



August 6, 2007

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, DC 20426

**Re: Dominion Transmission, Inc.  
Storage Factory Project  
PF07-12-000  
Draft Resource Report 1 and Summary of Alternatives**

Dear Secretary Bose:

On July 5, 2007, the Commission issued an Approval of the Pre-Filing Process Request for Dominion Transmission, Inc.'s (DTI) Storage Factory Project and the associated National Environmental Policy Act (NEPA) review process, as filed under the above referenced docket.

Pursuant to Section 157.21(f)(5) of the Commission's regulations, DTI hereby submits the draft Resource Report 1 and a summary of project alternatives.

If you have any questions, please contact me at 804-819-2878.

Respectfully submitted,

*Amanda K. Prestage*

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Regulatory and Certificates Analyst II

cc: David Hanobic, FERC



**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**DOMINION TRANSMISSION, INC.  
STORAGE FACTORY PROJECT  
Docket No. PF07-12-000**

Filed: August 6, 2007

VOLUME I OF II – PUBLIC

**Dominion Transmission, Inc.  
Storage Factory Project  
Docket No. PF07-12**

**DRAFT**

**Resource Report No. 1  
General Project Description**

**August 6, 2007**

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**H-326035.100.02**

**Resource Report No. 1**

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<b>Project Name</b>	Storage Factory Project	<b>Document</b>	
<b>Client Name</b>	Dominion Transmission, Inc.	<b>Revision</b>	Draft
<b>Hatch Project Number</b>	H-326035.100.02	<b>Date</b>	August 6, 2007

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**Client Name** Dominion Transmission, Inc.  
**Hatch Project Number** H-326035.100.02

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**Date** August 6, 2007

**Resource Report 1 – GENERAL PROJECT DESCRIPTION****SUMMARY OF FILING INFORMATION**

<b>Minimum Filing Requirements</b>	<b>Section</b>
Provide a detailed description and location map of the project facilities. (§ 380.12 (c)(1)).	Section 1.1.2; Figure 1.1-1; Figure 1.1-8; Figure 1.1-9; Figure 1.1-10
Describe any non-jurisdictional facilities that would be built in association with the project. (§ 380.12 (c)(2)).	Section 1.8
Provide current original U.S. Geological Survey (USGS) 7.5-minute-series topographic maps with mileposts showing the project facilities. (§ 380.12 (c)(3)).	Alignment Sheets to follow
Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the project facilities. (§ 380.12 (c)(3)).	Alignment Sheets to follow
Provide plot/site plans of compressor stations showing the location of the nearest noise-sensitive areas (NSA) within 1 mile. (§ 380.12 (c)(3,4)).	Attachment 3
Describe construction and restoration methods. (§ 380.12 (c) (6)).	Section 1.3
Identify the permits required for construction across surface waters. (§ 380.12 (c)(9)).	Attachment 1
Provide the names and addresses of all affected landowners and certify that all affected landowners will be notified as required in § 157.6(d). (§§ 380.12(a)(4) and (c)(10)).	Section 1.7; Attachment 2

**Resource Report No. 1**

Page 1

<b>Project Name</b>	Storage Factory Project	<b>Document</b>	
<b>Client Name</b>	<b>Dominion Transmission, Inc.</b>	<b>Revision</b>	Draft
<b>Hatch Project Number</b>	H-326035.100.02	<b>Date</b>	August 1, 2007

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**1 General Project Description****1.1 Proposed Facilities****1.1.1 Purpose and Need**

Dominion Transmission, Inc. (DTI) proposes to file an application with the Federal Energy Regulatory Commission (FERC or Commission) for a Certificate of Public Convenience and Necessity under Section 7(c) of the Natural Gas Act, as amended, for authorization to construct, install, own, operate and maintain certain facilities that comprise the Storage Factory Project (Project).

DTI is a provider of gas transportation and storage services, in accordance with the terms of a Commission-approved FERC Gas Tariff. DTI operates a large, integrated underground natural gas storage system, and maintains approximately 10,000 miles of gas transmission pipeline located in six states (Ohio, West Virginia, Pennsylvania, New York, Maryland and Virginia). The proposed Project will integrate new salt cavern gas storage with DTI's existing transmission and storage assets. This Project will enable DTI to effectively meet increased market demand for gas storage services in the Eastern United States.

This Project will provide a flexible and reliable source of firm gas storage service. The Project will ensure that additional quantities of gas are available to markets when demands are high, under terms and conditions defined by the storage and transportation service agreements between DTI and Project customers. This capability will reduce the potential for inadequate available gas supplies for Project customers during periods of short-term peak demand, such as severe winter weather periods. The Project will also enable DTI to balance short-term fluctuations between gas supply and demand in the transmission system to which the Project facilities will be interconnected.

The proposed Project mainly consists of the development of a new gas storage facility, which will be created by leaching caverns within existing bedded salt formations in Tioga County, Pennsylvania for the purpose of storing and cycling high pressure natural gas to be used in conjunction with DTI's other storage facilities. A new compressor station will be constructed adjacent to the leaching operations for gas storage injection and withdrawal purposes. In order to utilize the new capacity and deliverability created from the salt cavern, DTI is also proposing on-system enhancements to other existing facilities, located in Pennsylvania.

The initial phase of the Project will place approximately 11.2 million dekatherms (MMDT) of new storage capacity in-service in January 2014. This will consist of approximately 2.5 billion cubic feet (Bcf) of working gas capacity from the initial salt cavern and approximately 8.4 Bcf of new storage capacity from on-system enhancements and modified utilization of DTI's existing, integrated gas storage system.

The major components of the project are described in the following sections.

## 1.1.2 Location and Description of Facilities

### 1.1.2.1 Salt Cavern Gas Storage Development

Salt cavern development for hydrocarbon (gas) storage is an engineering methodology that has been in existence for several decades, with a well-documented process and procedural history. The first criteria for successful development of a salt cavern requires the presence of suitable salt formations that may be bedded (layered) or domal (massive) in nature. Some of the critical criteria specifications include: an adequate thickness of a salt deposit at a feasible depth in the ground, a suitable source of fresh water, a brine disposal plan, and logistical infrastructure to support the development and desired future use of the cavern. The Project meets all of these critical criteria for successful cavern development.

In order to most efficiently develop the Tioga, Pennsylvania facility, DTI proposes the simultaneous development of two salt caverns, even though DTI seeks to place only one cavern into gas storage service under the initial phase of the Storage Factory Project. This development process is commonly known as "cascading". Pursuant to the cascading procedure, freshwater is introduced into the first cavern at high rates and then cycled as a non-fully saturated brine stream into a second cavern. Cycling the brine through the second cavern allows the stream to become fully saturated and therefore economically feasible for salt processing and production. During the initial cavern development stages, water contact with the salt walls is limited and the leaching process results in non-saturated weak brine which is not conducive to efficient salt production. As the first cavern's size increases due to the ongoing leaching process, the subsequent water contact time with the salt walls increases, as does the resulting saturation level of the brine stream. Hence, the second cavern in the cascading development process is leached at a very minimal rate and is only partially developed when the first cavern is completely ready for service. In a multi-cavern design, the cascading process is repeated for the development of additional salt caverns.

The Project will be developed in phases. This initial phase, which is the subject matter of this resource report, involves the leaching of two salt caverns and placing the first cavern – along with various other facilities as further described herein – in service by 2014. While only one cavern will be placed in service in the initial phase, the simultaneous leaching of two caverns, or cascading, is required to fully saturate the brine from the first cavern for processing. At this time, DTI is requesting authorization only for this initial phase. The specific nature and timing of subsequent phases will depend on factors including future market conditions.

The first cavern, when completed, will have an anticipated working gas storage capacity of approximately 2.5 Bcf and a total capacity of approximately 4.4 Bcf. The preliminary design contemplates a maximum pressure gradient of 0.80 psi/ft and minimum cavern pressure gradient of 0.25 psi/ft. This is in contrast to the previous caverns proposed to be located within the active limits of the Tioga Storage Pool certificated by the Commission in *N.E. Hub Partners*, 83 FERC ¶ 61,043 (1998), *order on rehearing*, 90 FERC ¶ 61,142 (2001), which proposed a maximum gradient of 0.9 psi/ft. and a minimum gradient of 0.15 psi/ft. The preliminary cavern design anticipates an average cavern diameter of approximately 200 feet. Once leaching is complete, DTI will conduct

geological/sonar surveys to determine actual capacities and pressures, which will be filed with the Commission once the final data is collected and analyzed.

#### **1.1.2.1.1 Storage Caverns**

Figure 1.1-1 presents the salt storage cavern locations. The underground storage caverns will be developed through a leaching or solution mining process. Solution mining involves the injection of freshwater (weak brine) into a salt bed and subsequent withdrawal of the resultant saltwater solution (brine). The saturated brine is transported and treated at a brine processing facility.

An initial gas storage capacity of approximately 2.5 Bcf will be available within the salt stratum that underlies the site, at a depth of approximately 5,000 to 6,000 feet below ground surface (approximately 3,200 to 4,200 feet below sea level). This storage capacity will be created from the full development of one cavern. However, note that a second cavern will be developed – at least partially – during the initial phase of the project.

Each of the new storage caverns will be developed through a single casing string that is cemented to surface and a casing shoe set approximately 150 feet into the salt formation. In the preliminary facility design, this casing is anticipated to continue approximately 4,860 feet below the surface. All proposed cavern wellheads will be located outside the active limits of DTI's existing Tioga Storage Pool. Furthermore, leaching will be controlled within each cavern so that the cavern wall development will not encroach on active limits of the Tioga Storage Pool. The preliminary design contemplates approximately 900 feet to 1,000 feet of vertical separation between the Tioga Storage Pool Oriskany formation (with an average depth of 4,000 feet from the surface) and the top of the salt cavern, anticipated at a depth of approximately 4,960 feet from the surface.

The caverns will be developed at a maximum brining rate of 1,200 gallons per minute (gpm). Direct leaching methods will be used. DTI will inject freshwater at the bottom of the caverns, and withdraw brine at the top. Each cavern will generally develop the shape of a long narrow cone with a 260-foot diameter. The total vertical height of each cavern, from roof to floor, is anticipated to be approximately 1,300 feet; however, the eventual cavern floor will be considerably shallower given the significant amount of insoluble particles that will accumulate on the floor as the cavern is leached. See Figure 1.1-2, for a schematic of the cavern.

During the cavern development period, approximately 400 barrels (bbl) of crude oil or natural gas condensate will be temporarily introduced into each cavern as a blanket material to control the vertical to horizontal ratios of the cavern sizing. The crude oil/natural gas condensate will be recovered and sold for use as fuel. Residual crude oil/natural gas condensate within the salt formation is not considered to pose a significant impact after cavern development due to the depth of the formation, the confining low permeability of the overlying formations, and the containment within the well casing.

### **1.1.2.1.2 Leaching Facilities**

The Leaching System facilities are composed of a Leaching Facility, a proposed freshwater intake structure, a 6-inch freshwater pipeline from the intake area to the Leaching Facility, storage cavern development wells and associated connected leaching water pipelines, and brine pipelines to/from the proposed Brine Processing Facility. The leaching operation, as described above, will simultaneously develop two storage caverns through a cascading process in the initial stage. However, only one cavern will be fully developed during the project period.

Figure 1.1-1 shows the Leaching System layout presented in a USGS map.

### **1.1.2.1.3 Freshwater Source Supply**

A freshwater pump station which will provide freshwater to the Leaching Facility for the cavern solution mining is proposed to be located on U.S. Army Corps of Engineers (COE) property at the Cowanesque Reservoir. The necessary easement, operating parameters, environmental impact minimization measures, and site restoration proposals will be included in a separate application to the COE. The Commission will be given a copy of this application upon presentation to the COE. Further, the Cowanesque Reservoir, operated by the COE, retains water that is stored for downstream use by the Susquehanna River Basin Commission (SRBC). Discussions among the project sponsors, COE and SRBC have been initiated to address the consumptive use of freshwater from this storage reservoir. The consumptive use, hydrology analysis, environmental impacts and operating agreements will be included in a separate application to the SRBC. The Commission will be given a copy of this application and apprised of its progress upon presentation to the SRBC. Based on consultations to date with the SRBC, DTI understands that approval of the proposed water supply withdrawals would be subject to assuring that such withdrawals would not have an adverse impact on reservoir storage that is available to meet downstream consumptive use compensation and flow augmentation requirements, particularly during drought periods. The applicant is evaluating alternative sources, physical designs and/or operational plans and arrangements to address these issues. Project alternatives will be provided and discussed in detail in Resource Report 10.

