



Transcontinental Gas Pipe Line Corporation
2800 Post Oak Blvd.
Houston, TX 77056
713-215-2000

June 27, 2008

The Honorable Jim Gerlach
U.S. House of Representatives
308 Cannon House Office Building
Washington, DC 20515

Dear Congressman Gerlach:

Thank you for inviting us to meet with you and your constituents on Monday June 16, 2008 to answer questions about the Transcontinental Gas Pipe Line Corporation (Transco) proposed Sentinel Expansion Project. As you requested, an electronic copy of the presentation that was used during the meeting was forwarded to your office on June 25. That presentation includes additional slides that we were not able to show during the meeting but which provide useful information for residents. We've also included this presentation on our project website at www.williams.com/sentinel.

We acknowledge receipt of your letter dated June 26, 2008 addressed to Mr. Steve Malcolm, Williams' Chairman and Chief Executive Officer, and the questions contained in it. I have reviewed this letter with Steve, and I am answering on his behalf. As requested, answers to your questions are provided below. We have also provided answers to additional questions that were raised in the public comment period at the town hall meeting.

Question No. 1

What are the specific scientific and engineering requirements and industry standards that constitute the basis for both the temporary and permanent right-of-way requests by Williams along the project corridor?

Response No. 1

Permanent Right-of-Way. From a public safety perspective, it is prudent for all pipeline companies to provide as much separation as reasonably possible between their pipelines and the public. When we propose an expansion to our system, we must take into account and balance the essential activities related to project design and construction as well as the future maintenance of our pipelines to ensure the safety of the public and our employees.

The request for additional right-of-way space is part of our overall integrity management program. In 49 CFR 192.911 and 49 CFR 192.939 the Department of Transportation's Office of Pipeline and Hazardous Materials Safety Administration (PHMSA) established regulations in 2002 that require pipeline operators to assess the integrity of their pipeline system and perform reassessments at an interval not to exceed seven years. This frequency determination is based upon population density with the public's safety in mind.

The above referenced regulations provide various options for inspecting the pipeline. Transco has elected to utilize the least intrusive method in the Downingtown area. Inspecting a pipeline is a process that involves several steps. The initial step is typically completed using internal inspection tools (smart pigs) and does not impact the homeowner. The smart pigs are extremely accurate and allow us to determine if anomalies in the pipe wall thickness have changed since the original installation or if dents are present in the pipe.

The next step is to investigate the anomalies or dents by visually inspecting the pipeline. Excavating the pipeline, removing its coating and conducting a full, 360 degree inspection of the pipeline is the only way to complete a physical inspection. This process requires the use of large equipment to construct a ditch opening that safely allows our employees to conduct extensive investigations along and under the pipeline without fear of a ditch collapse. Since 2004 all three pipelines in District 200, which extends from York County, Pa. to Bucks County Pa.(A, B, and C lines) have been smart pigged according to our baseline assessment plan and in accordance with 49 CFR 192.921. As a result of this assessment and other routine maintenance work, we have performed over 300 excavations in District 200. Most of these excavations were to perform preventative maintenance on one of the lines, such as recoating the exterior of the pipe or investigating and correcting anomalies that our internal inspections indicated were present. Internal inspection tools are now quite precise in locating even small anomalies, and the ability to correct them early contributes to safe operation of the pipeline. We also inspect the pipelines where our lines are crossed by utilities to ensure the proper installation of the 3rd party utility line and the continued integrity of our lines. All of these activities require the availability of adequate right-of-way space to perform the work. In recent years, we have had to adjust the amount of permanent right-of-way required to maintain the pipeline in recognition to changes in population density and commercial development. We recognize this can be intrusive to landowners but it reflects the reality of operating this vital component of the national infrastructure in today's densely populated Northeastern U.S.

As shown on the attached drawing, Attachment 2, the minimum width of the excavation required to safely inspect an in-service 42-inch diameter pipeline is typically 34 feet centered over the pipeline. The minimum trench depth is 11 feet. The work space is needed for safe excavation, spoil storage, and equipment required to access and inspect the pipeline. The existing right-of-way extends only five feet to the north of our proposed replacement pipeline. This spacing is prevalent along the Downingtown Replacement and is not sufficient for this type of excavation. Therefore, our request for the additional permanent right-of-way space is to ensure that we maintain enough space between the pipeline and any future structures to safely excavate and inspect the pipeline. In some limited instances where existing structures restrict our ability to excavate the pipeline, we would use a trench shoring method to reduce the width required for safe excavation. This type of shoring technique is used for short distances of exposed pipeline to conduct activities such as tie-ins or cursory inspections. This technique is not typically used to recoat or replace segments of pipe.

