



**ALGONQUIN INCREMENTAL MARKET (“AIM”)
PROJECT**

RESOURCE REPORT 10
Alternatives

FERC Docket No. PF13-16-000

Pre-Filing Draft
July 2013



TABLE OF CONTENTS

10.0	RESOURCE REPORT 10 – ALTERNATIVES	10-1
10.1	INTRODUCTION	10-1
10.2	PURPOSE AND NEED.....	10-1
10.3	NO-ACTION ALTERNATIVE	10-3
10.3.1	<i>Energy Conservation</i>	10-4
10.3.2	<i>Existing Transportation Systems Alternatives</i>	10-4
10.4	FACILITY DESIGN AND SITING OF THE AIM PROJECT FACILITIES	10-8
10.5	MAJOR ROUTE ALTERNATIVES ALONG THE AIM PROJECT PIPELINES	10-9
10.5.1	<i>West Roxbury Lateral Alternative</i>	10-10
10.6	MINOR ROUTE VARIATIONS.....	10-10
10.6.1	<i>Hudson River</i>	10-10
10.7	ABOVEGROUND FACILITY ALTERNATIVES.....	10-12
10.7.1	<i>Existing Metering & Regulating Stations</i>	10-12
10.7.2	<i>Construction of New M&R Stations</i>	10-12
10.8	FUTURE CONSIDERATIONS REGARDING ALTERNATIVES.....	10-14
10.9	REFERENCES	10-14

LIST OF FIGURES

FIGURE 10.3-1.	GAS FLOW	10-5
FIGURE 10.3-2.	AREA PIPELINES	10-7
FIGURE 10.5-1.	WEST ROXBURY LATERAL	10-11
FIGURE 10.6-1.	HUDSON RIVER STUDY AREA	10-13



RESOURCE REPORT 10—ALTERNATIVES	
Filing Requirement	Location in Environmental Report
<input checked="" type="checkbox"/> Address the “no action” alternative. For large projects, address the effect of energy conservation or energy alternatives to the project.	Section 10.3
<input checked="" type="checkbox"/> Identify system alternatives considered during the identification of the project and provide the rationale for rejecting each alternative.	Section 10.4
<input checked="" type="checkbox"/> Identify major and minor route alternatives considered to avoid impact on sensitive environmental areas (e.g., wetlands, parks, or residences) and provide sufficient comparative data to justify the selection of the proposed route.	Sections 10.5 and 10.6
<input checked="" type="checkbox"/> Identify alternative sites considered for the location of major new aboveground facilities and provide sufficient comparative data to justify the selection of the proposed site.	Section 10.7



ACRONYMS AND ABBREVIATIONS

AIM	Algonquin Incremental Market
Algonquin	Algonquin Gas Transmission, LLC
2009 Plan	2009 New York State Energy Plan
2012 Open Season	AIM Project from September 20, 2012 through November 2, 2012
2013 Open Season	AIM Project from June 11, 2013, through June 25, 2013
AIM Project	Algonquin Incremental Market Project
bcf/d	billion cubic feet per day
CES	Comprehensive Energy Strategy
CS	Compressor Station
Dth/d	decatherms per day
EPAct	The Energy Policy Act of 2005
FERC or Commission	Federal Energy Regulatory Commission
HDD	horizontal directional drill
Iroquois	Iroquois Gas Transmission System
LDCs	local distribution companies
M&R	metering and regulating
MAOP	maximum allowable operating pressure
MP	milepost
NEPA	National Environmental Policy Act
Project	AIM Project
Project Shippers	Yankee Gas Services Company, NSTAR Gas Company, Connecticut Natural Gas Corporation, The Southern Connecticut Gas Company, The Narragansett Electric Company d/b/a National Grid, Colonial Gas Company d/b/a National Grid and Boston Gas Company d/b/a National Grid
ROWs	rights-of-way
Study Area	Hudson River Study Area
Tennessee	Tennessee Gas Pipeline Company
U.S.	United States
USGS	U.S. Geological Survey



10.0 RESOURCE REPORT 10 – ALTERNATIVES

10.1 Introduction

Algonquin Gas Transmission, LLC (“Algonquin”), an indirect wholly owned subsidiary of Spectra Energy Corp, is seeking authorization from the Federal Energy Regulatory Commission (“FERC” or the “Commission”) pursuant to Sections 7(b) and 7(c) of the Natural Gas Act to construct, install, own, operate, and maintain the Algonquin Incremental Market Project (“AIM Project” or “Project”) which will involve expansion of its existing pipeline system located in New York, Connecticut, Rhode Island and Massachusetts. The AIM Project will create up to 433,000 dekatherms per day (“Dth/d”) of firm pipeline capacity to deliver natural gas to the Northeast market area to meet immediate and future supply and load growth requirements. Specifically, the Project will create the additional capacity from the Ramapo, New York, and Mahwah, New Jersey, receipt points on Algonquin’s system to various Algonquin city gate delivery points in Connecticut, Rhode Island and Massachusetts. The target in-service date for the AIM Project is November 1, 2016.

As is more fully described in Section 1.3.1 of Resource Report 1, the Project will consist of the construction of approximately 43.6 miles of replacement, loop and lateral pipeline facilities, modifications to six existing compressor stations (“CS”) resulting in the addition of 78,540 horsepower of compression, modifications to 30 existing metering and regulating (“M&R”) Stations, and the construction of three new M&R Stations. These proposed Project facilities are located in New York, Connecticut, Rhode Island and Massachusetts. Refer to Figure 1.1-1 in Resource Report 1 for a Project overview map that shows the location of all proposed facilities and their association with Algonquin’s existing pipeline facilities.

The maximum allowable operating pressure (“MAOP”) downstream of the Stony Point and Southeast Compressor Stations will be 850 pounds per square inch gauge for the new 42-inch diameter mainline pipeline. The maximum design capacity of the expanded Algonquin system will increase from approximately 3.33 billion cubic feet per day (“bcf/d”) to 3.75 bcf/d.

This Resource Report 10 provides a description of potential alternatives identified by Algonquin and reflects the input received from agency consultations, discussions with local landowners, residents and public officials and from the numerous stakeholder meetings held in the majority of the communities where various AIM Project facilities are proposed.