DTI proposes to construct a pump station at the confluence of Baldwin Creek and the Cowanesque Reservoir. The pump station would draw a maximum of 400 gallons per minute (gpm) from the Cowanesque Reservoir. Two 400 gpm (one operating/one standby) pumps with 350 horsepower (hp) electric motors will be provided. The pumps will have suction and discharge shutoff valves for isolation purposes and a suction strainer to protect the pump. The pump discharges will be manifolded together to a common 6-inch discharge to the Leaching Facility. Figure 1.1-3 presents the freshwater intake site plan.

The structure will be located within the 100-year floodplain of the Cowanesque River and, therefore, will be made waterproof to above the 100-year flood level of El 1117. An intake channel approximately 10 feet wide by 10 feet deep at the lowest point, and 300 feet long will be excavated and dredged to convey water from the reservoir to the pump intake. An intake trash rack and fish screen will be provided at the pump station

intake. The intake screen will feature a bar spacing of 1-inch and an intake design velocity of less than 0.25 fps.

For the arrangement of the freshwater pump house, see Figures 1.1-4 and 1.1-5. Figure 1.1-1 shows the arrangement of the 6 inch freshwater discharge to the Leaching Facility.

#### **1.1.2.1.4 Leaching System Pipelines**

The Leaching System will take the freshwater supplied from the Cowanesque Reservoir and inject it into the cavern well, where it will be circulated in order to dissolve the salt formation and create a cavern for gas storage. The Leaching System will be designed for series, or cascaded, leaching of the caverns.

The freshwater from the Cowanesque Reservoir will be delivered to the Leaching Facility through a 6-inch pipeline. The freshwater will be stored at the facility in one 3,000 barrel (bbl) storage tank. Three 400 gpm pumps, each driven by a 300-hp electric motor will pump freshwater into the cavern. A 10-inch pipeline will deliver the freshwater from the outlet of these pumps to the cavern wellhead.

When leaching in series, the partially saturated brine from the first cavern is re-injected to leach the second cavern. A return pipeline from the second cavern, also 10-inch in diameter, will return saturated brine to the facility to be stored in three 3,000 bbl storage tanks. From these tanks, the brine will be transported to the Brine Processing Facility.

All of the leaching system pumps and associated equipment will be located in a pump house at the Leaching Facility.

At the cavern wellheads, injection water will enter through the center piping string that will extend to the bottom of the cavern. Brine will return to the surface through the annular space between the inner string and the adjacent piping string. This annular space will be located near the top of the cavern. These piping strings will be raised as required to control the cavern size and configuration. In addition, crude oil and/or natural gas condensates will be pumped into the cavern as a blanket material to control the vertical to horizontal ratios of the cavern sizing. A 1,000 bbl crude oil/natural gas condensate storage tank and pump will be located at Leaching Facility for this purpose.

A 10-inch brine pipeline from the Leaching Facility to the Brine Processing Facility, and an 8-inch return condensed freshwater (weak brine) pipeline to the Leaching Facility, will also be required.

Pipeline lengths and diameters are presented in Table 1.1-1. Figure 1.1-1 presents the location of the Leaching Facility pipelines. Figure 1.1-7 shows the preliminary site plan for the Leaching Plant adjacent to the gas compression/delivery station.

### **1.1.2.1.5 Brine Processing Facility**

In the Gulf Coast region, of the United States, brine is often disposed of by re-injecting the stream into porous underground geologic formations. The geology indicative to the Tioga, Pennsylvania region is not capable of supporting adequate brine re-injection. Instead, DTI will process the brine resulting from the Project's solution mining operation into salt commodity products. To that end, DTI proposed to construct a Brine Processing Facility on a 40-acre site located approximately one mile from the Town of Tioga, Pennsylvania. The Brine Processing Facility will receive saturated brine from the cavern leaching and convert the brine into salt commodity products. The Brine Processing Facility will consist of a closed system evaporative process, which will have little environmental impact. Brine will be transported from the solution mining operation to the Brine Processing Facility through a 10-inch brine pipeline that is approximately 4.6 miles long. From this brine, the facility will generate two products: freshwater (weak brine) and crystalline salt. Water effluent will be piped from the Brine Processing Facility back into the cavern leaching operation, through approximately 4.6 miles of 8-inch brine transfer pipeline.

The crystalline salt product will be processed and then stored either bulk or bagged and then shipped by truck or rail. These salt product shipments will be made via existing, adjacent rail and roadway infrastructure.

The Brine Processing Facility will consist of three major components, the wet process, the dry process and the storage and shipping system. Figure 1.1-6 presents the Plant Layout and Site Plan of the Brine Processing Facility.

#### **1.1.2.1.5.1 Wet Process**

Brine from the Project solution mining operation will be delivered through a 10-inch brine pipeline at a rate of up to 1,200 gpm to the Brine Processing Facility. The brine pipeline will terminate at the Brine Processing Facility property boundary, at which point the process plant piping will transport the intake brine to the brine treatment area. In the wet process, salt slurry will precipitate out of the brine solution during the evaporation process and freshwater (weak brine) will be condensed and returned to the solution mining operation. The salt slurry will be sent to the dry process after being dried to a moisture content of 0.05%.

Raw brine will be collected in a raw brine tank and pumped to one of two reactors. The brine is first treated in each reactor to precipitate and settle magnesium and calcium compounds out of the raw brine. The magnesium and calcium compounds resulting from this precipitation process will be collected and sent back to the caverns together with the freshwater condensate.

The brine delivered to the processing plant will also contain naturally occurring sulfates. These sulfates will be removed during brine processing, in order for the furnished salt to meet food grade quality specifications. Sulfates cannot be returned to the caverns and will require treatment prior to off-site disposal. To avoid a rapid increase of sulfate in the raw brine, it will be necessary to precipitate these sulfates using calcium chloride. The

resulting gypsum will be removed from the evaporator/crystallizer feed and disposed of at a permitted landfill.

These two treatment processes will be designed for batch operations. Each batch treatment will occur over a period of approximately nine hours. The resulting purified, or "clear", brine will then be pumped into a purified brine storage tank. From that location, purified brine will be continuously pumped to the evaporator/crystallizer, through plant feed brine heat exchangers. The preheated brine will be fed to the circulation pipes of the evaporator system where boiling occurs at the surface of the liquid level in the evaporator body. Salt crystals will form and grow until their weight causes them to fall, by operation of gravity, into the elutriation (salt) leg of the evaporator.

The salt discharged from the salt leg will be fed directly to a pusher-type centrifuge, where residual moisture is reduced to approximately 2 to 3% by weight. This "wet" salt is discharged from the centrifuge onto a belt conveyor that feeds the fluid bed drier/cooler. The residual moisture is reduced in the drier to 0.05% by weight and the salt slurry is cooled. Separate hot salt and cold salt draw-off systems will be provided, to allow these salt types to be discharged onto separate belt conveyors for transport to the dry processing operations.

#### **1.1.2.1.5.2 Dry Process**

After the salt slurry has been dried to a moisture content of 0.05% through the wet process, the salt slurry is processed and segregated into the different quality grades. This component of the process is referred to as the "dry process." There will be one grade of salt produced at the plant. The salt will be shipped as a bulk or packaged product. Some portion of the packaged product will be bagged as granulated food grade product, while a portion of the salt will be further processed into compacted pellets for water conditioning. The packaged pellets and granulated salt will be palletized, stretch wrapped and stored in the warehouse for future shipment by truck or rail. Bulk salt will be conveyed to silos for loading and shipment in trucks or rail cars.

The dry process will include the following major components:

- Pellet sheet press systems;
- Screening and distribution systems; and,
- Bulk surge systems for packaging granulated salt and compacted pellets.

#### **1.1.2.1.5.3 Storage and Shipping**

The bulk and bagged material will be stored or warehoused and will be shipped either by trucks or by rail car. DTI does not propose any facility construction in support of the shipment process.

#### **1.1.2.1.6 Natural Gas Storage Facilities**

The natural gas storage operations at the Tioga, Pennsylvania site will consist of the use of the one completed storage cavern developed from the leaching operation to store

natural gas, as well as the installation and use of a gas compressor/delivery station and gas pipelines linking the storage cavern to existing DTI transmission pipelines. During the injection or storing process, gas will be delivered to the compressor station from the DTI pipelines, compressed and injected into the storage cavern. During the withdrawal or delivery process, gas will be withdrawn from the storage cavern, treated, regulated and delivered through a gas pipeline to DTI transmission pipelines.

Total gas storage capacity will consist of one 2.5 Bcf capacity storage cavern. The compressor facility will be designed to be capable of withdrawing the working gas capacity in 10 days at an average rate of 250 million cubic feet per day (mmcf/d), and will be capable of injecting the working gas in 40 days at an average rate of 62.5 mmcf/d.

Figure 1.1-1 shows the gas storage system layout presented on a USGS map.

The pipeline lengths and diameters are presented in Tables 1.1-1 and 1.1-2. Figure 1.1-1 presents the location of the gas pipelines. These Gas System pipelines will be designed in accordance with Code of Federal Regulations (CFR) 49 Part 192. The buried pipelines will be coated with a fusion bonded epoxy coating. Pipeline sizes listed in the text of this report and on the drawings are preliminary and may vary as the Project design is finalized. However, DTI anticipates that such variances will be limited to +/- 2 diameter sizes. In addition, pipeline distances are approximate at this preliminary stage of design.

A new 4,735-hp compressor station will be constructed adjacent to the storage cavern, for gas storage injection and withdrawal purposes. Associated, ancillary piping and gas processing facilities will also be installed at this compressor station.

The Gas System's major equipment will include piping and regulation, compressors, natural gas fueled engines, after-coolers, process heaters and separators, and dehydrators. Where permitted and appropriate, ancillary piping and gas processing equipment will be installed pursuant to 18 C.F.R. Part 2.55, or DTI's blanket construction authority under Part 157 F of the Commission's regulations.

Figure 1.1-7 presents the preliminary site plan for the Gas Compressor/Delivery station located adjacent to the Leaching Plant.

### **1.1.2.2 Transmission Facilities, On-System Enhancements and System Utilization**

Approximately 8.4 Bcf of new additional storage capacity will be derived from on-system enhancements, and through integration of the deliverability resulting from the new salt storage cavern with DTI's existing system. Approximately 4.0 Bcf of the 8.4 Bcf will result from reclassifying base gas levels at DTI's Sabinsville Storage Pool. To minimize gas velocities and pressure drop at low inventory levels, limited storage pool trunk lines will be replaced in DTI's Sabinsville Storage Pool, as necessary. Proposed modifications to transmission facilities include additional compression at DTI's existing Ardell Station (approximately 4,000 HP) in Elk County, Pennsylvania, and approximately 7.5 miles of new 30-inch pipeline looping within an existing right-of-way (ROW) in Clinton County,

Pennsylvania, south of DTI's existing Leidy and Finnefrock compressor stations. The remaining 4.4 Bcf will be derived from a portion of the previously-certificated, unsubscribed inventory of DTI's integrated storage system capacity that was reserved by DTI for operational purposes, as authorized by the Commission in previous dockets.

#### **1.1.2.2.1 Sabinsville Storage Pool**

The Sabinsville Storage Pool enhancements will include trunk line replacements to minimize gas velocities and pressure drop at low inventory levels. DTI will take up approximately 2.65 miles of existing 16-inch, 12-inch, 10-inch, and 8-inch piping and replace that piping with new 20-inch, 16-inch, and 12-inch pipelines in the existing ROWs. The pipeline replacements will originate at DTI's Sabinsville compressor station in Tioga County, Pennsylvania. Figure 1.1-8 shows the Sabinsville Pipe Replacements on a USGS map.

#### **1.1.2.2.2 Thirty-Inch Pipeline Looping**

The proposed Thirty-Inch Pipeline Loop consists of approximately 7.5 miles of existing 16-inch abandoned pipeline, which will be replaced with new 30-inch pipeline within the existing ROW. The pipeline replacement will originate at DTI's Finnefrock compressor station in Clinton County, Pennsylvania. Figure 1.1-9 presents the 7.5 miles of proposed 30-inch pipeline looping on a USGS map.

#### **1.1.2.2.3 Ardell Horsepower Replacement**

The existing compressor at the Ardell Station will be upgraded from approximately 15,000-hp to approximately 19,000-hp as part of the enhancements of related transmission facilities. DTI's Ardell Station is located in Elk County Pennsylvania. Figure 1.1-10 presents the Ardell Horsepower Replacement on a USGS map. Figure 1.1-13 presents a Site Plan.

