



**NATIONAL FUEL GAS SUPPLY CORPORATION
AND EMPIRE PIPELINE, INC.**

NORTHERN ACCESS 2016 PROJECT

**RESOURCE REPORT 1
General Project Description**

FERC Docket No. PF14-18-000

Submitted: March 16, 2015



| SUMMARY OF REQUIRED FERC REPORT INFORMATION | | |
|---|--|--|
| Topic | FERC Reference | Report Reference or Not Applicable |
| 1. Provide a detailed description and location map of the project facilities. <ul style="list-style-type: none"> • Include all pipeline and aboveground facilities. • Include support areas for construction or operation. • Identify facilities to be abandoned. | §380.12(c)(1) | Sections 1.1, 1.2, 1.5 and 1.7, Appendix 1-A |
| 2. Describe any nonjurisdictional facilities that would be built in association with the project. <ul style="list-style-type: none"> • Include auxiliary facilities. • 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. | §380.12(c)(2) §2.55(a) §380.12(c)(2)(ii) | Section 1.7 / Not Applicable |
| 3. Provide current original U.S. Geological Survey (USGS) 7.5-minute-series topographic maps with mileposts showing the project facilities. <ul style="list-style-type: none"> • Maps of equivalent detail 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. | §380.12(c)(3) | Appendix 1-A |
| 4. Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the project facilities. | §380.12(c)(3) | Appendix 1-C |
| 5. Provide plot/site plans of compressor stations showing the location of the nearest noise sensitive areas (NSA) within 1 mile. <ul style="list-style-type: none"> • Scale no smaller than 1:3,600 • Show reference to topographic maps and aerial alignments provided above. | §380.12(c)(3,4) | Appendix 1-D |
| 6. Describe construction and restoration methods. <ul style="list-style-type: none"> • Include this information by milepost | §380.12(c)(6) | Section 1.3 |
| 7. Identify the permits required for construction across surface waters. <ul style="list-style-type: none"> • 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 the FERC. | §380.12(c)(9) | Section 1.6 and Table 1-3 |
| 8. Provide the names and address of all affected landowners and certify that all affected landowners will be notified as required in §157.6(d). <ul style="list-style-type: none"> • Affected landowners • Provide an electronic copy directly to the environmental staff. | §380.12(c)(10) §157.6(d) | Appendix 1-G |

Additional Information

| | |
|---|-----------------------------|
| Describe all authorizations required to complete the proposed action and the status of applications | Section 1.6 |
| Provide plot/site plans of all other aboveground facilities that are not completely within the right-of-way. | Appendix 1-B |
| 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 right-of-way, and temporary construction right-of-way. | Appendix 1-E |
| Summarize the total acreage of land affected by construction and operation of the project. | Section 1.2 and Table 1.3-1 |
| 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. | Section 1.3.21 |
| Send two (2) additional copies of topographic maps and aerial images/photographs directly to the environmental staff of the Office of Energy Projects (OEP). | Appendices 1-A and 1-C |

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LIST OF ACRONYMS

| | |
|-------------------|--|
| ABACT | Antidegradation best available combination of technologies |
| AC | alternating current |
| ANSI | American National Standards Institute |
| APE | Area of Potential Effect |
| API | American Petroleum Institute |
| AR | Access Road |
| ASME | American Society of Mechanical Engineers |
| ATWS | additional temporary workspace |
| BMP | best management practice |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| Dth/d | Dekatherms per day |
| E&SCP | Erosion and Sedimentation Control Plan |
| EI | Environmental Inspector |
| Empire | Empire Pipeline, Inc. |
| ESCAPM | National’s Erosion and Sediment Control & Agricultural Mitigation Plan |
| FERC | Federal Energy Regulatory Commission |
| FERC’s Plan | FERC’s Upland Erosion Control, Revegetation, and Maintenance Plan |
| FERC’s Procedures | FERC’s Wetland and Waterbody Construction and Mitigation Procedures |
| HDD | horizontal directional drilling |
| hp | horsepower |
| KV | kilovolt |
| M&R | metering and regulating |
| MAOP | Maximum Allowable Operating Pressure |
| MLV | mainline valve |
| National Fuel | Supply and Empire, collectively known as |
| NGA | Natural Gas Act |
| NDE/NDT | nondestructive examination/nondestructive testing |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| NWI | National Wetlands Inventory |
| NWP | Nationwide Permit |
| NYSDEC | New York State Department of Environmental Conservation |
| O&M | operations and maintenance |
| OD | outside diameter |
| OPRHP | Office of Parks, Recreation, and Historic Preservation |
| PADCNR | Pennsylvania Department of Conservation and Natural Resources |
| PADEP | Pennsylvania Department of Environmental Protection |
| PAR | Permanent Access Road |
| PHMC | Pennsylvania Historical and Museum Commission |
| Project | Northern Access 2016 Project |
| ROW | right-of-way |
| SHPO | State Historic Preservation Officer |
| Supply | National Fuel Gas Supply Corporation |

| | |
|-------|--------------------------------|
| TAR | Temporary Access Road |
| TBD | To Be Determined |
| TGP | Tennessee Gas Pipeline |
| USACE | U.S. Army Corps of Engineers |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| § | Section |

RESOURCE REPORT 1 – GENERAL PROJECT DESCRIPTION

1.0 INTRODUCTION

National Fuel Gas Supply Corporation (“Supply”) and Empire Pipeline, Inc. (“Empire,” and together with Supply, herein referred to as “National Fuel”), both subsidiaries of National Fuel Gas Company, are seeking authorization from the Federal Energy Regulatory Commission (“FERC”) pursuant to Section 7(c) of the Natural Gas Act (“NGA”) to construct and operate the proposed Northern Access 2016 Expansion Project (“Project”), and authorization pursuant to Section 7(b) of the NGA to abandon certain related facilities.

Through this proposed Project, Supply proposes to expand its pipeline system to provide approximately 497,000 dekatherms per day (“Dth/d”) of new firm natural gas transportation capacity. Empire also proposes to expand its pipeline system to provide approximately 350,000 dekatherms per day of new firm natural gas transportation capacity. Specifically, Supply would provide the new firm natural gas transportation service from a receipt point at a production gathering system in McKean County, Pennsylvania to interconnections with (i) Empire’s existing pipeline system in Niagara County, New York, and (ii) Tennessee Gas Pipeline Company, L.L.C. (“TGP”) at a new interconnect in Erie County, New York. Empire would provide approximately 350,000 Dth/d of new firm natural gas transportation service from a Supply interconnection in Niagara County, New York to Empire’s existing interconnection with TransCanada PipeLines Limited (TransCanada) at Chippawa.

The Project is located in McKean County, Pennsylvania and the counties of Allegany, Cattaraugus, Erie and Niagara Counties, New York. The Project consists of new gas transmission facilities, and the modification and replacement of existing gas transmission facilities to provide the proposed service. The proposed Supply facilities include approximately 96.65 miles of new 24-inch outer diameter (“OD”) natural gas transmission pipeline (“Mainline Pipeline”), the addition of compression at an existing compressor station, and one interconnect meter station. The proposed Empire facilities include a new compressor station, a new dehydration facility, and the replacement of approximately 3.05 miles of an existing 16-inch OD Supply pipeline with 24-inch OD pipeline (collectively, the “Replacement Pipeline”).

1.1 PURPOSE AND NEED

The Project will enable Supply and Empire to provide incremental firm transportation to markets in the northeastern United States and Canada through Supply and Empire’s existing interconnections. Market access for the Shipper, a natural gas producer in north-central Pennsylvania, would be available at Empire’s interconnection with TransCanada at Chippawa, as well as markets on TGP’s 200 Line in Erie County, New York, and other interconnections with local gas distribution companies, power generators, and other interstate pipelines available on both Supply and Empire. The Supply portion of the Project would create a total of 497,000 Dth/day of capacity from a receipt point at a

producer interconnection (McKean County Pennsylvania); 357,000 Dth/day of which will be delivered to Supply’s Interconnection with Empire in Wheatfield, New York, and the remaining 140,000 of which will be delivered to a new Supply interconnection with TGP’s 200 Line. Empire’s portion of the Project would create 350,000 Dth/day of new capacity from the aforementioned Wheatfield interconnection to a delivery point with TransCanada Pipeline at Chippawa (Erie County, New York). Supply and Empire each held Open Seasons for the Project from June 3 to June 26, 2014 and executed a long-term binding agreement with Seneca Resources Corporation for 100% of the firm transportation capacity.

As a producer/supply driven project, the delivered gas would be accessible by customers on TransCanada and TGP, and other pipeline interconnections on both pipelines providing access to Canadian and northeastern U.S. markets.

Please see the Public Convenience and Necessity section of the certificate application for the Project for further discussion of the purpose and need for the Project. The proposed Project in-service date is November 1, 2016.

1.2 LOCATION AND DESCRIPTION OF FACILITIES

The Project includes new pipeline and aboveground facilities, modification of existing aboveground facilities, and the replacement of existing pipeline facilities located in McKean County, Pennsylvania and the counties of Allegany, Cattaraugus, Erie and Niagara Counties, New York. A summary of the facilities for this Project is provided in Table 1.2-1.

Table 1.2-1. Summary of Project Facilities

| Facility Identification | Company | Facility Type | Length (miles), Additional Horsepower (hp), or Milepost location (“MP” #) | State | County |
|----------------------------------|---------|---|---|-------|-------------|
| Pipeline Facilities | | | | | |
| Mainline Pipeline | Supply | 96.65 miles of new 24-inch pipeline | 27.90 mi | PA | McKean |
| | | | 8.70 mi | NY | Allegany |
| | | | 35.00 mi | NY | Cattaraugus |
| | | | 25.05 mi | NY | Erie |
| Replacement Pipeline | Empire | 3.05 miles of 24-inch pipeline to replace existing 16-inch pipeline | 3.05 mi | NY | Niagara |
| Total Pipeline Facilities | | | 99.70 mi | - | - |

| Facility Identification | Company | Facility Type | Length (miles), Additional Horsepower (hp), or Milepost location (“MP” #) | State | County |
|---|---------------|--|--|-------|--|
| Aboveground Facilities (in MP order, south to north) | | | | | |
| Tie-In at Clermont | Supply | New Tie-In Facility | Mainline MP 0.0 | PA | McKean |
| Tie-In and M&R at Hinsdale Compressor Station ¹ | Supply | New Tie-In Facility and M&R Station | Mainline MP 43.05 | NY | Cattaraugus |
| TGP Interconnect | Supply | New M&R Station | Mainline MP 92.15 | NY | Erie |
| X-North M&R/Pressure Reduction Station | Supply | New M&R Station | Mainline MP 95.75 | NY | Erie |
| Porterville Compressor Station | Supply | Modification to Existing Compressor Station | 5,350 hp, located 0.5 mile west of Mainline 96.2 | NY | Erie |
| Tie-In to Line X-North | Supply | New Tie-In Facility | Mainline MP 96.65 | | |
| 13 Mainline Valve (MLV) Sites | Supply | MLV Sites | 6.92, 13.99, 21.94, 28.31, 35.69, 43.09, 51.07, 58.08, 64.73, 72.65, 80.45, 87.47, 93.65 | PA/NY | McKean, Allegheny, Cattaraugus, and Erie |
| Tie-In Replacement Pipeline to Line X-North (south end of Replacement Pipeline) | Empire/Supply | Modify Existing Tie-In Facility | Replacement MP 0.0 | NY | Niagara |
| Pendleton Compressor Station | Empire | New Compressor Station | 22,214 hp, at Replacement MP 3.05 | NY | Niagara |
| Remove Existing Meter Station | Empire | Remove existing meter station equipment and relocate/reuse at new Pendleton Compressor Station | NA | NY | Niagara |

| Facility Identification | Company | Facility Type | Length (miles), Additional Horsepower (hp), or Milepost location (“MP” #) | State | County |
|---|---------|---------------------------------|---|-------|---|
| Tie-In of XM-10 to Empire Pipeline | Empire | Modify Existing Tie-In Facility | NA (1 mile north of Replacement MP 3.05) | NY | Niagara |
| Wheatfield Dehydration Facility | Empire | New Dehydration Facility | NA | NY | Niagara |
| Auxiliary Facilities | | | | | |
| Cathodic Protection Facilities | Supply | Cathodic Protection Groundbeds | TBD | PA/NY | TBD (McKean/Allegany/Cattaraugus/Erie/and/or Niagara) |
| Notes: NA = Not Applicable TBD = To be Determined 1 = Hinsdale Compressor Station is proposed as part of National Fuel’s Northern Access 2015 Project, certificated by FERC on 2/27/15 in CP14-88 and expected to be in-service prior to the construction of this Project. | | | | | |

1.2.1 Pipeline Facilities

Pipeline facilities consist of new and the replacement of existing gas transmission pipeline. Approximately 96.65 miles of new Mainline Pipeline and 3.05 miles of Replacement Pipeline are proposed. A summary of the pipeline facilities for the Project is provided in Table 1.2-2.

1.2.1.1 Mainline Pipeline

The Project includes approximately 96.65 miles of new 24-inch OD pipeline (Mainline Pipeline) with a maximum allowable operating pressure (“MAOP”) of 1,440 pounds per square inch gauge (“psig”). The majority (81.7 miles or approximately 85%) of the Mainline Pipeline mileage will be located parallel and adjacent to existing utility corridors, including approximately 1.4 miles parallel to Somerset Gas Gathering of Pennsylvania, LLC pipelines, 59.8 miles parallel to National Grid U.S. and New York State Electric & Gas Corporation’s (NYSEG) 345 kilovolt (“KV”) power lines, approximately 17.6 miles parallel to Supply’s Line X-South right-of-way (“ROW”), and 2.9 miles parallel to TGP Niagara Spur Pipeline. The pipeline will commence in Sergeant Township, McKean County, Pennsylvania, and continue north for approximately 27.9 miles before crossing into New York. In New York, the Mainline Pipeline will continue approximately 68.76 miles to the north through Allegany,

Cattaraugus and Erie Counties, before reaching its terminus on Supply’s Line X-North, just north of Supply's existing Porterville Compressor Station in the Town of Elma, Erie County, New York.

Approximately 13 main line valves (“MLVs”) will be installed on the new Mainline Pipeline. National Fuel will install MLVs on the Mainline Pipeline within areas affected by pipeline construction and within the permanent operational ROW.

Table 1.2-2. Pipeline Facilities

| Facility | Pipeline Diameter and Type | Milepost | | Length (miles) | County | Township/Town |
|---|----------------------------|-----------------|-------|----------------|-------------|---------------|
| | | Begin | End | | | |
| Pennsylvania | | | | | | |
| Mainline | 24-inch new line | 0.00 | 5.08 | 5.08 | McKean | Sergeant |
| | | 5.08 | 16.35 | 11.27 | McKean | Keating |
| | | 16.35 | 18.95 | 2.6 | McKean | Annin |
| | | 18.95 | 20.78 | 1.83 | McKean | Eldred |
| | | 20.78 | 22.32 | 1.54 | McKean | Annin |
| | | 22.32 | 27.90 | 5.58 | McKean | Ceres |
| New York | | | | | | |
| Mainline | 24-inch new line | 27.90 | 34.83 | 6.93 | Allegany | Genesee |
| | | 34.83 | 36.58 | 1.75 | Allegany | Clarksville |
| | | 36.58 | 38.30 | 1.72 | Cattaraugus | Portville |
| | | 38.30 | 44.80 | 6.50 | Cattaraugus | Hinsdale |
| | | 44.80 | 49.12 | 4.32 | Cattaraugus | Ischua |
| | | 49.12 | 50.82 | 1.70 | Cattaraugus | Humphrey |
| | | 50.82 | 57.27 | 6.45 | Cattaraugus | Franklinville |
| | | 57.27 | 65.10 | 7.83 | Cattaraugus | Machias |
| | | 65.10 | 71.60 | 6.50 | Cattaraugus | Yorkshire |
| | | 70.60 | 78.84 | 8.24 | Erie | Sardinia |
| | | 78.84 | 85.92 | 7.08 | Erie | Colden |
| | | 85.92 | 89.72 | 3.80 | Erie | Aurora |
| | | 89.72 | 94.70 | 4.98 | Erie | Wales |
| | | 94.70 | 96.63 | 1.93 | Erie | Marilla |
| 96.63 | 96.65 | 0.02 (100 feet) | Erie | Elma | | |
| Subtotal Mainline Pipeline Facilities | | | | 96.65 | | |
| Replacement | 24-inch replacement | 0.0 | 1.1 | 1.1 | Niagara | Wheatfield |
| | | 1.1 | 3.05 | 1.95 | Niagara | Pendleton |
| Subtotal Replacement Pipeline Facilities | | | | 3.05 | | |
| Total Pipeline Facilities | | | | 99.70 | | |

1.2.1.2 Replacement Pipeline

Pipeline facilities also include the replacement of a total of 3.05 miles of Supply’s existing 16-inch pipeline with 24-inch pipeline in the Towns of Wheatfield and Pendleton, Niagara County, New York (Replacement Pipeline). The replacement pipeline will have a MAOP of 1,440 psig.

1.2.2 Aboveground Facilities

Aboveground facilities consist of new facilities and the modification of existing facilities. The Project includes one new compressor station, modifications to the existing Porterville Compressor Station, a new TGP interconnect with meter and regulator station (M&R Station), and a new dehydration facility. It also includes four new tie-ins (one, at the Hinsdale Compressor Station, which includes an M&R station for delivery to the existing Supply Line X-South), and a new M&R station delivering to National Fuel’s Line X-North Pipeline (located slightly away from the actual tie-in location). A summary of the aboveground facilities for the Project is provided in Table 1.2-3.