10.2 Purpose and Need

Demand for natural gas is growing in the Northeast. The region seeks to grow its economy by using an economic source of fuel that is domestically produced, clean burning and efficient. Specifically, demand in the region is expected to continue to increase as more homes and commercial buildings convert heating units and appliances to natural gas and as natural gas utilization increases for electric generation. To reliably meet this increased natural gas demand, the Northeast will need additional natural gas pipeline infrastructure.

The Connecticut Department of Energy and Environmental Protection recently issued a Comprehensive Energy Strategy (“CES”) that includes specific recommendations for increasing the use of natural gas in Connecticut (CES, 2013). The CES notes that “only 31 percent of Connecticut homes heat with gas today” and “proposes to make gas available to as many as 300,000 additional Connecticut homes and businesses.” Similar to Connecticut, less than 50 percent of the homes in Rhode Island and



Massachusetts utilize natural gas for home heating. Converting home and commercial building heating units and other appliances to natural gas represents a substantial source of growth in the region. Further, according to the 2009 Energy Plan for the State of New York, the annual demand for natural gas in New York State is expected to increase by 5 percent by 2020 (2009 Plan, 2009). This increased market demand is anticipated in light of public initiatives to increase competitiveness in energy markets, and to promote more efficient electric generation and a cleaner environment.

To meet this increased demand for clean burning natural gas, Algonquin proposes to construct the AIM Project to increase pipeline capacity and allow abundant supplies from regional production to flow to Northeast local distribution companies (“LDCs”) and other natural gas customers. Algonquin held an open season for the AIM Project from September 20, 2012, through November 2, 2012 (“2012 Open Season”), and held a supplemental open season and reverse open season concurrently from June 11, 2013, through June 25, 2013 (“2013 Open Season”). As a result of the 2012 Open Season and 2013 Open Season, Algonquin has executed precedent agreements with seven LDC shippers for 308,000 Dth/d of firm transportation service to deliver new, critically needed natural gas supplies to the Northeast region. These LDC capacity commitments from Yankee Gas Services Company, NSTAR Gas Company, Connecticut Natural Gas Corporation, The Southern Connecticut Gas Company, The Narragansett Electric Company d/b/a National Grid, Colonial Gas Company d/b/a National Grid and Boston Gas Company d/b/a National Grid (collectively, the “Project Shippers”) confirm the need for new pipeline infrastructure to support the growing use of natural gas and, more specifically, growth of home and commercial building heating with natural gas in the region. In addition, Algonquin is currently negotiating the terms of Project precedent agreements with other bidders in the 2012 Open Season and 2013 Open Season and Algonquin expects those precedent agreements to be executed within the next few months. Placing the Project facilities in service by November 1, 2016, will allow the Project Shippers to receive service as contemplated in the precedent agreements for the Project and to meet LDC increased peak demand at the beginning of the traditional heating season.

The AIM Project also advances President Barack Obama’s Climate Action Plan (WhiteHouse.gov website, 2013). 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 United States (“U.S.”) Greenhouse Gas emissions by 17 percent below 2005 levels by 2020, and is founded on 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 frames 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.

The primary purpose of the AIM Project is to provide the necessary pipeline infrastructure to economically transport significant, new diverse natural gas supplies from upstream receipt points to the Northeast markets and thereby meet the immediate and future load growth requirements. Not only will the Project satisfy the operational and load demands of the Project Shippers in the Northeast, but it will also help to eliminate capacity constraints into the region, increase commodity price competition, and reduce gas price volatility. Natural gas customers in the region, including residential, commercial and



industrial end users and electric generators, will be able to obtain immediate benefits from this additional capacity.

10.3 No-Action Alternative

The AIM Project would provide additional natural gas to help meet growing demand in the Northeastern U.S., and additional energy reliability and flexibility by expanding the current pipeline infrastructure to efficiently transport these new supplies of natural gas.

The No-Action Alternative would entail not constructing the AIM Project facilities. Without these facilities, the Project Shippers will not be able to satisfy their natural gas transportation needs and the Northeast Region (in particular, southern New England) will forego numerous benefits. Those lost benefits include: (1) new delivery points for diverse sources of natural gas supply to reach the Northeast market; (2) increasing competition in natural gas commodity markets, reducing natural gas price volatility, additional access to diverse natural gas supply sources and operational benefits; (3) opportunities for eliminating system bottlenecks that will enable Algonquin to bring additional natural gas supplies to the Northeast region; (4) providing new and existing electric generation facilities with greater sources of natural gas supply, with the expected benefits of improving air quality and the reliability of the electric system and reducing carbon emissions; (5) addressing escalating residential and commercial demands for energy with clean-burning natural gas; (6) providing new delivery points for Massachusetts local distribution companies, thus adding new supply options and enhancing operational performance and reliability of those systems; and (7) a more robust energy infrastructure to support economic development in the Northeast.

The No-Action Alternative would eliminate transportation infrastructure for new, long-term natural gas supply sources for the Northeast, causing traditional and potential users of natural gas to either find other natural gas transportation options or rely on other fuels (such as heating oil, with its recent price volatility and supply constraints and its higher air emissions), while others (e.g., gas-fired electric generating plants) could face difficulty getting economical gas supplies. That could lead to both higher gas and electric rates in the region as well as impede the required investment in new electric capacity. The lack of new pipeline infrastructure with multiple upstream supply sources into the region will continue the existing supply constraints in the area which create winter-premium pricing and exacerbate price volatility for all natural gas users in the area.

The No-Action Alternative would constrain the economic and environmental benefits associated with greater inter-fuel and gas-on-gas competition in the Northeast energy markets, in particular in the electric sector. As identified in Section 10.2 above, the facilities and services proposed herein will increase gas transportation capacity to these markets, allowing consumers greater choice among the abundant supplies attached to the North American pipeline grid and will thus encourage greater competition in fuel markets. By increasing the number of gas customers who have direct access to gas from multiple new diverse supply sources as well as the traditional Gulf coast supply basin, the additional capacity created by the AIM Project will enhance competition between gas suppliers from various production regions. Accordingly, the No-Action Alternative would deprive the Northeast region of the benefits of this enhanced competition. The No-Action Alternative would also deprive the Northeast of the cleaner air and reduced carbon emissions that would result if the AIM Project went forward and enabled electrical generators and residential, commercial and industrial users the opportunity to increase their reliance on natural gas over other energy sources like coal and fuel oil.

