Exhibit VGS-AG-126

STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition of Vermont Gas Systems, Inc., requesting a Certificate of Public Good pursuant to 30 V.S.A. § 248, authorizing the construction of the **"Addison Natural Gas Project"** consisting of approximately 43 miles of new natural gas transmission pipeline in Chittenden and Addison Counties, approximately 5 miles of new distribution mainlines in Addison County, together with three new gate stations in Williston, New Haven, and Middlebury, Vermont	Docket No. 7970

2-28-13 SUPPLEMENTAL PREFILED TESTIMONY OF JOHN HEINTZ ON BEHALF OF VERMONT GAS SYSTEMS, INC.

February 28, 2013

Mr. Heintz is the Project Manager for the Addison Natural Gas Project. His supplemental testimony describes the revised Project design, construction and schedule and provides an estimate of the Project costs. Mr. Heintz also describes construction-related impacts with respect to noise, water supply, waste disposal and transportation.

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Petition of Vermont Gas Systems, Inc., requesting a Certificate of Public Good pursuant to 30 V.S.A. § 248, authorizing the construction of the **"Addison Natural Gas Project"** consisting of approximately 43 miles of new natural gas transmission pipeline in Chittenden and Addison Counties, approximately 5 miles of new distribution mainlines in Addison County, together with three new gate stations in Williston, New Haven, and Middlebury, Vermont	Docket No. 7970

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JOHN HEINTZ
ON BEHALF OF
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1. Introduction

Q1. Please state your name, occupation, and business address.

A1. My name is John Heintz. I am the President of International Engineering and Development Corporation and have been retained by Clough Harbour & Associates ("CHA") to serve as Project Manager of the Vermont Gas Systems, Inc. ("Vermont Gas" or "VGS" or the "Company") Addison Natural Gas Project ("Project" or "ANGP"). My business address is 2812 Shipping Ave, Miami, FL 33133.

Q2. What is the purpose of your testimony?

A2. My testimony and exhibits provide a detailed description of the revised Project layout and engineering design, including the refinements and modifications undertaken since the December 20, 2012 initial filing in this proceeding, referenced herein as either the

"December 20 Proposal" or the "Initial Proposal". The result of these revisions is referred to here and in other witnesses' testimony as the "2/28/13 Alignment."

My testimony also describes the equipment specifications and the pipeline construction process that will be involved in building the Project. I also provide an updated Project cost estimate. Finally, for ease of reference, I am also restating and including those portions of my original testimony that are not changed.

2. Revised Project Description

Q3. Please describe the revised Project.

A3. The Project includes the following principal components:

(1) Approximately 41.2 miles of new 12-inch transmission pipeline, extending from a new tie-in to be located at Vermont Gas's existing 10-inch mainline north of Severance Road in Colchester ("Colchester Tie-In"), Vermont, to the intersection of U.S. Route 7 and Exchange Street in Middlebury, Vermont (the "Transmission Mainline"). The initial Project contained 43 miles of 12-inch transmission.

(2) Approximately 5.1 miles of new six-inch distribution mainlines ("Distribution Mainlines") that will extend distribution service to Vergennes (3.73 miles) and Middlebury (1.35 mile). The initial Project contained 4.8 miles of six-inch distribution mainlines; and

(3) Three new pressure regulation stations ("Stations" or "Gate Stations"), one located near Route 2 in Williston to reinforce the existing distribution system, one off Plank Road in New Haven, and the third north of the intersection of U.S. Route 7 and Exchange Street in Middlebury. The number of gate stations is unchanged, however this 2/28/13 Alignment reflects modified locations and configurations in response to community feedback as discussed below.

The Transmission Mainline is approximately 41.2 miles in length from the point of interconnection in Colchester to the terminus at the new Route 7 Gate Station in Middlebury. As with the initial proposal, the line will pass through the towns of Colchester, Essex, Williston, St. George, Hinesburg, Monkton, New Haven and Middlebury.

The Distribution Mainline to Vergennes will extend from a new Plank Road Gate Station in New Haven, running along Plank Road 3.7 miles through the towns of New Haven, Ferrisburgh and Waltham, to the intersection of Route 7 in Waltham, just east of Vergennes. The Middlebury Distribution Mainline will extend from the new Route 7 Gate Station in Middlebury to the Middlebury industrial park on Exchange Street.

2.1 Transmission Mainline from Colchester to Middlebury

Q4. Please describe the Transmission Mainline and the proposed alignment changes.

A4. A one page map with the revised 2/28/13 Alignment is included as Exhibit Petitioner Supp. JH-2 (2/28/13). Detailed engineering plan sheets of the 2/28/13 Alignment Transmission Mainline with design details are included as Exhibit Petitioner Supp. JH-3 (2/28/13). There have been a number of revisions to VGS' proposed transmission pipeline alignment from the Petition submitted to the Board on December 20, 2012 (the "Initial Proposal") to the 2/28/13 Alignment. These revisions have been developed in response to stakeholder comments.

In addition to the summary of alignment changes from the Initial Proposal to the 2/28/13 Alignment, the following adjustments occurred throughout the alignment:

- An approximate one to five foot shift of the pipeline alignment where it parallels the VELCO corridor due to improved Right-Of-Way information;
- The three Stations have been moved;
- and the Mainline Valve locations have shifted along the proposed pipeline relative to the new Transmission pipeline length and Station locations.

Below is a list of specific locations with alignment changes, with reference to specific Exhibit Petitioner Supplement JH-3 (2/28/13) plan sheets. It should be noted that with the exception of the gate stations described above and those locations where the pipeline has been moved from road rights-of-way to adjacent to or within the VELCO corridor in Hinesburg, Monkton and New Haven, most of the adjustments listed below are minor alignment adjustments generally within the same vicinity:

- ANGP-T-C-001 Specification of the dewatering area west of Colchester Tie-In
- ANGP-T-C-005 - Change in additional temporary work space (ATWS) areas near MP 2.2 (Route 2A)
- ANGP-T-C-018 - Transmission Mainline alignment change at MP 8.6 to avoid VELCO infrastructure (500 feet)
- ANGP-T-C-021 - Transmission Mainline alignment change at Allen Brook/Route 2 crossing (MP 10.3) and addition of an ATWS south of Route 2 (1,100 feet) for Horizontal Directional Drilling (HDD) purposes
- ANGP-T-C-021& 022 - Williston gate station (MP-10.45) moved to the east 300 feet along Transmission Mainline
- ANGP-T-C-023B - Alignment change at I-89 crossing to Hurricane Lane (MP 11.4) and concurrent pullback area shift (1,400 feet)
- ANGP-T-C-027 & 028 – Transmission Mainline alignment shift further east of VELCO (K-23) ROW (MP 13.5) north of Williston Switching Station (600 feet)
- ANGP-T-C-028 – Transmission Mainline alignment shift from west to east side of VELCO K-43 ROW from MP 13.84 to MP 14.25 (2,200 feet)
- ANGP-T-C-031 & 032 – Transmission Mainline alignment shift into VELCO K-43 ROW at MP 15.6 (1,500 feet)
- ANGP-T-C-034 & 035 – Transmission Mainline re-alignment along Route 116 to Route 2A Crossing (MP 16.9) (1,700 feet)