Table 1.2-3. Aboveground Facilities

| Facility Identification | New/Modification | Milepost | Horsepower | | State | County |
|---|---|---|------------|-------|-------|-------------|
| | | | New | Added | | |
| Pendleton Compressor Station | New | Replacement 3.05 | 22,214 | NA | NY | Niagara |
| Porterville Compressor Station | Modification | 0.5 mile west of Mainline 96.2 | NA | 5,350 | NY | Erie |
| TGP Interconnect (M&R Station) | New | Mainline 92.15 | NA | NA | NY | Erie |
| Wheatfield Dehydration Facility | New | 4.55 mile west of Replacement MP 0.5 (along Existing Empire Pipeline) | NA | NA | NY | Niagara |
| Tie-In at Clermont | New | Mainline 0.00 | NA | NA | PA | McKean |
| Tie-In and M&R station at Hinsdale Compressor Station | Within Existing Station Property ¹ | Mainline 43.05 | NA | NA | NY | Cattaraugus |
| X-North M&R/Pressure Reduction Station | New | Mainline 95.75 | NA | NA | NY | Erie |
| Tie-In to Line X-North | New | Mainline 96.65 | NA | NA | NY | Erie |

| Facility Identification | New/Modification | Milepost | Horsepower | | State | County |
|---|------------------|--|------------|-------|-------|---|
| | | | New | Added | | |
| Mainline Valve (MLV) Sites (13) | New | 6.92, 13.99, 21.94, 28.31, 35.69, 43.09, 51.07, 58.08, 64.73, 72.65, 80.45, 87.47, 93.65 | NA | NA | PA/NY | McKean, Allegany, Cattaraugus and Erie |
| Tie-In of Replacement Pipeline to Line X-North (south end of Replacement Pipeline) | Modification | Replacement 0.00 | NA | NA | NY | Niagara |
| Tie-in of XM-10 Pipeline to Empire Pipeline | Modification | 1 mile north of Replacement 3.05 | NA | NA | NY | Niagara |
| Remove Existing Meter Station | Existing/Remove | 200 feet north of proposed Pendleton Compressor Station | NA | NA | NY | Niagara |
| Notes: NA = Not Applicable 1 = Hinsdale Compressor Station was proposed as part of National Fuel's Northern Access 2015 Project, was certificated by FERC on February 27, 2015 in CP14-88 and is expected to be in-service prior to the start of construction for this Project. | | | | | | |

1.2.2.1 Pendleton Compressor Station

Empire proposes to construct one new compressor station, at the north end of the Replacement Pipeline in the Town of Pendleton, Niagara County, New York (see site location on maps in Appendix 1-A, and a compressor station plot plan in Appendix 1-C). Empire anticipates the compressor station will include a total of approximately 22,214-horsepower (“hp”) gas-fired compressor units, consisting of two gas turbines (11,107 hp each), each housed in separate new buildings. Appurtenant facilities will include an access driveway, parking areas, a station control/auxiliary building, a power distribution and control building, intake and exhaust silencers, gas coolers, turbine lube oil coolers, unit blowdown silencers, a filter-separator with a liquids tank, and an emergency electrical power generator. In addition, measurement and control facilities and a pig launcher and receiver will be installed.

Pipeline facilities required for this compressor station are limited to a new 24-inch diameter suction pipeline and a new 16- or 20-inch diameter discharge pipeline, which

will connect the compressor station to the Replacement Pipeline. A new MLV assembly with launcher and receiver will also be required on the existing pipeline, located between the new suction and discharge lines. All of the facilities described above will be located on the property to be acquired by Empire or on the existing ROW for the XM-10/Replacement Pipeline.

Electric power and communications circuits are anticipated to be supplied from local utility companies. Empire will consult with the local electric provider to determine if electric supplies will be adequate to support the new compressor station. These utilities may require minor construction to bring the services into the station property. If the respective utilities' existing power distribution infrastructure is insufficient to support the incremental load requirements for the station, modifications to the utilities' overall distribution networks (such as line change outs), may be required. Water and sewer utilities either will be supplied from local utility providers (if available) or will be supplied onsite through installation of an onsite water well and a sanitary sewer system (e.g., onsite septic or tank).

1.2.2.2 Porterville Compressor Station

At the existing Porterville Compressor Station in the Town of Wales, Erie County, New York, Supply proposes to add a total of 5,350 hp of compression, consisting of two reciprocating engine driven compressors (2,675 hp each) (see site location on maps in Appendix 1-A, and a compressor station plot plan in Appendix 1-C). The existing station currently has 600 hp of installed compression. The proposed facilities will be located entirely on land already owned by National Fuel, at the Porterville Compressor Station.

Appurtenant facilities will include a station control/auxiliary building, power distribution and control building intake and exhaust silencers, gas coolers, unit blowdown silencers, a filter-separator with a liquids tank and an emergency electrical power generator. In addition, measurement and control facilities will be installed. Finally suction and discharge pipelines will be installed to connect the new compressors to the existing Line X-North Pipeline within the Porterville Compressor Station.

1.2.2.3 TGP Interconnect

The TGP Interconnect M&R station will be located in the Town of Wales, Erie County, New York (see site location on maps in Appendix 1-A, and a station plot plan in Appendix 1-C).

The M&R station will consist of an unmanned facility enclosed by chain link fence containing a meter, regulating, filter separator and flow control facilities housed in a building, associated above and below ground piping, and valve fixtures to tie in to the Mainline Pipeline and the existing TGP 200 Line. The M&R building will be constructed on poured concrete slab foundations or piles, with the balance of the yard inside the facility fence line consisting of crushed stone. This station will also require power, communications, and a stand-by generator.

1.2.2.4 Wheatfield Dehydration Facility

A dehydration unit to remove water vapor from the natural gas stream will be located along the Empire Pipeline in the Town of Wheatfield, Niagara County, New York (see site location on maps in Appendix 1-A, and a station plot plan in Appendix 1-C). National Fuel will utilize triethylene glycol dehydrators to remove water vapor from the natural gas stream. The purpose of this unit is to take gas that already meets U.S. standards for gas pipeline moisture content and allow it to meet the stricter Canadian gas standards.

This station will be an unmanned facility enclosed by chain link fence containing a triethylene glycol reboiler/regenerator, contactor tower as well as pumps for the triethylene glycol exchange and the required piping valves and electronic controls necessary to operate the unit remotely. This station will also require power, communications, and a stand-by generator. The facility will include the installation of approximately 400 feet of 24-inch inlet and outlet pipe and a mainline valve to route gas from the Empire mainline through the dehydration facility when required to meet moisture content specifications. The balance of the yard inside the facility fence line will consist of crushed stone. The facilities described above will be located on the property to be acquired by Empire, or in the case of the mainline valve and inlet and outlet piping, on the ROW for the Empire mainline or acquired permits/licenses required to cross the adjoining railroad.

1.2.2.5 Additional Aboveground Facilities

National Fuel will construct additional aboveground facilities including MLVs and tie-in facilities. Typical plot plans showing the MLV and tie-in facility layouts are provided in Appendix 1-C.

MLVs will be located along the Mainline Pipeline, spaced an average of about 7.2 miles apart. The locations of proposed MLV sites are shown on the aerial-based alignment sheets in Appendix 1-C. MLV sites will consist of a fenced area enclosing aboveground piping and valves, and each will occupy an area approximately 50 feet by 50 feet (0.6 acre), located within the same construction and permanent ROWs as utilized for the pipeline. These sites are typically located near public roadways for accessibility, and a permanent, stoned access road will be installed to each MLV site. The MLVs will have a design pressure of 1,400 pounds per square inch. All MLVs will be remote controlled and will require electric power and telecommunications connections.

A Tie-In will be located at Clermont, at the site of an existing Producer Interconnect Station (located at Mainline Pipeline MP 0.0/southern terminus), on property owned by a National Fuel subsidiary. The existing station interconnects with the TGP 300 Pipeline. As part of the Northern Access 2016 Project, this facility will also be attached to the Mainline Pipeline at MP 0.0. This will require the addition of metering, flow control, additional indirect heaters and additional filtration by NFG Midstream Clermont LLC. In addition, a pig launcher and associated piping will be installed as part of the Northern Access 2016 Project.

A Tie-in will be located at Hinsdale (Mainline Pipeline MP 43.05), on property that is being acquired by National Fuel and being developed as the Hinsdale Compressor Station as part of National Fuel's Northern Access 2015 Project (under construction in 2015). This tie-in will involve installation of necessary piping, valves (series of "jumper valves"), metering, and flow regulation equipment, to tie in the proposed Mainline Pipeline to Supply's existing Line X-South and a jumper connection to the Hinsdale Compressor Station. Electric power and telecommunications will be provided from the Hinsdale Compressor Station.

A Tie-in to Supply's existing Line X-North Pipeline will be located at Mainline Pipeline MP 96.65 (northern terminus). The tie-in site will include a tap, and 24-inch valve connection.

Near the Tie-in to Line X-North, a Pressure Reduction Station will be located at Mainline Pipeline MP 95.75. This site will include a meter station with pressure control, overpressure protection, flow control, and a pig receiver. This facility will require electric power and telecommunications.

At the south end of the Replacement Pipeline the existing 16-inch tap, valve and pig launcher for XM-10 will need to be modified to 24-inch piping to accommodate the 24-inch Replacement Pipeline tie-in.

At the north end of XM-10, at the existing tie-in to the Empire mainline (located approximately 1 mile north of Replacement Pipeline MP 3.05/proposed Pendleton Compressor Station), the current 12-inch hot tap will need to be modified to accommodate the higher expected flow rate, and will be replaced with a 16-inch tee, valve and pig receiver.

1.2.2.6 Auxiliary Facilities – Cathodic Protection

The Project cathodic protection system will either be a galvanic anode bank system or an impressed current system. If a galvanic anode bank system is used, all of the work and material installation will take place within the 50-foot-wide permanent ROW. National Fuel would install banks of anodes, connection cables, and test stations at specified distances along the pipeline route. These galvanic anode banks are ideally installed near road crossings for ease of access for operations and maintenance. If an impressed current system is used, additional workspace would be required at the ground bed installation locations. The current estimated number of impressed current ground beds is four (4) installation locations for this pipeline. Each impressed current ground bed would require additional workspace of approximately 50 feet by 1500 feet. These are typically installed perpendicular to the pipeline ROW and adjacent to road crossings. If an impressed current cathodic protection system is selected, additional field surveys will be completed once the installation locations are selected.

The existing Line XM-10 Pipeline is currently protected by an impressed current system. The current plan for cathodic protection of the replacement pipeline is to transfer the existing impressed current system onto the Replacement Pipeline. This would not require any additional workspace or facilities.

The Mainline Pipeline will parallel HVAC power transmission lines at multiple locations. Therefore, induced alternating current (AC) and fault currents are design issues for the sections of pipeline that parallel and break away from the high voltage power lines. An AC electrical interference study will be completed on this pipeline and an AC mitigation plan will be developed. This plan will likely require the installation of a zinc ribbon parallel to the Mainline Pipeline. This zinc ribbon is typically installed approximately 5 feet away from the pipeline, so all materials and work will take place within the 50-foot-wide permanent ROW. The exact locations of this zinc ribbon installation are not known at this time and will be identified after the AC mitigation study is completed.

1.2.3 Location Maps, Detailed Route Maps, and Site-Specific Construction Plans

The regional location of the Project is shown in Figure 1 in Appendix 1-A. The Project facilities, including pipelines, compressor stations, a dehydration facility, an interconnect meter station, tie-in locations, contractor/pipe yards, and access roads are depicted on full size 7.5-minute USGS topographic maps (Appendix 1-A). Maps showing the proposed Project on National Wetlands Inventory maps are provided in Appendix 1-B. Aerial photo-based pipeline alignment sheets and plot plans for compressor stations and the dehydration facility are provided in Appendix 1-C. Maps showing compressor stations with noise sensitive areas (NSAs) within 1 mile of the stations are provided in Appendix 1-D. Typical ROW cross section drawings are provided in Appendix 1-E. Site-specific residential construction drawings for four residences within 25 feet of the proposed construction workspace areas are provided as Appendix 1-F (additional drawings are in preparation for the remaining residences within 25 feet).

Appendix 1-G, found in the volume entitled *Privileged and Confidential*, contains a list of affected landowners. Pursuant to 18 Code of Federal Regulations (CFR) §388.112, this information is included in the volume labeled “Contains Privileged Information – Do Not Release.” This volume contains information that is customarily treated as privileged and confidential.

Appendix 1-F is National Fuel’s Erosion and Sedimentation Control and Agricultural Mitigation Plan (ESCAMP), which outlines construction, restoration, and maintenance procedures planned for this Project.

1.3 LAND REQUIREMENTS

The proposed Project will require a substantial amount of land area for construction of the proposed facilities, and a lesser amount of land area for operation and maintenance (“O&M”) of the facilities. The Project will affect approximately 1,313 acres of land during construction, of which 685 acres will consist of temporary workspace that will return to existing land uses after construction, and the remaining 628 acres of land will be permanently maintained for operation of the new facilities. A summary of land requirements for the Project is provided in Table 1.3-1.

Land requirements for the proposed pipeline facilities are discussed in greater detail in Section 1.3.1. MLVs will not require additional land outside of that identified for the construction and operation of the pipeline or other aboveground facilities/tie-ins, and are therefore included in the calculations of land requirements for the pipeline or other aboveground facilities, as applicable. Some MLVs may require access roads which will be quantified and addressed as permanent access roads. Aboveground facilities land requirements are provided in Table 1.3-1 and discussed in greater detail in Section 1.3.2.

Four pipe storage and contractor yards have been determined at this time; additional yards are being evaluated and will be submitted for FERC’s review when located. Land requirements for the proposed pipe/contractor ware yards are included in Table 1.3-1 and are discussed in more detail in Section 1.3.3.1.

Access to the Project ROWs will be via public roads to the extent possible, as well as a number of non-public roads. Non-public access roads are discussed in Section 1.3.3.2 and listed in Table 1.3-4. Current land use in all areas affected by the Project is further described in Resource Report 8.

Table 1.3-1. Land Requirements for the Proposed Project

| Project Component | Construction ROW or Area^a (acres) | Permanent Operational ROW or Area^b (acres) |
|--|---|--|
| Pipeline Facilities | | |
| Mainline Pipeline (McKean, PA and Allegany, Cattaraugus and Erie Counties, NY) | 879.19 | 585.77 |
| Additional Temporary Workspace for Mainline Pipeline | 131.96 | 0.00 |
| Replacement Pipeline (Niagara County, NY) | 24.40 | 24.40 |
| Additional Temporary Workspace for Replacement Pipeline | 0.00 | 0.00 |
| Pipeline Subtotal | 1035.55 | 610.07 |
| Aboveground Facilities | | |
| Pendleton Compressor Station (Niagara County, NY) | 39.79 | 4.96 |
| Porterville Compressor Station (Erie County, NY) | 13.55 | 1.00 |
| TGP Interconnect (Erie County, NY) | 6.67 | 1.89 |

| Project Component | Construction ROW or Area ^a (acres) | Permanent Operational ROW or Area ^b (acres) |
|---|---|--|
| Wheatfield Dehydration Facility (Niagara County, NY) | 40.00 ^c | 2.25 ^c |
| Tie-In at Clermont (McKean County, PA) | 5.00 | 0.54 |
| Tie-In at Hinsdale Compressor Station (Cattaraugus Cty, NY) | 5.70 | 0.92 |
| X-North M&R/Pressure Reduction Station (Erie County, NY) | 3.44 | 1.10 |
| Tie-in Mainline Pipeline to Line X-North (Erie County, NY) | 2.07 | 0.06 |
| Tie-in Replacement Pipeline to Line XM-10 (Niagara County, NY) | 2.07 | 1.10 |
| Tie-in Replacement Pipeline to Empire Pipeline (Niagara County, NY) | 2.07 | 1.10 |
| Remove Existing Meter Station / Relocate at New Pendleton Compressor Station (Niagara County, NY) | 0.46 | 0.00 |
| Mainline Valve Sites (13 sites, 50'x50') ^d | 0 ^d | 0 ^d |
| Aboveground Subtotal | 120.82 | 14.00 |
| Support/Auxiliary Facilities | | |
| Pipe/Contractor Yards | | |
| Port Allegheny Pipe Yard (McKean County, PA) | 12.99 | 0.00 |
| Port Allegheny Contractor Yard (McKean County, PA) | 9.13 | 0.00 |
| Hinsdale Contractor Yard (Cattaraugus County, NY) | 23.72 | 0.00 |
| Blasdell Metalico Pipe Yard (Erie County, NY) | 7.38 | 0.00 |
| Pipe/Contractor Yard Subtotal | 53.22 | 0.0 |
| Temporary Access Roads (Temporary Use) (total appx. 27 mi) | 99.07 | 0.00 |
| Permanent Access Roads to Proposed MLVs and Other Aboveground Facilities (Permanent Use) | 3.89 | 3.89 |
| Cathodic Protection Groundbeds (total) | TBD | TBD |
| Support/Auxiliary Subtotal | 156.18 | 3.89 |
| GRAND TOTAL | 1312.55 | 628.06 |

Notes:

NA = Not Applicable

- a Includes areas to be disturbed by construction.
- For Mainline Pipeline, includes typical 75-foot-wide ROW, including 25-foot-wide temporary ROW, and 50-foot-wide permanent ROW.
 - For Replacement Pipeline, includes 66-foot-wide construction ROW (same as permanent existing ROW for this pipeline).
 - For Pendleton Compressor Station and Wheatfield Dehydration Facility, includes size of entire parcel to be purchased, even if not all areas will be actively used for construction. For existing Porterville Compressor Station, includes size of entire existing station, even if not all areas will be actively used for construction.
 - For access roads includes a total width of 30 feet, including existing road width plus required widening up to 30 feet and construction of new roads.
- b For pipelines, includes permanent operational ROW (including portions of which that may overlap other existing permanent ROWs). For aboveground facilities, includes areas to be newly developed within the existing and proposed aboveground facilities properties. Excludes temporary construction ROW and additional temporary workspace (ATWS) areas which will only be used during construction.
- c At the Wheatfield Dehydration Facility, it is likely that less than 40 acres will be required for construction (to be determined), but construction area will not exceed the approximately 40-acre property being purchased.