The No-Action Alternative would inhibit the development of cost-effective new pipeline infrastructure in the region that would not only provide the benefits described above in the short and long term, but would



also serve as the additional foundation for efficient expansion of the delivery capability to move developing natural gas supplies into the region in the future. Increasing economical access to such supplies would produce further economic and environmental benefits (notably, improved air quality) for the Northeast region.

10.3.1 Energy Conservation

Energy conservation measures are playing an increasing role in reducing future energy demand in the U.S. The Energy Policy Act of 2005 (“EPAAct”) provides guidelines to diversify America’s energy supply and reduce dependence on foreign sources of energy; increase residential and business’ energy efficiency and conservation (e.g., Energy Star Program); improve vehicular energy efficiency; and modernize the domestic energy infrastructure. While EPAAct encourages energy efficiency and conservation by supporting new energy efficient technologies and increasing funds for energy efficiency research, the results of energy conservation and its success in meeting the major goals of EPAAct would be long-term and, therefore, beyond the timeframe of the needs to be satisfied by the AIM Project.

10.3.2 Existing Transportation Systems Alternatives

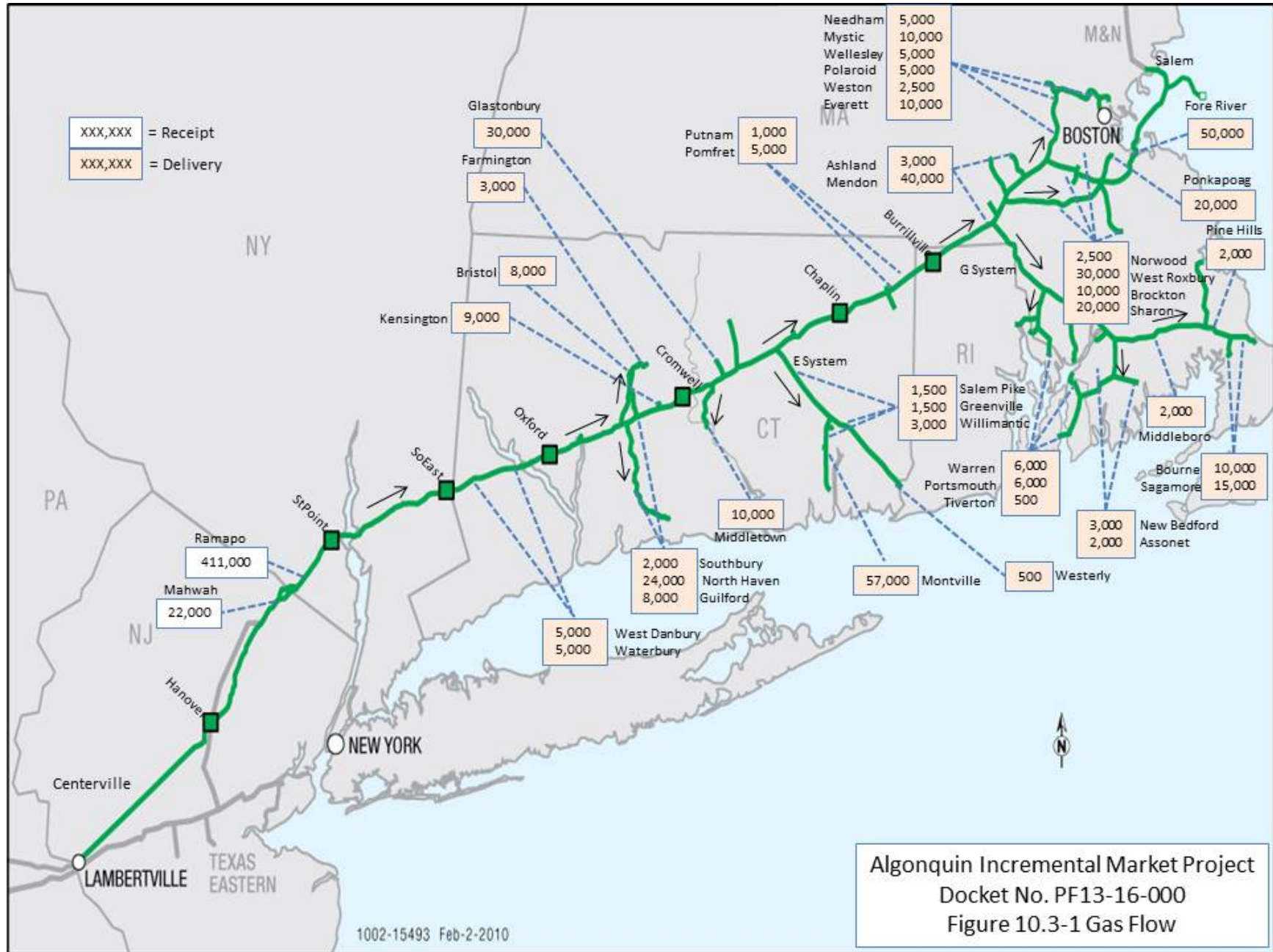
System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objectives of the proposed project. System options would involve the transportation of the equivalent amount of incremental natural gas. System alternatives would make it unnecessary to construct all or most of the proposed Project, although modifications or additions to other existing pipeline system(s) may be required to increase capacity, or construction of another entirely new pipeline system may be required. Although these modifications or additions could result in environmental impacts, the impacts may be less than, similar to, or greater than that associated with construction of the proposed AIM Project.

System alternatives that would result in significantly less environmental impact might be preferable to the Project. However, only those alternatives that are reasonable and consistent with the underlying purpose and need of the Project are required to be considered for National Environmental Policy Act (“NEPA”) purposes. Consequently, a viable system alternative must be technically and economically feasible and practicable to satisfy the Project’s purposes, including possessing the necessary contractual commitments made with Project shippers supporting the development of the Project.

Figure 10.3-1 provides a geographic overview of the Algonquin pipeline system showing the gas flow for the AIM Project for the new service proposed by Algonquin.