Since the original installation of the first Transco pipeline in this area (early 1950s), the area surrounding the Downingtown Replacement project has been developed with homes, apartments and businesses, resulting in numerous structures abutting our northern easement line. Our desire is to prevent future structures from being constructed so close to the pipeline that future inspections are hindered. This desire is consistent with the expectation defined in 49 CFR 192.937.

A detailed explanation of the need for additional permanent easement is contained in the Transco response to the FERC data request number 38. See Attachment 1 to this letter for the FERC Data Request and the Transco response.

Temporary Work Space. According to an independent study funded by the Interstate Natural Gas Association of American (INGAA), titled *Temporary Right-of-Way Width Requirements for Pipeline Construction*, the baseline right-of-way width for safe and maneuverable construction of a pipeline is dependent on the diameter of the pipe. Large diameter pipe, 36-inch and greater, requires wider and deeper trenches, resulting in the need to expand typical construction corridors from the conventional 75 feet in width (depending on soil stability and terrain) for smaller diameter pipe.

Regarding our request for temporary work space, Transco is proposing to increase the spoil side of the construction corridor on the existing pipeline side by 15 feet to allow for proper storage of excavated soils without increasing the environmental impacts to adjacent land resources. Our Transco engineers determined that any reduction of clear work space below 90 feet would result in a potentially unsafe working environment for construction personnel. For these reasons, a reduced construction corridor of less than 90 feet is not a viable alternative to this Project.

Question No. 2

In response to concerns that data being used by Williams is outdated and no longer accurately represents development along the existing right-of-way, can you provide specific information regarding the maps and source material you have utilized to draft Williams' current proposal?

Response No. 2

The mapping provided in FERC's Environmental Assessment was developed by FERC staff according to their mapping standards. For our application, Transco obtained aerial photography created in 2006 as the basis for its route planning, field reconnaissance, alignment sheets, and Soil Erosion and Sediment Control (SESC) plans. Transco also utilized the most current mapping information and GIS data publicly available. In addition to the aerial photography, FERC and other agencies require the submission of United State Geological Survey (USGS) quadrangle maps. These maps are maintained by the USGS and may at certain times contain out of date information. Therefore, in support of our permitting and mitigation efforts, all points along the proposed pipeline replacement have been walked, topographically surveyed, and inspected by engineers to ensure the Sentinel Project has the most up to date information about these areas.

Question No. 3

How and when does Williams plan to assess specific water runoff impact on the project in environmentally sensitive areas? Further, what specific action will be taken to prevent tree loss and any other unnecessary and long-term harm to the natural resources and environment?

Response No. 3

In December 2007 Transco submitted to the FERC an assessment of environmental impact and plans for environmental mitigation in Transco's application for a Certificate of Public Convenience and Necessity. In that application Transco provided Resource Report numbers 1 through 10 as required by FERC procedure. The resource reports and sections that are particularly applicable to Question No. 3 are Resource Report 3, section 3.3, and Resource Report 7, section 7.3. More specifically:

Resource Report 3 - Vegetation and Wildlife, Section 3.3 - Upland Vegetation (Attached to this Letter as Attachment 3); and
Resource Report 7 - Soils, Section 7.3 - General Impact and Mitigation (Attached to this Letter as Attachment 4).

Furthermore, many residents expressed concern that conversion of the permanent right-of-way from forested to herbaceous cover will create new problems with storm water runoff. To address this

concern and to meet Pennsylvania Department of Environmental Protection (PADEP) storm water permit requirements, Transco is developing site-specific Soil Erosion and Sediment Control (SESC) and Post-Construction Storm Water Management (PCSM) plans for all parts of the Sentinel Project. These plans will identify Best Management Practices (BMPs) that will be used to manage storm water runoff and minimize erosion and sedimentation during of the project until final stabilization of the work area has been completed.

Plans for the Downingtown Replacement are being developed in consultation with the Chester County Conservation District (CCCD), Chester County Parks and Recreation Department (CCPRD), and PADEP. These permit applications are typically filed after submission of the FERC application. Transco has met with these agencies to consult on the best methods for prevention and mitigation of water runoff in Chester County as well as other issues. A history of meetings with these agencies is listed below.

- 16 November 2006 – interagency meeting with PADEP (Southeast Region), CCCD and others.
- 13 December 2006 – meeting with CCPRD to discuss scope of project.
- 17 January 2007 – site visit at Ludwig's Run with PADEP Southeast Region, CCCD, East Caln Township
- 13 June 2007 – meeting with CCPRD to discuss Struble Trail and Exton Park.
- 20 March 2008 – meeting with CCPRD to discuss Struble Trail and Exton Park.
- 21 May 2008 – meeting with PADEP (central office in Harrisburg) to discuss various PA permitting issues.
- 10 June 2008 – meeting with CCCD, PADEP Southeast Region to discuss SESC plans and storm water permitting for project components in Chester County (aboveground facilities and replacement project).
- 11 June 2008 – meeting with CCCD, CCWRA, CCPRD, Chester County Planning Commission, and W. Whiteland TWP to discuss various issues raised during the Environmental Assessment comment period, including issues associated with Struble Trail, Exton Park, Brandywine Creek, Ludwigs Run, local water intakes, well protection, and karst topography.
- 13 June 2008 – meeting with PADEP (central office in Harrisburg) to discuss processing of storm water discharge permit applications in Southeast Region.
- 26 June 2008 – meeting with CCCD to review preliminary draft of SESC plans for Downingtown Replacement and discuss path forward.