- ANGP-T-C-036 – Transmission Mainline alignment shift toward VELCO K-43 ROW (MP 17.35) (700 feet)
- ANGP-T-C-041 - 049 – Transmissionalignment change from along Charlotte/Baldwin Rd to VELCO K-43 ROW and parallel VELCO line (MP 19.8 to 24) (22,200 feet)
- ANGP-T-C-050 - 052 – Transmission Mainline alignment change from VELCO K-43 ROW to (MP 24 to MP 24.9), crossing Rotax Rd. (4,800 feet)
- ANGP-T-C-053 – 061A – Transmission Mainline alignment change from along Monkton Rd to continuing to follow VELCO K-43 ROW, with HDD under Monkton Swamp and with access from Split Rock Rd, to Old Stage Rd (MP 25.75 to MP 28.9) (16,600 feet)
- ANGP-T-C-063 - 068 – Transmission Mainline alignment change from along Old Stage Rd/Parks-Hurlburt Rd/North St (MP 29.65) to west side of VELCO K-43 ROW to Plank Rd (MP 32.4) (14,500 feet)
- ANGP-T-C-068 - Plank Rd gate station moved from east of North St/Plank Rd intersection to west side of VELCO K-43 ROW at MP 32.5
- ANGP-T-C-072 –Transmission Mainline alignment shift from west side of VELCO K-64 ROW to cross Route 17 (Main St) and parallel New Haven Substation access (MP 34.6 – MP-35.1)) (2,640 feet)
- ANGP-T-C-074 – Transmission Mainline alignment change under VELCO K-64 ROW and crossing Town Hill Rd (MP 35.6) (1,050 feet)

- ANGP-T-C-083A - 085 – Transmission Mainline alignment change from east side of Route 7 at River Rd intersection to west side with ATWS on north west corner of Belden Falls Rd/Route 7 intersection (MP 40.3 to 41.2 end of ANGP transmission mainline) (4,800 feet)
- ANGP-T-C-085 - Middlebury gate station moved from south of Exchange St/Route 7 intersection, ~0.5 miles north
- ANGP-T-C-085 - Change from Transmission to Distribution Mainline from end of ANGP at Middlebury Gate Station (MP 41.2) along west side of Route 7 to Exchange St/Route 7 intersection (2,400 feet)

At the point of interconnection with the existing VGS transmission system in Colchester, the Colchester Tie-In will be reconfigured with an approximately 35-foot by 85-foot fenced-in yard to enclose the valve and an area for utilizing a pipeline in-line cleaning or inspection tool or "PIG" launcher. This is a slightly larger footprint to better accommodate the necessary infrastructure. A PIG is a tool used in the industry to clean the pipe or to inspect the integrity of the pipeline walls for things such as defects or corrosion. It moves down the pipeline by the force of the natural gas pressure in the pipeline. The fence will be a galvanized chain-link metal fence approximately 6 feet in height with three strands of barbed wire extending another foot. The fenced area will have a pervious crushed stone surface underlain by a geogrid to infiltrate rainwater and snowmelt. An access road, approximately 1,000 feet long, consisting of 470 feet of existing paved driveway and 530 feet of new stabilized pervious surface driveway will

extend from Severance Road to the Colchester Tie-In. Exhibit Petitioner Supp. JH-4 (2/28/13) is a site plan for the Colchester Tie-In.

To optimize the alignment of the Transmission Mainline corridor, Vermont Gas has attempted to co-locate the pipeline with, or adjacent to, other utility and road infrastructure where possible, in order to minimize impacts. The northern segment of the Transmission Mainline, from Colchester to Williston near Interstate 89, will generally be located within the ROW of VT 289 (also referred to as the Circumferential Highway, "CCCH" or "CIRC"). This segment of the Project corridor is approximately 11 miles from the Colchester Tie-In, and extends though portions of the towns of Colchester, Essex and Williston, to a point east of Interstate 89 in Williston, near the intersection of Interstate 89 and U.S. Route 2.

Near the intersections of Interstate 89 and Route 2 in Williston, the Transmission Mainline will leave the CIRC corridor. The Transmission Mainline continues south, within or adjacent to an existing Vermont Electric Power Company, Inc. ("VELCO") electric transmission line corridor that extends between Williston and Middlebury, Vermont. This segment of the Transmission Mainline extends about 30 miles and crosses through portions of the towns of Williston, St. George, Hinesburg, Monkton, New Haven and Middlebury. The details for this approximately 30-mile southern segment of the Transmission Mainline are shown in the Transmission Mainline Alignment Sheets, Exhibit Petitioner Supp. JH-3 (2/28/13).

A more detailed summary of the Transmission Mainline 2/28/13 Alignment is as follows:

- The proposed 12-inch transmission pipeline connects to an existing VGS 10-inch transmission pipeline in Colchester, VT. The pipeline exits this location (Colchester Tie-In Site) and runs west for approximately 0.1-miles within the existing VGS ROW to the northerly ROW edge of the un-built CCCH. The pipeline runs parallel to the ROW edge and within the CCCH ROW for approximately 2.1-miles crossing Mill Pond Road (MP-0.49), passing under Indian Brook (MP 0.99), crossing VELCO's K-22 transmission line (MP-1.3), passing under Indian Brook for a second time (MP-1.5), and crossing Route 2A and New England Central Railroad (MP-2.1); avoiding along the way, present and future constructability issues. This segment of the 2/28/13 Alignment is essentially unchanged from the December 20, 2012 proposal.

- The alignment then drops off the un-built CCCH ROW and runs along Route 289, approximately 40-ft off the edge of pavement for 0.9-miles until the pipeline crosses VELCO at MP-3.0. After crossing VELCO, the pipeline works its way back to the edge of Route 289 ROW, where again it parallels the ROW edge for a distance of 3-miles; crossing Indian Brook a third time (MP-3.6), crossing Route 15 (MP-4.1), Essex Way (MP-4.55), Alder Brook 9MP-5.05), and Alder Brook again (MP-6.25). The only substantive change in this segment is a location change for a temporary work space.