Modification of Existing Pipeline Systems

As discussed in Section 10.2, the purpose and need for the AIM Project is to provide the necessary infrastructure to transport natural gas from the existing interconnection between the Millennium Pipeline at the Town of Ramapo, Rockland County, New York, and the Tennessee Gas Pipeline in the Township of Mahwah, Bergen County, New Jersey, and various points located throughout southern New England in the states of Connecticut, Rhode Island and Massachusetts.



Algonquin Incremental Market Project
 Docket No. PF13-16-000
 Figure 10.3-1 Gas Flow



Based on the commitments from the Project Shippers, and the anticipated commitments from other shippers, to move specific volumes of gas to the Northeast markets, any viable system alternative composed of modifications to existing pipeline systems would need to transport 433,000 Dth/d from Ramapo, New York, and Mahwah, New Jersey to the proposed Connecticut, Rhode Island and Massachusetts delivery points while creating less environmental impact.

Status of Existing Systems

Algonquin does not have access to proprietary information concerning the flow characteristics of the existing interstate pipeline systems surrounding the southern New England Project area. However, based on publicly available information, Algonquin believes that these pipeline systems are at or near capacity. Accordingly, any of these existing systems would require substantial expansions well in excess of the facilities proposed for the AIM Project in order to transport an additional 433,000 Dth/d for deliveries throughout the Northeast.

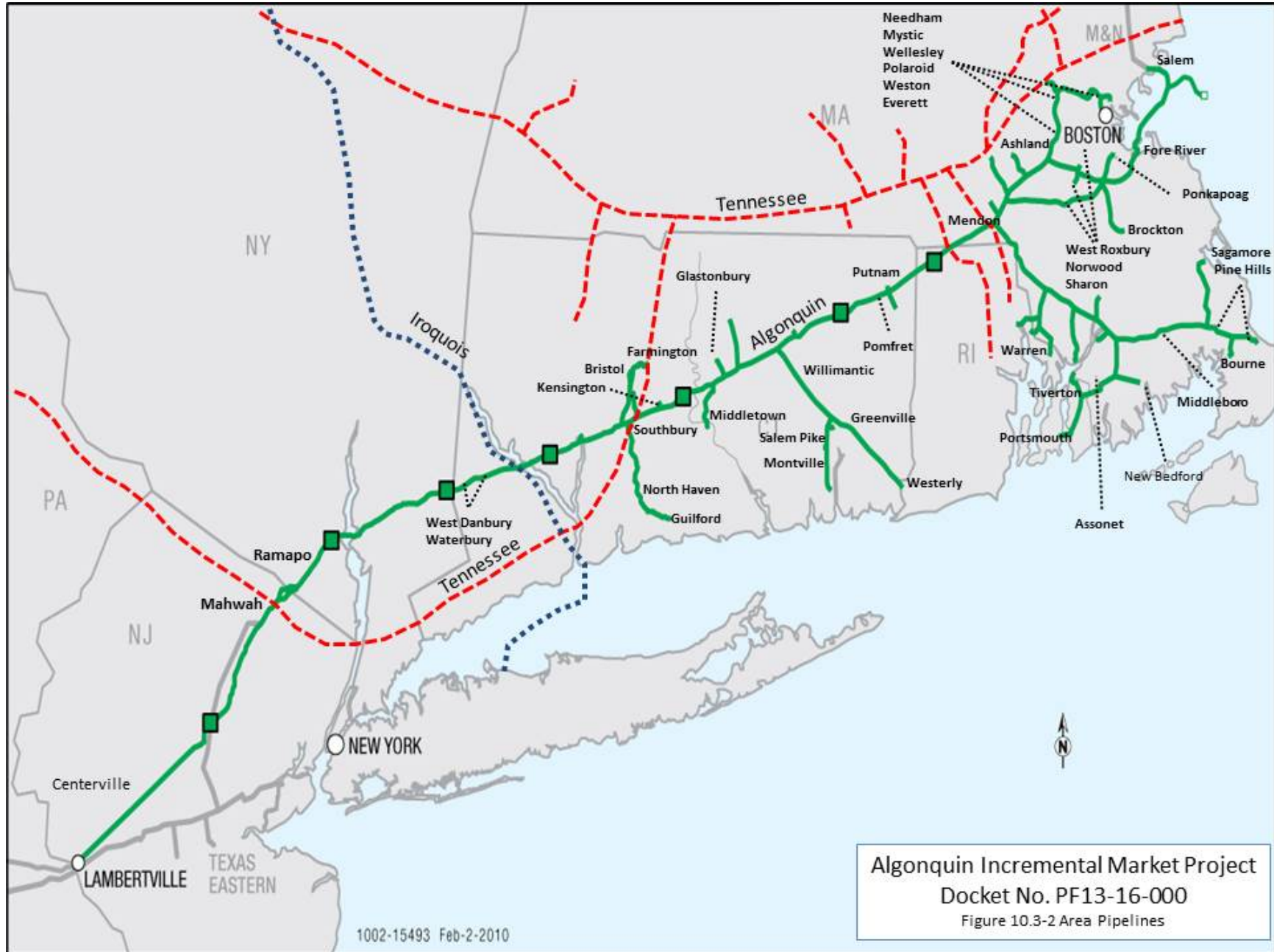
Additionally, the Project Shippers for the AIM Project have requested specific delivery points to the Project shippers' existing systems in southern New England, as well as to three new delivery points on Algonquin's system that do not exist today. Regardless of the alternatives evaluated, the gas supply must reach the delivery points requested by the Project shippers by November 2016. There are two interstate pipelines within the broad area around the AIM Project area that were evaluated to render the same service as proposed by Algonquin (see Figure 10.3-2). They are as follows:

- ◆ Tennessee Gas Pipeline Company ("Tennessee"); and
- ◆ Iroquois Gas Transmission System ("Iroquois").

Each interstate pipeline was evaluated for suitability to render the same service as that proposed by the AIM Project.