Transco will continue mitigation and restoration efforts after construction is complete. The PCSM plan identifies those BMPs which will be applied to manage and treat the storm water discharges after construction. This plan will outline measures to maximize groundwater infiltration, protect the structural integrity of stream banks, and protect and maintain existing and designated stream uses. The post-construction BMPs will be designed to ensure that there is no net increase in storm water runoff volume or peak rate of discharge. The SESC and PCSM plans are being developed based on the PADEP Storm water *Best Management Practices Manual*. We plan to submit the SESC plan for review by the CCCD and the application for the NPDES permit to PADEP on approximately August 8, 2008.

Question No. 4

What specific actions will Williams undertake to investigate the odor complaints from residents of Malvern Hunt?

Response No. 4

During routine operations, there should be no odor. Our operations personnel have recently verified that there are no leaks in the odorant system at Station 200. As a matter of routine operations, our personnel check the odorant system every 6 hours, 24 hours per day, 7 days per week. We invite any landowner who believes they smell a gas odor coming from our facility to call the facility and report the smell when it occurs. Having a record of when these incidents occur will help us determine whether or not we are responsible for the odor and if so, to identify the cause. If we are responsible for the odor, we will seek out the cause and take the necessary actions to contain the odorant more effectively.

Description of the Station 200 Odorant System

An odorant compound, mercaptan, is injected into the pipelines at Station 200 to odorize the gas. Transco is sensitive to the fact that residents of the Malvern Hunt subdivision have on occasion smelled the mercaptan. We take special precautions to ensure that raw odorant is not released into the atmosphere. The tanks containing odorant are double walled and all odorant piping is welded. Where practical, the fittings for stainless steel tubing in the odorant pump building are also welded, making leaks very unlikely. Additionally, the odorant pump building has a carbon filter through which exhaust air passes thereby removing any fugitive odorant.

Probable Source of the Odor

It is possible the odor mentioned by the landowner at the public meeting occurred during pipeline construction activities associated with our pipeline integrity program. During the past three years, we have performed construction activities in District 200 where pipe has been removed and replaced. To perform the pipe removal and replacement, all gas in the pipeline must be removed, which is called a blow down. In the past three years, blow downs have been performed at Station 200 several times in association with the pipeline integrity program. During blow downs, we use a masking agent to minimize the odor. Additionally, prior to any blow down our operations department tries to notify all land owners that live near Station 200 as well as the Chester County Fire Board. We believe this is the likely cause of the odor smelled and we expect such events to occasionally be necessary in the future for execution of the pipeline integrity program that is required by the Department of Transportation.

Other Issues from the Town Meeting

We are providing the following responses to several issues raised during the town meeting.

Update on Lowering the Fiber Optic Cable

As mentioned during the meeting, Level 3 Communications now owns the fiber optic cable and owns an easement that runs in parallel to Transco's right of way between lines A and B. This cable was originally installed by Williams Communications, a former subsidiary of The Williams Companies, Inc. Williams Communications obtained the easement rights to install this cable directly from the landowners in the area. Therefore, easement acquisition transactions were conducted solely between the landowners and Williams Communications. These easement acquisition rights were acquired by Level 3 along with all historical records as part of their acquisition of the Williams Communications assets and liabilities.

Contrary to the perceptions of many of the landowners at the public meeting, Transco did not receive any monetary compensation in connection with the Williams Communications acquisition of the right-of-way easement for the fiber optic cable.

We are in the process of investigating the possibility of lowering this cable in certain areas along the proposed Downingtown Replacement. Lowering the cable would eliminate or significantly reduce the need for additional permanent right-of-way on approximately 45 tracts of land along the north side of Line A. However, due to the work space required to safely install the 42-inch diameter pipeline, the amount of temporary work space will remain the same in most areas. From all indications, this option looks very promising and we expect to have a definitive answer on this possibility by mid-August 2008, followed by revised site specific drawings by September 2008. Our land agents plan to revisit with affected landowners during this process as revised drawings become available. Our commitment is to use no more land or remove no more trees than is necessary to perform the work safely.