### **1.1.3 Location Maps, Detail/Route Maps, and Plot/Site Plans**

Location maps, route maps, and plot/site plans are presented in Figures 1.1-1, 1.1-8, 1.1-9, and 1.1-10. Detailed photo based alignment drawings to follow.

## **1.2 Land Requirement**

A detailed discussion of the Project's land requirements, by land use category, is presented in Resource Report 8. Detailed discussions of land requirements for Project construction and operation are also presented in Resource Report 8. A general summary of land requirements is provided in this section.

### **1.2.1 Land Requirement – Leaching and Gas Storage Areas**

The estimated total land requirement and ROW for the proposed Leaching and gas Storage areas of the Project, including fee property, permanent easement, temporary easement, and additional temporary workspace, is 111.3 acres. During the construction phases of the project, approximately 111.3 acres will be disturbed. Following

construction, approximately 53.6 acres of disturbed land will be allowed to revert to its former use, while approximately 57.7 acres will be retained as permanent fee property or ROW. DTI proposes to minimize the environmental impacts from clearing and ROW maintenance by locating underground facilities within the same disturbed ROW, where feasible.

The majority of the land disturbance involved in the Project will result from construction of the various pipelines. The standard construction ROW will be 100 feet wide. In most areas, pipelines will be installed within the same ROW as a previous line to be replaced. As a result, the width of the construction ROW will be minimized and the amount of land disturbance will be reduced.

Table 1.1-3 presents the aboveground Project facilities. Figure 1.1-1 shows the location of these facilities on plan view maps. Table 1.2-3 presents the land requirements for the surface facilities.

Table 1.2-1 shows the land requirements for each of the various pipelines. Figure 1.1-1 presents the location of the pipeline and ROW on a USGS map. Figure 1.1-11 presents typical ROW cross sections.

The surface facilities include:

- Freshwater Intake;
- Leaching/Compressor Station;
- Cavern Wellhead Areas;
- Brine Processing Facility, and;
- Transmission pipeline connection valve.

## **1.2.2 Land Requirement – Brine Processing Facility**

The estimated total land requirement for the Brine Processing Facility is 40 acres, including 35 acres for the permanent facility with an additional five acres required as a temporary disturbed area. The majority of the disturbance involved in the Project will result from the construction of the process building facilities. Figure 1.1-6 presents the location of these facilities on plan view maps.

## **1.2.3 Land Requirement – Additional Project Enhancements**

### **1.2.3.1 Land Requirement – Sabinsville Storage Pool**

The estimated total land requirement and ROW for the proposed Sabinsville Storage Pool enhancement, including fee property, permanent easement, temporary easement, and additional temporary workspace, is 24.1 acres. During the construction phases of the Project, approximately 24.1 acres will be disturbed. Following construction, DTI anticipates that all 24.1 acres of disturbed land will be allowed to revert to its former use, which is an existing DTI ROW. DTI proposes to minimize the environmental impacts from clearing and ROW maintenance by replacing the pipeline facilities within the same previously disturbed ROW.

Table 1.2-2 presents the land requirement for the Sabinsville pipeline. Figure 1.1-8 presents the location of the pipeline and ROW on a USGS map. Figure 1.1-12 presents typical ROW cross sections.

### **1.2.3.2 Land Requirement – Thirty-Inch Pipeline Looping**

The estimated total land requirement and ROW for the proposed Thirty-Inch Pipeline Looping enhancement, including fee property, permanent easement, temporary easement, and additional temporary workspace, is 68.9 acres. During the construction phases of the Project, approximately 68.9 acres will be disturbed. Following construction, approximately all 68.9 acres of disturbed land will be allowed to revert to its former use, an existing DTI ROW. DTI proposes to minimize the environmental impacts from clearing and ROW maintenance by locating multiple underground facilities within the same disturbed ROW.

As mentioned above, the entire 7.5 miles of new pipe will be located in an existing ROW, except for the pipeline crossing Kettle Creek, which will be adjacent to an existing ROW. Approximately 1.0 acre of additional land will be disturbed on a temporary basis, for bore pits associated with directional drilling.

Table 1.2-2 presents the land requirement for the 7.5 miles of 30-inch pipeline looping. Figure 1.1-9 presents the location of the pipeline and ROW on a USGS map. Figure 1.1-12 presents typical ROW cross sections.

### **1.2.3.3 Land Requirement – Ardell Compressor Upgrade**

The compressor upgrade at the Ardell Compressor Station is not expected to require any additional land, because the new compressor can be installed in virtually the same location as the existing compressor to be replaced. However, DTI expects that approximately 5 acres of previously disturbed station property will be further disturbed for construction and temporary workspace. Following construction, approximately 2 acres will remain as permanently disturbed land, and approximately 3 acres will revert to its former use as station property.

## **1.3 Construction Procedures**

DTI will implement the procedures and mitigation measures contained in the Commission's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan), (January 17,2003) (Appendix 1-C); Wetland and Waterbody Construction and Mitigation Procedures (Procedures), (January 17,2003) (Appendix 1-D).

This section addresses the construction of the entire multi-use facilities. Construction methods and schedules are described more fully in the following subsections. DTI plans to begin construction of the Project in the spring of 2009, beginning with construction of the Leaching facilities and Brine Processing Facility. The peak construction workforce at the Tioga, Pennsylvania site may exceed 200 people. DTI expects to place these facilities into service early in 2011, when leaching operations are scheduled to begin. The remaining gas facilities for the storage services as well as the related transmission

facilities will be constructed in years 2012 and 2013 as is necessary to commence gas storage and transportation service early in 2014.

### **1.3.1 Pipeline Facilities**

Several pipelines will be constructed as a part of the Project. The pipelines will be constructed using standard industry procedures and will consist of typical pipeline construction working sequentially across the ROW with construction crews performing the normal functions of clearing, grading, ditching, stringing, welding, coating, lowering in, backfilling, testing, tie-ins, and cleanup. DTI will implement the procedures and mitigation measures contained in the Commission's 2003 Plan and Procedures.

Construction of the leaching related pipelines will begin in the late spring 2009 and will be divided over two construction seasons, during 2009 and 2010. Cleanup and restoration for each pipeline will begin immediately following completion of the pipeline segment with follow-up residual work and monitoring continuing as necessary until restoration is in compliance with mitigation measures. Each construction season will last approximately six to nine months and will require approximately 80 construction workers. DTI does not anticipate the need for special construction methods.

The leaching-related pipelines to be constructed include a 6-inch pipeline that will carry water from the freshwater pumping station to the freshwater storage tanks at the leaching facility, 10-inch pipelines connecting the leaching facility to the cavern development wellhead locations and back to the leaching facility, a 10-inch saturated brine pipeline from the leaching facility to the Brine Processing Facility, and an 8-inch weak brine return pipeline from the Brine Processing Facility back to the leaching facility. The brine lines will be installed in a common trench.

The natural gas pipelines include one 30-inch storage gas pipeline that will connect the compressor station to DTI's transmission system and the storage cavern piping necessary to connect the initial storage cavern to the compressor station. Other pipeline work will begin in spring 2013 and includes the work within the Sabinsville Storage Pool to replace approximately 2.65 miles of existing trunk line piping and the related 7.5 mile transmission looping project in Clinton County. DTI anticipates that the natural gas pipeline work will require approximately 24 to 60 construction workers, depending on the pipeline diameter and construction duration.

Layout of the gas, water, and brine pipelines indicates that the pipelines will traverse some wetland areas; these will be discussed in Resource Report No. 2, Water Use and Quality. In areas of wetland crossing, the Commission's Wetland and Water-body Construction and Mitigation Procedures will be followed. The pipeline alignment is such that there is no disturbance to residential areas. Alignment of the pipelines also avoids any existing structures. Pending soil investigations during detailed design, it is assumed that there is some near-surface hard rock that may require special equipment or blasting for the construction of the pipelines. The pipelines will be built using conventional equipment.

The pipelines will be installed below ground at a minimum depth (cover) of three to four feet to the top of the pipe. During the final layout and design of the new pipelines, the

utilization of existing ROWs will be incorporated as much as possible. The use of existing ROW and the running of new ROW adjacent to existing ROW will reduce land disturbance due to pipeline installation.

### **1.3.2 Aboveground Facilities**

#### **1.3.2.1 General Site Construction**

Detailed construction specifications, procedures, and site plan drawings will be prepared for each construction item prior to the start of construction. Construction of the leaching related aboveground facilities is expected to begin in spring 2009 and continue over two construction seasons. DTI anticipates that construction of these facilities will require between 120 and 150 construction workers.

#### **1.3.2.2 Freshwater Intake**

A freshwater pumping station is proposed to be constructed at the confluence of Baldwin Creek and the Cowanesque Reservoir. The pumping station will house two 350-hp horizontal centrifugal pumps (one operating/one standby) each capable of delivering 400 gpm of water to the freshwater storage tanks located at the leaching plant/gas facility.

An intake chamber, integral with the pumping station, will be provided with intake screens to prevent fish and debris from being drawn into the chamber. The screens will be fabricated with 1-inch slots, and the screened openings will be sized to limit intake velocities to less than 0.25 feet/second.

An intake channel will be excavated out into the Cowanesque Reservoir to provide a steady flow of water to the pumping station. The channel will be approximately 10 feet wide with 2:1 side slopes where excavated in earth. The channel bottom, at El 1070, will ensure an adequate water supply with reservoir levels down to El 1070.

Work at the pump station and intake will be isolated from the reservoir through the use of a silt curtain suspended from a floating boom and ballasted to maintain contact with the bottom. The curtain will be anchored outside the limit of intake channel excavation. An earthen cofferdam will also be constructed to El 1085, which will further isolate the pump station construction activities from the reservoir. Excess excavated material will be disposed of in the embankment spoil area adjacent to the leaching/process facility in the cavern storage area.

Figure 1.1-3 shows the location of the pump station, intake channel, and proposed cofferdam and silt curtain. The pump station will be located within the 100-year floodplain of the Cowanesque Reservoir; therefore, the pump station is required to be a watertight structure.

#### **1.3.2.3 Cavern Development Facilities**

Construction activities necessary to develop the leaching facilities include site preparation, construction of on-site roads, construction of the leach plant, construction

of freshwater and brine tanks, erection of a crude oil/natural gas condensate (blanket oil) storage tank, construction of freshwater injection pipelines, brine pipelines, and well drilling for cavern development.

The leaching facility will house the major equipment required for cavern development. The equipment includes the raw water injection and brine pumps, piping, valves, and other facilities necessary for the leaching operation.

The leach plant will be located on a 20-acre site (approximately 13.5 fenced acres) that will also be the location of the gas compression/delivery facilities (Figure 1.1-7).

#### **1.3.2.4 Well Installation**

The wells used to develop the storage caverns will be drilled and cased using conventional oil field methods. These wells will meet United States Environmental Protection Agency (USEPA) requirements for Class III disposal wells. A 36-inch conductor pipe and 30-inch surface casing will be set at 80 and 600 feet, respectively. A 24-inch intermediate casing will then be installed through the Oriskany sandstone and cemented to isolate the well from any overlying aquifers and the existing storage reservoirs. A 20-inch hole will then be drilled to the bottom of the cavern (approximate depth 6,300 feet). A 16-inch production casing will be installed and cemented 150 feet into the salt (approximate depth 5,000 feet). Two concentric leaching strings will be hung within the production casing. The leaching strings will be lowered to start leaching at the cavern bottom, and will be raised as the cavern is developed.

#### **1.3.2.5 Additional Surface Facilities**

The gas compression/delivery facility will contain the major equipment associated with the gas storage operations and will include the engine and compressor, inlet filter/separators, suction scrubbers for each stage of compression, gas and jacket water coolers, a pressure-reducing station, withdrawal separator, associated piping and valving, process heaters, and dehydration equipment

#### **1.3.2.6 Brine Processing Facility**

Construction methods for the Brine Processing Facility are described below. It is estimated that the peak construction workforce will be approximately 120 workers.

Access to the site will be provided by existing state, county and local roads. New roads to be constructed on site will consist of a stabilized sub grade with suitable embankment material, an aggregate sub base and a bituminous paved wearing surface. These roads will be of sufficient width to allow passage of vehicles necessary to transport construction materials on the site, with shoulders and drainage facilities as determined during detailed design. The embankment material will be either from excess excavation on site or material imported from an offsite source. The elevation of the roadway will be above the existing grade to promote drainage and to assure all-weather access. Each embankment layer will be placed and compacted prior to placing the next layer. Each layer will be compacted to 95% of the maximum density.

