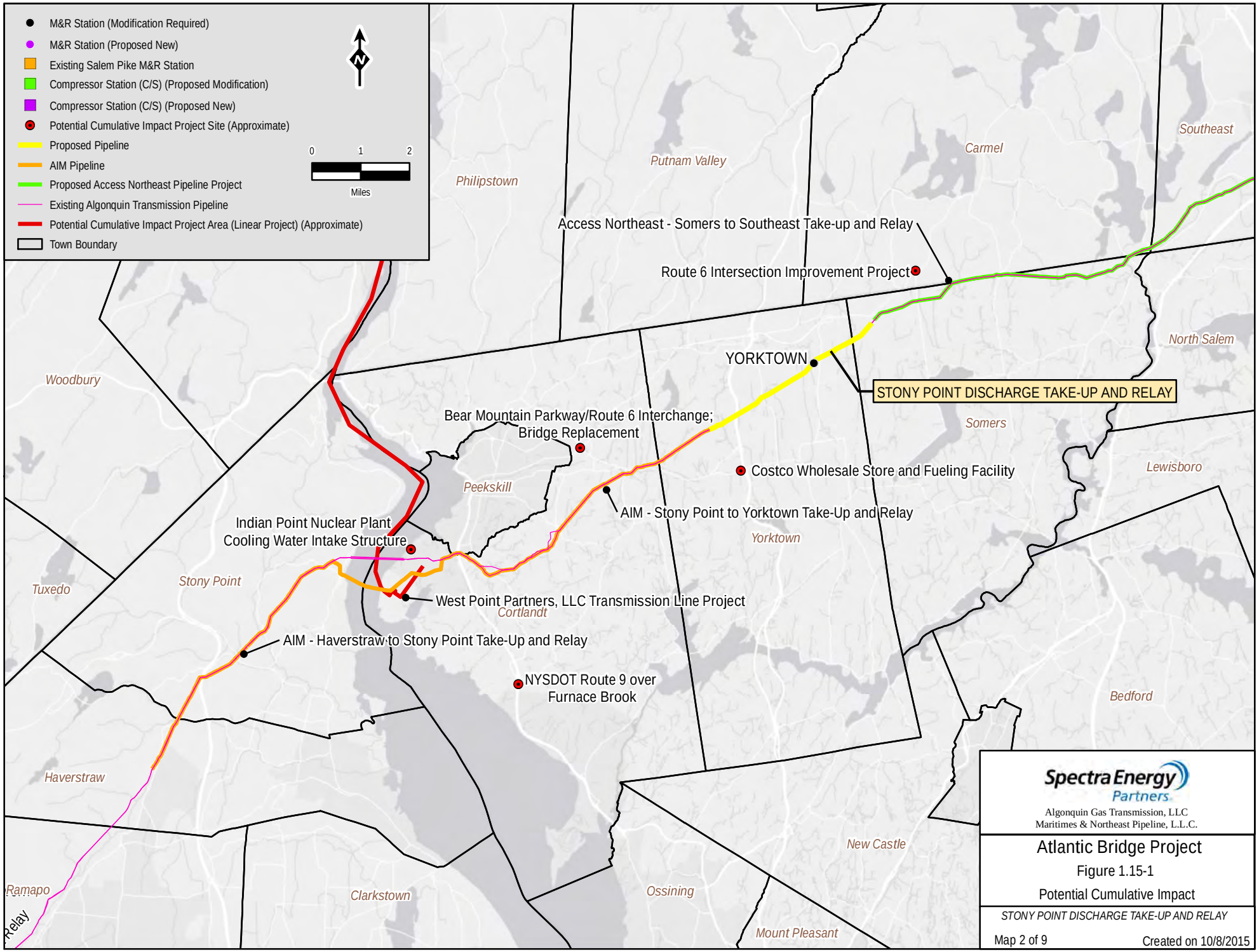

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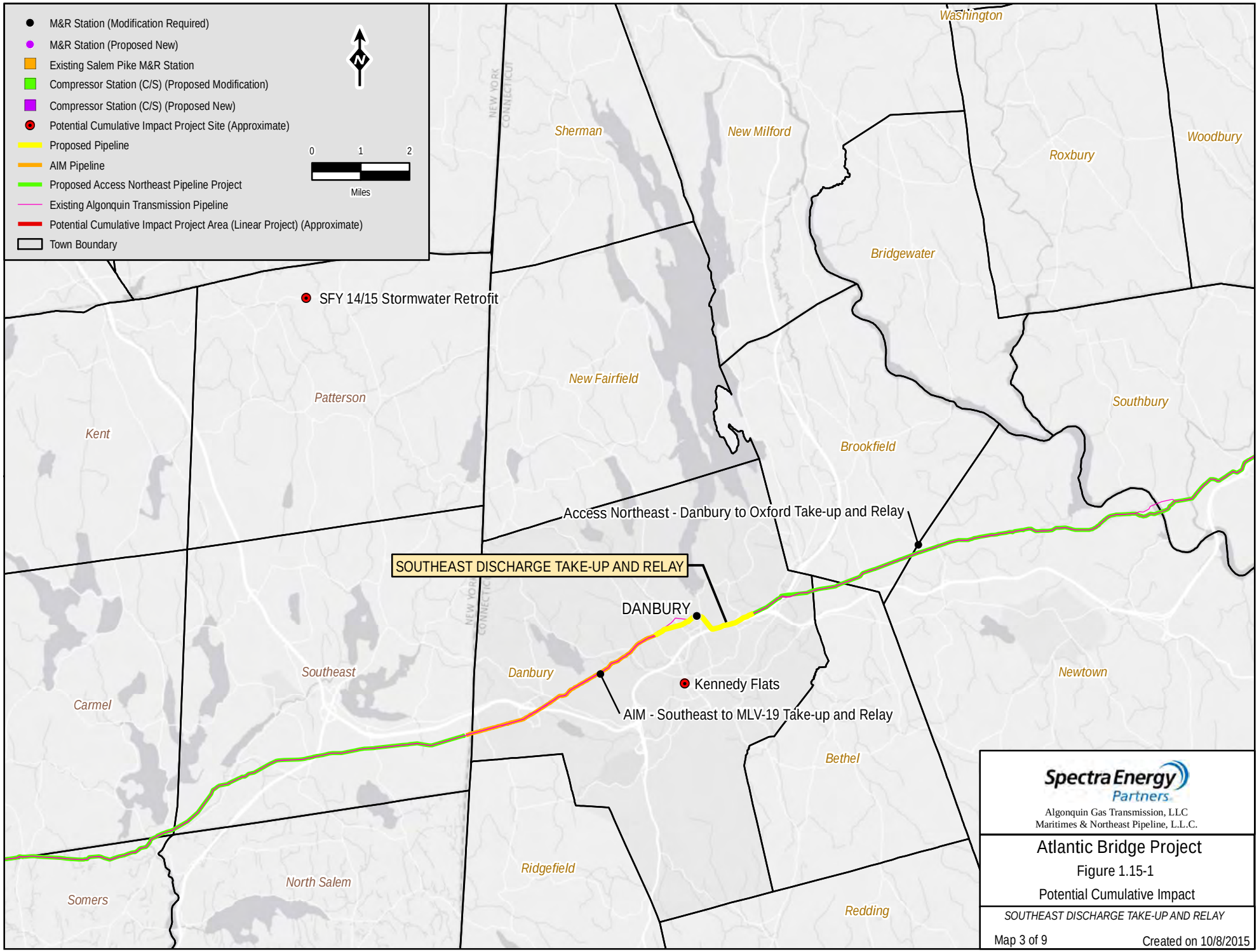
Figure 1.15-1

Potential Cumulative Impact

STONY POINT DISCHARGE TAKE-UP AND RELAY

Map 2 of 9

Created on 10/8/2015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M&R Station (Proposed New)
Existing Salem Pike M&R Station
Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
Potential Cumulative Impact Project Site (Approximate)
Proposed Pipeline
AIM Pipeline
Proposed Access Northeast Pipeline Project
Existing Algonquin Transmission Pipeline
Potential Cumulative Impact Project Area (Linear Project) (Approximate)
Town Boundary
N
0
1
2
Miles
Washington
Sherman
New Milford
Roxbury
Woodbury
Bridgewater
SFY 14/15 Stormwater Retrofit
New Fairfield
Patterson
Kent
Southbury
Brookfield
Access Northeast - Danbury to Oxford Take-up and Relay
SOUTHEAST DISCHARGE TAKE-UP AND RELAY
DANBURY
Southeast
Danbury
Kennedy Flats
Newtown
Carmel
AIM - Southeast to MLV-19 Take-up and Relay
Bethel
Ridgefield
North Salem
Somers
Redding
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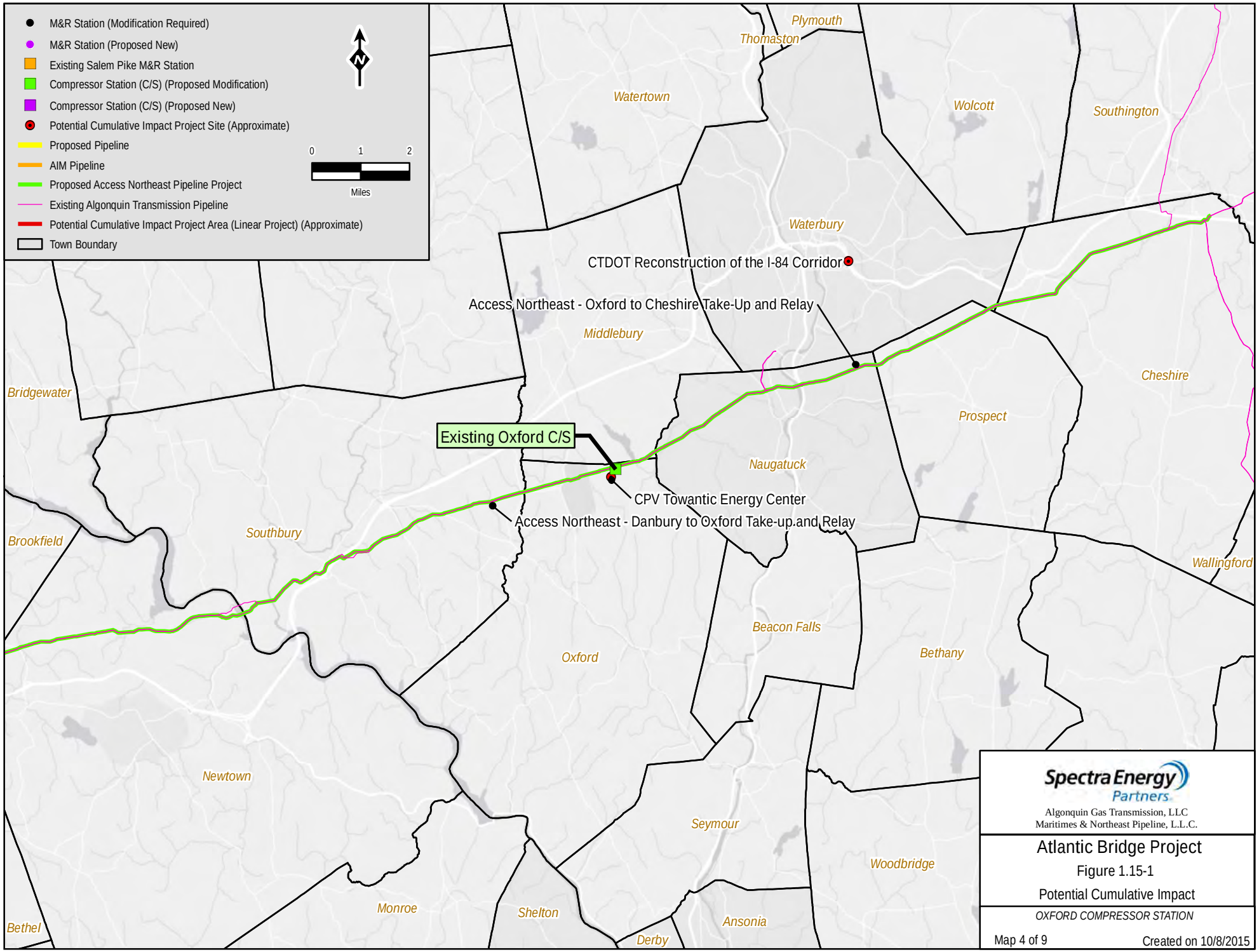
Potential Cumulative Impact
SOUTHEAST DISCHARGE TAKE-UP AND RELAY
Map 3 of 9
Created on 10/8/2015



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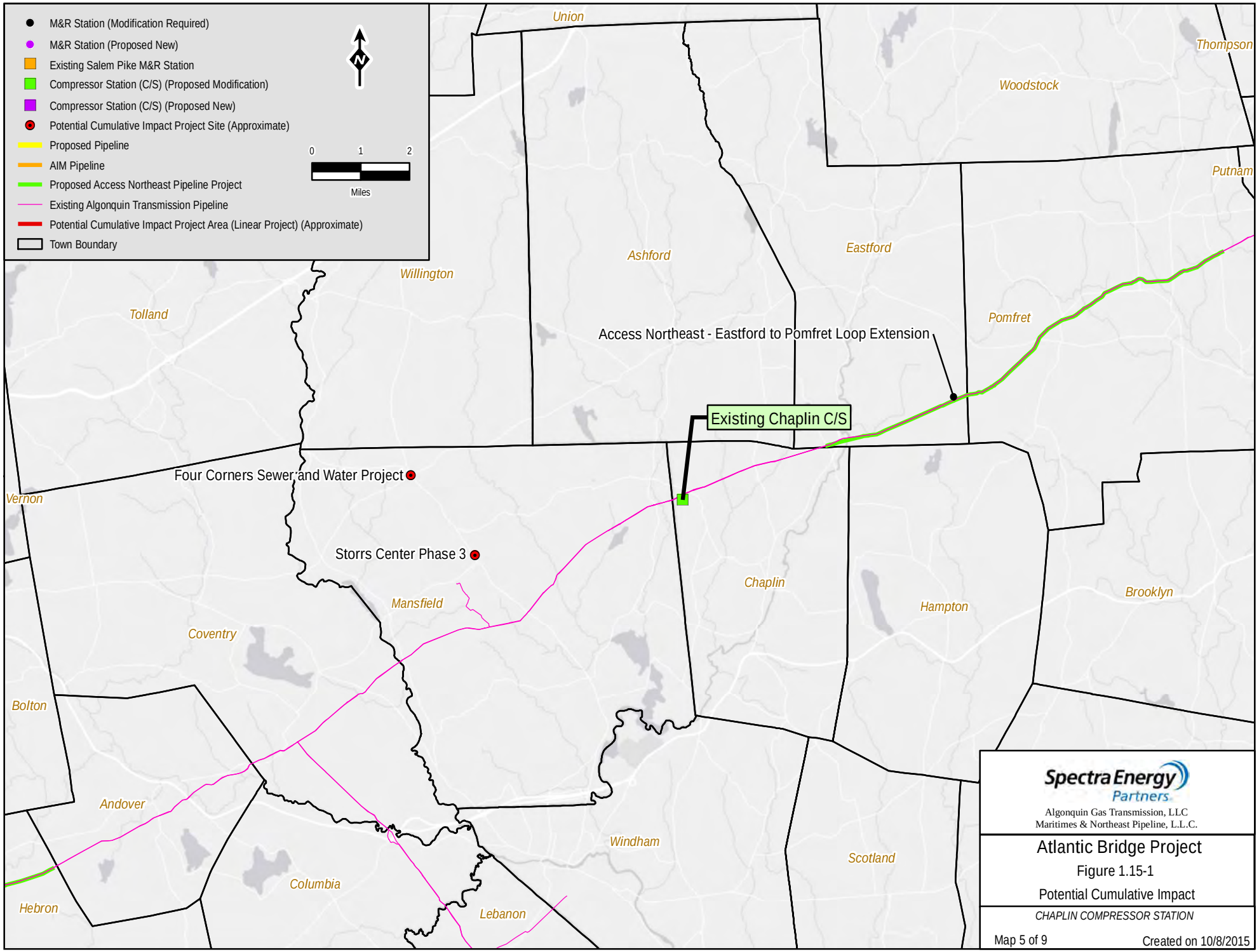
Potential Cumulative Impact

OXFORD COMPRESSOR STATION

Map 4 of 9

Created on 10/8/2015


M&R Station (Modification Required)
M&R Station (Proposed New)
Existing Salem Pike M&R Station
Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
Potential Cumulative Impact Project Site (Approximate)
Proposed Pipeline
AIM Pipeline
Proposed Access Northeast Pipeline Project
Existing Algonquin Transmission Pipeline
Potential Cumulative Impact Project Area (Linear Project) (Approximate)
Town Boundary
N
0
1
2
Miles
Union
Thompson
Woodstock
Putnam
Ashford
Eastford
Willington
Tolland
Pomfret
Access Northeast - Eastford to Pomfret Loop Extension
Existing Chaplin C/S
Four Corners Sewer and Water Project
Vernon
Storrs Center Phase 3
Chaplin
Brooklyn
Mansfield
Hampton
Coventry
Bolton
Andover
Windham
Scotland
Columbia
Hebron
Lebanon
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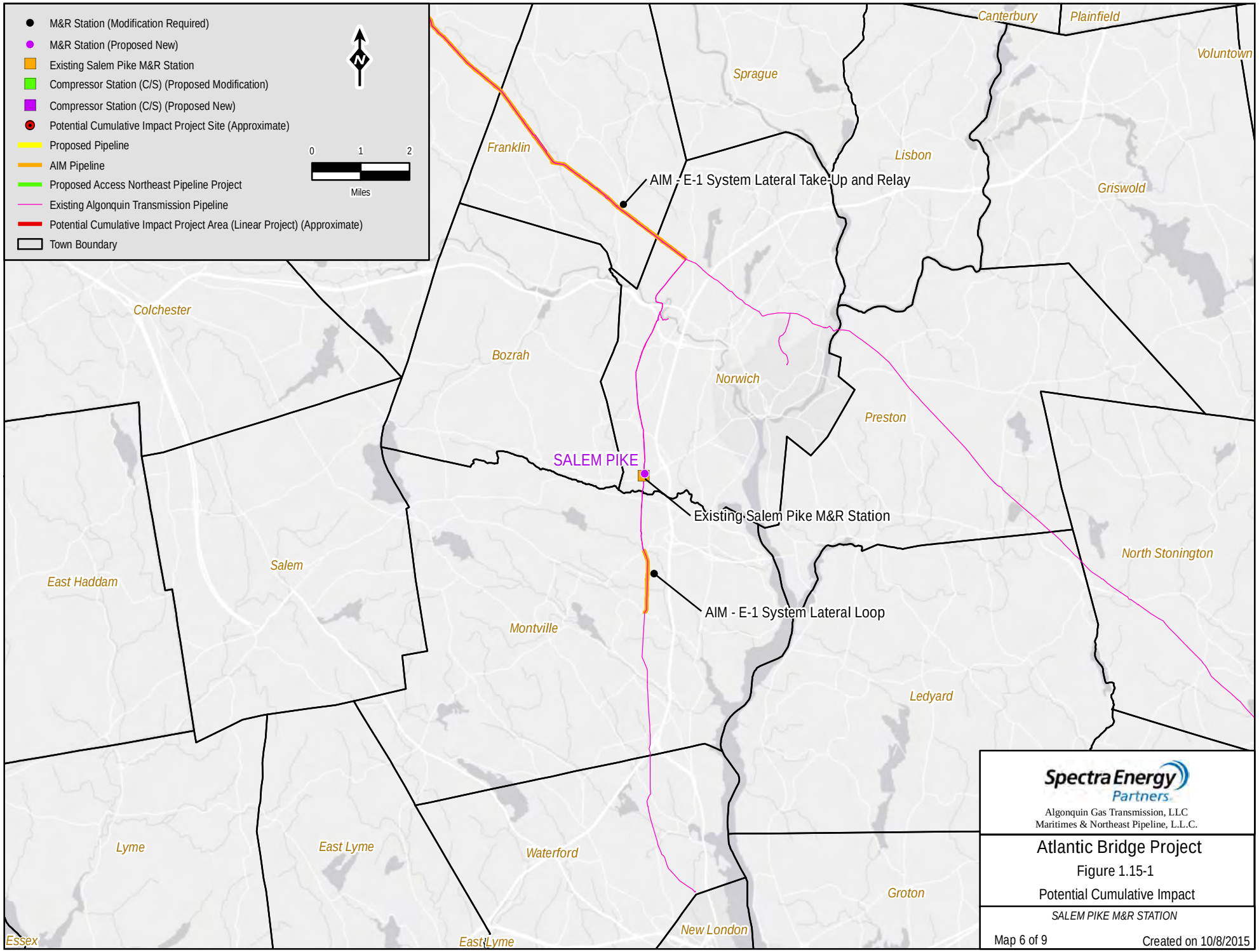
Potential Cumulative Impact
CHAPLIN COMPRESSOR STATION
Map 5 of 9
Created on 10/8/2015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M&R Station (Proposed New)
Existing Salem Pike M&R Station
Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
Potential Cumulative Impact Project Site (Approximate)
Proposed Pipeline
AIM Pipeline
Proposed Access Northeast Pipeline Project
Existing Algonquin Transmission Pipeline
Potential Cumulative Impact Project Area (Linear Project) (Approximate)
Town Boundary
N
0
1
2
Miles
Canterbury
Plainfield
Voluntown
Sprague
Franklin
Lisbon
Griswold
AIM - E-1 System Lateral Take-Up and Relay
Colchester
Bozrah
Norwich
Preston
SALEM PIKE
Existing Salem Pike M&R Station
North Stonington
Salem
East Haddam
AIM - E-1 System Lateral Loop
Montville
Ledyard
Lyme
East Lyme
Waterford
Groton
Essex
East Lyme
New London
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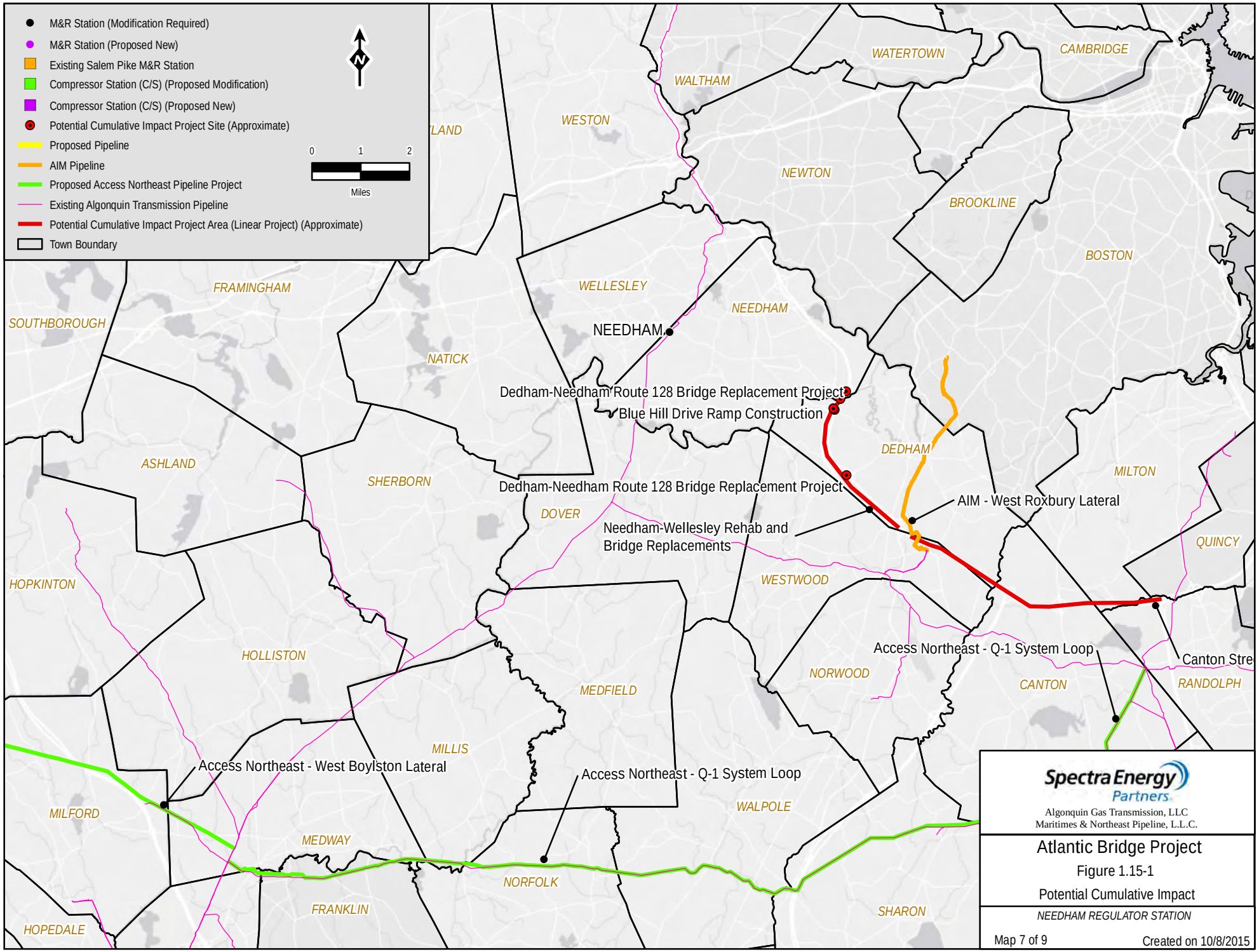
Potential Cumulative Impact
SALEM PIKE M&R STATION
Map 6 of 9
Created on 10/8/2015



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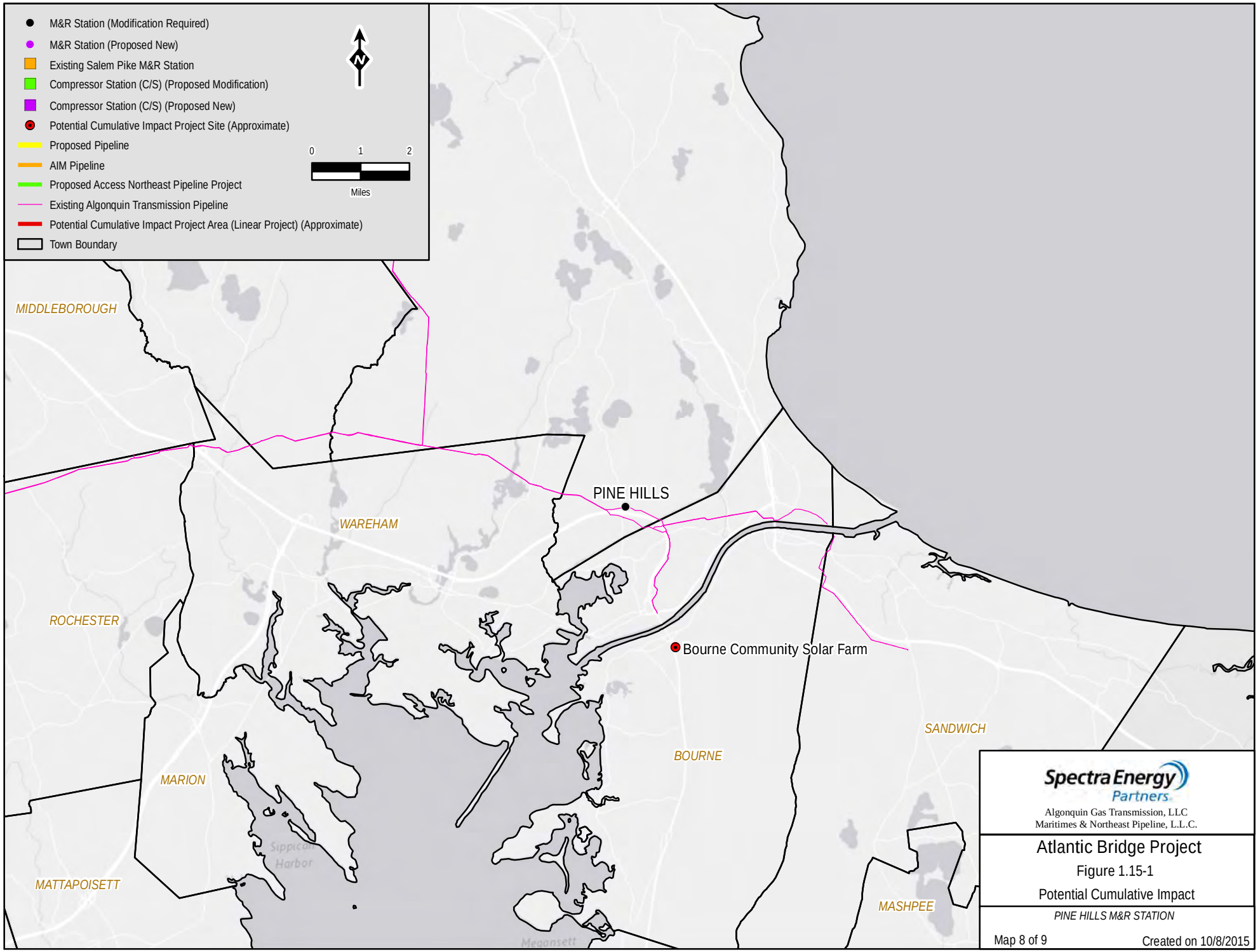
Potential Cumulative Impact

NEEDHAM REGULATOR STATION

Map 7 of 9

Created on 10/8/2015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M&R Station (Proposed New)
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Compressor Station (C/S) (Proposed Modification)
Compressor Station (C/S) (Proposed New)
Potential Cumulative Impact Project Site (Approximate)
Proposed Pipeline
AIM Pipeline
Proposed Access Northeast Pipeline Project
Existing Algonquin Transmission Pipeline
Potential Cumulative Impact Project Area (Linear Project) (Approximate)
Town Boundary
N
0
1
2
Miles
MIDDLEBOROUGH
PINE HILLS
WAREHAM
ROCHESTER
Bourne Community Solar Farm
SANDWICH
BOURNE
MARION
MATTAPOISETT
MASHPEE
Sippican Harbor
Megansett
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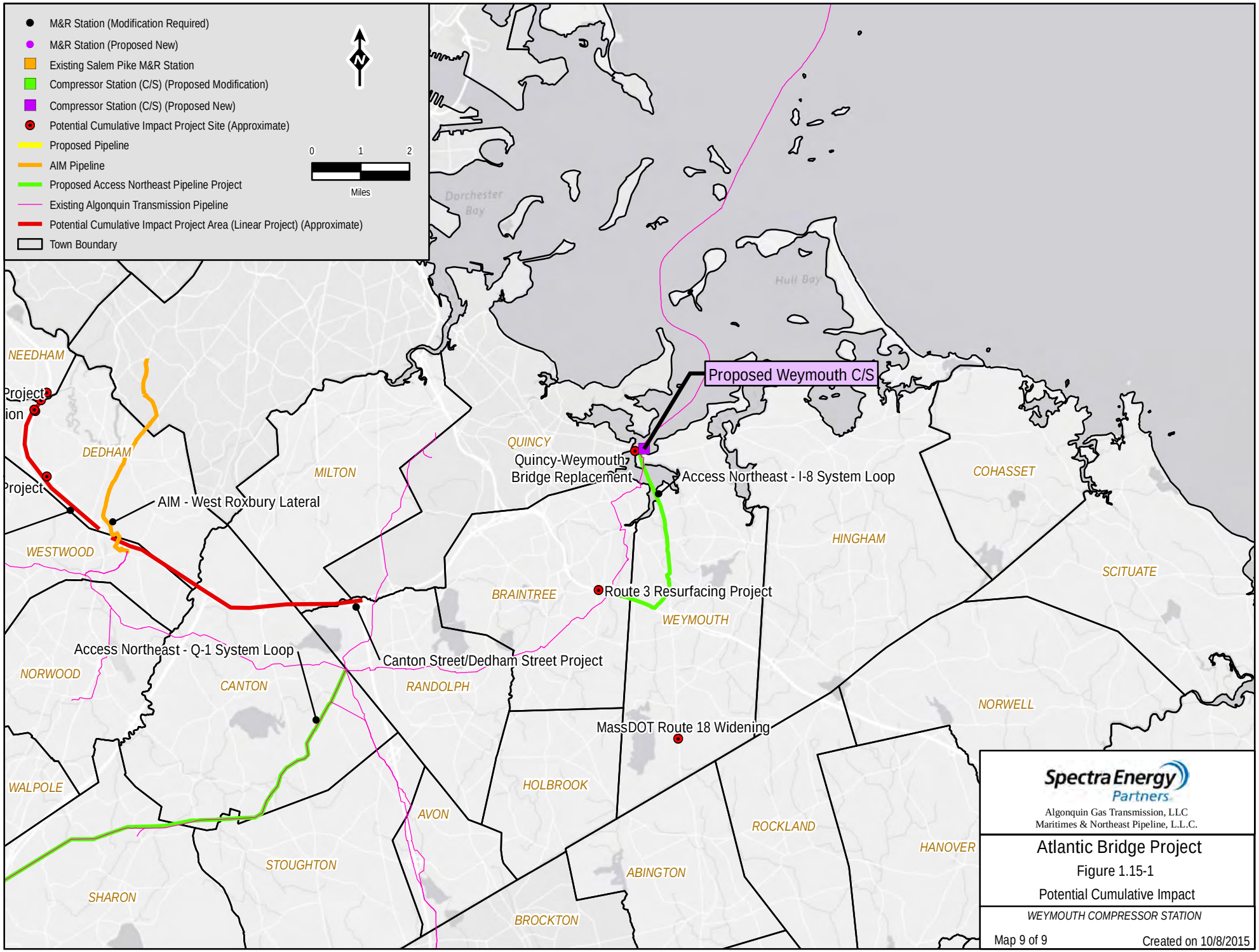
Potential Cumulative Impact
PINE HILLS M&R STATION
Map 8 of 9
Created on 10/8/2015



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Maritimes & Northeast Pipeline, L.L.C.

Atlantic Bridge Project

Figure 1.15-1

Potential Cumulative Impact

WEYMOUTH COMPRESSOR STATION

Map 9 of 9

Created on 10/8/2015

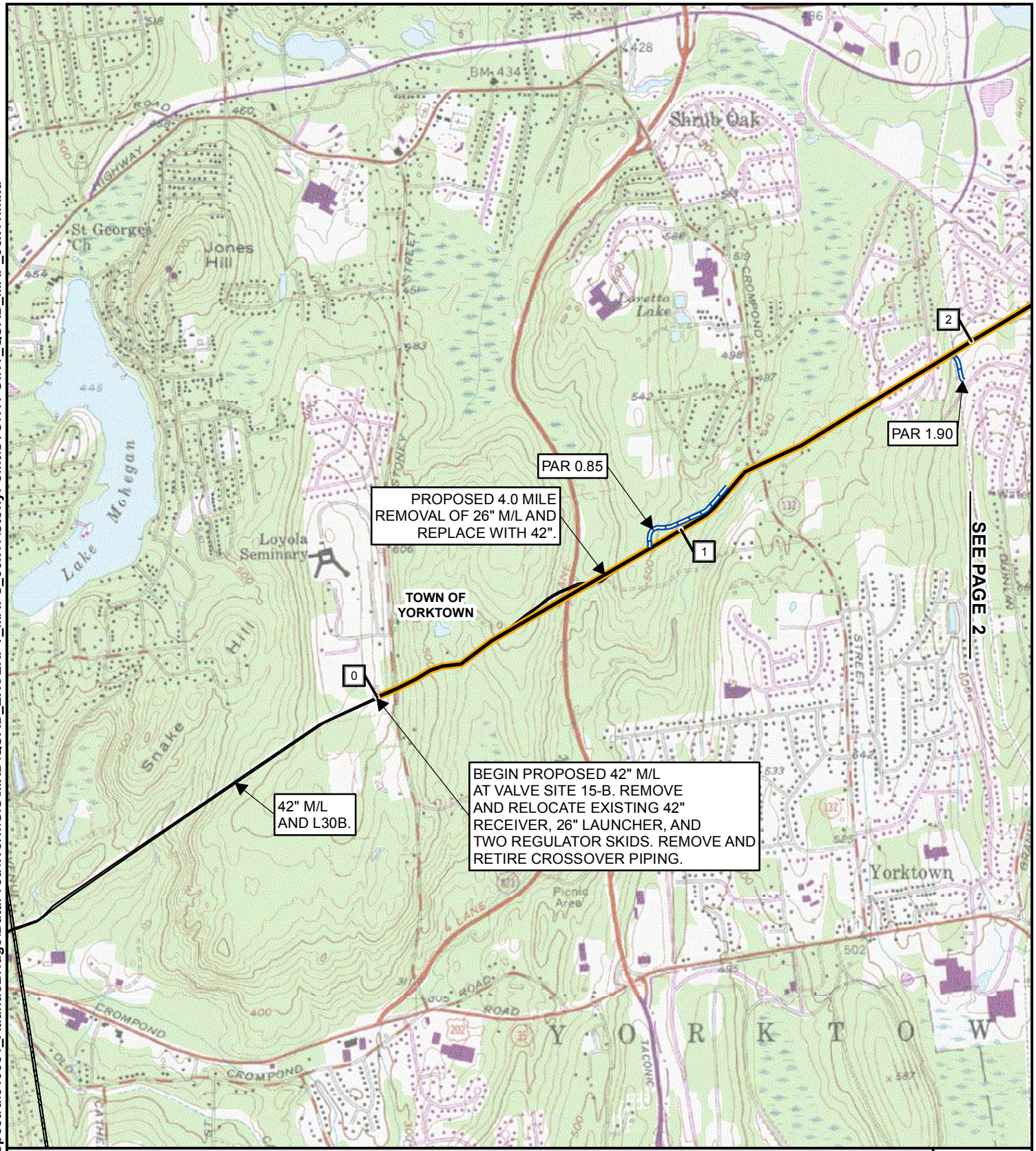
APPENDIX 1A

1. 8.5”x11 USGS Quadrangle Excerpts
2. Typical Right-of-Way Configurations
3. Full Size Drawings Provided Under Separate Cover in Volume II-B
   a) Pipeline Alignment Sheets
   b) Horizontal Directional Drill Plan and Profile Drawing
   c) Compressor Station Plans
   d) Metering and Regulating Station Plans
   e) USGS Quadrangles

1. 8.5”x11” USGS QUADRANGLE EXCERPTS

STONY POINT DISCHARGE TAKE-UP AND RELAY PIPELINE

TOWN OF YORKTOWN, TOWN OF SOMERS
WESTCHESTER COUNTY, NEW YORK



1 MILE POST

EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

PROPOSED PIPELINE

PROPOSED ACCESS ROAD

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

COUNTY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

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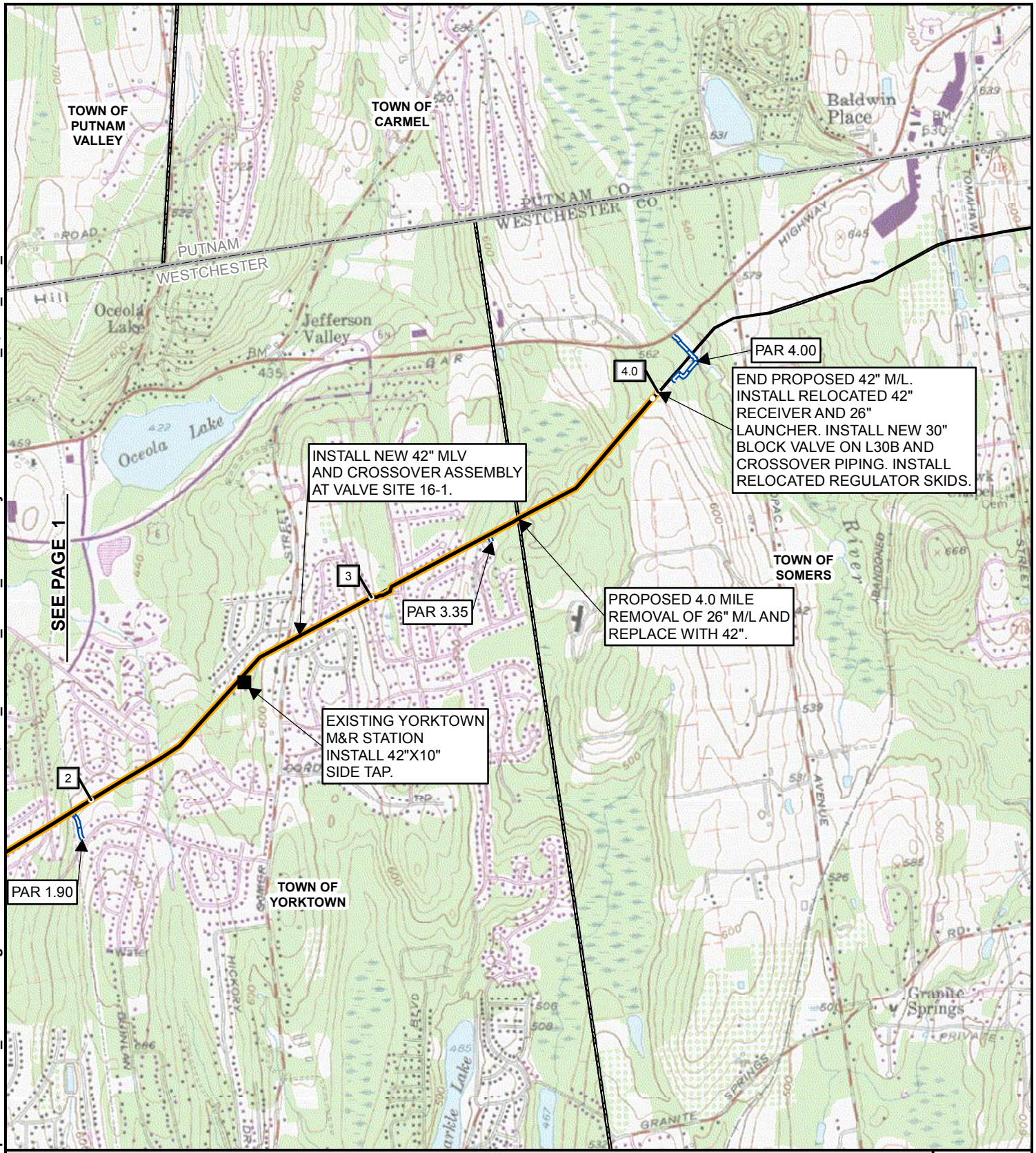
I.G.

TITLE: ATLANTIC BRIDGE PROJECT - STONY POINT TO SOUTHEAST
STONY POINT TAKE-UP AND RELAY - USGS QUAD EXCERPT
(MOHEGAN LAKE, NY)

LOC.: WESTCHESTER COUNTY, NEW YORK				REV. 2
CKD. BY: HMMHOL	ENG.		DATE: 09/15/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'		DWG. NO.	STON-E-6501

Spectra Energy Partners

Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400



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1 MILE POST

EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

PROPOSED PIPELINE

PROPOSED ACCESS ROAD

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

COUNTY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

TITLE: **ATLANTIC BRIDGE PROJECT - STONY POINT TO SOUTHEAST**
STONY POINT TAKE-UP AND RELAY - USGS QUAD EXCERPT
(MOHEGAN LAKE, NY)

LOC.: WESTCHESTER COUNTY, NEW YORK			REV. 2
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	STON-E-6502

I.G.

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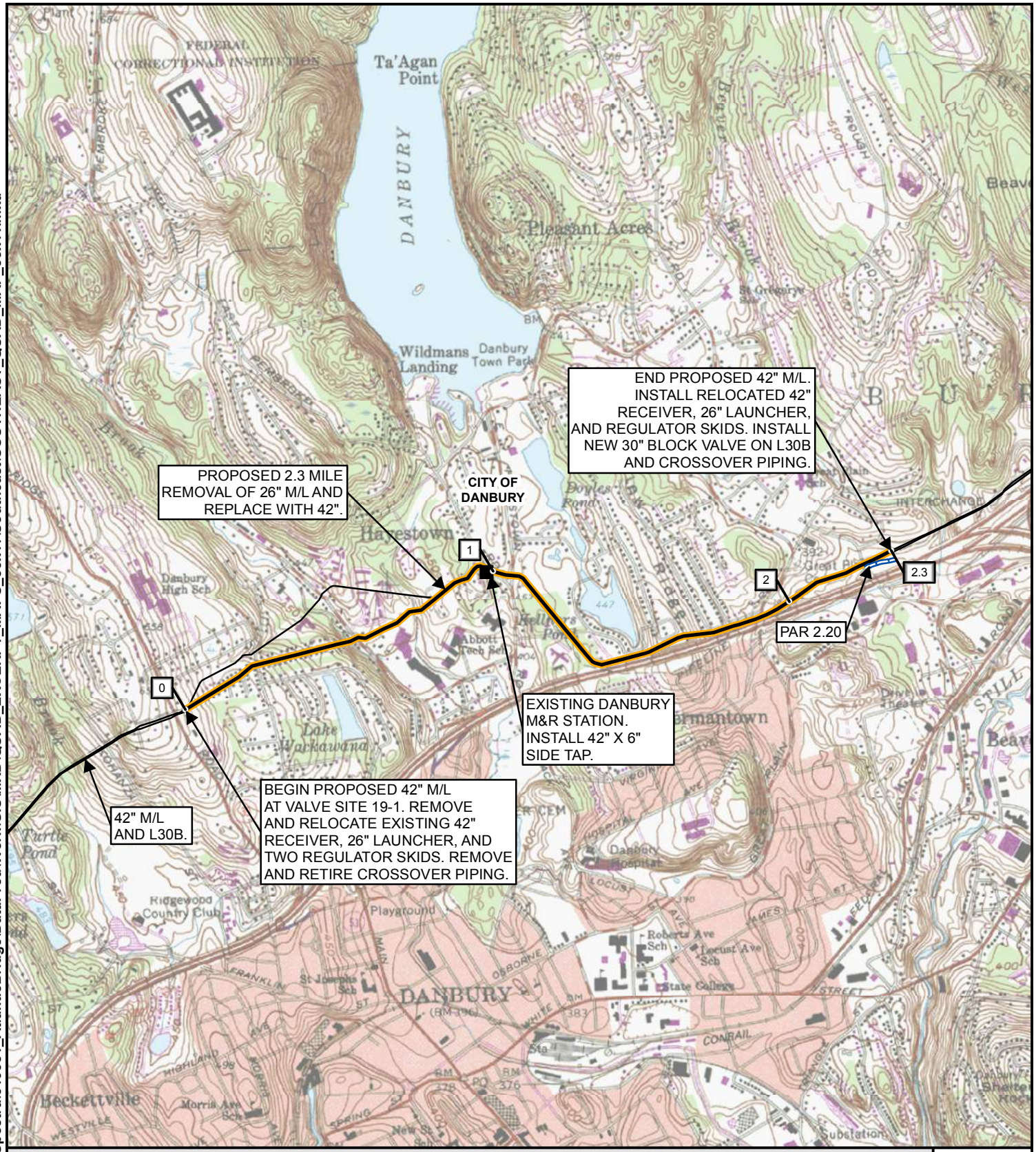
1. 8.5”x11” USGS QUADRANGLE EXCERPTS

SOUTHEAST DISCHARGE TAKE-UP AND RELAY PIPELINE

CITY OF DANBURY
FAIRFIELD COUNTY, CONNECTICUT



1 MILE POST

EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

PROPOSED PIPELINE

PROPOSED ACCESS ROAD

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

N W E S

ISSUED FOR FERC (09/2015)

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I.G.

TITLE: ATLANTIC BRIDGE PROJECT - SOUTHEAST TO OXFORD
SOUTHEAST TAKE-UP AND RELAY - USGS QUAD EXCERPT (DANBURY, CT)

LOC.: FAIRFIELD COUNTY, CONNECTICUT				REV. 2
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.	
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	SEAS-E-6501	

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1. 8.5”x11” USGS QUADRANGLE EXCERPTS

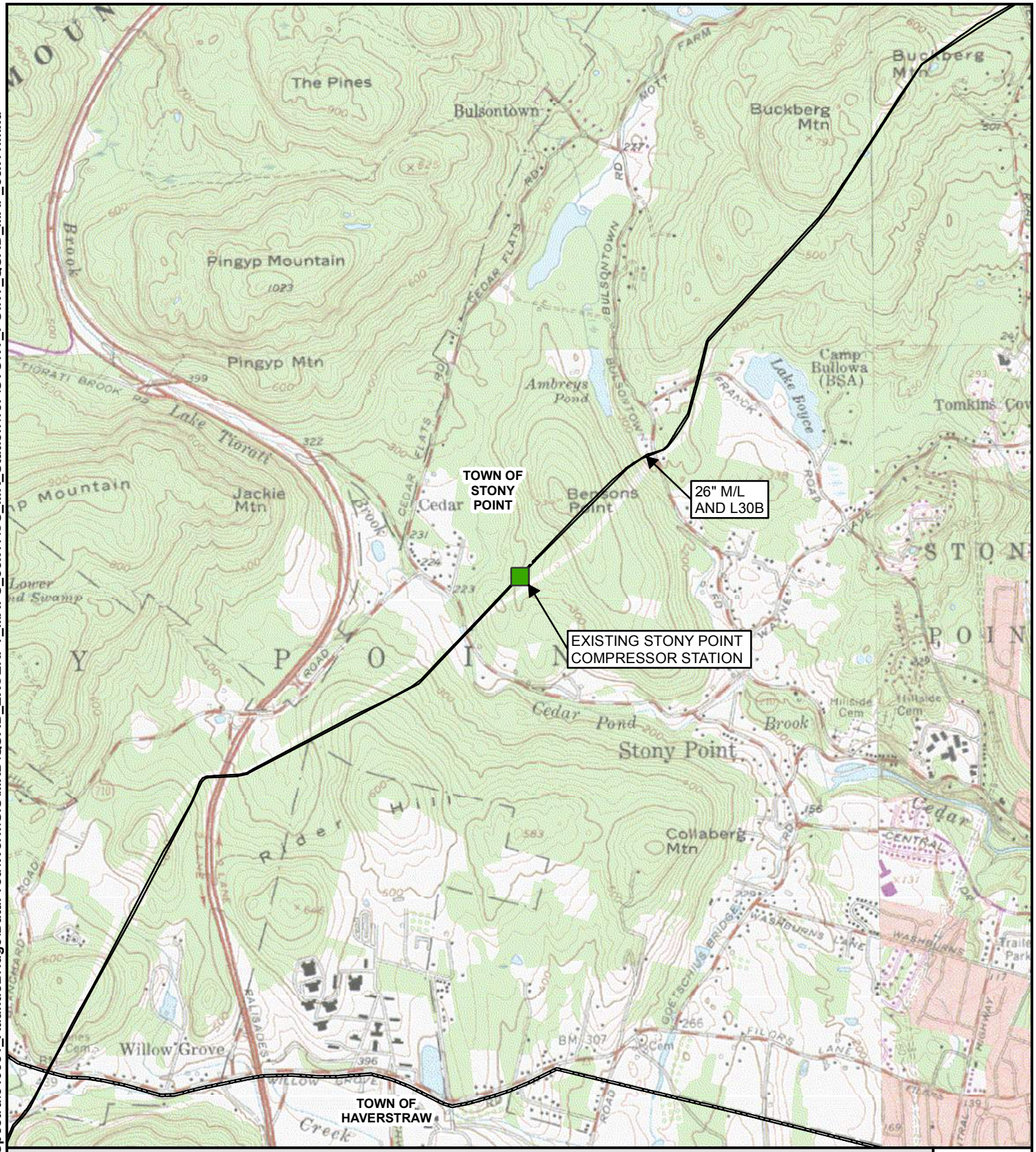
COMPRESSOR STATIONS

STONY POINT COMPRESSOR STATION (EXISTING)
TOWN OF STONY POINT
ROCKLAND COUNTY, NEW YORK

OXFORD COMPRESSOR STATION (EXISTING)
TOWN OF OXFORD
NEW HAVEN COUNTY, CONNECTICUT

CHAPLIN COMPRESSOR STATION (EXISTING)
TOWN OF CHAPLIN
WINDHAM COUNTY, CONNECTICUTT

WEYMOUTH COMPRESSOR STATION (PROPOSED)
TOWN OF WEYMOUTH
NORFOLK COUNTY, MASSACHUSETTS



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I.G.