- Over the next 0.65-miles the alignment makes a cross country approach for a horizontal directional drill crossing under the Winooski River (MP-6.85) and Route 117 (MP-6.76), coming up on the south side of the river adjacent to Vermont Central Railroad (MP-7.0). The pipeline crosses under Vermont Central Railroad, and runs alongside the same for 0.1-miles and crosses another section of the un-built CCCH, crosses the Burlington Transfer Station site and Chittenden Solid Waste and picks up Redmond Road (MP-7.56), the location of VGS' first Mainline Valve. This segment is essentially unchanged from the Initial Proposal.

- The alignment runs south along the eastern edge of the Redmond Road ROW for 1.44-miles, then along the northern edge of Mountain View Road ROW for 0.1-miles before crossing Mountain View Road and re-entering the CCCH highway, where the Transmission Mainline follows the westerly edge of the un-built CCCH highway for 1-mile, makes an approach for and crosses Allen Brook (MP-10.3), Route 2 (Williston Rd), avoiding conflicts with sensitive environmental areas, and the possible future extension of the CCCH. On the south side of Williston Road, VGS proposes constructing the first of three Gate Stations (MP-10.45). The change of note in this segment is the shift of the Williston Station approximately 300 feet to the east.

- Upon leaving the Williston Station the pipeline re-enters the un-built CCCH ROW at its western edge and continues southerly to Interstate 89 and then west along I89 to MP-11.3 the location of the I89 crossing, thus avoiding potential conflicts with

the existing VELCO Sub Station infrastructure on the south side of I89 and the stakeholders along Hurricane Lane. The distance between the Gate Station and the I89 crossing location is approximately 0.85-miles. Any changes from the December 20, 2012 proposal in this area are minor.

- After crossing I89, the pipeline runs along the southerly edge of Hurricane Lane, for 0.2-miles, crosses to the west side of the VELCO ROW, avoiding existing utility infrastructure before generally running along and parallel to VELCO to the St. George/Williston town line (MP-14.7). In this section, the pipeline crosses VELCO at MP-12.35, St. George Road at MP-12.42, VELCO at MP-12.52, VELCO at MP-13, across Sucker Brook at MP-13.8, then south to VGS' second mainline valve location north of Lincoln Rd (MP-14.3), across Lincoln Rd (MP-14.31) and on to the St George/Williston town line. Any changes from the December 20, 2012 proposal in this area are minor.

- After crossing the St. George/Williston town line the transmission pipeline leaves the VELCO ROW to avoid stakeholder and constructability issues. This segment is essentially unchanged from the Initial Proposal.

- At MP-15.2 the alignment crosses the VELCO ROW to its western side, the alignment continues southerly generally parallel to the VELCO ROW western side (MP 15.3 to 16.2). This segment is essentially unchanged from the Initial Proposal

except for approximately 1,500 feet of pipeline that has been shifted into the VELCO ROW.

- The alignment then crosses the VELCO ROW (MP-16.2) and continues southerly 0.8 miles (MP 16.2 to 17.0) until crossing Route 2A (MP-16.8), Route 116 (MP-16.92), and VELCO again at MP-17.0. Any changes from the December 20, 2012 proposal in this area are minor.

- The alignment then continues southerly just west of VELCO to address landowner concerns and aligns with and parallels the VELCO ROW just inside the Hinesburg town line (MP-17.4 to MP-18.1), then moves west to avoid a tributary to the Laplatte River, crosses Shelburne Falls Road (MP-18.94) and joins back up with the western side of the VELCO ROW (MP-19.2), crosses under the Laplatte River MP-19.5 to VGS third mainline valve located at MP-19.81, just north of Charlotte Road in Hinesburg. Any changes from the December 20, 2012 proposal in this area are minor.

- The pipeline crosses Charlotte Road, continues southerly parallel to and 270 Ft. offset from the western VELCO ROW avoiding a meandering stream and wetlands for 0.9-miles (MP 19.9 to 20.8) where it re-enters the VELCO ROW. The 2/28/13 Proposal has been relocated off of Baldwin Road to a location that parallels the VELCO ROW.

- The pipeline continues 10 Ft. inside the western edge of VELCO crossing Baldwin Road (MP-21.1) and Drinkwater Road (MP-22.34) and Lewis Creek (MP-22.86) for 4.1-miles (MP 19.9 to 24.0). The 2/28/13 Proposal has been relocated off of Baldwin Road to a location within the VELCO ROW.

- The alignment leaves VELCO in the vicinity of Rotax Road in Monkton (i.e. the "Rotax Road Reroute") and continues southerly 0.9 miles (MP 24.0 to 24.9). The Initial Proposal was along public road ROW. The Rotax Road Reroute was selected due to constructability and landowner concerns.

- The alignment meets the VELCO ROW and continues southerly 0.9 miles (MP 24.9 to 25.8) parallel to and along the westerly side. The 2/28/13 Proposal has been relocated off of public road ROWs to a location adjacent to the VELCO ROW.

- The alignment enters and continues 10-ft inside the VELCO ROW for 1.5 miles (MP 25.8 to 27.3), crossing Stillson Road (MP-26.1), and Hollow Road (MP-25.4). VGS' fourth mainline valve is proposed just south of Hollow Road in Monkton (MP-26.48). The 2/28/13 Proposal has been relocated off of the public road ROW to a location within the VELCO ROW.

- The pipeline then continues west under Monkton Swamp using HDD, MP-27.3 – MP-27.65 and then back to and 10-ft inside the VELCO ROW at MP-28. The

2/28/13 Proposal has been relocated off of the public road ROW to a location within or parallel to the VELCO ROW.

- The pipeline continues inside VELCO's ROW until Old Stage Road, where it then runs within the Old Stage Road ROW (MP-28.9 to MP-29.63) to avoid a meandering stream and wetland. At MP 29.63, the Transmission Mainline crosses from Old Stage Road through approximately 330 feet of open field to the western edge of the VELCO ROW and continues southerly 10 ft within and parallel to VELCO until MP-31.6, crossing Parks –Hurlburt Road (MP-30.1) and the Monkton, New Haven town line (MP-31.1). The 2/28/13 Proposal has been primarily relocated off of the public road ROW to a location within the VELCO ROW.

- The proposed alignment then continues outside and parallel to the VELCO ROW 3.2 miles (MP 31.6 to 34.8) crossing Little Otter Creek (MP-32.3), Plank Road (MP-32.5), Quarry Road (MP-33.5), Route 17 (MP-34.9), and into the VELCO New Haven Substation property (MP-34.9 – MP-35.51). VGS' proposed fifth mainline valve is located at MP-32.39. The alignment then continues 0.6 miles (MP 35.1 to 35.7) briefly leaving VELCO to avoid structures and crossing Town Hill Road (MP-35.64) and VELCO to the eastern edge of VELCO. The most significant adjustment from the Initial Proposal is the shift of the New Haven Station location approximately a quarter mile west.