- d MLVs will not require additional land outside of that identified for the construction and operation of the pipeline or other aboveground facilities. Accordingly, “0 acres” means the acreage was already accounted for in the calculations of land requirements for the pipeline or other aboveground facilities, as applicable.

A list of private and public landowners/properties traversed by the proposed pipeline is provided as Appendix 1-G (in the volume – Privileged and Confidential).

A breakdown of land requirements by facility type is provided in the following sections. Additional information concerning land requirements and land use associated with the Project is presented in Resource Report 8.

1.3.1 Pipelines

Construction of the Project pipeline facilities will affect a total of approximately 1,036 acres of land, of which 426 acres will consist of temporary workspace that will return to existing land uses after construction. The remaining 610 acres of land will be permanently maintained for operations (Table 1.3-1). Mainline and Replacement Pipeline facilities are described in more detail in the following sections.

Approximately 84.75 miles (85 percent) of the 99.7 miles of Project pipeline facilities will be located parallel and adjacent to existing ROW, consisting of pipeline ROW, public roadways, and electric transmission line corridors. Specifically, approximately 81.7 miles (85 percent) of the Mainline Pipeline are located parallel and adjacent to existing ROWs, and all 3.05 miles (100 percent) of the Replacement Pipeline are located within the existing ROW of National Fuel. National Fuel is currently assessing the feasibility of areas of overlap of its Mainline Pipeline construction ROW with existing adjacent ROWs, as shown in Table 1.3-2. Typical pipeline collocated ROW cross-sections are provided in Appendix 1E.

Table 1.3-2. Existing Rights-of Way Adjacent to Project

| From MP | To MP | Miles | Type of ROW/Ownership/ Type | Width of Existing ROW (ft) | Width Used for Temporary Construction (ft) | Width Used for Permanent ROW (ft) | Comments |
|--------------------------|-------|-------|---------------------------------------|----------------------------|--|-----------------------------------|---|
| Mainline Pipeline | | | | | | | |
| 3.5 | 4.0 | 0.5 | Pipeline/Somerset Gathering/ Easement | Unknown; Assume 50 | 25 | 25 | Title search for easement description (and confirmation of width overlap) is ongoing. |
| 4.8 | 5.7 | 0.9 | Pipeline/Somerset Gathering/ Easement | Unknown; Assume 50 | 25 | 25 | Title search for easement description (and confirmation of width overlap) is ongoing. |
| 7.9 | 12.9 | 5.0 | Power Line/ NYSEG/Easement | 157 | 20 | 20 | |
| 14.3 | 16.0 | 1.7 | Power Line/ NYSEG/Easement | 175 | 35 | 25 | |
| 21 | 27.3 | 6.3 | Power Line/ NYSEG/Easement | 175 | 35 | 25 | |
| 27.3 | 27.9 | 0.6 | Power Line/ | 175 | 35 | 25 | |

| From MP | To MP | Miles | Type of ROW/Ownership/ Type | Width of Existing ROW (ft) | Width Used for Temporary Construction (ft) | Width Used for Permanent ROW (ft) | Comments |
|-----------------------------|--------------|-------------|---|----------------------------|--|-----------------------------------|---|
| | | | NYSEG/Easement | | | | |
| 27.9 | 32.9 | 5.0 | Power Line/ NYSEG/Easement | 175 | 35 | 25 | |
| 34.2 | 36.5 | 2.3 | Pipeline/National Fuel - Line X/Easement | 66 | 25 | 33 | |
| 36.5 | 51.8 | 15.3 | Pipeline/National Fuel - Line X/Easement | 66 | 25 | 33 | |
| 51.8 | 71.6 | 19.8 | Power Line/National Grid/Owned in Fee | 150 | 25 | 25 +/- | Width overlap is estimate. Meeting with National Grid is pending; fee owned property is undefined in majority of public data obtained to date. |
| 71.6 | 88.5 | 16.9 | Power Line/ NYSEG/Easement | 150 | 25 | 25 | |
| 88.5 | 92.8 | 4.3 | Power Line/ NYSEG/Easement | 250 | 25 | 25 | |
| 92.8 | 95.7 | 2.9 | Pipeline/TGP Niagara Spur/Easement | 75 | 24 | 24 | |
| 96.5 | 96.7 | 0.2 | Power Line/ NYSEG/Easement | 150 | 25 | 25 | |
| | Total | 81.7 | | | | | |
| Replacement Pipeline | | | | | | | |
| 0 | 3.05 | 3.05 | Existing National Fuel Easement | 66 | 66 | 66 | |
| | Total | 3.05 | | | | | |

1.3.1.1 Mainline Pipeline

The approximate land requirements for the Mainline Pipeline are summarized in Table 1.3-1.

During construction of the Mainline Pipeline, the width of the construction ROW will typically be 75 feet. ATWS areas will be used to facilitate construction in certain areas (such as for certain stream and road crossings, topsoil segregation in agricultural areas, and side slopes), depending on site-specific needs. Following construction, the permanently maintained ROW will be 50 feet wide.

Where the Mainline Pipeline parallels Supply's Line X Pipeline, 25 feet of the construction ROW and 33 feet of the proposed Mainline Pipeline's permanent ROW will overlap and be shared with the existing permanent ROW of Supply's Line X Pipeline (Table 1.3-2). Similarly, the Mainline Pipeline will be parallel and adjacent to (and overlap to the extent permitted) other utility easements for approximately 81.7 miles (85 percent of its length) as listed in Table 1.3-2.

1.3.1.2 Replacement Pipeline

The approximate land requirements for the Replacement Pipeline are summarized in Table 1.3-1.

The replacement will be done using a “lift and lay” technique, whereby the replacement pipeline will be laid in the same trench as the pipeline that was removed. Due to construction constraints associated with construction on an elevated berm/former railroad bed, and multiple buried utilities within this general area, the construction ROW will be limited to 66 feet wide (which is the width of the existing permanent easement for the National Fuel’s existing Line XM-10 Pipeline being replaced). A “stovepipe” construction technique, typical of roadside utility construction, will most likely be used for the Replacement Pipeline. This technique involves trenching and assembling the pipe (welding, radiography, and coating) directly over the trench, installing the pipeline one joint at a time (or double-jointed). Although this technique results in a slower pace (for construction footage completed per day), it lends itself well for narrow constrained areas. ATWS areas may be required during construction in certain areas depending on site-specific needs. At this time, no additional temporary or permanent ROW has been identified beyond National Fuel’s existing 66-foot-wide permanent ROW. As shown in Table 1.3-2, this pipeline replacement will be within National Fuel’s existing permanent ROW for its entire length.

1.3.2 Aboveground Facilities

Construction of the Project aboveground facilities will affect approximately 121 acres of land, approximately 107 acres of which will consist of temporary workspace that will return to existing land uses after construction (Table 1.3-1). The remaining 14 acres of land will be permanently developed for operations. Minor aboveground facilities proposed for the Project, including new MLVs and internal inspection facilities (pig launchers/receivers) will be constructed and operated within the station facilities or the proposed permanent easement associated with the pipeline. Aboveground facilities are described in more detail in the following section.

1.3.2.1 Pendleton Compressor Station

The new Pendleton Compressor Station will be located on an approximately 39.79-acre property to be purchased by Empire. Empire has an access agreement with the current landowners for two separate parcels, and is planning a fee simple purchase of the land.

The site is currently a combination of farm fields, reverting farm fields (open land), shrub land, and forest. The available construction area for the Station will be 39.79 acres (although National Fuel does not anticipate using the entire acreage for active construction), and the area to be developed for operations will be approximately 5 acres. Suction/discharge pipelines are anticipated to be located entirely within the new station property and the existing Replacement Pipeline ROW. These pipelines will generally be constructed using a 125-foot-wide construction ROW, and will be operated with a 75-foot-wide permanent ROW, located entirely on the compressor station property. A new

30-foot-wide access road will provide access to the new facility from Aiken Road along an improved access road currently used for the existing Pendleton Interconnection.

Drawings showing the station layout plans are provided in Appendix 1-C.

1.3.2.2 Porterville Compressor Station

National Fuel's existing property for the Porterville Compressor Station totals approximately 14 acres. The construction workspace (including laydown areas, parking, materials storage, and construction areas) and operational area for the additional facilities at Porterville Compressor Station will be sited entirely within the current station's boundaries, in currently maintained lawn, graveled and paved areas owned by Supply.

Drawings showing the station layout plans are provided in Appendix 1-C.

1.3.2.3 TGP Interconnect

The TGP Interconnect will be located on an approximately 15-acre property to be purchased by National Fuel. The site is currently a combination of open and shrub fields, forested, and existing utility ROWs. The construction work area will require approximately 6.65 acres, and the area to be developed for operations will be approximately 1.89 acres. A new approximately 515-foot long permanent access road (30 feet wide) (leading from the existing road to TGP's property to the west) to the station would also be required. National Fuel is currently working with TGP, the landowner, to purchase property for the Interconnect site.

Drawings showing the typical station layout plans are provided in Appendix 1-C.

1.3.2.4 Wheatfield Dehydration Facility

The Wheatfield Dehydration Facility will be located on an approximately 40-acre Industrial-zoned property to be owned by Empire. The construction work area will use available areas within the 40-acre property (avoiding wetlands and tree clearing where possible), and total construction acreage will likely be much less than 40 acres. The area to be developed for operations will be approximately 2.25 acres. A new approximately 250-foot long access road (30 feet wide) leading from Liberty Drive to the station would also be required. National Fuel is currently working with the landowner to purchase property for the Dehydration Facility.

Drawings showing the station layout plans are provided in Appendix 1-C.

1.3.2.5 Additional Aboveground Facilities

The Producer Tie-in at Clermont (Mainline MP 0.0) will occupy a part of a property owned by NFG Midstream Clermont, LLC. Approximately 5 acres will be required to construct National Fuel's tie-in facilities, and an area approximately 150 feet by 150 feet (0.54 acre) will be developed for permanent operations. National Fuel is currently working with the landowner, National Fuel's affiliate Seneca Resources, and an agreement for the site will be secured during the course of the ROW negotiations process.

The Tie-in to Hinsdale Compressor Station (Mainline MP 43) will be located on a property that National Fuel has acquired and is developing in 2015 as the Hinsdale Compressor Station, as part of National Fuel's Northern Access 2015 Project, certificated by FERC in CP14-088. The interconnection will provide operational flexibility between National's current Line X system and the Mainline Pipeline. Approximately 5.7 acres will be required to construct the tie-in facilities, and approximately 0.92 acre will be developed for operations, all on the Hinsdale Compressor Station property.

The Tie-in to the existing X-North Pipeline (Mainline MP 96.65) will require approximately 2.07 acres for construction and 0.06 acres (approximately 50 feet by 50 feet) for operation. This area is currently existing pipeline ROW and open/agricultural land. National Fuel will acquire this property as part of the ROW negotiations process.

Near the Tie-in to the X-North Pipeline, a Pressure Reduction Station will be constructed (Mainline MP 95.75) on lands that currently consist of forest, farm fields, and utility ROW. The Pressure Reduction Station will require 3.44 acres for construction, and 1.10 acre (approximately 150 feet by 150 feet) for operation. National Fuel will acquire this property as part of the ROW negotiations process.

The modification of two existing Tie-ins along Line XM-10 (at Replacement MP 0.0, and approximately 1 mile north of Replacement Pipeline MP 3.05, where the XM-10 Pipeline connects with the Empire Pipeline) will each require 2.07 acres for construction and 1.10 acres for operation. These Tie-ins will be installed using the rights already conveyed to National Fuel under its easements for the existing pipeline.

An existing meter station located approximately 200 feet north of the proposed Pendleton Compressor Station will be removed. Certain metering equipment will be relocated and reused at the Pendleton Compressor Station. The area of the existing meter station that is available for construction/equipment removal is approximately 0.46 acres. After the meter station is abandoned and equipment is removed, the site will remain as a gravel pad and National Fuel will continue to use the site for staging and materials storage for this and other system operations. This station site is currently leased by National Fuel.

MLV sites will be located approximately every 7.2 miles (average) along the Mainline Pipeline for a total of 13 proposed MLV sites. These sites will be constructed using the same construction workspace as used for the pipeline construction and will require a permanent area of approximately 50 feet by 50 feet; the same area as will be used for

permanent ROW for the pipeline. National Fuel will acquire this property as part of the ROW negotiations process.

Typical site layout drawings showing these additional aboveground facilities are provided in Appendix 1-C.

1.3.3 Support Sites (Pipe / Contractor Yards and Access Roads)

National Fuel has selected four pipe storage and contractor yards for temporary use to support construction of the Project. These sites are included in Table 1.3-2 and described in section 1.3.3.1. Additional pipe storage and contractor yards are being evaluated and information on these will be provided to FERC for review when available.

National Fuel plans to utilize a number of access roads temporarily and permanently during construction and operation of the Northern Access 2016 Project. Access roads are included in Table 1.3-2 and described in section 1.3.3.2.

1.3.3.1 Pipe / Contractor Yards

Pipe storage and contractor yards will be used for equipment, pipe, and material storage, as well as temporary field offices and pipe preparation/field assembly areas. Site selection and acquisition is ongoing and will continue throughout the planning and permitting stages of the Project. National Fuel will advise all contractors that they shall not establish a contractor staging or warehouse yard for this Project without first advising National Fuel and without Commission approval.

The four pipe storage and contractor yards National Fuel has selected to date to use temporarily to support construction of the Project are listed in Table 1.3-3, along with acreage, location, and current land use. Additional pipe storage and contractor yards are being evaluated and information on these will be provided to FERC when available.

Table 1.3-3. Pipe/Contractor Yard Land Requirements

| Facility (County, State) | Near Milepost ^a | Construction Area (acres) | Existing Land Use Type ^b |
|---|--|------------------------------|--|
| Pennsylvania | | | |
| Port Allegheny Pipe Yard (McKean County, PA) | 10.6 miles east of Mainline MP 7.5 | 12.99 | Industrial (railroad siding), open land |
| Port Allegheny Contractor Yard (McKean County, PA) | 10.8 miles east of Mainline MP 7.5 | 9.13 | Rural residential, open field/agricultural land (currently and previously used as contractor yard) |
| Pennsylvania Subtotal | | 22.12 | |
| New York | | | |
| Hinsdale Contractor Yard (Cattaraugus County, NY) | 42.8 (on Mainline Route) | 23.72 | Rural residential, open field |
| Blasdell Pipe Yard (Erie County, NY) | 13.2 miles west of Mainline MP 96.6 | 7.38 | Industrial (previously used as pipe yard) |
| New York Subtotal | | 31.10 | |
| PROJECT TOTAL: | | 53.22 | |

1.3.3.2 Access Roads

To the extent possible, National Fuel will use existing public and private roads for temporary construction access to the Mainline and Replacement Pipeline ROWs and aboveground facilities. In addition, new permanent access roads will be required for new aboveground facilities, such as the Pendleton Compressor Station, the Tie-in to Line X-North, the Pressure Reduction Station near the Tie-in to Line X-North, and the proposed MLV sites. Permanent access roads will also be constructed at the Wheatfield Dehydration Facility, TGP Interconnect, and the Tie-ins at Hinsdale and Clermont; however, these facilities are generally adjacent to roadways with existing road access/frontage to the properties to be developed, so the access roads will generally be entirely on National Fuel's proposed facility property.

In addition to public roads, a total of 45 temporary access roads and 15 permanent access roads are currently proposed for Project use. Some existing roads may need to be widened to 30 feet in width to accommodate construction or permanent use. Table 1.3-4 lists these roads, including location and length. Access roads are shown on Project mapping in Appendix 1-A (USGS maps) and Appendix 1-C (construction alignment sheets and overview drawings of workspace at aboveground facilities). Resource Report 8 provides additional details on proposed access roads.

National Fuel will seek and obtain the necessary property rights and approvals from landowners and government agencies prior to the use or construction of such roads.