TITLE:	**ATLANTIC BRIDGE PROJECT - STONY POINT TO SOUTHEAST** **STONY POINT COMPRESSOR STATION - USGS QUAD EXCERPT** **(THIELLS, NY)**			
LOC.: ROCKLAND COUNTY, NEW YORK				REV. 0
CKD. BY: HMMHOL	ENG.		DATE: 10/14/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'		DWG. NO.	STON-E-6601

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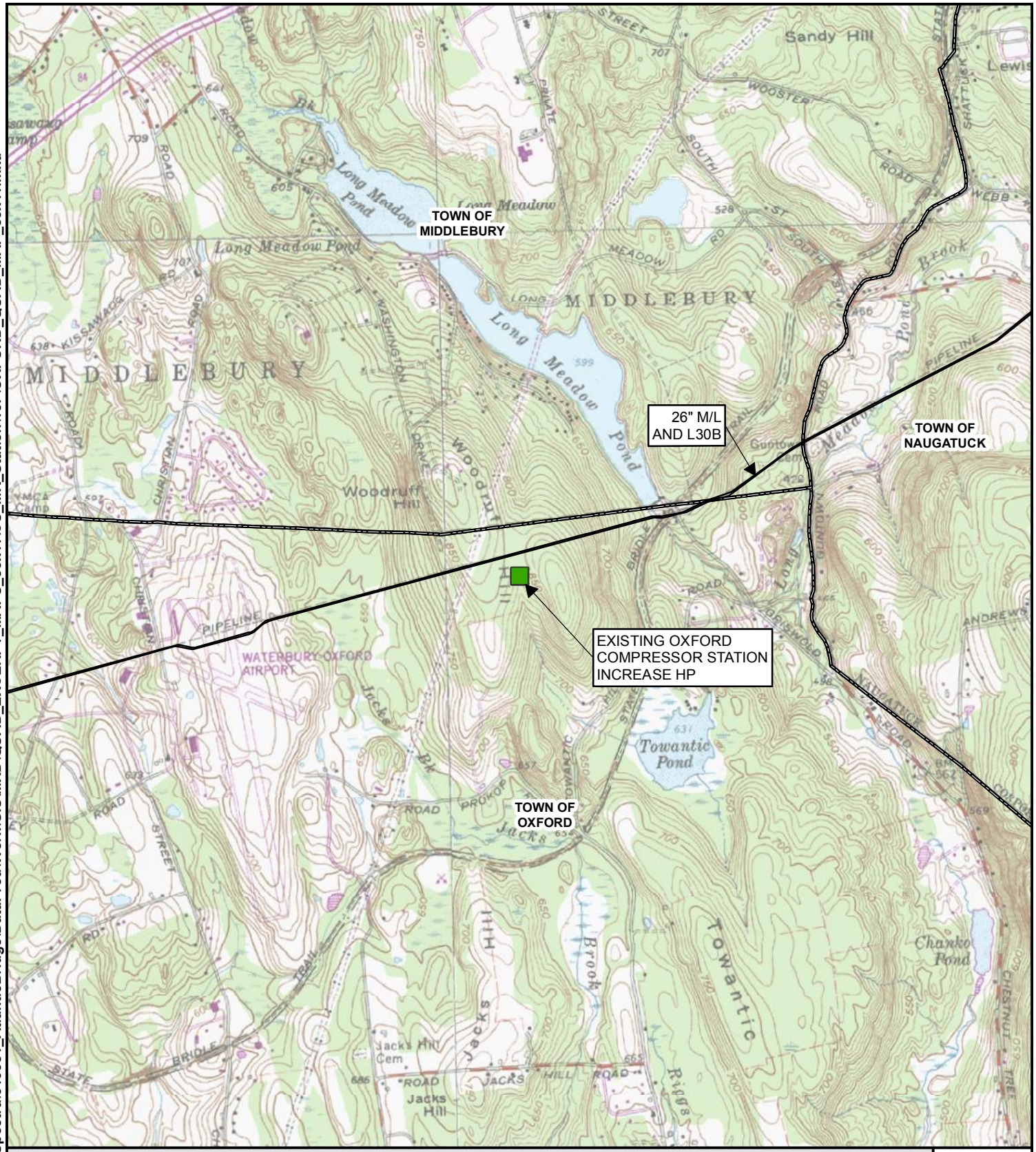
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400



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EXISTING COMPRESSOR STATION PROPOSED MODIFICATION

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

TITLE: ATLANTIC BRIDGE PROJECT - OXFORD TO CROMWELL
OXFORD COMPRESSOR STATION - USGS QUAD EXCERPT
(NAUGATUCK, CT)

LOC.: NEW HAVEN COUNTY, CONNECTICUT				REV. 1
CKD. BY: HMMHOL	ENG.		DATE: 09/15/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'		DWG. NO.	OXFO-E-6501

I.G.

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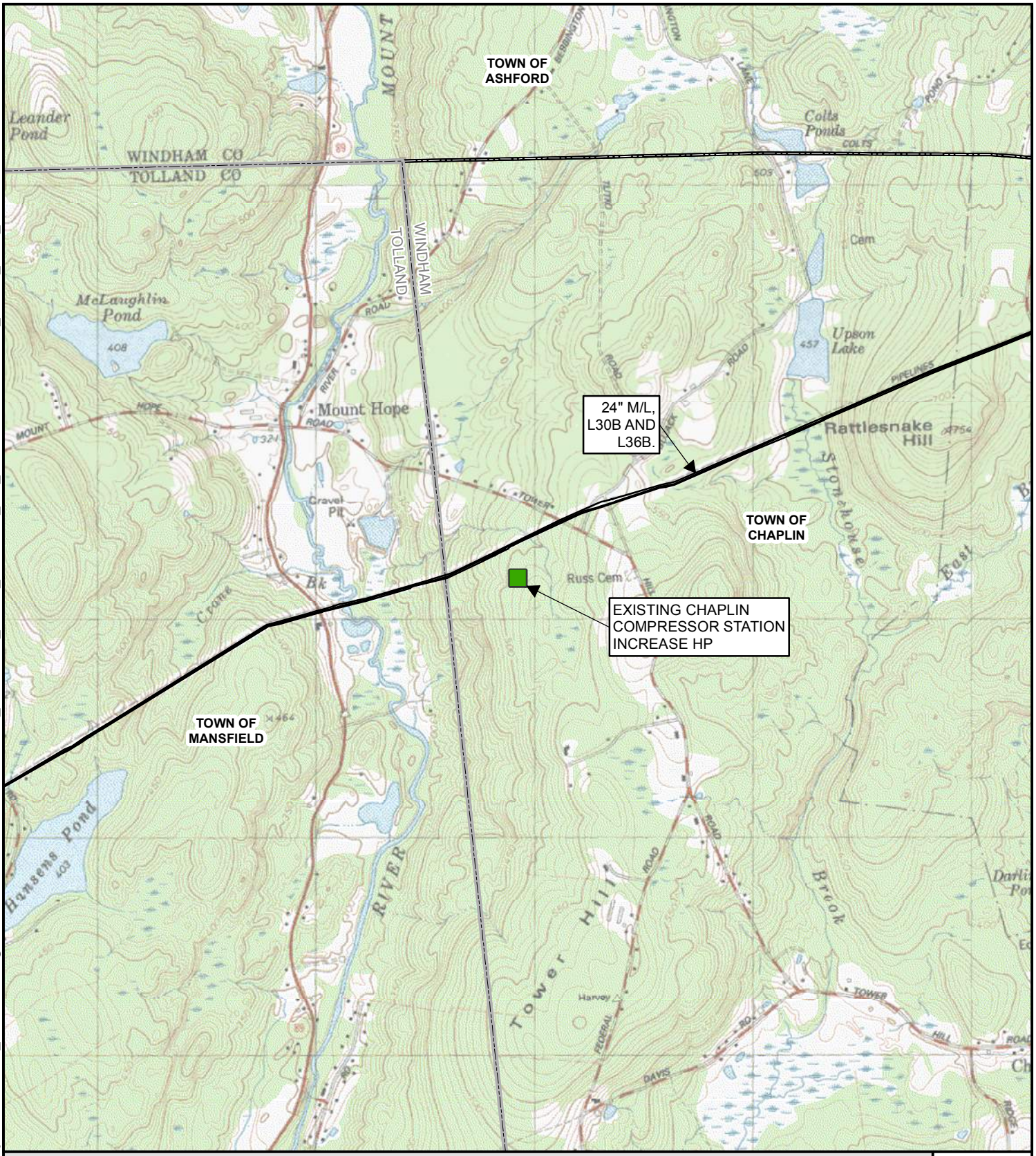

EXISTING COMPRESSOR STATION PROPOSED MODIFICATION

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

COUNTY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

TITLE: ATLANTIC BRIDGE PROJECT - CHAPLIN TO BURRILLVILLE
CHAPLIN COMPRESSOR STATION - USGS QUAD EXCERPT
(SPRING HILL, CT)

LOC.: WINDHAM COUNTY, CONNECTICUT				REV. 1
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.	
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	CHAP-E-6601	

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I.G.

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PROPOSED COMPRESSOR STATION

MUNICIPALITY BOUNDARY

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

ISSUED FOR FERC (09/2015)

TITLE:	ATLANTIC BRIDGE PROJECT - I SYSTEM WEYMOUTH COMPRESSOR STATION - USGS QUAD EXCERPT (WEYMOUTH, MA)		
LOC.: NORFOLK COUNTY, MASSACHUSETTS		REV. 1	
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	ISYS-E-6501

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5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

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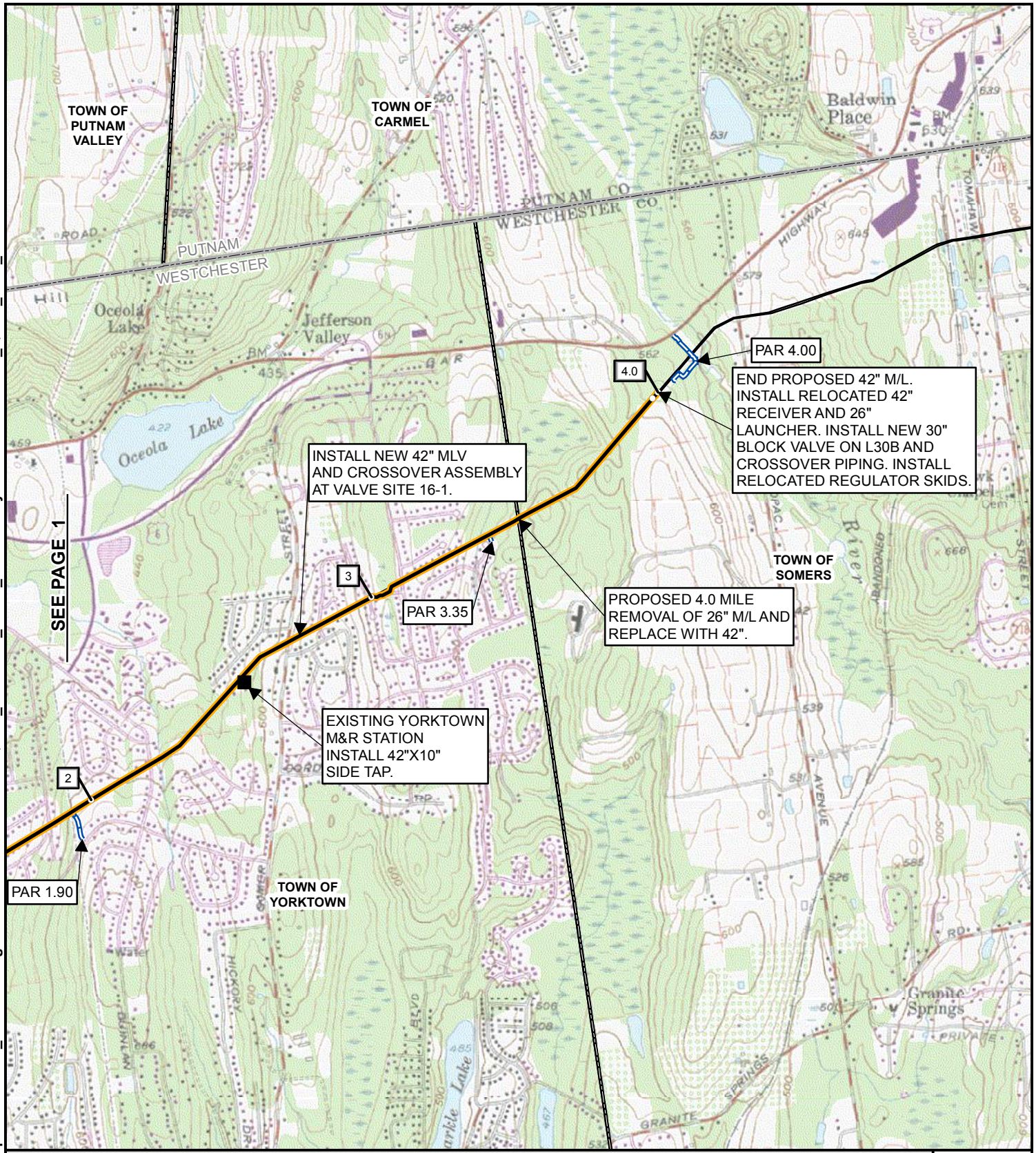
I.G.

1. 8.5”x11” USGS QUADRANGLE EXCERPTS

NEW YORK M&R STATION

YORKTOWN M&R STATION
TOWN OF YORKTOWN
WESTCHESTER COUNTY, NEW YORK



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1 MILE POST

EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

PROPOSED PIPELINE

PROPOSED ACCESS ROAD

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

COUNTY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

TITLE: **ATLANTIC BRIDGE PROJECT - STONY POINT TO SOUTHEAST**
STONY POINT TAKE-UP AND RELAY - USGS QUAD EXCERPT
(MOHEGAN LAKE, NY)

LOC.: WESTCHESTER COUNTY, NEW YORK			REV. 2
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	STON-E-6502

I.G.

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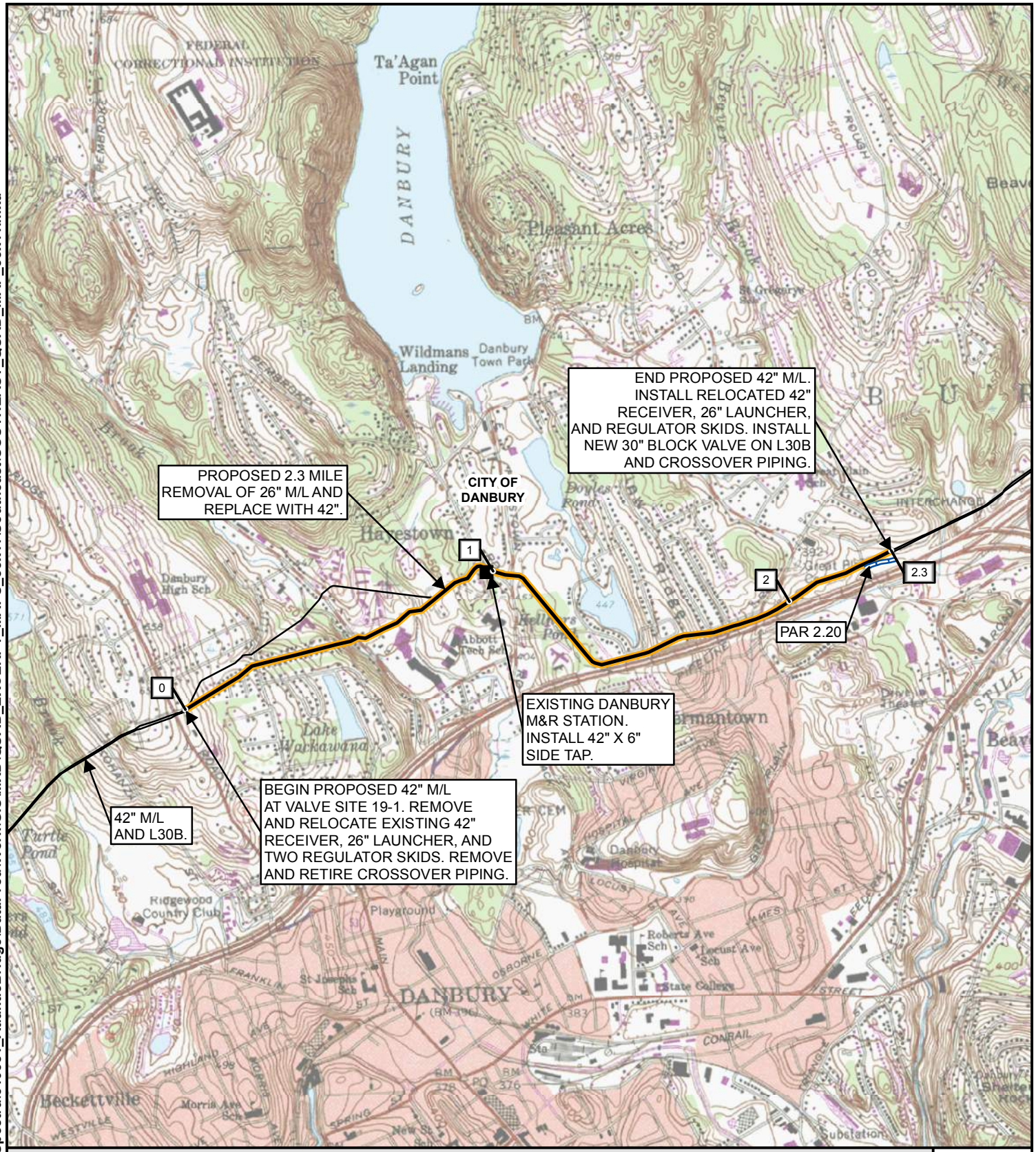
1. 8.5”x11” USGS QUADRANGLE EXCERPTS

CONNECTICUT M&R STATIONS

DANBURY M&R STATION
CITY OF DANBURY
FAIRFIELD COUNTY, CONNECTICUT

SALEM PIKE M&R STATION
CITY OF NORWICH
NEW LONDON COUNTY, CONNECTICUT



1 MILE POST

EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

PROPOSED PIPELINE

PROPOSED ACCESS ROAD

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

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ISSUED FOR FERC (09/2015)

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I.G.

TITLE: ATLANTIC BRIDGE PROJECT - SOUTHEAST TO OXFORD
SOUTHEAST TAKE-UP AND RELAY - USGS QUAD EXCERPT (DANBURY, CT)

LOC.: FAIRFIELD COUNTY, CONNECTICUT				REV. 2
CKD. BY: HMMHOL	ENG.	DATE: 09/15/2015	W.B.S.	
DRN. BY: HMMHOL	SCALE: 1" = 2000'	DWG. NO.	SEAS-E-6501	

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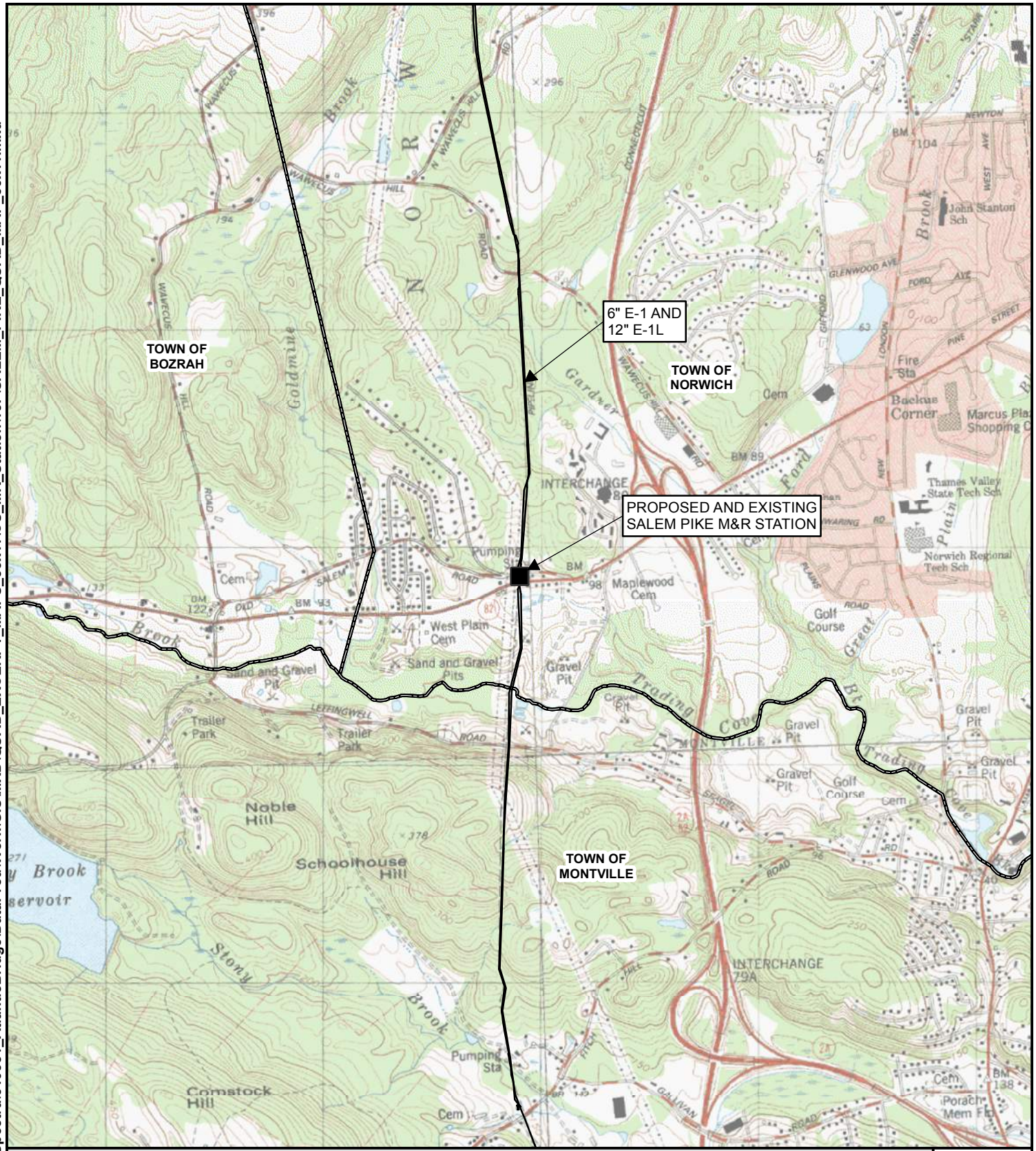
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400



EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

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ISSUED FOR FERC (09/2015)

TITLE:	**ATLANTIC BRIDGE PROJECT - E-SYSTEM** **SALEM PIKE M&R STATION - USGS QUAD EXCERPT MAP** **(FITCHVILLE, CT- NORWICH, CT)**			
LOC.: NEW LONDON COUNTY, CONNECTICUT				**REV. 1**
CKD. BY: HMMHOL	**ENG.**	**DATE: 09/15/2015**	**W.B.S.**	
DRN. BY: HMMHOL	**SCALE: 1" = 2000'**	**DWG. NO. ESYS-E-6501**		

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I.G.

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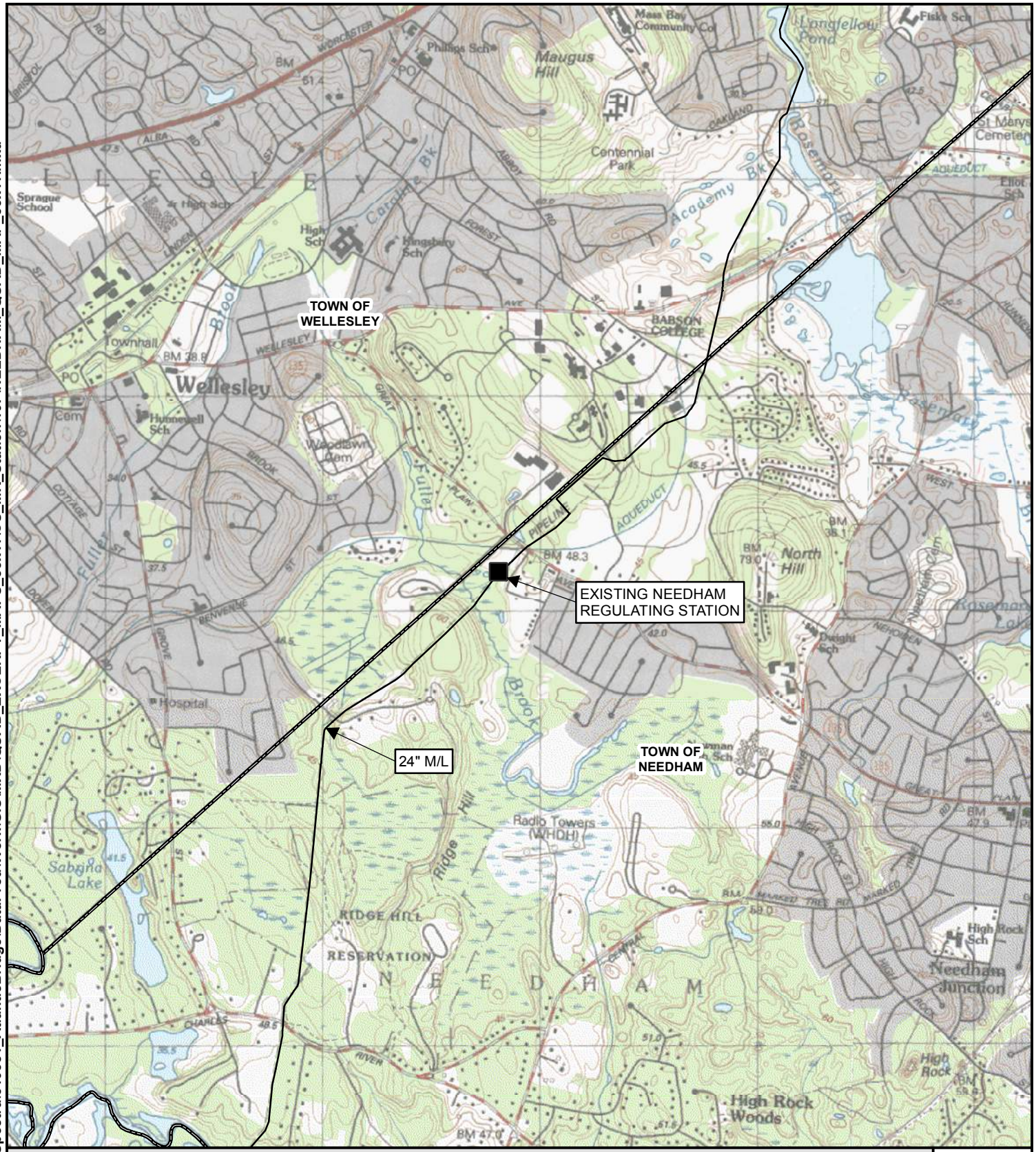
1. 8.5”x11” USGS QUADRANGLE EXCERPTS

MASSACHUSETTS M&R STATIONS AND REGULATOR STATIONS

NEEDHAM REGULATOR STATION
TOWN OF NEEDHAM
NORFOLK COUNTY, MASSACHUSETTS

PINE HILLS M&R STATION
TOWN OF PLYMOUTH
PLYMOUTH COUNTY, MASSACHUSETTS

PLYMOUTH M&R STATION
TOWN OF PLYMOUTH
PLYMOUTH COUNTY, MASSACHUSETTS



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EXISTING REGULATING STATION MODIFICATION REQUIRED

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

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ISSUED FOR FERC (09/2015)

TITLE:	**ATLANTIC BRIDGE PROJECT - BURRILLVILLE** **NEEDHAM REGULATING STATION - USGS QUAD EXCERPT** **(NATICK, MA)**			
LOC.: NORFOLK COUNTY, MASSACHUSETTS				**REV. 1**
CKD. BY: HMMHOL	**ENG.**	**DATE: 09/15/2015**	**W.B.S.**	
DRN. BY: HMMHOL	**SCALE: 1" = 2000'**	**DWG. NO.**	**BURR-E-6501**	

I.G.

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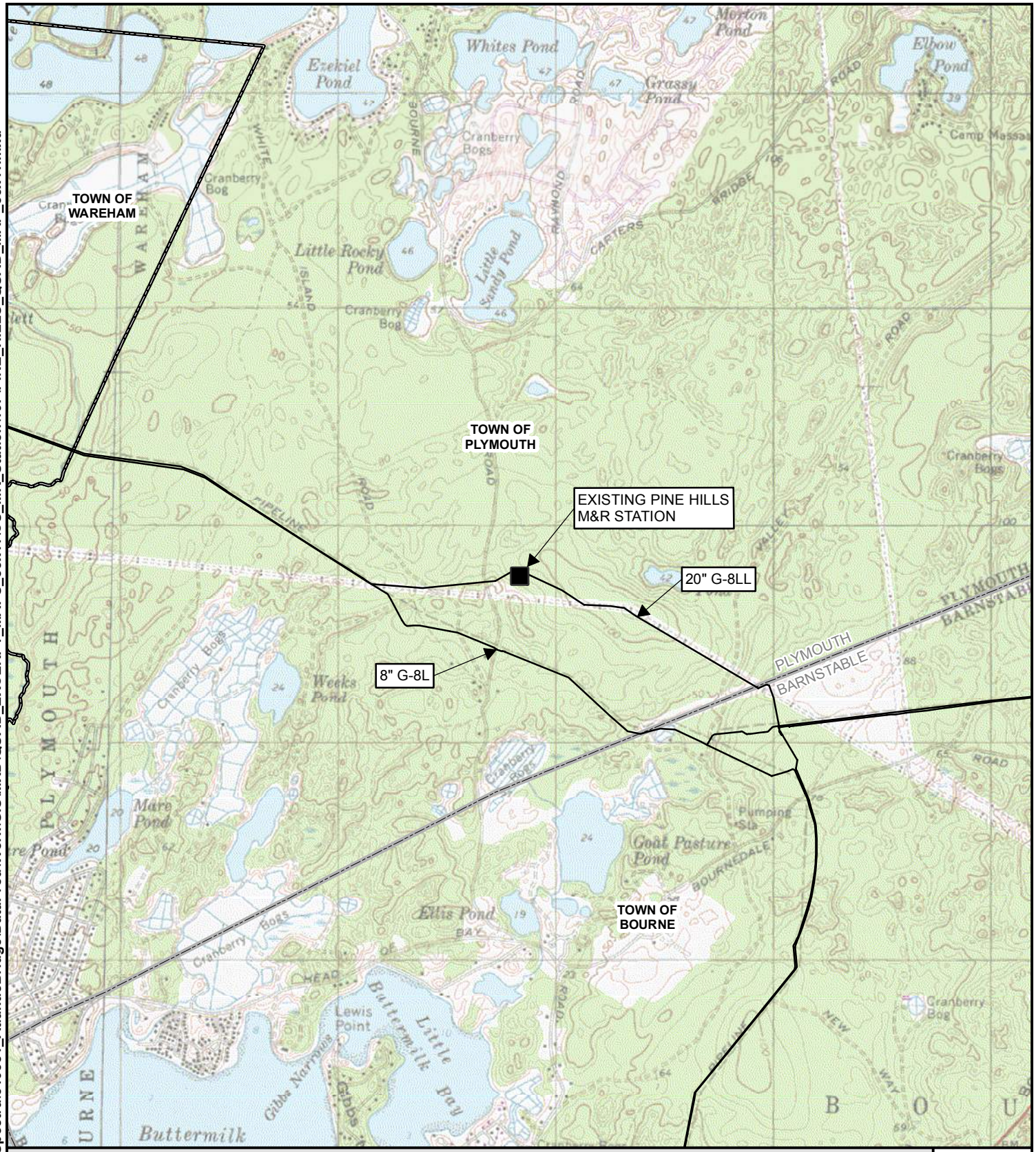
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400



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EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

COUNTY BOUNDARY

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W E
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ISSUED FOR FERC (09/2015)

TITLE:	**ATLANTIC BRIDGE PROJECT - G SYSTEM** **PINE HILLS M&R STATION - USGS QUAD EXCERPT** **(SAGAMORE, MA)**			
LOC.: PLYMOUTH COUNTY, MASSACHUSETTS				**REV. 1**
CKD. BY: HMMHOL	**ENG.**	**DATE: 09/15/2015**	**W.B.S.**	
DRN. BY: HMMHOL	**SCALE: 1" = 2000'**	**DWG. NO.**	**GSYS-E-6601**	

I.G.

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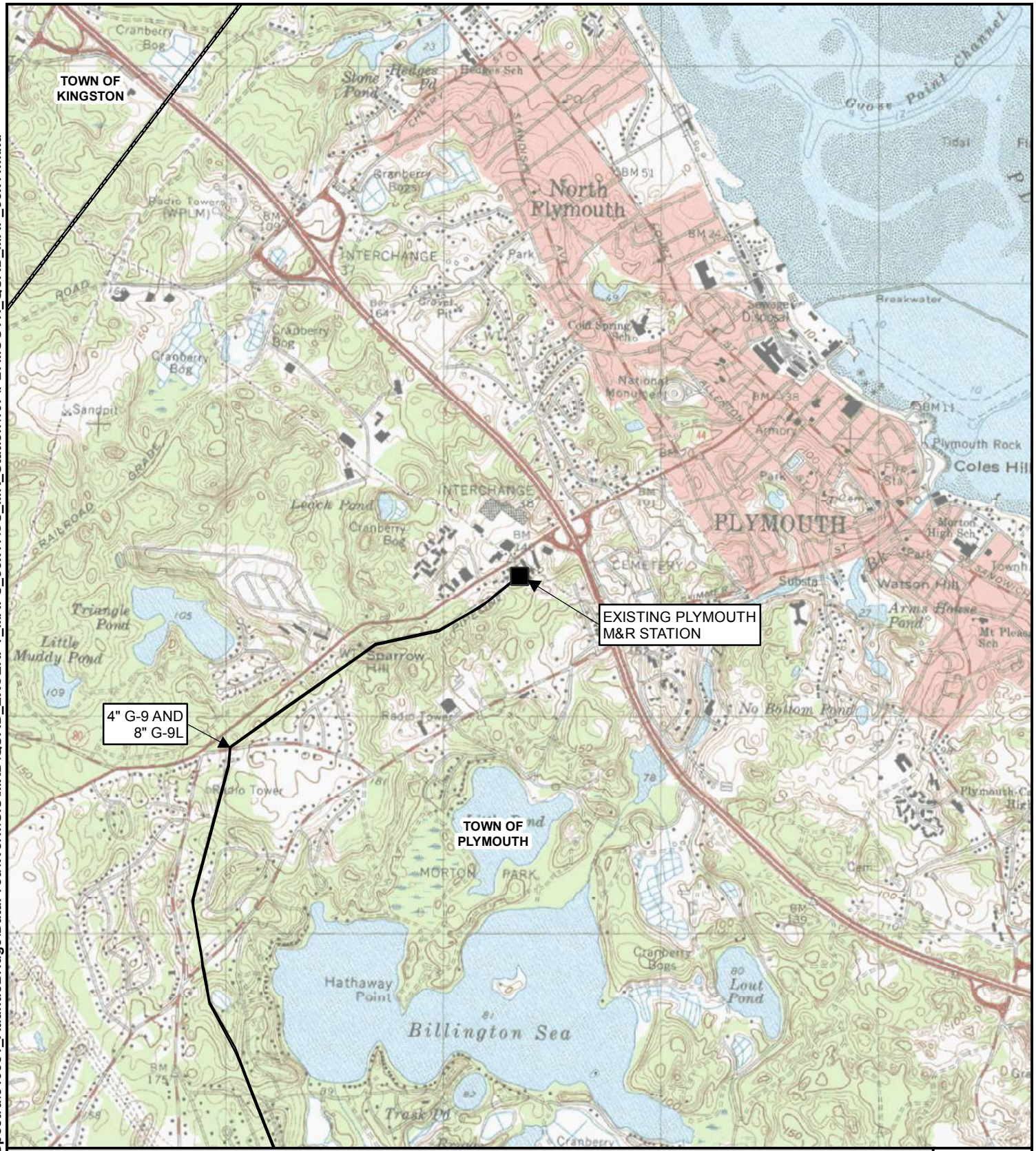
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400



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EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

EXISTING ALGONQUIN GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

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W E
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ISSUED FOR FERC (09/2015)

TITLE:	**ATLANTIC BRIDGE PROJECT - G SYSTEM** **PLYMOUTH M&R STATION - USGS QUAD EXCERPT** **(PLYMOUTH, MA)**			
LOC.: PLYMOUTH COUNTY, MASSACHUSETTS				**REV. 1**
CKD. BY: HMMHOL	**ENG.**	**DATE: 09/15/2015**	**W.B.S.**	
DRN. BY: HMMHOL	**SCALE: 1" = 2000'**	**DWG. NO.**	**GSYS-E-6701**	

Spectra Energy Partners

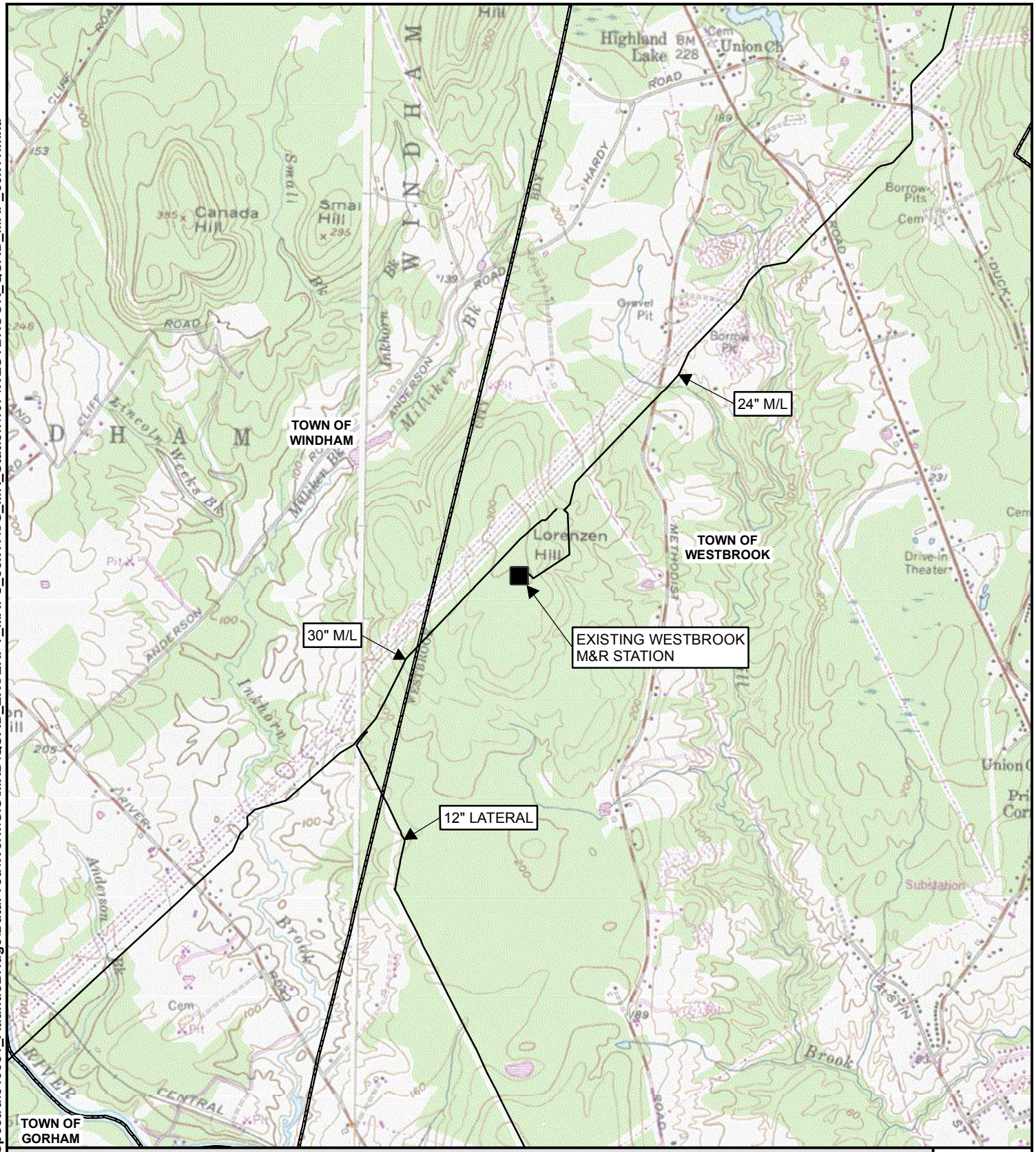
Algonquin Gas Transmission, LLC
5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

I.G.

1. 8.5”x11” USGS QUADRANGLE EXCERPTS

MAINE M&R STATION

WESTBROOK M&R STATION
CITY OF WESTBROOK
CUMBERLAND COUNTY, MAINE



EXISTING METERING AND REGULATING (M&R) STATION MODIFICATION REQUIRED

EXISTING MARITIMES & NORTHEAST GAS TRANSMISSION PIPELINE

MUNICIPALITY BOUNDARY

N W E S

ISSUED FOR FERC (09/2015)

TITLE:	**ATLANTIC BRIDGE PROJECT - MARITIMES & NORTHEAST** **WESTBROOK M&R STATION - USGS QUAD EXCERPT** **(PORTLAND WEST, ME)**			
LOC.: CUMBERLAND COUNTY, MAINE				**REV. 1**
CKD. BY: HMMHOL	**ENG.**	**DATE: 09/15/2015**	**W.B.S.**	
DRN. BY: HMMHOL	**SCALE: 1" = 2000'**	**DWG. NO.**	**WBRK-E-6701**	

Spectra Energy Partners

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5400 Westheimer Court, Houston, TX 77056-5310 713/627-5400

I.G.

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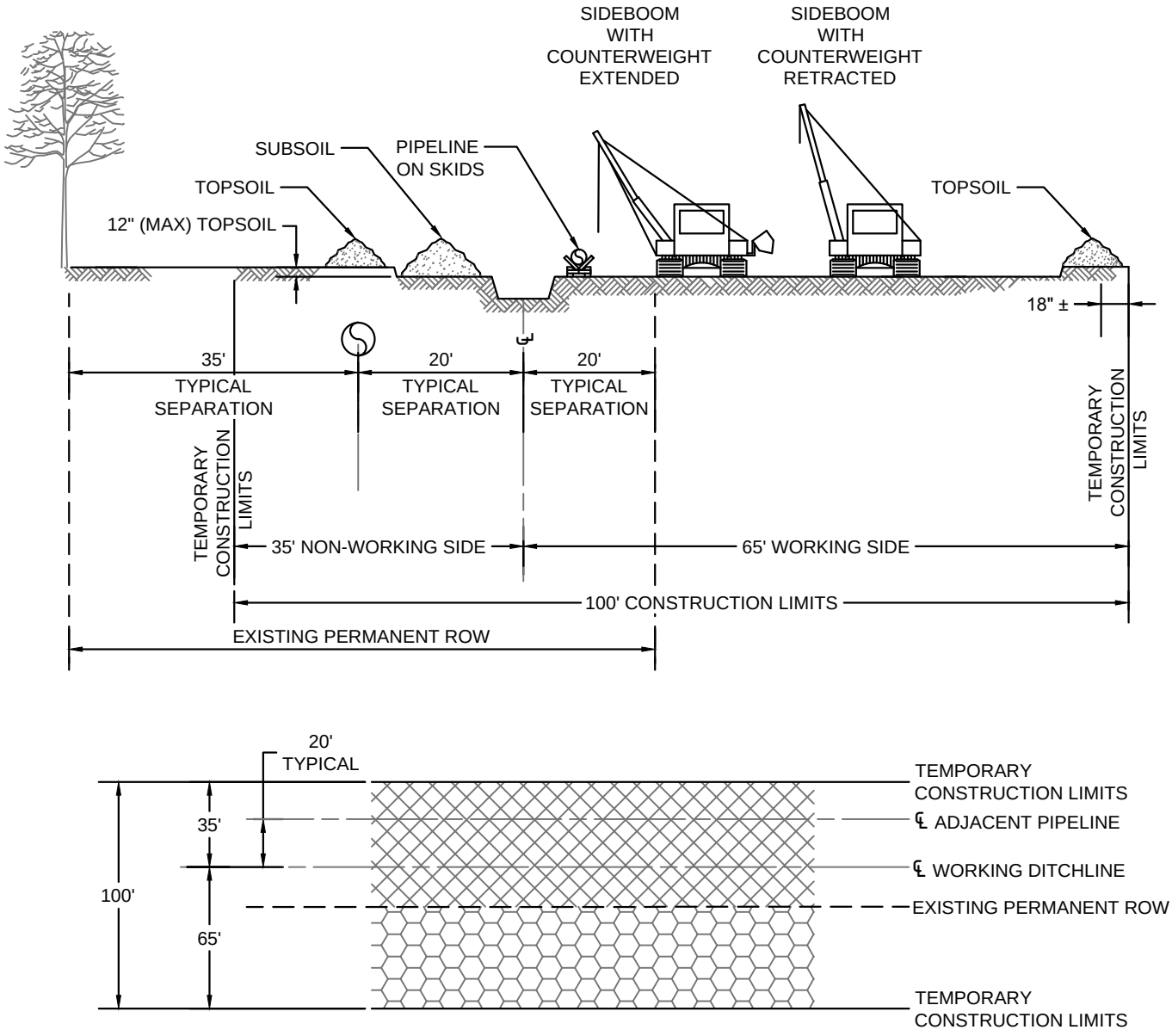
2. TYPICAL RIGHT-OF-WAY CONFIGURATIONS

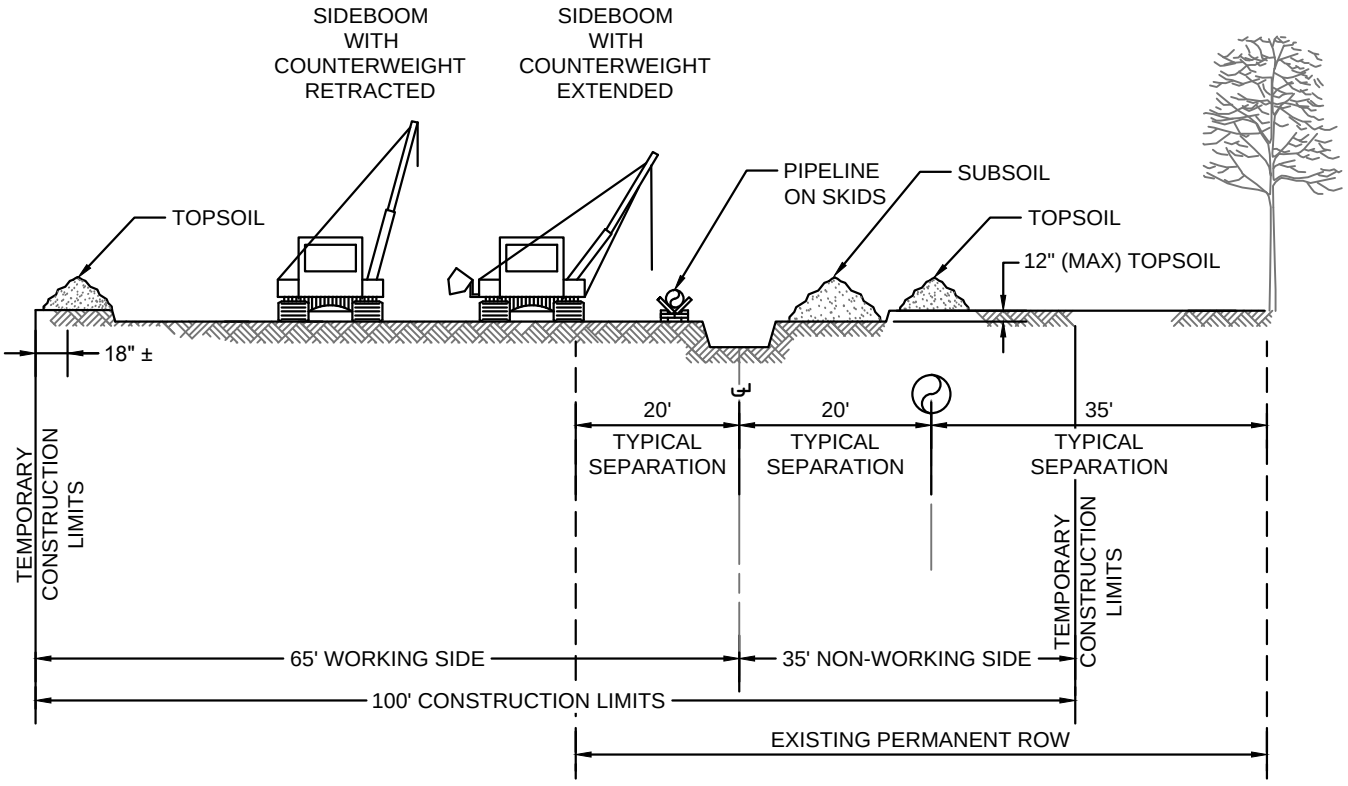


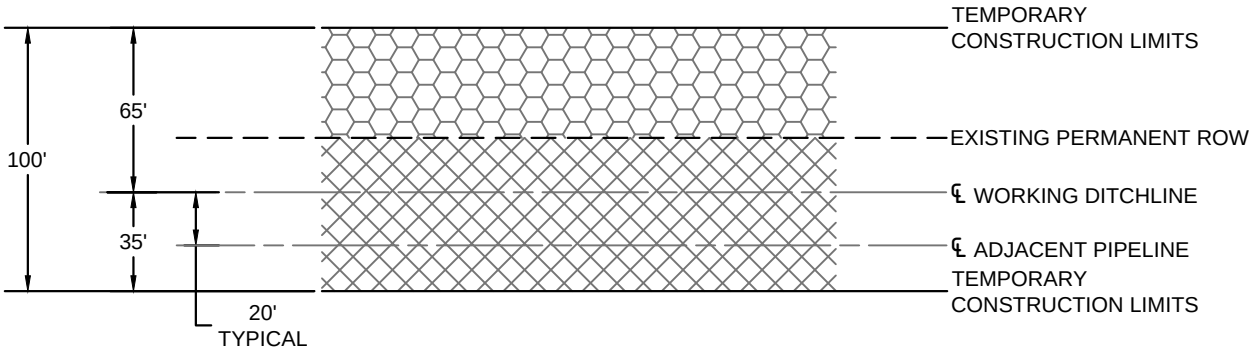
NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 100 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

	TYPICAL MAINLINE CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE SOUTH SIDE	FIGURE #1
		ES–0001 DWG. / REV.