- The proposed alignment continues outside and parallel to the eastern edge of VELCO to MP-36.4 wherein the pipeline crosses VELCO and runs parallel to and outside the VELCO ROW to River Road (MP-39.54), crossing Hunt Road (MP-38.1) where Mainline Valve 6 will be installed and then crossing the New Haven River (MP-39.35). Any changes from the December 20, 2012 proposal in this area are minor.

- The pipeline continues westerly inside and outside the northerly ROW of River Road crossing to the westerly edge of Route 7, where it continues south 10 ft. outside and parallel to the road ROW terminating at the Proposed Middlebury Station (MP 41.23). The 2/28/13 Proposal changes the pipeline and the Station from the east side of Route 7 to the west.

Q5. Please describe the design specifications for the Transmission Mainline.

A5. The engineering design was guided by applicable federal and state standards including the following, which have not changed from the Initial Proposal:

- U.S. Department of Transportation, Office of Pipeline Safety, Code of Federal Regulations Title 49, Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Safety Standards ("Code");
- American Society of Mechanical Engineers ("ASME") B31.8 – Gas Transmission and Distribution Piping Systems;

- Vermont Public Service Board General Order #43, Rules and Regulations Prescribing Standards for Gas Utilities;
- American Petroleum Institute ("API") 5L, Specification for Line Pipe, 2009;
- API Specification 6D, Specification for Pipeline Valves, 2008;
- American Society for Testing and Materials ("ASTM") A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless;
- ASTM D2513-99, Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings;
- MSS-Standard Practice SP-44-2006 Standard Practice, Steel Pipeline Flanges; and
- Vermont Public Service Board Rule 6.100.

The Transmission Mainline will be designed and constructed to a Maximum Allowable Operating Pressure ("MAOP") of 1,440 pounds per square inch ("psi"). The pipeline will be constructed of carbon-steel pipe (12.75-inch outside diameter), with a wall thickness of 0.283 inches in Class II (rural)[1] areas and 0.312 inches for the remainder of the route. The pipe material will have a specified minimum yield strength of 65,000 psi. For Class III areas, a design factor of 0.5 was used in the design pressure calculation, and for Class I and II areas a design factor of 0.6 was used, both of which are more stringent than

[1]Class location is the term used in the Code (49 C.F.R. Part 192) to classify the population density in the vicinity of the pipeline. The design of a pipeline may vary depending on the class location of the pipeline. Please refer to Mr. Teixeira's testimony for further explanation of this class location system.

required by the Code. This will allow the design pressure to stay the same even if there is a future change in the class location of the pipeline. The pipe will be manufactured in accordance with the API 5L, Specification for Line Pipe.

The pipe will have an external, corrosion-control coating; the coating will vary dependent upon soil conditions but in general it will consist of 15 mils thickness of fusion bond epoxy or Pritec. Segments of pipe to be installed by horizontal directional drill ("HDD") will have an additional 40 mils thickness of abrasion resistant coating over the external control coating. Cathodic protection will be provided by an impressed current rectifier system. The pipe will be hydrostatically-tested at a pressure of 1.5 times MAOP, at 2,160 psi for a minimum of eight hours before being placed in service. The test will assure there are no leaks and validate the MAOP of 1,440 psi. I discuss this testing below.

The pipeline will be entirely welded in accordance with API recommended practice standard 1104 – Welding of Pipelines and Related Facilities. All welds will be nondestructively tested in accordance with API 1104 by x-ray techniques. The test records will be kept for the life of the facility.

Q6. What is the width of the Transmission Mainline corridor?

A6. Generally, the Transmission Mainline corridor will occupy a 50-foot wide permanent ROW, together with a 25-five foot temporary easement area that will be used to complete

construction. This too is unchanged from the Initial Proposal. Vanasse Hangen Brustlin, Inc. ("VHB") has studied up to a 300-foot wide area for purposes of conducting its environmental resource impact analysis for this Section 248 application.

In areas where construction will parallel a public road ROW, VGS will utilize a 20-foot ROW on private land adjacent to the road ROW where possible. If obtaining a ROW on private land is not possible, the pipeline will be located in the public ROW and the construction crews will utilize the road as work space. The entire ROW on the side of the road where the pipeline will be located will be cleared of vegetation in order to allow for construction. After completion of construction, the disturbed ROW area will be graded back to its previous contours and restored consistent with the Erosion Prevention and Sediment Control Plan (provided as an attachment to Exhibit Petitioner Supp. JAN-9 2/28/13).

Q7. Earlier you mentioned a number of reroutes and revisions that occurred to accommodate sensitive environmental and cultural resources along the route first identified in the Preliminary Alignment for the Transmission Mainline. Please summarize those revisions.

A7. Designing the Project is a complex, interdisciplinary and iterative process that has taken months to develop. Once the CIRC and VELCO corridors were identified as the Preliminary Alignment for the Transmission Mainline (the process for which is more fully discussed in Mr. Howe's prefiled testimony), VGS hired CHA and environmental,

archaeological and aesthetic consultants to undertake detailed assessments of the Preliminary Alignment. Based upon that input, we continued to refine the Project design in dozens of locations to avoid or minimize impacts. With this 2/28/13 Proposal we have continued to minimize impacts as well as address community concerns. We have modified over 21 miles or about 51% of the Preliminary Alignment in order to avoid or mitigate these sensitive resource areas, as follows:

- 16 miles (pipeline reroutes and alignment shifts)
- 7.6 miles (narrowing of ROW)
- 3.6 miles (HDD)

Please refer to Exhibits Petitioner Supp. JH-14 (2/28/13) (Impact Minimization/Avoidance, Pipeline Reroutes and Alignment Shifts), JH-15 (2/28/13) (Impact Minimization/Avoidance, Through Horizontal Directional Drill) and JH-16 (2/28/13) (Impact Minimization/Avoidance, Through Right-of-Way Narrowing).

One significant re-route from the Preliminary Alignment is located on the southern side of the Winooski River in the area parallel to Redmond Road in Williston. There, the 2/28/13 Alignment, like the Initial Proposal, will extend west of the CIRC to connect to Redmond Road near the Chittenden Solid Waste Facilities, and continue south and southeast along Redmond Road at a point where Mountain View Road in Williston meets up with the CIRC corridor. This re-route, the so-called "Redmond Road Re-Route" is approximately 1.9 miles in length. This change to the Preliminary Alignment along the CIRC was undertaken by VGS following input from regulators and stakeholders in order

to avoid and minimize potential impacts to forested wetlands and wetland habitat, as discussed in more detail in the testimony and exhibits of Jeffrey Nelson of VHB. These areas are depicted on the Transmission Mainline Alignment Plans, Exhibit Petitioner Supp. JH-3 (2/28/13). Mr. Nelson also addresses this re-route in his testimony and exhibits.