Table 1.3-4. Access Roads Proposed for Use

| Access Road | Nearest Milepost | Location (County, State) | Proposed Use | Length (ft) | Length (mi) |
|-------------------------|---------------------------|--------------------------|--------------|-------------|-------------|
| AR-1 | 0.2 | McKean, PA | Temp | 3429 | 0.65 |
| AR-1A | 0 | McKean, PA | Temp | 240 | 0.05 |
| AR-1B | 0.3 | McKean, PA | Temp | 699 | 0.13 |
| AR-2 | 0.5 | McKean, PA | Temp | 4450 | 0.84 |
| AR-3 | 1.1 | McKean, PA | Temp | 3605 | 0.68 |
| AR-4 | 2.2-2.6 | McKean, PA | Temp | 10649 | 2.02 |
| AR-5 | 2.6 | McKean, PA | Temp | 4334 | 0.82 |
| AR-8 | 3.5 | McKean, PA | Temp | 5181 | 0.98 |
| AR-9 | 4.4 | McKean, PA | Temp | 4101 | 0.78 |
| AR-10 | 4.4 | McKean, PA | Temp | 2602 | 0.49 |
| AR-11 | 5.4 | McKean, PA | Temp | 542 | 0.10 |
| MLV Site 1 Permanent AR | 6.9 | McKean, PA | Perm | 50 | 0.01 |
| AR-12A | 7.8 | McKean, PA | Temp | 22197 | 4.20 |
| AR-12B | 10.9 | McKean, PA | Temp | 4192 | 0.79 |
| AR-13 | 11.7 | McKean, PA | Temp | 72 | 0.01 |
| AR-14 | 12.9 | McKean, PA | Temp | 1090 | 0.21 |
| MLV Site 2 Permanent AR | 14.0 | McKean, PA | Perm | 47 | 0.01 |
| AR-15 | 14.4 | McKean, PA | Temp | 2263 | 0.43 |
| AR-16 | 15.3 | McKean, PA | Temp | 1446 | 0.27 |
| MLV Site 3 Permanent AR | 21.9 | McKean, PA | Perm | 47 | 0.01 |
| AR-18 | 22.3 | McKean, PA | Temp | 1357 | 0.26 |
| AR-19 | 23.4 | McKean, PA | Temp | 1179 | 0.22 |
| AR-20 | 24.0 | McKean, PA | Temp | 2984 | 0.57 |
| AR-21 | 25.3 | McKean, PA | Temp | 1771 | 0.34 |
| AR-23 | 26.7 | McKean, PA | Temp | 5055 | 0.96 |
| AR-24A | 27.6 | McKean, PA | Temp | 2531 | 0.48 |
| AR-24B | 28.2 | Allegany, NY | Temp | 1434 | 0.27 |
| MLV Site 4 Permanent AR | 28.3 | Allegany, NY | Perm | 88 | 0.02 |
| AR-25 | 30.0 | Allegany, NY | Temp | 5955 | 1.13 |
| AR-26 | 32.3 | Allegany, NY | Temp | 4929 | 0.93 |
| AR-27B | 35.3 36.5 ^d | Allegany/Cattaraugus, NY | Temp | 13902 | 2.63 |
| AR-27A | 35.7 | Cattaraugus, NY | Temp | 1061 | 0.20 |
| MLV Site 5 Permanent AR | 35.7 | Cattaraugus, NY | Perm | 195 | 0.04 |
| AR-27C | 37.5 | Cattaraugus, NY | Temp | 2452 | 0.46 |
| MLV Site 6 Permanent AR | 43.1 | Cattaraugus, NY | Perm | 223 | 0.04 |
| AR-28 | 43.5 | Cattaraugus, NY | Temp | 1865 | 0.35 |
| MLV Site 7 Permanent AR | 51.1 | Cattaraugus, NY | Perm | 42 | 0.01 |
| AR-29 | 51.8 | Cattaraugus, NY | Temp | 2851 | 0.54 |

| Access Road | Nearest Milepost | Location (County, State) | Proposed Use | Length (ft) | Length (mi) |
|--------------------------|------------------|--------------------------|--------------|----------------|--------------|
| AR-31 | 53.3 | Cattaraugus, NY | Temp | 2326 | 0.44 |
| AR-32 | 54.1 | Cattaraugus, NY | Temp | 1228 | 0.23 |
| AR-34 | 57.6 | Cattaraugus, NY | Temp | 1226 | 0.23 |
| MLV Site 8 Permanent AR | 58.1 | Cattaraugus, NY | Perm | 296 | 0.06 |
| AR-35 | 61.6 | Cattaraugus, NY | Temp | 1887 | 0.36 |
| MLV Site 9 Permanent AR | 64.7 | Cattaraugus, NY | Perm | 53 | 0.01 |
| AR-36 | 65.3 | Cattaraugus, NY | Temp | 2615 | 0.50 |
| AR-37 | 66.6 | Cattaraugus, NY | Temp | 3924 | 0.74 |
| AR-38 | 67.8 | Cattaraugus, NY | Temp | 862 | 0.16 |
| AR-39 | 69.0 | Cattaraugus, NY | Temp | 1542 | 0.29 |
| MLV Site 10 Permanent AR | 72.6 | Erie, NY | Perm | 66 | 0.01 |
| AR-41 | 74.3 | Erie, NY | Temp | 861 | 0.16 |
| AR-42 | 75.1 | Erie, NY | Temp | 2393 | 0.45 |
| MLV Site 11 Permanent AR | 80.4 | Erie, NY | Perm | 180 | 0.03 |
| MLV Site 12 Permanent AR | 87.5 | Erie, NY | Perm | 94 | 0.02 |
| AR-46 | | | Temp | 391 | 0.07 |
| AR-47 | 92.1 | Erie, NY | Temp | 3759 | 0.71 |
| AR-48 | 93.6 | Erie, NY | Temp | 413 | 0.08 |
| MLV Site 13 Permanent AR | | | Perm | 122 | 0.02 |
| AR-50A | 95.8 | Erie, NY | Perm | 3301 | 0.63 |
| AR-50B | 96.6 | Erie, NY | Perm | 845 | 0.16 |
| | | | Total | 149,494 | 28.29 |

1.3.4 Field Surveys and Agency Clearances

National Fuel has been identifying and contacting landowners about the Project and obtaining survey access permission for the properties crossed by the Project since summer 2014. Approximately 90 percent of the landowners contacted (and/or ROW mileage) had granted survey permission as of August 2014. Subsequent route changes to avoid sensitive resources or to accommodate landowner requests have changed this metric slightly and adjustments are being made in preparation for the 2015 survey season.

Field surveys consisting of pipeline route selection/ROW marking, civil survey, and rare bat surveys began on July 8, 2014. Rare bat surveys ceased in mid-August 2014 in accordance with seasonal bat survey timing restrictions. Cultural Resources surveys began on August 4, 2014 and continued through December 2014 until the ground was frozen for the season. Cultural field surveys will resume in spring 2015. Wetland and waterbody delineation surveys and certain rare species habitat assessments (such as: rare plants in PA; burbot in PA, and blue spotted salamanders and hellbenders in PA) began in mid-August 2014, and continued until about November 2014. Wetland and rare species surveys will resume in spring 2015. The schedule for completion of all field surveys is by the end of summer 2015, and will depend on the timing of obtaining survey access

permissions for individual parcels/landowners, as well as field conditions and timing restrictions for required rare species surveys.

The study area, or survey corridor, for environmental and cultural resources surveys along the Mainline Pipeline was 300 feet wide and is intended to include (and exceed) the width of all proposed workspace areas, in order to identify any sensitive resources warranting protection within or adjacent to the proposed construction area. However, in some areas, route changes have resulted in relocation of the proposed pipeline out of previously surveyed areas and re-survey is necessary (scheduled for 2015).

A Phase 1 Cultural Resources field survey is being completed and a Phase 1 Cultural Resources Investigation Report is being submitted to the Pennsylvania Historical and Museum Commission (PHMC), Bureau for Historic Preservation, State Historic Preservation Office (SHPO) and New York State Office of Parks, Recreation and Historic Preservation (OPRHP), SHPO pursuant to Section 106 of the National Historic Preservation Act. Due to the need to complete the surveys over two survey seasons and the required timing of various agency reviews, an initial Phase I Cultural Resources Investigation Report is being submitted in March 2015, and a supplemental report will be submitted to complete the required survey areas at the end of the 2015 surveys.

Field surveys for wetlands/waterbodies and various remaining required rare, threatened, or endangered plant and wildlife species (such as primarily in New York Project areas) are planned to resume in spring 2015 (rare plant surveys timed in accordance with seasonal survey timing requirements).

Field survey results for those Project areas completed in 2014 are summarized in Resource Report 2 (Water Use and Quality), Resource Report 3 (Vegetation and Wildlife), and Resource Report 4 (Cultural Resources). Surveys completed in 2015 will be summarized in supplemental survey reports and will be submitted to FERC and the other appropriate agencies for review, as available.

In addition to its public outreach efforts with landowners and local officials, National Fuel has been conducting extensive planning and consultations with federal, state and local regulatory agencies, resource agencies and other groups interested in the Project. The consultation process has involved briefings, meetings, letter requests for resource information, and telephone discussions and emails.

1.4 CONSTRUCTION PROCEDURES

The Project will be constructed in accordance with applicable government regulations, permits, and approvals. Construction methods will be those that are consistent with industry-recognized practices, company policies, and best management practices (BMPs). National Fuel plans to implement construction procedures successfully used in constructing gas transmission systems throughout the United States. Its methods will be consistent with guidelines and recommendations from the U.S. Army Corps of Engineers (USACE), the U.S. Department of Agriculture, Natural Resources Conservation Service

(USDA/NRCS), the Pennsylvania Department of Environmental Protection (PADEP), New York State Department of Conservation, (NYSDEC) and FERC, particularly the FERC’s 2013 *Upland Erosion Control and Revegetation Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) (FERC 2013a, 2013b). National Fuel has incorporated the FERC’s Plans and Procedures, the NYDEC and PADEP Design Manuals within National’s Erosion and Sediment Control & Agricultural Mitigation Plan (ESCAMP) (Appendix 1-H), which supports the Project’s site specific earth disturbance plan. Construction methods are summarized in the following subsections.

Construction is planned to commence in early 2016, to accommodate anticipated tree clearing timing restrictions expected from the USFWS related to rare bat species potentially protected under the Endangered Species Act of 1973 and migratory birds protected under the Migratory Bird Treaty Act of 1918. The planned in-service date is November 1, 2016, and final restoration activities are planned to be completed for the entire Project by the end of 2017. The crossing of environmentally sensitive resources (e.g., waterbodies with fisheries) will be in accordance with State/Commonwealth timing restrictions, unless a waiver is granted by the applicable State/Commonwealth agency.

1.4.1 Pipeline Facilities

Construction will be performed in accordance with FERC’s Plan and Procedures (May 2013), unless more stringent regulatory requirements apply. The FERC’s Plan and Procedures have been incorporated into National Fuel’s ESCAMP (Appendix 1-H), which will be followed during construction and restoration. At this time, National Fuel does not propose any modifications to the FERC’s Plan or Procedures that are less stringent than the Plan and Procedures (May 2013), with the exception of certain ATWS areas within 50 feet of streams and wetlands, as listed in Resource Report 2 – Water Use and Quality. The Project reserves the right, if necessary, to request variances to FERC’s Plan and Procedures. Variance requests made by the Project will be in writing and include the existing condition, the existing FERC requirement, the requested variance, and how the variance is believed to be as good as or better than the existing requirement.

Construction procedures will vary due to a variety of reasons (e.g., type of work, contractor performing the work, and existing site conditions). To enforce compliance with the environmental mitigation measures identified herein, these requirements will be incorporated, either directly or by reference into applicable plans, procedures, drawings and specifications developed by National Fuel and its contracted entities to be used throughout the life of the Project. Inspectors will monitor activities against these requirements.

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.

- Surveying and Staking;
- Clearing and Grading operations (includes temporary erosion control devices) ;

- Installation and maintenance of temporary erosion control devices;
- Topsoil Segregation, where required;
- Pipe Stringing and Bending;
- Trench excavation;
- Pipe Assembly and Field Welding;
- Nondestructive Examination, Inspection and Weld Repair;
- Pipe Coating, Inspection, and Repair;
- Lowering-in, Padding and Backfill;
- Tie-ins;
- Pressure Testing and Final Tie-ins; and
- Cleanup, Restoration and Revegetation

Surveying and Staking

Surveys and field staking/flagging will be completed to locate the proposed pipeline centerline, access roads, staging areas, exterior construction ROW limits, and ATWS areas. In addition to centerline and limit surveys, other resources will be flagged and signed along the route. These will include any environmental and archaeological resources; geologic and topographic features; land types and uses; other utility crossings (e.g., pipelines, power lines, railroads, and other wires/cables); waterbodies; drainages; and roads.

Clearing and Grading

The pipeline construction ROW will be cleared of vegetation. A combination of heavy equipment and sawyers are used to remove large trees, heavy brush, and small trees; ground cover (i.e., including bushes) may remain until grading is required. Grading creates a safe working platform to construct Project facilities. Marketable timber cleared will be managed in accordance with the landowners' agreements and other timber may be given back to the landowner or properly disposed of as construction debris (e.g., stacked off the edge of the limits of disturbance, chipped, or hauled to an approved disposal site). Displaced soils are normally stockpiled along the construction ROW to minimize the need and potential impact of additional haul vehicles. However, in locations where the construction ROW is restricted, these soils may be stockpiled at a different location. In areas where topsoil segregation is required, topsoil will be segregated and stockpiled in such a manner that it is conserved and can be returned to the construction ROW.

To manage stormwater surface flow, regular breaks (gaps) in windrowed spoil piles and diversion structures will be used to manage cross drainage needs. Gaps in windrowed spoil and topsoil piles would allow surface water to migrate across the construction ROW in such a way as to minimize up-gradient flooding and downstream sedimentation. Gaps would be located at regular intervals and/or where appropriate due to site conditions (e.g., depressions in terrain where water would likely concentrate).

Temporary Environmental Controls

Immediately following ground-disturbing activities (i.e., which may include mechanized clearing activities) temporary environmental controls (i.e., erosion and sediment controls) will be installed where necessary. Temporary environmental controls primarily consist of installing barriers (e.g., silt fencing, filter socks or hay bale structures) or diversion structures (e.g., temporary slope breakers) to prevent sediment-laden waters from migrating off approved work areas. Temporary slope breakers would be spaced in accordance with the FERC's Procedures or state-required spacing, whichever is more stringent. Once installed, these controls will be monitored and maintained so they function as intended until the area has been stabilized or permanent environmental controls are installed.

Topsoil Segregation

Topsoiling is the segregation of topsoils (i.e., including sensitive soils) from subsoils to protect the quality and quantity of topsoil present. In designated areas (e.g., agricultural and pasture areas and non-saturated wetlands), topsoils are segregated from subsoils during grading activities, using heavy equipment. The pipelines cross a number of agricultural areas where space will be necessary for topsoil segregation. All topsoiling will be performed as stated in National Fuel's ESCAMP and in accordance with FERC's Plan and Procedures, unless more stringent regulatory requirements apply or variance(s) have been sought by this application.

Pipe Stringing and Bending

Sections of line pipe (joints) are strung along the construction ROW and adjacent to the trench, set on wooden supports (skids), and arranged so they are safely accessible to construction personnel. Joints vary in length and can be individual (i.e., a single length of pipe) or double-jointed (i.e., two lengths of pipe pre-welded offsite). Pipe joint lengths from the mill can vary from 37 to 80 feet and can be cut as needed in the field. Depending on construction ROW requirements and restrictions, some pipe bends may be pre-manufactured at the pipe mill (factory bends). For all other bends (field bends), a mechanical pipe-bending machine will bend joints to the desired angle at locations where there are changes in the natural ground contours and at centerline points of intersection (PIs).

Trenching

Trenching would be accomplished with backhoes and/or mechanical trenching machines. Under typical conditions, the average trench depth will be no less than 5 feet to accommodate the 24-inch OD pipeline and 36 inches of cover. Pipeline cover will be a minimum of 4 feet in agricultural lands. The trench width will vary based on site conditions (e.g., soil types, bedrock, and presence of groundwater). At certain crossings (e.g., road, waterbody) the trench depth will be greater in order to achieve the greater depth of cover requirements. In areas where shallow bedrock and/or large boulders are

present, specialized construction techniques to remove the rock may be necessary (e.g., blasting, rock hammer). Blasting is discussed in Section 1.4.2 (Specialized Construction Methods and Crossings).

Similar to grading activities, considerations for cross drainage will be made while trenching and where stormwater or existing runoff flows are a concern. Flume pipe (e.g., appropriately sized polyvinyl chloride, or steel piping) or diversion berms/ditches may be used where needed to direct stormwater across the trench and away from the construction ROW. Inlet and outlet structures may also be necessary to prevent erosion and scouring. Additionally, on sloping terrain, a combination of trench plugs may be used to prevent water from scouring the bottom of the trench line. Earthen material trench plugs can be characterized as soft or hard. Soft plugs have been excavated and the spoil re-compacted in the trench. Hard plugs have not been excavated. Foam trench plugs can also be used. Foam plugs are typically mechanically blown in, and are environmentally compatible.

Pipe Assembly and Field Welding

After the stringing and bending are complete, pipe sections are aligned and welded together. All welding shall be performed in accordance with the Project's Welding Procedure Specification (to be developed during design of the Project) and by qualified welders who have passed specified qualifying tests. Welders and welding procedures will be qualified according to applicable American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), and American Petroleum Institute (API) standards.

Nondestructive Examination, Inspection, and Weld Repair

One hundred percent of welds will be inspected, both visually and by nondestructive examination (NDE). Visual inspection shall be carried out on all welds to check for imperfection(s) that can be seen with the naked eye. Weld imperfections shall be rejected and repaired upon identification (i.e., before NDE). Welds then go through the NDE process (i.e., x-ray examination) for imperfections that are not visible with the naked eye. The NDE acceptance criteria will be API 1104.

Detailed records of all welds, including successful welds, welds that are repaired and those that are cut-out, shall be maintained for each weld as it is completed. The records would include an identification serial number, the location of the weld, the date it was produced, qualified procedure reference number; and welders' names and reference numbers. These records shall be maintained in the Project's permanent files.

Pipe Coating, Inspection, and Repair

Line pipe is coated to protect it from the environment and accelerated degradation. Line pipe is normally mill-coated or yard-coated prior to stringing. However, line pipe also requires a coating at the field-welded joints where bare metal has been exposed. Prior to lowering the pipeline segment into the trench, the pipeline coating is visually and

electronically inspected to locate and repair coating faults or voids (i.e., this is commonly referred to as “jeeping” the pipe).

Lowering-In, Padding, and Backfill

Once the welds and coating have passed inspection, and just prior to lowering-in, the trench is checked for sharp edges that could damage the pipe and/or its coating during installation (i.e., “crumbing” the line). Next, sand bags with clean fill or foam pads are placed along the trench bottom for the pipe to set on to allow the padding material to sufficiently surround the pipe. In areas where the backfill has the potential to damage the coating, the pipe may be wrapped with rock shield material to provide additional protection.