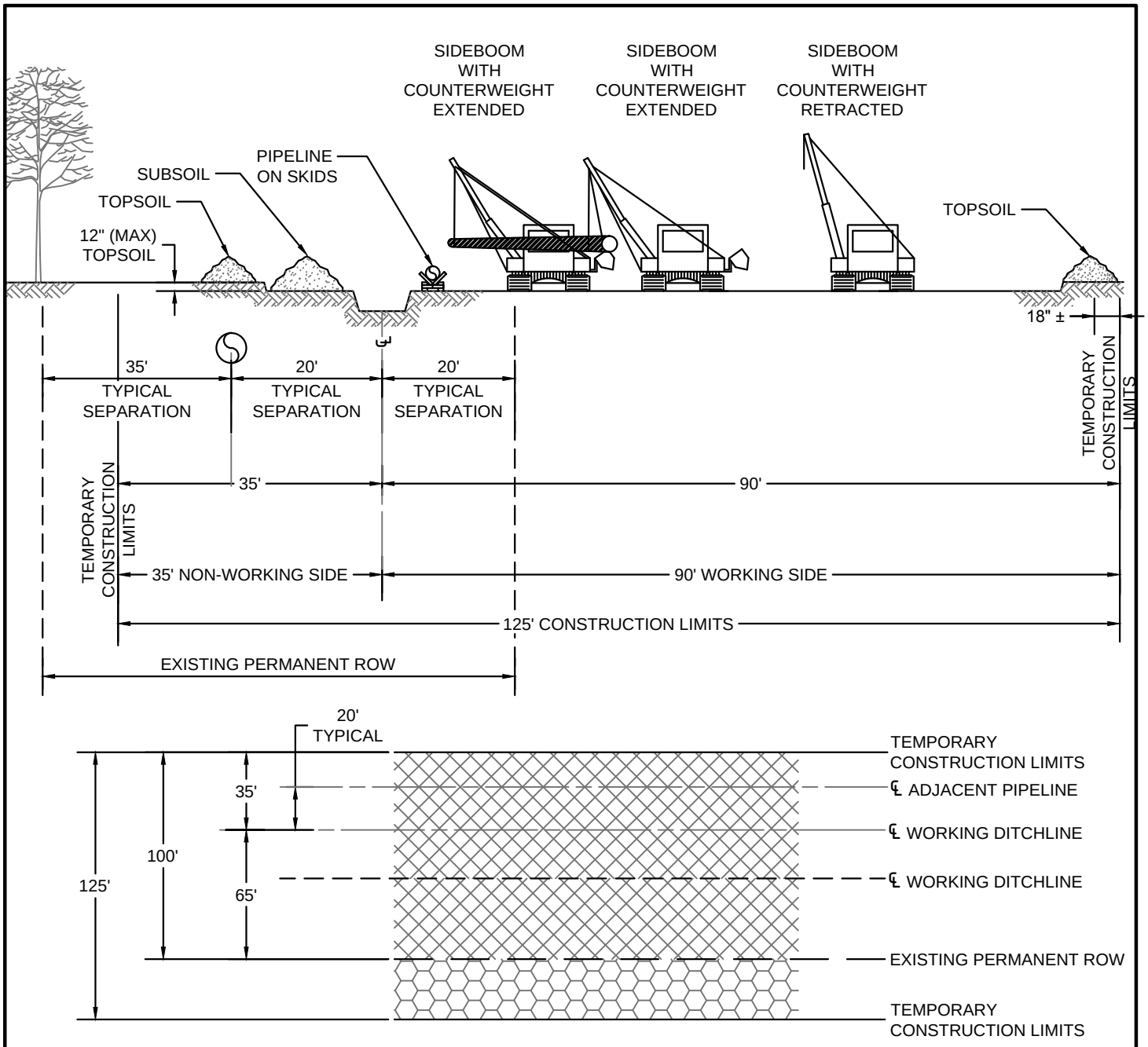


NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 100 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

	TYPICAL MAINLINE CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE NORTH SIDE	FIGURE #2
		ES-0002 DWG. REV.



NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 125 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

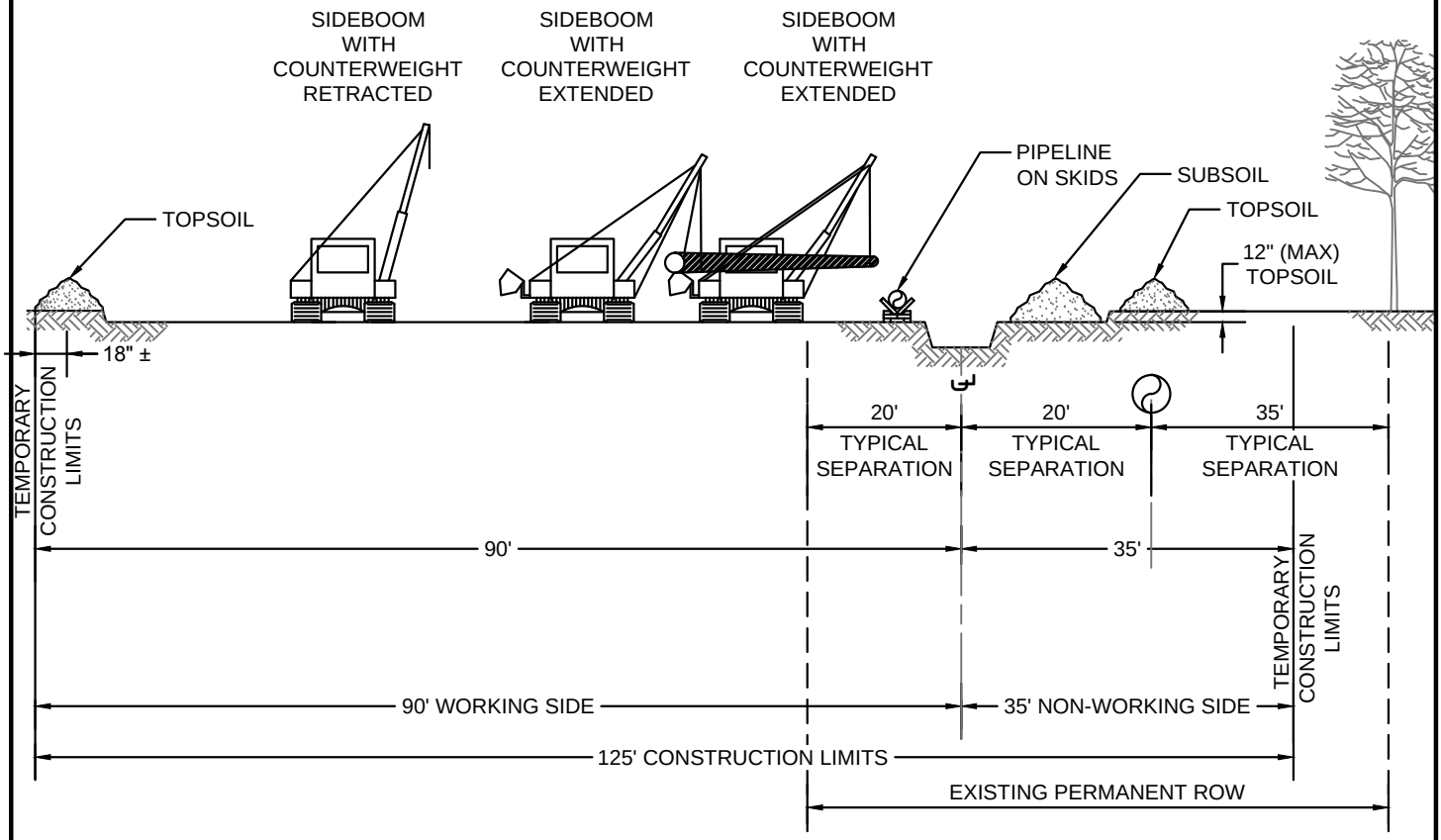
I.G.

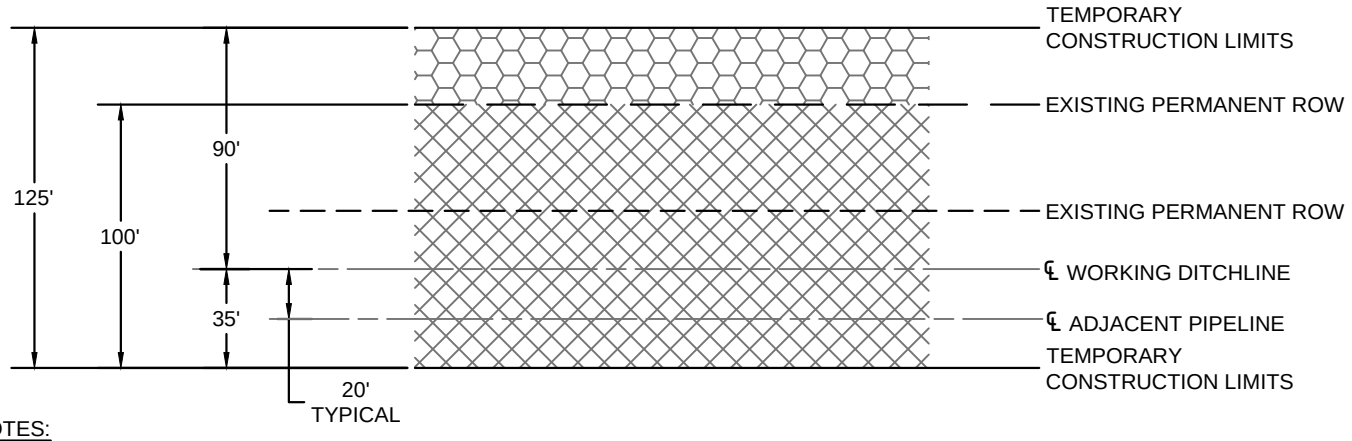
TYPICAL MAINLINE ADDITIONAL CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE SOUTH SIDE

FIGURE #3

DWG. ES-0003

REV.





NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 125 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

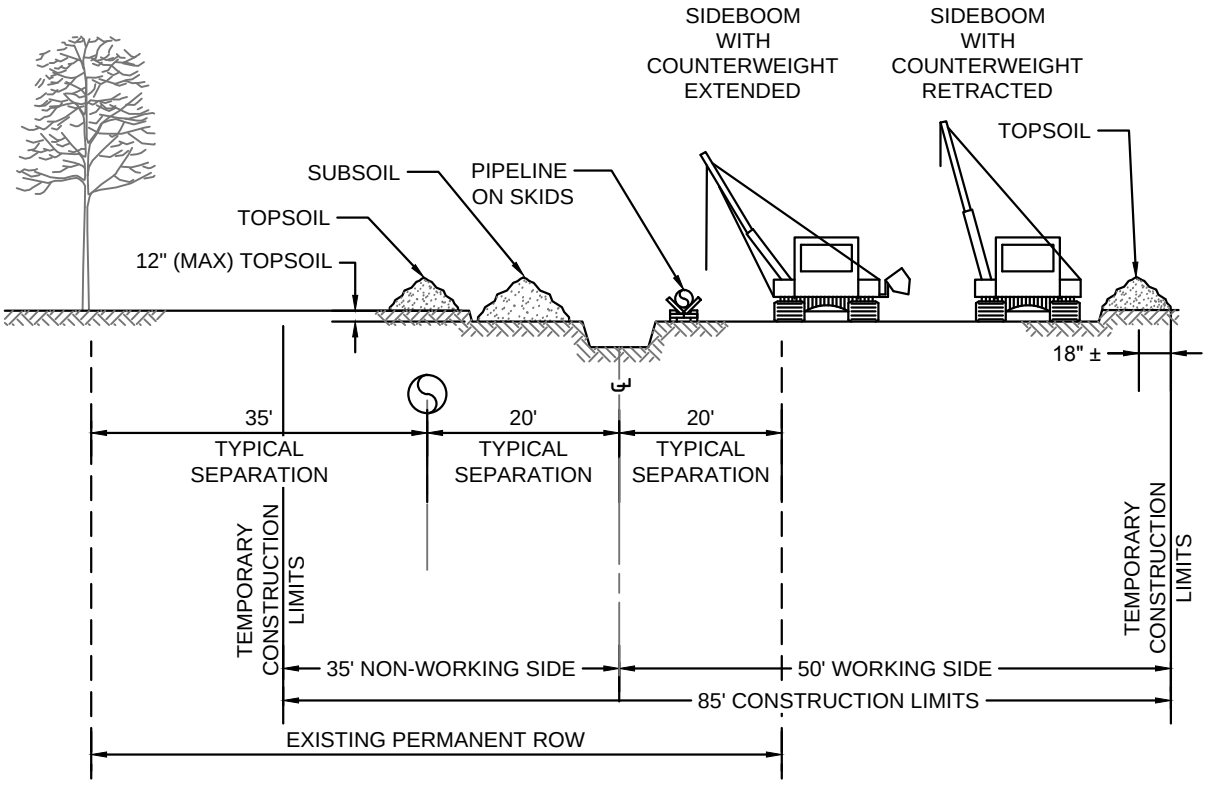
TYPICAL MAINLINE ADDITIONAL CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE NORTH SIDE

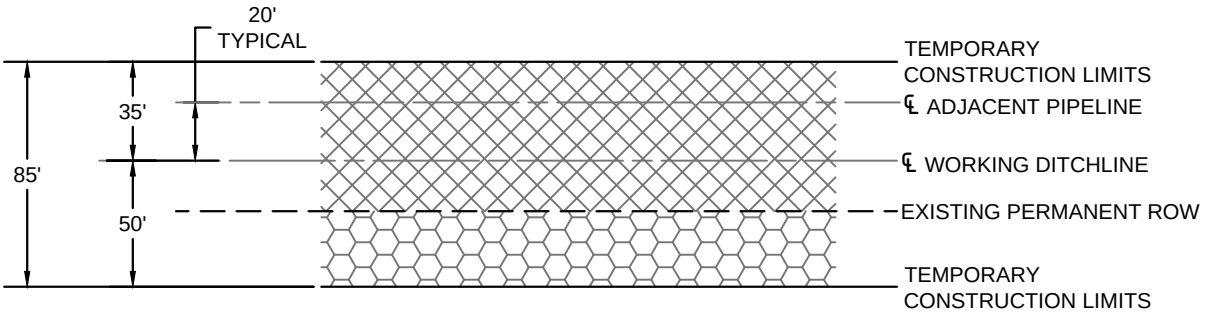
FIGURE #4

ES-0004

DWG.

REV.





NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 85 FEET.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.

3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.

4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

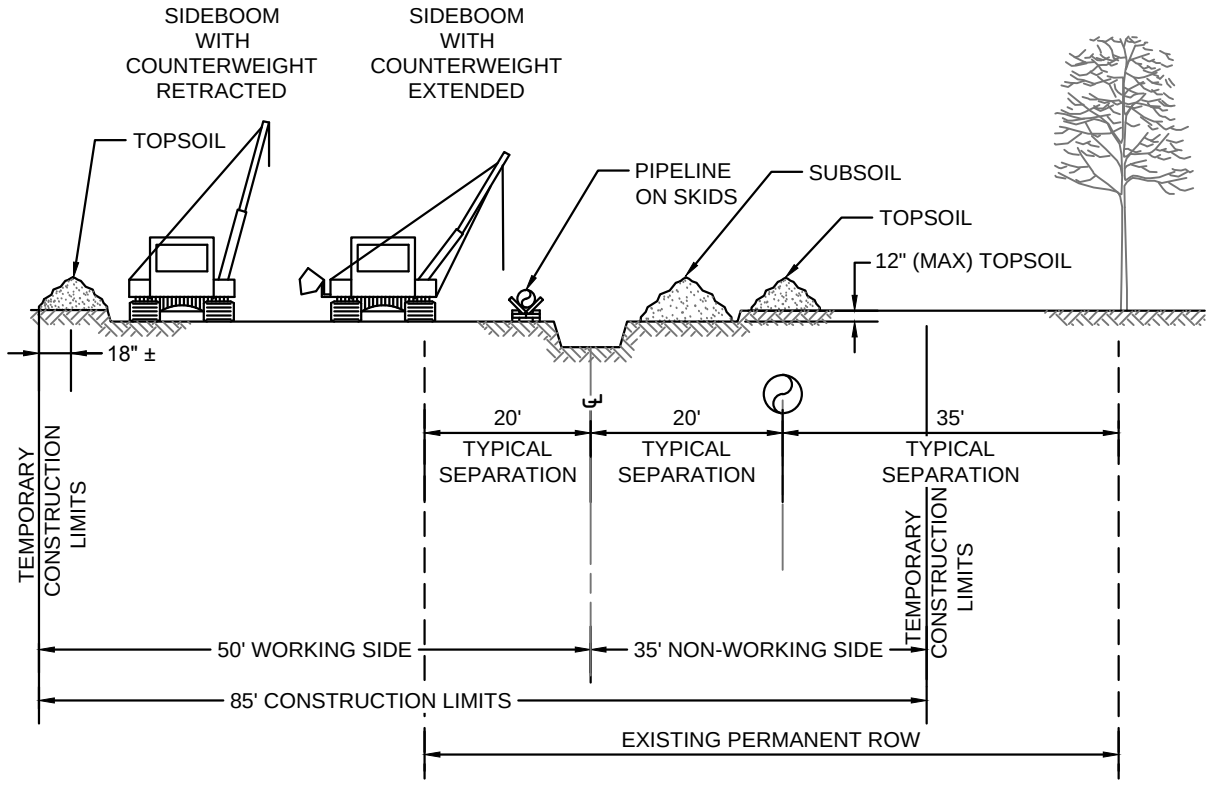
TYPICAL MAINLINE 85' REDUCED CONSTRUCTION WIDTH THROUGH WETLANDS (MULTIPLE LINE SYSTEM - TAKE UP & RELAY) PROPOSED PIPELINE SOUTH SIDE

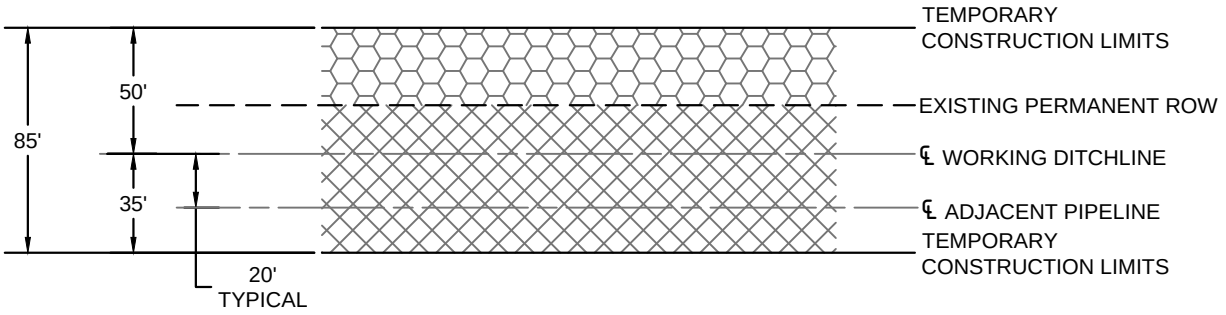
FIGURE #5

ES-0005

DWG.

REV.





NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 85 FEET.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.

3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.

4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

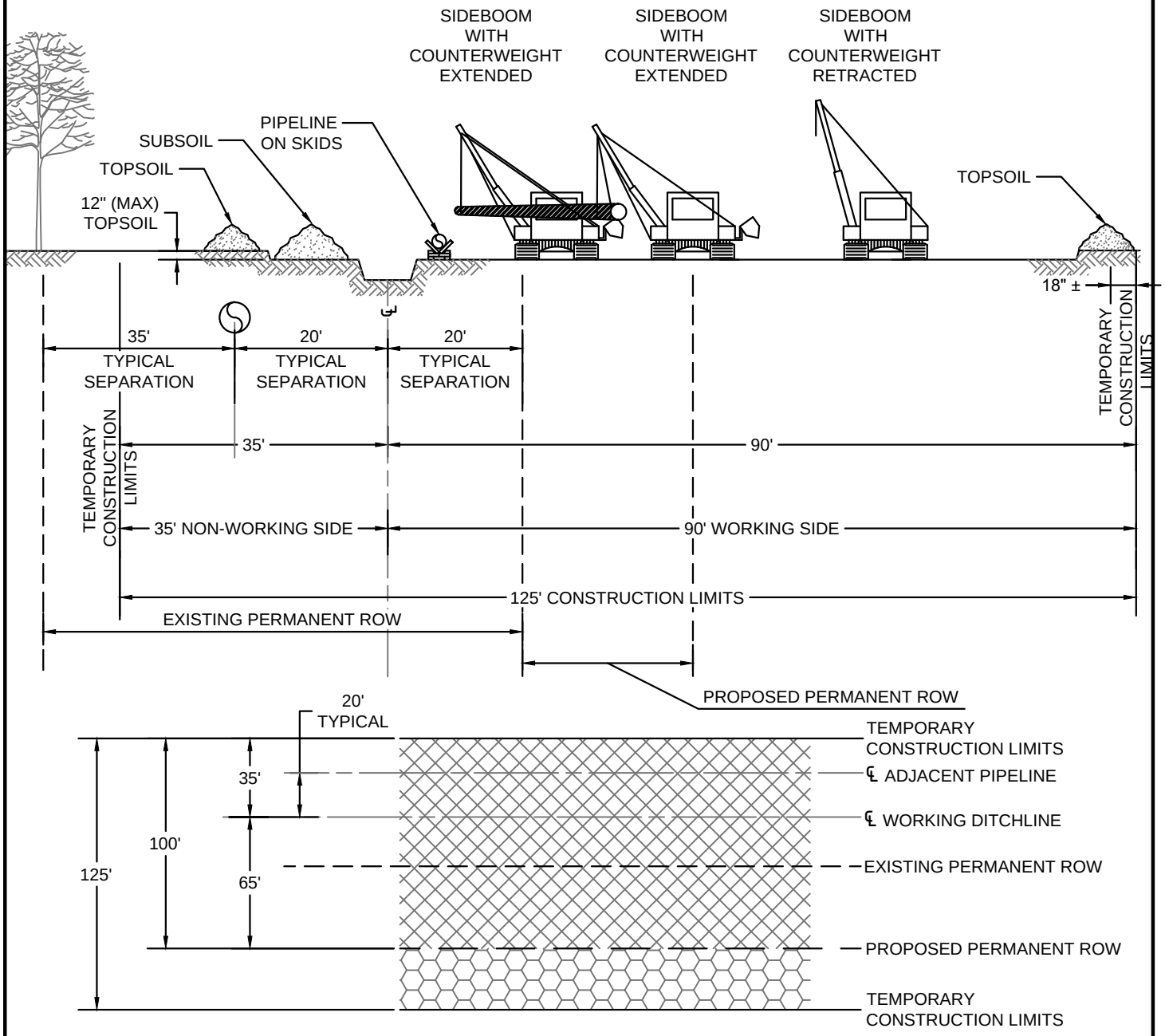
TYPICAL MAINLINE 85' REDUCED CONSTRUCTION WIDTH THROUGH WETLANDS (MULTIPLE LINE SYSTEM - TAKE UP & RELAY) PROPOSED PIPELINE NORTH SIDE

FIGURE #6

ES-0006

DWG.

REV.



NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 100 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

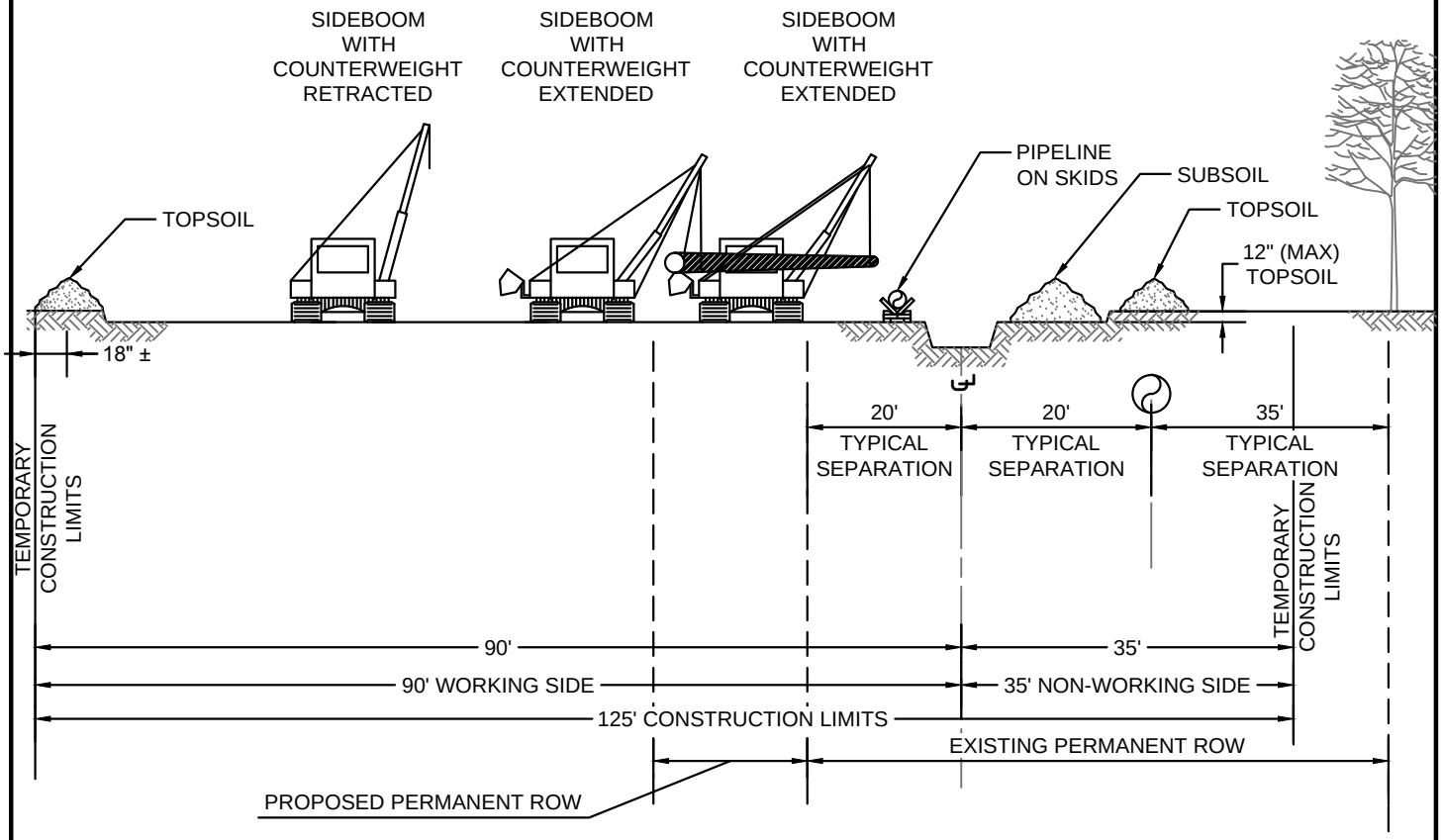
TYPICAL MAINLINE ADDITIONAL CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE SOUTH SIDE

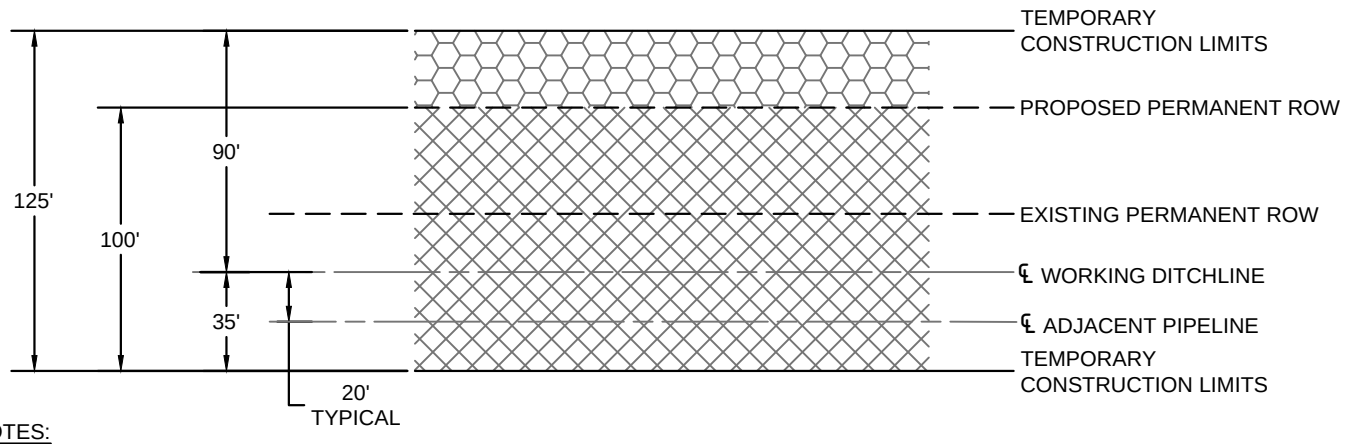
FIGURE #07

ES-0007

DWG.

REV.





NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 100 FEET.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.
3. WHERE TOPSOIL SEGREGATION IS REQUIRED, MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

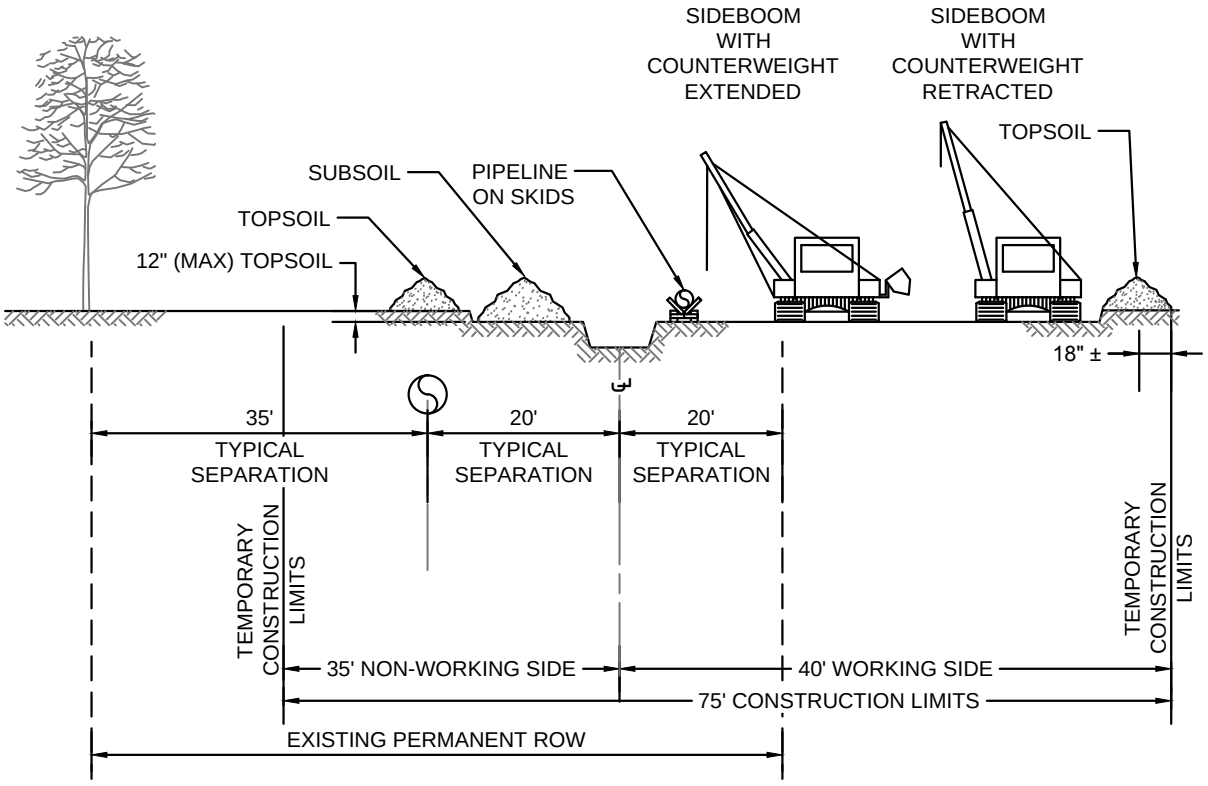
I.G.

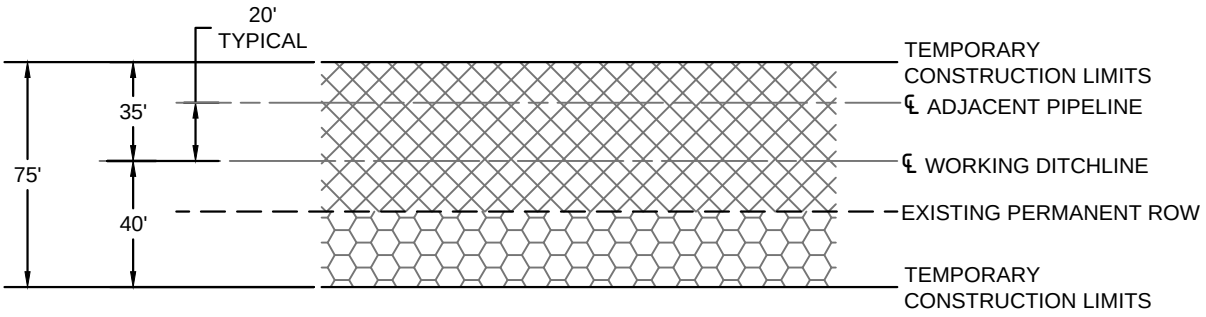
TYPICAL MAINLINE ADDITIONAL CONSTRUCTION WIDTH (MULTIPLE LINE SYSTEM) PROPOSED PIPELINE NORTH SIDE

FIGURE #08

DWG. ES-0008

REV.





NOTES:

1. ALTHOUGH THE DIMENSIONS SHOWN ARE TYPICAL, SOME VARIATIONS MAY EXIST DUE TO SITE SPECIFIC CONDITIONS AND DIAMETER OF PROPOSED PIPELINE. UNLESS OTHERWISE INDICATED ON THE ALIGNMENT SHEETS, THE WIDTH OF THE CONSTRUCTION RIGHT-OF-WAY SHALL BE 75 FEET.

2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.

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4. IN WETLANDS, SEGREGATE THE TOP 12 INCHES (MAX) OF TOPSOIL WITHIN THE DITCHLINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED OR FROZEN.

I.G.

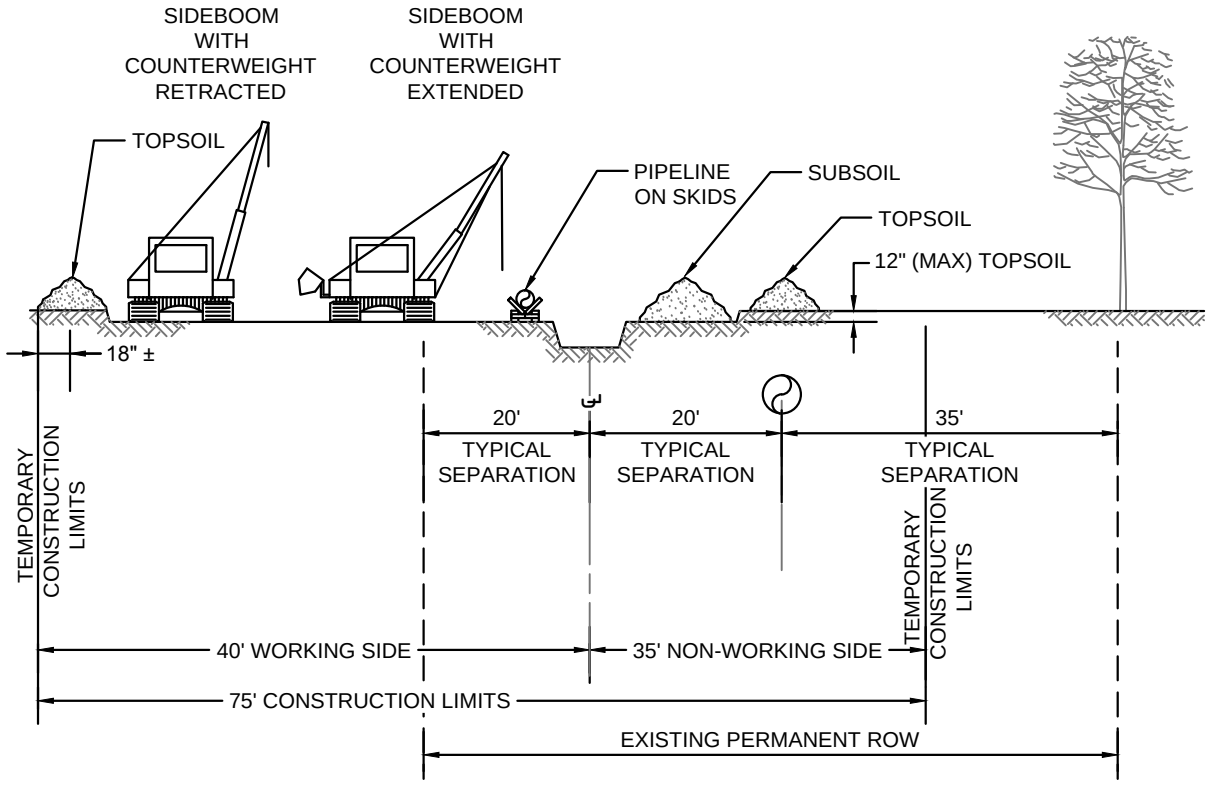
TYPICAL MAINLINE 75' REDUCED CONSTRUCTION WIDTH THROUGH WETLANDS (MULTIPLE LINE SYSTEM - TAKE UP & RELAY) PROPOSED PIPELINE SOUTH SIDE

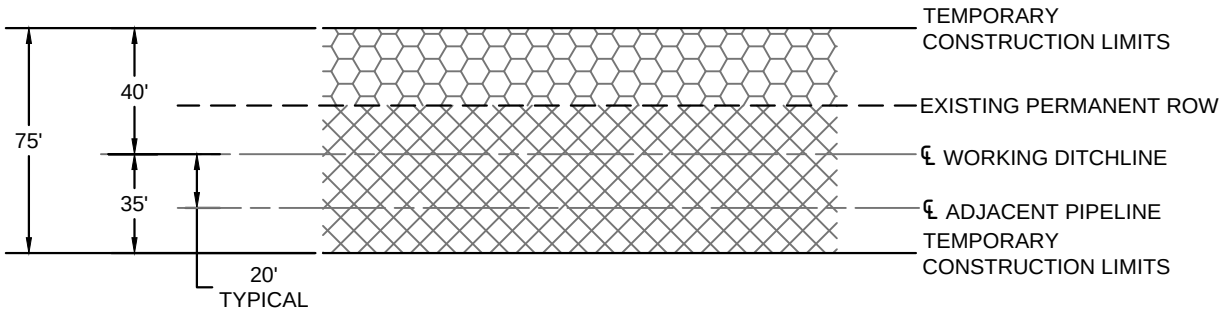
FIGURE #09

ES-0009

DWG.

REV.





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2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED IN ALL RESIDENTIAL AREAS AND IN AGRICULTURAL LANDS, PASTURES, HAYFIELDS, AND OTHER AREAS AT LANDOWNER'S OR LAND MANAGING AGENCY'S REQUEST IF THE CONSTRUCTION ROW IS WIDER THAN 30 FEET.

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I.G.

TYPICAL MAINLINE 75' REDUCED CONSTRUCTION WIDTH THROUGH WETLANDS (MULTIPLE LINE SYSTEM - TAKE UP & RELAY) PROPOSED PIPELINE NORTH SIDE

FIGURE #10

ES-0010

DWG.

REV.

3. FULL SIZE DRAWINGS PROVIDED UNDER SEPARATE COVER IN VOLUME II-B

a. Pipeline Alignment Sheets
b. Horizontal Directional Drill Plan and Profile Drawing
c. Compressor Station Plans
d. Metering and Regulating Station Plans
e. USGS Quadrangles

APPENDIX 1B

Atlantic Bridge Project Erosion and Sediment Control Plan & Spill Prevention Control and Countermeasure Plan

EROSION AND SEDIMENTATION CONTROL PLAN

Company: Algonquin Gas Transmission, LLC

Maritimes & Northeast Pipeline, L.L.C.

Project: Atlantic Bridge Project

Location: New York, Connecticut, Massachusetts, and Maine

Person Responsible (ECP Lead):

Prepared by:

Environmental Construction Permitting
5400 Westheimer Court
Houston, Texas 77056-5310

Revised version issued June 6, 2014

TABLE OF CONTENTS

LIST OF FIGURES, continued

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 Superintendant.

Clearance Package/Permit Book – The document issued by the Company's Environmental Construction Permitting (ECP) Department that contains all of the necessary environmental permits, clearances, plans and other requirements specific to a project. The Clearance Package/Permit Book is also included as part of the construction contract.

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 Clearance Package / Permit Book. 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 Company Environmental Construction Permitting Department (ECP) representative or ECP Lead. The more stringent or site-specific requirement is typically applicable unless otherwise approved by ECP. 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 ECP 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 Clearance Package/Permit Book.

1.4 Inquiries

Inquiries regarding this E&SCP should be addressed to the ECP Department at the address shown on the front cover. For field conditions requiring an immediate response, contact the designated person responsible at the address shown on the front cover.

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, at least one Environmental Inspector (EI) will be designated by the Company for each construction spread during active construction or restoration activities. The EI is responsible for verifying environmental compliance on the construction spread, and performing the duties that are outlined in Section 2.1 below.

2.1 Role & Responsibilities of the Environmental Inspector

EIs will have the authority to stop activities that 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:

1. 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;

2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;

3. Verifying that the limits of authorized construction work areas and locations of access roads are visibly marked before clearing, and maintained throughout construction;

4. Verifying the location of signs and 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;

6. 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;

9. 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 pipeline construction. All construction personnel from the Chief Inspector, EI, 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 ECP:

- 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, non-riparian 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:

1. During construction and restoration activities, access to the ROW is limited to the use of new or existing access roads identified on the construction drawings.

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 Clearance Package / Permit Book.

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.

7. 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;
2. Install erosion and sediment control structures as directed by the EI or identified on the 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 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. 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 ECP Department 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.

3.5.1 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;
    b. Signs and 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;
    d. 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 on the construction drawings (with the limited exception of compliance activities described above in Section 3.4);

3. 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;

4. 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.
5. 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.

b. 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.

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.

1. 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):

Slope (%)	**Spacing (feet)**
< 5	No structure
5 – 15	300
> 15 – 30	200
> 30	100

2. Direct the outfall of each slope breaker to a stable, well vegetated area or construct an energy-dissipating 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.

4. 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
    b. 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.

2. 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 ECP 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 Clearance Package/Permit Book.
    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.
2. 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:

1. Discharge water only at the locations shown on the construction drawings or locations identified in the Clearance Package/Permit Book or ECP's Hydrostatic Test Clearance Package.
2. 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).
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.

1. 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.

8. 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:

Slope (%)	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).

i. 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:

1. 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;

2. 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;

8. 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.

2. 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.

3. 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-specific Clearance Package / Permit Book. 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 ECP 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 ECP.

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.
3. 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).
4. 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:

1. 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.
2. 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.
3. 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-specific Clearance Package / Permit Book.

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 Clearance Package / Permit Book 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:

1. 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.
3. 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.

1. 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. EI approval is required prior to equipment crossing a waterbody without an equipment bridge.

2. 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.

3. 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.

3. 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.

6. 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.

2. 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 at all times 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-specific Clearance Package/Permit Book and on the construction 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:

1. 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 dam-and-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;
4. Monitor dam and pumps at all times 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.

2. 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 Clearance Package/ Permit Book (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:

    a. 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 state-designated 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:

1. 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:
    a. 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.

1. Return all waterbody banks to preconstruction contours or to stable angle of repose as approved by the EI.

2. Use clean gravel or native cobbles for the upper 12 inches of trench backfill in all waterbodies identified in the Clearance Package/Permit Book 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 Clearance Package / Permit Book. 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. Project-specific permits or authorizations issued by the COE or other appropriate agenc(ies) are provided in the Clearance Package / Permit Book. 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.

2. 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.

2. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the ROW.

3. 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-ground-weight 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; or, 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.

2. 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 Clearance Package/Permit Book.

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,

1. 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.

2. 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);

    b. 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.

6. 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.

1. Routine vegetation mowing or clearing over the full width of the permanent ROW in uplands shall be conducted no more frequently than once every 3 years. 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.

2. 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.

4. 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 at least 2 years 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

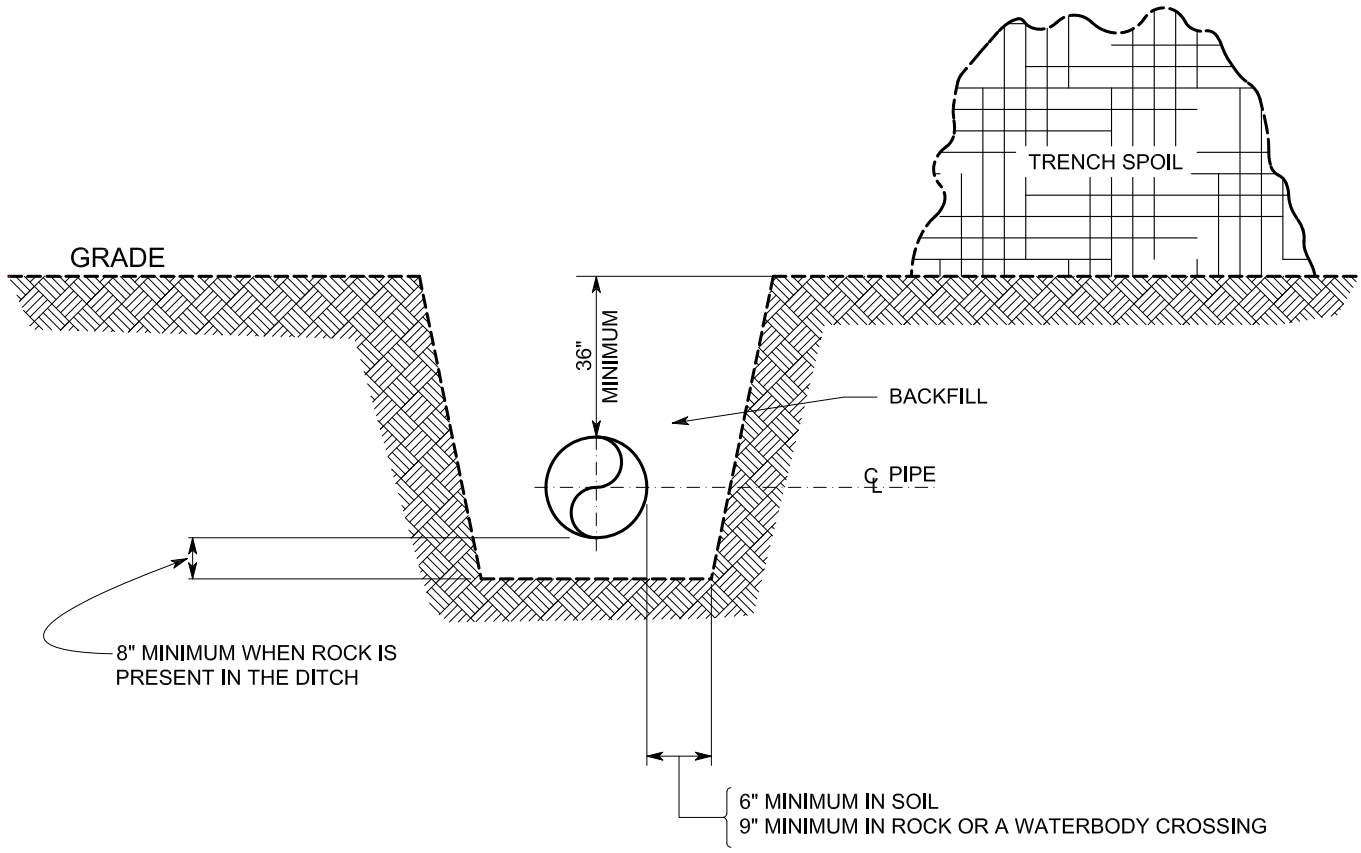
E&SCP FIGURES

FIGURE NUMBER	STANDARD NUMBER	DRAWING TITLE
CONSTRUCTION WORKAREAS (CW)		
CW-1	ES-0001	TYPICAL TRENCH DETAIL
CW-2	ES-0002	RIGHT-OF-WAY TOPSOIL SEGREGATION TECHNIQUES
CW-3	ES-0003	TYPICAL CONSTRUCTION WIDTHS ACQUIRING NEW PERMANENT RIGHT-OF-WAY
CW-4	ES-0004	TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (SINGLE LINE SYSTEM)
CW-5	ES-0005	TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (MULTIPLE LINE SYSTEM)
ACCESS ROADS & ROAD 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 WETLANDS
RD-4	ES-0009	TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (OPEN CUT)
RD-5	ES-0010	TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (BORED)
EROSION CONTROLS (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 SLOPE BREAKERS
EC-8	ES-0018	PERMANENT SLOPE BREAKERS
EC-9	ES-0019	CHEVRON SLOPE BREAKER
EC-10	ES-0020	TRENCH BREAKER DETAIL (SACK)
EC-11	ES-0021	TRENCH BREAKER DETAIL (FOAM)
EC-12	ES-0022	PERMANENT TRENCH BREAKER OPTIONS
EC-13	ES-0023	EROSION CONTROL FABRIC INSTALLATION
EC-14	ES-0024	TYPICAL EROSION CONTROL BLANKETS ON SLOPES
WATER DISCHARGES (WD)		
WD-1	ES-0025	FILTER BAG
WD-2	ES-0026	DISCHARGE STRUCTURE FOR HYDROSTATIC TEST WATER
WD-3	ES-0027	OPTIONS FOR SMALL WATER DISCHARGES
WD-4	ES-0028	DISCHARGE OF HYDROSTATIC TEST WATER TO A SURFACE 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 PORTABLE BRIDGE)
WATERBODY AND WETLAND CROSSINGS (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 STREAMBANKS
WC-6	ES-0037	TYPICAL RIP-RAP PLACEMENT
SPECIAL USE / AGRICULTURAL AREAS (SU)		
SU-1	ES-0038	DRAIN TILE REPAIR PROCEDURE

INDEX OF FIGURES

APPENDIX A

DWG. ES-0000 REV.