The approximately 7.4 miles of the pipeline ROW that was narrowed from 75 feet to 50 feet, results in an approximate 7.4-acre reduction in wetland impacts. The reduction of ROW width will result in additional costs to the Project which are currently estimated at approximately $1.2 million. These additional costs are also included in the Project Cost Estimate, Exhibit Petitioner Supp. JH-11 (2/28/13).

Q8. What other measures will be taken to minimize impacts?

A8. Because of the nature of a long, linear pipeline expansion project such as this, complete avoidance of all environmental and cultural resource areas is not possible, but a number of precautions will be taken to minimize impacts. In wetlands and agricultural areas, where trenches are used, soil horizons will be removed in order and stockpiled so that horizons can be restored as closely as possible to pre-construction conditions. In some cases, we will employ coffer dams for stream crossings and we will use matting for all work in wetland areas. Silt fences and other erosion control techniques will be used, as well as matting, construction limit barriers, etc. Mr. Nelson's testimony describes the

techniques that will be employed to minimize environmental impacts to sensitive areas during Project construction.

As I have also noted, where appropriate, we will horizontally directional drill under certain streams, rivers, wetlands, and other resources. These areas include:

Indian Brook, MP 0.9;

Indian Brook, MP 1.3;

Indian Brook, MP 3.6;

Winooski River, MP 6.7;

Allen Brook, MP 10.3;

LaPlatte River, MP 19.6;

Resources near Drinkwater Road, MP 22.1;

Lewis Creek, MP 22.6;

Monkton Swamp, MP 27.2:

VT AD-1560&1561-Locus 1 and 2 (Arch Sites), South of Monkton Road, MP 28.2:

VT AD-1562 (Arch Site), South of Monkton Road, MP 28.6:

VT AD 446 (Arch site), North of Quarry Road, MP 33.2;

VT AD 793(Arch site), Locus 2 and 3, MP 33.7;

VT AD 806 (Arch Site) South of Town Hill Road, MP 35.8;

VT AD 808 (Arch Site), MP 36;

New Haven River, MP 39.35.

The use of HDD in these areas has eliminated over 6.7 acres of wetland impact, nearly 60,000 square feet of stream impact, impact to four rare, threatened and endangered species habitat and nine archaeological sites. The additional cost associated with the installation of HDDs in these areas is approximately $5.4 million and is reflected in the Project Cost Estimate, see Exhibit Petitioner Supp. JH-11 (2/28/13).

These areas are identified in Exhibit Petitioner Supp. JH-15 (2/28/13).

2.2 Distribution Mainlines to Vergennes and Middlebury

Q9. Please describe the Distribution Mainlines.

A9. There are two Distribution Mainlines. The site plans are included as Exhibit Petitioner Supp. JH-5 (2/28/13). The first is a 3.7-mile segment of 6-inch polyethylene ("PE") pipe that will begin at the new Plank Road Gate Station in New Haven, that runs through the Towns of New Haven, Ferrisburgh, and Waltham, to the intersection of Route 7 in Waltham, just east of Vergennes (the "Vergennes Distribution Mainline"). Network construction will begin at this point extending into the City of Vergennes. As a result of the change in the location of Plank Road Station, the Vergennes Distribution Mainline is slightly shorter than the Initial Proposal.

The second Distribution Mainline is also 6-inch PE pipe which will run approximately 1.35 miles along Route 7 and Exchange Street in Middlebury, between the new

Middlebury Station and into the Middlebury industrial park. As a result of the change in the location of Middlebury Station, the Middlebury Distribution Mainline is slightly longer than the Initial Proposal.

Both Distribution Mainlines will be located within the public ROWs of Plank Road and Route 7/Exchange Street. The Project plans for the Distribution Mainlines are included as Exhibit Petitioner Supp. JH-5 (2/28/13).

2.3 Gate Stations and Valves

Q10. Please describe each of the three Gate Stations.

A10. A gate station is a necessary component of a gas distribution system. The purpose of a gate station is to reduce the higher pressure in the transmission pipeline to the lower pressure used in the distribution network. A photograph of a VGS gate station was provided as Exhibit Petitioner JH-6.1.

The first Gate Station will be located near Route 2 in Williston to reinforce the existing distribution system. A site plan for the Williston Gate Station is included as Exhibit Petitioner Supp. JH-7 (2/28/13). It will include an approximately 55-foot by 85-foot fenced-in yard with a small parking area, an approximately 12-foot wide by 32-foot long precast concrete meter and regulator building, a-foot wide by 8-foot long SCADA[2] building and an approximately 8-foot wide by 12-foot long concrete pad on which the

[2]The acronym SCADA stands for "supervisory control and data acquisition."

pipeline heater will be mounted. Each enclosure building will be approximately 9 feet high from ground level to the roof peak. The enclosure buildings will house three major components of the Gate Station: (1) SCADA and telecommunications equipment, (2) the pressure regulation equipment, and (3) the meter. A Dry-Line heater system will be installed outside on the concrete pad. A Dry-Line heater works by producing steam within a vacuum, and heating the gas passing through pipes within the heater shell with low temperature steam.

Plantings will be installed to provide screening for the facility, as shown on the visual report provided by Michael Buscher, Exhibit Petitioner Supp. MJB-2.1 (2/28/13).

The design criteria for the Williston Gate Station are described as follows:

- Design maximum station inlet pressure (current): 605 psig
- Design maximum station inlet pressure (future): 1440 psig
- Design minimum station inlet pressure, at regulators: 250 psig
- Design normal station inlet pressure, at regulators: 400 psig
- Design maximum station outlet pressure: 100 psig
- Design flow volume, summer: 350 Mcfh
- Design flow volume, peak: 1,000 Mcfh
- Design minimum flow volume: 50 Mcfh
- Pipeline size into station: 6-inch
- Station piping wall thickness: Schedule 80 or XH Seamless

• Station piping grade:	Gr. B or X-42
• Safety device:	Monitor and Relief
• Relief set pressure at 110% of MOP:	110 psig
• Inlet gas temperature:	32°F
• Outlet gas temperature:	40°F
• Heater:	CWT Dry-Line Heater
• Filter:	PECO 30F
• Meter:	6-inch Turbine
• Odorizer:	N/A
• Station outlet control methodology:	3-inch Grove 900TE Monitor/Regulator

The changes to the Williston Station from the Initial Proposal are primarily related to a slight change in the equipment configuration. The footprint of the Williston Station is unchanged.