## **1.4 Operations and Maintenance**

### **1.4.1 Gas Storage & Pipeline Transmission Facilities**

DTI will operate and maintain the proposed gas storage and pipeline transmission facilities in accordance with the applicable safety standards established by the USDOT (49 CFR, Part 192). The standards imposed are in accordance with the Natural Gas Pipeline Safety Act of 1968, as amended. Additional information on operation and maintenance practices is presented in Resource Report 11. The Gas Storage and Pipeline Transmission Facilities will employ approximately 12 full-time staff.

### **1.4.2 Brine Processing Facility**

DTI will operate and maintain the Brine Processing Facility in accordance with all applicable Federal, state, and local safety laws and regulations. The Brine Processing Facility will employ approximately 75 full-time staff. With additional support from part-time technical and maintenance specialists, this staff will operate, maintain, inspect and supervise the Brine Processing Facility activities. As noted in Section 1.6, below, this operation is not subject to Commission jurisdiction.

## **1.5 Future Plans and Abandonment**

### **1.5.1 Gas Storage Facility**

As noted in Section 1.1, this application is for the development of two storage caverns. The development of additional gas storage capacity will be contingent on future demand for natural gas services in the markets served by DTI and its customers.

### **1.5.2 Brine Processing Facility**

The raw material source for the Brine Processing Facility is the Project related brine generated as a by-product of the gas storage cavern development. DTI intends to continue to operate the Brine Processing Facility for as long as brine is available from the Project developments. DTI may explore continued Brine Processing Facility operations after Storage Factory development, if economic alternate sources of brine can be identified. However, at this time DTI anticipates that once the proposed storage caverns are fully developed, the Brine Processing Facility would be decommissioned and/or sold to a third party.

## **1.6 Permits and Approvals**

DTI and its consultants have contacted federal, state, and local regulatory agencies to identify the permit requirements for the Project. Attachment 1 lists the permits that have been identified through agency consultation for the Project.

## **1.7 Affected Landowners**

Attachment 2 lists the affected landowners for each main site area included in the proposed Project.

## **1.8 Non-Jurisdictional Facilities**

All facilities of the Project are considered jurisdictional for the licensing and permitting processes, including all environmental studies and assessments. However, after environmental review of the Brine Processing Facility is complete, the construction and operation of the Brine Processing Facility, including the subsequent the salt production and distribution activity, is considered non-jurisdictional.

## **TABLES**

- 1.1-1 Pipeline Facilities
- 1.1-2 Pipeline Facilities – Enhancements
- 1.1-3 Aboveground Facilities
- 1.2-1 Land Requirements for Pipeline Facilities
- 1.2-2 Land Requirements for Pipeline Facilities - Enhancements
- 1.2-3 Land Requirements for Aboveground Facilities

<p style="text-align: center;"><b>TABLE 1.1-1</b></p> <p style="text-align: center;"><b>Pipeline Facilities</b></p>						
Phase	Facility	Pipeline Diameter and Type	Approximate Length (ft)	Approximate Stations (MP)	State	County
1	Freshwater Intake	6" New	5,970	0 – 1.1	PA	Tioga
1	Weak Brine Supply	10" New	2,400	0 – 0.4	PA	Tioga
1	Partially Saturated Brine Supply	10" New	770	0.4 – 0.5	PA	Tioga
1	Saturated Brine Return	10" New	3,170	0.6 – 0	PA	Tioga
1	Mineral Oil Blanket	2" New	3,170	0 – 0.5	PA	Tioga
1	Cavern Storage Gas #1	30" New	2,400	0 – 0.4	PA	Tioga
1	Cavern Storage Gas	30" New	770	0.4 – 0.5	PA	Tioga

	#2					
1	Tap Site Gas Transfer	30" New	4,700	0 – 0.9	PA	Tioga
1	Saturated Brine Supply	10" New	26,960	0 – 5.1	PA	Tioga
1	Weak Brine Return	8" New	26,960	5.1 - 0	PA	Tioga

**TABLE 1.1-2****Pipeline Facilities – Enhancements**

Phase	Facility	Pipeline Diameter and Type	Approximate Length (ft)	Stations	State	County
1	Sabinsville	16" New	6,000	0 – 1.1 (West)	PA	Tioga
1	Sabinsville	20" New	2,500	0 – 0.5 (East)	PA	Tioga
1	Sabinsville	16" New	2,925	0.5 – 1.0 (East)	PA	Tioga
1	Sabinsville	12" New	2,575	1.0 – 1.5 (East)	PA	Tioga
1	Finnefrock	30" New	40,000	0 – 7.5	PA	Clinton

<b>TABLE 1.1-3 Aboveground Facilities</b>					
Facility	New/ Modified	Horsepower	Approximate Station	State	County
Freshwater Pumping Station	New	N/A	1.1	PA	Tioga
Brine Processing Facility	New	N/A	5.1	PA	Tioga
Storage Cavern Well Site 1	New	N/A	0.4	PA	Tioga
Storage Cavern Well Site 2	New	N/A	0.5	PA	Tioga
Leaching Facilities	New	N/A	0	PA	Tioga
Gas Compression & Delivery	New	4 x 4,730 = 18,940	0	PA	Tioga
Gas Compression & Delivery	Modified	19,000	N/A	PA	Elk

<b>TABLE 1.2-1</b>				
<b>Land Requirements for Pipeline Facilities</b>				
<b>Facility</b>	<b>Right-of-Way Cross Section</b>	<b>Length (ft) No. of Sites</b>	<b>Land Affected During Construction (acres)</b>	<b>Land Affected During Operation (acres)</b>
Freshwater Pipeline	1	4,190	9.6	4.8
Freshwater, Brine, Mineral Oil, & Gas Pipeline from the Leaching/ Gas Compressor Station to the Caverns and Freshwater Supply Pipeline	2	2,400	5.5	2.8
Brine Pipeline & Gas Transfer Pipeline from the Leaching/Gas Compressor Station to the Tap Site	3	4,700	10.8	5.4
Brine/Salt Plant Pipelines Within New ROW	4	14,940	34.3	17.2
Brine/Salt Plant Pipelines Along Existing Pipeline	5	7,310	16.8	8.4

Partially Saturated Brine, Mineral Oil, Saturated Brine, and Gas Pipeline from Cavern 1 to Cavern 2	6	770	1.8	0.9
Total		34,310	78.8	39.4

<b>TABLE 1.2-2</b>				
<b>Land Requirements for Pipeline Facilities - Enhancements</b>				
<b>Facility</b>	<b>Right-of-Way Cross Section</b>	<b>Length (ft) No. of Sites</b>	<b>Land Affected During Construction (acres)</b>	<b>Land Affected During Operation (acres)</b>
Sabinsville Storage Pipe Replacement	1A	14,000	24.1	0
7.5 Mile 30" Pipeline Looping at the Finnefrock Station	2A	40,000	68.9	0
Total		54,000	93.0	0

<b>TABLE 1.2-3</b>				
<b>Land Requirements for Aboveground Facilities</b>				
<b>Facility</b>	<b>Property Size (acres)</b>	<b>Land Disturbed During Construction (acres)</b>	<b>Land Required for Operation (acres)</b>	<b>Comments</b>
Freshwater Pumping Station	8	2.3	0.5	New Facility
Leaching/Compressor Facility	82	20.0	13.5	New Facility
Storage Cavern Well Site 1	*	5.8	0.1	New Facility
Storage Cavern Well Site 2	*	5.8	0.1	New Facility
Brine Processing Facility	55	40	35	New Facility
Ardell Horsepower Replacement	NA	5.0	2.0	Existing Facility with Equipment Upgrades
<b>Total</b>		<b>78.9</b>	<b>51.2</b>	

\* Storage Caverns Sites 1 & 2 will be located within the same 52 Acre Site.

## **FIGURES**

- 1.1-1 Site & Location Plan – Salt Storage Facilities
- 1.1-2 Gas Storage Cavern Schematic
- 1.1-3 Freshwater Intake Structure – Site Plan
- 1.1-4 Freshwater Intake Structure – Horizontal Pump Plan
- 1.1-5 Freshwater Intake Structure – Horizontal Pump Section
- 1.1-6 Brine Processing Facility – Plant Layout – Site Plan
- 1.1-7 Gas Storage Facility – Site Plan
- 1.1-8 Site & Location Plan – Sabinsville Storage Pipe Replacement
- 1.1-9 Site & Location Plan – 7.5 Mile 30-inch Pipeline Looping
- 1.1-10 Site & Location Plan – Ardell Horsepower Replacement
- 1.1-11 Typical ROW and Cross Sections
- 1.1-12 Typical ROW and Cross Sections
- 1.1-13 Ardell Compressor Station – Site Plan

**(TO FOLLOW)**

# **ATTACHMENT 1**

Identify the permits required for construction across surface waters. (§ 380.12 (c)(9)).

**ATTACHMENT 1  
PF07-12  
Dominion Transmission, Inc.  
Storage Factory Project**

*FEDERAL AGENCIES*

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN  PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Federal Energy Regulatory Commission  888 First Street, NE  Washington, DC 20426	NGA Section 7(c) Certificate	Kimberly D. Bose, Secretary 202-502-8400  Mark Robinson, Director, Office of Energy Projects 202-502-8700	Staff meetings 1/22/07 4/25/07	NA		3/08	Pre-filing request filed on 6/29/07. Director issued acceptance on 7/5/07.
USEPA Region 3 Groundwater & Enforcement Branch (3WP22) 1650 Arch Street Philadelphia, PA 19103-2029  • USEPA Region 3 Field Office PO Box 47 Titusville, PA 16354	Permit Applications for Cavern Leaching Wells:  USEPA Underground Injection Control Permit Application (Class III G Area Permit) (8 Well Program) (10-yr Term)	Karen Johnson Chief, Groundwater & Enforcement Branch 215-814-2158  Stephen Platt UIC Program Manager 215-814-5464  David Rectenwald	Letter notification 5/18/07  Phone contact 5/18/07  Letter notification 5/18/07  Letter notification 5/18/07	Yes	Have accounted for 4 to 6 month review period as indicated by Agency in the schedule.	12/31/07	Initial meeting with USEPA & other involved agencies held on 7/19/07. A separate preapplication meeting to be scheduled within the next month.

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
<p>US Army Corps of Engineers, Baltimore District City Crescent Building 10 S. Howard Street Baltimore, MD 21201</p> <ul style="list-style-type: none"> <li>Operations Division; Flood Protection and Natural Resources</li> <li>Real Estate Division</li> </ul>	<p>Submittal to the Baltimore District Corps of Engineers (BDCOE) for Use of the Cowanesque Reservoir and Request for Easement on US Army Corps of Engineers property</p>	<p>Joseph Ignatius, Chief, Flood Protection &amp; Natural Resources 410-962-6043 410-962-6038 (fax)</p> <p>James Turkel Chief, Real Estate Division 410-962-3000</p> <p>Craig Homesley</p>	<p>Phone contact 5/18/07</p> <p>Letter notification 5/18/07</p> <p>Letter notification 5/18/07</p> <p>Phone contact 5/18/07</p>	<p>Yes</p> <p>Yes</p>	<p>The BDCOE schedule has been accounted for by involving the Agency in the process from the beginning.</p>	<p>All BDCOE applications by 12/31/07</p> <p>12/31/07</p>	<p>Mr. Ignatius to coordinate BDCOE involvement. BDCOE attended 7/11/07 open house.</p> <p>Initial meeting held with BDCOE and other involved agencies on 7/19/07.</p> <p>Separate meeting held</p>

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
<ul style="list-style-type: none"> <li>• Regulatory Branch</li>   <li>• Pennsylvania Section 1631 South Atherton Street Suite 102 State College, PA 16801</li>   <li>• Tioga, Hammond, and Cowanesque Reservoirs 710 Ives Run Lane Tioga, PA 16946-9733</li> </ul>	PADEP and Dept. of Army, COE Joint Application; Section 404 Permit and Nationwide Permits	Real Estate Division 410-962-4944  Meg Gaffney-Smith Chief, Regulatory Branch  Beth Bachur 410-962-4336  Tom Pluto, PhD 814-235-0574  Marilyn Jones Operations Manager	Letter notification 5/18/07  Letter notification 5/18/07  Letter notification 5/18/07  Phone contact 5/18/07  Letter notification 5/18/07  Letter notification 5/18/07	Yes		12/31/07       12/31/07	with BDCOE & SRBC on 8/2/07.  Wetlands delineation and stream crossing surveys are currently ongoing.
Susquehanna River Basin Commission 1721 N. Front Street Harrisburg, PA 17102-2391	Application to the Susquehanna River Basin Commission for Consumptive Water Use from the Cowanesque Reservoir	Michael G. Brownell, Chief, Water Resources Management Division 717-238-0425  Damian Zampogna	Phone contact 5/11 & 5/16/07  Letter notification 5/18/07	Yes	Have accounted for the 1 year review period as indicated by the Agency in the schedule.	12/31/07	SRBC attended 7/11/07 open house. An initial meeting held with SRBC and other involved agencies on

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
		717-238-0425 ext. 219					7/19/07. Followup meeting with SRBC and BDCOE was held on 8/2/07. Formal application to be submitted by Dec. 2007.
US Fish and Wildlife Service 315 South Allen Street, Suite 322 State College, PA 16801	U.S. Fish and Wildlife Service Determination	David Densmore, Field Supervisor  Pam Shellenberger 814-234-4090 (Designated Contact)	Letter notification 5/18/07  Phone contact 5/16/07	Yes	FWS schedules will be accounted for by involving them in the process from the beginning.	12/31/07	General pedestrian survey to be performed. Letter with project maps to be submitted to USFWS requesting comment regarding threatened and endangered species and other concerns within next two months.