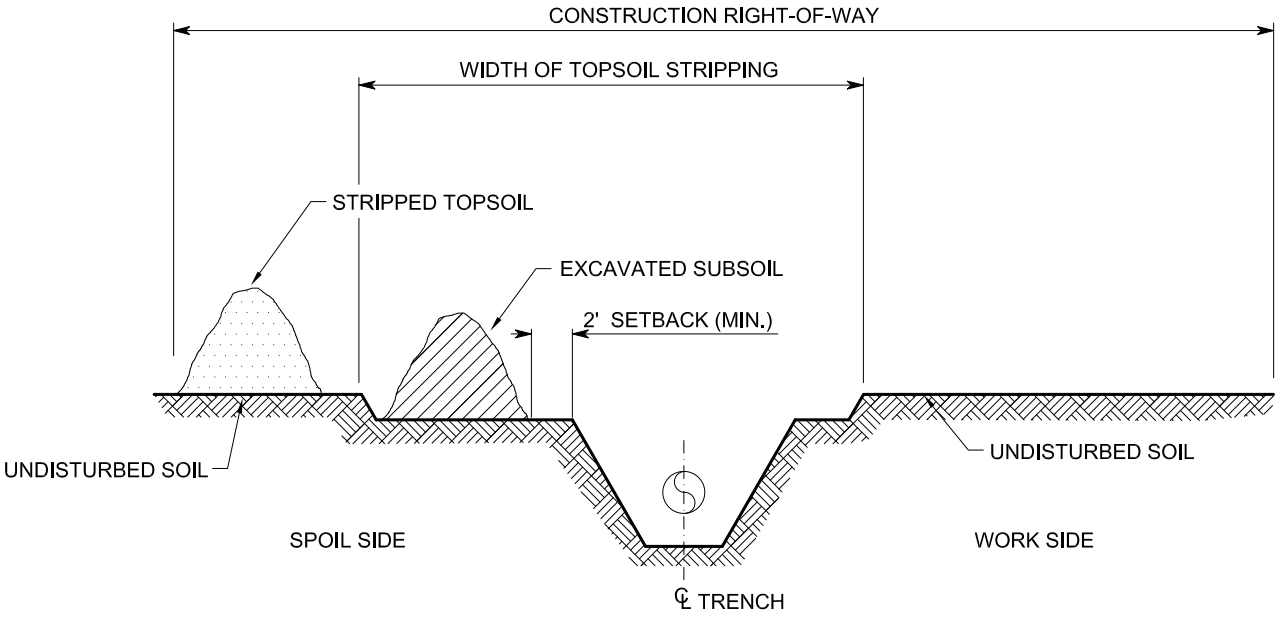
CROSS-SECTION VIEW

NOTES:

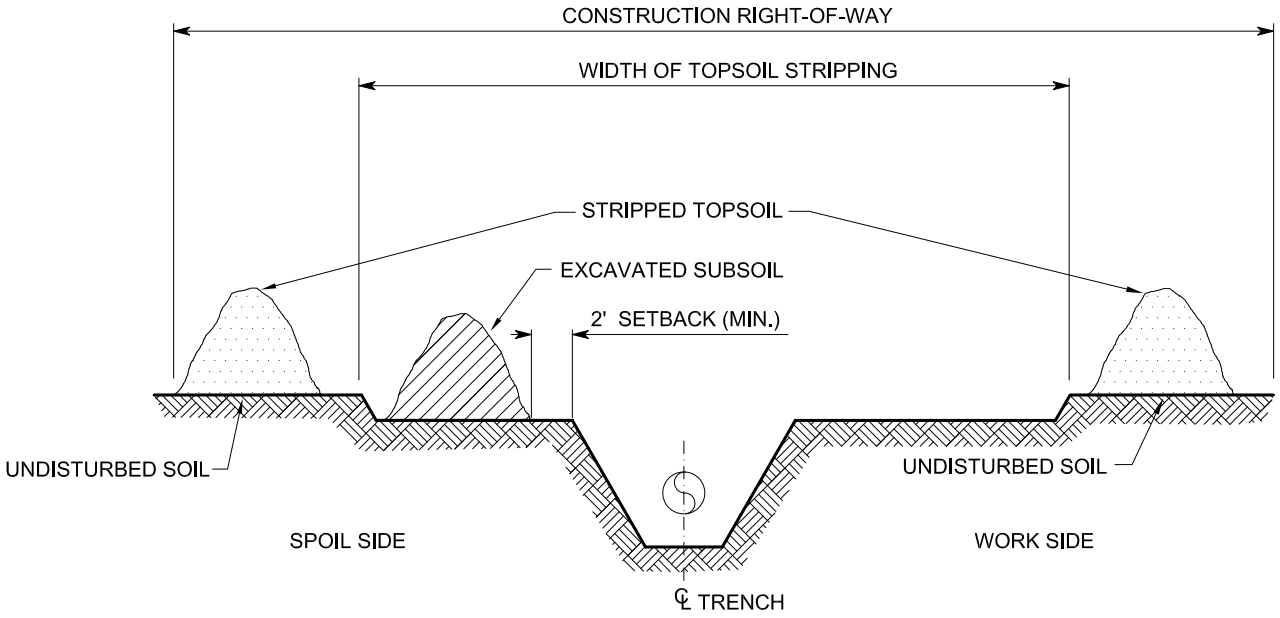
1. ALL PRECONSTRUCTION CONTOURS WILL BE RE-ESTABLISHED UPON COMPLETION OF PIPE INSTALLATION. EXCEPT IN WETLANDS, A CROWN MAY BE LEFT TO ACCOUNT FOR DITCH SETTLING, AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

2. IN COLD WATER FISHERY STREAMS, THE TOP 12" OF THE TRENCH WILL BE BACKFILLED WITH CLEAN GRAVEL OR NATIVE COBBLES UNLESS OTHERWISE SPECIFIED BY THE PERMITTING AGENCY.

	TYPICAL TRENCH DETAIL	FIGURE CW-1
		DWG. ES-0001 REV.



DITCH PLUS SPOILSIDE TOPSOIL SEGREGATION

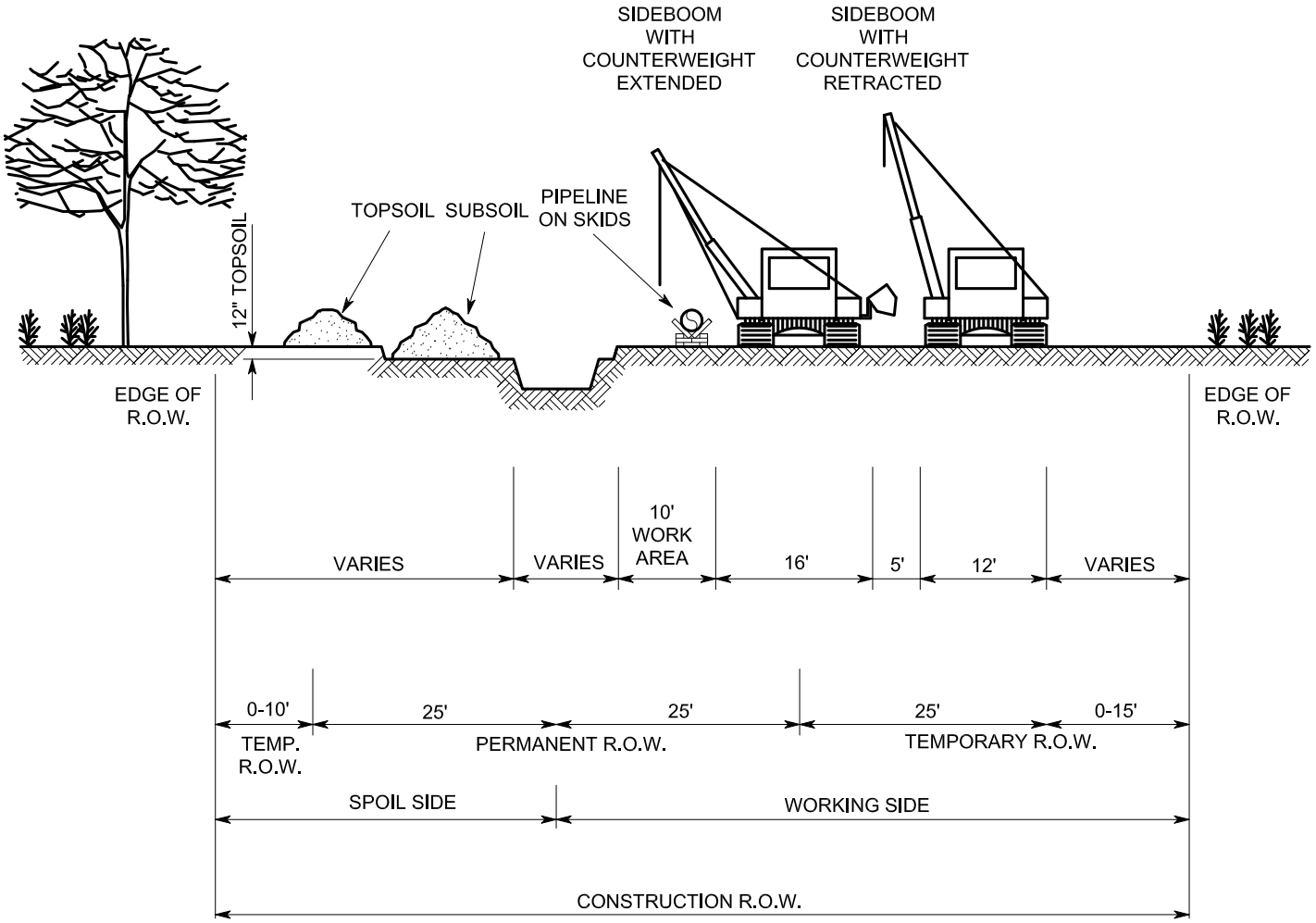


FULL RIGHT-OF-WAY TOPSOIL STRIPPING

NOTES:

1. TOPSOIL MAY BE STORED IN LOCATIONS AS SHOWN ABOVE OR AT OTHER COMPANY APPROVED LOCATIONS WITHIN THE CONSTRUCTION R.O.W.
2. LEAVE GAPS IN SPOIL PILES FOR WATER RUN-OFF.
3. MAINTAIN SEPARATION OF SALVAGED TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES.
4. STABILIZE TOPSOIL PILES AND MINIMIZE LOSS DUE TO WATER OR WIND EROSION WITH USE OF SEDIMENT BARRIERS, MULCH, TEMPORARY SEEDING, TACKIFIERS OR FUNCTIONAL EQUIVALENTS, WHERE NECESSARY.

	RIGHT-OF-WAY TOPSOIL SEGREGATION TECHNIQUES	FIGURE CW-2
		DWG. ES-0002 REV.



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.

TYPICAL CONSTRUCTION WIDTHS ACQUIRING NEW PERMANENT RIGHT-OF-WAY

FIGURE CW-3

DWG. ES-0003 REV.

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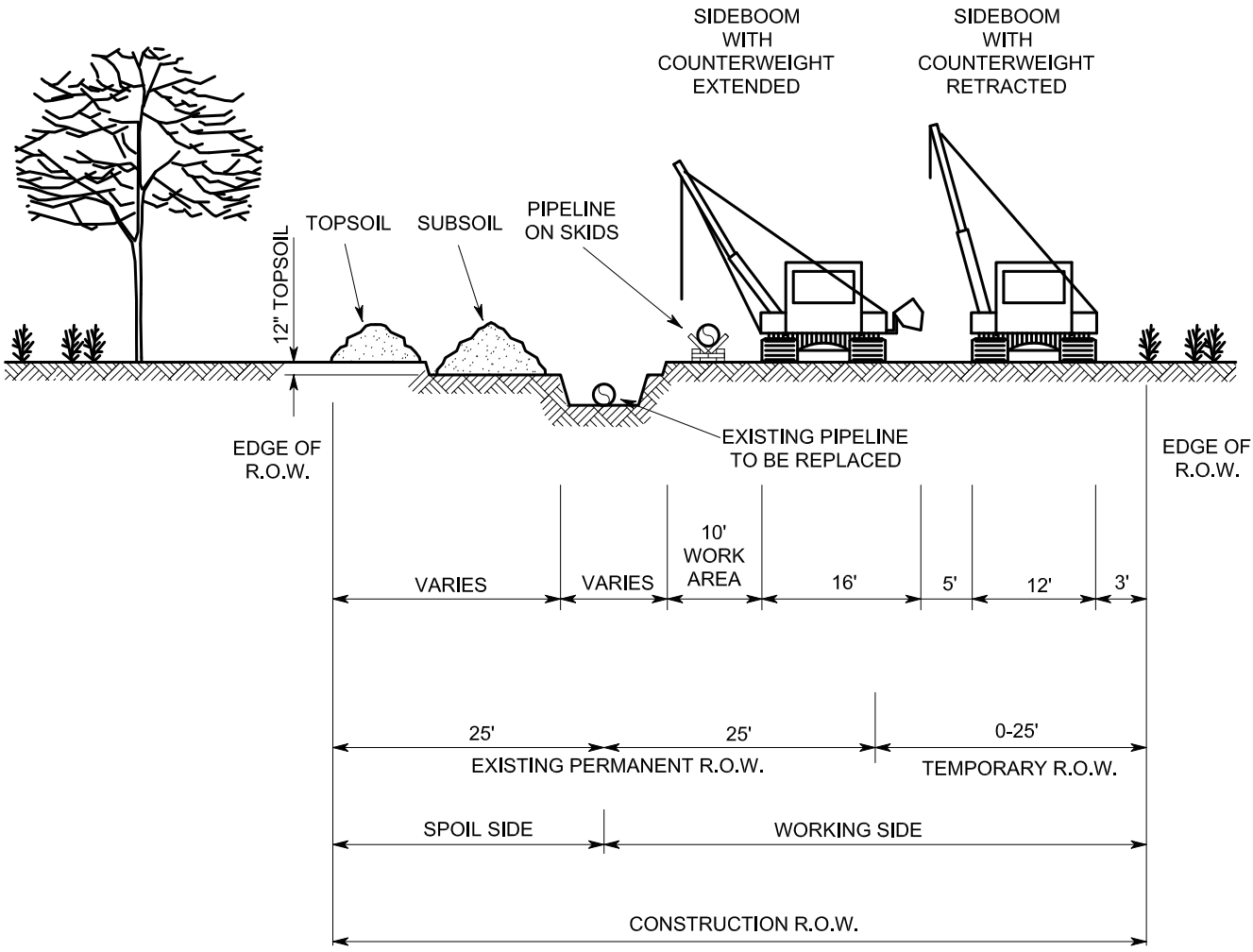


PIPE DIAMETER	SPOIL SIDE (FT.)	WORKING SIDE (FT.)	CONSTRUCTION R.O.W. (FT.)
12" OR LESS	25	25	50
14" - 30"	25	50	75
36" - 42"	25	50	75
WETLANDS	25	50	75

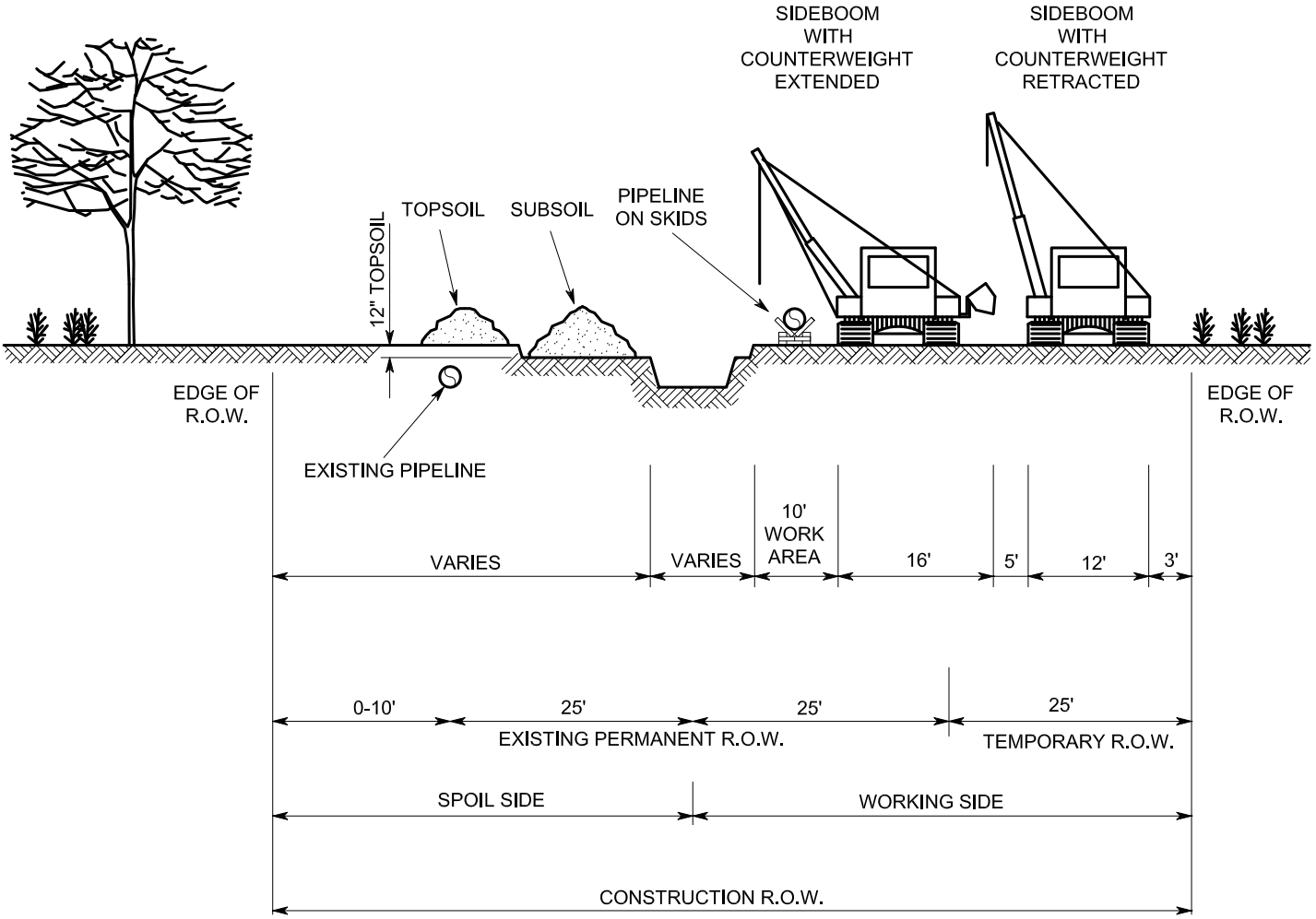
NOTES:

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.

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.

	TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (SINGLE LINE SYSTEM)	FIGURE CW-4
		DWG. ES-0004 REV.



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	50	85
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.

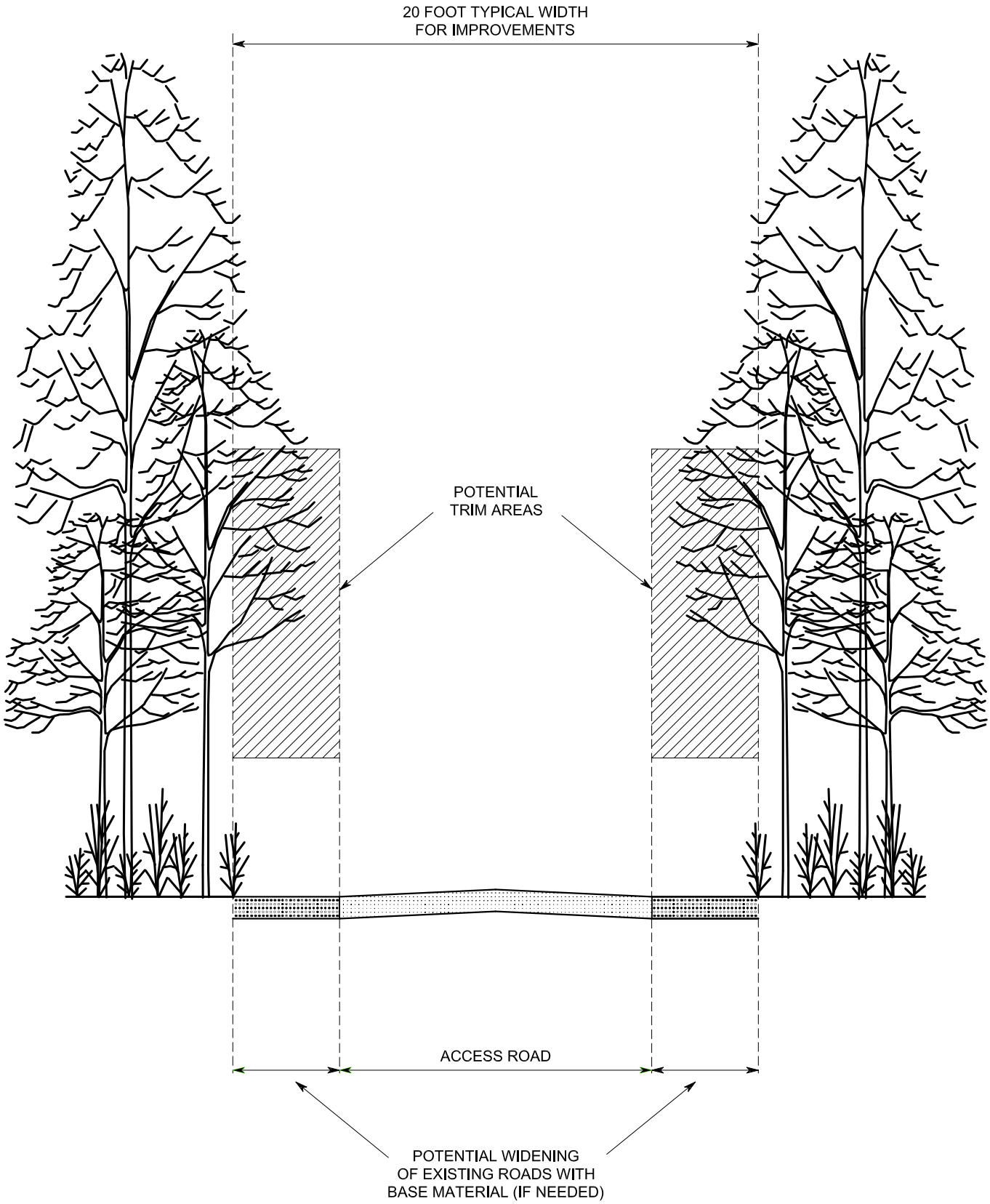
2. TOPSOIL SEGREGATION METHODS WILL BE USED IN ALL RESIDENTIAL AREAS AND WHEN THE CONSTRUCTION ROW IS WIDER THAN 30 FEET IN CULTIVATED OR ROTATED AGRICULTURAL LANDS, MANAGED PASTURES, HAYFIELDS, AND OTHER AREAS AT THE LANDOWNER'S OR LAND MANAGEMENT AGENCY'S REQUEST. FOR WETLANDS, SEGREGATE THE TOP 12 INCHES OF TOPSOIL WITHIN THE DITCH LINE, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED.

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.

TYPICAL CONSTRUCTION WIDTHS NOT ACQUIRING NEW PERMANENT RIGHT-OF-WAY (MULTIPLE LINE SYSTEM)

FIGURE CW-5

DWG. ES-0005 REV.



ACCESS ROAD CROSS SECTION

FIGURE RD-1

DWG. ES-0006 REV.

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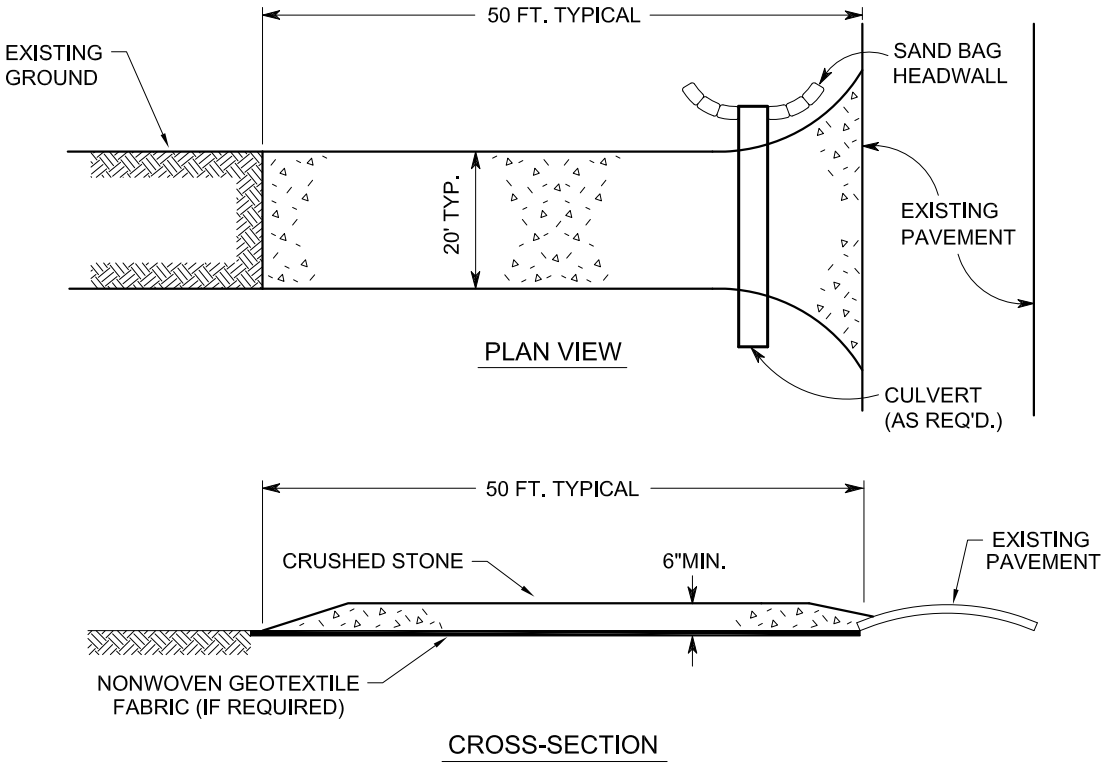
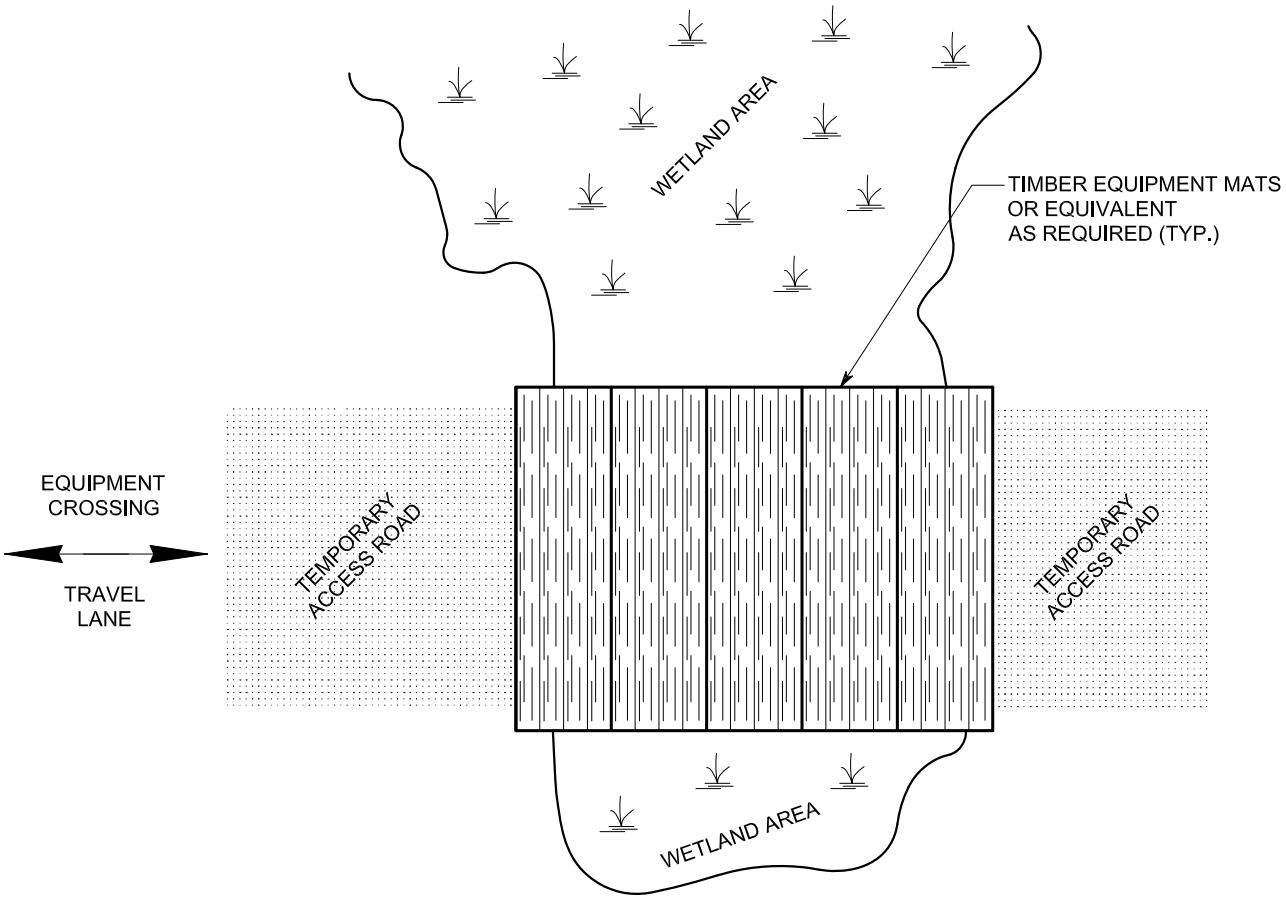


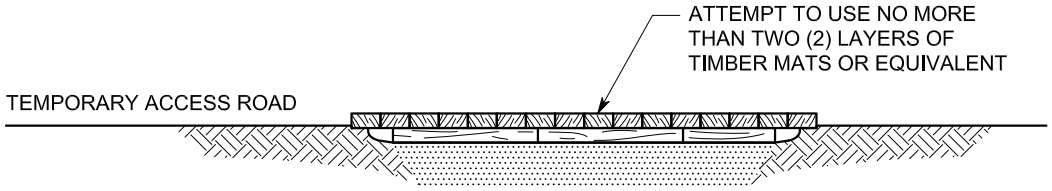
CONSTRUCTION SPECIFICATIONS:

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.

	ROCK ACCESS PAD	FIGURE RD-2
		DWG. ES-0007 REV.



PLAN VIEW
NOT TO SCALE



CROSS-SECTION
NOT TO SCALE

NOTE:

1. SILT FENCE OR STRAW BALES MAY BE USED, AS NECESSARY, TO PREVENT SEDIMENT FROM MIGRATING OUTSIDE OF ACCESS ROAD LIMITS.

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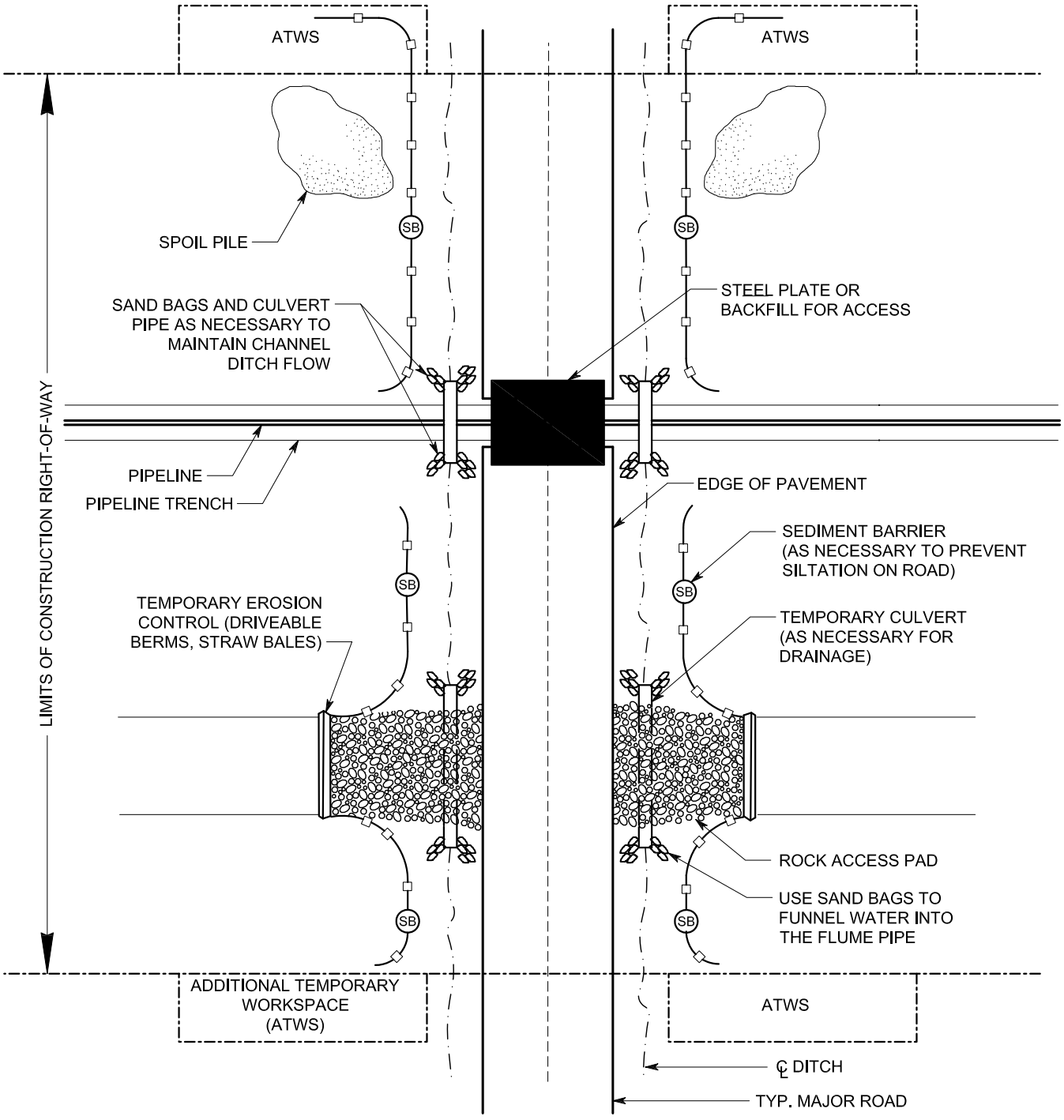
TYPICAL TEMPORARY ACCESS ROAD THROUGH WETLANDS

FIGURE RD-3

DWG. ES-0008 REV.



NOTES:

1. FIRST LAY SAND BAGS IN DITCH, THEN PLACE END OF CULVERT IN THE MIDDLE OF THE SAND BAGS BEFORE BUILDING HEAD WALLS TO CULVERT.
2. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS.

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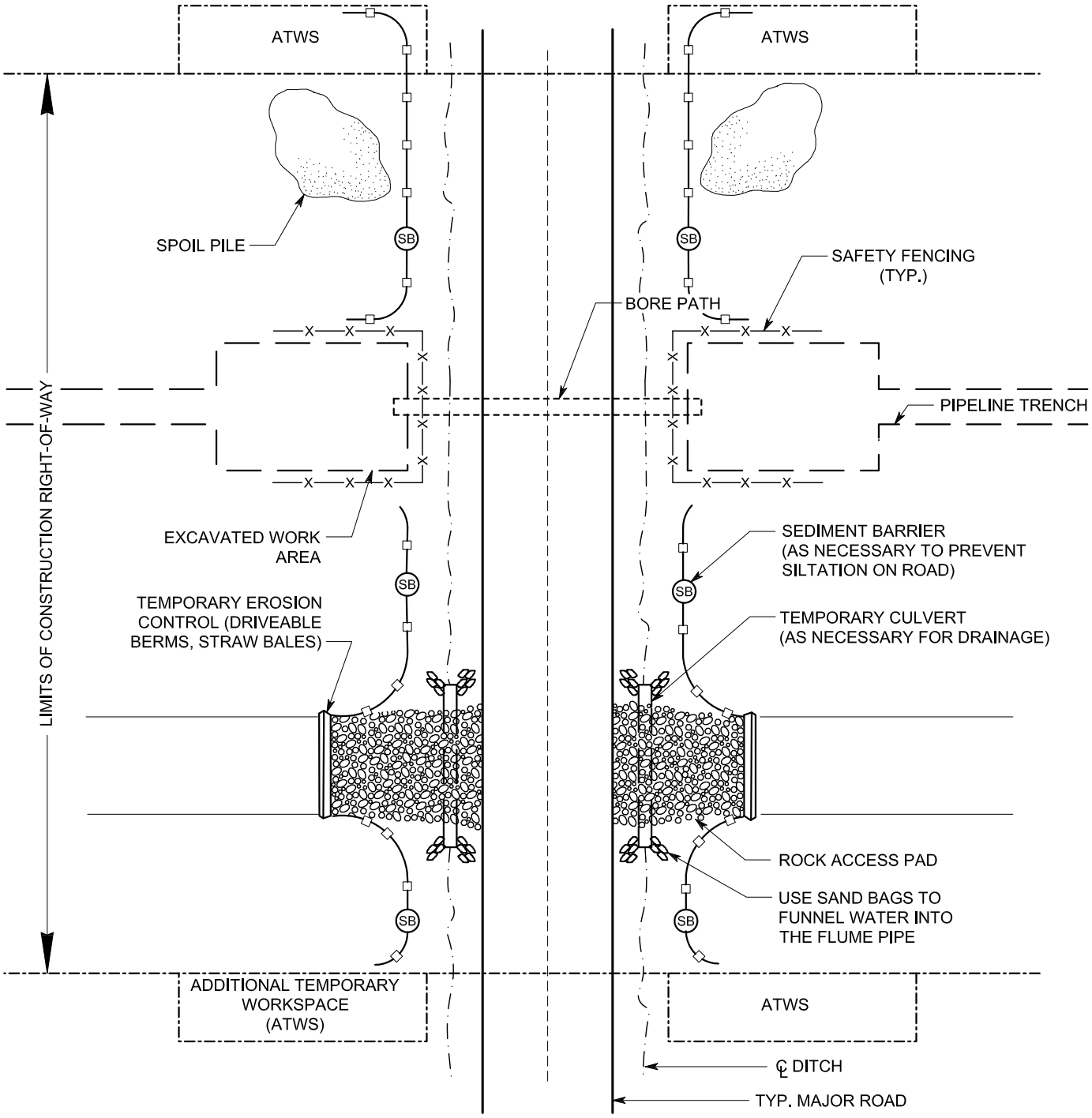
TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (OPEN CUT)

FIGURE RD-4

DWG. ES-0009 REV.



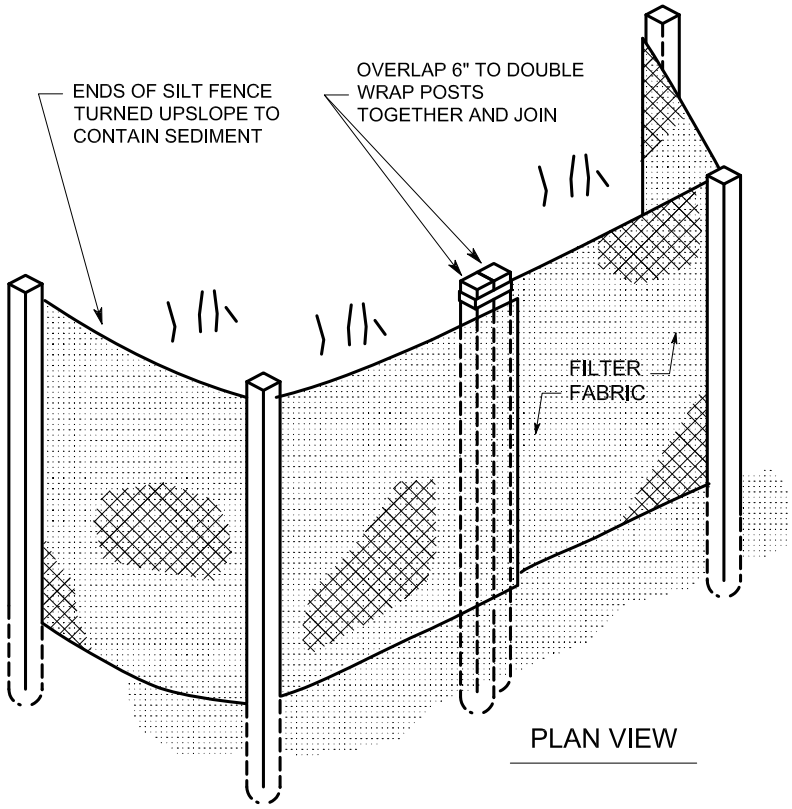
NOTES:

1. BORE PIT DIMENSIONS WILL BE DICTATED BY SITE-SPECIFIC CONDITIONS (E.G. SOIL TYPE, WIDTH OF ROAD, DEPTH OF COVER).
2. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS.

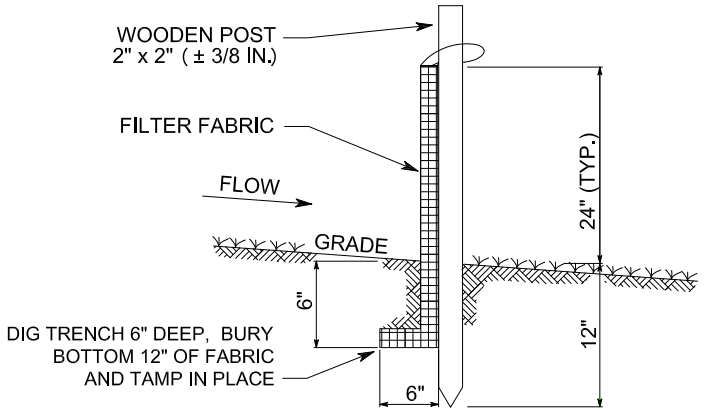
TYPICAL PAVED ROAD CROSSING CONTROL MEASURES (BORED)

FIGURE RD-5

DWG. ES-0010 REV.



PLAN VIEW



CROSS SECTION

INSTALLATION REQUIREMENTS:

- WHEN USING SILT FENCE, PLACE IT:
  - BETWEEN DISTURBED AREAS AND DOWN-SLOPE ENVIRONMENTAL RESOURCE AREAS
  - AT THE BASE OF ALL SLOPES NEXT TO WETLANDS, WATERBODIES, AND ROAD CROSSINGS
  - AT THE INLET AND OUTLET OF OPEN DRAINAGE STRUCTURES
  - APPROXIMATELY 8 FEET BEYOND THE TOE OF THE SLOPE TO GIVE THE SEDIMENT ROOM TO COLLECT (IF POSSIBLE)
- USE SANDBAGS OR BACKFILLING TO KEY IN THE BOTTOM OF THE FABRIC WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE ROOTS, ETC.)

MAINTENANCE REQUIREMENTS:

- INSPECT SILT FENCE:
  - 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 SILT FENCE AS NEEDED
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA WHEN SEDIMENT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SILT FENCE.

	SILT FENCE DETAIL	FIGURE EC-1
		DWG. ES-0011 REV.

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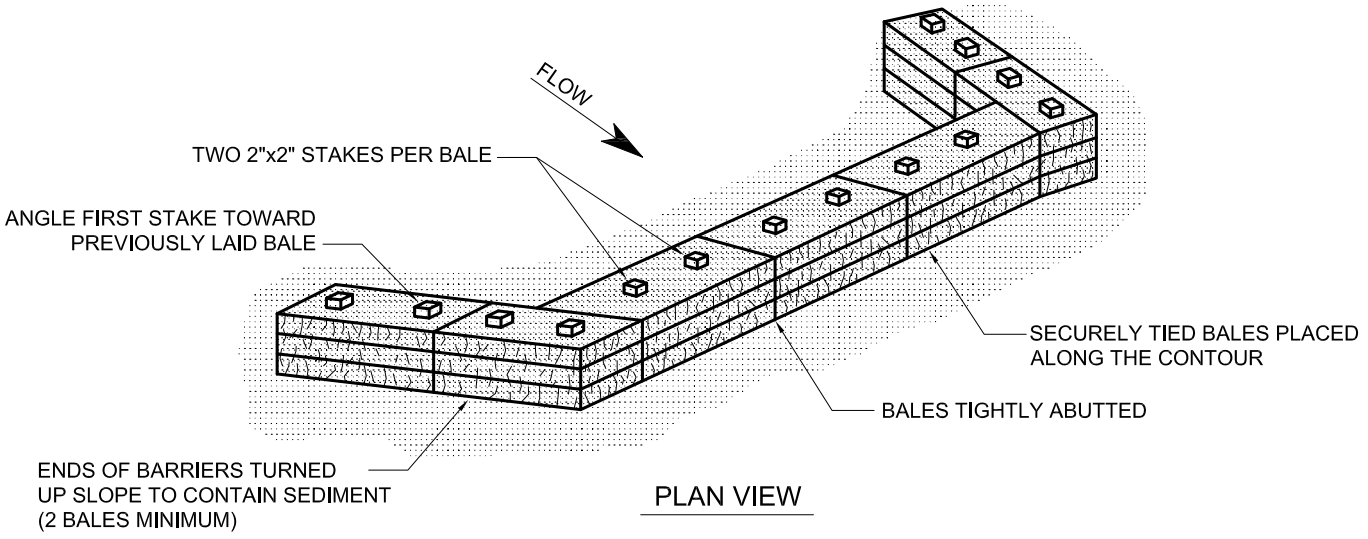
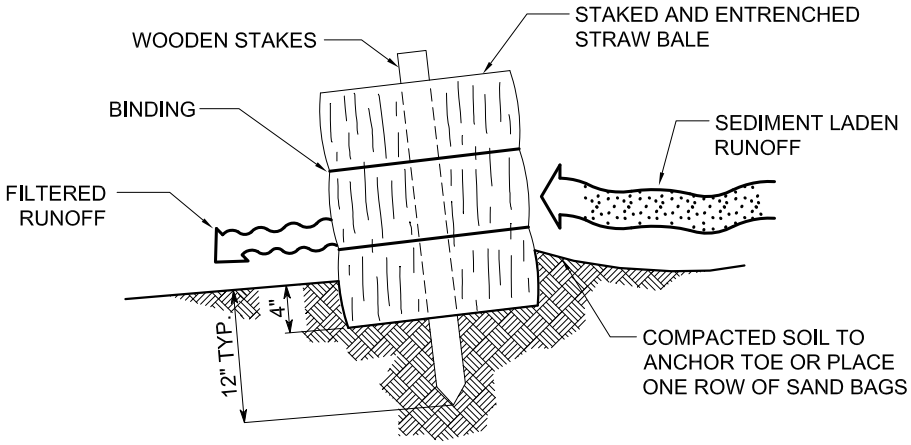


PLAN VIEW



CROSS-SECTION

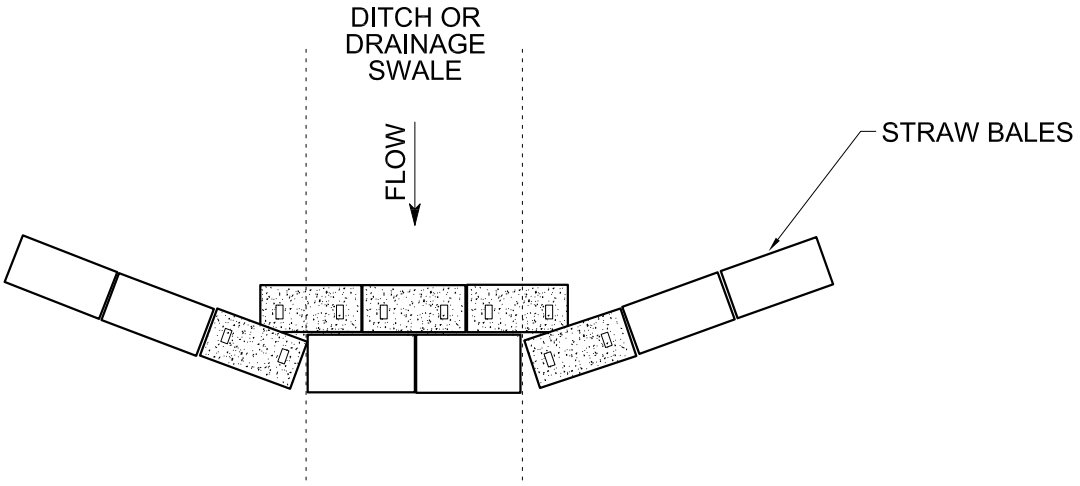
INSTALLATION REQUIREMENTS:

- WHEN USING STRAW BALES, PLACE THEM:
  - WITH THEIR ENDS TIGHTLY ABUTTING AND EMBEDDED IN THE SOIL A TYPICAL OF 4".
  - BETWEEN DISTURBED AREAS AND DOWN-SLOPE ENVIRONMENTAL RESOURCE AREAS.
  - AT THE BASE OF ALL SLOPES NEXT TO WETLANDS, WATERBODIES, AND ROAD CROSSINGS
  - AT THE INLET AND OUTLET OF OPEN DRAINAGE STRUCTURES.
  - APPROXIMATELY 6 FEET BEYOND THE TOE OF THE SLOPE TO GIVE THE SEDIMENT ROOM TO COLLECT.
- KEY IN THE BOTTOM OF THE BALE. IN AREAS WHERE IT IS NOT FEASIBLE TO TRENCH IT IN (LEDGES, ROCKY SOIL, LARGE TREE ROOTS, ETC.), USE NATIVE SOIL AS BACKFILL UP-SLOPE OF THE BALE OR PLACE ONE ROW OF SAND BAGS.
- DO NOT STAKE OR TRENCH IN PLACE STRAW BALES USED ON EQUIPMENT BRIDGES OR ON MATS ACROSS THE TRAVEL LANE.
- IF USED IN CONJUNCTION WITH SILT FENCE, BALES ARE PLACED DOWNSLOPE / UPSLOPE OF THE SILT FENCE AND DO NOT NEED TO BE TRENCHED IN.