The welded pipe section to be lowered-in is typically placed into the trench with pipe slings or rollers and side-boom tractors. Once the pipe is lowered-in, trench breakers are installed on sloping terrain and/or at sensitive environmental crossings to prevent the subsurface piping of water, which could create void space and subsidence or drain environmental features. Clean fill (e.g., subsoil, sand) is used where needed as padding material to provide protection to the pipe and coating. The material used for padding is selected in accordance with permit conditions and Project engineering specifications, and under no circumstances shall topsoil be used as padding or backfill material. The trench is then rough backfilled using backfilling equipment (e.g., bulldozers, track hoes) to protect the pipe until final restoration can be completed. No foreign materials (e.g., construction debris) will be permitted to be used as backfill material. If allowed by permit conditions and landowner agreements, excess rock and/or stumps may be buried onsite within the construction ROW. Excess rock and/or woody debris (e.g. stumps and brush) can be windrowed along the edge of the construction ROW. Otherwise these materials would be properly disposed of off-site as construction debris.

Tie-In Crews

Tie-In crews are normally self-sufficient crews that work in tandem with the construction spread. They have equipment, welders, and labor to perform a specialized task (e.g., waterbody/wetland crossings, road crossings). Tie-in crews are also used in areas that would normally slow-down the main spread or in locations that have been skipped for lack of access.

Pressure Testing and Final Tie-ins

Prior to commissioning the pipeline, the pipeline is pressure tested in accordance with engineering specifications and regulatory approvals. The test can be performed with an inert gas or liquid, with water being the standard. Water is taken from available water sources (e.g., waterbodies or municipal water). The pipe is tested in sections to a pressure in excess of the maximum allowable operating pressure (MAOP) for a specified period of time. Test sections are determined by pipe wall thickness and elevation changes. Once the test of a section is successfully completed, water is re-used to the

extent possible. The test water would be discharged in accordance with regulatory and permitted requirements.

Cleanup, Restoration, and Revegetation

Cleanup of Project activities includes removing construction debris (i.e., including unused and surplus materials), temporary construction structures, and equipment. Restoration consists of returning the construction ROW and areas disturbed by construction activities to pre-existing contours and hydraulic regimes. Permanent erosion and sediment controls are installed (e.g., waterbars on sloping terrain) and the construction ROW is re-seeded and/or mulched per permit requirements and landowner agreements. Pipeline markers are installed. Soil adjuncts and fertilizers may be added where necessary. Temporary erosion controls are removed when the area has been stabilized in accordance with project requirements. The revegetation would be monitored for at least two growing seasons following final restoration.

Temporary construction facilities will include staging areas, ATWS, and temporary access roads. Upon completion of construction activities, areas used for temporary construction facilities will be restored to pre-existing conditions or better. Temporary construction facility locations are shown on the USGS Topographic Maps (Appendix 1-A) and construction alignment sheets (Appendix 1-C) and are included in the total acreage area to be affected by construction, as shown in Table 1.3-1.

1.4.2 Specialized Construction Methods and Crossings

In addition to the standard construction practices listed above, the following special construction methods and crossings are likely to occur throughout the construction phase.

Dewatering

Dewatering activities may be necessary to remove excess water from the trench line during periods of excessive precipitation or high water table. Dewatering activities will be performed in accordance with the Project ESCAMP/SWPPP (based on FERC's Plan and Procedures). Under no circumstances will heavily silt-laden waters be directly discharged into wetlands or waterbodies. To the extent possible, discharges will occur in well-vegetated uplands areas on stable, non-erosive surfaces. If dewatering locations are selected that are not within or immediately adjacent to the construction right-of-way, they will be sited to avoid and minimize off-right-of-way impacts. If dewatering locations must occur within sensitive areas (e.g., designated wetland areas), prior approval will be sought and (if approved) multiple sediment controls will be used consistent with the E&SCP to prevent adverse impacts.

Residential Areas

The pipeline is being routed to avoid residential areas to the extent possible. Where unavoidable, construction in residential areas (i.e., where construction activities and/or

the edge of the construction right-of-way are located within 50 feet or less of an active residence) will be accomplished by employing additional restrictive measures, which may include restricting the construction ROW width. National Fuel will coordinate with residence owners and/or tenants prior to construction activities. Additional safety precautions will include: erecting barricades (e.g., standard orange barricade/safety fencing), welding off site, controlling fugitive dust, and reducing the duration of the open trench. The occurrences where the construction ROW will be located within 50 feet of a residence will be provided within Resource Report 8, Land Use, Recreation and Aesthetics, along with proposed mitigation steps to be taken in these areas. Site specific residential area construction plan drawings will be prepared for areas where it is not possible to keep construction work areas a minimum of 25 feet from a residence.

Stovepipe Construction

Stovepipe construction is typically used where the pipeline is installed close to an existing structure or when an open trench will adversely impact a residential, commercial, or industrial area. Stovepiping involves installing the pipeline one joint at a time (or double-jointed) whereby the welding, radiography, and coating activities are all performed in the open trench. At the end of each day, the newly-installed pipe is backfilled or the open trench is covered. The length of excavation performed each day will not exceed the amount of pipe installed.

Lift and Lay Pipeline Replacement

Lift and lay construction techniques apply to pipeline replacement activities (such as the proposed replacement of four miles of the 16-inch XM-10 pipeline with 24-inch pipeline). This technique involves the removal of existing pipeline, and then installation of the new pipeline in the same trench from which the existing pipeline was removed. The pipe is exposed through excavation, cut and removed from the trench. The new pipeline may be fabricated along the trench (if room permits), welded into “drag sections” in a fabrication yard along the ROW, or fabricated over the ditch. Following welding/tie-in of the new pipeline, the trench is backfilled and ground surface restored and seeded.

Rock Removal and Blasting

Given the presence of surface rock in some portions of the Project area, National Fuel anticipates that blasting for rock removal may be required during construction of the Project. Rock encountered during trenching will be removed using one of the techniques listed below. The technique selected is 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; or
- Hammering with a pointed backhoe attachment followed by backhoe excavation.

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.

National Fuel's blasting procedures include pre-blast and post-blast inspections/surveys by National Fuel if construction is within 150 feet of any structure, with the permission of the owner. Blasting mats will be used to prevent the scattering of loose fly rock. Blasting will be conducted during daylight hours and will not begin until occupants of buildings, stores, residences, and places of business within 150 feet have been notified.

National Fuel will comply with applicable regulations applying to blasting and blast vibration limits with regard to structures and underground utilities. 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. All blasting activity would be performed by state-licensed professionals according to strict guidelines designed to control energy release. Additional details will be provided within Resource Report 6 relative to potential blasting locations and National Fuel's Blasting Plan.

Rugged Topography

Some steep slopes and side slopes are present in the Project area, and the need for ATWS areas and increased ROW widths or specialized construction techniques may be necessary to enable construction safely. These areas of increased workspace (if needed) will be identified on the construction alignment drawings in Appendix 1-C. Erosion and sediment control, as well as restoration and revegetation, will be performed in accordance with National Fuel's ESCAMP and BMPs.

Active Agricultural Land

Inquiries have been initiated with landowners and agricultural agents to determine the locations and configuration of drain tiles and other important features (diversion ditches, etc.) to avoid or accommodate during construction. National Fuel will continue to work actively with landowners to identify site conditions (i.e., to include drain tiles and header systems) crossed by Pipeline facilities, so that impacts and disruptions can be avoided and minimized to the extent feasible. In general, in actively cultivated or rotated croplands, managed pastures and hayfields, topsoil will be stripped across the width of the construction ROW and placed separate from subsoil. Excess rock will be removed from at least the top 12 inches of soil to the extent practical. The size, density and distribution of rock left in construction work areas should be similar to adjacent areas not affected by construction, unless otherwise approved in writing by the landowner. ATWS may be necessary when topsoil segregation is required. The depth of the pipeline in these areas will be a minimum of four feet. After the pipe has been lowered into the ditch, subsoil is used for backfilling and topsoil is then spread across the graded ROW. Any drain tiles will be located, monitored for damage and repaired, as needed. The depth of

the pipeline will also be adjusted as needed to prevent interference with the proper function of drain tile systems. Water flow in any affected irrigation systems will be maintained, unless shutoff is coordinated with affected parties. Equipment traffic will be controlled within agricultural land to minimize rutting or compaction. Soil compaction will be treated, as necessary, in conjunction with the FERC Plan and ESCAMP. Resource Report 8 will contain additional discussions on agricultural land, including specialty crops.

Wetland and Waterbody Crossings

The proposed route for the Pipeline is being routed to avoid or minimize where practicable impacts to wetland and waterbody areas located in the vicinity of the Project Area. Resource Report 2, Water Use and Quality, and Resource Report 3, Fish, Wildlife, and Vegetation will contain specific information the number and type of wetlands and waterbodies as well as detailed crossing methods. Construction in these areas will be performed in accordance with the FERC's Wetland and Waterbody crossing procedures and applicable permit conditions, unless more stringent regulatory requirements apply or in accordance with variances requested in this application. A copy of the FERC's Wetland and Waterbody crossing procedures (along with any requested modifications) will be attached to Resource Report 2. BMPs for water body crossings, wetland crossings and site specific waterbody crossings will be provided in Resource Report 2, Water Use and Quality.

Additional Temporary Workspace

ATWS locations are those areas of additional workspace (i.e., in addition to the standard construction ROW width) that are needed to safely construct project facilities. ATWS is needed at locations requiring additional excavation; soil placement requirements; or staging of additional equipment and/or materials. Examples include:

- road and railroad crossings;
- wetland and waterbody crossings;
- areas with steep slopes (> 25 percent) and side hills;
- areas requiring topsoil segregation;
- areas with potential trench slumping;
- equipment turnarounds and spread move-arounds;
- hydrotest fill and dewatering locations and test locations;
- pipeline crossovers; and,
- equipment and material staging areas.

The size and configuration of an ATWS is dependent upon its purpose as well as the existing site conditions (e.g., available and/or accessible space, nearby resources) at each proposed work location.

Trenchless Techniques

Trenchless construction techniques include horizontal bore and horizontal directional drill (HDD) methods. Trenchless methods allow the installation of the pipeline with minimal impacts or disturbance to surficial features. Boring techniques are regularly used when crossing transportation features that cannot be disrupted (e.g., roadways, railroads). HDDs may be used when re-routing alternatives are limited and other trenching and trenchless techniques are not feasible. National Fuel anticipates using bores for road and railroad crossings except where an open-cut crossing is determined to be feasible.

1.4.3 Aboveground Facilities

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 FERC Plan and Procedures and Project ESCAMP/SWPPP will be followed, as applicable, for the aboveground facilities as well. Generally, aboveground facilities are sited to avoid cultural and natural resource impacts to the greatest extent feasible. The following is a brief description of the typical construction sequence for the new compressor station. Construction activities for the interconnects, dehydration facility and modifications to the existing compressor station will be similar to those activities described below, just to a lesser scale.

Clearing and Grading

Proposed aboveground facility locations will be cleared and graded to the extent necessary to install the facility and provide a level platform and sufficient space to execute the work safely. Onsite material will be used as structural backfill where permitted by engineering specifications. If necessary, clean imported structural backfill material will be used if a sufficient amount of onsite material does not exist. Areas temporarily disturbed by construction activities will be restored to pre-existing conditions or better. Some site modifications (e.g. re-contouring) may be required to provide sufficient drainage and site access. Construction activities at the aboveground facilities will be completed in accordance with measures specified in the Project ECP.

Foundations and Structures

Depending on soil conditions and the results of sub-surface geotechnical sampling and analysis, engineered screw piles will be the preferred method of mounting buildings, prime movers, gas handling equipment and piping. The foundation method will be determined after land acquisition is complete.

Piping

Installation of the various piping systems will begin at about the same time as the foundation work. Trenches will be dug for the underground portions of the piping. The

pipe will be welded, x-rayed, coated, and placed in the trench and backfilled. Some portions of the station piping will occur aboveground. Any aboveground piping will be installed on concrete or metal pipe supports and painted. If required through mandated post-construction noise studies, acoustic insulation may be installed on some of the piping for noise control. Some of the piping, valves and fittings are typically fabricated off-site at a fabrication shop and then transported to the site. As major parts of the piping are completed, each will be hydrostatically tested to ensure its integrity. Test water is usually trucked to the site for the testing and will be discharged as specified in Section 1.4.1 (Pressure Testing and Final Tie-Ins) and Section 1.4.2 (Dewatering).

Equipment Installation

Equipment will normally be delivered by truck, then offloaded and positioned, leveled, grouted, and secured with anchor bolts as necessary. Equipment installation will include the inspection of all major mechanical and electrical equipment (i.e., both visual and radiographic), and painting and finishing.

Clean-up and Restoration

Clean-up and restoration activities will be performed as discussed in Section 1.6.1.1 above. Some site modifications (e.g., re-contouring) may be required to provide sufficient drainage and site access.

1.4.4 Environmental Inspector Training

National Fuel would use at least three full-time Environmental Inspectors (EIs) during Project construction. The EI would monitor construction activities to ensure compliance with the FERC Certificate; specifications of the ESCAMP/SWPPP; all applicable federal, regional, state, and local environmental permits, site-specific construction and restoration plans or other mitigation measures; and landowner agreements. National Fuel will hold in-house training for the contractor and National Fuel project personnel, conducted by the EI before construction. The EI will perform all duties specified in National Fuel's ESCAMP/SWPPP.

1.5 OPERATION AND MAINTENANCE PROCEDURES

The Project would be operated and maintained by appropriately trained and licensed National Fuel employees and contracted entities, in accordance with regulatory permit conditions and authorizations, the FERC's Plan and Procedures, engineering design specifications, recommended manufacturer maintenance practices, and National Fuel's operating policies and procedures.

1.6 FUTURE PLANS AND ABANDONMENT

In the future, and subject to sufficient market support, expansion of the facilities could be accomplished with the construction of additional compression at the proposed and existing compressor station locations. However, National Fuel has no current or foreseeable future plans to increase the capacity of the Northern Access 2016 project facilities described herein. In addition, National Fuel does not currently plan to abandon any associated facilities in the near future.

1.7 PERMITS AND APPROVALS

1.7.1 Permits, Licenses, and Certifications

National Fuel will submit applications for all required federal, regional, state, and local approvals or opinions required for the Project, as provided in Table 1.7-1. National Fuel will endeavor to obtain all necessary permits, licenses, and clearances related to the installation, operation, and maintenance of the proposed Project. National Fuel will require its contractor to become familiar with all required permits, licenses, and clearances, and to comply with all applicable construction and restoration requirements and mitigation measures. National Fuel or its contractor shall procure all necessary hauling and other operating permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due lawful execution of the work.

Table 1.7-1. Environmental Permits, Approvals, and Consultations Required for the Project

| Administering Agency | Permit/Consultation | Date Submitted / Anticipated Submittal | Date Received / Anticipated Receipt |
|---|--|---|--|
| Federal | | | |
| Federal Energy Regulatory Commission (FERC) | Section 7(c) of the Natural Gas Act – Certificate of Public Convenience and Necessity | <i>March 16, 2015</i> | <i>February 2016</i> |
| U.S. Fish and Wildlife Service (USFWS) – New York and Pennsylvania Field Offices | Endangered Species Act, Section 7 Consultation (Threatened & Endangered Species Clearance) Project review under Migratory Bird Treaty Act | Coordination June-July 2014; Initial Letter Sent August 1, 2014; <i>Submit Habitat Assessment Report August 2015; Submit final species specific survey report(s) September 2015</i> | <i>November 2015</i> |
| U.S. Army Corps of Engineers (USACE), Buffalo and Pittsburgh Districts | Section 404 of the Clean Water Act – Wetland and Waterbody Crossing Permit Section 10 of the Rivers and Harbors Act (for pipeline crossing Navigable Waterways) | <i>August 2015</i> | <i>January 2016</i> |
| Various Native American Group Contacts | Consultation with Federally Recognized Native American Groups | July 17, 2014 | (See below under “Native American Groups” for list of groups contacted and status of response) |
| Commonwealth of Pennsylvania | | | |
| Pennsylvania Historical and Museum Commission (PHMC), Bureau for Historic Preservation, State Historic Preservation Office (SHPO) | Section 106 of the National Historic Preservation Act, Cultural Resources Consultation | June 23, 2014 submitted Request to Initiate Consultation; <i>Submit Phase I Cultural Resources Report March 2015</i> | <i>April 2015</i> |
| Pennsylvania Department of Conservation and Natural Resources Natural Diversity Inventory (PADCNR/PNDI) | Threatened & Endangered Species Consultation | Initiated consultation June 19, 2014; Received initial response July 17, 2014 with recommended presence/absence survey for two plant species. <i>Submit survey report March 2015.</i> | <i>July 2015</i> |
| Pennsylvania Fish and Boat Commission (PAFBC) | Threatened & Endangered Species Consultation | Initiated consultation | <i>September 2015</i> |