Tennessee Gas Pipeline

As represented in Figure 10.3-2, Tennessee's existing pipeline system currently reaches western Connecticut, northern Rhode Island and central Massachusetts. However, Tennessee's system only partially reaches the delivery areas that are part of the AIM Project. In fact, as the Tennessee system exists today it cannot serve eastern Connecticut, southern Massachusetts or southern Rhode Island without substantial new pipeline investment. Utilizing Tennessee's system as an alternative will require the construction of new pipeline in new virgin right-of-way ("ROW") to reach the delivery points specified by the Project Shippers, which will result in the disturbance of many more miles of land than the AIM Project, which uses existing, previously disturbed ROW to the maximum extent possible. In order for Tennessee to render the same service envisioned by the AIM Project, it would require Tennessee to nearly duplicate large segments of the Algonquin system. This is an undertaking which would have a far larger environmental impact than the modifications and enhancements of the Algonquin system as proposed in the AIM Project. As a result, the use of the Tennessee system is not a reasonably viable alternative to the AIM Project.





Iroquois Gas Transmission

The existing Iroquois pipeline system currently serves southwestern Connecticut and Long Island, New York but does not serve eastern Connecticut, Rhode Island or Massachusetts. In order for the Iroquois system to render the same service as that proposed by Algonquin, Iroquois would have to build an entirely new pipeline system that would essentially duplicate the existing Algonquin system. This would involve the construction of hundreds of miles of new pipelines which would have a far greater environmental impact than the modifications and enhancements to the Algonquin system as proposed in the AIM Project. As a result, the use of the Iroquois system is not a reasonably viable alternative to the proposed AIM Project.

10.4 Facility Design and Siting of the AIM Project Facilities

The AIM Project utilizes, to the maximum extent possible, existing facilities and existing ROW along the Algonquin system. The proposed Project facilities are designed to create 433,000 Dth/d of additional firm transportation capacity from Algonquin's Ramapo and Mahwah interconnections to the delivery points requested by the Project Shippers while continuing to meet all its contractual obligations to its existing customers.

The transportation path for the new AIM Project encompasses a substantial portion of the Algonquin system from receipt points at Ramapo, New York and Mahwah, New Jersey, near the western end of the system, to Everett, Massachusetts, near the easternmost end. This additional capacity and the fact that gas will be delivered throughout the Algonquin system requires a system-wide solution. The system-wide facilities proposed herein are a combination of increased compression, replacement of existing pipelines, the extension of existing pipeline loops and the construction of a new lateral.

Replacement Segments

The replacement of certain segments of the 26-inch diameter mainline with new 42-inch diameter pipeline is required to address several issues. First, in order to provide transportation service from Ramapo and Mahwah to the many delivery points along Algonquin's system as requested by the Project Shippers, Algonquin will be required to utilize both of Algonquin's existing mainlines. Replacement of the existing 26-inch mainline with a larger, 42-inch diameter pipeline allows for an increase in carrying capacity by increasing cross-sectional area. Second, an 850 psig MAOP of the 42-inch diameter mainline downstream of the Stony Point and Southeast Compressor Stations also increases the carrying capacity. Third, the area where the replacement segments are being proposed is a heavily populated area that does not readily allow for the construction of a third loop line requiring a wider permanent right-of-way. Fourth, replacement makes use of previously disturbed land that will minimize the environmental impact to the extent feasible.

The replacement segments proposed along the E-1 Lateral will replace an existing 6-inch diameter line that cannot support the proposed incremental capacity of the AIM Project. Existing capacity along the E-1 Lateral is currently total approximately 65,000 Dth/d. With the new AIM Project capacity of 58,000 Dth/d, the E-1 Lateral capacity will rise to approximately 123,000 Dth/d. Accordingly, Algonquin will replace this existing 6-inch diameter line with a 16-inch diameter line.



New Loop Segments

The new loop segments proposed under the AIM Project represent the extension of existing loop pipelines in areas where there is less development along the existing pipelines and installation of a new pipeline is more feasible and operationally preferable given the required delivery pressures.

New Lateral Pipeline

West Roxbury Lateral and M&R Station, City of Boston, Massachusetts

Boston Gas Company has requested a new delivery point located in the West Roxbury section of the City of Boston, Massachusetts. The site for the new delivery point cannot be reached by the existing Algonquin system. As a result, it is necessary to install approximately 4.9 miles of lateral pipeline and an M&R Station to provide Boston Gas Company with the service they have requested.

Compressor Station Additions

The existing Algonquin system does not have adequate unsubscribed capacity to accommodate the additional volumes contemplated under the AIM Project. In addition to the pipeline facilities detailed previously, the AIM Project requires additional compressors to transport the incremental Project volumes. The needed horsepower takes the form of the addition of two new compressor units at the existing Stony Point CS, and one compressor unit at each of the existing Southeast CS, Oxford CS, Cromwell CS, Chaplin CS, and Burrillville CS.

At the Stony Point CS, the larger compressor unit (Mars 100) will compress on the 30-inch diameter mainline loop while the smaller unit (Centaur 50) will compress on the 42-inch diameter mainline. As mentioned previously, service to the Project Shippers will be rendered from both mainlines and thus it is necessary to provide for additional compression capabilities on both lines.

There will be one compressor unit added at the Southeast CS (Mars 90), the Oxford CS (Centaur 50), Cromwell (Mars 100), the Chaplin CS (Taurus 60) and the Burrillville CS (Mars 90). These units will compress on the 30-inch diameter line. At the Cromwell CS and Burrillville CS, the existing units will be realigned such that they can compress on the 24-inch diameter mainline and 36-inch loop. The realignment is made necessary by the proposed deliveries rendered from the 24-inch diameter mainline and thus the realignment provides for additional carrying capacity on the 24-inch diameter mainline without the need for installing new compressor units.

10.5 Major Route Alternatives along the AIM Project Pipelines

As discussed in Section 10.1, the AIM Project will consist primarily of the replacement/modification of existing Algonquin pipeline and compressor station facilities and/or the construction of loop pipelines adjacent to existing Algonquin ROWs. As a result, the evaluation of major alternatives was limited and only one major route associated with the West Roxbury Lateral in Massachusetts was identified by Algonquin after consultation with public officials and following further engineering analysis. A description of the West Roxbury Lateral Alternative is provided below.