MAINTENANCE REQUIREMENTS:

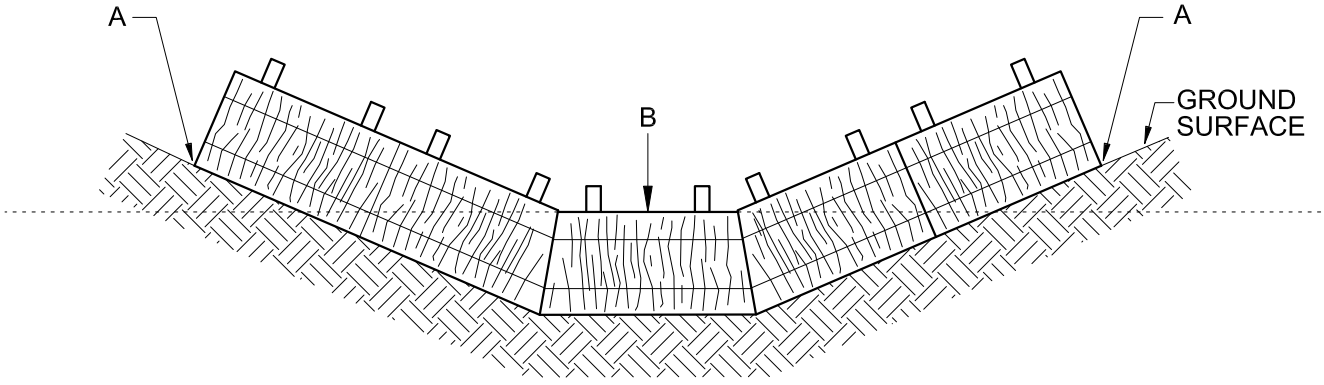
- INSPECT BALES:
  - DAILY IN AREAS OF ACTIVE CONSTRUCTION.
  - WEEKLY IN AREAS WITH NO CONSTRUCTION.
  - WITHIN 24 HOURS FOLLOWING EACH RAINFALL EVENT OF ≥ 0.5 INCH.
- REPAIR OR REPLACE BALES AS NEEDED.
- REMOVE ACCUMULATED SEDIMENTS TO AN UPLAND AREA AS NEEDED.

	STRAW BALE DETAIL	FIGURE EC-2
		DWG. ES-0012 REV.



PLAN VIEW
NOT TO SCALE

POINTS A SHALL BE HIGHER THAN POINT B

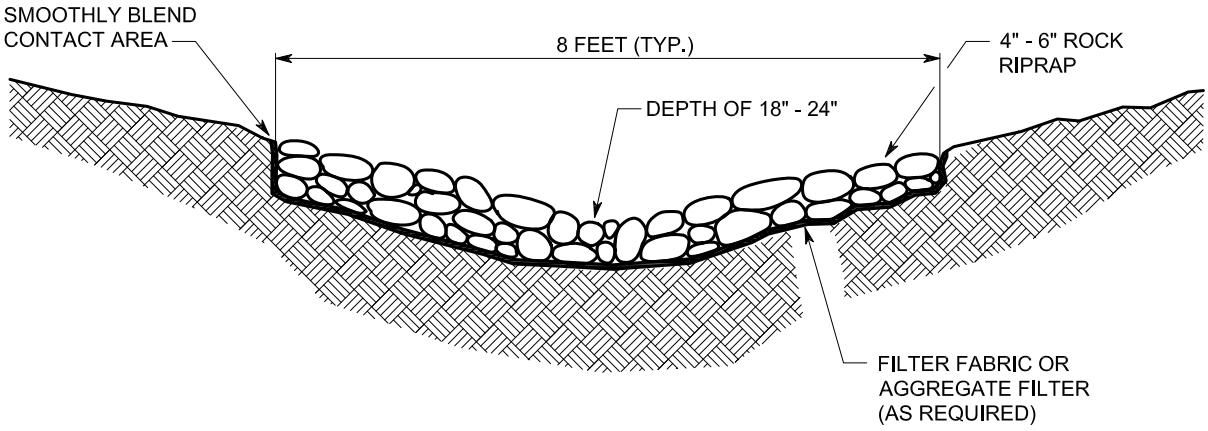


CROSS-SECTION
NOT TO SCALE

NOTE:

1. THE NUMBER OF BALES IS DETERMINED BASED ON SITE SPECIFIC FACTORS.

	STRAW BALE CHECK DAM IN A DRAINAGEWAY	FIGURE EC-3
		DWG. ES-0013 REV.



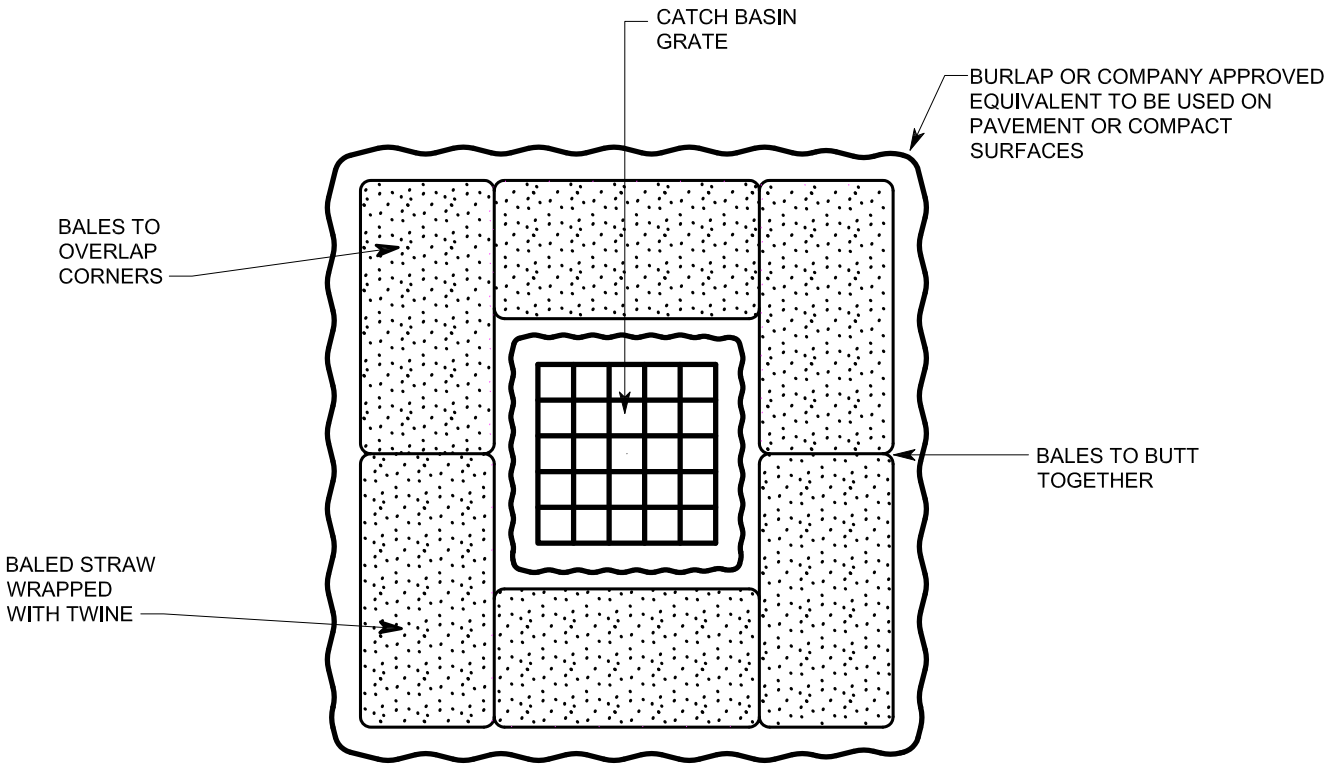
INSTALLATION REQUIREMENTS:

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.
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.

	ROCK-LINED DRAINAGE SWALE	FIGURE EC-4
		DWG. ES-0014 REV.

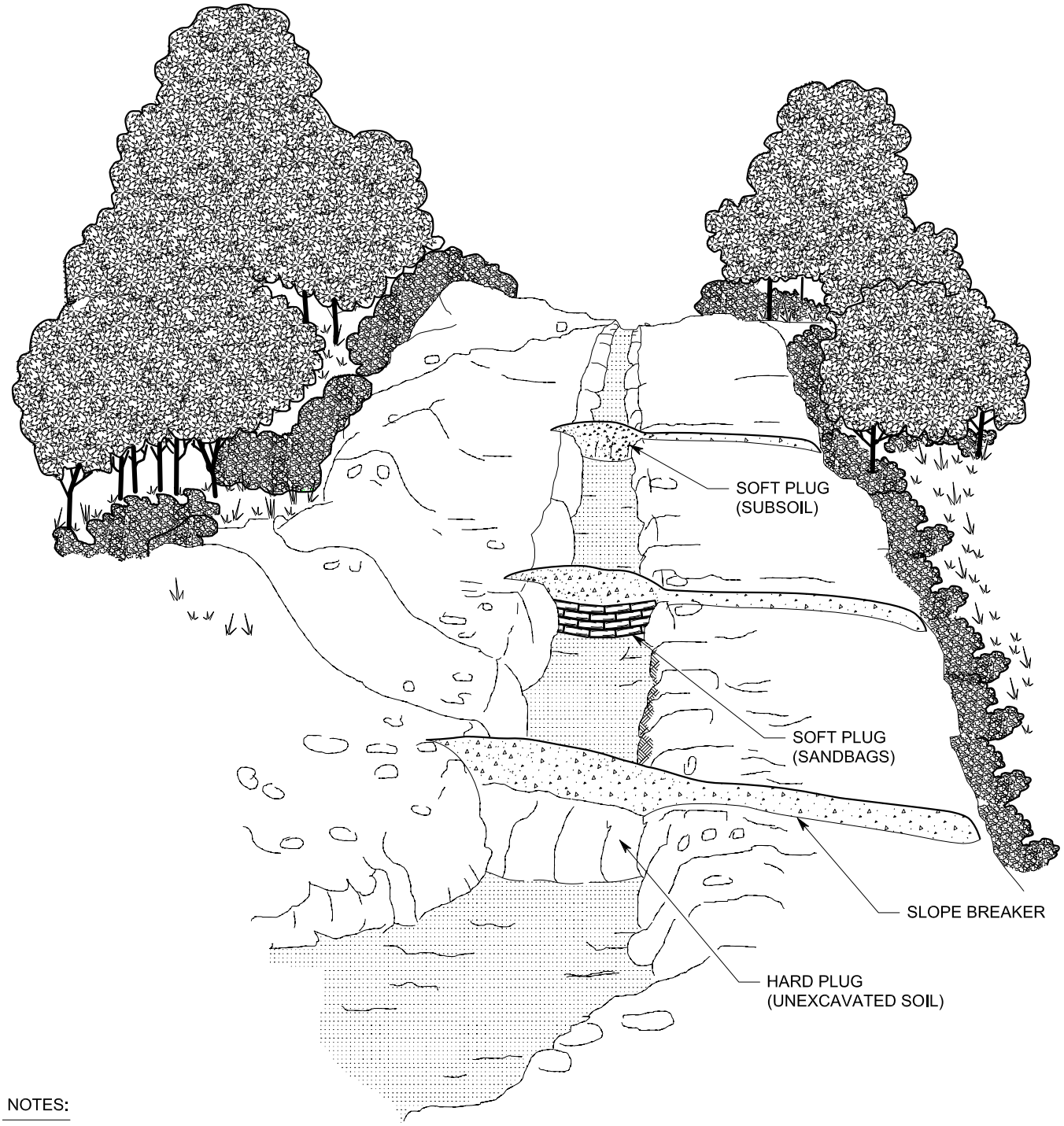


PLAN VIEW

NOTES:

1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH STRAW BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED.
2. FOR BALES PLACED ON PAVEMENT (OR COMPACT SURFACES), PLACE BURLAP OR COMPANY APPROVED EQUIVALENT BETWEEN PAVEMENT AND BALE.
3. REMOVE ACCUMULATED SEDIMENT.
4. AN ALTERNATIVE STORM DRAIN INLET PROTECTION MAY USE ONLY FABRIC LINING WITHOUT STRAW BALES BASED ON THE DISCRETION OF THE THE ENVIRONMENTAL INSPECTOR.

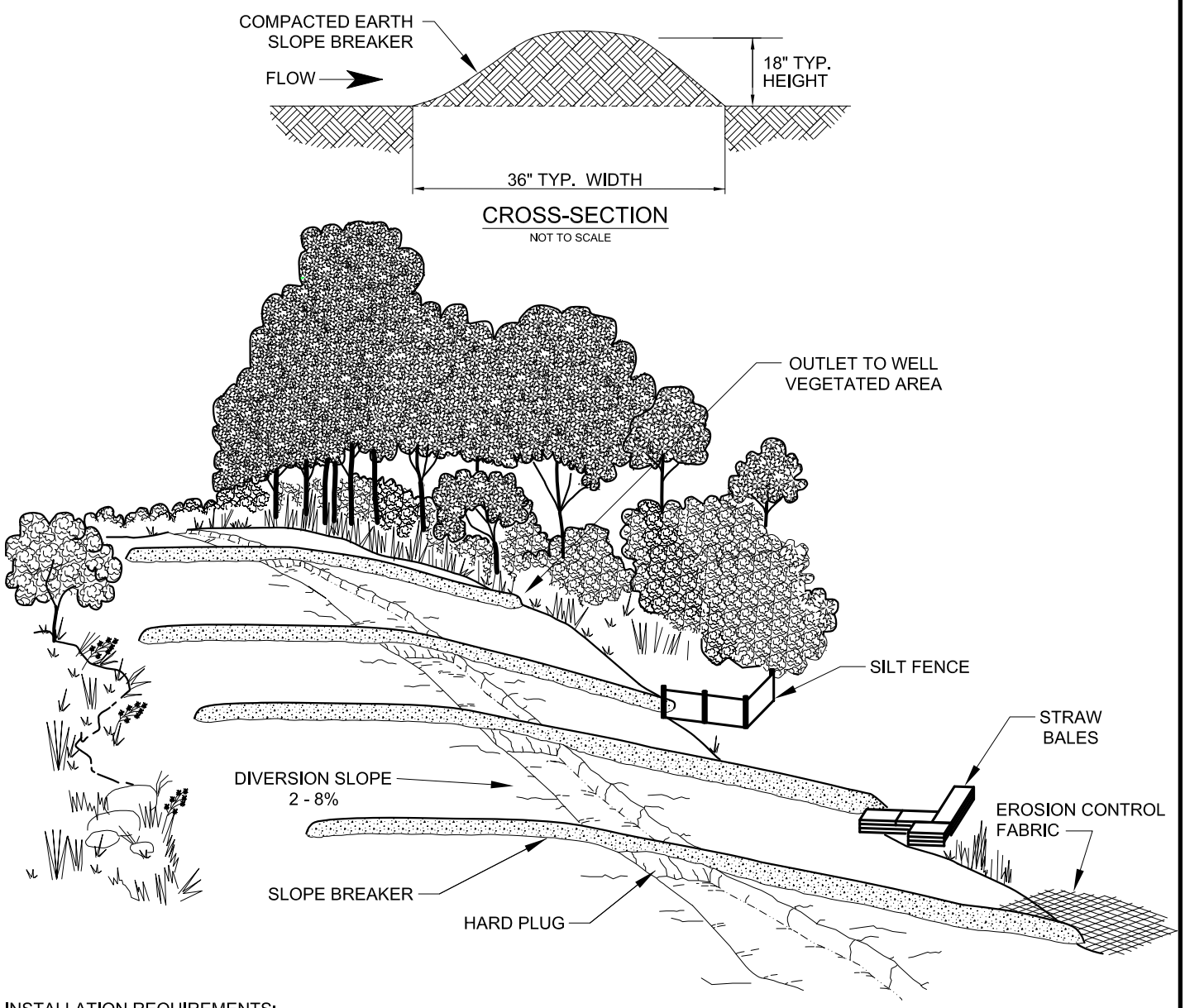
	STORM DRAIN INLET PROTECTION	FIGURE EC-5
		DWG. ES-0015 REV.



NOTES:

1. TEMPORARY TRENCH PLUG MATERIALS MAY CONSIST OF UNEXCAVATED PORTIONS OF THE TRENCH (HARD PLUG), COMPACTED SUBSOIL OR SANDBAGS PLACED ACROSS THE DITCH (SOFT PLUG), OR SOME FUNCTIONAL EQUIVALENT. THESE OPTIONS ARE DEPICTED ABOVE. DO NO USE TOPSOIL FOR TRENCH PLUGS.
2. 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. 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 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
		DWG. ES-0016 REV.



INSTALLATION REQUIREMENTS:

- INSTALL SLOPE BREAKERS IN ALL DISTURBED AREAS AS NECESSARY TO AVOID EXCESSIVE EROSION AT THE LOCATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS APPROVED BY THE ENVIRONMENTAL INSPECTOR (EI).
- MUST BE INSTALLED ON SLOPES GREATER THAN 5% WHERE THE BASE OF THE SLOPE IS LESS THAN 50 FEET FROM A WATERBODY, WETLAND OR ROAD CROSSING AT THE FOLLOWING MINIMUM SPACING:

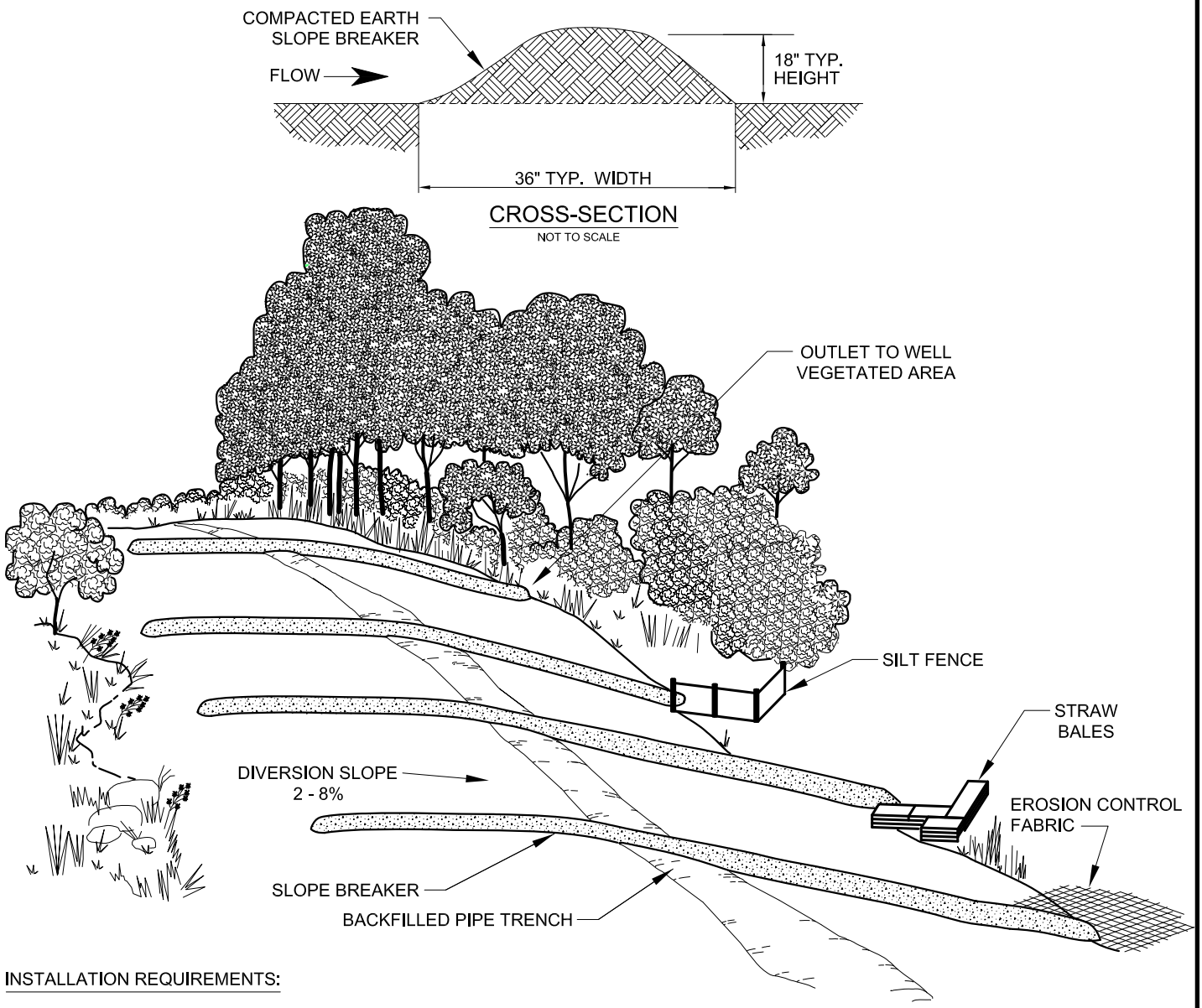
SLOPE (%)	SPACING (FT.)
5 - 15	300
> 15 - 30	200
> 30	100

- CONSTRUCT USING SAND BAGS, STAKED STRAW BALES, SILT FENCE, OR SOIL.
- INSTALL WITH A 2 - 8% OUTFALL ANGLE.
- POSITION OUTFALL TO PREVENT SEDIMENT DISCHARGE INTO WETLANDS, WATERBODIES, OR OTHER SENSITIVE RESOURCES.
- FILTER RUN-OFF WATER BY CONSTRUCTING THE OUTLET IN A WELL VEGETATED STABLE AREA, OR BY USING AN ENERGY DISSIPATING DEVICE (SILT FENCE, STRAW BALES, EROSION CONTROL FABRIC). IF NEEDED, THE TYPE OF ENERGY DISSIPATION DEVICE WILL DEPEND ON SITE CONDITIONS (OPTIONS ARE DEPICTED ABOVE).

MAINTENANCE REQUIREMENTS:

- INSPECT DURING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.

	TEMPORARY SLOPE BREAKERS	FIGURE EC-7
		DWG. ES-0017 REV.



INSTALLATION REQUIREMENTS:

- INSTALL AND MAINTAIN IN ALL DISTURBED AREAS TO AVOID EXCESSIVE EROSION, EXCEPT CULTIVATED AREAS AND LAWNS (UNLESS REQUESTED BY THE LANDOWNER), USING SPACING RECOMMENDATIONS OBTAINED FROM THE LOCAL SOIL CONSERVATION AUTHORITY OR LAND MANAGEMENT AGENCY, AT THE LOCATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS APPROVED BY THE ENVIRONMENTAL INSPECTOR (EI).
- INSTALL ON SLOPES GREATER THAN 5% WHERE THE BASE OF THE SLOPE IS LESS THAN 50 FEET FROM A WATERBODY, WETLAND OR ROAD CROSSING AT THE FOLLOWING MINIMUM SPACING IN THE ABSENCE OF WRITTEN RECOMMENDATIONS:

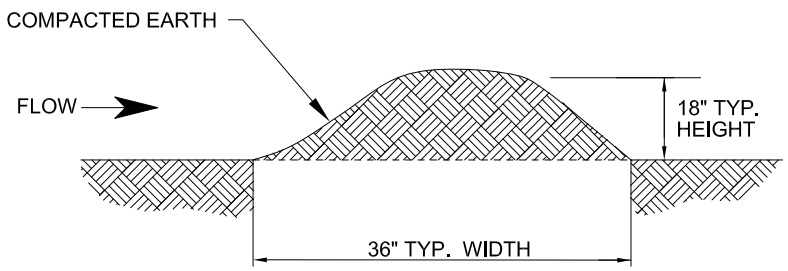
SLOPE (%)	SPACING (FT.)
5 - 15	300
> 15 - 30	200
> 30	100

- CONSTRUCT USING SOIL, STONE, OR SOME FUNCTIONAL EQUIVALENT.
- INSTALL WITH A 2 - 8% OUTFALL ANGLE.
- POSITION OUTFALL TO PREVENT SEDIMENT DISCHARGE INTO WETLANDS, WATERBODIES, OR OTHER SENSITIVE RESOURCES.
- FILTER RUN-OFF WATER BY CONSTRUCTING THE OUTLET IN A WELL VEGETATED STABLE AREA, OR BY USING AN ENERGY DISSIPATING DEVICE (SILT FENCE, STRAW BALES, EROSION CONTROL FABRIC). IF NEEDED, THE TYPE OF ENERGY DISSIPATION DEVICE WILL DEPEND ON SITE CONDITIONS (OPTIONS ARE DEPICTED ABOVE).
- IF NECESSARY, OUTFALL MAY EXTEND SLIGHTLY, UP TO 4 FEET, BEYOND THE EDGE OF THE CONSTRUCTION RIGHT-OF-WAY, SUBJECT TO ALL APPLICABLE SURVEY REQUIREMENTS.

MAINTENANCE REQUIREMENTS:

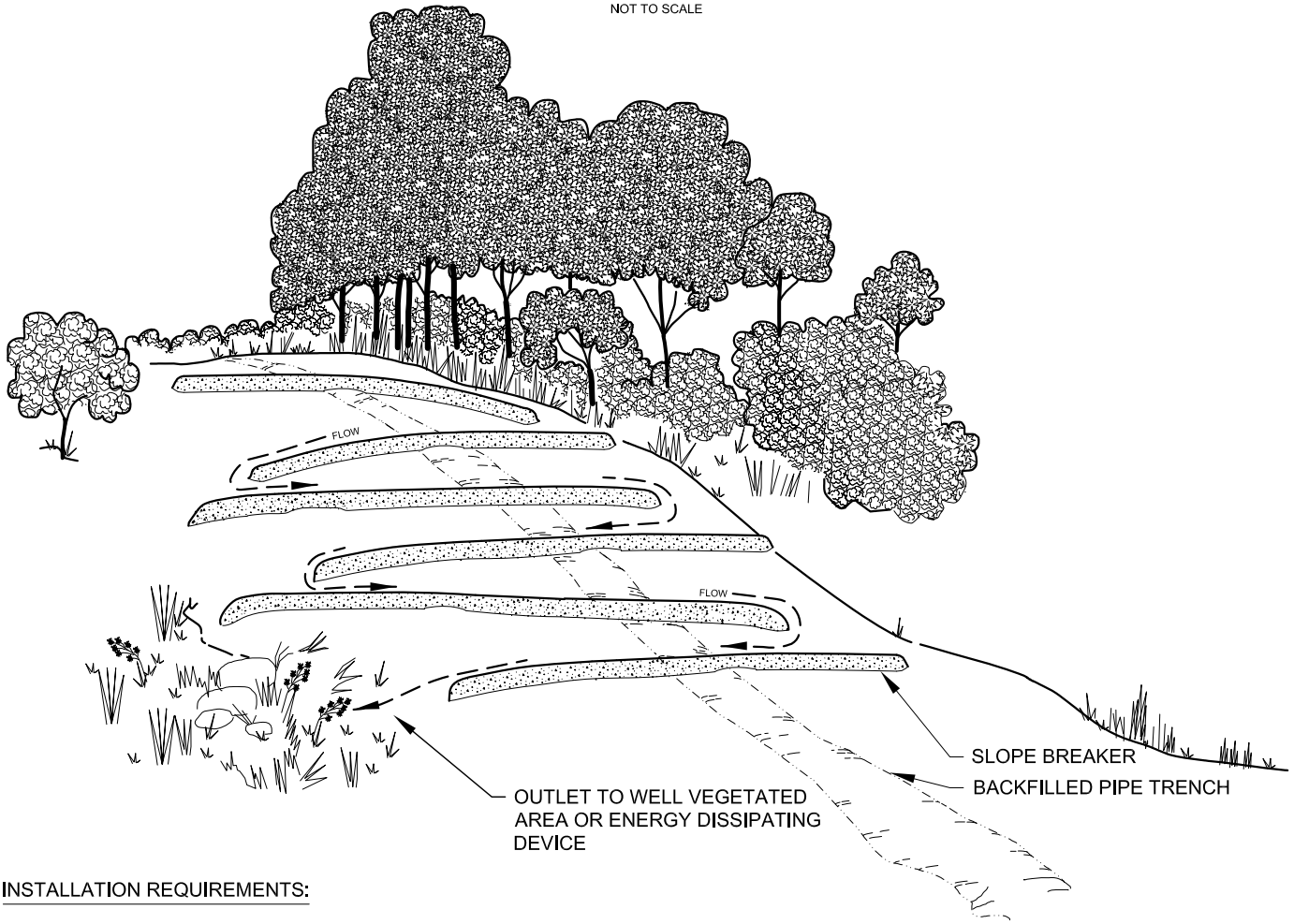
- INSPECT DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT SLOPE BREAKERS FOLLOWING CONSTRUCTION.

	PERMANENT SLOPE BREAKERS	FIGURE EC-8
		DWG. ES-0018 REV.



CROSS-SECTION

NOT TO SCALE



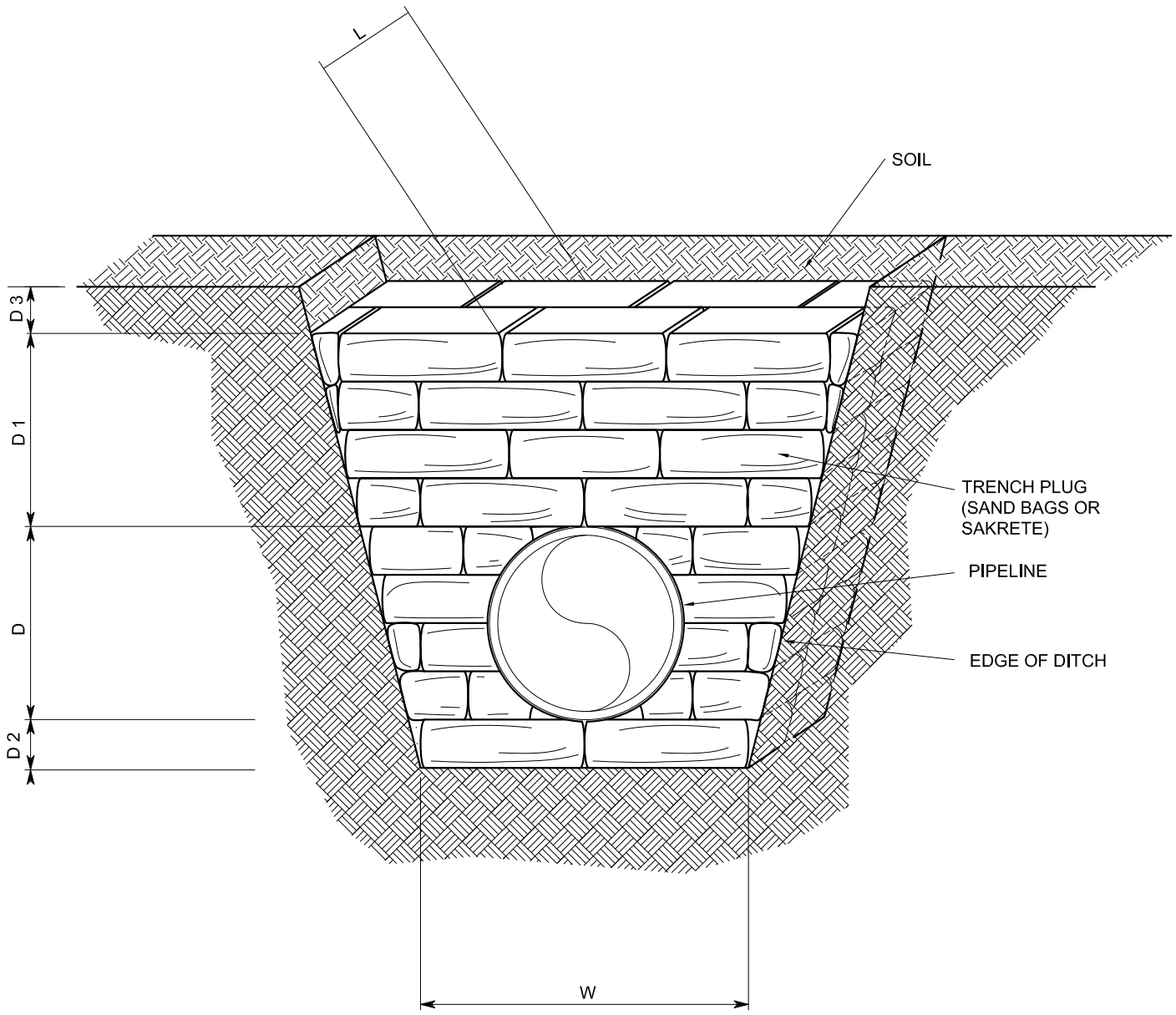
INSTALLATION REQUIREMENTS:

- INSTALL IN ALL AREAS EXCEPT RESIDENTIAL OR AGRICULTURAL (UNLESS AUTHORIZED BY LANDOWNER OR LAND MANAGING AGENCY).
- CONSTRUCT USING EARTH FILLED SACKS OR STAKED STRAW BALES FOR TEMPORARY OR COMPACTED EARTH AND ROCK FOR PERMANENT.
- INSTALL WITH A 2 - 8% OUTFALL ANGLE.
- FOR TEMPORARY CHEVRON SLOPE BREAKERS, POSITION OUTFALL TO PREVENT SEDIMENT DISCHARGE INTO WETLANDS, WATERBODIES, OR OTHER SENSITIVE RESOURCES.
- FILTER RUN-OFF WATER BY CONSTRUCTING AN OUTLET USING AN ENERGY DISSIPATING DEVICE (SILT FENCE, STRAW BALES, EROSION CONTROL FABRIC), AS APPROVED BY THE ENVIRONMENTAL INSPECTOR.

MAINTENANCE REQUIREMENTS:

- INSPECT DURING AND FOLLOWING CONSTRUCTION AND MAKE REPAIRS AS NEEDED.
- KEEP THE CHANNEL FREE OF DEBRIS AND OBSTRUCTIONS.
- SEED AND MULCH PERMANENT SLOPE BREAKERS FOLLOWING CONSTRUCTION.

	CHEVRON SLOPE BREAKER	FIGURE EC-9
		DWG. ES-0019 REV.



D = PIPE DIAMETER
D1 = APPROXIMATELY 24"
D2 = APPROXIMATELY 6" (8" MIN. IN ROCK)
D3 = APPROXIMATELY 12"
W = D + 2 to 4 FEET
L = APPROXIMATELY 18" - 24"
D1 + D3 = 36" MINIMUM

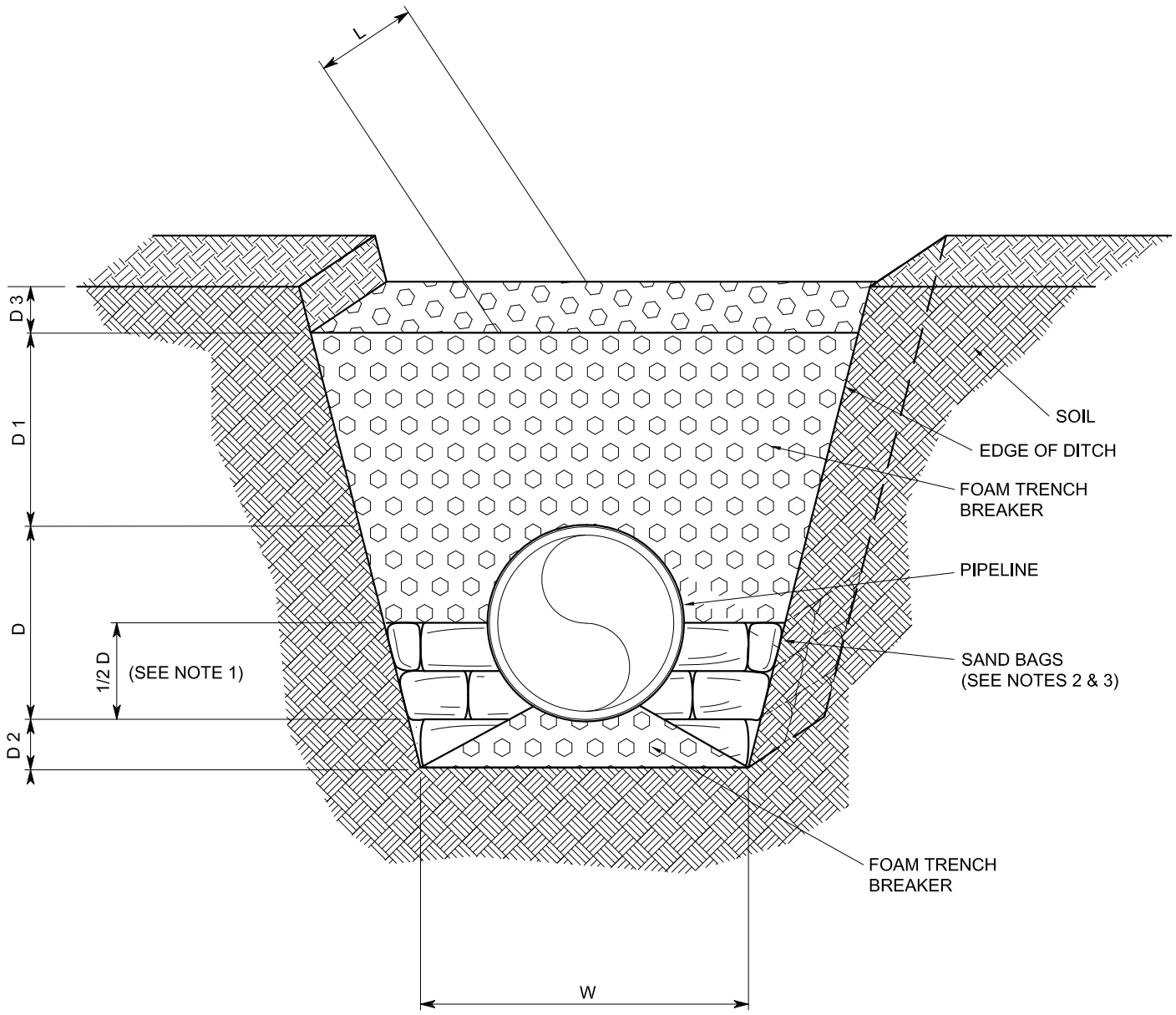
NOTE:

1. USE OF SAKRETE SHALL REQUIRE PRIOR COMPANY APPROVAL.
2. TOPSOIL SHALL NOT BE USED TO CONSTRUCT BREAKERS.
3. DO NOT INSTALL TRENCH BREAKERS WITHIN A WETLAND.

TRENCH BREAKER DETAIL (SACK)

FIGURE EC-10

DWG. ES-0020 REV.



D = PIPE DIAMETER
D1 = APPROXIMATELY 24"
D2 = APPROXIMATELY 6" (8" MIN. IN ROCK)
D3 = APPROXIMATELY 12"
W = D + 2 to 4 FEET
L = APPROXIMATELY 18" - 24"
D1 + D3 = 36" MINIMUM

NOTE:

1. A MINIMUM OF TWO LAYERS OF BAGS SHALL BE INSTALLED.
2. THE ADDITION OF SAND BAGS UNDER THE FOAM WILL BE PLACED AS PRESCRIBED IN THE E&S PLAN OR AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR (EI).
3. FOAM TRENCH BREAKERS ARE TO BE USED WITHIN UPLAND AREAS. DO NOT USE FOAM TRENCH BREAKERS AT WATERBODY OR WETLAND BOUNDARIES..

	TRENCH BREAKER DETAIL (FOAM)	FIGURE EC-11
		DWG. ES-0021 REV.

I.G. ES0021.DWG

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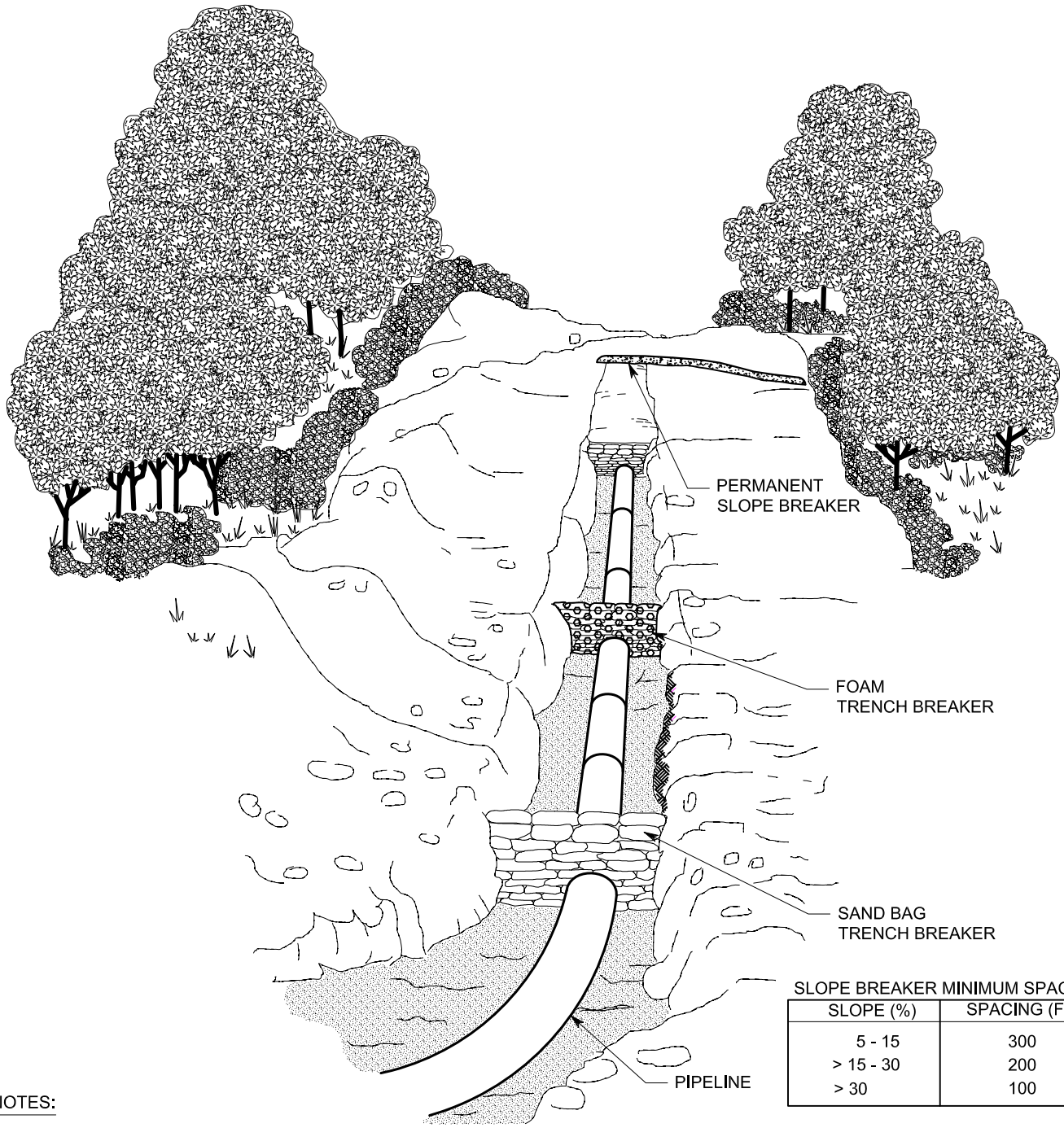


SLOPE BREAKER MINIMUM SPACING

SLOPE (%)	SPACING (FT)
5 - 15	300
> 15 - 30	200
> 30	100

NOTES:

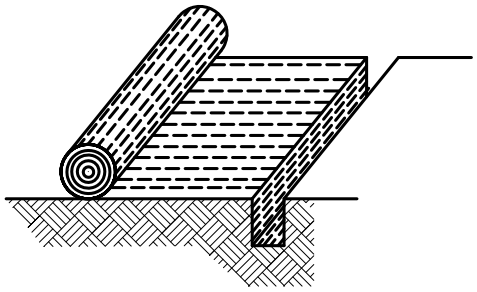
1. PERMANENT TRENCH BREAKER MATERIALS WILL CONSIST OF SAND BAGS, POLYURETHANE FOAM OR SOME FUNCTIONAL EQUIVALENT PLACED ACROSS THE DITCH AS IDENTIFIED IN PERMIT REQUIREMENTS. DO NOT USE TOPSOIL FOR TRENCH BREAKERS. THESE OPTIONS ARE DEPICTED ABOVE.
2. PERMANENT TRENCH BREAKERS, WHICH ARE USED IN CONJUNCTION WITH SLOPE BREAKERS, SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DETERMINED IN THE FIELD BY THE ENVIRONMENTAL INSPECTOR.
3. AT A MINIMUM, INSTALL A TRENCH BREAKER AT THE BASE OF SLOPES GREATER THAN 5 PERCENT WHERE THE BASE OF THE SLOPE IS LESS THAN 50 FEET FROM A WATERBODY OR WETLAND AND WHERE NEEDED TO AVOID DRAINING A WATERBODY OR WETLAND.
4. INSTALL TRENCH BREAKERS AT WETLAND BOUNDARIES AND/OR SEAL THE TRENCH BOTTOM AS NECESSARY TO MAINTAIN THE ORIGINAL WETLAND HYDROLOGY. DO NOT INSTALL TRENCH BREAKERS WITHIN A WETLAND.
5. 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.

PERMANENT TRENCH
BREAKER OPTIONS

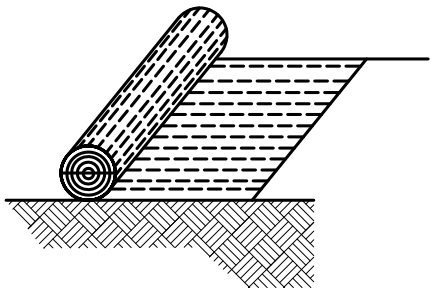
FIGURE EC-12

DWG. ES-0022 REV.

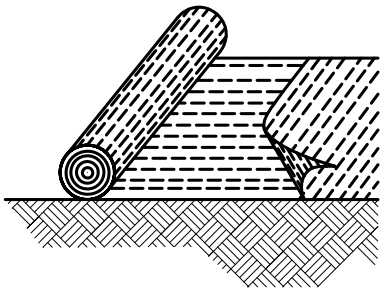
A. BURY THE TOP END OF THE ROLL IN A 6" TRENCH (TYPICAL)



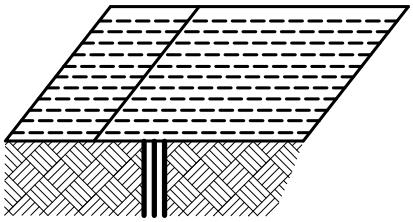
B. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING.