*STATE AGENCIES*

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
PADEP – District Mining Operations Moshannon District Office 186 Enterprise Drive Philipsburg, PA 16866	PADEP Non-Coal Surface Mine Permit (with Underground Mine Module)	John P. Varner Permit Chief 814-342-8200  Dr. Charles Miller Senior Geologist	Phone contact 6/4/07  Letter notification 5/18/07  Phone contact 6/4/07	Yes	PADEP schedule is accounted for by involving Agency in the process from the beginning.	12/31/07	Followup meeting held with PADEP Moshannon contacts and other involved agencies on 7/19/07.  Followup meeting to be scheduled.
PADEP – Licensing Unit Bureau of Mining Reclamation Compliance Section Rachel Carson State Office Building, 5 <sup>th</sup> Floor PO Box 8461 Harrisburg, PA 17105-8461	Mine Operator's License	Chief, Division of Monitoring & Compliance  717-787-7846  717-787-5103	Letter notification 5/18/07		PADEP schedule is accounted for by involving Agency in the process from the beginning.	4/1/08	Operator's license application to be filed at a later date.
PADEP Northwest Regional Office Bureau of Oil and Gas Management (BOGM) 230 Chestnut Street Meadville, PA 16335-3481	PADEP Permit Application for Drilling or Altering Wells (required for each well)	S. Craig Lobins Regional Program Manager  Robert Gleeson Manager 814-332-6860  Ronald P. Gillius Director	Letter notification 5/18/07  Phone contact 5/24/07  Letter notification 5/18/07	Yes	PADEP schedule is accounted for by involving Agency in the process from the beginning.	12/31/07	Initial meeting was held with BOGM and other involved agencies on 7/19/07. A preapplication meeting to be scheduled with BOGM and USEPA within the next month.

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
		717-772-2199					
<p>PADEP Northcentral Regional Office 208 West Third Street, Suite 101 Williamsport, PA 17701-6448</p> <ul style="list-style-type: none"> <li>• Bureau of Watershed Management</li> <li>• Soils &amp; Waterways Section</li> <li>• Bureau of Air Quality</li> <li>• Bureau of Land Recycling and Waste Management</li> <li>• Bureau of Water Standards and Facility Regulation</li> </ul>	<p>PADEP General Information Application</p> <p>PADEP and Dept. of Army, Corps of Engineers Joint Application for U.S. Army Corps of Engineers 404 Permit and PA Chapter 105 Water Obstruction and Encroachment Permits. The General Permit applications (GP-3 , 4, 5, and 8) are included.</p> <p>PADEP Application for Plan Approval to Construct, Modify, or Reactivate an Air Contamination Source and/or Air Cleaning Device and for a Permit to Operate.</p> <p>PADEP Residual Material Permit Applications (for alternative methods of management of solids removed from the brine during solution mining.)</p> <p>National Pollutant Discharge Elimination System (NPDES) Part I – Stormwater Permit Application (for Construction)</p>	<p>Gary Byron Assistant Regional Director 570-327-3320</p> <p>L. Richard Adams, Chief 570-327-0529</p> <p>F. Alan Sever, Chief</p> <p>David Aldenderfer Air Quality Program Manager 570-327-3745</p> <p>TBD</p> <p>Kenneth Cooper PADEP 600 Gateway Drive</p>	<p>Phone contact 5/16/07</p> <p>Letter notification 5/18/07</p> <p>Letter notification 5/18/07</p>	<p>Yes</p>	<p>PADEP schedule is accounted for by involving Agency in the process from the beginning.</p>	<p>12/31/07</p> <p>For all PADEP applications required for Phase 1 Construction.</p>	<p>Mr. Byron stated he would notify &amp; coordinate all Permit activities of all PADEP Bureaus.</p> <p>PADEP attended open house on 7/11/07.</p> <p>Initial meeting with PADEP and other involved agencies held on 7/19/07.</p> <p>As discussed at 7/19/07 meeting, separate preapplication meetings will be scheduled with each of the main permitting Bureaus and Sections</p> <p>within the next two months.</p> <p>All permitting</p>

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN  PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
	<p>NPDES Permit for New Industrial Dischargers for Facility Discharges During Operation.</p> <p>NPDES Permit Application for Small Flow Treatment Facility (SFTF) at Leaching/Compression Facility</p> <p>Act 537 Approval of Sanitary Sewage Facility Planning Module. (NPDES and Water Quality Management Permit Approvals are also required.)</p> <p>PADEP Water Quality Management Part II Permit Application for the Approval of Plans for the Sewage Treatment Package Unit.</p> <p>PADEP Water Quality Management General Permit for Small Flow Treatment Facilities</p> <p>PADEP Drinking Water Supply Testing and Approval.</p> <p>PADEP Water Quality Management Part II Permit for Industrial Applications</p> <p>PADEP Storage Tank Registrations.</p>	<p>Mansfield, PA 16933</p> <p>Dana R. Boob Chief, Permits Section, Water Management Program 570-321-6560</p>					<p>applications required for Phase 1 Construction are scheduled for submission to PADEP by Dec. 2007.</p>

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
<ul style="list-style-type: none"> <li>Water Supply Section</li> </ul>	PADEP Drinking Water Supply Testing & Approval; State Water Well Permit	Bethany Shrodo 570-327-3732					
PADEP Northwest Regional Office Permitting & Technical Services Section 230 Chestnut Street Meadville, PA 16335	PADEP Application for Plan Approval to Construct, Modify, or Reactivate an Air Contamination Source and/or Air Cleaning Device and for a Permit to Operate (at Ardell Station)  NPDES Part I – Stormwater Permit Application (for Construction)	Kelly Burch Director 814-332-6816  James Rozakis Assistant Director	Letter notification 5/24/07  Phone contact 5/21/07  Letter notification 5/24/07	Yes	PADEP schedule is accounted for by involving Agency in the process from the beginning.	12/31/07	Mr. Rozakis stated to contact him for meetings.  PADEP NW Regional Office will be included in separate preapplication meetings to be scheduled with PADEP Northcentral Regional Office.
Pennsylvania Historical and Museum Commission Bureau for Historic Preservation  Commonwealth Keystone Building, Second Floor 400 North Street Harrisburg, PA 17120-0093	Cultural Resources Approvals by the State Historic Preservation Office	Steven McDougal 717-705-4035	Phone contact 5/15/07  Letter notification 5/18/07	Yes	PHMC schedules will be accounted for by involving them in the process from the beginning.	12/31/07	Areas previously surveyed and given PHMC clearance will not require re-survey.  Phase 1 Cultural Resources Survey to be undertaken in August 2007. Final report submission to PHMC by Dec. 2007.

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Dept. of Transportation Commonwealth of Pennsylvania 715 Jordan Avenue Montoursville, PA 17754-0218	PennDOT Excess Maintenance Agreements for State Roads to be used during construction.  Approval of State road pipeline crossings.	Sandra Tosca, PE District Executive 570-368-8686	Letter notification 5/18/07			4/1/08	Applications for road crossing approvals and maintenance agreements that may be required will be submitted during the 1 <sup>st</sup> Quarter 2008.
Bureau of Forestry Department of Conservation and Natural Resources  Rachel Carson State Office Building, 7 <sup>th</sup> Floor PO Box 8552 Harrisburg, PA 17105-8552	Pennsylvania Natural Diversity Inventory Determination for plant species.  State Right-of-Way Application (if required).	Emily Boyer Environmental Review Specialist 717-787-7067	Phone contact 5/17/07  Letter notification 5/18/07	Yes	DCNR schedules will be accounted for by involving them in the process from the beginning.	12/31/07	A letter request for agency review and comment regarding PNDI will be submitted by Dec. 2007. This request will reference any previous PNDI numbers issued for the project in the 1990's.  Application for ROW approval also to be filed.
PA Fish and Boat Commission 1601 Elmerton Ave. PO Box 67000 Harrisburg, PA 17106-7000	Pennsylvania Natural Diversity Inventory Determination for aquatic species, as well as general input and approval	Doug Austen Executive Director 717-705-7801	Letter notification 5/18/07				

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Division of Environmental Services Pennsylvania Fish and Boat Commission 450 Robinson Lane Bellefonte, PA 16823		Steven Shervinskie 814-359-5147	Phone contact 5/14/07  Letter notification 5/18/07	Yes	PFBC schedules will be accounted for by involving them in the process from the beginning.	12/31/07	Mr. Shervinskie is the initial contact for Div. of Env. Services, but project may be assigned to others.  A letter request for agency review and comment regarding PNDI will be submitted by Dec. 2007.
PA Game Commission 2001 Elmerton Ave. Harrisburg, PA 17110-9797  PA Game Commission Northcentral Regional Office 1566 South Route 44 Highway PO Box 5038 Jersey Shore, PA 17740	Pennsylvania Natural Diversity Inventory Determination for wildlife species, as well as general input and approval.	Carl Roe Executive Director 717-787-4250  Peter Aiken Land Management Supervisor 570-398-4744	Letter notification 5/18/07  Phone contact 5/15/07  Letter notification 5/18/07	Yes	PGC schedules will be accounted for by involving them in the process from the beginning.	12/31/07	Mr. Aiken is the initial contact for PGC, but project may be assigned to others. PGC's primary interest is any effects on state game lands.  A letter request for agency review and comment regarding PNDI will be

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							submitted by Dec. 2007.
PA Bureau of Labor and Industry	Final Facility Plans Review and Approval.	TBD					Meeting to be scheduled at later date when design for project facilities has been finalized.

*COUNTY AGENCIES\**

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Tioga County Conservation District (TCCD) 50 Plaza Lane Wellsboro, PA 16901	Approval of NPDES Part I – Stormwater Permit Application (for Construction) in Conjunction with PADEP.  Approval of Erosion and Sedimentation Control Plans	Ralph Brugger 570-724-1801	Phone contact 5/24/07  Letter notification 5/24/07	Yes	TCCD schedule will be accounted for by involving them early in the process.	12/31/07	TCCD attended initial meeting with involved agencies on 7/19/07.
Tioga County Planning Commission Tioga County Court House 118 Main Street Wellsboro, PA 16901	Applications in compliance with the Tioga County Land Development Ordinance to be filed with the County Planning Commission for approval of the following facility components: <ul style="list-style-type: none"> <li>• Well Head Areas, the Leaching Facility, and Gas Handling Facility</li> <li>• Freshwater Intake Facility</li> <li>• Brine Evaporation Facility</li> </ul> The Unified Construction Code applies Statewide. Therefore, County also assists Townships with building, road occupancy, and driveway permitting.	Jim Weaver Planning Director 570-723-8251	Phone contact 6/18/07	Yes	TCPC schedule will be accounted for by involving them early in the process.	4/1/08	County Planning handles site plan approvals for Townships of Lawrence, Farmington, Tioga, and Clymer.  County presently drafting zoning ordinance.
Clinton County Conservation District (CCCD) 45 Cooperation Lane Mill Hall, PA 17751	Approval of NPDES Part I – Stormwater Permit Application (for Construction) in Conjunction with PADEP.  Approval of Erosion and Sedimentation Control Plans	Thomas E. Bittner Sr. Resource Conservationist 570-726-3798	Phone contact 5/24/07  Letter notification 5/24/07	Yes	Have accounted for 1 month review period as indicated by the Agency.	12/31/07	CCCD attended initial meeting with involved agencies on 7/19/07.

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN  PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Clinton County Planning Commission 232 East Main Street Lock Haven, PA 17745	Applications in compliance with the Clinton County Land Development Ordinance to be filed for approval of the new 30" looping pipeline.	Timothy L. Holladay Planning Director 570-893-4080 570-893-4122 (fax)	Phone contact 6/18/07	Yes	CCPC schedule will be accounted for by involving them early in the process.	4/1/08	County Planning also handles site plan approvals for Townships of East Keating and Leidy.