| Administering Agency | Permit/Consultation | Date Submitted / <i>Anticipated Submittal</i> | Date Received / <i>Anticipated Receipt</i> |
|---|--|--|---|
| | | June 19, 2014; Received initial response August 5, 2014 with recommended presence/absence surveys for two species (fish, amphibian) and habitat assessment for various mussel species. Submitted survey reports December 2014 and January 2015. Conference call February 2015. <i>Followup blue spotted salamander surveys for route change areas Spring 2015.</i> | |
| Pennsylvania Game Commission (PAGC) | Threatened & Endangered Species Consultation | Initiated consultation June 19, 2014; Received initial response July 1, 2014 with recommended conservation measures for two mammal species of concern. <i>Submit response letter April 2015.</i> | <i>September 2015</i> |
| Pennsylvania Department of Environmental Protection (PADEP) | State Wetland and Waterbody Crossing/Encroachment Permit and Section 401 Water Quality Certification | <i>July 2015</i> | <i>December 2015</i> |
| PADEP | Pennsylvania State NPDES – Hydrostatic Test Water Discharge Authorization (PAG – 10) | <i>September 2015</i> | <i>December 2015</i> |
| PADEP & McKean County Conservation District | Erosion and Sediment Control Permit (ESCGP-2) | <i>August 2015</i> | <i>December 2015</i> |
| PAFBC | Permit for In-Stream Blasting (if required) | Requirement for permit to be confirmed (if in-stream blasting is required to construct the Project, an in-stream blasting permit may be required). <i>December 2015</i> | <i>February 2016</i> |

| Administering Agency | Permit/Consultation | Date Submitted / Anticipated Submittal | Date Received / Anticipated Receipt |
|---|---|--|--|
| New York State | | | |
| New York State Office of Parks, Recreation, and Historic Preservation, SHPO | Section 106 of the National Historic Preservation Act, Cultural Resources Consultation | Submit Phase I Cultural Resources Report March 2015; Submit Supplemental report and Phase II Reports September 2015 | December 2015 |
| New York Natural Heritage Program | Threatened & Endangered Species Consultation | Initiated consultation June 19, 2014. Surveys planned 2015. | December 2015 |
| New York State Department of Environmental Conservation (NYSDEC) | Request for Information re: threatened/endangered species and other environmental issues of NYSDEC concern. | Initiated consultation June 19, 2014. Meeting held September 24, 2014 to go over NYNHP letter. T&E surveys planned 2015. | December 2015 and/or within stream/wetland permitting process. |
| NYSDEC | Article 24 – Freshwater Wetlands Permit (State regulated wetland crossings) Article 15 – Protection of Waters Permit (State-regulated stream crossings) Section 401 Water Quality Certification | July 2015 | December 2015 |
| NYSDEC | State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities | September 2015 | December 2015 |
| NYSDEC | Air Permit (for new compressor station/additions to existing compressor stations) | April 2015 | January 2016 |
| New York State Department of Agriculture and Markets | Coordination regarding project construction and land restoration in agricultural lands. | August 14, 2014 – Summer 2015 | NA/Coordination Only (no permit required) |
| County/Local Agencies | | | |
| McKean County Conservation District | Erosion and Sedimentation Control Plan review/comment | August 2015 | December 2015 |
| Native American Groups | | | |
| Absentee-Shawnee Tribe of Oklahoma | Consultation | July 17, 2014 | None received as of 3/11/15. (Response voluntary) |

| Administering Agency | Permit/Consultation | Date Submitted / <i>Anticipated Submittal</i> | Date Received / <i>Anticipated Receipt</i> |
|---|----------------------------|--|--|
| Eastern Shawnee Tribe of Oklahoma | Consultation | July 17, 2014 | <i>None received as of 3/11/15. (Response voluntary)</i> |
| Seneca Nation of Indians | Consultation | July 17, 2014 | <i>None received as of 3/11/15. (Response voluntary)</i> |
| Seneca-Cayuga Tribe of Oklahoma | Consultation | July 17, 2014 | <i>None received as of 3/11/15. (Response voluntary)</i> |
| Shawnee Tribe Miami, Oklahoma | Consultation | July 17, 2014 | <i>None received as of 3/11/15. (Response voluntary)</i> |
| Tonawanda Band of Seneca Indians Basom, NY | Consultation | July 17, 2014 | <i>None received as of 3/11/15. (Response voluntary)</i> |

1.7.2 Landowner Notifications

The names and mailing addresses of the landowners affected by the Project are provided in Appendix 1-G, located in the volume – Privileged and Confidential. This list includes landowners directly affected by the pipeline, abutters to the pipeline, and properties located within one half mile radius of the proposed Pendleton compressor station and existing Porterville compressor station, and dehydration facility.

As set forth in National Fuel’s application, National Fuel certifies that all affected landowners and local officials and agencies will be notified as required by 18 CFR §157.6(d). Specifically, National Fuel will provide Project notification to landowners, regulatory agencies, libraries, and newspapers within three business days following the date that the FERC issues a notice of application. Also, within 14 days after the FERC assigns a docket number to the application, National Fuel will publish a notice of the application in a daily or weekly newspaper of general circulation in which the Project is located.

On May 13, 2014, National Fuel held information sessions for landowners and the interested public in Smethport, Pennsylvania. In addition, on May 20, 21, and 28, 2014, National Fuel held public information sessions in Olean, Franklinville, and Sardinia, New York, respectively. On August 26, 27, and 28, National Fuel hosted public “open house” meetings with the FERC staff present in Olean, Sardinia, and Pendleton, New York, respectively.

1.8 NONJURISDICTIONAL FACILITIES

No nonjurisdictional facilities are associated with the Project.

For the proposed Pendleton Compressor Station, electric power supply and phone/communications connections will be required. National Fuel will coordinate with power and telecommunications providers to determine whether any new or increased facilities would need to be constructed by service providers to supply these requirements.

Similarly, electric power and telecommunications will be required for the new facilities at the existing Porterville Compressor Station, Wheatfield Dehydration facility, the TGP Interconnect, the Pressure Reduction Station near the Tie-In to Line X-North, and Tie-ins at Clermont and Hinsdale. National Fuel will coordinate with power and telecommunications providers to determine whether any new or increased facilities would need to be constructed by service providers to supply these requirements.

1.9 CUMULATIVE IMPACTS

National Fuel assessed the potential cumulative impacts associated with the Project. Pursuant to the Council on Environmental Quality (“CEQ”) regulations, a cumulative impact is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions

regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). “Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR §1508.7).

Cumulative impacts associated with the proposed Project are those that may potentially result from the combined effect on resources from construction and operation of the Project facilities with other projects occurring in the vicinity of the Project facility locations. To evaluate the potential for cumulative impacts, National Fuel assessed recent, current, and reasonably foreseeable future projects or activities near the Project facilities. National Fuel based the cumulative impacts analysis on guidance set forth by the Council on Environmental Quality (CEQ) and USEPA (CEQ 1997, USEPA 1999). Under these guidelines, inclusion of other potential future actions is based on identifying commonalities between the potential impacts that would result from the Project and the impacts likely to be associated with other past, present or potential future projects. For purposes of this analysis, an action must meet the following criteria to be included in the cumulative impacts analysis:

- impact a resource area potentially affected by the Project;
- cause this impact within all, or part, of the Project area;
- cause this impact within the resource-specific geographic boundary of where the Project will also have an impact; and
- cause this impact within all, or part, of the time span for the potential impact of the Project (CEQ 1997; USEPA 1999).

Cumulative impacts may occur when the environmental effects associated with a project are added to either temporary (construction-related) or permanent (operation-related) impacts associated with past, present, or reasonably foreseeable future actions (i.e., projects within the geographic scope and timeframe of the Project). Direct and indirect effects of the proposed Project are presented in Resource Reports 2 – 9. The area of potential effect (“APE”) for cumulative impacts of a proposed project will generally depend on the scope, size and components of the project. National Fuel identified 39 other projects in or surrounding McKean County, Pennsylvania and Allegany, Cattaraugus, Erie and Niagara Counties, New York

National Fuel’s cumulative impacts assessment considered the following:

- Whether past, present, or future project will impact a resource potentially affected by the proposed action. Other projects were initially identified based on geographic proximity to the Project (location by county). Distant projects were eliminated from further evaluation because their impacts would not likely overlap with the Project.
- The timing (past or future) of other projects, as the potential for cumulative effects is dependent on the duration of the impact (short-term, long-term or permanent). Present projects were considered to overlap with the Project in time of occurrence.
- Information found in other FERC filings, scoping activities, and other publicly accessible information.

Recent Past, Ongoing, and Reasonably Foreseeable Projects

In defining the APE for the cumulative impacts analysis, National Fuel determined the area of potential overlap between the proposed action and other projects. Recently completed, current, and planned major projects (e.g., roads, bridges, mining, large commercial/industrial/residential developments) were identified in and in the geographic vicinity of the Project area. Analysis considered actions impacting resources affected by the proposed action, within all or part of the Project area (region of influence), within areas in reasonable geographic proximity to, and within all or part of the duration of the impacts resulting from the proposed action (i.e., APE for cumulative impacts). Boundaries for evaluating cumulative effects were expanded to the point where resources would no longer be affected significantly. The time span for analysis was selected based on the duration that proposed Project impacts could persist. The APE for cumulative impacts can vary by resource based on the extent of the potential effect. Except as noted in the following discussion, National Fuel initially identified other projects by county, generally considered an approximately 0.5 to 1-mile radius for resources affected (excluding air quality), and the duration of the impacts for most resources as 1 - 10 years (excluding mature forest). The geographic boundary of the area assessed for cumulative impacts relative to air emissions was extended in the vicinity of aboveground facilities (i.e., compressor stations, the dehydration facility, meter stations, interconnects, and tie-ins).

Table 1.9-1 identifies other past, present or potentially foreseeable future projects or actions occurring in or surrounding McKean County, Pennsylvania and Allegany, Cattaraugus, Erie and Niagara Counties, New York. The projects and actions considered in this cumulative impacts analysis may vary from the Project in nature, magnitude, and duration. These projects were selected for review based on their similarities with the proposed Project. These projects and actions include FERC-jurisdictional natural gas projects, other FERC energy projects, other non-FERC-jurisdictional energy and utility projects, and local commercial and residential projects. Anticipated cumulative impacts were based on NEPA documentation filed with FERC. Additional local projects were initially identified based on overall location by county and further considered geographic proximity to the Project area. Some of the projects considered have project components in nearby counties or extend into abutting states.

Seven ongoing or planned residential and commercial development projects were identified and considered in this analysis, all of which are unrelated to the proposed Project. Local projects were identified through scoping activities, including correspondence and communication with local municipalities that specifically requested information on other known projects, for use in National Fuel's cumulative impacts analysis.

Drilling for Marcellus Shale reserves in Pennsylvania is ongoing; Table 1.9-2 provides summary information for 2014. Impacts of drilling activities involve well pad development, improvement of existing dirt and paved roads, construction of new access roads, and construction of gathering pipeline systems. All of these activities are outside

of FERC's jurisdiction and are under the jurisdiction of the PADEP or New York State Department of Environmental Conservation (NYSDEC). The first natural gas production from the Marcellus Shale in Pennsylvania began in 2005.

According to reports provided by the PADEP Office of Oil and Gas, a total of 7,255 permits were issued to drill all types of wells (e.g., oil, gas, conventional, unconventional) were issued in McKean County from 2005 through the end of 2014. Of that number, 216 unconventional wells were drilled (PADEP 2015a, PADEP 2015b). No unconventional well permits were issued in the townships of Annin, Eldred, and Ceres (where the proposed Mainline Pipeline will be located) from 2011 through 2014. During this same period, PADEP issued three unconventional well permits for proposed wells in Keating Township and 20 permits for proposed wells in Sergeant Township (townships also traversed by the proposed Mainline Pipeline) (PADEP 2015c). See Resource Report 6 for a list of oil and gas wells within 0.5-mile of the Project. There are no Marcellus Shale wells located in New York due to the moratorium and recent announcement of a permanent ban on hydraulic fracturing (NYSDEC 2014).

National Fuel's analysis does not speculate concerning potential future upstream facilities, given that the timing of additional Marcellus Shale development, and the location, scale, and timing of future upstream facilities that could potentially contribute to cumulative impacts in the proposed Project area and vicinity are unknown. Moreover, the schedules for Marcellus Shale gas development activities are particularly tentative for economic reasons. In addition, the magnitude or acreage of each project was typically not available without conducting detailed file review at agency offices.

Ongoing or planned road improvement projects needed to accommodate drilling rigs have been noted by National Fuel in their construction planning. Since the environmental impacts related to road widening and grading would be minimal, these activities were not included in the cumulative impacts analysis for most resource areas. Moreover, the number of unconventional well drilling permits issued and the time frame from issuance of such permits to the installation of the wells (if ever) is too speculative to allow National Fuel to account for potential overlapping impacts during the Project anticipated construction duration.

Emissions associated with gathering lines, would generally occur during the construction phase and would be localized and temporary. Compressor stations installed or modified as part of a gathering line system could present a potential impact and are addressed below.

Table 1.9-1. Recently Completed, Ongoing and Planning Projects Identified for Potential Cumulative Impacts Evaluation