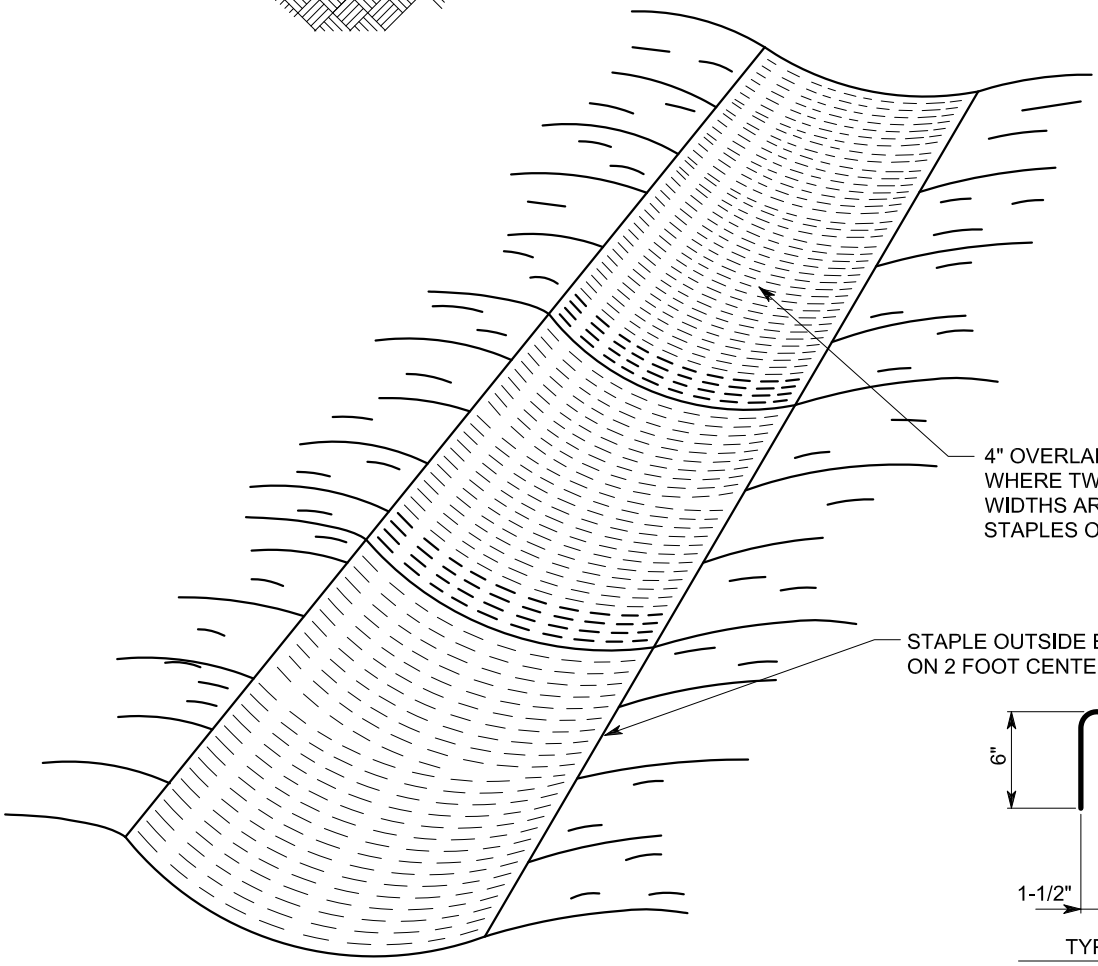


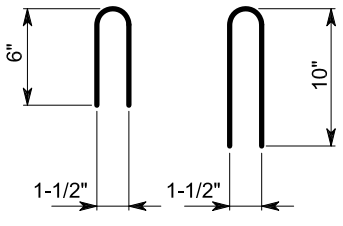
C. BURY AND TAMP UPPER END OF LOWER STRIP AS IN "A" AND "B". OVERLAP END OF TOP STRIP 4" AND STAPLE.



D. WHERE FABRIC STOPS, FOLD, BURY, AND TAMP ROLL IN SLIT TRENCH. PROVIDE DOUBLE ROW OF STAPLES







TYPICAL STAPLES
NO. 11 GAUGE WIRE

EROSION CONTROL FABRIC INSTALLATION

FIGURE EC-13

DWG. ES-0023 REV.

I.G. ES0023.DWG

Wayne Sicora
5/29/2014 12:06 PM

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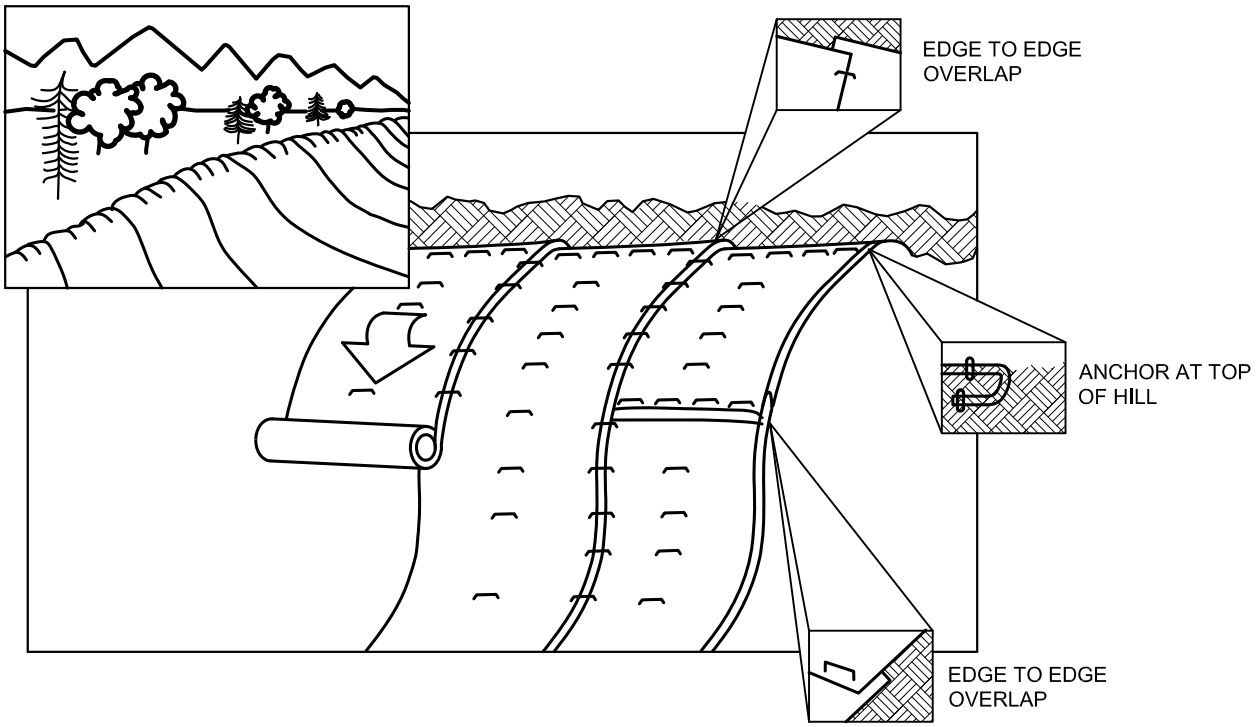
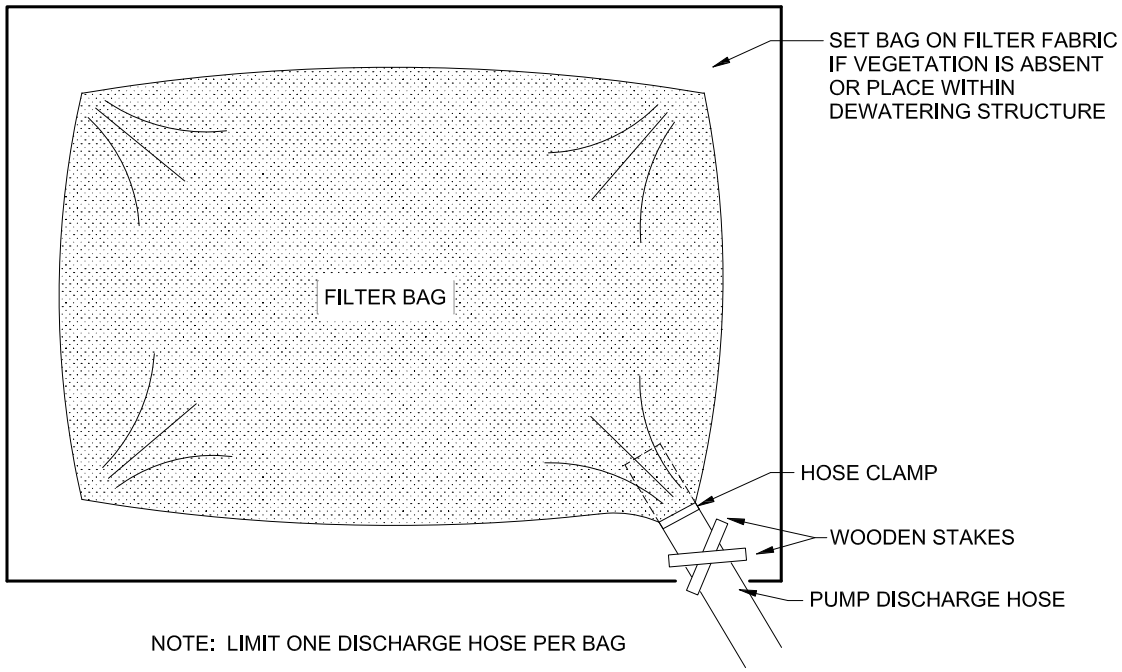


NOTES:

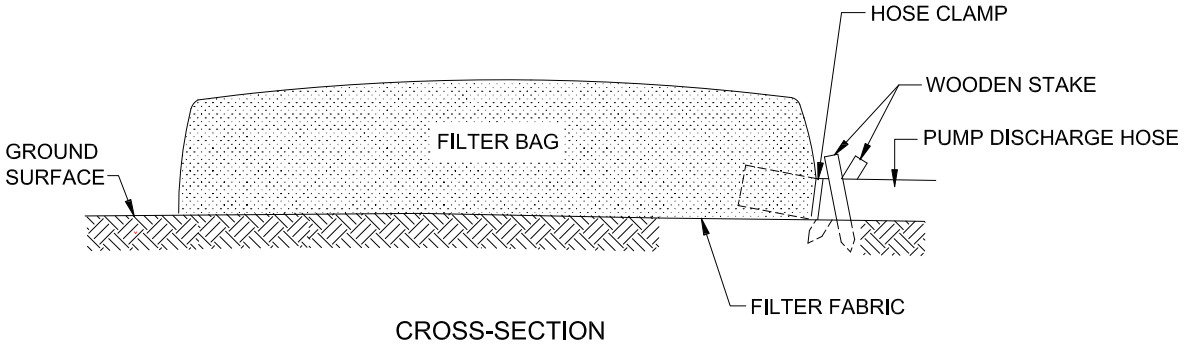
1. EROSION CONTROL BLANKETS (FABRIC) SHALL BE USED AT LOCATIONS IDENTIFIED IN THE PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. EROSION CONTROL BLANKETS SHALL MEET THE REQUIREMENTS SPECIFIED IN THE PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
3. STAPLES SHALL BE MADE OF 11 GAUGE 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.
4. BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS OR AS STATED BELOW:
   - EXTEND TOP OF BLANKET 3 FEET PAST THE UPPER EDGE OF THE SLOPE.
   - ANCHOR ("KEY") THE UPPER EDGE OF THE BLANKET INTO THE SLOPE USING A 6" DEEP TRENCH AND ROLL THE BLANKET DOWN THE HILL. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING TRENCH.
   - INSTALL LOOSELY ON SLOPE AND AVOID STRETCHING EROSION CONTROL BLANKETS DURING INSTALLATION.
   - BRING ROLL BACK OVER THE TOP OF THE TRENCH AND CONTINUE TO ROLL DOWN SLOPE. STAPLE EVERY 12" WHERE BLANKETS EXIT THE TRENCH AT THE TOP OF THE SLOPE.
   - WHEN BLANKETS ARE SPLICED DOWN-SLOPE TO ADJOINING BLANKETS (SLOPE OR STREAMBANK MATS), THE UPPER BLANKET SHALL BE PLACED OVER THE LOWER (SHINGLE STYLE) WITH APPROXIMATELY 6" OF OVERLAP. STAPLE THROUGH THE OVERLAPPED AREA EVERY 12".
   - OVERLAP ADJACENT BLANKETS 6". STAPLE EDGES OF BLANKETS AND CENTER EVERY 36".
5. IN LIVESTOCK AREAS WHERE EROSION CONTROL BLANKETS ARE APPLIED TO THE SLOPES, FENCING WILL BE USED IF NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER.
6. MONITOR WASHOUTS, STAPLE INTEGRITY OR BLANKET MOVEMENT. REPLACE OR REPAIR AS NECESSARY.
7. DO NOT USE SYNTHETIC MONOFILAMENT MESH / NETTED MATERIALS IN AREAS DESIGNATED AS SENSITIVE WILDLIFE HABITAT, UNLESS THE PRODUCT IS SPECIFICALLY DESIGNED TO MINIMIZE HARM TO WILDLIFE.

	TYPICAL EROSION CONTROL BLANKETS ON SLOPES	FIGURE EC-14
		DWG. ES-0024 REV.



NOTE: LIMIT ONE DISCHARGE HOSE PER BAG

PLAN VIEW



CROSS-SECTION

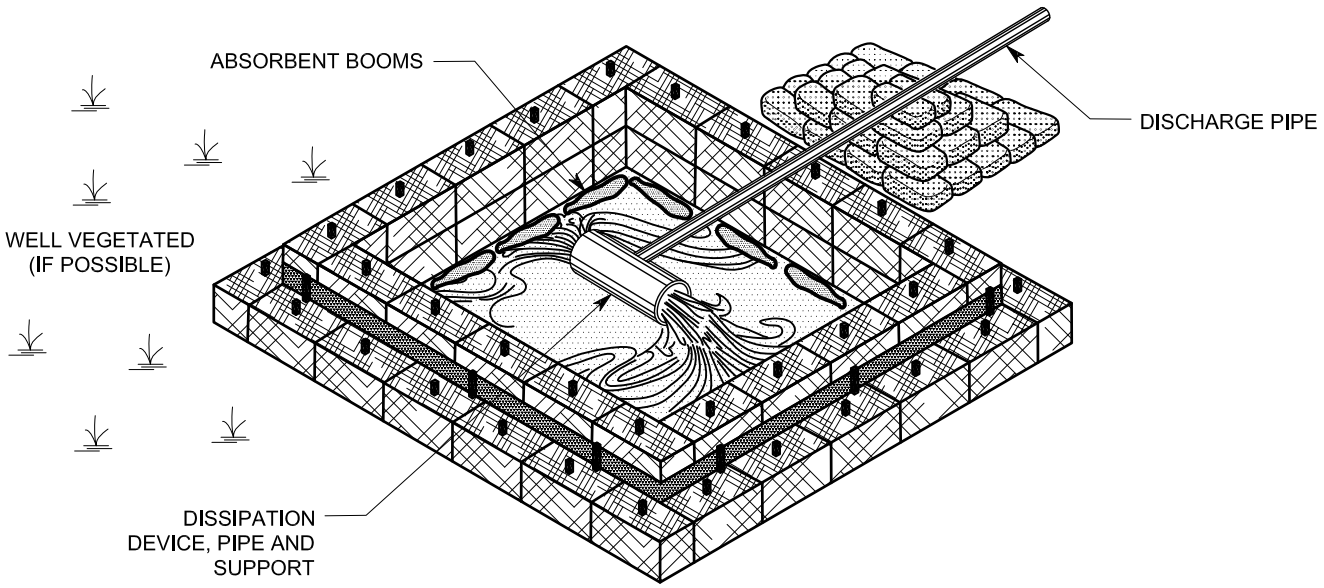
NOTES:

1. THE FILTER BAG OR STRUCTURE MUST BE MANNED WHEN THE PUMPING IS INITIATED TO ENSURE PROPER OPERATION AND FUNCTIONALITY.

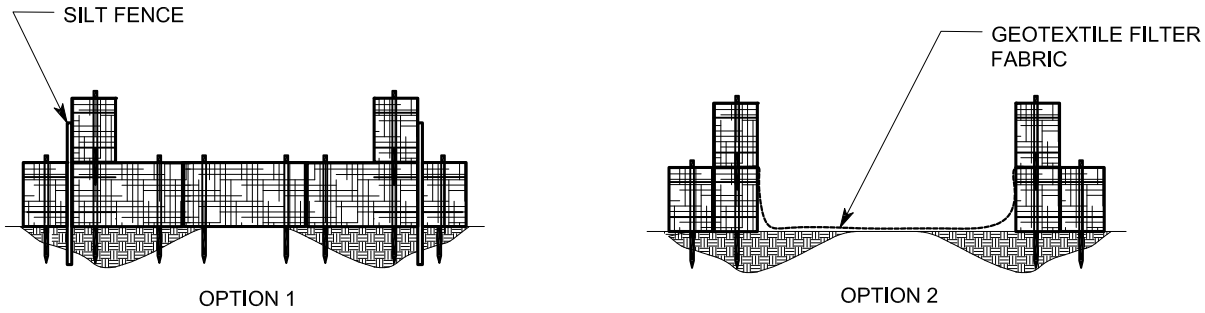
2. REMOVE DEWATERING STRUCTURE AS SOON AS PRACTICABLE AFTER COMPLETION OF DEWATERING ACTIVITIES.

3. PLACEMENT OF FILTERBAGS SHOULD BE IN A MANNER THAT BAG USE DOES NOT CAUSE EROSION. IF SITE CONDITIONS ALLOW, PLACE FILTER BAG IN WELL-VEGETATED AREA, A MINIMUM OF 50 FEET FROM WETLANDS OR WATERBODIES.

	FILTER BAG	FIGURE WD-1
		DWG. ES-0025 REV.



PLAN VIEW



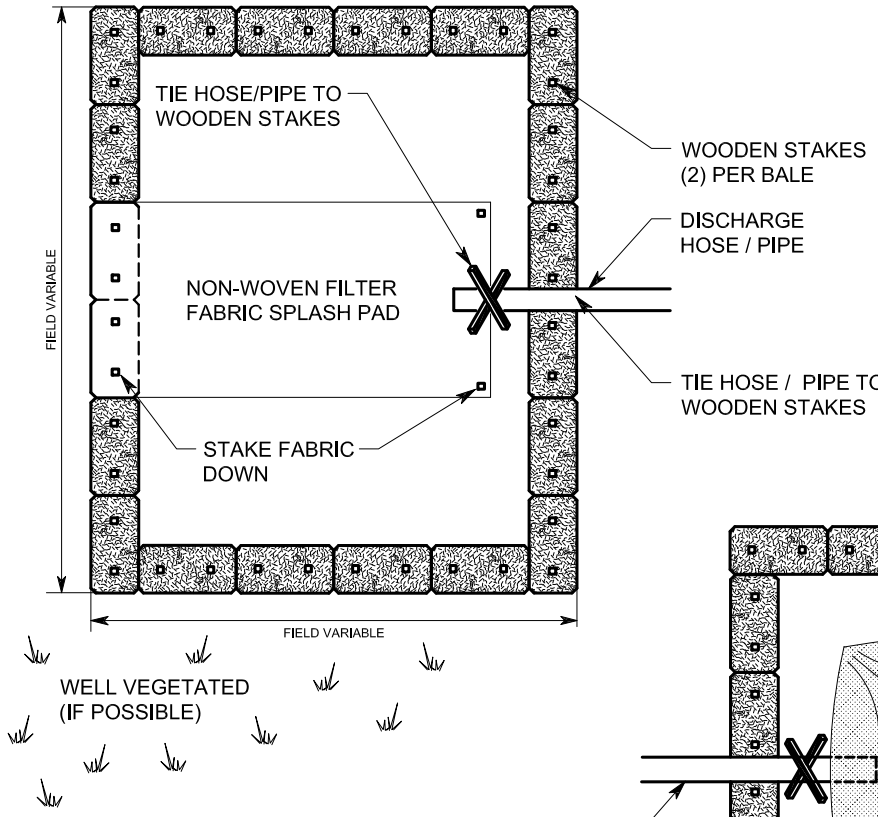
CROSS SECTION VIEWS

NOTES:

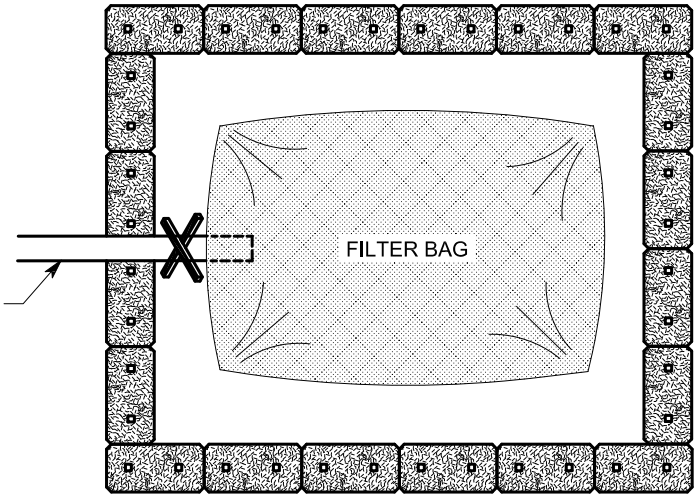
1. SIZE AND DIMENSION OF DEWATERING STRUCTURE WILL VARY DEPENDING ON THE VOLUME AND RATE OF DISCHARGE. STAGGER PLACEMENT OF STRAW BALES WHEN TWO ROWS ARE USED.
2. COVER THE BASE OF THE DISCHARGE STRUCTURE EITHER WITH STRAW BALES (OPTION 1) OR LINE WITH GEOTEXTILE FABRIC (OPTION 2).
3. PROVIDE SUPPORT TO ENSURE THAT DISCHARGE PIPE DOES NOT REST ON STRAW BALES.
4. PLASTIC SHEETING, WOODEN MATS OR STEEL PLATES MAY ALSO BE USED, AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR, TO PREVENT EROSION, STREAMBED SCOUR, SUSPENSION OF SEDIMENTS OR EXCESSIVE STREAMFLOW.
5. ABSORBENT BOOMS MUST BE USED DURING DISCHARGES FROM EXISTING / USED PIPE OR AS DIRECTED BY PERMIT REQUIREMENTS.
6. PREVENT EROSION, STREAMBED SCOUR, SUSPENSION OF SEDIMENTS AND EXCESSIVE STREAMFLOW BY PROPER DESIGN OF STRUCTURE, REGULATING THE WATER DISCHARGE RATE AS WELL AS USE OF ENERGY DISSIPATION DEVICE(S) AND SEDIMENT BARRIERS, AS NECESSARY.

	DISCHARGE STRUCTURE FOR HYDROSTATIC TEST WATER	FIGURE WD-2
		DWG. ES-0026 REV.

OPTION A



OPTION B



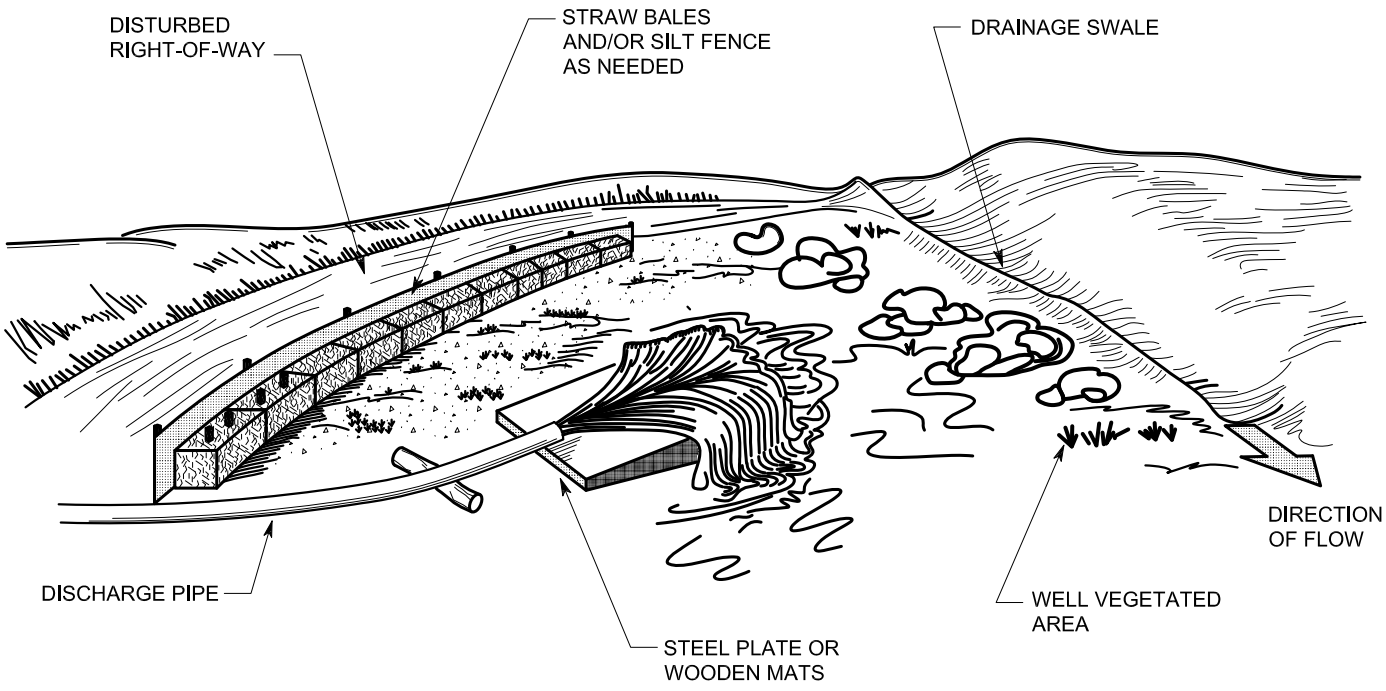
PLAN VIEW

NOT TO SCALE

NOTES:

1. SIZE AND DIMENSION OF DEWATERING STRUCTURE, INCLUDING NUMBER OF STRAW BALES USED, WILL VARY DEPENDING ON VOLUME OF WATER DISCHARGED, RATE OF DISCHARGE AND SITE CONDITIONS, SUCH AS THE TYPE AND AMOUNT OF SEDIMENT WITHIN THE DISCHARGE WATER.
2. PREVENT EROSION, STREAMBED SCOUR, SUSPENSION OF SEDIMENTS AND EXCESSIVE STREAMFLOW BY PROPER DESIGN OF STRUCTURE, REGULATING THE WATER DISCHARGE RATE AS WELL AS USE OF ENERGY DISSIPATION DEVICE(S) AND SEDIMENT BARRIERS, AS NECESSARY.
3. MONITOR AND CONDUCT DISCHARGES IN A MANNER THAT DOES NOT CAUSE EROSION AND DOES NOT RESULT IN SILT-LADEN WATER FLOWING INTO ANY WATERBODY OR WETLAND.
4. DO NOT DEPOSIT SAND, SILT, AND/OR SEDIMENT INTO SENSITIVE ENVIRONMENTAL RESOURCE AREAS, INCLUDING WETLANDS, WATERBODIES, CULTURAL RESOURCE SITES, AND SENSITIVE SPECIES HABITATS. STOP DEWATERING ACTIVITIES IF SUCH DEPOSITION IS OCCURRING AND ENSURE THE DESIGN OF THE DISCHARGE IS CHANGED TO PREVENT REOCCURRENCE.
5. ABSORBENT BOOMS MUST BE USED DURING DISCHARGES FROM EXISTING / USED PIPE OR AS DIRECTED BY PERMIT REQUIREMENTS.
6. FILTER BAGS SHOULD BE INSTALLED ACCORDING TO THE DETAILS SHOWN IN "FILTER BAG" FIGURE.
7. REMOVE STRUCTURE AS SOON AS PRACTICABLE AFTER COMPLETION OF WATER DISCHARGES.

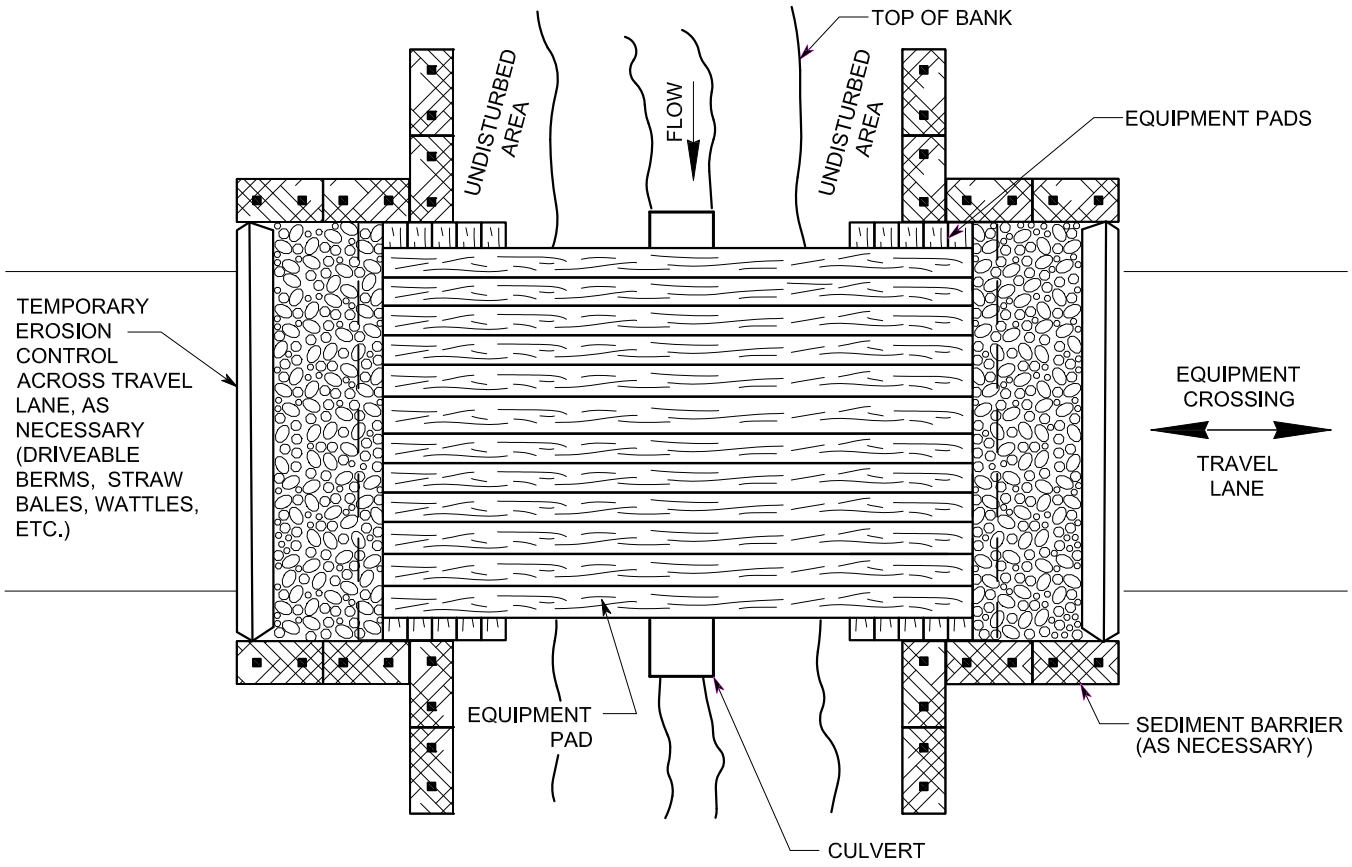
	OPTIONS FOR SMALL WATER DISCHARGES	FIGURE WD-3
		DWG. ES-0027 REV.



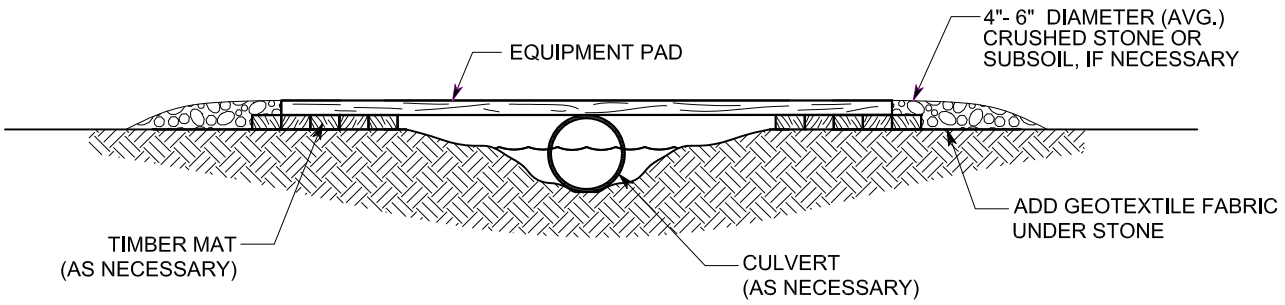
NOTES:

1. USE BACKHOE BUCKET OR DOZER BLADE TO ANCHOR DISCHARGE PIPE.
2. ON FLAT TERRAIN, USE STACKED STRAW BALES AND SILT FENCE AS NEEDED TO DIVERT WATER AWAY FROM DISTURBED RIGHT-OF-WAY.

	DISCHARGE OF HYDROSTATIC TEST WATER TO A SURFACE WATER	FIGURE WD-4
		DWG. ES-0028 REV.



PLAN VIEW

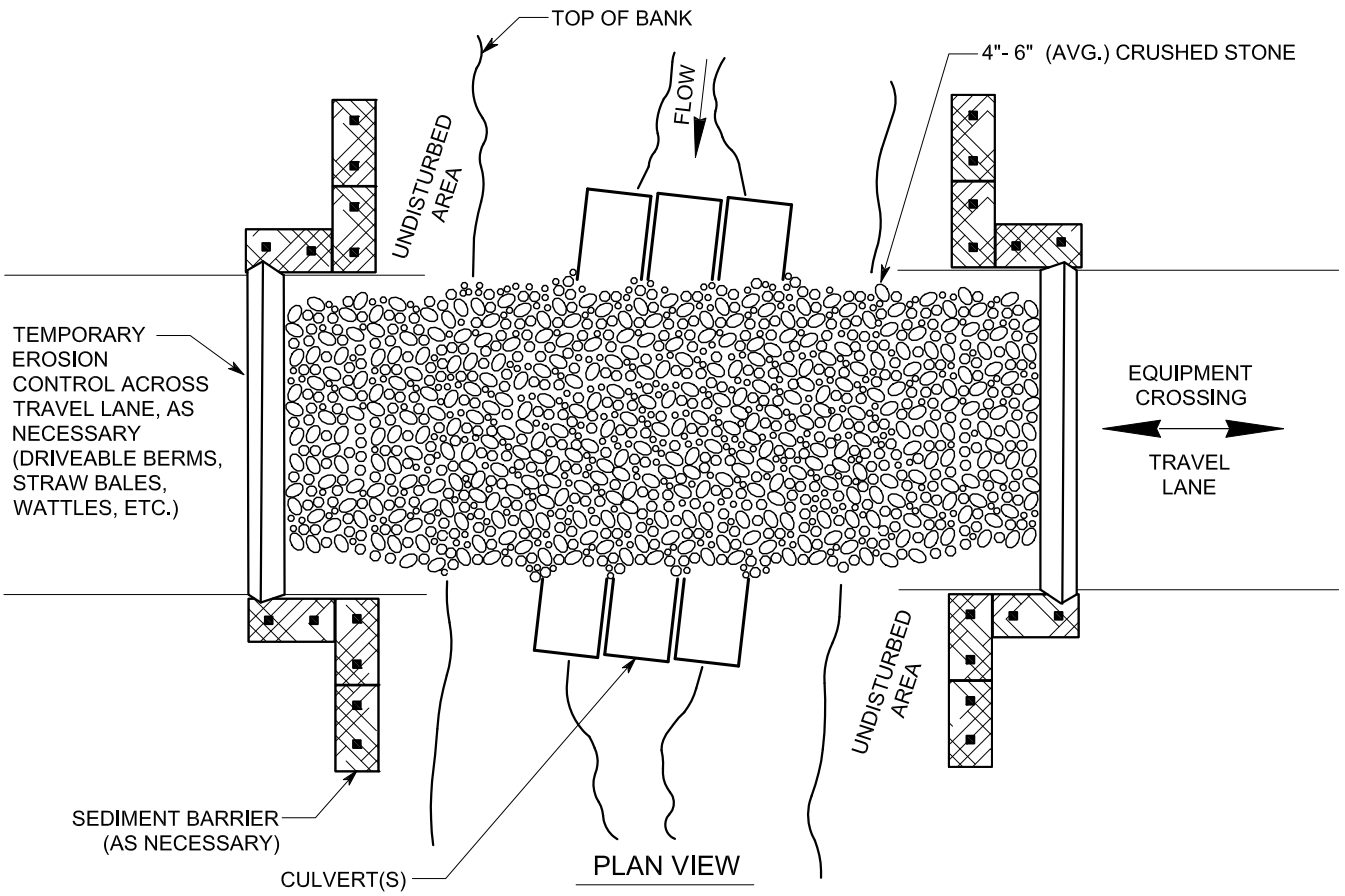


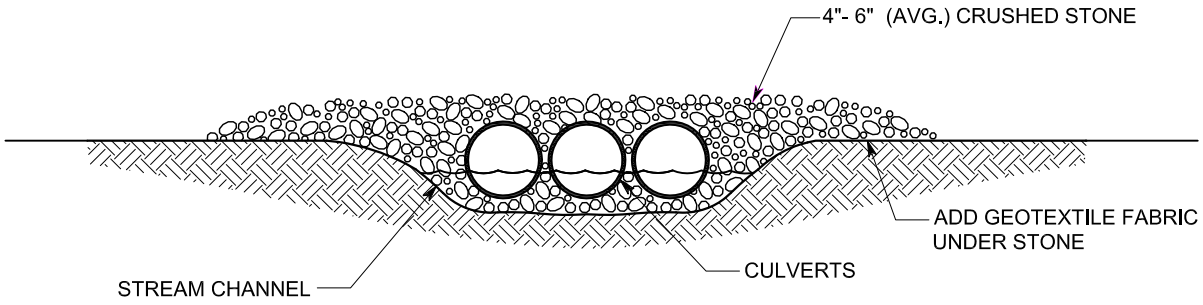
CROSS SECTION VIEW

NOTES:

1. TEMPORARY SEDIMENT BARRIER CONSISTS OF SILT FENCE AND/ OR STRAW BALES, OR OTHER APPROPRIATE MATERIAL.
2. NUMBER AND DIAMETER OF CULVERTS, AS WELL AS USE OF CULVERTS, WILL DEPEND ON SITE-SPECIFIC CONDITIONS.
3. EQUIPMENT PAD, TYPICALLY CONSTRUCTED OF HARDWOOD, SHALL BE IN GOOD CONDITION AND MUST ACCOMMODATE THE LARGEST EQUIPMENT USED. ADDITIONAL EQUIPMENT PADS CAN BE PUT SIDE BY SIDE IF EXTRA WIDTH IS REQUIRED. BRIDGE MUST SPAN FROM TOP OF BANK TO TOP OF BANK.
4. CRUSHED STONE OR SUBSOIL MAY BE USED AS ILLUSTRATED, IF NECESSARY, WITHIN TRAVEL LANE AS RAMP.
5. CONSTRUCT AND MAINTAIN BRIDGE TO WITHSTAND THE HIGHEST EXPECTED FLOW WHILE BRIDGE IS IN USE AND PREVENT SOIL FROM ENTERING WATERBODY. DO NOT USE SOIL TO CONSTRUCT OR STABILIZE BRIDGE.

	TEMPORARY EQUIPMENT BRIDGE (EQUIPMENT PADS WITH OR WITHOUT CULVERTS)	FIGURE BR-1
		DWG. ES-0029 REV.





CROSS SECTION VIEW

NOTES:

1. NUMBER AND DIAMETER OF CULVERTS WILL DEPEND ON SITE-SPECIFIC CONDITIONS. USE CULVERTS A MINIMUM OF 12-INCH DIAMETER.
2. ALIGN CULVERTS TO PREVENT EROSION AND STREAMBED SCOUR.
3. TEMPORARY SEDIMENT BARRIER CONSISTS OF SILT FENCES AND/OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS.
4. ATTEMPT TO REMOVE ALL IMPORTED ROCK DURING REMOVAL OF THE BRIDGE.
5. DO NOT USE SOIL TO CONSTRUCT OR STABILIZE BRIDGES.

TEMPORARY EQUIPMENT BRIDGE (CRUSHED STONE WITH CULVERTS)

FIGURE BR-2

DWG. ES-0030 REV.

I.G. ES0030.DWG

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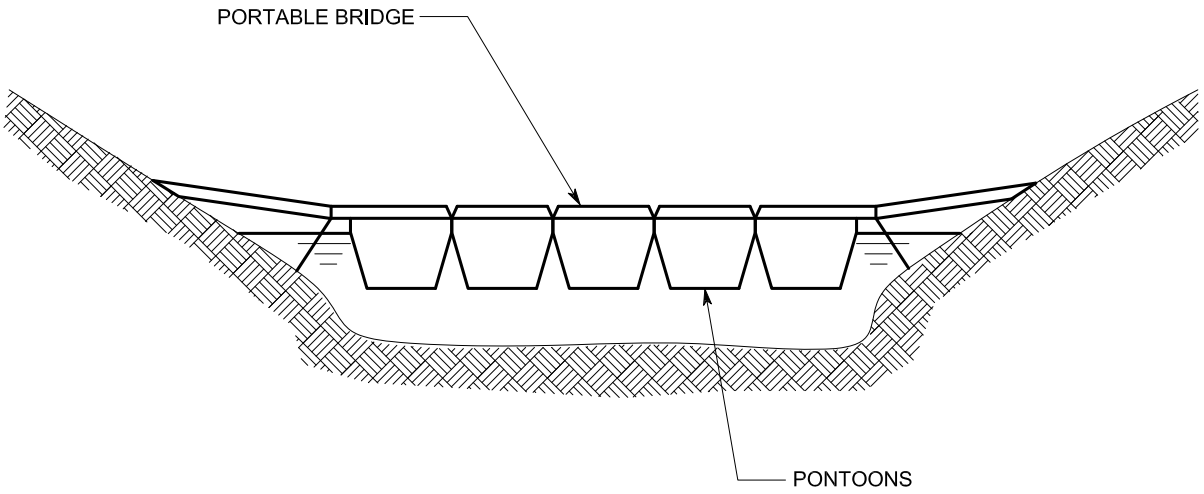
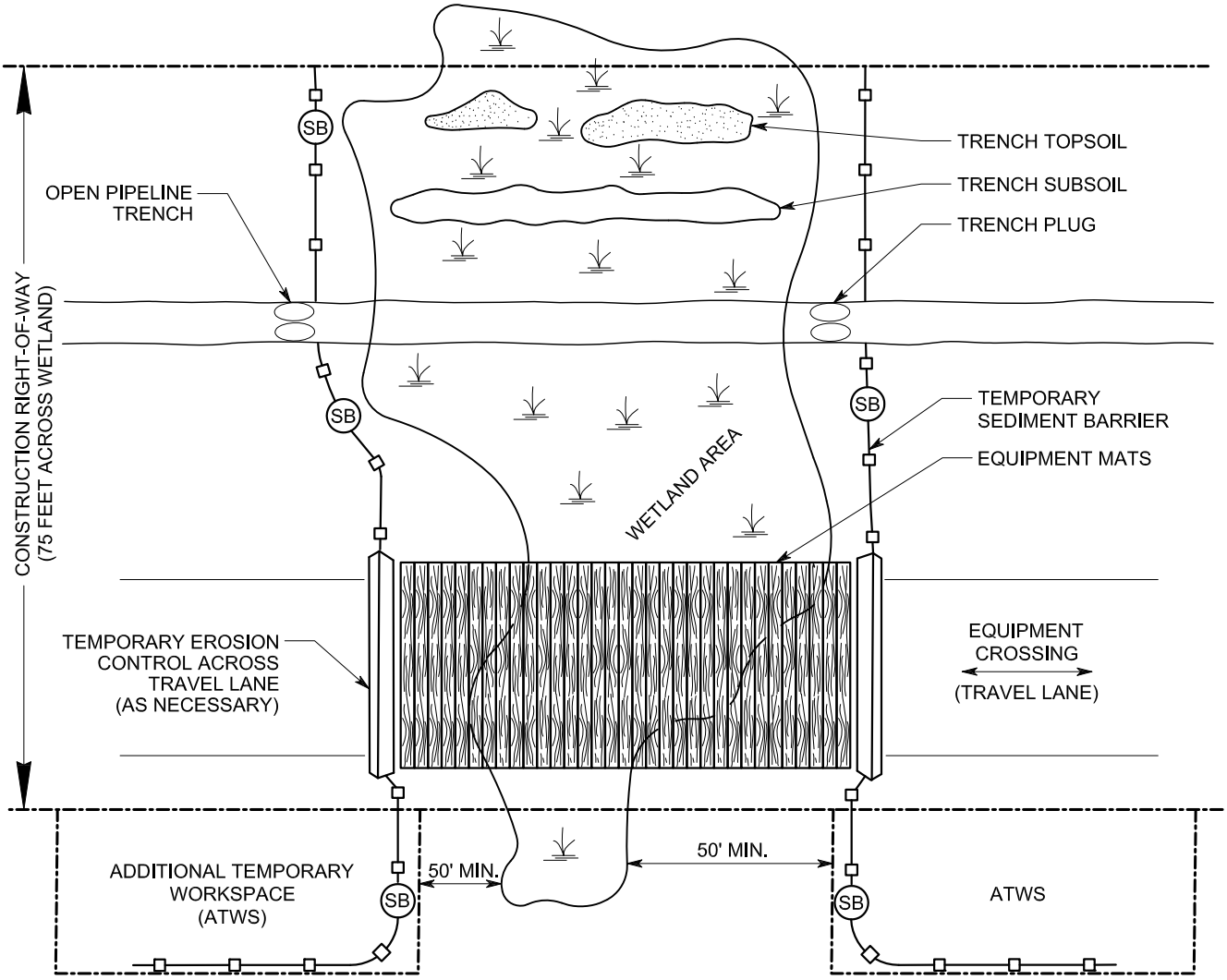


NOTES:

1. STABILIZE EDGES WITH SANDBAGS OR STONE.

2. REMOVE BRIDGE DURING CLEANUP.

	TEMPORARY EQUIPMENT BRIDGE (FLEXI-FLOAT OR PORTABLE BRIDGE)	FIGURE BR-3
		DWG. ES-0031 REV.



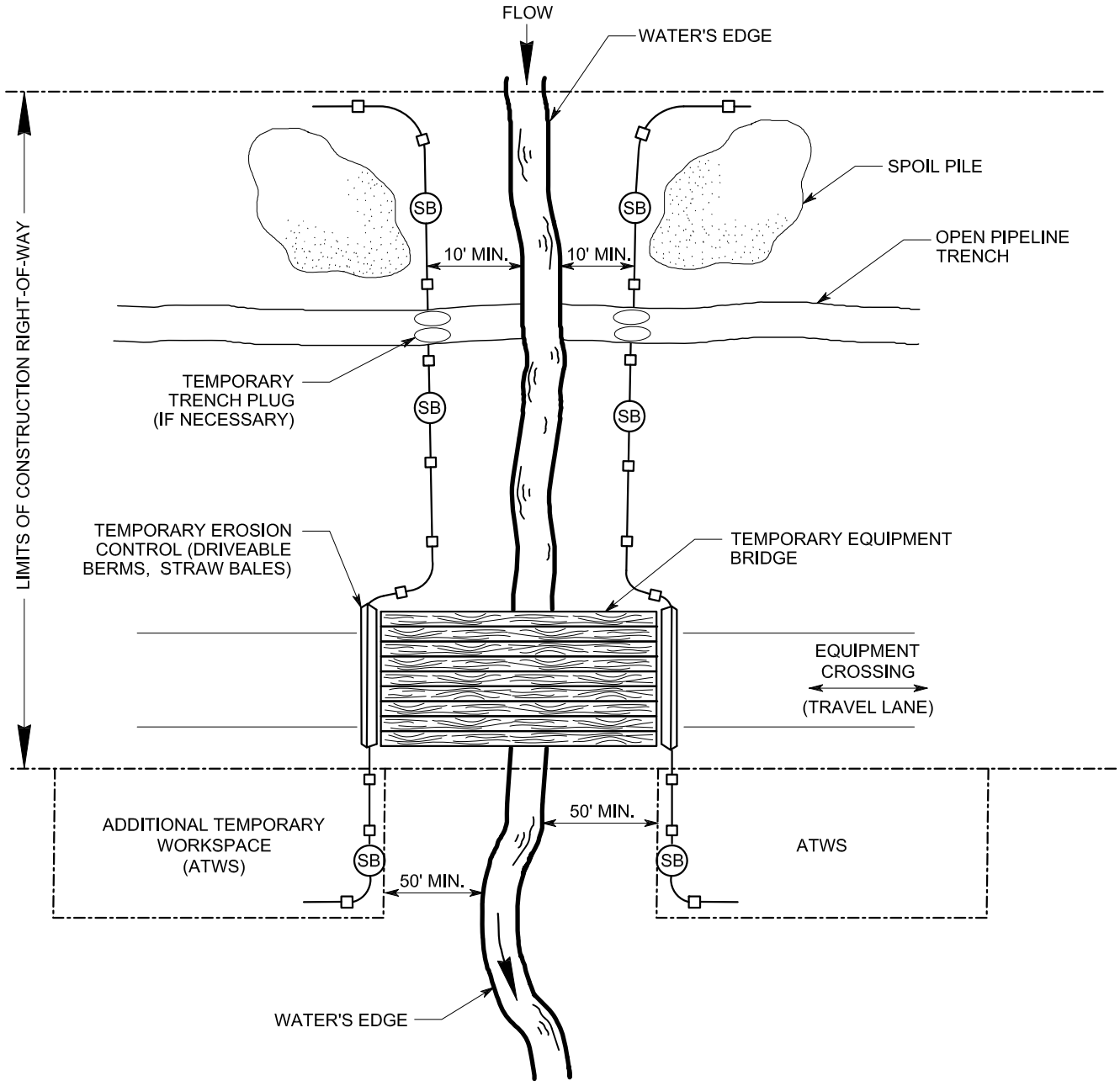
NOTES:

1. IN WETLANDS, EQUIPMENT MATS OR LOW GROUND WEIGHT EQUIPMENT SHALL BE UTILIZED IN SATURATED GROUND CONDITIONS.
2. LIMIT PULLING OF TREE STUMPS AND GRADING TO DIRECTLY OVER TRENCHLINE, EXCEPT IN SITUATIONS THAT THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE SAFETY-RELATED CONSTRUCTION CONSTRAINTS REQUIRE GRADING OR THE REMOVAL OF STUMPS FROM UNDER THE WORKING SIDE.
3. SEGREGATE THE TOP 12 INCHES OF TOPSOIL WITHIN THE DITCHLINE IN WETLANDS, EXCEPT IN AREAS WHERE STANDING WATER IS PRESENT OR SOILS ARE SATURATED.
4. DO NOT TRENCH THE WETLAND UNTIL THE PIPELINE IS ASSEMBLED AND READY FOR LOWERING IN.
5. CONCRETE COATING OR PIPELINE WEIGHTS OF AN APPROPRIATE TYPE, WEIGHT AND SPACING WILL BE USED AS REQUIRED. NO CONCRETE COATING ACTIVITIES WITHIN 100 FEET OF A WETLAND OR WATERBODY BOUNDARY, UNLESS THE LOCATION IS AN EXISTING INDUSTRIAL SITE DESIGNATED FOR SUCH USE.
6. INSTALL SEDIMENT BARRIERS (SB) ALONG THE EDGE OF THE CONSTRUCTION RIGHT-OF-WAY AS NECESSARY TO CONTAIN SPOIL AND SEDIMENT WITHIN THE CONSTRUCTION RIGHT-OF-WAY THROUGH WETLANDS.
7. IN THE TRAVEL LANE, SEDIMENT BARRIERS MAY CONSIST OF REMOVABLE SEDIMENT BARRIERS OR DRIVABLE BERMS.
8. AT THE BASE OF SLOPES (GREATER THAN 5 PERCENT) THAT ARE LESS THAN 50 FEET FROM A WETLAND, INSTALL AND MAINTAIN TEMPORARY SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY UNTIL REVEGETATION IS SUCCESSFUL.
9. NO FERTILIZER OR LIME SHALL BE USED WITHIN WETLANDS.
10. DEWATER THE TRENCH IN A MANNER THAT DOES NOT CAUSE EROSION OR RESULT IN SILT-LADEN WATER FLOWING INTO ANY WETLAND.