10.5.1 West Roxbury Lateral Alternative

To provide Boston Gas Company with the new gas delivery point it requested, Algonquin initially identified a preliminary route for the West Roxbury Lateral (the “West Roxbury Lateral Alternative”) as its proposed pipeline alignment. This West Roxbury Lateral Alternative route deviated from the currently proposed route for the West Roxbury Lateral at approximately MP 2.8 in the Town of Dedham, Massachusetts (see Figure 10.5-1). The alternate route followed Incinerator Road and existing parking lots and driveways for a variety of commercial properties for approximately 0.7 miles before paralleling State Route 1 to the north and crossing into the Boston neighborhood of West Roxbury. The Alternative route then followed an abandoned ROW for approximately 0.5 miles before intersecting Belle Avenue. At this point, the route followed various roadways including Belle Avenue, Baker Street, Spring Street and Alaric Street (approximately 1.0 mile) before intersecting with the currently proposed lateral route at approximately MP 4.9. If this Alternative route is used, the newly proposed M&R Station would also have to be located on private property at the intersection of Centre Street and Alaric Street, which does not present any favorable land options for locating a new aboveground facility.

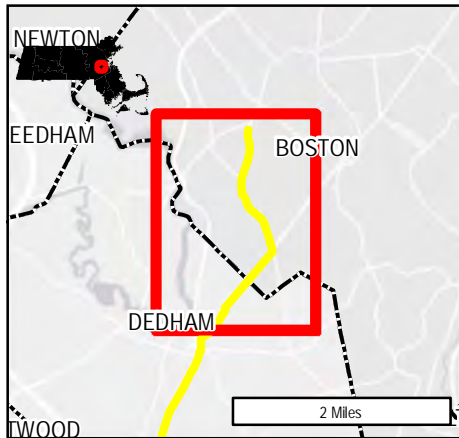
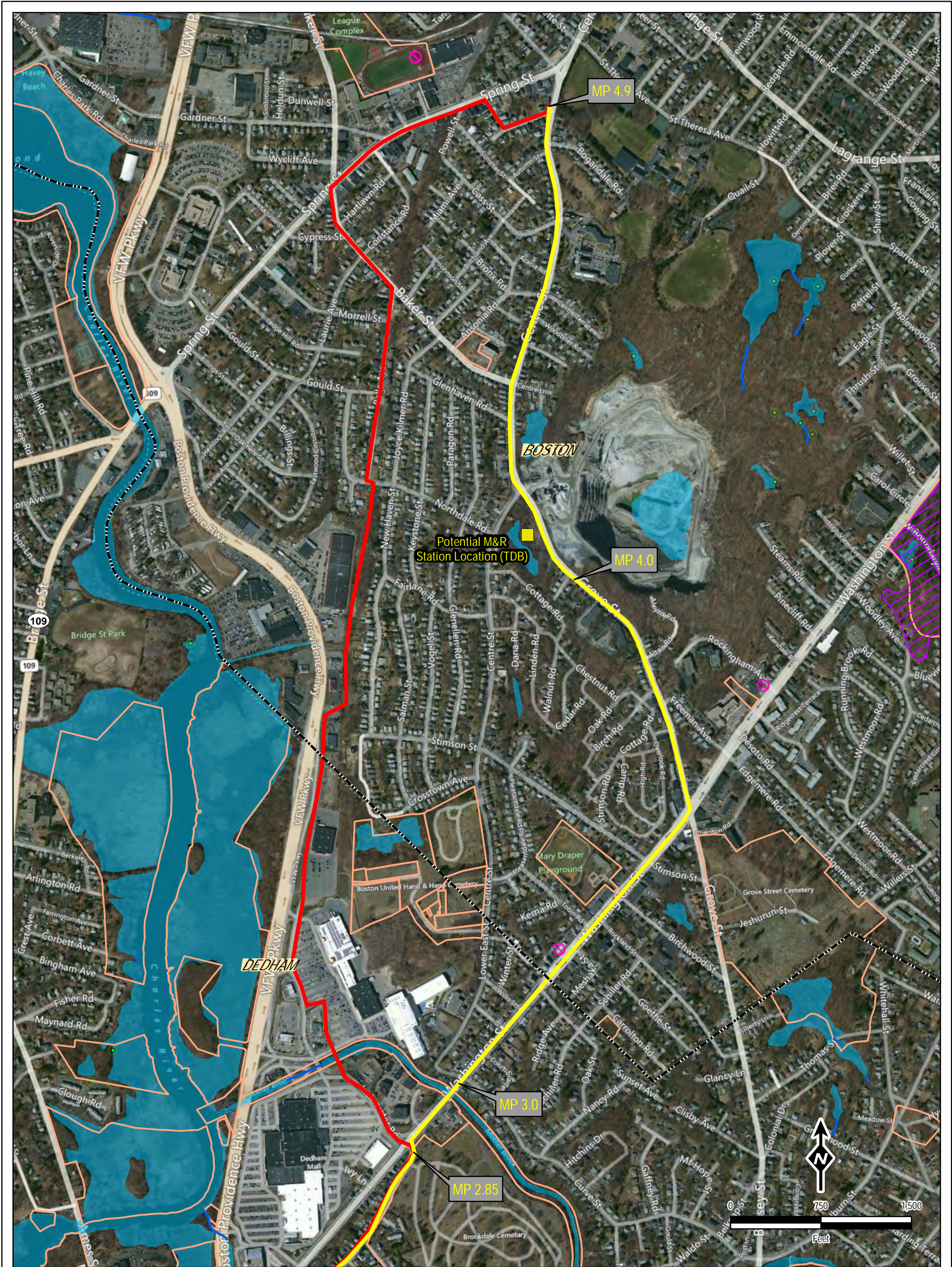
During the initial stakeholder outreach with public officials representing the City of Boston, significant concern was raised about the Alternative route primarily because of its proximity to residential neighborhoods, particularly along Belle Avenue in West Roxbury. For example, the Alternative alignment would cross through the backyards of several residential homes, impact residential streets, and cause significant disruption to the surrounding neighborhood. Thus, it was strongly suggested by the public officials that the route be relocated and that it be aligned more closely with public roads that traverse that area in order to minimize the impact on residential neighborhoods. The alignment that is currently proposed provides a better location because it follows more established roadways, including Washington Street, Grove Street and Centre Street in West Roxbury. In addition, after detailed engineering review, it was determined that there was no suitable location to site the proposed M&R Station along the West Roxbury Lateral Alternative due to the presence of residential homes, school athletic facilities, and traffic congestion. The proposed M&R station site under evaluation for the currently proposed route is located at the intersection of Centre Street and Grove Street on undeveloped property adjacent to an active gravel mining operation. This provides a more feasible option for siting a new M&R Station in this area. Given this and the other reasons described above, Algonquin eliminated the initial West Roxbury Lateral Alternative route from further consideration.