\* Officials from the State, counties and local municipalities, along with area residents, were invited to the open houses held on July 11 and 12, 2007.

Elk County Conservation District Elk County Courthouse 300 Center Street PO Box 448 Ridgeway, PA 15853	Approval of NPDES Part I Stormwater Permit Application (for Construction) in conjunction with PADEP.  Approval of Erosion & Sedimentation Control Plan	Robert Dippold District Manager 814-776-5373	Phone contact 5/24/07  Letter notification 5/24/07	Yes	Have accounted for the 1 month review period as indicated by the Agency.	12/31/07	Mr. Dippold noted from the description of the work in Elk County, it appears normal review will be required.
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*LOCAL MUNICIPALITIES\**

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Tioga Township c/o Susan A. Brown Town Secretary 35 Lakeview Lane Tioga, PA 16946  and  Eugene Haley, Zoning Officer PO Box 139 Tioga, PA 16946	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Road Occupancy Permits</li> <li>• Building Permits</li> <li>• Driveway Permits</li> <li>• Planning Board Site Plan Approvals</li> <li>• Rezoning Approval</li> </ul>	Tioga Township Board of Supervisors  Contacts:  Susan A. Brown, Secretary 570-835-5311  Eugene Haley, Zoning Officer 570-835-0201	Phone contact 6/6/07  Phone contact 6/6/07	Yes	Township schedule will be accounted for by involving them early in the process.	3/1/08	Ms. Brown and Mr. Haley to receive correspondence.
Lawrence Township c/o Susan Williams Town Secretary/Treasurer 1038 Buckwheat Hollow Road Lawrenceville, PA 16929	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Road Occupancy Permits</li> <li>• Building Permits</li> <li>• Driveway Permits</li> <li>• Planning Commission Site Plan Approvals</li> <li>• Rezoning Approval</li> </ul>	Lawrence Township Board of Supervisors  Contacts:  Susan Williams, Secretary/Treasurer 570-827-2254  Edward Deming, Supervisor/Road Master 570-827-2784	Phone contact 6/6/07  Phone contact 6/6/07	Yes  Yes	Township schedule will be accounted for by involving them early in the process.	3/1/08	Planning approval by Town Planning Commission and County Planning.
Lower Tioga River Valley Regional	Review by Commission in terms	Michael Gee	Phone contact	Yes	Commission	3/1/08	Commission

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Planning Commission (Lawrence Township, Lawrenceville Borough, Tioga Township, and Tioga Borough represented)  Michael Gee Chairman 785 Mann Hill Road Tioga, PA 16946	of Regional Planning; No Formal Approval Process	Chairman/ Tioga Supervisor  570-835-5341	6/18/07		schedule will be accounted for by involving them early in the process.		provides regional coordination for 4 local municipalities. Initial meeting held with Commission on 7/18/07.

\* Officials from the State, counties and local municipalities, along with area residents, were invited to the open houses held on July 11 and 12, 2007.

Farmington Township c/o Cherel Johnson Secretary 19 Elkorn Road Lawrenceville, PA 16929	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Road Occupancy Permits</li> <li>• Building Permits</li> <li>• Driveway Permits</li> <li>• Planning Board Site Plan Approvals</li> </ul>	Farmington Township Board of Supervisors  Contacts:  Cherel Johnson, Secretary 717-827-3016 Gary Jenkins, CEO	Phone contact 6/7/07	Yes	Township schedule will be accounted for by involving them early in the process.	4/1/08	Town follows County rules and Uniform Construction Bldg. Code; Rely on County Planning; approval by Supervisors;
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AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT  (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN  PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZATIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
		607-329-5820 (cell)  North Central Sewage Agency 570-662-2818					Contract w/Gary Jenkins for  Code enforcement. North Central Sewage Agency reviews sanitary sewage installation requirements.
Leidy Township (New 30" Looping Pipeline) c/o Danielle Cross Secretary/Treasurer 7214 Kettle Creek Rd. Renovo, PA 17764	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Road Bond Agreement</li> <li>• Building Permit</li> </ul> (Note: Site Plan Approval by County)	Leidy Township Board of Supervisors  Contacts:  Danielle Cross, Secretary 570-923-1516  Thomas Ransdorf, Supervisor/Road Master	Phone contact 6/4/07	Yes	Township schedule will be accounted for by involving them early in the process.	4/1/08	Planning approval by County; Town does not have a Planning Board.
East Keating Township (New 30" Looping Pipeline) c/o Marguerite Miller Secretary/Treasurer	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Road Bond Agreement</li> <li>• Building Permit</li> </ul> (Note: Site Plan Approval by County)	East Keating Township Board of Supervisors  Marguerite Miller, Secretary	Phone contact	Yes	Township schedule will be accounted for by involving them early in the	4/1/08	County handles all planning approvals and permitting for Town.

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
3 Miller Lane Wesport, PA 17778		570-923-2591  Stephen Miller, Jr. Supervisor 570-923-2591	6/4/07		process.		

Benezette Township (Ardell Station Upgrade) 105 School House Road PO Box 10 Benezette, PA 15821	Approvals and Permits from Township to include: <ul style="list-style-type: none"> <li>• Building Permits</li> </ul>	Benezette Township Board of Supervisors  Contacts:  Luci Walck, Secretary/ Treasurer 814-787-8811  Russ Braun, CEO 814-929-5138	Phone contact 6/6/07	Yes	Township schedule will be accounted for by involving them early in the process.	4/1/08	
Clymer Township (Sabinsville Storage Pool Piping Upgrades) c/o William Plumber Town Supervisor PO Box 7	Approvals and Permits to include: <ul style="list-style-type: none"> <li>• Building Permits</li> <li>• Road Occupancy Permit/ Bond</li> </ul>	Clymer Township Board of Supervisors  Contact:			Township schedule will be accounted for by involving them early in the process.	4/1/08	Site Planning Approval by County Planning

AGENCY	PERMIT(S)	AGENCY CONTACT/ PHONE NUMBER	INITIAL CONTACT (PRE-FILING NOTIFICATION)	AGREE TO PARTICIPATE IN PRE-FILING PROCESS	AGENCY SCHEDULES FOR FEDERAL AUTHORIZA- TIONS	PROPOSED DATE OF PERMIT/ APPLICATION SUBMITTAL	COMMENTS
Sabinsville, PA 16943		William Plumber Supervisor/Secretary 814-628-3611 814-628-5016 (fax)	Phone contact 6/11/07	Yes			

## **ATTACHMENT 2**

Provide the names and addresses of all affected landowners and certify that all affected landowners will be notified as required in § 157.6(d). (§§ 380.12(a)(4) and (c)(10)).

**(Under Separate Cover in Volume II of II)**

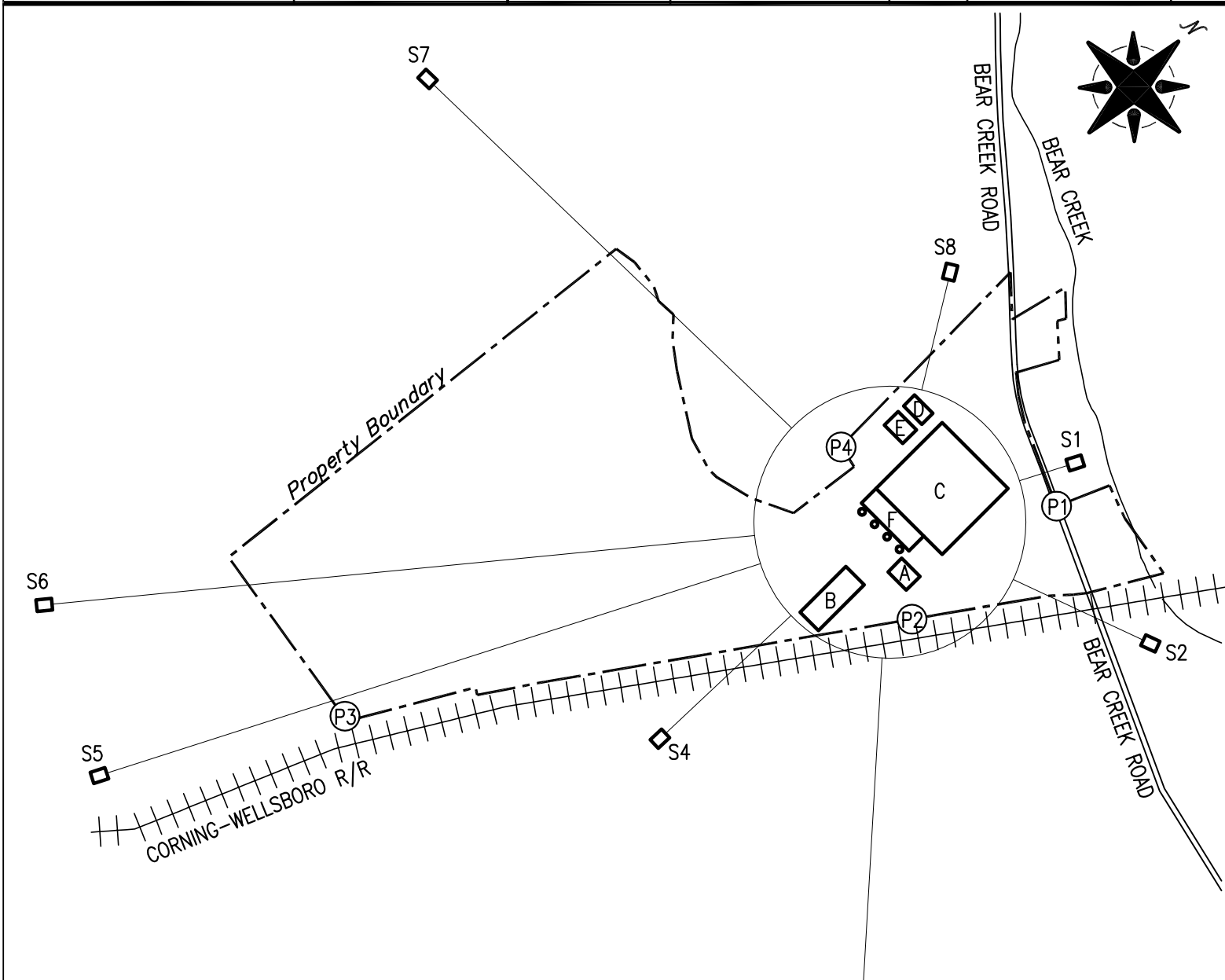
**CONTAINS PRIVILEGED INFORMATION**

## **ATTACHMENT 3**

Provide plot/site plans of compressor stations showing the location of the nearest noise-sensitive areas (NSA) within 1 mile. (§ 380.12 (c)(3,4)).