TYPICAL STANDARD WETLAND CROSSING

FIGURE WC-1

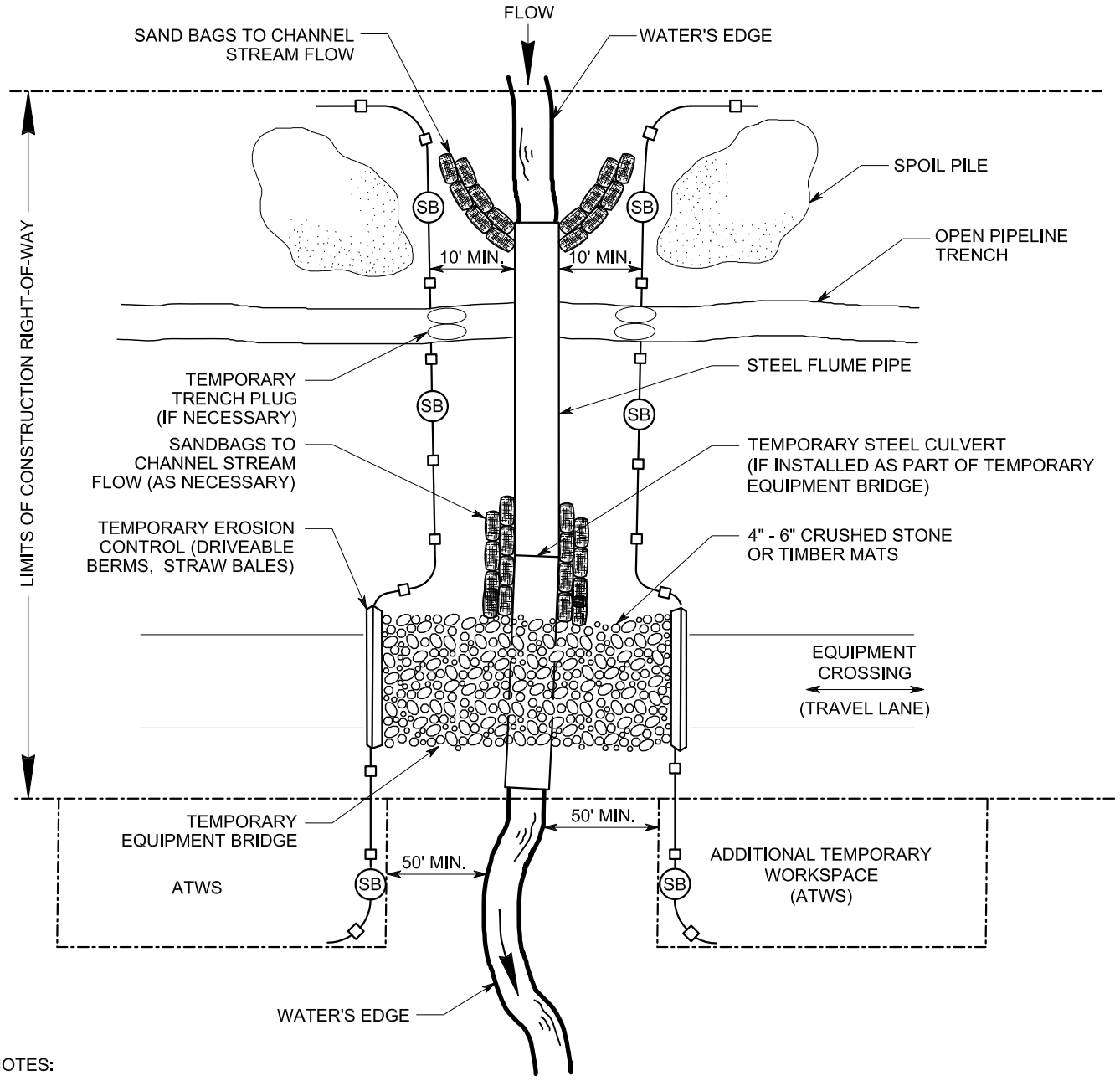
DWG. ES-0032 REV.



NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/OR STRAW BALES, OR APPROPRIATE MATERIALS.
2. FOR MINOR WATERBODIES, COMPLETE TRENCHING AND BACKFILLING IN THE WATERBODY (NOT INCLUDING BLASTING OR OTHER ROCK BREAKING MEASURES) WITHIN 24 CONTINUOUS HOURS. 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.
3. FOR INTERMEDIATE WATERBODIES (>10 FEET TO 100 FEET WIDE MEASURED WATER'S EDGE TO EDGE), COMPLETE TRENCHING AND BACKFILLING IN THE WATERBODY (NOT INCLUDING BLASTING OR OTHER ROCK BREAKING MEASURES) WITHIN 48 CONTINUOUS HOURS, UNLESS SITE-SPECIFIC CONDITIONS MAKE COMPLETION WITHIN 48 HOURS INFEASIBLE.

	TYPICAL WET WATERBODY CROSSING	FIGURE WC-2
		DWG. ES-0033 REV.



NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/ OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS.
2. SAND BAGS MUST BE FILLED WITH SAND FREE OF SILT, ORGANICS, AND OTHER MATERIAL.
3. ENSURE SANDBAGS ARE INSTALLED BEFORE PLACING FLUME PIPE.
4. ALIGN FLUME(S) TO PREVENT BANK EROSION AND STREAM SCOUR.
5. CONDUCT ALL IN-STREAM ACTIVITY (EXCEPT BLASTING OR OTHER ROCK BREAKING MEASURES) WITH THE FLUME(S) IN PLACE. FLUME PIPE(S) MAY NOT BE REMOVED FOR LOWERING IN PIPE OR INITIAL STREAMBED RESTORATION EFFORTS.
6. THE ENDS OF THE FLUME AND CULVERT MUST EXTEND TO AN UNDISTURBED AREA.
7. CONTRACTOR TO DETERMINE ACTUAL NUMBER AND SIZE OF FLUMES AND CULVERTS REQUIRED BASED ON STREAM WIDTH AND STREAM FLOW RATE AT THE TIME OF CROSSING.
8. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A FILTER BAG OR DEWATERING STRUCTURE PRIOR TO DISCHARGING INTO ANY SURFACE WATER.

TYPICAL FLUME WATERBODY CROSSING

FIGURE WC-3

DWG. ES-0034 REV.

I.G. ES0034.DWG

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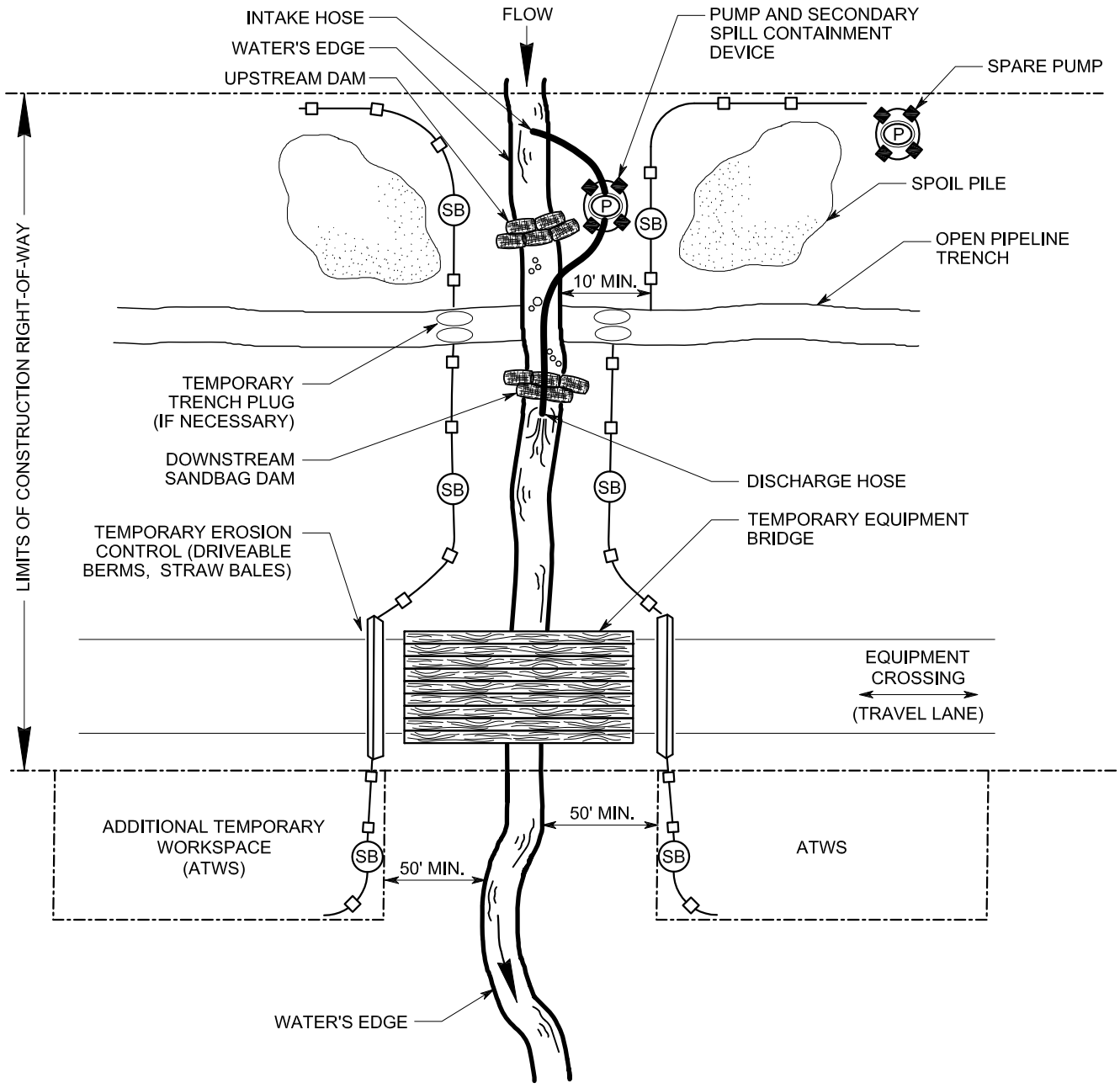


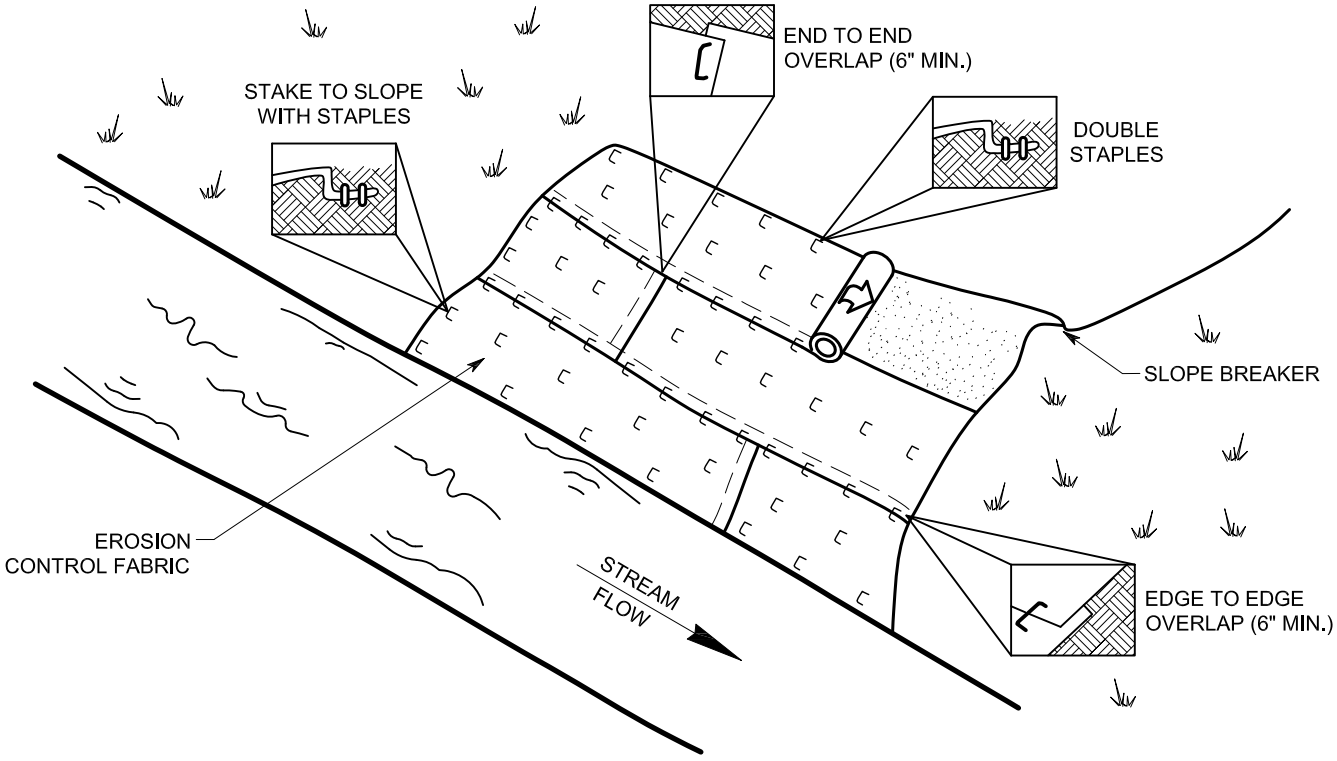
NOTES:

1. (SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE AND/ OR STRAW BALES, OR OTHER APPROPRIATE MATERIALS
2. INSTALL AND SEAL SANDBAGS UPSTREAM AND DOWNSTREAM OF THE CROSSING.
3. CREATE AN UPSTREAM SUMP USING SANDBAGS IF NATURAL SUMP IS UNAVAILABLE FOR THE INTAKE HOSE.
4. EXCAVATE ACROSS STREAM CHANNEL FOLLOWING WATER REROUTING.
5. DO NOT REFUEL OR STORE FUEL WITHIN 100 FEET OF THE WATERBODY. IF NOT FEASIBLE, ALTERNATIVE METHODS MUST BE APPROVED BY ENVIRONMENTAL INSPECTOR.
6. MONITOR PUMPS AT ALL TIMES DURING STREAM CROSSING PROCEDURE.
7. (P) USE SUFFICIENT PUMPS, INCLUDING ONSITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOW.
8. SCREEN PUMP INTAKES. PREVENT SCOURING WITHIN WATERBODY BY HOSE DISCHARGE.

TYPICAL DAM-AND-PUMP WATERBODY CROSSING

FIGURE WC-4

DWG. ES-0035 REV.



NOTES:

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.

2. EROSION CONTROL BLANKETS SHALL MEET THE REQUIREMENTS SPECIFIED IN THE E&S PLAN AND/OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.

3. 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.

4. BLANKETS SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS OR AS STATED BELOW:

   - EXTEND TOP OF BLANKET 2 FEET PAST THE UPPER EDGE OF THE HIGH WATER MARK. IF A SLOPE BREAKER IS PRESENT ON THE APPROACH SLOPE, BEGIN THE BLANKET ON THE UPHILL SIDE OF THE SLOPE BREAKER.
   - INSTALL BLANKET(S) ACROSS THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
   - ANCHOR ("KEY") THE UPSTREAM EDGE OF THE BLANKET(S) INTO THE SLOPE USING A 6" DEEP TRENCH. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING TRENCH
   - OVERLAP THE EDGES OF PARALLEL BLANKETS A MINIMUM OF 6". PLACE THE UPPER BLANKET OVER THE LOWER BLANKET (SHINGLE STYLE) AND STAPLE EVERY 12" ALONG THE LENGTH OF THE EDGE.
   - WHEN BLANKET ENDS ARE ADJOINED, PLACE THE UPSTREAM BLANKET OVER THE DOWNSTREAM BLANKET (SHINGLE STYLE) WITH APPROXIMATELY 6" OF OVERLAP AND STAPLE THROUGH THE OVERLAPPED AREA EVERY 12".
   - STAPLE DOWN THE CENTER OF THE BLANKET(S), THREE STAPLES IN EVERY SQUARE YARD.

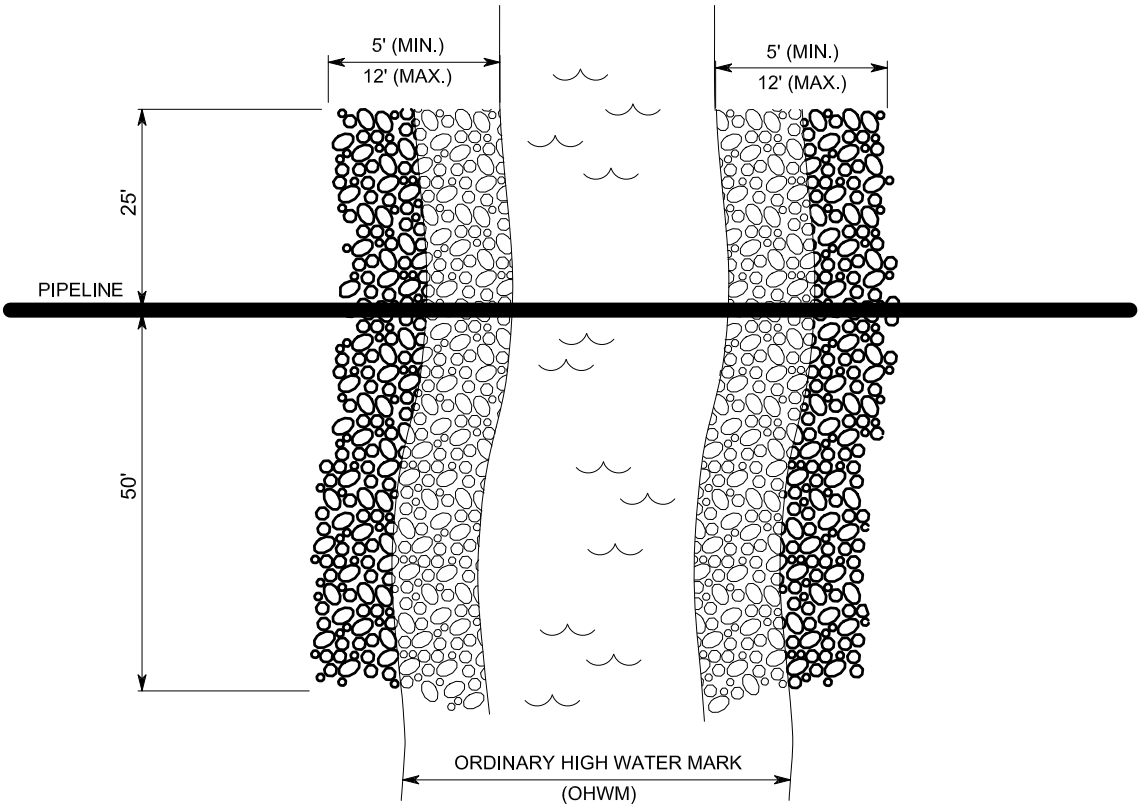
5. IN LIVESTOCK AREAS WHERE EROSION CONTROL BLANKETS ARE APPLIED TO THE STREAMBANKS, FENCING MAY BE USED IF NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER.

6. MONITOR WASHOUTS, STAPLE INTEGRITY OR BLANKET MOVEMENT. REPLACE OR REPAIR AS NECESSARY.

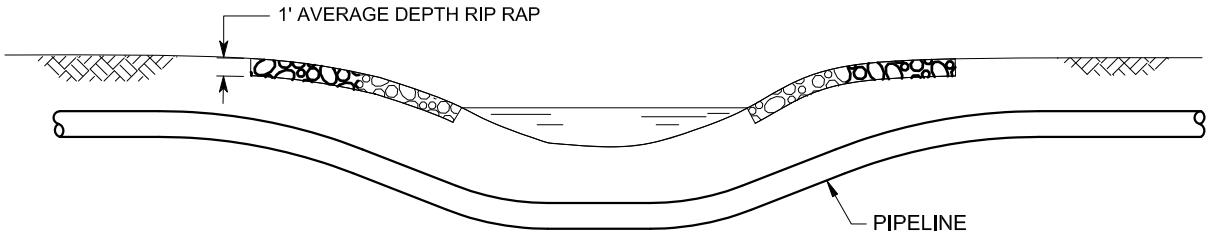
7. DO NOT USE SYNTHETIC MONOFILAMENT MESH / NETTED MATERIALS IN AREAS DESIGNATED AS SENSITIVE WILDLIFE HABITAT, UNLESS THE PRODUCT IS SPECIFICALLY DESIGNED TO MINIMIZE HARM TO WILDLIFE.

NOT TO SCALE

	TYPICAL EROSION CONTROL BLANKETS ON STREAMBANKS	FIGURE WC-5
		DWG. ES-0036 REV.



PLAN VIEW



CROSS-SECTION VIEW

NOTES:

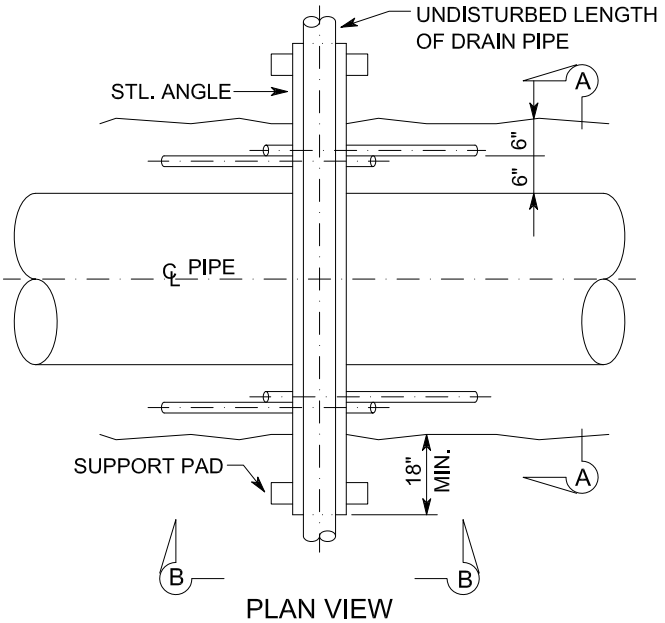
1. RIP-RAP SHALL NOT EXCEED 500 FEET IN LENGTH ALONG THE BANK.
2. RIP-RAP WILL NOT EXCEED AN AVERAGE OF ONE CUBIC YARD PER RUNNING FOOT BELOW THE OHWM.
3. RIP-RAP INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE PERMITS.
4. RIP-RAP MUST BE CLEAN AND FREE OF SOIL AND DEBRIS.
5. RIP-RAP SHALL NOT BE PLACED IN A MANNER THAT IMPAIRS SURFACE WATER FLOW.
6. GEOTEXTILE FABRIC MAY BE INSTALLED BELOW RIP-RAP.

NOT TO SCALE

TYPICAL RIP-RAP PLACEMENT

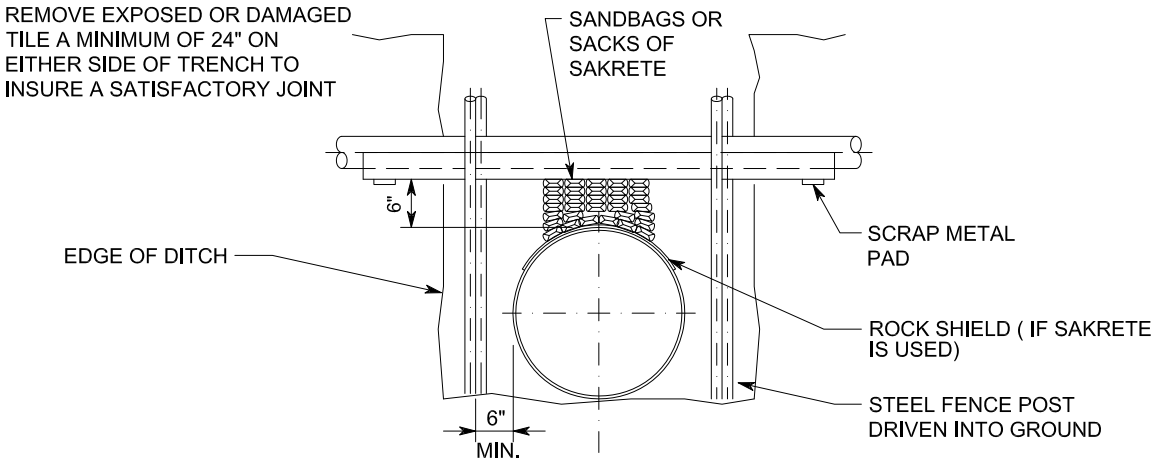
FIGURE WC-6

DWG. ES-0037 REV.



PLAN VIEW

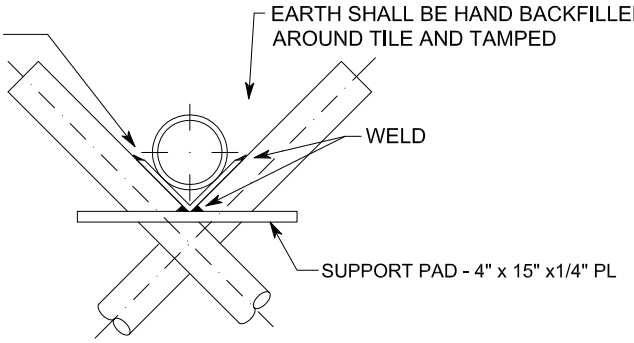
N.T.S.



SECTION "A-A"

N.T.S.

TO SUPPORT 4" & 6" TILE USE 4" x 1 / 4" ANGLE
" 8" " 6" x 7/ 16" "
" 10" " 6" x 7/ 16" "
" 12" " 8" x 1 / 2" "
" 16" " 8" x 1 / 2" "



SECTION "B-B"

N.T.S.

NOTE:
USE OF SAKRETE SHALL REQUIRE PRIOR
COMPANY APPROVAL.

DRAIN TILE REPAIR PROCEDURE

FIGURE SU-1

DWG. ES-0038 REV.

I.G. ES0038.DWG

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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.

c) "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).

d) 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./acre PLS
(For use only in disturbed pasture areas with landowner'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 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 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)	2.5 tons/acre
Fertilizer (6-12-12)	950 lbs./acre
Mulch (Oats, Wheat or Bermudagrass Straw)	3.0 tons/acre

Seed Mixture[1]

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	40 lbs/acre PLS

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN &

PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN for CONSTRUCTION PROJECTS

Project: ATLANTIC BRIDGE PROJECT

Prepared By:

Spectra Energy Partners, LP
Environmental Construction Permitting
5400 Westheimer Court
Houston, TX 77056-5310

Effective February 18, 2003

Updated: July 2015

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LIST OF APPENDICES

ABBREVIATIONS AND DEFINITIONS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CI	Chief Inspector (Company employee or Contractor Employee performing the duties of the onsite Construction Manager or Engineer)
Company	Spectra Energy Transmission, LLC
Company SC	Company Spill Coordinator (The Environmental Inspector or the Chief Inspector)
Contractor	Third party service provider performing construction activities for the Company on property owned or under the control of the Company. This role may be filled by the Company on small projects constructed by Company personnel and equipment.
Contractor SC	Contractor Spill Coordinator
CWA	Clean Water Act
DOT	U. S. Department of Transportation
E&C	Engineering & Construction
ECP	Environmental Construction Permitting
EHS, EH&S	Environmental Health and Safety
EI	Environmental Inspector (Company employee or Contractor Employee performing the duties of onsite environmental specialist overseeing Contractor compliance with environmental permit conditions, laws and regulations)
E&SCP	Erosion & Sedimentation Control Plan
FERC	Federal Energy Regulatory Commission
FWPC	Federal Water Pollution Control Act
HDD	Horizontal Directional Drill
JSA	Job Safety Analysis
MSDS	Material Safety Data Sheets
ppm	Parts per Million
Environmental Lead	Environmental Construction Permitting specialist assigned to the project
OPA	Oil Pollution Act
RCRA	Resource Conservation and Recovery Act
SPCC Plan or Plan	Spill Prevention, Control and Countermeasure Plan
TSCA	Toxic Substances Control Act

1.0 PURPOSE/PLAN OBJECTIVE

Spectra Energy Transmission, LLC ("Company") has prepared this Spill Prevention, Control and Countermeasure ("SPCC") Plan ("Plan") for construction projects in the United States. The purpose of this Plan is to reduce the probability and risk of a potential spill or release of oil or hazardous materials by the Company or Contractor during construction-related activities, by providing training to the Company and Contractor and expediting spill response and cleanup. This plan is not intended to meet the requirements of existing facility operations.

The Plan's specific objectives are to identify and address:

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

This plan has been prepared to meet the requirements of the Federal Energy Regulatory Commission's ("FERC's") *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures), the Oil Pollution Act ("OPA"), the Federal Water Pollution Control Act ("FWPC"), the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") of 1980, the Resource Conservation and Recovery Act ("RCRA"), the Toxic Substances Control Act ("TSCA") and the Clean Water Act ("CWA").

The Company Environmental Construction Permitting ("ECP") group is responsible for the development and maintenance of this Plan. The Plan will be distributed to the Company Engineering & Construction ("E&C") Department's teams and associated Company personnel and will be included in the construction contract. It is the responsibility of the E&C teams to distribute to any necessary Contractors for implementation.

This Plan outlines both Company and Contractor responsibilities by topic. The Contractor is responsible for implementation of the Plan. In the absence of a Contractor, the Company will be responsible for both Company and Contractor responsibilities as they are laid out in this Plan.

A copy of the Plan must be on site during active construction and should also be maintained at the closest construction field office.

2.0 TRAINING

The Company requires all Contractor and Company personnel engaged in any construction activity to receive training in the implementation of the Plan prior to the commencement of on-site construction related activities.

Site visitors are to be given a brief review of the Plan as part of their orientation on safety and emergency procedures prior to the start of any on-site activities.

Contractor Responsibility

The Contractor will be responsible for the following:

- Keep training records
- Perform training briefings through ongoing meetings like tailgates and the daily project Job Safety Analysis ("JSA") that include:
  - Precautionary measures to prevent spills;
  - Potential sources of spills, including equipment failure or malfunction;
  - Standard operating procedures in the event of a spill;
  - Applicable notification requirements;
  - Equipment, materials and supplies available for clean-up of a spill;
  - Hazardous waste identification procedures;
  - Generation and proper handling of all non-hazardous waste, hazardous waste, and other toxic substances;
  - Proper storage, labeling, transportation and disposal of non hazardous and hazardous waste; and
  - Sample collection procedures.

Company Responsibility

The Company Chief Inspector ("CI"), Environmental Inspector ("EI"), or their designate will perform the following:

- Teach awareness-level training at the initial project environmental training session;
- Ensure further training is available for other new project personnel; and
- Audit training records kept by the Contractor as necessary.

3.0 PRE-PLANNING - MATERIAL INVENTORY AND DOCUMENTATION

Contractor Responsibility

The Contractor will be responsible for the following **prior** to the start of construction:

- Develop an inventory of all oil/hazardous material stored or used during construction;
- Complete Tables I, II, IV, V and VI (see Appendix A);
- Obtain material safety data sheets ("MSDS") (Appendix B) for all hazardous and non-hazardous substances listed in Table I (see Appendix A);
- Prepare a basic facility diagram or sketch for any storage areas, including pipe yards and temporary storage areas. The diagram should include locations of oil-filled containers, direction of run-off, emergency evacuation routes and assembly areas (see Appendix E); and
- Submit the required Tables, MSDS, and signature pages to the ECP's Environmental Lead for review and approval.

Company Responsibility

- Complete Tables III (see Appendix A);
- Review the Tables, MSDS, and signature pages submitted by the Contractor for approval; and
- Distribute approved Tables, MSDS, and signature pages to include in Plan as Appendices A, B and D.
- Fill out any signature pages or forms (see Appendix D)
    - Management Approval and Cleanup Commitment
    - Certificate of Determination of Substantial Harm Criteria

4.0 SPILL AND LEAK PREPAREDNESS AND PREVENTION

4.1 Prevention and Preparedness

Contractor Responsibility

- Complete Appendix A, Table I, Material and Waste Storage Inventory, and Table VI, Areas for Potential Leaks and Spills, prior to construction;
- Provide spill prevention, containment, and clean up equipment, and keep it available on-site;
- Perform daily inspections of all equipment, storage tanks, and/or container storage areas;
- Repair all leaking equipment, machinery or tools immediately. If items cannot be repaired, remove them immediately from the project site;
- Maintain a minimal spill kit (absorbent diapers, plastic bags, gloves, etc.) for each piece of hydraulically operated equipment and personnel vehicles within the project area;
- Store materials as indicated in the storage facility diagram or sketch provided by the Contractor in Appendix E;
- Submit a secondary containment plan for any hazardous material storage within the project area to the Company for approval **prior** to storage; and
- Obtain written approval from the project CI or EI for hazardous material storage within 100 feet of a wetland or waterbody.

Company Responsibility

- Review any secondary containment or storage plans submitted by the Contractor for approval.

4.1.1 Secondary Containment

Contractor Responsibility

- Single wall tanks shall be provided with temporary secondary containment that will hold at least 110% of the tank capacity of the largest tank inside the containment area;
  - This includes pumps, generators, compressors or other petroleum powered equipment used on site for dewatering and other activities during construction.
- PCB (50 parts per million ("ppm") or greater) storage tanks shall be double-walled or have secondary containment that will hold 200 percent of the tank capacity;
- All containers with a storage capacity greater than 55 gallons shall have temporary containment (see Appendix A, Table I for type of temporary containment); and
- All pumps and other portable fuel burning equipment used during construction will be sited in secondary containment.

4.1.2 Storage/Inspection (Tanks/Containers)

Contractor Responsibility

- Operate only those tanks for fuel and material storage that meet the approval of the Company;
- Elevate tanks a maximum of two feet above grade;
- Inspect vehicle-mounted tanks to ensure all are equipped with flame/spark arrestors on all vents to prevent self-ignition;

- Locate tank storage in areas that are at least 100 feet from all waterbodies, wetlands, and designated municipal watershed areas, with certain exceptions as approved by ECP and listed in Appendix A, Table IV;
- Complete Appendix A, Table IV, Tank and Container Storage Exception Areas, and submit to the Company for approval prior to construction;
- Inspect all tanks daily for leaks and deterioration. The results of all inspections shall be made available to the Company upon request;
- Do not store incompatible materials in sequence in tanks prior to decontamination (A general list of potentially incompatible materials that may be used during construction are included in Appendix A, Table I);
- Store small cans of gasoline, diesel, solvents, etc., within the temporary secondary containment or within secured trailers or vehicles when not in use;
- Replace leaking and/or deteriorated containers as soon as the condition is first detected; and
- Ensure that all container storage and containment areas being used to store hazardous materials or wastes are in compliance with applicable local, state and federal requirements.

4.1.3 Loading/Unloading Areas

Contractor Responsibility

- Transfer liquids and refuel only in pre-designated and pre-approved locations that are at least 100 feet from all waterbodies and wetlands, with certain exceptions as approved by the EI and listed in Appendix A;
- Inspect the area beneath loading/unloading location for spills before and after each use;
- Utilize drip pans at all hose connections while loading/unloading liquids. If a leak or spill occurs, the loading/unloading operation will be stopped and the spill will be contained, cleaned up and collected prior to continuing the operation;
- Inspect all outlets of the tank trucks prior to leaving the loading and unloading area to prevent possible leakage from the truck while in transit;
- Equip any service vehicle used to transport lubricants and fuel with an emergency response spill kit. At a minimum, this kit must include:
  - 25 lbs of granular oil absorbent
  - 10, 48" x 3" oil socks
  - 5, 17" x 17" oil pillows
  - 1, 10" x 4" oil boom
  - 20, 24" x 24" x 3/8" oil mats
  - Garden size, 6 mil, polyethylene bags
  - 10 pair of latex gloves
  - 1, 55-gallon polyethylene open-head drum;
- Equip any service vehicle used to transport lubricants and fuel with a chemical response kit. At a minimum, this kit must include:
  - 1 bag of loose chemical pulp
  - 2 to 3, 17" x 17" chemical pillows
  - 2, 48" x 3" chemical socks
  - 5, 18" x 18" x 3/8" adsorbent mats
  - garden-size, 6 mil, polyethylene bags
  - 10 pair of latex gloves
  - 1, 30-gallon polyethylene open-head drum
  - hazardous waste labels

Company Responsibility

- Personnel shall be present during loading and unloading activities.

5.0 CONTINGENCY PLAN AND EMERGENCY PROCEDURES

All Company and Contractor personnel have responsibilities for spill prevention, control, and countermeasure.

Contractor Responsibility

- Maintain adequate manpower and equipment at the pipe yard or contractor ware yard necessary to divert any spill from reaching waterbodies and wetland areas; and
- Complete Appendix A, Table I, Emergency Response and Personal Protective Equipment, with a list of emergency equipment and storage location.

Company Responsibility

- Complete Appendix A, Table III, Key Emergency Contacts, prior to construction, and update as necessary.

First Responder Responsibility

The first responder is the person who first observes a spill or release of oil or other hazardous materials to the environment.

This person will take the following steps:

- Assess the situation to determine if the situation poses an immediate threat to human health or the environment;
- Identify hazardous material involved, if any;
- Report the spill to the Company Spill Coordinator ("Company SC") and Contractor Spill Coordinator ("Contractor SC") immediately; and
- Standby at a safe distance and keep others away.

Contractor SC Responsibility

- Coordinate the response to all spills which occur as a result of Contractor operations;
- Report the spill to the Company;
- Coordinate with the Company SC; and
- Conduct subsequent site investigations and associated incident reports unless otherwise directed by the Company.

The Contractor SC may be removed by the Company SC as spill response coordinator at the discretion of the Company.

The Contractor SC will direct Contractor personnel to:

- Shut off source of spill or leak as quickly as possible;
- Minimize affected area with appropriate containment or dike/berm;
- Assemble required spill response equipment as required (protective clothing, gear, heavy equipment, pumps, absorbent material, empty drums, etc.);
- Ensure that spilled material is placed in appropriate containers, in accordance with the best management practices and applicable laws and regulations;

- Properly label and store containers in accordance with applicable requirements; and
- Ensure that all spill response equipment is fully functional. Any equipment that cannot be reused shall be replaced.

Company SC Responsibility

The Company SC will be responsible for overseeing the Contractor SC's clean up of all spills of oil or hazardous materials.

Upon notification, the Company SC shall:

- Assess situation for potential threat to human health, environment and the neighboring community;
- Implement evacuation, if necessary;
- Activate emergency shutdown, if necessary;
- Control source as conditions warrant;
- Ensure that incompatible materials are kept away from the impacted area;
- Keep any potential ignition source away from the impact area, if spilled material is flammable;
- Coordinate sampling, disposal and equipment decontamination with Environmental Health and Safety ("EHS") in Houston, if necessary;
- For spills of PCBs, contact EHS for special spill response requirements related to PCB spills;
- Assist with the coordination of cleanup and disposal activities;
- If necessary, contact outside remediation services, in coordination with EHS, to assist with clean up;
- Notify EHS of all quantities and description of wastes to be handled by EHS;
- Complete the *EH&S Incident Investigation Form* (see Appendix C) and distribute accordingly;
- For unanticipated release of hydrostatic test waters, notify state contact if required by state permit, in accordance with timeframes required by state permit;
- Review permits to determine if immediate water sampling of test water is required and arrange if necessary; and
- Determine if local Right of Way agent will notify public officials (e.g. township manager and/or mayor).

6.0 SPILL CLEAN-UP/WASTE DISPOSAL PROCEDURES OF HYDROSTATIC TEST WATER

6.1 Oil/Fuel and Hazardous Material Spills and Unanticipated Releases

Contractor Responsibility

- Ensure no immediate threat to surrounding landowners or environment;
- Identify/verify the material and quantity released;
- Review MSDS to determine the proper handling;
- Ensure that Personal Protective Equipment and containers are compatible with the substance;
- Remediate small spills and leaks as soon as feasible. Use adsorbent pads whenever possible to reduce the amount of contaminated articles;
- Restrict the spill by stopping or diverting flow to the oil/fuel tank;
- If the release exceeds the containment system capacity, immediately construct additional containment using sandbags or fill material. Every effort must be made to prevent the seepage of oil into soils, wetlands and surface waters;
- Block off drains and containment areas to limit the extent of the spill. For chemical spills, never wash down a spill with water;
- If a release occurs into a storm drain or stream, immediately pump any floating layer into drums. For high velocity streams, place oil booms or hay bales between the release area and the site boundary and downstream of affected area. As soon as possible, excavate contaminated soils and sediments within approved work areas;
- Collect and reclaim as much of the spill as possible using a hand pump or similar device. Containerize contaminated soils in an appropriate Department of Transportation ("DOT") container in accordance with applicable requirements. Never place incompatible materials in the same drum;
- For larger quantities of soils, construct temporary waste piles using plastic liners placing the contaminated soils on top of the plastic and covered by plastic. Plastic-lined roll-off bins should be leased for storing this material as soon as feasible;
- Properly label any drums, containers or storage piles in accordance with applicable requirements;
- Move drum to secure staging or storage area;
- Decontaminate all equipment in a contained area and collect fluids in drums;
- Document and report cleanup activities to the Company SC as soon as feasible; and
- If environmentally sensitive resources (wetlands, waterbodies) exist in the area, ensure that Best Management Practices as described in Company's Erosion &Sedimentation Control Plan ("E&SCP") are utilized to minimize impact to these resources.

Company Responsibility

- If necessary, arrange for sampling the substance for analysis and waste profiling, according to instructions from the Company Standard Operating Procedures, and/ or EHS;
- Document and report activities to EHS as soon as feasible.

6.2 Disposal of Contaminated Materials/Soils

For Company and Contractor protocol on the disposal of contaminated materials, soils, or any other waste materials, please see the Company Waste Management Plan.

6.3 Notification

Company Responsibility

- The Company SC shall notify the Emergency Spill Hotline at (800) 735-6364 and those listed in Appendix A, Table III, immediately for spills that meet any of the following criteria:
  - one pound or more of a solid material (excluding Horizontal Directional Drill ("HDD") mud) spilled on land;
  - five gallons or more of a liquid spilled on land;
  - creates a sheen on water; or
  - unanticipated release of hydrostatic test water.
- If necessary, notify the local fire department, law enforcement authority, or health authority as appropriate. The following information should be provided:
  - the name of the caller and callback number;
  - the exact location and nature of the incident;
  - the extent of personnel injuries and damage;
  - the extent of release; and
  - the material involved and appropriate safety information.
- An incident report form should be filled out following containment and cleanup of the spill or release. Incident data should be gathered using the *EH&S Incident Investigation Form* (see Appendix C) and should be sent to the appropriate ECP project manager for records retention and entry into the EPASS/ILP database.

7.0 HOUSEKEEPING PROGRAM

7.1 Construction Area

Contractor Responsibility

- Maintain construction area in neat and orderly manner; and
- Routinely collect and properly dispose of all trash off-site.

7.2 Contractor Yards/Ware Yards

Contractor Responsibility

- Produce a "site specific" plan to address storage, spill prevention and overall yard organization for all contractor yards and ware yards. Contractor yard "site specific" plans should include the following:
  - facility name;
  - physical address;
  - longitude and latitude coordinates;
  - directions to facility (including road names);
  - date of first oil and hazardous material storage;
  - location of oil and hazardous material containers greater than 55 gallons;
  - loading/unloading areas;
  - direction of drainage flow; and
  - primary and secondary evacuation routes.
- Provide adequate aisle spacing to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment as necessary in storage areas;
- Ensure similar housekeeping practices enforced in construction areas are also implemented in storage areas; and
- Any facility with an aggregate aboveground oil storage capacity greater than 1,320 US gallons but less than 10,000 gallons must have the plan self-certified by the owner or operator of the qualified facility or a licensed Professional Engineer. Any facility with an aggregate aboveground oil storage capacity greater than 10,000 gallons must have the plan reviewed and certified by a licensed Professional Engineer.

7.3 Security

Contractor Responsibility

- Hazardous wastes and waste containing PCBs greater than 50 ppm will be stored in a secured location (i.e. fenced, locked, etc.). Fuel storage areas will be located to minimize, as much as possible, tampering by unauthorized personnel during non-operational hours.
- Complete Table V, Waste Storage Security Information, in Appendix A, prior to construction.

Company Responsibility

- Review Table V, Waste Storage Security Information in Appendix A, that has been prepared by the Contractor prior to construction.

Project Signatures:

Company Spill Coordinator:

Print Name

Signature Date

Contractor Spill Coordinator

Print Name

Signature Date

APPENDIX A - TABLES

TABLE I – MATERIAL AND WASTE INVENTORY

Oil and Fuel to be used or stored on site during construction:

STORAGE CAPACITY OF OIL FILLED-CONTAINERS

Container Number[a/]	Storage capacity (volume)	Location

[a/] The reference container numbers should correspond to the facility diagram in Appendix E.

Commercial Chemicals to be used or stored on site during construction:

Hazardous and Non-Hazardous Wastes to be used or stored on site during construction:

Incompatible Materials to be used or stored on site during construction:

Type of Temporary Containment containers to be used:

TABLE I TO BE COMPLETED BY CONTRACTOR
Prior to the Start of Construction and updated as necessary

TABLE II – EMERGENCY RESPONSE AND PERSONAL PROTECTIVE EQUIPMENT

Spill Response:

Equipment	Quantity	Location

Fire Protection:

Equipment	Quantity	Location

Personnel Protection:

Equipment	Quantity	Location

TABLE II TO BE COMPLETED BY CONTRACTOR
Prior to the Start of Construction and updated as necessary

TABLE III – KEY EMERGENCY CONTACTS

The list of key personnel who will be contacted in the event of an emergency or spill incident include:

1. ***Company Emergency Contacts*** Contact Name Phone Number

Company Spill Coordinator & Environmental
Inspector (within 15 minutes identifying of incident)

24-hour Emergency Spill Hotline -- 1-800-735-6364
(within 15 minutes of identifying incident)

Regional Environmental Coordinator
(within 15 minutes of identifying incident)

ECP's Project Environmental Lead / PM
(notify within 60 minutes of incident & submit
Spill Report Form within 24 hours to ECP PM)

Company Project Manager

Company Environmental Coordinator

Field Construction
Company Construction Coordinator

2. ***Contractor Emergency Contact***

Contractor Spill Coordinator

3. ***Local Authorities*** – As necessary

Emergency contact for Police, Fire & Medical assistance ***Dial 911***

Non-Emergency Local Authorities or Contacts		
Location	**Contact**	**Phone Number**

4. ***Environmental Agencies***

Notification to be made by Regional Environmental Coordinator and ECP's PM

5. ***Potential Environmental Remedial Service Contractors***

Clean Harbors Environmental Services, Inc.	Howard Alexander	(800) 782-8805
Safety-Kleen (FS), Inc	Edward A. Mitchell	(281) 478-7700
U.S.A. Environment	Cesar Garcia	(713) 425-6925 or (832) 473-5354
WRS Infrastructure and Environment Inc	Steve Maxwell	(281) 731-0886

TABLE III TO BE COMPLETED BY COMPANY
Prior to the Start of Construction and updated as necessary

TABLE IV – TANK AND CONTAINER STORAGE EXCEPTION AREAS

Tank and container storage shall be located in areas that are at least 100 feet from all waterbodies and wetlands.

The below exceptions have been approved by ECP and EHS:

1.

2.

3.

4.

TABLE IV TO BE COMPLETED BY CONTRACTOR
Prior to the Start of Construction and updated as necessary

TABLE V – WASTE STORAGE SECURITY INFORMATION

TABLE V TO BE COMPLETED BY CONTRACTOR
Prior to the Start of Construction and updated as necessary

TABLE VI–AREAS FOR POTENTIAL LEAKS AND SPILLS

1.

2.

3.

4.