10.6 Minor Route Variations


The following section provides an overview of the minor route variations that were identified by Algonquin during preliminary routing investigations. Algonquin remains open to the consideration of minor route variations and will continue to investigate and evaluate viable route variations.

10.6.1 Hudson River

As described in Section 1.3.1 of Resource Report 1, a new pipeline crossing of the Hudson River will be required for the AIM Project. Currently, Algonquin owns and operates two existing 24-inch diameter pipelines and a 30-inch diameter pipeline that cross the Hudson River between the Town of Stony Point in Rockland County, New York, and the Village of Buchanan (Town of Cortlandt) in Westchester County, New York. Algonquin typically aligns its replacement facilities in similar locations to the pipeline being replaced to utilize the existing footprint as much as practicable. However, the three Algonquin pipelines currently crossing the Hudson River at this location were all installed using the open cut construction method in the late 1950s to early 1960s and cross through the Indian Point Energy Center Station property on the east side of the river.



LEGEND	
	Meter Stations
	Proposed West Roxbury Lateral
	Algonquin Natural Gas Pipelines
	West Roxbury Lateral Alternative
	Town Boundary
<i>Note: "Facilities shown on this map are preliminary"</i>	
	MassDEP AUL Sites
	Certified Vernal Pools
	Potential Vernal Pools
	MassDEP Hydrography
	Open Space
	NHESP Natural Communities
	NHESP Estimated Habitats of Rare Wildlife
	NHESP Priority Habitats of Rare Species
	Outstanding Resource Waters
	MassDEP Wetlands


 Algonquin Gas Transmission, LLC
AIM Project
 Figure 10-5-1:
 West Roxbury Lateral Alternative
 Massachusetts

Prepared on 7/24/2013

Data Sources: ESRI, SPECTRA, MassGIS, MassDEP, USGS, TRC

T:\PROJECTS\AUGUSTASPECTRA\AIM\West_Roxbury_Lateral_Alt_Comparison.mxd



For these reasons, Algonquin is currently evaluating the feasibility of installing the new 42-inch diameter loop pipeline across the Hudson River in this area using the horizontal directional drilling (“HDD”) construction technique.

A HDD crossing at this location would be approximately 6,500 feet long, which is technically challenging for a 42-inch diameter pipeline crossing. Given the challenges related to such an HDD crossing coupled with the logistical requirements for constructing within the Indian Point Energy Center Station property, Algonquin is also currently evaluating another crossing location approximately 0.5 miles south of the existing pipeline crossings. Figure 10.6-1 depicts the Hudson River HDD Study Area (“Study Area”).

Since an HDD involves a different set of geological factors to be successful, Algonquin is in the process of obtaining permits from the New York State Department of Environmental Conservation and the U.S. Army Corps of Engineers to collect geotechnical corings in the Study Area in order to perform a thorough feasibility analysis. Permit applications were filed in early July 2013 and the in-water geotechnical work is expected to commence in late August 2013.

Algonquin has conducted early outreach efforts with the landowners, governmental/municipal officials, and agencies that have an interest in the Hudson River crossing area. No definitive decisions have been made at this time regarding a “preferred route” crossing. Algonquin will continue to coordinate with interested parties and will continue with its engineering evaluations to determine the most feasible route locations for crossing the Hudson River. More conclusive information will be presented in the second draft of this resource report that will be filed with the FERC in October 2013.

10.7 Aboveground Facility Alternatives

With the exception of the three newly proposed M&R Stations in Massachusetts, the aboveground facilities for the AIM Project will involve modifications to existing Algonquin facilities in order to meet the needs of Project shippers.