SCALE	NONE	DATE
DRAWN	JSD	7/23/07
CHECKED	RJP	-
APP. FOR BID		
APP. FOR CONST.		
TOWN:	CNTY:	

<b>Dominion Transmission, Inc.</b>			
445 West Main St. Clarksburg, West Virginia 26301 / Phone: (304) 623-8000			
FOR:		<b>STORAGE FACTORY PROJECT</b>	
TITLE:		<b>BRINE PROCESSING FACILITY BASELINE AMBIENT SOUND SURVEY</b>	
DIR:	GROUP	DWG. NO.	REV.
FILE:	PRJ/TSK:	ST	W4600
			0



**LEGEND**

- P1 = NORTH PROPERTY LINE = 950'±
- P2 = EAST PROPERTY LINE = 250'±
- P3 = SOUTH PROPERTY LINE = 1850'±
- P4 = WEST PROPERTY LINE = 250'±
- S1 = RESIDENCE 1000± (NNE)
- S2 = RESIDENCE 1250± (ENE)
- S3 = RESIDENCE 2800± (SE)
- S4 = RESIDENCE 850± (S)
- S5 = RESIDENCE 2800± (SSW)
- S6 = RESIDENCE 4100± (SW)
- S7 = RESIDENCE 2300± (W)
- S8 = RESIDENCE 1200± (NNW)

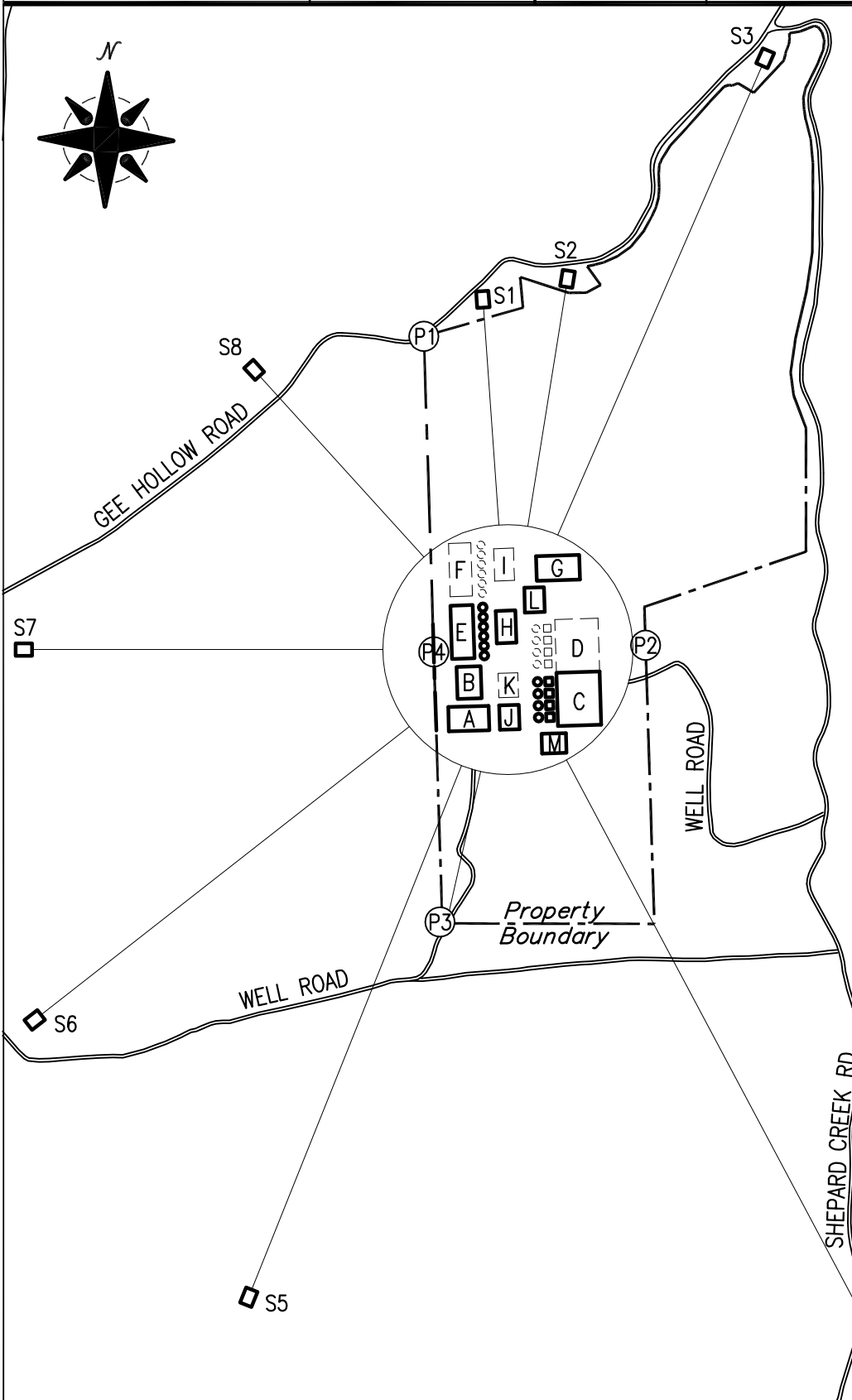
**LEGEND**

- = WET SALT PROCESS FACILITY
- = TANKS & HOLDING PONDS
- = WAREHOUSE (320'x320')
- = MAINTENANCE BUILDING (100'x60')
- = PALLET STORAGE (100'x75')
- = DRY PROCESSING FACILITY
- = EXHAUST
- = DTI PROPERTY LINE

S3

SCALE	NONE	DATE
DRAWN	JSD	7/23/07
CHECKED	RJP	-
APP. FOR BID		
APP. FOR CONST.		
TOWN:	CNTY:	

<b>Dominion Transmission, Inc.</b>		
445 West Main St. Clarksburg, West Virginia 26301 / Phone: (304) 623-8000		
FOR: <b>STORAGE FACTORY PROJECT</b>		
TITLE: <b>LEACHING &amp; COMPRESSOR (2) 4735HP FACILITY BASELINE AMBIENT SOUND SURVEY</b>		
DIR:	GROUP	DWG. NO.
FILE:	PRJ/TSK:	REV.
	<b>ST</b>	<b>W3656</b>
		<b>0</b>



**L E G E N D**

- P1 = NORTH PROPERTY LINE = 2050'±
- P2 = EAST PROPERTY LINE = 850'±
- P3 = SOUTH PROPERTY LINE = 1700'±
- P4 = WEST PROPERTY LINE = 450'±
- S1 = RESIDENCE 2150± (N)
- S2 = RESIDENCE 2250± (N)
- S3 = RESIDENCE 3800± (NNE)
- S4 = RESIDENCE 4900± (SSE)
- S5 = RESIDENCE 4200± (SSW)
- S6 = RESIDENCE 3600± (SW)
- S7 = RESIDENCE 4200± (W)
- S8 = RESIDENCE 2200± (NW)

**L E G E N D**

- A** = OFFICES
- B** = TANK FARM
- C** = COMPRESSOR BLDG
- D** = (FUTURE) COMPRESSOR BLDG
- E** = HEATERS
- F** = (FUTURE) HEATERS
- G** = COOLERS
- H** = KNOCKOUT VESSELS
- I** = (FUTURE) KNOCKOUT VESSELS
- J** = FILTER/SEPARATORS
- K** = (FUTURE) FILTER/SEPARATORS
- L** = PRESSURE REG. STATION
- M** = GAS METERING BLDG
- ◻ = INTAKE
- = EXHAUST
- - - = DTI PROPERTY LINE

**DOMINION TRANSMISSION INC.  
STORAGE FACTORY PROJECT  
Docket No. PF07-12**

## **SUMMARY OF ALTERNATIVES**

This summary provides an overview of the alternatives that were considered for the Storage Factory Project, including the Salt Cavern Gas Storage Development and associated facilities, which include the Brine Processing Facility, on-system enhancements and related transmission facilities. Draft Resource Report 1 describes the separate components of the Project.<sup>1</sup>

### **1. RANGE OF ALTERNATIVES**

Several major alternatives were considered and evaluated in the development of the Storage Factory Project. The alternatives can be grouped into the following general categories:

- The No-Action Alternative;
- Alternative locations (for the Project as a whole);
- Alternative systems and technologies;
- Alternative brine disposal methods;
- Alternative source of freshwater supply; and,
- Alternative energy sources.

In addition to review of alternative locations for the Project as a whole, DTI will assess and present information regarding alternative locations for the following Project components in Resource Report No. 10:

- The gas storage caverns;
- The leaching and gas storage operations surface facilities; and,
- The gas, freshwater, and brine pipeline routes.

### **2. NO-ACTION ALTERNATIVE**

This alternative would consist of the decision to not construct or operate the Storage Factory Project and to continue the status quo within the Eastern U.S. market area for natural gas. This alternative would have both economic and environmental consequences within this market area.

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<sup>1</sup> The proposed Project is similar to the previous Tioga Gas Storage Project that was authorized by the Commission and other federal, state and local agencies in 1998. Some of the evaluation of alternatives that is summarized in this Resource Report initially occurred during the planning for the previous Tioga Gas Storage Project. However, further refinements of both the project scope and resulting resource evaluation have occurred since that earlier proposal.

The primary economic consequence would be that the Eastern U.S. market area would be deprived of a flexible and reliable source of firm gas storage service. The Project, if built, will ensure that additional quantities of gas are available to markets when demands are high. Capability established by this Project will reduce the potential for inadequate available gas supplies for Project customers during periods of short-term peak demand, such as severe winter weather periods. The Project will also enable DTI to balance short-term fluctuations between gas supply and demand in the transmission system, to which the Project facilities will be interconnected.

Since there is the need in the Eastern U.S. market area for this incremental source of gas during peak demand periods, failure to construct the Storage Factory Project will likely result in the development of alternative gas storage schemes elsewhere in the market area. These alternative schemes could include either pipeline looping or development of other cavern storage facilities. Pipeline looping, however, would not be a feasible alternative to the proposed Project. Each proposed natural gas storage cavern would store 2.5 billion cubic feet (bcf) of working natural gas, and the site could ultimately accommodate up to eight caverns. For pipeline looping, a total of more than 2,000 miles of 24-inch diameter pipeline would be required in order to 'store' 2.5 bcf of gas as line pack, to mimic the storage capacity of one cavern.

Other cavern storage sites may be feasible in the Northeast, although the proposed site is unique in the thickness of the salt formation, which is in excess of 2,000 feet thick. Typically, bedded salt formations in the Northeast are relatively thin (100 feet or less), and thus would accommodate only smaller storage caverns. With these thinner salt formations, more land area would be required for multiple caverns to provide the same storage capacity as the Storage Factory Project. This would result in larger surface disturbance and greater environmental impact.

In summary, any alternatives to the proposed Project would have difficulty providing a similar volume and deliverability of gas.

The environmental consequences of not developing the Project site would be twofold: the first would be related to the local site conditions, and the second would be associated with development of alternatives to the Project. If the Project site is not developed, the local site conditions would likely remain the same. The existing rural/agricultural setting, which is crossed by existing natural gas pipelines, would not be modified by development of the natural gas storage facilities. The economy of the local area would remain primarily agricultural, with existing recreational usage associated with the Cowanesque and Hammond Reservoirs and other outdoor activities.

If alternative natural gas storage facilities were developed in lieu of the proposed Project, environmental impacts could be greater than if this Project was constructed. Assuming that the same capacity facility could be built, more land area and resources would be affected, because more numerous smaller-size caverns would need to be constructed. The specific impacts of alternative facilities would depend on the Project location and the resources that would be directly affected.

If the proposed Project is not constructed, the Eastern U.S. market area will not gain the advantage of having a major gas storage facility of high deliverability, which can be developed with limited environmental impacts.

### 3. ALTERNATIVE PROJECT LOCATIONS

Market studies have demonstrated the need for additional gas storage services. [See, for example, the analysis of the Federal Energy Regulatory Commission in its recent Final Rule establishing incentives for the development of additional storage infrastructure, and the studies relied upon therein. *Rate Regulation of Certain Natural Gas Storage Facilities*, Order No. 679, 115 FERC ¶61,343, at PP 8-10 (June 19, 2006).]

DTI's proposed Project will meet a portion of this incremental market need, utilizing an efficient combination of lower-deliverability storage assets, along with new high-deliverability storage capabilities. Salt caverns offer the most feasible alternative for the high-deliverability storage component of the Project. For a salt cavern storage project to be technically and economically viable and environmentally sound, the following conditions must be met:

- The Project must be located in close proximity to an existing natural gas pipeline(s);
- The Project site must contain a subsurface salt formation of sufficient thickness at a minimum depth of 2,500 ft;
- The salt formation must be free of thick shale or dolomite layers or interbeds that would affect the shape of the leached cavern;
- There must be a sufficient source of freshwater to meet leaching needs;
- The Project must have the ability to dispose of large quantities of brine; and,
- The Project must be capable of being developed without causing significant adverse environmental impacts, or generating significant public opposition.

In the Northeast, salt beds of considerable thickness are found in the Upper Silurian Syracuse Formation in parts of both Pennsylvania and New York. Over this area, net Salina salt thickness ranges from less than 200 feet to over 2,000 feet. The greatest salt thicknesses are found within the cores of anticlinal folds. There, individual salt beds are sometimes repeated by thrust faults. Also, recrystallization and flowage thickens the salt in the core of the anticlines, while it thins the salt at the flanks.

The broad Tioga anticline contains in excess of 2,000 feet of net salt. This anticline was identified through extensive review of surface and subsurface data from regional gas exploration records. Once identified, the geologic conditions were confirmed with a test hole/cored well (No. TW-501) drilled near the center of the site, during the studies for the previous NE Hub Tioga Gas Storage Project.

Investigation of potential sites throughout Pennsylvania and New York found that the proposed site had the best combination of the required conditions, compared to the other sites investigated in the region. In summary, the Tioga Site offers the following:

- Close proximity to existing DTI pipelines;

- A 2,000-foot thick salt layer capable of containing relatively large salt caverns for gas storage;
- Large freshwater sources are available nearby, with the Cowanesque, Tioga, and Hammond reservoirs;
- Very good brine disposal potential with the concurrent development of a brine processing facility, which will produce food-grade salt that will be readily transported via a nearby railroad and highways, and;
- The associated sites can be developed without significant environmental impacts and public/landowner opposition.