A second Gate Station will be located on Plank Road in New Haven to initially provide natural gas service to Vergennes. A site plan for the Plank Road Gate Station is included as Exhibit Petitioner Supp. JH-8 (2/28/13). It will include an approximately 85-foot by 55-foot fenced-in yard with a small parking area, an approximately 12-foot wide by 32-foot long precast concrete meter and regulator building, an 8-foot wide by 8-foot long SCADA building and an approximately 8-foot wide by 12-foot long concrete pad on

which the pipeline heater will be located. Each enclosure building will be approximately 9 feet high from ground level to the roof peak. The enclosure buildings will house three major components of the Gate Station: (1) SCADA and telecommunications equipment, (2) the pressure regulation equipment, and (3) the meter. A Dry-Line heater system will be installed outside on the concrete pad. Plantings will be installed to provide screening for the facility, as shown on the visual report provided by Michael Buscher, Exhibit Petitioner Supp. MJB-2.1 (2/28/13).

The design criteria for the Plank Road Gate Station are as follows:

- Design maximum station inlet pressure (current): 605 psig
- Design maximum station inlet pressure (future): 1440 psig
- Design minimum station inlet pressure, at regulators: 250 psig
- Design normal station inlet pressure, at regulators: 400 psig
- Design maximum station outlet pressure: 125 psig
- Design flow volume, summer: 250 Mcfh
- Design flow volume, peak: 400 Mcfh
- Design minimum flow volume: 25 Mcfh
- Pipeline size into station: 4-inch
- Station piping wall thickness: Schedule 80 or XH Seamless
- Station piping grade: Gr. B or X-42
- Safety device: Monitor and Relief
- Relief set pressure at 110% of MOP: 137 psig

- Inlet gas temperature: 32°F
- Outlet gas temperature: 40°F
- Heater: CWT Dry-Line Heater
- Filter: PECO
- Meter: 6-inch Turbine
- Odorizer: N/A
- Station outlet control methodology: 2" Grove 900TE Monitor/Regulator

The changes to the Plank Road Station from the Initial Proposal are primarily related to a slight increase in the footprint to accommodate changes in the equipment configuration.

The third Gate Station, the Middlebury Gate, will be located on the westside of Route 7 behind Paquette Enterprises Self Storage Facility in Middlebury. A site plan for the Middlebury Gate Station is provided as Exhibit Petitioner Supp. JH-9 (2/28/13). It will include an approximately 55-foot by 85-foot fenced-in yard with a small parking area, an approximately 12-foot wide by 32-foot long precast concrete meter and regulator building, an 8-foot wide by 8-foot long SCADA building and an approximately 8-foot wide by 12-foot long concrete pad on which the pipeline heater will be located. Each enclosure building will be approximately 9 feet high from ground level to the roof peak. The enclosure buildings will house three major components of the Station: (1) SCADA and telecommunications equipment, (2) the pressure regulation equipment, and (3) the meter. A Dry-Line heater system will be installed outside on the concrete pad. Plantings

will be installed to provide screening for the facility, as shown on the visual report provided by Michael Buscher, Exhibit Petitioner Supp. MJB-2.1 (2/28/13).

The design criteria for the Middlebury Gate Station are described as follows:

- Design maximum station inlet pressure (current): 605 psig
- Design maximum station inlet pressure (future): 1440 psig
- Design minimum station inlet pressure, at regulators:250 psig
- Design normal station inlet pressure, at regulators: 400 psig
- Design maximum station outlet pressure: 125 psig
- Design flow volume, summer: 350 Mcfh
- Design flow volume, peak: 500 Mcfh
- Design minimum flow volume: 75 Mcfh
- Pipeline size into station: 4-inch
- Station piping wall thickness: Schedule 80 or XH Seamless
- Station piping grade: Gr. B or X-42
- Safety device: Monitor and Relief
- Relief set pressure at 110% of MOP: 137 psig
- Inlet gas temperature: 32°F
- Outlet gas temperature: 40°F
- Heater: CWT Dry-Line Heater
- Filter: PECO 30F
- Meter: 6-inch Turbine

- Odorizer: N/A
- Station outlet control methodology: 3" Grove 900TE Monitor/Regulator

The Station configuration being proposed consists of two separate regulator runs, with one run serving as a full back up to the other. Each regulator run consists of two identical regulators set up in what is termed a working and monitor set. The Station will also include a relief valve to provide a secondary device for overpressure protection. This configuration provides for both overpressure protection and redundancy. A single regulator run in the Station is designed to handle the existing load requirement of the local distribution system.

The changes to the Middlebury Station from the Initial Proposal are primarily related to a decrease in the footprint. The new location allowed for a smaller footprint than the location contained in the Initial Proposal.

Q11. What is the height of the fence to be installed at each Gate Station?

A11. It is unchanged from the Initial Proposal. The fence will be 6-foot high galvanized chain link with one additional foot of barbed wire at the top.

Q12. Please describe the access and parking areas for each Gate Station.

A12. They are unchanged from the Initial Proposal. The access will consist of a 15-foot wide stabilized pervious surface underlain by geogrid. The parking area will be large enough for two vehicles and will consist of the same surface material as the access drive.

Q13. Please describe the Gate Station external lighting plans.

A13. It is unchanged from the Initial Proposal Only limited night-time lighting will be needed at each Gate Station, at the entrance and at the building. The lights will be 100-watt floodlights or luminaries, angled downwards.

Q14. Please describe the valves and valve locations.

A14. Other than the specific valve locations described below, the valve plans are unchanged. Eight sectionalizing valves will be installed along the pipeline length to allow for isolation of pipeline segments in the event that they need maintenance or in the case of an incident. Valve spacing is dictated by the Code and is based on the class location of the pipeline. The valve placement along the Transmission Mainline will exceed the requirements of 49 C.F.R. Section 192.179 (Transmission Line Valves).

A photograph of a VGS Mainline Valve ("MLV" or "Sectionalizing Valve") was included as Exhibit Petitioner JH-6.2. A typical MLV site is shown in Exhibit Petitioner Supp. JH-10 (2/28/13). Valve locations along the Transmission Mainline are identified in Exhibit Petitioner JH-3 at the following mile points:

MLV 0 at the Colchester Tie-In, MP 0.0;

MLV 1 at Redmond Road, Williston, MP 7.56;

MLV 2 at Lincoln Road, Williston, MP 14.3;

MLV 3 at Charlotte Road, Hinesburg, MP 19.81;

MLV 4 at Hollow Road, Monkton, MP 26.48;

MLV 5 at Plank Road, New Haven, MP 32.4;

MLV 6 at Hunt Road, New Haven, MP 38.11; and

MLV 7 at Middlebury Gate Station, MP 41.24.