TABLE VI TO BE COMPLETED BY CONTRACTOR Prior to the Start of Construction and updated as necessary

APPENDIX B - MSDS

APPENDIX C – EH&S INCIDENT INVESTIGATION FORM

APPENDIX D – REQUIRED SIGNATURE FORMS

Management Approval and Cleanup Commitment
40 CFR §112.7

This Spill Prevention, Control and Countermeasures Plan (Plan), including the Spill Procedures Chart and Supplemental Document, which has been prepared in accordance with 40 CFR 112, has been reviewed and approved by the Project Manager. The Project Manager has the level of authority to commit the necessary resources to fully implement this Plan and to contain and clean up any oil discharged at this facility. By signing below, the **Project Manager** also **authorizes station supervisors to expediently commit manpower, equipment, and materials necessary to contain and remove any harmful quantity of oil discharged from this facility** (40 CFR §112.7). **This commitment includes the authority to use company and/or contract personnel and equipment.**

Facility Name: _____

Location: _____

Signature: _____

Name: _____

Date: _____

Title: _____

CERTIFICATE OF DETERMINATION OF SUBSTANTIAL HARM CRITERIA

Facility Name: _____

Location: _____

Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons? Yes___ No ___

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is large enough to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area? Yes___ No ___

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in rule 40 CFR 112 Attachment C-III or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to this Part, Section 13, for availability) and the applicable Area Contingency Plan.
Yes___ No ___

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to this appendix or a comparable formula) such that a discharge from the facility would shut down public drinking water intake? For the purpose of 40 CFR 112, public drinking water intakes are analogous to public water systems as described in 40 CFR 143.2(c)
Yes___ No ___

Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil discharge in an amount greater than or equal to 10,000 gallons within the last five years?
Yes___ No ___

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for this information, I believe that the submitted information is true, accurate, and complete.

Signature: _____
Title: _____

Name (please type or print): _____

Date: _____

APPENDIX E – PIPEYARD / FACILITY STORAGE DRAWING

APPENDIX 1C

Public and Agency Participation Plan

Public and Agency Participation Plan for the Atlantic Bridge Project

October 2015

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LIST OF ATTACHMENTS

Note: Algonquin Gas Transmission, LLC (Algonquin) is an indirect, wholly owned subsidiary of Spectra Energy Partners, LP. Maritimes & Northeast Pipeline, L.L.C. ("Maritimes") is owned by Spectra Energy Partners, LP (77.53%), Scotia Power U.S. Ltd. (12.92%) and Mobil Midstream Natural Gas Investments, Inc. (9.55%).

1.0 PLAN PURPOSE

The purpose of this Public and Agency Participation Plan is to identify stakeholders and potential issues related to the proposed Atlantic Bridge Project (Project), determine appropriate and effective methods of communication, identify responsible parties, document the public consultation process and adhere to communication protocols.

Algonquin Gas Transmission, LLC (Algonquin) and Maritimes & Northeast Pipeline, L.L.C. (Maritimes) are dedicated to seeking out greater involvement from the various affected groups early in the planning so those who are interested may participate in the decision making process. Algonquin is an indirect, wholly owned subsidiary of Spectra Energy Partners, LP. Maritimes is owned by Spectra Energy Partners, LP (77.53%), Scotia Power U.S. Ltd. (12.92%) and Mobil Midstream Natural Gas Investments, Inc. (9.55%).

Our goal is to achieve consensus and settlements among the stakeholders reaching mutually acceptable project designs. We believe earlier and more collaborative involvement will lead to project designs that minimize impacts to landowners, communities and the environment while enabling us to develop more comprehensive applications submitted to the Federal Energy Regulatory Commission (FERC) and other agencies.

1.1 Project Description

The Atlantic Bridge Project, a proposed expansion of the Algonquin and Maritimes systems, will connect abundant North American natural gas supplies with markets in the Northeast United States and the Maritime provinces of Canada. Algonquin and Maritimes are strategically positioned to answer the region's need for more domestic, clean-burning natural gas. The additional supply will enhance the reliability of energy throughout the New England region, moderate future natural gas and electricity price volatility, and generate savings for homeowners, businesses and manufacturers.

During the Pre-filing process, the scope of the project has evolved as we engage the public and refine the pipeline facilities in order to minimize impacts and meet customer obligations. Facilities currently proposed along the existing Algonquin system include construction of approximately 6.3 miles of 42-inch diameter mainline take-up and relay pipeline in New York and Connecticut; construction of one new compressor station with 7,700 horsepower in Weymouth, Massachusetts; addition of two new compressor units, for a total of 14,000 additional horsepower, at two existing compressor stations in Connecticut; replacement of two existing compressor units, for a total of 1,500 horsepower, at an existing compressor station in Connecticut; use of reserve capacity in one compressor unit, for a total of 3,300 additional horsepower at an existing compressor station in New York; construction of a new metering and regulating station in Connecticut; and modifications to existing metering and regulating in New York, Connecticut, Massachusetts and Maine.

1.2 Values and Principles

Our core values guide our stakeholder outreach programs and activities as well as the work of our employees and contractors.

In conducting our business, we value our stakeholders by:

- ✓ ***Stewardship*** - Demonstrating a commitment to environmental responsibility and vibrant communities.

- ✓ ***Respect for the Individual*** - Embracing diversity and inclusion, enhanced by openness, sharing, trust, leadership, teamwork and involvement.
- ✓ ***Integrity*** - Ethically and honestly doing what we say we will do.
- ✓ ***Win-Win Relationships*** - Having relationships that focus on the creation of value for all parties.
- ✓ ***Initiative*** - Having the courage, creativity and discipline to lead change and shape the future.

While these values guide our stakeholder outreach approach, we tailor our activities for each project, ensuring that our dialogue with stakeholders is open, transparent and meaningful.

Our Stakeholder Engagement Principles**,** developed to guide our interactions, are as follows:

- We will be respectful of and considerate to all stakeholders.
- We will engage with those affected by our business.
- We will consider stakeholder-identified issues in our decision-making process.
- We will provide timely and accurate communications using accessible information and language.
- We will be transparent in our processes and communications.

Having established principles and knowing where, when and how to engage with external stakeholders is critical to our business success.

1.3 Management Commitment

Overview

Our stakeholder outreach activities are endorsed by our executive management team. We have a company-wide and customized program for each activity and project. We have communication plans that provide our employees the "who, what, where and when" protocols when conducting business.

To ensure effective dialogue with our stakeholders, we rely on one-on-one discussions, face-to-face meetings, open houses, websites, legal notices, media outreach and individual letters sent via mail.

Project Development Stakeholder Outreach

During project development, stakeholder consultation is critical because many people along the proposed and existing pipeline route may not be familiar with natural gas pipelines or our company.

The key criteria inherent in implementing a successful stakeholder consultation plan are the ability and knowledge to explain a project's benefits and its potential impacts; to respond to questions, concerns and issues; and, whenever possible, to mitigate potential impacts. In order to sustain a successful program, we seek, involve, inform and respond to stakeholders by implementing the planning process early, with open and collaborative activities. We execute our plans by engaging in and sustaining understandable, accurate and timely dialogue with our stakeholders. This process guides us toward building and maintaining win-win relationships.

The Atlantic Bridge Project has developed as the market demands and our customers' needs change. The Project is subject to government approval. We will file with the FERC an Abbreviated Application for a Certificate of Public Convenience and Necessity and for Related Authorizations (Application).

Our mission is to work with the Atlantic Bridge Project's stakeholders to define an acceptable project design. Our vision is to involve affected landowners, other interested citizens, public officials and government agencies early in the project planning process to determine the route. It is imperative to us that our employees and Project team understand the importance of public participation. The underpinnings of this plan are to inform, listen to, and record stakeholders' ideas and knowledge of the area and environment. Our values and principles include a commitment to being honest and open and following through with stakeholders' concerns and issues.

We manage all projects and operations in a manner that protects the environment and the health and safety of employees, customers, contractors and the public. Protection of human life is of highest priority, and actions undertaken to protect the environment or our assets must reflect this philosophy. We rely on each employee and contractor to support and actively participate in our environmental, health and safety program.

2.0 PROJECT DEVELOPMENT

The Atlantic Bridge Project team has been discussing the need for the Project with landowners, agencies, public officials and other stakeholders. We explain supply and demand, energy reliability, pipeline construction, operations and safety, and the need for the Project at opportunities such as voluntary Landowner Informational Meetings, public Open Houses and meetings with stakeholders. In identifying issues important to landowners and other stakeholders, we seek assistance from state agencies and commissions, the Energy Information Administration and regional and local entities. In addition to sharing information about the benefits of the Atlantic Bridge Project, we are open to issues and concerns (e.g., Project construction activities aligning with landowners', communities' and businesses' activities, environmental needs, right-of-way requirements, etc.).

As part of determining potential stakeholders for the Atlantic Bridge Project's preliminary and proposed routes, we identified and are continually contacting the following:

- Governors;
- Federal, state, county and local public officials;
- Federal, state and local permitting agencies;
- Energy agencies;
- FERC staff; and
- Landowners.

We continue to identify other stakeholders interested in the Project.

Proper documentation is being completed with regard to conversations, meetings, and phone/visitor logs so we can track a call, visit, email or letter and the issues/concerns raised from initial contact through all subsequent contacts to final resolution. Our goal is to be responsive to all participating agencies, landowners and stakeholders.

2.1 Atlantic Bridge Project Team

The Atlantic Bridge Project's team members include representatives from engineering, right-of-way, legal, environmental, stakeholder outreach, public relations, government relations, operations, regulatory affairs, and business development.

2.2 Team Training

All facets of our public consultation are discussed with and supported by our Atlantic Bridge Project Team.

Our land agents and survey crews participate in Public Consultation Training. The training includes appropriate communication, participation and documentation practices with stakeholders.

All land agents are trained in project-appropriate research methods with regard to determining property ownership and legal descriptions. All receive training on negotiating skills that include appropriate listening skills. Reflective listening is a vital part of the stakeholder/agent communication process. All have extensive training in contracting and documentation, including fact checking and quality control.

2.3 Route/Corridor Planning

The proposed route/corridor is selected based upon engineering, construction, environmental and stakeholder considerations that include:

- Maximizing the use of existing corridors;
- Minimizing residential and business impacts;
- Minimizing impacts to the environment;
- Minimizing interference with future development; and
- Minimizing disruptions during construction.

The pipe to be specified for the Atlantic Bridge Project will meet or exceed the class location requirements of the U.S. Department of Transportation regulations.

2.4 Map

A vicinity map is included as Attachment 1.

3.0 PUBLIC PARTICIPATION

We believe public participation strengthens our connection with people living and working near the pipeline and is critical to the successful completion of the Project.

When the route is being determined, we involve many landowners within a wide corridor called the "study corridor" of the preliminary route. We mail to landowners Project description letters and request survey permission, and we telephone landowners and follow up with face-to-face contacts. We also hold voluntary Landowner Informational Meetings and public Open Houses along the preliminary route and contact local, state and federal public officials.

To address the concerns of residents living and working along the proposed pipeline route, we believe it is essential to provide pipeline information to help landowners understand how to protect their families and their property. This information has been created keeping in mind that it should be simple, credible, available and personal.

We respond to questions through our toll free number and website.

3.1 Public Outreach

We are implementing and coordinating the project activities that occur during the Pre-Filing and post-Application timeframe. There are a number of separate components to the stakeholder outreach actions that we undertake:

- Developing our philosophy of outreach and stating our commitment;
- Ensuring landowner, government and agency participation;
- Training company representatives and land agents;
- Providing a toll free number and website for easy access;
- Developing and implementing a Public and Agency Participation Plan;
- Collecting data and responding to stakeholders; and
- Having a plan for potential mitigation and compensation.

3.1.1 Identification of Issues

Landowner

Throughout the development, construction and operation of the Atlantic Bridge Project, we emphasize the importance of landowner and community communications.

We sent letters to landowners providing them with information on the Project and requesting survey permission. Communication with affected stakeholders will continue after we submit our Application to the FERC.

Further, we held 15 voluntary Landowner Informational Meetings in communities with proposed facilities during September and October 2014 and January 2015. To announce the Landowner Informational Meetings, we mailed letters to landowners and public officials.

Sample letters are being provided as part of the Application filing.

See Attachment 3 for a list of voluntary Landowner Informational Meetings.

Environmental

Our pipeline operations and past projects in New York, Connecticut, Massachusetts and Maine, where the Project facilities are proposed, have involved working with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, states' environmental protection departments, states' conservation and natural resources departments, and states' historic preservation offices, and successfully implementing impact mitigation actions for numerous natural and cultural resource issues. Knowing that developing the Atlantic Bridge Project may result in impacts to resources, we are engaging these agencies to seek guidance on specific issues.

3.1.2 Resolution of Issues

Resolutions of issues are documented in our database and updated on an ongoing basis.

3.1.3 Response to Comments

Project Team representatives are documenting all comments and responding as appropriate.

3.1.4 Communication Protocol

Pre-Filing and post-Application activities are and will be part of a coordinated plan involving many facets of the Project and team. Stakeholder communication is coordinated as needed.

3.2 Access to Land

Project introduction letters were mailed to affected landowners beginning in July 2014, with letters requesting survey permission mailed subsequently.

Sample letters are being provided as part of the Application filing.

3.2.1 Land Agent Contacts

Contacts have been made with 1,556 landowners living along the study corridor of the preliminary route and abutting existing facilities. Currently, there are approximately 178 directly impacted landowners along the entire proposed route**,** 126 abutting landowners along the entire proposed route, and 1,103 landowners within 0.5 mile of the proposed new compressor station and existing compressor stations with proposed facilities. All 1,103 landowners, who abut the proposed new compressor station and existing compressor stations with proposed facilities, received Project notifications but were not asked for survey permissions. Additionally, 149 landowners abutting existing metering and regulating have received Project notifications.

3.3 Identification of Stakeholders

3.3.1 Landowners

A list of landowners and sample letters are being provided as part of the Application filing.

3.3.2 Public Officials

Contacts have been made and/or briefings have been held with affected public officials beginning in February 2014.

A list of public officials is being provided as part of the Application filing.

3.3.3 Community and Public Interest Groups and Non-governmental Organizations

Contacts have been made and/or briefings have been held with community and public interest groups and non-governmental organizations.

A list of community and public interest groups and non-governmental organizations is being provided as part of the Application filing.

3.3.4 Media

Information has been and will be provided to media outlets upon request.

3.3.5 Federal, State, and Local Agencies

Initial contacts and meetings with affected government officials and agencies were conducted during the third quarter of 2014. A Project overview was provided at the meetings. Since that time, we have kept and will remain in contact with these officials and agencies.

A list of federal, state and local agencies and sample letters are being provided as part of the Application filing.

3.4 Agency Permits/Approvals

A table listing the required permits and approvals and their estimated application dates is being provided as part of the Application filing.

4.0 DISSEMINATION OF INFORMATION

4.1 Website Development

A targeted Project page on the Spectra Energy website was launched in March 2014 and is updated periodically. The website includes toll free telephone contact numbers.

Attachment 2 provides a sample of the Atlantic Bridge Project page.

4.1.1 Accessibility

The Atlantic Bridge Project website information is located at www.spectraenergy.com or www.AtlanticBridgeProject.com. This is a convenient location providing stakeholders with information about the company, as well as facts about the Project, regulatory process, virtues of natural gas, pipeline operations, safety and maintenance, and Frequently Asked Questions. Toll free telephone contact numbers were established to assist stakeholders with their questions and comments.

In addition, we ensure information is disseminated, as requested by stakeholders, since not all stakeholders have access to the Internet.

4.1.2 Maintenance

The webmaster maintains the website and manages web-based stakeholder inquiries.

4.1.3 Interactive Capabilities

The website houses a "Contact Us" section, which includes a web/email form. This allows stakeholders to request information about the Project, and we will respond within three (3) business days.

4.2 Federal, State and Local Agency Communications

Consultation letters were mailed to the identified federal, state and local permitting agencies with jurisdiction over the Project. We maintain contact with the permitting agencies and respond to all requests for information we receive from them.

A list of agencies and sample letters are being provided as part of the Application filing.

4.3 Stakeholder Notification of FERC Pre-Filing Participation Letters

Stakeholders, as required, were notified by letter that the FERC approved the Atlantic Bridge Project to participate in the Pre-Filing process. These letters were signed by the Atlantic Bridge Project's team members accountable for specific stakeholder groups.

4.4 Voluntary Landowner Informational Meetings

During September and October 2014 and January 2015, we conducted 15 voluntary Landowner Informational Meetings in convenient locations for affected landowners. Recommended locations included the New York communities of Suffern and Yorktown; the Connecticut communities of Danbury, Norwich, Southbury, Glastonbury and Chaplin; the Rhode Island communities of Tiverton and Little Compton; and the Massachusetts communities of Franklin, Bourne, Norfolk, Weymouth, Walpole and Quincy.

At the voluntary Landowner Informational Meetings, information was available regarding all aspects of the Project, pipeline operations, safety and our company. Sign-in sheets were available in order to follow-up with affected landowners.

See Attachment 3 for a list of voluntary Landowner Informational Meetings.

4.5 Landowner Invitations to Voluntary Landowner Informational Meetings

Letters inviting landowners to voluntary Landowner Informational Meetings were distributed prior to the meetings.

Sample letters to landowners are being provided as part of the Application filing.

4.6 Open Houses

In March 2015, we conducted 13 public Open Houses to provide information on the Project to landowners, public officials, other stakeholders and the public. Locations included the New York communities of Suffern and Yorktown; the Connecticut communities of Danbury, Norwich, Southbury, Glastonbury and Chaplin; the Rhode Island community of Little Compton; and the Massachusetts communities of Franklin, Norfolk, Weymouth, Walpole and Quincy.

At the public Open Houses, information about all aspects of the Project, pipeline operations, safety and our company was available. Sign-in sheets were available in order to follow-up with affected landowners.

See Attachment 4 for the dates, times and locations of the public Open Houses.

4.7 Landowner Invitations to public Open Houses

Letters inviting landowners to public Open Houses were distributed prior to the meetings.

4.8 Public Libraries for Filings

An electronic copy of the draft resource reports and preliminary alignment sheets were placed in the public libraries of each community with proposed facilities. The FERC Application and supporting documents also will be filed in the public libraries.

See Attachment 5 for a list of those libraries.

4.9 Updates of Information

Updates are approved by our Project Manager and disseminated to stakeholders in a timely manner. Methods of dissemination of information to stakeholders include U.S. mail, hand-delivery, email, Project website and/or telephone calls.

4.10 Filings with the FERC

The Atlantic Bridge Project Application will meet all of the FERC requirements.

5.0 ATLANTIC BRIDGE PROJECT SCHEDULE

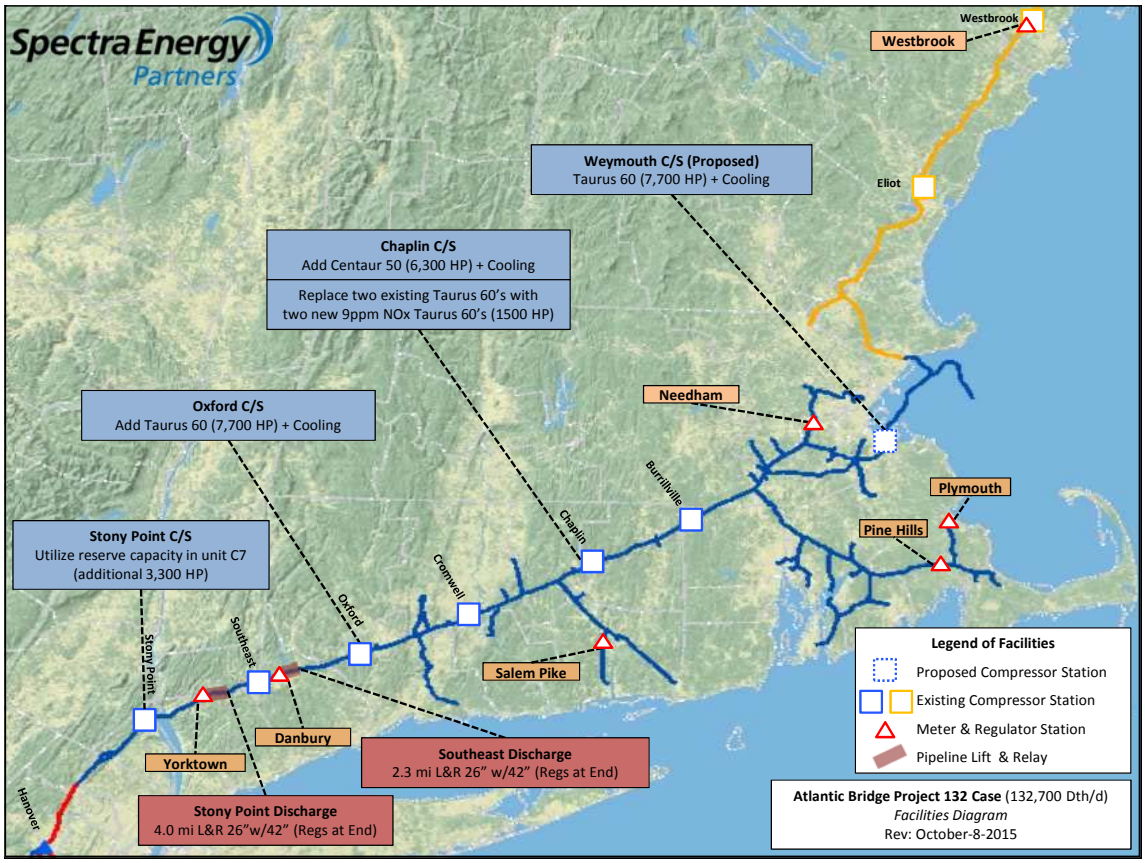
Conduct Open Season	February – March 2014
Conduct Landowner Informational Meetings	September – October 2014 / January 2015
Request Pre-Filing Initiation	January 2015
Submit Draft Resource Reports 1 & 10 (Description & Alternatives)	March 2015
Conduct Open Houses	March 2015
FERC holds Scoping Meetings	May 2015
Submit Draft Resource Reports	July 2015
File FERC Certificate Application	October 2015
Submit Federal and State Permit Applications	October 2015
FERC issues Environmental Assessment	Second Quarter 2016
FERC issues Certificate	Third Quarter 2016
Receive Final Agency Clearances	January 2017
Request Notice to Proceed with Construction	March 2017
Place Project into Service	November 2017

6.0 REPORTING

All FERC, federal, state and local government reporting will be timely and respectful of requirements. An official list of contacts within each stakeholder group has been developed to effectively and efficiently provide copies of reports and updates.

ATTACHMENT 1

Map


Spectra Energy Partners
Westbrook
Westbrook
Eliot
Weymouth C/S (Proposed)
Taurus 60 (7,700 HP) + Cooling
Chaplin C/S
Add Centaur 50 (6,300 HP) + Cooling
Replace two existing Taurus 60's with two new 9ppm NOx Taurus 60's (1500 HP)
Oxford C/S
Add Taurus 60 (7,700 HP) + Cooling
Needham
Burrillville
Plymouth
Pine Hills
Chaplin
Cromwell
Oxford
Southeast
Stony Point
Stony Point C/S
Utilize reserve capacity in unit C7 (additional 3,300 HP)
Salem Pike
Danbury
Yorktown
Hanover
Southeast Discharge
2.3 mi L&R 26" w/42" (Regs at End)
Stony Point Discharge
4.0 mi L&R 26"w/42" (Regs at End)
Legend of Facilities
Proposed Compressor Station
Existing Compressor Station
Meter & Regulator Station
Pipeline Lift & Relay
Atlantic Bridge Project 132 Case (132,700 Dth/d)
Facilities Diagram
Rev: October-8-2015

ATTACHMENT 2

Sample of the Website

Spectra Energy Partners

Atlantic Bridge Project

Evaluation | Signed Agreements | Regulatory Review | Regulatory Approval | Under Construction | In-Service

- Location: Northeast United States and Maritime Provinces
- Proposed Facilities: See detail below
- Capacity: 132,700 dekatherms of natural gas per day
- Ownership: Algonquin Gas Transmission, LLC
- Ownership: Maritimes & Northeast Pipeline, L.L.C. (U.S.)
- Ownership: Maritimes & Northeast Pipeline Limited Partnership (Canada)
- Project In-Service Date: November 2017

ENLARGE

Project Need

The Atlantic Bridge Project, a proposed expansion of the Algonquin Gas Transmission (Algonquin) and Maritimes & Northeast Pipeline (Maritimes) systems, will connect abundant North American natural gas supplies with markets in the New England states and the Maritime provinces.

Algonquin and Maritimes are strategically positioned to answer the region's need for additional pipeline infrastructure as well as much needed reliable, clean-burning natural gas supplies by November 2017. The additional supply will enhance the reliability of energy throughout the New England region, moderate future natural gas and electricity price volatility, and generate savings for homeowners, businesses and manufacturers.

Project Shippers

Algonquin and Maritimes have signed separate long-term contracts for natural gas transportation service, beginning in November 2017, with eight shippers – four local distribution companies, three manufacturing and industrial companies, and a municipal utility located in Connecticut, Massachusetts, Maine and Atlantic Canada.

The Atlantic Bridge Project will not be designed for nor will the project be used to transport natural gas for export as liquefied natural gas (LNG). The additional supplies will be used exclusively within New England and the Canadian Maritime Provinces.

Related Links

- An Interstate Natural Gas Facility on My Land?
- Pipeline Safety & Public Awareness
- Pipeline Design & Construction
- Federal Energy Regulatory Commission (U.S. Regulatory Body)

Project Calendar 30

Fact Sheets & Videos

The Project to Date

The Federal Energy Regulatory Commission (FERC) is an independent federal agency that regulates the interstate transmission of natural gas and exclusively authorizes the construction of new interstate natural gas facilities. FERC is also the lead federal agency responsible for conducting environmental reviews of interstate natural gas projects in compliance with the National Environmental Policy Act (NEPA).

FERC's Pre-File Process

FERC approved Algonquin's and Maritimes' request to participate in the "Pre-file" process, a series of activities which provide interested parties – including landowners, public officials, community members, government agencies and FERC staff – an opportunity to review project-related information and identify issues prior to us submitting to FERC a formal application for a Certificate of Public Convenience and Necessity.

The Atlantic Bridge Project has been assigned a Pre-file docket number of PF15-12. You may visit FERC's website at www.FERC.gov and enter this docket number to follow the Project.

As part of the Pre-file process, FERC is conducting a comprehensive review of environmental impacts that could result from the construction and operation of the proposed facilities in accordance with NEPA. As part of its review, FERC issued a Notice of Intent to prepare an Environmental Assessment (pdf, 903 KB) and initiate a public scoping period.

During the scoping period, FERC encouraged the public and agencies to provide comments on potential environmental issues by June 11, 2015. FERC will continue to accept comments after the scoping period. Comments may be submitted verbally or in writing at the public Scoping Meetings; electronically on FERC's website (www.ferc.gov) using the eComment or the eFiling feature under the link to Documents and Filings; or by mail to this address:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

In March, we held a series of open houses to provide information and gather input on the Atlantic Bridge Project. The project calendar lists the dates and locations of the open houses.

Upon completion of the Pre-file process later in 2015, we will file with FERC an application for a Certificate of Public Convenience and Necessity that will allow the construction and operation of the Atlantic Bridge Project.

The Open Season

In early 2014, the Atlantic Bridge Project completed an open season (pdf, 4.4 MB) for customers to submit requests for additional natural gas service with a target in-service date of November 2017. We are moving forward with the Project based upon the market's positive response to the open season.

Proposed Project Facilities

The Project is still in the development stage; facilities currently proposed along the existing Algonquin system include:

- Construction of approximately 6.3 miles of 42-inch diameter mainline take-up and relay pipeline in New York and Connecticut
- Construction of one new compressor station with 10,915 horsepower in Weymouth, Massachusetts
- Addition of two new compressor units and replacement of two existing compressor units, for a total of 18,715 additional horsepower, at two existing compressor stations in Connecticut
- Construction of a new meter station in Connecticut
- Modifications to existing meter stations in New York, Connecticut, Massachusetts and Maine

Most of this work will occur within our existing footprint, minimizing impacts to landowners, the environment and communities. Click here to view a map of the proposed facilities.

Project Contacts

Landowners may call us toll-free at 888-331-6553 (MA/RI) or 866-873-2579 (NY/CT).

Parties interested in discussing business development opportunities may contact their Algonquin or Maritimes account manager or Greg Crisp at (713) 627-4611.

For other information including media inquiries, please contact Marylee Hanley at (617) 560-1573 or via email MHanley@spectraenergy.com.

ATTACHMENT 3

List of Voluntary Landowner Informational Meetings

Dates, times and locations of voluntary Landowner Informational Meetings

GLASTONBURY, CONNECTICUT
September 17, 2014
5:30 PM - 7:30 PM
Glastonbury Riverfront Community Center
Community Room B
300 Welles Street
Glastonbury, CT 06033

CHAPLIN, CONNECTICUT
September 18, 2014
5:30 PM - 7:30 PM
Chaplin Senior Center
132 Chaplin Street
Chaplin, CT 06235

WALPOLE, MASSACHUSSETTS
September 22, 2014
5:30 PM - 7:30 PM
Boyden Elementary School
1852 Washington Street
So. Walpole, MA 02071

MILLIS/NORFOLK, MASSACHUSETTS
September 23, 2014
5:30 PM - 7:30 PM
Norfolk Town Library
139 Main Street
Norfolk, MA 02056

TIVERTON, RHODE ISLAND
September 24, 2014
5:30 PM - 7:30 PM
Tiverton Town Hall
343 Highland Road
Tiverton, RI 02878

LITTLE COMPTON, RHODE ISLAND
September 25, 2014
5:30 PM - 7:30 PM
Town Hall
40 Commons
Little Compton, RI 02837

YORKTOWN, NEW YORK
September 29, 2014
5:30 PM – 7:30 PM
American Legion Hall
235 Veterans Road
Yorktown Heights, NY 10598

SUFFERN, NEW YORK
September 30, 2014
5:30 PM – 7:30 PM
Crowne Plaza (formerly Holiday Inn)
3 Executive Blvd (Exit 14B)
Suffern, NY 10901

DANBURY, CONNECTICUT
October 1, 2014
5:30 PM - 7:30 PM
Crowne Plaza
18 Old Ridgebury Road
Danbury, CT 06810

SOUTHBURY, CONNECTICUT
October 2, 2014
5:30 PM - 7:30 PM
Crowne Plaza
1284 Strongtown Road
Southbury, CT 06762

NORWICH, CONNECTICUT
October 6, 2014
5:30 PM – 7:30 PM
Norwich Holiday Inn
10 Laura Blvd
Norwich, CT 06360

FRANKLIN/MEDWAY/BELLINGHAM, MASSACHUSETTS
October 7, 2014
5:30 PM – 7:30 PM
Hawthorn Suites by Wyndham
835 Upper Union Street
Franklin, MA 02038

BOURNE, MASSACHUSETTS
October 8, 2014
5:30 PM – 7:30 PM
The Beachmoor, Massachusetts Maritime Academy
11 Buttermilk Way
Buzzards Bay, MA 02532

QUINCY, MASSACHUSETTS
January 28, 2015
5:30 – 7:30 p.m.
Sons of Italy Social Center
120 Quarry Street
Quincy, MA 02169

WEYMOUTH, MASSACHUSETTS
January 29, 2015
5:30 – 7:30 p.m.
Weymouth Elks #2232
1197 Washington Street
East Weymouth, MA 02189

ATTACHMENT 4

List of Public Open Houses

Dates, times and locations of public Open Houses

DANBURY, CONNECTICUT
March 2, 2015
5:30 PM - 7:30 PM
Crowne Plaza Danbury
18 Old Ridgebury Road
Danbury, CT 06810

SUFFERN, NEW YORK
March 3, 2015
5:30 PM – 7:30 PM
Crowne Plaza Suffern - Mahwah
3 Executive Boulevard, Exit 14B
Suffern, NY 10901

NORWICH, CONNECTICUT
March 4, 2015
5:30 PM – 7:30 PM
Norwich Holiday Inn
10 Laura Blvd
Norwich, CT 06360

SOUTHBURY, CONNECTICUT
March 5, 2015
5:30 PM - 7:30 PM
Crowne Plaza
1284 Strongtown Road
Southbury, CT 06488

GLASTONBURY, CONNECTICUT
March 9, 2015
5:30 PM - 7:30 PM
Glastonbury Riverfront Community Center
Community Room B
300 Welles Street
Glastonbury, CT 06033

CHAPLIN, CONNECTICUT
March 10, 2015
5:30 PM - 7:30 PM
Chaplin Senior Center
132 Chaplin Street
Chaplin, CT 06235

YORKTOWN, NEW YORK
March 11, 2015
5:30 PM – 7:30 PM
American Legion Hall
235 Veterans Road
Yorktown Heights, NY 10598

FRANKLIN / MEDWAY, MASSACHUSETTS
March 16, 2015
5:30 PM – 7:30 PM
Helen Keller Elementary School
500 Lincoln Street
Franklin, MA 02038

MILLIS / NORFOLK, MASSACHUSETTS
March 17, 2015
5:30 PM - 7:30 PM
Norfolk Town Library
NPL Community Room
139 Main Street
Norfolk, MA 02056

WEYMOUTH, MASSACHUSETTS
March 19, 2015
5:30 PM – 7:30 PM
Weymouth Elks #2232
1197 Washington Street
East Weymouth, MA 02189

LITTLE COMPTON, RHODE ISLAND
March 23, 2015
5:30 PM - 7:30 PM
Little Compton Town Hall
40 Commons
Little Compton, RI 02837

WALPOLE, MASSACHUSETTS
March 25, 2015
5:30 PM - 7:30 PM
Boyden Elementary School
1825 Washington Street
Walpole, MA 02071

QUINCY, MASSACHUSETTS
March 26, 2015
5:30 – 7:30 PM
Sons of Italy Social Center
120 Quarry Street
Quincy, MA 02169

ATTACHMENT 5

Public Libraries Where Filings Are Available

CONNECTICUT

Chaplin
Chaplin Public Library
130 Chaplin Street
Chaplin, CT 06235

Danbury
Danbury Library
170 Main Street
Danbury, CT 06810

Mansfield
Mansfield Public Library
54 Warrenville Road
Mansfield Center, CT 06250

Middlebury
Middlebury Public Library
30 Crest Road
Middlebury, CT 06762

Norwich
Otis Library
261 Main Street
Norwich, CT 06360

Oxford
Oxford Public Library
486 Oxford Road
Oxford, CT 06478

MASSACHUSETTS

Needham
Needham Public Library
1139 Highland Avenue
Needham, MA 02494

Plymouth
Plymouth Public Library
132 South Street
Plymouth, MA 02360

Weymouth
Tufts Library
46 Broad Street
Weymouth, MA 02188

NEW YORK

Montebello
Suffern Free Library
210 Lafayette Ave
Suffern, NY 10901

Somers
Somers Public Library
Route 139 & Reis Park
Somers, NY 10589

Yorktown
John C. Hart Memorial Library
1130 Main Street
Shrub Oak, NY 10588

Rockland
Rose Memorial Library
79 East Main Street
Stony Point, NY 10980

MAINE

Westbrook
Walker Memorial Library
800 Main Street
Westbrook ME 04092

RHODE ISLAND

Burrillville
Jesse M. Smith Memorial Library
100 Tinkham Lane
Harrisville, RI 02830

Atlantic Bridge Public Officials List as of 10.09.15

Name	Title	Company	Address	City, State, Zip Code
Sean Patrick Maloney	U.S. Congressman	123 Grand Street, 2nd Floor	Newburgh, NY 12550	
Kirsten E. Gillibrand	U.S. Senator	780 Third Avenue, Suite 2601	New York, NY 10017	
Charles E. Schumer	U.S. Senator	780 Third Avenue, Suite 2301	New York, NY 10017	
Brandon Graham	District Representative	Office of Chuck Schumer	780 Third Avenue, Suite 2301	New York, NY 10017
William Faulkner	Council Member	Town of Somers	335 Route 202	Somers, NY 10589
Rick Morrissey	Supervisor	Town of Somers	335 Route 202	Somers, NY 10589
Richard G. Clinchy	Council Member	Town of Somers	335 Route 202	Somers, NY 10589
Anthony J. Cirieco	Council Member	Town of Somers	335 Route 202	Somers, NY 10589
Kathleen R. Pacella	Town Clerk	Town of Somers	335 Route 202	Somers, NY 10589
Thomas A. Garrity, Jr.	Council Member	Town of Somers	335 Route 202	Somers, NY 10589
Michael W. Driscoll	Chief of Police	Town of Somers	335 Route 202	Somers, NY 10589
Alan Cole	Interim Legislator	Westchester County of Board of Legislators	Michaelian Office Building	148 Martine Ave., 8th Flr.
Michael B. Kaplowitz	Chairman & Legislator, District 4	Westchester County of Board of Legislators	Michaelian Office Building	148 Martine Ave.
Rob Astorino	Westchester County Executive	Westchester	Office of The County Executive	900 Michaelian Office Building
George Oros	Chief of Staff	Office of the Westchester County Executive	900 Michaelian Office Building	White Plains, NY 10601
Susan Siegel	Town Council Member	Town of Yorktown	363 Underhill Avenue	PO Box 703
Michael J. Grace	Supervisor	Town of Yorktown	363 Underhill Avenue	PO Box 703
Alice E. Roker	Town Clerk	Town of Yorktown	363 Underhill Avenue	PO Box 703
Brian Gray	Supt. of Parks & Recreation	Town of Yorktown	363 Underhill Avenue	PO Box 703
Vishnubhai V. Patel	Town Council Member	Town of Yorktown	363 Underhill Avenue	PO Box 703
Greg Bernard	Town Council Member	Town of Yorktown	363 Underhill Avenue	PO Box 703
Tom Diana	Town Council Member	Town of Yorktown	363 Underhill Avenue	PO Box 703
Mary Capoccia	Executive Assistant	Town of Yorktown	Office of Supervisor Michael Grace	363 Underhill Avenue, PO Box 703
Sharon Robinson	Acting Town Engineer	Town of Yorktown	363 Underhill Avenue	PO Box 703
John G. Testa	Minority Leader & Legislator, District 1	Westchester County of Board of Legislators	Michaelian Office Building	148 Martine Ave., 8th Flr.
Terrence P. Murphy	NY State Senator	NYS Senate	Putnam Co. Office Building	40 Gleneida Avenue, 3rd Floor
Steve Katz	NY State Assemblyman	NYS Assembly	947 S. Lake Blvd., Ste. 1C	Mahopac, NY 10541
Michael Limperopulos	District Representative	Office of Sean Patrick Maloney	123 Grand Street, 2nd Floor	Newburgh, NY 12550
Marc Gerstman	Commissioner	NYS Department of Environmental Conservation	625 Broadway	Albany, NY 12233
Audrey Zibelman	Chair	NYS Public Service Commission	3 Empire State Plaza	Albany, NY 12223
Joseph Griffo	Senator, Chair of Energy Committee	NYS Senate	Legislative Office Building, Room 612	Albany, NY 12247
Cindy Mc Carran	Deputy Director	NYS Public Service Commission, Utility Rates and Services - Gas & Water	3 Empire State Plaza	Albany, NY 12223
Julie Tighe	Director of Legislative Affairs	NYS Department of Environmental Conservation	625 Broadway	Albany, NY 12233
Amy Paulin	Assembly member, Chair of Energy Committee	NYS Assembly	Legislative Office Building, Room 713	Albany, NY 12248
Kara Allen	Assistant Secretary for Energy	NY Governor's Office	NYS State Capitol	Albany, NY 12224
Andrew Cuomo	Governor	NY Governor	NYS State Capitol	Albany, NY 12224
George Jepsen	Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106
Kimberly Massicotte	Associate Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106

Atlantic Bridge Public Officials List as of 10.09.15

Name	Title	Company	Address	City, State, Zip Code
Joseph Rubin	Associate Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106
Matthew Levine	Assistant Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106
Robert Snook	Assistant Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106
Robert Clark	Special Counsel to the Attorney General	State of Connecticut	55 Elm Street	Hartford, CT 06106
Robert Klee	Commissioner	Connecticut DEEP	79 Elm Street	Hartford, CT 06106
Jessie Stratton	Policy Development Director to Commissioner Klee	Connecticut DEEP	79 Elm Street	Hartford, CT 06106
Katie Scharf Dykes	Deputy Commissioner	Connecticut DEEP	79 Elm Street	Hartford, CT 06106
Michael Caron	Commissioner	CT Public Utilities Regulatory Authority	Ten Franklin Square	New Britain, CT 06051
Arthur House	Chairman	CT Public Utilities Regulatory Authority	Ten Franklin Square	New Britain, CT 06051
John Betkoski III	Vice Chairman	CT Public Utilities Regulatory Authority	Ten Franklin Square	New Britain, CT 06051
Elin Swanson Katz	Consumer Counsel	CT Office of the Consumer Counsel	10 Franklin Square	New Britain, CT 06051
Joseph Rosenthal	Principal Attorney	CT Office of the Consumer Counsel	10 Franklin Square	New Britain, CT 06051
Richard E. Sobolewski	Supervisor of Utility Financial Analysis	CT Office of the Consumer Counsel	10 Franklin Square	New Britain, CT 06051
Paul Mounds Jr.	Director, Government Relations	Office of Governor Dannel P. Malloy	300 Capitol Avenue, Room 416	Hartford, CT 06106
Liz Donohue	Policy Director	Office of Governor Dannel P. Malloy	300 Capitol Avenue, Room 416	Hartford, CT 06106
Kenny Curran	State Director	Office of U.S. Senator Chris Murphy	One Constitution Plaza, 7th Floor	Hartford, CT 06103
Dan Lynch	District Aide	Office of Congressman John Larson	221 Main Street, Second Floor	Hartford, CT 06106
Ayanti Grant	District Director	Office of Congressman Joe Courtney	55 Main Street, Suite 250	Norwich, CT 06360
Samantha Pillion	District Aide	Office of Congresswoman Elizabeth Esty	114 West Main Street	New Britain, CT 06051
Stephanie Podewell	Director of District Operations	Office of Congresswoman Elizabeth Esty	114 West Main St., Suite 206	New Britain, CT 06051
Rich Kehoe	State Director	Office of U.S. Senator Richard Blumenthal	90 State House Square, 10th Floor	Hartford, CT 06103
Matthew LeBeau	Research Aide	Office of U.S. Senator Richard Blumenthal	90 State House Square, 10th Floor	Hartford, CT 06103
Senator Robert Duff	Senate Majority Leader	Legislative Office Building Room 3300	300 Capitol Avenue	Hartford, CT 06106
Representative Lonnie Reed	Chair, Energy & Technology Committee	Legislative Office Building Room 3900	300 Capitol Avenue	Hartford, CT 06106
Senator Paul Doyle	Chair, Energy & Technology Committee	Legislative Office Building Room 3900	300 Capitol Avenue	Hartford, CT 06106
Senator Tim Larson	Vice Chair, Energy & Technology Committee	Legislative Office Building Room 3300	300 Capitol Avenue	Hartford, CT 06106
Senator Paul Formica	Ranking Member, Energy & Technology Committee	Legislative Office Building Room 3900	300 Capitol Avenue	Hartford, CT 06106
Representative Tim Ackert	Ranking Member, Energy & Technology Committee	Legislative Office Building Room 3900	300 Capitol Avenue	Hartford, CT 06106
Dave Steuber	Policy Aide, Senate Democrats	Legislative Office Building Room 3300	300 Capitol Avenue	Hartford, CT 06106
Jesse Hubbard	Policy Aide, House Democratic Caucus	Legislative Office Building Room 4000	300 Capitol Avenue	Hartford, CT 06106
Jason Stark	Policy Advisor, Senate Republican Caucus	Legislative Office Building Room 3400	300 Capitol Avenue	Hartford, CT 06106
Ryan Wolfe	House Republican Caucus	Legislative Office Building Room 4200	300 Capitol Avenue	Hartford, CT 06106
William H. Rose IV	First Selectman	Town of Chaplin	495 Phoenixville Road	Chaplin, CT 06235
John A. Smith	Selectman	Town of Chaplin	495 Phoenixville Road	Chaplin, CT 06235
Irene J. Schein	Selectman	Town of Chaplin	495 Phoenixville Road	Chaplin, CT 06235
Deb Hinchey	Mayor, City of Norwich	Norwich City Hall	100 Broadway, Rm. 330	Norwich, CT 06360
John Bilda	Acting City Manager, City of Norwich	Norwich City Hall	100 Broadway, Rm. 219	Norwich, CT 06360

Atlantic Bridge Public Officials List as of 10.09.15

Name	Title	Company	Address	City, State, Zip Code
Mark D. Boughton	Mayor	City of Danbury	155 Deer Hill Avenue	Danbury, CT 06810
Farid Khouri	City Engineer	City of Danbury	155 Deer Hill Avenue	Danbury, CT 06810
David Dey	Public Utilities Superintendent	City of Danbury	Newtown Road	Danbury, CT 06810
Timothy Nolan	PU Foreman of Maintenance Transmission & Distribution	City of Danbury	Newtown Road	Danbury, CT 06810
George R. Temple	First Selectman	Town of Oxford	Town Hall, 486 Oxford Road	Oxford, CT 06478
Andrew McGeever	Economic Development Director	Town of Oxford	Town Hall, 486 Oxford Road	Oxford, CT 06478
Michael McLachlan	State Senator	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Dan Carter	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
David Arconti	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Janice Giegler	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Robert Godfrey	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Richard Smith	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Douglas Dubitsky	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Catherine Osten	State Senator	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Emmett Riley	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Kevin Ryan	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Anthony Guglielmo	State Senator	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Robert Kane	State Senator	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
David Labriola	State Representative	Legislative Office Building	300 Capitol Avenue	Hartford, CT 06106
Charles Baker	Governor	Statehouse, Room 280	24 Beacon Street	Boston, MA 02133
Matt Beaton	Secretary	Massachusetts EEEA	100 Cambridge Street, Suite 900	Boston, MA 02114
Representative Tom Golden	House Chair, Committee on Telecommunications, Utilities & Energy	Statehouse, Room 413-F		Boston, MA 02133
Ben Dowling, Senate Chair	Committee on Telecommunications, Utilities and Energy	Department of Public Utilities	State House, Room 413-F	Boston, MA 02133
Deidre Buckley	Director	MEPA	100 Cambridge Street, Suite 900	Boston, MA 02114
Angela O'Connor	Chairman	Department of Public Utilities	1 South Station	Boston, MA 02110
Roger Lau	US Senator Elizabeth Warren's office	2400 JFK Federal Building	15 New Sudbury Street	Boston, MA 02203
David Bray	US Congressman Edward Markey's office	975 JFK Federal Building	15 New Sudbury Street	Boston, MA 02203
Bob Folkes, District Director	US Congressman Stephen Lynch's office		1245 Hancock Street, Suite 16	Quincy, MA 02169
Andrew Greene, Executive Director	Energy Facilities Siting Board		One South Station, Fifth Floor	Boston, MA 02110
Judith Judson	Commissioner	Massachusetts Division of Energy Resources	100 Cambridge Street, Suite 1020	Boston, MA 02114
Martin Suuberg	Commissioner	MA DEP	One Winter Street	Boston, MA 02108
Robert Hedlund	Senator	State House	Room 313-C	Boston, MA 02133
John Keenan	Senator	State House	Room 413-B	Boston, MA 02133
James Murphy	Representative	State House	Room 156	Boston, MA 02133
Haley Ling	Special Assistant to Representative Ron Mariano	State House	Room 343	Boston, MA 02133
Tacky Chan	Representative	State House	Room 26	Boston, MA 02133
David Sullivan	Mayor	Town of Braintree	1 John F. Kennedy Memorial Drive	Braintree , MA 02184

Atlantic Bridge Public Officials List as of 10.09.15

Name	Title	Company	Address	City, State, Zip Code
Michael Molisse	Town Councilor	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
T J Lacey	Town Councilor	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
Susan Kay	Mayor	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
Patrick O'Connor	President, Town Council	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
Rebecca Haugh	District Councilor	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
Tom Koch	Mayor	Town of Quincy	1305 Hancock Street	Quincy, MA 02169
James Fatseas	Office of Mayor Tom Koch	Town of Quincy	1305 Hancock Street	Quincy, MA 02169
Jim Clarke	Director, Planning	Town of Weymouth	75 Middle Street	Weymouth, MA 02189
Brad Corall	City Councilor	Quincy City Hall	1305 Hancock Street	Quincy, MA 02169
Doug Gutro	City Councilor	Quincy City Hall	1305 Hancock Street	Quincy, MA 02169
Margaret Laforest	City Councilor	Quincy City Hall	1305 Hancock Street	Quincy, MA 02169
Hon. Paul LePage	Governor	State of Maine	1 State House Station	Augusta, ME 04333
John McGough	Chief of Staff	Office of the Governor	1 State House Station	Augusta, ME 04333
Kathleen Newman	Deputy Chief of Staff	Office of the Governor	1 State House Station	Augusta, ME 04333
Patrick Woodcock	Director	Governor's Energy Office	1 State House Station	Augusta, ME 04333
Timothy Schneider	Public Advocate	Office of the Maine Public Advocate	112 State House State	Augusta, ME 04333
Hon. Michael Thibodeau	Senate President	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. Garrett Mason	Senate Majority Leader	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. Andre Cushing	Assistant Senate Majority Leader	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. Justin Alfond	Senate Democratic Leader	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. Dawn Hill	Assistant Senate Democratic Leader	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. Mark Eves	Speaker of the House	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Jeff McCabe	House Majority Leader	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Sara Gideon	House Majority Whip	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Ken Fredette	House Republican Floor Leader	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Eleanor Espling	Assistant House Republican Floor Leader	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Susan Collins	U.S. Senator	U.S. Senate	202 Harlow Street, Room 20100	Bangor, ME 04401
Hon. Mark Dion	House Chair of the Joint Standing Committee on Energy, Utilities & Technology	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. Nathan Wadsworth	Ranking Member, Joint Standing Committee of Energy, Utilities & Technology	Maine House of Representatives	2 State House Station	Augusta, ME 04333
Hon. David Woodsome	Senate Chair, Energy, Utilities & Technology Committee	Maine Senate	3 State House Station	Augusta, ME 04333
Hon. August King	U.S. Senator	U.S. Senate	4 Gabriel Drive, Suite 3	Augusta, ME 04333
Hon. Chellie Pingree	U.S. Congresswoman	U.S. House of Representatives	2 Portland Fish Pier, Suite 304	Portland, ME 04101
Hon. Bruce Poliquin	U.S. Congressman	U.S. House of Representatives	179 Lisbon Street	Lewiston, ME 04240
Steve Katz	Assemblyman	NY Assembly	LOB, Room 718	Albany, NY 12248

APPENDIX 1D

List of Affected Landowners

[Privileged and Confidential – Included under separate cover in Volume III]

APPENDIX 1E

Agency Correspondence

[PROVIDED ON DVD]

LETTERS SENT

LETTERS RECEIVED