The other sites examined in Pennsylvania and New York have potential for gas storage, but this Project site appears to have the "ideal" combination of characteristics for the present market conditions. The other sites may have potential for future development, depending on future natural gas market conditions.

#### 4. OTHER SYSTEM ALTERNATIVES

Other system alternatives are options for storage within the existing gas producing, storage, and transmission system. This would include pipeline looping, using existing or new storage facilities that were formerly gas producing reservoirs, and existing storage facilities that were not formerly gas producing reservoirs.

Pipeline looping, as mentioned previously, is not a feasible alternative due to the length of pipeline required. In order to store 2.5 bcf of gas, more than 2,000 miles of 24-inch diameter pipeline would be required.

Using existing or new storage facilities that were formerly gas producing reservoirs, without incorporation of a high-deliverability storage component, is not a feasible alternative to meet the needs that will be addressed by the Project. Depleted gas producing reservoirs do not have as high a gas deliverability rate as a leached cavern. The porosity of the gas producing geologic formation allows volume storage; however, the withdrawal rates are much less than withdrawal rates associated with a large void such as a cavern. Therefore, the storage facilities that were formerly gas producing reservoirs are not considered reasonable alternatives to the high deliverability storage caverns.

Existing gas storage facilities that were not formerly gas producing fields do exist in other parts of the United States other than in the Northeast. These storage facilities are connected through gas pipelines to the Northeast; however, the distance the gas must travel affects the deliverability rate and response time, therefore rendering this alternative not feasible.

#### 5. BRINE DISPOSAL ALTERNATIVES

A major consideration for the development of the gas storage salt caverns and this Project is the disposal of brine resulting from the leaching operations. Three primary

techniques are available for disposal of the brine. These include construction of a brine processing plant, brine distribution to other industrial facilities, and deep injection wells.

A brine processing plant will employ evaporation and desalination techniques, resulting in the production of freshwater and salt. This option would be the most resourceful, yet the most expensive, alternative for brine disposal. Such a facility is costly to construct due to the specialized metals and materials that are required to withstand the potentially corrosive effects of brine. A brine processing plant is also expensive to operate in light of the vacuum distillation, vapor recompression, and large boilers that may be used. However, DTI has identified an opportunity to gain access to a normally high-entry-barrier salt industry through a grass roots installation in the heart of its production/consumption area. The proposed location for the evaporation plant would be adjacent to an existing railroad line, which would facilitate transportation and distribution of the salt. Salt would be readily produced, while the freshwater distillate would be pumped back to the cavern site for use in the leaching process. Additional costs and impacts associated with this option would be related to the construction of a rail spur and terminal at the Project site.

The brine distribution alternative may be less expensive than other alternatives, and a market for the brine may be available in nearby central and western New York State. This alternative would involve the transport of brine by truck/railroad or by pipeline approximately 40 to 90 miles to New York State evaporation facilities that are owned by third parties. The brine would be evaporated to form crystalline salt, which would be used for these parties' existing consumers' market throughout the Eastern U.S. A disadvantage of this alternative is that it depends upon the willingness or capacity of third parties to accept the brine. To date, DTI believes that such third parties would not participate on economically favorable terms, if at all. Secondly, the environmental impact from a new pipeline right-of-way 40 to 90 miles in length would be of greater magnitude. The pipeline option was evaluated and dismissed because of the potential environmental impacts and costs of constructing a pipeline of 40 to 90 miles into New York State.

The transportation options would be to either transport the brine by truck or by railroad to New York State. The trucking option, however, was initially dismissed because the volume of brine to be generated would be too great for an economical trucking operation. The best transportation option would be by railroad. There is an existing railroad line along the east side of the Project area (follows the west shore of Hammond Reservoir), which runs north to the Finger Lakes area of New York State. An estimated 75 standard railroad tank cars (each holding 23,000 gallons) would be required to move the anticipated daily production of brine. This option would also require the construction of a rail spur and terminal at the Project site.

The third brine disposal alternative identified was injection wells. The primary consideration for this alternative was the geological feasibility within the general Project area. The siting of brine disposal wells is primarily dependent on the permeability and porosity factors in formations at least 5,000 feet below the surface, which is well below the existing freshwater groundwater level that is used by many local residents for water supply. Within the Project area, a 450 to 500-foot thick layer of Onondaga limestone, Oriskany sandstone, Helderberg limestone, and Bass Islands dolomite, at a depth of about 5,000 feet, will provide the necessary permeability and porosity for brine injection, and is separated from freshwater groundwater levels by more than 4,500 feet. Since the

geological conditions in the Project area met the required criteria, further evaluation of the alternatives focused on potential well locations and alternative well configurations. Two disposal zones that met these criteria were identified within the Project vicinity. Both alternatives, however, would require the construction of additional pipelines, along with surface facilities associated with the injection wells.

The deep well brine disposal option presents, a number of concerns regarding the ultimate ability or capacity of the formation to accept the volume of brine. In addition, DTI would have concerns regarding the migration of brine to unintended formations. For these reasons, a phased approach with considerable monitoring, and sampling for the disposal, would have to be carried out. This option was dismissed due to the unacceptable level of risk associated with it.

Based on the overall analysis of technical feasibility, construction costs, environmental impacts, risks, and current salt market sensitivity, a brine processing facility was selected as the preferred method to dispose of the brine generated by the Project. Although this would be the most expensive alternative, the brine processing facility would also provide additional economic benefits to the Project through the sale of salt to the Northeast market. In addition, this alternative provides a beneficial use of a natural resource.

## 6. FRESHWATER (RAW WATER) SUPPLY ALTERNATIVES

A critical part of this Project involves the supply of approximately 400 gallons per minute (gpm) of freshwater to be used in leaching operations to create storage caverns in the salt. DTI has assessed possible alternative sources for the freshwater. This evaluation included looking into both surface water and groundwater.

- Groundwater

Tioga County is underlain by granular soil deposits and bedrock. Based on well data from the region, neither of these materials appears capable of the high well yields that would be necessary to supply the brining operations.

According to the Pennsylvania Water Inventory Data Files, there are historical records of approximately 1,800 water wells in Tioga County. This source indicates a typical yield of 5 and 20 gpm per well. There are 21 existing wells within a one-mile radius of the Project site. For these wells, the average yield is 10.8 gpm.

Using a reasonable estimate of a continuous average yield of 10 gpm per well in the vicinity of the Project site, approximately 40 wells spread over a large area would be required to achieve the 400 gpm supply required for cavern leaching. Such a large number of wells and associated pipelines would create a relatively significant surface impact on the environment, compared to the proposed Project approach. Also, the extraction of the required amount of freshwater would likely impact the existing groundwater regime and domestic water supply wells in the area.

For these reasons, DTI concludes that the use of groundwater as a source of freshwater for leaching is impractical. The groundwater alternative should not be considered.

However, a possible source of groundwater which will be investigated is from the valley fill aquifers located several miles from the leaching facilities and caverns.

- Surface Water

A reasonable resource for freshwater for the Project appeared to be the surface water sources in the area. These surface water sources included the Cowanesque Reservoir, Tioga Reservoir, Hammond Reservoir, Crooked Creek, Elkhorn Creek, Baldwin Creek, Cummings Creek, Crawford Run, Daly Hollow, Niles Hollow, and Norris Brook.

- Streams and Creeks

DTI first considered streams and creeks in the area. All these water bodies consist of small, low flow – oftentimes intermittent – streams, which would not serve as a reliable water source. Additionally, the extraction of this volume of water (400 gpm) from one or several streams is likely to have a significant affect on the ecological habitat and environment. Therefore, DTI concludes that these creeks and streams should not be used as a source for the freshwater required for leaching.

- New Surface Impoundment

DTI has considered creating a new surface impoundment that would be used to store freshwater for use in the leaching operations. The reservoir would likely require covering a fairly large area with water, which would create significant environmental impacts. DTI also expects that this alternative would: involve a lengthy regulatory permitting process, lengthen the proposed schedule for the Project, and increase significantly the cost (impoundment and appurtenances). For the above reasons, this alternative was also dismissed.

- Reservoirs

Three existing reservoirs: the Tioga, Hammond, and Cowanesque are located in the general area of the proposed Storage Factory Project. The closest reservoirs to the Project are Cowanesque and Hammond. The Tioga Reservoir is located east of the Hammond Reservoir.

In evaluating the reservoirs, the following conditions were noted:

The Tioga Reservoir has degraded water quality due to acidic mine drainage entering it. This poor quality water would have an adverse effect on the brine transport and brine processing operations. The reservoir is the greatest distance from the leaching operations site, thus requiring longer pipeline routes. The pipelines would also traverse a varied topography, cross several roads and utility rights-of-way and be constructed through more populated areas than routes required to reach the other reservoirs.

The Hammond Reservoir has limited inflow due to its small drainage basin. The releases from this reservoir are mixed with releases from the Tioga Reservoir to improve water quality in locations downstream. The Hammond Reservoir is heavily

used for recreational purposes. The Hammond Reservoir is located further from the Project site than the Cowanesque Reservoir, but closer than the Tioga Reservoir. The pipeline route would cross several roads and other utility rights-of-way.

The Cowanesque Reservoir is the largest of the three reservoirs. It is the closest to the Storage Factory site and has better water quality. The pipeline route for freshwater would require no road or utility crossings. The pipeline route would also avoid populated areas. Recreational use of the Cowanesque Reservoir does occur, but at a lower level than at the Hammond Reservoir. Because the Cowanesque is the largest of the reservoirs, the withdrawal would have the least impact on recreational activities.

Based on the evaluation of the three reservoirs, the Cowanesque Reservoir was selected as the preferred source of freshwater for the leaching operations.

Discussions between DTI, U.S. Army Corps of Engineers (COE), and the Susquehanna River Basin Commission (SRBC) have been initiated to address the consumptive use of freshwater from the Cowanesque Reservoir. Based on consultations to date with the SRBC, DTI understands that such water supply withdrawals would be subject to assuring that the project withdrawal would not have an adverse impact on reservoir storage available to meet downstream consumptive use compensation and flow augmentation requirements, particularly during drought periods. DTI is evaluating alternative sources, physical designs and/or operational plans and arrangements to address these issues.

## 7. ALTERNATIVE ENERGY SOURCES

Commission regulations require a discussion of the potential for accomplishing the proposed Project objectives through use of other systems, energy conservation, and the potential for using realistic energy alternatives. Since natural gas is already being supplied to users in the Northeast by DTI and other pipelines, and because the Project would support an existing energy system and provide valuable flexibility to Northeast markets, a discussion of energy alternatives to natural gas is not appropriate. Natural gas is also considered the "fuel of choice" in many Northeast markets, because of its relatively low cost and its non-polluting qualities. The only real energy alternative to the proposed Project would be the no-action alternative of not building the Project and maintaining the status quo in the Northeast natural gas markets. DTI does not view this alternative as reasonable, as noted in Section 1, above.

The Project will allow gas to be readily available to consumers during peak usage periods and during periods of supply fluctuations. This result, in turn, will likely reduce the need to construct additional pipelines to supply the peak usage periods.

## 8. TRANSMISSION FACILITIES, ON-SYSTEM ENHANCEMENTS AND SYSTEM UTILIZATION

The proposed Project will also include other system enhancements to provide additional storage capacity in the existing DTI system. This will include replacement of storage pool trunk lines at the DTI Sabinsville Storage Pool, installation of new compression equipment at the Ardell Station (Elk County, PA), and installation of 7.5 miles of new pipeline looping within an existing right-of-way in Clinton County, PA. Various options

for these enhancements were evaluated, however, such alternatives were dismissed. Because the enhancements reflected in the proposed Project will occur within existing facilities or existing rights-of-way to the maximum extent feasible, the resulting environmental impacts are considered minimal. Refer to Resource Report 1 (Sections 1.1.2.2 and 1.2.3) for greater detail regarding the proposed facilities. By contrast, the construction of new greenfield storage or transmission facilities in order to integrate the proposed salt storage caverns with the existing DTI network would cause relatively greater environmental disturbance.

## 9. SUMMARY

The proposed Project provides the best overall balance between the Project purposes and environmental and socioeconomic considerations. The proposed Project is the result of an ongoing process of agency and landowner consultations, environmental field studies and innovative engineering design, in which reasonable alternatives to the various Project components were considered and analyzed before selection of the proposed Project. This process will continue through the final design phases of the Project components to ensure that the Project meets all applicable environmental protection standards while accommodating local landowner preferences and meeting customer needs.

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