10.7.1 Existing Metering & Regulating Stations

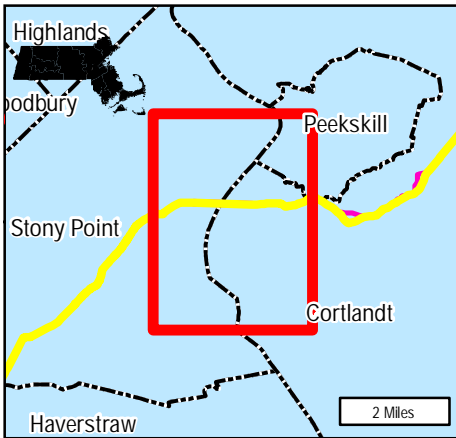
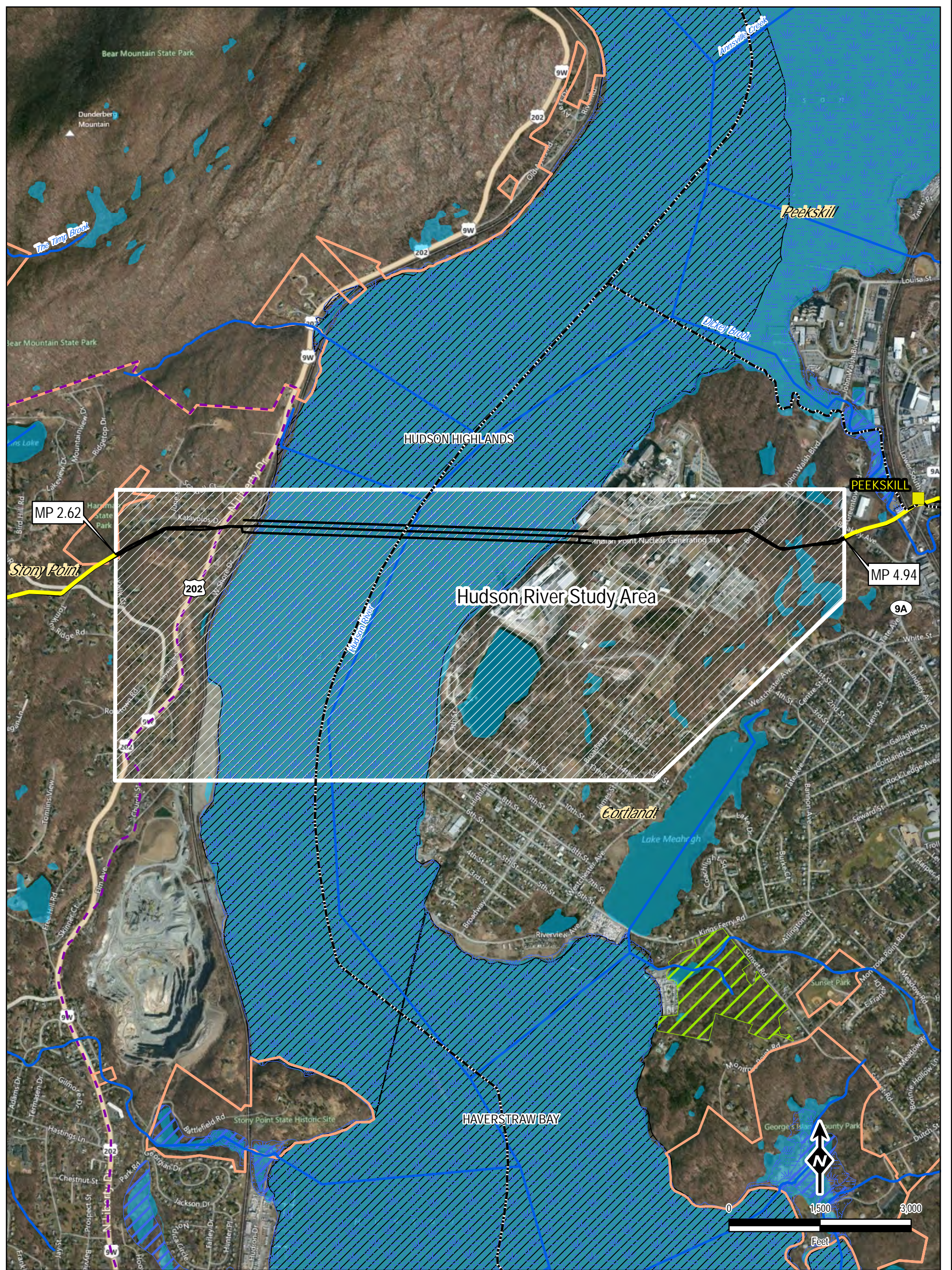
As stated in Section 1.3.1.2 and 1.3.1.3 of Resource Report 1, the AIM Project will include modifications to 30 existing Algonquin M&R Stations in New York, Connecticut and Massachusetts. The proposed modifications will include the replacement of existing heaters and metering facilities, piping modifications, facility uprates, and, in a few cases, complete station rebuilds. Algonquin is still evaluating the required modification work at each station site. More conclusive information regarding potential alternatives to the M&R Stations that require complete rebuilds will be presented in the second draft of this resource report that will be filed with the FERC in October 2013.

10.7.2 Construction of New M&R Stations

The AIM Project includes the construction of three new Algonquin M&R Stations in Suffolk County, Plymouth County and Bristol County, Massachusetts, respectively. The new M&R Stations are identified in Table 1.3-2 of Resource Report 1 and are described in further detail below.

- ◆ Assonet M&R Station

Algonquin proposes to construct the new Assonet M&R Station in the Town of Freetown located in Bristol County. Algonquin is constructing this station to deliver natural gas to the NSTAR Gas Company.



LEGEND

Meter Stations	NHD Stream/River
Stony Point L&R	DEC Lands
Existing Algonquin Natural Gas Pipelines	New York State Park and Public Lands
Town Boundary	Upper Hudson Tidal Wetlands
Hudson River Study Corridor	Significant Coastal Fish and Wildlife Habitat
<i>Note: "Facilities shown on this map are preliminary"</i>	NYDEC Wetlands
	NWI Wetlands

Spectra Energy

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

AIM Project
 Figure 10.6-1:
 Hudson River Study Corridor
 New York

Prepared on 7/29/2013



- ◆ North Middleborough M&R Station
Algonquin proposes to construct the new North Middleborough M&R Station, including regulation, within the Town of Middleborough located in Plymouth County.
- ◆ West Roxbury M&R Station
Algonquin proposes to construct the new M&R Station, including regulation, at the northern end of the new West Roxbury Lateral in the City of Boston (West Roxbury). Algonquin is constructing this station to deliver natural gas to Boston Gas Company.

The general locations of the new Assonet and West Roxbury M&R stations are shown on the U.S. Geological Survey (“USGS”) Quadrangle excerpts located in Appendix 1A of Resource Report 1. The location of the North Middleborough M&R Station is not determined and is not shown on the USGS quad at this time. Algonquin is still evaluating the potential site requirement for each station site. More conclusive information regarding potential alternatives to the new M&R Stations will be presented in the second draft of this resource report that will be filed with the FERC in October 2013.

Launcher and receiver facilities will be located for efficient testing and cleaning of the pipeline and will be co-located with other aboveground facilities to the maximum extent practicable. Proposed mainline valve locations have been spaced along the pipelines as required, in accordance with the spacing requirements of 49 CFR Part 192, Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards.

10.8 Future Considerations Regarding Alternatives

Algonquin understands that as the Project moves forward through the FERC NEPA Pre-filing Process and the routing is examined more closely by affected parties, some additional concerns and issues are likely to be raised and additional alignment changes may be proposed. Algonquin remains open to the consideration of such alternatives and will continue to investigate and evaluate viable alternatives.

10.9 References

2009 Plan. 2009 State Energy Plan, Volume I. State Energy Planning Board, Governor David A. Paterson, State of New York. December 2009.

Online: http://www.nysenergyplan.com/final/New_York_State_Energy_Plan_VolumeI.pdf
Accessed on July 18, 2013.

[CES] Comprehensive Energy Strategy for Connecticut. Connecticut Department of Energy and Environmental Protection. 2013. February 19, 2013.

Online: http://www.ct.gov/deep/lib/deep/energy/cep/2013_cep_final.pdf.

WhiteHouse.gov website. 2013. *FACT SHEET: President Obama’s Climate Action Plan*. June 25, 2013. Online: <http://www.whitehouse.gov/the-press-office/2013/06/25/fact-sheet-president-obama-s-climate-action-plan>. Accessed on July 12, 2013.