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|---|---|---|-------------------------------------|---|
| FERC Natural Gas Projects | | | | |
| Tennessee Gas Pipeline Company, LLC (TGP's) 300-Line Project (CP09-444) | Expand natural gas transportation capacity of its existing 300-Line pipeline. The 300 Line Project includes the following facilities: <ul style="list-style-type: none"> • installation of approximately 127.4 miles of new 30-inch-diameter pipeline loop in seven separate segments in Potter, Tioga, Bradford, Susquehanna, Wayne, and Pike Counties, Pennsylvania; and Sussex and Passaic Counties, New Jersey; • construction of new compressor stations in Venango and McKean Counties, Pennsylvania; • modifications of seven existing compressor stations in Potter, Tioga, Bradford, Susquehanna, and Pike Counties, Pennsylvania, and Sussex County, New Jersey; • installation of associated appurtenant aboveground facilities including mainline valves and pig7 launchers and receivers. | Potter, Tioga, Bradford, Susquehanna, Wayne, Pike, Venango, McKean Counties, PA | Recently completed, in-service 2011 | Mainline Pipeline |
| TPG's Northeast Supply Diversification (NSD) Project (CP11-30) | The proposed Project would include construction of one 6.77-mile, 30-inch-diameter pipeline loop in northeastern Pennsylvania, designated as Loop 315. Loop 315 is located within and adjacent to the right-of-way (ROW) associated with its existing 24-inch pipeline designated as the 300 Line. Additionally, the Project includes the following facilities: <ul style="list-style-type: none"> • make improvements and modifications at existing Compressor Station 230C (Station 230C) in Niagara County, New York, and the existing Niagara Spur meter station/East Aurora Meter Site in Erie County, New York; | Bradford, Tioga Counties, PA Niagara, Erie, Livingston Counties, NY | Past - in-service November 2012 | Proposed Pendleton Compressor Station, Wheatfield Dehydration Facility and Replacement Pipeline, Niagara County, NY |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|--|--|--|---|---|
| | <ul style="list-style-type: none"> • install a new pig receiver at existing Compressor Station 317 in Bradford County, Pennsylvania; • install a new 16-inch tap on its 200 Line in Livingston County, New York; and • install appurtenant facilities. | | | |
| National Fuel Gas Supply Corporation (National Fuel 's) Northern Access Project (CP11-128) | <p>The Project consists of the construction and operation of the following facilities:</p> <ul style="list-style-type: none"> • a new compressor station totaling 4,470 horsepower (hp) and auxiliary facilities in Erie County, New York (East Aurora Compressor Station); • pipng modifications to permit bi-directional flow at the existing Concord Compressor Station in Erie County, New York; • modifications to underground piping and valves at the existing East Eden Metering and Regulation Station in Erie County, New York; • expansion of the Ellisburg Compressor Station with two new compressor units totaling 9,470 hp in Potter County, Pennsylvania; and • a new meter station (Rose Lake Meter Station) and auxiliary piping/facilities at the Ellisburg Compressor Station. | Erie County, NY; Potter County, PA | Past - Recently completed, in service November,11 2012 | Existing Porterville Compressor Station, Mainline Pipeline, Erie County, NY |
| TGP's Station 230C Project (CP11-133) | TGP's Station 230C Project involves compressor restaging, compressor engine driver replacements, and piping and valve modifications at its existing Station 230C Compressor Station along the Niagara Spur Loop Line (NSLL) in Niagara County, New York. | Niagara County, NY | Past – Recently completed, in-service | Proposed Pendleton Compressor Station, Wheatfield Dehydration Facility and Replacement Pipeline, Niagara County, NY |
| TPG's MMP Project(CP12-28) | The proposed Project includes: <ul style="list-style-type: none"> • construction of a 30-inch-diameter pipeline loop approximately 7.9 miles long in Hebron | Potter, Mercer, Venango, McKean Counties, PA | Past – Recently completed October 2013 - In service | Mainline Pipeline, McKean County, PA |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|---|--|--|--|---|
| | and Allegany Townships, Potter County, Pennsylvania, designated as Loop 313; and • improvements and modifications at the following compressor stations in Pennsylvania: (1) Compressor Station 219 in Mercer Borough, Mercer County; (2) Compressor Station 303 in Cranberry Township, Venango County; (3) Compressor Station 310 in Sergeant Township, McKean County; and (4) Compressor Station 313 in Hebron Township, Potter County. | | November 1, 2014 | |
| TPG's Niagara Expansion Project (CP14-88) | Proposed project consists of : • construction and installation of approximately 3.1 miles of a 30-inch pipeline loop segment along Tennessee's 200 Line north of Compressor Station 224 in Chautauqua County, New York (Loop 224).; • modification of existing station piping at Compressor Station 219 in Mercer County; • installation of a new pig launcher at Compressor Station 224 in Chautauqua County, New York; and • modification the Hamburg Meter Station in Erie County, New York. | Erie, Chautauqua Counties, NY; Mercer County, PA | Future Anticipated in-service date November 2015 | Mainline Pipeline, Erie County, New York |
| National Fuel's Line TNY Replacement Project (CP14-89) | Project to construct and operate approximately 6 miles of 24-inch-diameter pipeline and appurtenances, also known as the Line TNY system, in Erie County, New York and authorization to abandon certain related facilities. | Erie County, NY | Past - Recently completed, in-service October 2014 | Mainline Pipeline, Erie County, New York |
| National Fuel's Northern Access 2015 Project (CP14-100) | Proposed project consists of the following facilities: • construction of a new 15,400-horsepower (hp) compressor station (Hinsdale Compressor Station) in Cattaraugus County, New York; • modifications at its existing Concord | Chautauqua, Cattaraugus, Erie Counties, NY | Future Anticipated in-service date November 2015 | Mainline Pipeline, Cattaraugus or Erie Counties, NY |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|--|---|--------------------------------|---|---|
| | Compressor Station, including the addition of 7,700 hp of compression in Erie County, New York; and • modifications at its existing East Eden Meter Station in Erie County, New York. | | | |
| National Fuel's Line KNY and KM3 Replacement Project (CP14-107) | Project includes construction of approximately 4.72 miles of 16-inch and 20-inch-diameter replacement pipeline along two segments of National Fuel's existing pipeline right-of-way in the Town of Collins, Erie County and the Towns of Otto and East Otto, Cattaraugus County, New York. | Erie, Cattaraugus Counties, NY | Recently completed, in-service October 31, 2014 | Mainline Pipeline, Cattaraugus or Erie Counties, NY |
| National Fuel's KNY 2.43 Mile Replacement Project (CP11-426) | Project located in the Town of Otto, Cattaraugus County. 2.43 mile 20-inch-diameter pipeline replacement project. | Cattaraugus County, NY | Past – Recently completed | Mainline Pipeline, Cattaraugus County, NY |
| National Fuel's Modification of the Boundaries of Beech Hill, Independence and West Independence Storage Fields (CP14-501) | Proposed project to modify the reservoir and buffer boundaries of three adjacent underground storage fields located in Allegany and Steuben Counties. Seeking addition of 8,299.02 acres of reservoir area and 4,654.67 acres buffer area to the 3 fields. Use of Well 7451 as a withdrawal -only well. No ground disturbance and no environmental impacts anticipated. | Allegany, Steuben County, NY | Future | Mainline Pipeline, Allegany County, NY |
| National Fuel's Well 7451 Project (CP12-525) | Project entailed authorization to use Well 7451 (near Beech Hill) and associated pipeline on an interim basis to withdrawal migrated storage gas pending the filing of an application to change boundaries of its Beech Hill, East Independence and West Independence Storage Facilities. FERC automatic authorization under National Fuel's blanket certificate | Allegany County, NY | Past – Recently completed, in-service | Mainline Pipeline, Allegany County, NY |
| National Fuel's Beech Hill Compressor Unit #3 (CP11-533) | Project to reclassify existing compressor unit - Beech Hill Compressor Unit #3 at Beech Hill Compressor Station. | Allegany County, NY | Past – Recently completed and in service | Mainline Pipeline, Allegany County, NY |
| N/A (CP12-8) | Project to abandon natural gas storage | Allegany County, NY | Past – Recently | Mainline Pipeline, Allegany |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|---|---|--|---|---|
| | service (SS-2) service provided to Delmarva Power & Light Company. | | completed and in service | County, NY |
| National Fuel's West Side Expansion and Modernization Project (CP14-70) | <p>The proposed project will consist of the following:</p> <ul style="list-style-type: none"> •The installation of approximately 23-miles of 24-inch pipeline to generally parallel existing 20-inch Line N from Mt. Pleasant Township in Washington, PA, to Independence Township in Beaver County, PA. •The installation of approximately 3,550 horsepower of compression via the construction of one additional compression unit at National Fuel's Mercer Compressor Station in Mercer County, PA. •The installation of miscellaneous valve and piping modifications at National Fuel's existing Henderson Compressor Station in Venango County, PA. •The conversion of approximately 23-miles of National Fuel's existing Line N to inactive status for possible future use. | Washington, Allegheny, Beaver, Venango and Mercer Counties, Pennsylvania | Present Construction activities (timber clearing activities) February 2015, in-service date of September 2015 | This project's facilities are outside the counties where the Project facilities are located. This National Fuel project was considered as associated with National Fuel's, regional/Northeast system, but determined to be too remote for further cumulative impact analysis. |
| National Fuel's Line NM-44 NY and Line U 2015 Replacement Project (CP15-36) | Project involves replacement of 17,249 feet of existing pipeline (Line NM44 NY) located in the Town of Elma, Erie County NY | Erie County, NY | Present – Construction activities (tree clearing) in March 2015, in-service October 31, 2015 | Mainline Pipeline, Erie County, NY |
| Other FERC Energy Projects | | | | |
| ECOspensible, Inc.'s Niagara River Community Hydro Project (P-13839) | <p>Proposed project and application for a preliminary permit proposing to study the feasibility of the Niagara River Community Hydro Project to be located on the Niagara River, near Buffalo, in Erie County, New York.</p> <p>**Preliminary permit holders are not authorized to perform any land-disturbing activities or otherwise enter upon lands or</p> | Erie County, NY | Future | Over 10 miles from the Wheatfield Dehydration Facility, in Niagara County, NY |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|---|--|---|--|---|
| <p>ECOspensible, Inc.'s Niagara River Community Hydro Project #2 (P-13840)</p> | <p>waters.</p> <p>Proposed project and application for a preliminary permit proposing to study the feasibility of the Niagara River Community Hydro Project #2 to be located on the Niagara River, near Lewiston, in Niagara County, New York.</p> <p>**Preliminary permit holders are not authorized to perform any land-disturbing activities or otherwise enter upon lands or waters.</p> | <p>Niagara County, NY</p> | <p>Future - no in-service date</p> | <p>Over 8 miles from the Wheatfield Dehydration Facility in Niagara County, NY.</p> |
| <p>KC Small Hydro LLC's Scoby Dam Hydropower Project (P-14569)</p> | <p>Proposed project and application for a preliminary permit, to study the feasibility of the proposed Scoby Dam Hydropower Project to be located at the existing Scoby dam located on Cattaraugus Creek near Route 219 in Erie County, New York.</p> <p>**Preliminary permit holders are not authorized to perform any land-disturbing activities or otherwise enter upon lands or waters.</p> | <p>Erie County, NY</p> | <p>Future –in-service date unknown</p> | <p>Over 10 miles from the Mainline Pipeline, Erie County, NY</p> |
| <p>Non-jurisdictional - Other Energy and Utility</p> | | | | |
| <p>National Grid's Five Mile Road Station</p> | <p>Project involves the construction of a new 345kV to 115kV station located on a 18.9-acre parcel owned by National Grid at 4580 Five Mile Road (County Route 19), in the Town of Humphrey, Cattaraugus County, New York</p> | <p>Cattaraugus County, NY</p> | <p>Construction start date of January 16, 2015. Construction activities to last 6-12 months.</p> | |
| <p>Oil and Natural Gas Wells (including Marcellus Shale/unconventional wells)</p> | <p>Various possible locations in McKean County, PA. Between the years 2005 and 2014, 216 unconventional wells were permitted, during that same period 84 of these were drilled. Ongoing construction activities associated with Marcellus Shale development.</p> | <p>Various possible locations in McKean County, PA (no Marcellus shale development in NY)</p> | <p>Ongoing</p> | <p>Mainline Pipeline - various locations in McKean County, PA</p> |
| <p>Various Gathering Pipelines</p> | <p>Facilities to gather the gas from wells will be constructed in the counties where the Project would be constructed</p> | <p>Various possible locations in McKean County, PA,</p> | <p>Ongoing</p> | <p>Mainline Pipeline - various locations in McKean County, PA</p> |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|--|---|--|--|---|
| | | Allegany, Cattaraugus Counties, NY | | |
| Mining | Sand and gravel, permitted ongoing construction activities | Cattaraugus County, NY | Present/Ongoing | Mainline Pipeline in Cattaraugus County |
| EverPower Wind Holdings' Allegheny Wind Power Project | Proposed project includes 29 wind turbines. | Cattaraugus County, NY | Future – permitting not complete | Mainline Pipeline in Cattaraugus County |
| Apex Clean Energy Holding, LLC's Lighthouse Wind Farm | Proposed 201 MW wind energy project located in the Town of Somerset, Niagara County, New York and the Town of Yates, Orleans County, New York. Study area for the project includes approximately 99,837 acres (156 square miles). Project considered but no further evaluation as too speculative - no filing or construction dates. Planning stage only. | Niagara County, NY | Future - Preliminary Planning Stage - January 2015 filed revised Public Involvement Plan. | Over approximately 20 miles from the new Pendleton Compressor Station, in Niagara County, NY |
| Iberdrola Renewables, LLC's Bone Run Wind Project | Proposed 68-130MW wind energy project located in the Towns of Randolph and South Valley, with the majority of land actively logged by private landowners. | Cattaraugus County, NY | Future -project in planning stage with stated projected in- service date of December 2016 | Mainline Pipeline in Cattaraugus County |
| Call Hill Wind - 102 MW, a NextEra Energy Resources project, would be located in Steuben and Allegany Counties | Proposed 102 MW wind energy project located in Steuben and Allegany Counties, NY. | Steuben and Allegany Counties, NY | Future -project in planning stage anticipated in- service date unknown | Mainline Pipeline in Allegany County |
| Pennsylvania Electric Company - new substation and transmission line | Proposed project to install a new line and substation in vicinity of the Project Mainline Pipeline crossing of Pierce Brook Road (MP14.34). | Keating Township, McKean County, PA | Future | Crosses Mainline Pipeline in McKean County, PA |
| Keating Township - sewer system installation | The locations where this sewer project crosses the proposed pipeline route are near milepost ("MP") 8.5 (the sewer line parallels State Route 59, which is crossed by the Project), and MP 11.9 (the sewer line parallels Farmers Valley Road, which is also crossed by the Project)-- portions out to bid and portion in construction, | Keating Township, McKean County, PA | Present – construction commenced in stages, a portion in- service in 2015 and other portions in- service early 2017. | Crosses Mainline Pipeline in McKean County, PA |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|--|--|--------------------------|---|---|
| | with anticipated completion in 2015. The sewer project phase near MP 8.5 will be under construction in spring/summer 2015, and the phase near MP 11.9 will be constructed in spring/summer 2016. | | | |
| Town of Machias, Lime Lake Sewer District Sewer collection infrastructure project | Project is a 7.1-mile sewer collection located primarily along the existing Route 16 right-of-way. Closest point is 1 mile from the Project. | Cattaraugus County, NY | Future, unknown construction schedule and anticipated in-service date | Approximately 1 mile from the Mainline Pipeline in Cattaraugus County, NY |
| 417 East Water Line, Village of Wellsville | Project is 1.3 mile water main along NYS Route 417. Project is over 18 miles from the Project Mainline Pipeline. | Allegany County, NY | Future, unknown construction schedule and anticipated in-service date | Over 18 miles from the Mainline Pipeline in Allegany County, NY |
| Commercial/Residential (Scoping - municipal correspondence and communication [See Resource Report 8]) | | | | |
| Proposed Mixed Use Development Project | Proposed mixed use development project (Brownfield Conversion Site), Olean, NY (approximately 6.63 miles from MP 39.6). | Cattaraugus County, NY | Future, unknown construction schedule | Over 6 miles from the Mainline Pipeline in Cattaraugus County, NY |
| Community Bank/Olean Physical Therapy Office | Community Bank facility, Olean, NY (across the street from St. Bonaventure University) (approximately 8 miles from MP 40.4). Impacts: The site was previously occupied, since the 1930s by a motel, restaurant, and 9-hole golf course, so no impacts were identified during state environmental review process. | Cattaraugus County, NY | Present- under construction. Bank will be complete spring 2015 | Over 8 miles from the Mainline Pipeline in Cattaraugus County, NY |
| Aspen Dental Office, Town of Allegany | Project is located at 3018 NYS Route 417, Olean, NY and involves construction of a dentist office on a site previously occupied by two single family homes 26,100 sq. feet. | Cattaraugus County, NY | Site plan approved by Planning Boards, construction in spring 2015. | Over 7 miles from the Mainline Pipeline in Cattaraugus County, NY |
| 42 Degrees North Subdivision, Town of Ellicottville | Project is located on 144 acres includes a 25-lot subdivision, 24 lots are single family residential lots; a 10- acre parcel will be reserved as a community area. The town board was lead agency for state environmental review and determined that | Cattaraugus County, NY | Future – completion date unknown | Over 8 miles from the Mainline Pipeline in Cattaraugus County, NY |

| Project/Action | Description | Location County State | Status | Nearest Project Facility Location |
|--|--|--------------------------|---|---|
| | any potential impacts would be mitigated. | | | |
| Westmont Ridge Planned Unit Development, Town of Mansfield | Project is located on Ridge Way, Mansfield (off Route 242). Mansfield Town Board, in 2010, approved a Preliminary Planned Unit Development (PUD) Plan to allow the construction of up to 93 single family homes; 72 townhouses; new day lodge; a relocated ski slope, new skate pond and other recreational features; a 400 vehicle parking lot, and associated infrastructure. Project will be built in phases. | Cattaraugus County, NY | Present, construction of infrastructure nearly complete. | Over 9 miles from the Mainline Pipeline in Cattaraugus County, NY |
| Wal-Mart Plaza, Town of Wellsville, NY | Project is a Wal-Mart Superstore with a new intersection and large parking area located south of the Wellsville, NY. | Allegany County, NY | Future, environmental review completed Summer 2014, unknown construction schedule, citizen group opposition | Over 18 miles from the Mainline Pipeline in Allegany County, NY |
| Ceramic Museum, Village of Alfred, NY | Project entails construction of a 25,000 square foot Ceramic Museum directly adjacent to the McLane Gym and NYS School of Ceramics at Alfred University. | Allegany County, NY | Present, ongoing construction, completion anticipated in 2016 | Over 30 miles from the Mainline Pipeline in Allegany County, NY |

National Fuel evaluated projects by county and proceeded to evaluate these projects' anticipated impacts on resources. National Fuel and TGP own or operate the majority of natural gas facilities in this region and projects recently completed or in development were evaluated. In some instances, this evaluation expanded outside of the location/county-based approach discussed above. National Fuel further considered existing or reasonably foreseeable actions anticipated to affect similar resources during similar time periods to that of the proposed Project. Table 1.9-2 presents a summary comparison of FERC jurisdictional projects impacts with the potential to overlap the Project impacts, which were further evaluated for cumulative impacts. Potential impacts considered as being most cumulatively significant pertain to water resources, vegetation (specifically, tree clearing), land use, and air quality and noise. Given the nature of these resources, there is greater potential to affect areas outside the direct vicinity of the Project construction ROW and operational areas, and therefore these impacts are included in Table 1.9-2. The anticipated cumulative impacts of the proposed Project and these other actions are discussed below, as are pertinent mitigation measures. Anticipated cumulative impacts were primarily based on NEPA documentation.

Many of the FERC-jurisdictional projects identified were recently completed and are operational. While some forest clearing impacts could overlap the geographic distances that separate the identified projects and the proposed Project, an analysis of project duration and geographic proximity determined that the resulting cumulative impacts are not significant.

National Fuel identified planned commercial/residential development projects through scoping activities and initiated correspondence and communication with local municipalities crossed by the Project. While there is a potential for increased construction-related traffic in the event that these planned projects occur within the same time frame and location(s) as the proposed Project, the exact schedule for most of these projects was not able to be determined. More specifically, the schedule for many projects is unadvertised/unknown, variable, and dependent on economic factors. In addition, the majority of these projects consist of short-term, localized activities (e.g., retail developments). National Fuel expects that these projects would require state or local approval and that BMPs would be implemented to minimize environmental impacts, such as erosion and sedimentation. As the proposed Project would be constructed and operated in accordance with the FERC Plan and Procedures and assuming the implementation of the Project ESCAMP/SWPPP during construction and restoration of the pipeline ROWs and aboveground facilities, as well as other applicable federal, state, or local requirements, we conclude that construction and operation of the proposed Project and commercial/residential development projects would result in negligible cumulative impacts in the Project's region. Therefore, these projects will not require further analysis.