3. <u>Project Construction</u>

Q15. Please describe the pipeline construction process.

A15. The process involves a series of sequential steps, as graphically illustrated on Exhibit JH-13, previously provided. The pipeline construction process, which is essentially unchanged from the December 20 Proposal, will generally proceed in the following sequence:

1. The construction is expected to be sequenced from north to south although there will be multiple construction sections called “spreads.”
2. The route is first cleared and temporary work areas are prepared.
3. Perimeter erosion control measures, such as silt fences, are installed along sensitive resource areas such as stream edges and wetlands to control sediment.
4. For the Transmission Mainline, a four to five-foot wide trench will be excavated to a depth of approximately five-feet, and soil from the trench will

be stockpiled adjacent to the trench within the construction corridor. There will be different construction configurations for each of the different types of area to be crossed, including wetlands, agricultural areas and within the public highway ROW. These configurations are shown in Exhibit Petitioner Supp. JH-3 (2/28/13). Smaller trenches of approximately four-feet by five-feet will be used for the Distribution Mainlines.

5. Pipe lengths will be welded together, inspected, laid in the trench and warning tape will be laid over the line, and then the trench will be backfilled. The pipe will be covered by at least 36 inches of soil. The pipeline will have four-feet of cover in agricultural areas, within the VELCO ROW and residential areas, and generally five-feet of cover at road crossings and seven of feet cover at open cut streams.

6. The landscape will be restored as close as possible to pre-construction conditions in accordance with applicable permit requirements.

As Project Manager, it will be my responsibility to oversee that the Project is constructed in accordance with all applicable Code and permit requirements.

Q16. Is water required for Project construction or operation?

A16. The Project will not require the use of water for on-going operations. The three Gate Stations are unmanned and therefore do not have sink or toilet facilities. However, as part of construction, the Project will require approximately 1.4 million gallons of water to hydrostatically pressure test the Transmission Mainline. The pipe will be hydrostatically

tested at a pressure of at least 2160 psi for a minimum of eight hours before being placed in service. The test will prove there are no leaks and will validate the MAOP of 1440 psi. For the hydrostatic test, water will be taken from a Town of Colchester municipal water hydrant near the Colchester Tie-In. VGS has contacted the Champlain Water District which supplies Colchester Fire District #3, where we propose to obtain the water for our test. The Champlain Water District has stated that it will be able to provide the water volume required. When the test is complete, the water will be discharged to a nearby potential upland area at the tap as indicated on the Erosion Prevention and Sediment Control Plans included with Mr. Nelson's prefiled testimony as Exhibit Petitioner Supp. JAN-9 (2/28/13). These plans are being submitted as part as the Construction Stormwater Discharge Permit to the Vermont Department of Environmental Conservation, as discussed in more detail in Mr. Nelson's Supplemental testimony.

The two sections of Distribution Mainlines will be tested independently with air at a pressure of 190 psi for a period of eight hours.

In addition, water, sourced from a local water hauler, will be used to control dust during construction.

Q17. Has VGS identified the construction access points and laydown areas?

A17. Yes. We have identified locations where access to the Transmission Mainline corridor will be used as well as temporary work areas for equipment and materials staging areas.

These locations are identified in Exhibit Petitioner Supp. JH-3 (2/28/13)and were studied by our environmental and cultural resource experts and are noted in the VHB natural resources mapping, provided as an appendix to Exhibit Petitioner Supp. JAN-2 (2/28/13).

Q18. How will VGS manage construction waste?

A18. Unchanged from the Initial Project, the generation of construction debris from the Project will be minimal. Construction debris will be disposed of at an approved landfill. While not generally considered construction waste, VGS will handle woody debris as follows: trees under 6 inches in diameter, slash and brush will be chipped—not burned—and spread along the ROW in upland areas. Trees greater than 6 inches in diameter will be cut into logs, stacked in upland areas and offered to landowners along the ROW for landowner use.

Q19. Will blasting be required for pipeline installation?

A19. Yes, we anticipate that blasting will be required for approximately 35% of the proposed route. The 2/28/13 Proposal requires similar levels of blasting to the Initial Proposal, accordingly there is no change to the blasting protocols described below. Areas requiring blasting will be further defined during the final design process. VGS will use a blasting contractor licensed in the State of Vermont. It should be noted that blasting for projects of this nature will have limited impacts. Any blasting that is required for the Project would be conducted by state-licensed professionals in accordance with applicable blasting codes and local blasting requirements. All blasting would be conducted during

daylight hours and would not begin until appropriate local authorities and the occupants of nearby buildings, including residences and places of business, have been notified. In general, blasting would involve installation of small drill holes, and the use of low energy charges. Potential fracture impacts would be avoided through the use of open-face blasting techniques, which would direct the energy of the blast upward to the surface instead of downward. Delayed charges would be ignited in sequence to facilitate the upward movement of rock along the rock face. VGS will also conduct pre-blast inspections of nearby facilities and structures; install blasting mats to control the scattering of loose rock; use warning signals, flags and barricades to limit access to the blast area; and conduct post-blast surveys as necessary to assess damage.

Notwithstanding the limited impact of the blasting, VGS will adhere to a rigorous blasting plan, highlights of which are described below.

Pre-Blast Surveys/Notifications

Pre-blast surveys and Water Quality/Flow Testing will be offered to all property owners that are within a 600-foot radius from the blast site. Appropriate notices will be given and appointments arranged for those owners who desire a survey. Pre-blast surveys will be conducted by a qualified firm approved by VGS. Results of those surveys will be documented through video or still photographs and appropriate narration or written reports.

Blast Monitoring

All blasts will be monitored by a representative of a qualified firm approved by VGS who has been properly trained in the setup and use of seismic monitoring equipment. At least one seismograph will be in use at all times. Placement of monitoring equipment will be at the nearest structure to the blast site. Results of blast monitoring will typically be available before the next blast. Results can be reviewed and modifications can be made to the blast design for the next blast if necessary.

Sequence of Blasting

All blasting operations will be strictly coordinated with VGS's on-site representative and local Fire Departments. Emphasis will be on the safe and efficient removal of the rock existing on this project without impact to surrounding structures.

Blasting Procedures

1. Blasting operations shall commence after 7:00 AM and cease before 7:00 PM, Monday through Saturday.
2. Blasting cannot be conducted at times different from those announced in the blasting schedule except in emergency situations, such as electrical storms or public safety required unscheduled detonation.
3. Warning and all-clear signals of different character that are audible within a range of one-quarter mile from the point of the blast shall be given. All persons within the permit area shall be notified of the meaning of the signals through appropriate instructions and signs posted.

4. Access to the blasting area shall be regulated to protect the public from the effects of blasting. Access to the blasting area shall be controlled to prevent unauthorized entry before each blast and until the perimeter's authorized representative has determined that no unusual circumstances exist after the blast. Access to and travel in or through the area can then safely resume.
5. Areas in which charged holes are awaiting firing shall be guarded, barricaded and posted, or flagged against unauthorized entry.
6. Blasting mats shall be used to cover blasts and prevent fly rock.

Blast Security

Each blast will be preceded by a security check of the affected area. Communications will be made with job site supervisors and local officials as required to ensure the safest possible operation. All personnel in the vicinity closest to the blast area will be warned.

No blast will be fired until the area has been secured and determined safe. The blast site will be examined by the blaster prior to the all-clear signal to determine that it is safe to resume work.

Blast Vibration

Blast vibration will be monitored at the blast site, typically at the structure(s) closest to the blast site. Vibration limits will closely follow industry limits and the State and Local Regulations. Blast designs will be modified as required to stay within the guidelines.

Blasting operations will be modified accordingly when approaching buildings and utilities.

4. Right of Way Acquisition

Q20. Will the Project require ROW acquisition?

A20. Yes. VGS will purchase easements from landowners along the Transmission Mainline where public ROWs are not being used. Landowner parcels along the Final Alignment are shown on Exhibit Petitioner Supp. JH-3 (2/28/13). VGS has contacted all landowners along the pipeline route and is currently in discussions to obtain easements. As a result of moving the alignment off of public roads in some locations at the request of the communities, the 2/28/13 Alignment will require VGS to obtain easements associated with approximately 200 land parcels. This is an increase of approximately 40 parcels from the Initial Proposal. VGS is targeting to have all easements in place by the end of 2013.

5. Noise Impacts

Q21. Will the Project generate noise?

A21. During construction, the Project will generate general construction noise associated with construction vehicles and equipment. Construction activities will normally occur between 7 a.m. and 7 p.m. and will only last during the construction period. Once constructed, because they are buried, the Project pipelines will not generate any additional noise.

The sectionalizing valves are not pressure-reduction valves containing any mechanized components, and therefore will not result in additional noise.

VGS has selected a heater system for the Gate Stations that emits very little noise. VGS has calculated that after construction of the Project and during the peak hour of operation, the noise level at each Gate Station will be approximately 50 dBA when measured at the fence line. The closest occupied structure (a bookstore in Middlebury) to any of our proposed Gate Stations is approximately 150 feet. While this is closer than the nearest occupied structure in the Initial Proposal, the Gate Station was relocated at the request of the community, and at this distance, the noise is projected to drop well below the 45 dBA nighttime and 55 dBA daytime noise levels required in other Board proceedings.

6. <u>Transportation Impacts</u>

Q22. What impacts will the Project construction have on traffic and transportation facilities?

A22. We plan to conduct horizontal directional drilling ("HDD") or boring under a number of street crossing and railway crossings, namely:

Mill Pond Road, Colchester; Uncased bore

Colchester Rd. (Route 2A), Essex; Uncased bore

New England Central RR, Essex; Cased bore

Upper Main St. (Route 15), Essex; Uncased bore

Essex Way, Essex; Uncased bore

River Rd. (Route 117), Essex; HDD with Winooski River

New England Central RR, Essex; Cased bore

Redmond Road at CSWD, Williston; Uncased bore

Mountain View Rd. , Williston; Uncased bore

Williston Rd. (Route 2), Williston; HDD with Allen Brook

Interstate Highway 89, Williston; HDD

Hurricane Lane, Williston; Uncased bore

St. George Rd. (Route 2A), Williston; Uncased bore

St. George Rd (Route 2A), St. George; Uncased Bore

Vermont Route 116, St. George; Uncased bore

Shelburne Falls Road, Hinesburg; Uncased bore

Charlotte Road, Hinesburg; Uncased bore

Hollow Road, Monkton; Uncased bore

Monkton Road, Monkton; Uncased bore

Plank Road, New Haven; Uncased bore

North Road, New Haven; Uncased bore

Plank Road, New Haven; Uncased bore

Quarry Road, New Haven; Uncased bore

Main St. (Route 17), New Haven; Uncased bore

Town Hill Road, New Haven; Uncased bore

Hunt Road, New Haven; Uncased bore

River Road, New Haven; Uncased bore

Vermont Route 7, New Haven; Uncased Bore

Beldon Road, New Haven; Uncased Bore

HDD or boring involves the installation of pits at either side of the area to be crossed and drilling or auguring the pipe beneath that area, creating no disturbance at the surface. This technique, although more expensive, allows us to avoid direct impacts to these areas. These locations reflect the route alignment changes previously described.

In areas where we will install the pipe with traditional open-cut methods across roadways, we will employ standard traffic control measures to maintain at least one lane of traffic during installation. Additionally, there are areas where we will be installing pipe within the road ROW or shoulder. In these areas we will employ traffic control measures and maintain one lane of traffic during construction. Road surfaces will be protected and restored to original or better condition if impacted by construction.

During construction in these areas, VGS will utilize traffic control methods that comply with Vermont Agency of Transportation ("VTrans") standards, including employment of appropriate signage and the services of sheriffs or other traffic control personnel to manage traffic flow. VGS will obtain highway permits from VTrans and local municipalities for work in state and local roadways.

The Winooski River is considered a navigable water under Section 10 of the Rivers and Harbors Act of 1899, and is subject to the permit jurisdiction of the Army Corps of

Engineers ("ACOE"). As explained in Mr. Nelson's testimony, VGS has applied for a Section 10 permit for this crossing. From a practical standpoint, this will have no impact on river transportation and navigation, as we plan to HDD the crossing, and thus will not impact surface waters.

7. Cost Estimate

Q23. Please provide the estimated cost of the Project.

A23. The Project is estimated to cost $86,612,944, which includes the proposed Transmission Mainline and Distribution Mainlines; it does not include the distribution networks in Middlebury and Vergennes. This reflects an increase of $2.8 million, primarily associated with additional HDD to mitigate environmental impacts as discussed in MR. Nelson's supplemental testimony. A breakdown of the cost estimate is set forth in Exhibit Petitioner Supp. JH-11 (2/28/13). The cost estimate was prepared using quotes from equipment vendors, discussions with contractors familiar with the work and historical costs from similar projects.

8. Schedule

Q24. What is the schedule for the Project?

A24. The current schedule is to construct the Project in 2014. This will bring gas service to anchor customers in the Middlebury industrial park by late 2014. The distribution networks in Middlebury and Vergennes would be constructed in 2015, with residential and commercial customers receiving gas service by the 2015/16 winter.

9. Conclusion

Q25. Does this conclude your testimony at this time?

A25. Yes, it does.