Table 1.9-2. Resource Impacts of Existing and Future FERC Jurisdictional Projects Evaluated for Cumulative Impacts

| Project/Activity | Resource Impacts | | |
|--|---|---|--|
| | Project Footprint | Forest acres | Waterbodies (Number Affected) |
| TPG's Northeast Supply Diversification (NSD) Project (CP11-30) | Total temporary construction workspace of 110.22 acres; permanent operational areas consisting of new (19.41 acres) and existing (25.21 acres). | Total of 51.43 acres | 16 streams (12 perennial, 1 ephemeral, 3 intermittent) |
| TGP's 300-Line Project (CP09-444) | Total temporary construction workspace of 2,628.7 acres. After construction, 2,189.5 acres revert back previous conditions and 439.2 acres retained for permanent operational areas. | Pipeline: 977.3 acres during construction with 172.2 acres converted for operation. Aboveground facilities: 18.9 acres cleared for construction, 15 acres converted for operation. | 79 perennial, 78 intermittent, 29 waterbodies within construction workspace but not crossed by pipeline or avoided by use of HDD crossing method |
| National Fuel 's Northern Access Project (CP11-128) | Total temporary construction workspace of 12.1 acres; permanent operational areas of 11.4 acres. (Of this total, 4.9 acres was disturbed at East Aurora Compressor Station in Erie County, NY during construction, 4.2 acres was converted to permanent operational areas, and 0.2 acres of previously disturbed land was used for construction of Concord Compressor Station in Erie County) | Total of 2.2 acres of forest at East Aurora Compressor Station permanently converted for operation. No forest clearing at Concord Compressor Station and East Eden Meter Station; both covered with stone and no impacts on vegetation. | 1 stream (crossed via dry crossing method to minimize impacts) |
| TGP's Station 230 C (CP11-133) | Total temporary construction workspace 7 acres; 2.4 acres converted to permanent/operational areas. Construction activities limited to previously disturbed areas within boundaries of Station 230 C. | No forest cleared | No waterbodies |
| TPG's MMP Project (CP12-28) | Total temporary construction workspace of 236.4 acres, of this 93.4 acres within boundaries of existing TGP compressor stations; 23.8 acres of new permanent ROW, 212.6 acres to | Total of 43.24 acres cleared for construction | 11 waterbodies (7 intermittent and 5 perennial); no impact to waterbodies at aboveground facilities. |

| Project/Activity | Resource Impacts | | |
|---|--|--|--|
| | Project Footprint | Forest acres | Waterbodies (Number Affected) |
| | revert to previous condition. | | |
| TPG's Niagara Expansion Project (CP14-88) | Total temporary construction workspace of 80.74 acres; permanent operational areas of 17.74 acres.(Hamburg meter station 1.03 acre construction; no new land impacts as located in existing aboveground facility). | Total of 8.43 acres cleared for construction; 2.90 acres permanently converted for operation. | Pipeline loop crosses 8 waterbodies and 1 waterbody crossed by access road (no waterbodies impacted by aboveground facilities). |
| National Fuel's Northern Access 2015 Project (CP14-100) | Total temporary construction workspace of 39.02 acres; permanent operational areas of 7.65 acres. | Total of 1.21 acres cleared for construction at Concord Compressor Station and East Eden M&R Station; 0 acres converted for operation. | 2 waterbodies at the Concord Compressor Station (both flow under permanent gravel access roads); no new stream impacts; Hinsdale Compressor Station - 384-foot long intermittent stream to be relocated to the west of the new station). |
| National Fuel's Line TNY Replacement Project (CP14-89) | Total temporary construction workspace of 78 acres. | Total of 21.6 acres of mixed upland forest cleared for construction, of which 10.7 acres permanently converted for operation. | 31 minor waterbodies, including 15 perennial and 16 intermittent tributaries of the Lower South Branch of Eighteen Mile Creek and Jennings Creek. |
| National Fuel's Line KNY and KM3 Replacement Project (CP14-107) | Total temporary construction workspace of 55.4 acres. | Total of 11.5 acres cleared for construction; 6.44 acres permanently converted for operation. | 26 waterbodies (crosses main channel of Cattaraugus Creek). |
| National Fuel's Line NM-44 NY and Line U 2015 Replacement Project (CP15-36) | Total temporary construction workspace of 38 acres. | Total of 5.56 acres of scattered stands of hardwoods). | 7 waterbodies |

Potential Cumulative Impacts by Resource

National Fuel has assumed, for the purpose of its cumulative impacts analysis, that the past, ongoing, and reasonably foreseeable future projects listed on Table 1.9-1 are undergoing appropriate reviews by the applicable state and federal regulatory agencies, which are designed to avoid, minimize and mitigate impacts to environmental resources. Furthermore, National Fuel anticipates that these projects will be required to be constructed in compliance with all applicable environmental regulations and requirements to avoid and minimize environmental impacts, and that any significant unavoidable impacts on sensitive resources would be mitigated in accordance with the applicable federal and state requirements.

The following sections describe the potential cumulative impacts of the Project when combined with the effects of other projects, by resource type.

Soils and Geology

Cumulative impacts on soils and geology may occur when the construction period of the Project facilities and other projects in the region overlap. Depending on soil conditions, these impacts may include loss of excavated soil from water and wind erosion, soil compaction from construction equipment, and mixing of subsoil and topsoil. Cumulative impacts could result from the proposed Project and National Fuel's other projects if constructed in close proximity and at the same time. However, all of National Fuel's projects will be constructed according to the FERC Plan and Procedures and applicable state requirements, which will minimize the likelihood erosion and sedimentation impacts during and after construction. National Fuel will also implement erosion and sediment control BMPs. Similarly, construction of natural gas wells is regulated by the PADEP and NYSDEC which require erosion and sediment control measures. Cumulative impacts related to any the overlap of Project construction, the Keating Township sewer system project, and the Pennsylvania Electric Company project, all located in McKean County, Pennsylvania, are also possible. However, as of the date of this Resource Report, none of the proposed construction on these pending projects is anticipated to be within the 1-mile APE during National Fuel's proposed construction for the Project. The Project impacts on soils are expected to be minor and temporary, as most construction would take place within previously disturbed ROWs and at existing aboveground facility sites. Construction of the Pendleton Compressor Station and the Wheatfield Dehydration Facility will result in temporary impacts and approximately 5 acres of land will be converted for permanent operation at the Pendleton Compressor Station and approximately 2.3 acres will be converted for operation of the Dehydration Facility. Additionally, minor construction will result as utility services are installed at these facilities. However, construction and restoration activities, as well ongoing operation and maintenance activities, would also be closely monitored during and after construction, to ensure compliance with applicable state and federal environmental requirements.

Consequently, the construction or operation of the Project would not contribute significantly to cumulative impacts on geological resources and soils when considered in conjunction with other past, present, and reasonably foreseeable projects.

Water Resources

The cumulative impacts on groundwater resources are expected to be temporary and limited to the construction phase of the Project. Most impacts can be avoided or minimized by the use of both standard and specialized construction techniques. Cumulative impacts would be limited to project areas that in close proximity to the proposed Project (See Resource Report 2). National Fuel will follow the FERC Plan and Procedures and Project ESCAMP/SWPPP and implement appropriate BMPs for the Project. Additionally, National Fuel's prior and current projects, as listed in Table 1.9-1, were or will be constructed in accordance with the FERC Plan and Procedures, minimizing potential impacts on groundwater during construction. The cumulative effects of the Project and those projects discussed herein on groundwater resources is not expected to be significant.

Based on the field surveys conducted to date, a total of 181 waterbodies (179 streams, and 3 ponds) will be crossed by the Project. Desktop analysis reveals there are approximately 22 (nine in Pennsylvania and 13 in New York) additional crossings that are mapped but not yet surveyed for this Project (See Resource Report 2). National Fuel's impacts on waterbodies, however, are expected to be minimal due to its commitment to comply with FERC's Plans and Procedures and the Project's ESCAMP/SWPPP during construction and restoration of the pipeline ROWs and aboveground facilities across waterbodies.

Based on the wetland surveys completed in 2014, the proposed Project crosses 178 wetlands (see Resource Report 2 and Aquatic Resources Report - Attachment 2-A). Surveys will be completed in the spring of 2015, and supplemental information will be filed. During construction there will be primarily minor, temporary impacts on wetlands; however, some impacts on wetlands would be long-term, such as permanent impacts on forested wetlands converted to operational maintained land. Again, however, National Fuel's impacts on wetlands are expected to be minimized due to its commitment to comply with the FERC Plans and Procedures and Project's ESCAMP/SWPPP during construction and restoration, and through the fulfillment of applicable mitigation requirements imposed by regulatory agencies.

Potential indirect impacts of the above-described projects on wetlands and waterbodies include runoff of stormwater into nearby resources. National Fuel will implement BMPs to ensure that the proposed Project's impacts on waterbodies are minimized. For existing and new aboveground facilities, there are or will be sufficient vegetated buffers between the proposed facilities and any nearby wetlands and waterbodies. With the possible exception of the Keating Township sewer system project and the Pennsylvania Electric Company project in McKean County, Pennsylvania, none of the construction projects listed on Table 1.9-1 are likely to ongoing within the 1-mile APE during National Fuel's

construction on the proposed Project. Therefore, the proposed Project is not anticipated to significantly contribute to impacts on wetlands or waterbodies.

Vegetation and Wildlife

The present and reasonably foreseeable future actions identified in table 1.9-1 will result in the temporary and permanent loss (and conversion) of vegetation and wildlife habitat. Impacted vegetation and wildlife habitat includes open, agricultural, maintained/disturbed, and wooded/forested vegetation. When projects are constructed in the same general location and time frame, there is the potential for a cumulative impacts on local vegetation and wildlife communities. ROW clearing and grading and other construction activities associated with the Project will result in the removal of vegetation; alteration of wildlife habitat; displacement of wildlife; and other potential secondary effects such as increased population stress, predation, and the establishment of invasive plant species. These actions may also result in an increase in the amount of stress, injury and mortality experienced by wildlife.

The local residential and commercial development projects identified and presented in Table 1.9-1 and the general disturbed character of these suburban and rural environments have the potential to result in relatively minor and localized impacts.

Cumulative impacts on vegetation may be associated with large-scale construction or development projects that would clear significant areas of upland forest contiguous to the proposed pipeline corridor. This would result in additional habitat fragmentation and would modify the vegetation classification from forest to either scrub–shrub or herbaceous classes. Additionally, development of areas adjacent to the pipeline corridor could result in the permanent loss of vegetation through the construction of residential developments, roadways and other impervious surfaces.

However, National Fuel does not anticipate that construction or operation of the Project would contribute significantly to cumulative impacts on vegetation or wildlife when considered in conjunction with other projects in the area (see Resource Report 3). National Fuel’s implementation of impact minimization measures, and applicable state and local requirements, considering in conjunction with the impacts of other present and reasonably foreseeable future actions, would not result in a significant cumulative impact on these resources. In addition, with the possible exception of the Keating Township sewer system project and the Pennsylvania Electric Company project in McKean County, Pennsylvania, none of the construction projects discussed above are likely to be ongoing within the 0.5-mile APE during National Fuel’s construction on the proposed Project. Therefore, no significant cumulative impacts are anticipated on wildlife, although there would be a minor and long-term cumulative impact resulting from incremental habitat loss.

As described in Resource Report 3, Project-related activities have the potential to impact federal or state-endangered and threatened species. Therefore, it is reasonable to anticipate that any listed species identified as potentially occurring within the Project area

will also have potential to occur in other project areas within the APE. Injury or mortality to endangered, threatened, or special concern species is possible as a result of Project activities; however, clearing and construction activities will adhere to any restrictions set forth by state and federal agencies to avoid potential impacts to any listed species that may occur in the Project area. National Fuel anticipates that the construction of other projects listed on Table 1.9-1 will be required to follow similar restrictions and to avoid and minimize impacts federal or state-endangered and threatened species.

Construction is planned to commence in early 2016 to accommodate anticipated tree clearing timing restrictions expected to be imposed by the USFWS related to protected bat species, and protected and migratory birds. National Fuel will conduct additional surveys during the spring and summer of 2015, in order to identify the presence of any potential endangered and threatened species in the Project area. Based on the scope of the present and reasonably foreseeable future actions identified in Table 1.9-1, the characteristics of known threatened and endangered and other special status species within the region of influence, and the types and amounts of land, vegetation and habitat impacted by these actions, it is reasonable to conclude that the proposed Project would not significantly impact federally listed or other special status species.

Socioeconomics

The Project is located in McKean County, Pennsylvania and Allegany, Cattaraugus, Erie and Niagara Counties, New York. The Project and other projects in the region have the potential to affect the socioeconomic condition on a county-level. The FERC *Guidance Manual for Preparing Environmental Documents* (FERC 2008) specifies that the socioeconomic impact area generally comprises the municipalities or counties in which project facilities will be located or may be affected by project activities. As such, the APE for Project-related impacts is defined as the county in which Project facilities are or will be located.

Based on the impacts of the proposed action (as described in Resource Report 5), Project-related activities are expected to have a beneficial effect on the local economy through sales and property tax generation and the consumption of goods and services. The Project will not have a disproportionately high or adverse human health, socioeconomic, or other environmental effect on minority or low-income communities; therefore, it is not anticipated to contribute to an adverse cumulative effect.

Land Use and Visual Resources

The present and reasonably foreseeable future actions identified in Table 1.9-1 would result in temporary disturbances/losses of use and permanent conversions of land uses. Impacted land uses include forest, agricultural, residential, commercial, industrial, and open lands. These actions would also temporarily and permanently impact visual resources. These impacts include disturbances related to the general use of construction equipment and changes to the viewshed resulting from the placement of permanent buildings/structures.

Based on the anticipated impacts of the proposed action (as described in Resource Report 8), and state and local regulation of these actions (including local planning efforts), it is anticipated that cumulative impacts on land use and visual resources when would not be significant cumulative. In addition, with the possible exception of the Keating Township sewer system project and the Pennsylvania Electric Company project in McKean County, Pennsylvania, none of the pending construction projects discussed above are likely to ongoing within the 1-mile APE during National Fuel's proposed construction for the Project. Therefore, no significant cumulative impacts are anticipated on land use or visual impacts.

Cultural Resources

Cumulative impacts on cultural resources could occur if other projects were to affect the same historic properties as the proposed Project. Because direct effects are highly localized and limited primarily to the period of construction, cumulative impacts to cultural resources would only occur if other projects are constructed at the same time and in the same geographic footprint as the proposed Project. Where direct impacts on significant cultural resources are unavoidable, mitigation (e.g., recovery of data and curation of materials) would occur before construction. Most federal and many non-federal projects/actions are required to comply with New York or Pennsylvania SHPO mitigation measures. National Fuel has re-routed the Mainline Pipeline ROW to avoid impacts to potentially significant cultural resources. In addition, National Fuel developed a project-specific plan to address unanticipated discoveries of cultural resources and human remains in the event they are discovered during construction. While the proposed project may incrementally add to the cumulative effects of other projects under construction during the proposed Project this increase would not be significant. In addition, with the possible exception of the Keating Township sewer system project and the Pennsylvania Electric Company project in McKean County, Pennsylvania, none of the pending construction projects discussed above are likely to ongoing within the 1-mile APE during National Fuel's proposed construction for the Project. Therefore, no significant cumulative impacts are anticipated on cultural resources.

Air Quality and Noise

The Project and other projects in the area would all involve the use of heavy equipment that generate emissions of air contaminants, fugitive dust, and noise. The majority of these impacts, with the exception of HDDs, would be minimized because the construction activities would occur over a large geographical area and would be moving regularly.

With the exception of greenhouse gas (GHG) emissions, air impacts would be localized and confined primarily to the airshed in which the project occurs. The combined effect of multiple construction projects occurring in the same airshed and timeframe could temporarily add to the ongoing air quality effects of existing activities. However, the contribution of National Fuel's Project during construction to the cumulative effect of all foreseeable projects would be temporary. The local projects discussed above have

varying construction schedules and would take place over a relatively large geographic area. Additionally, it is likely that mitigation measures would be required for these projects to protect ambient air quality. The majority of impacts would be further minimized by the lack of geographic and durational overlap of construction activities. Although these projects would result in short-term construction air emissions, they are not likely to significantly impact long-term air quality in the region.

Impacts during construction of the aboveground facilities would be comparable to those impacts along the Mainline Pipeline and Replacement Pipeline. The construction and restoration methods and procedures in the FERC Plan and Procedures and Project ESCAMP/SWPPP and BMPs would be followed, as applicable, for the aboveground facilities. Generally, Project's proposed new aboveground facilities are sited to avoid cultural resources and avoid or minimize natural resource impacts to the greatest extent feasible.

Once operational, the air emissions of the proposed Pendleton Compressor Station, existing Porterville Compressor Station, and proposed Wheatfield Dehydration Facility could contribute cumulatively to existing air emissions. However, based on the anticipated impacts of the proposed action (as described in Resource Report 9), the proposed Project would not have a significant long-term adverse impact on air quality and would not add significantly to the long term cumulative impact of other projects. Furthermore, operational air pollutant emissions from the Project aboveground facilities will be reviewed and regulated under NYSDEC and PADEC [for PA aboveground facilities] air permit standards, with requirements imposed as applicable by such agencies.

The proposed Project could contribute to cumulative noise impacts. However, the impact of noise is highly localized and attenuates quickly as the distance from the noise source increases. Noises more than 2 miles away are not expected to contribute to noise-related impacts that would be experienced by the human ear and vibrations perceptible to the human body. Therefore, cumulative impacts are unlikely unless one or more of the local projects discussed above is constructed at the same time and in the in close geographic proximity to the Project. Moreover, noise impacts associated with the Project would mostly be limited to the period of construction [with exception for C.S. noise?]. With the possible exception of the Keating Township sewer system project and the Pennsylvania Electric Company project, and potentially the development of Marcellus shale wells and gathering lines in McKean County, Pennsylvania, none of the pending construction projects discussed above are likely to be ongoing within the 2-mile APE during National Fuel's proposed construction. Moreover, there are no additional identified or nearby planned industrial facilities. Therefore, based on the anticipated impacts of the proposed action (as described in Resource Report 9), no significant cumulative impacts are anticipated on the local noise environment.

Conclusion

Cumulative impacts of the Project are anticipated to be minimal or insignificant. This is largely due to the lack of physical proximity to the majority of the projects discussed in the tables above, as well as the implementation of specialized construction techniques and resource protection by National Fuel, as required by applicable state and federal regulatory agencies.

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- U.S. Environmental Protection Agency (USEPA). 1999. Consideration of Cumulative Impacts in EPA Review of NEPA Documents. U.S. Environmental Protection Agency, Office of Federal Activities. 1999.

APPENDIX 1-A

Overview and USGS Topographic Maps

APPENDIX 1-B

National Wetlands Inventory Maps

APPENDIX 1-C

**Construction Alignment Sheets and
Overview Drawings Showing Workspaces at Aboveground Facilities**

APPENDIX 1-D

Compressor Station Plot Plans Showing Noise Sensitive Areas Within 1 Mile

APPENDIX 1-E

Typical Right-Of-Way Cross-Section Drawings

APPENDIX 1-F

Site Specific Residential Construction Drawings

APPENDIX 1-G

**Affected Landowner Lists
(Included in Volume Entitled Privileged and Confidential)**

APPENDIX 1-H

**National Fuel's Erosion and Sedimentation Control
and Agricultural Mitigation Plan (ESCAMP)**