Noise from Station 200

Recommendation numbers 26 and 27 of the FERC Environmental Assessment direct Transco to conduct a sound survey at the station property line and the nearest noise sensitive area when operated at full load prior to the start of construction and to conduct a follow-up noise survey within 60 days after placing the modified facilities at Station 200 in service. If the noise attributable to the operation of Station 200 after construction is greater than pre-construction noise levels, Transco will install noise controls to meet the pre-construction levels within one year of the in-service date. If additional controls are necessary, an additional noise survey will be conducted within 60 days of installing such noise controls.

The pre-construction noise survey is scheduled to be conducted this Fall and submitted to FERC prior to construction of the Downingtown Replacement.

Right-of-Way Amendment Agreements and Additional Pipeline Rights

Our current easement agreements with private property owners along the Downingtown Replacement contain language that refers to multiple pipeline rights. These agreements have been in place for many years. During preliminary right-of-way negotiations for this project, Transco's land agents presented amendment agreements to landowners that included language indicating that the supplemental easement would convey rights for Transco to install additional pipelines within the new permanent easement.

It was never our intention to use the new right-of-way to install additional pipelines. We regret any misunderstanding that may have been caused, and we have instructed our land agents to strike this language from the agreements before resuming negotiations to ensure clarity of our intent. Any landowner that has already executed a contract with this language included will be offered the opportunity to re-execute a new agreement.

Request to modify the Frequency of In-Line Inspection (Smart Pigging) of the Pipelines

Our response to Question No. 1 above indicated the necessity of conducting baseline assessments of our pipeline system per PHMSA regulations and additionally the guidelines established in ASME B31.8S technical paper. These technical and regulatory documents guide Transco's smart pigging program including establishing the frequency of in-line inspection (smart pig). It is Transco's intent to continue to follow and to not vary from our established pigging frequency as part of our Integrity Management Program and to meet the requirements of PHMSA's 49 CFR 192.911 regulation.

The Honorable Jim Gerlach
June 27, 2008
Page 7

We hope this additional information more fully addresses issues raised during the meeting on June 16. We enjoyed meeting you and hope that we can continue to work together to address landowner issues.

Sincerely,

By



Randall L. Barnard
Senior Vice President

cc: Steven J. Malcolm
Chairman, President and CEO
The Williams Companies, Inc.

Phillip D. Wright
President
Transcontinental Gas Pipe Line Corporation

Attachment 1 -
FERC Data Request Number 38 and Transco Response

FERC DATA REQUEST - Question 38:

Provide a more detailed analysis of the “reduced permanent ROW” alternative and identify the specific DOT requirements that may prohibit a reduced ROW in certain areas.

Response:

With respect to the Downingtown Replacement segment of the Sentinel Expansion Project, Transco has requested FERC approval to acquire an additional 20 feet of permanent easement located parallel to and to the outside of the existing 5 feet of permanent easement. The additional easement will increase the separation distance between the proposed pipeline and potential development to 25 feet. The pipe segment is located within a “high consequence area,” thereby requiring the additional easement. As a result of being in a high consequence area, Transco is required under [Title 49 CFR Part 192.935 (a) - Subpart O: General Requirements to: “...take additional measures beyond those already required by Part 192 to prevent a pipeline failure and to mitigate the consequences of a pipeline failure in a high consequence area,” and Part 192.935 (b): third party damage and outside force damage, “An operator must enhance its damage prevention program, as required under Part 192.614, with respect to a covered segment to prevent and minimize the consequences of a release due to third party damage.”]

Transco’s assessment of the existing pipelines in this area indicates that they are currently in safe operating condition. Furthermore, Transco believes that the installation of a new pipeline in this high consequence area, in accordance with Part 192 of these regulations, is an indication that the new pipeline will be placed in service in safe operating condition. Transco’s assessment also reveals that significant residential and commercial development has occurred along the proposed Downingtown Replacement since the original Mainline “A” was placed in service in 1951. The requested 20 feet of additional easement will assist in maintaining the new pipeline in safe operating condition by increasing the separation between it and ongoing development. Such separation was not required when the original pipeline was installed because the adjacent land use did not involve significant residential and commercial development. To maintain the pipelines in safe operating condition, additional separation distance from future development is prudent.

Much of the residential and commercial development adjacent to the pipelines has occurred without regard for proximity to the pipelines. For the Downingtown Replacement, Transco has determined that 19 residences have been constructed less than 25 feet from the existing Mainline “A” centerline and in some cases residences have been constructed as close as 5 feet from the pipeline. The subject residences are listed in the table provided below. Transco has consulted with both the Township and County governments and discovered that no setbacks from natural gas pipelines are required by these bodies for construction of new residences and commercial buildings. It is also clear that some developers have voluntarily placed new home construction a distance of approximately 25 feet or more from the existing Mainline A centerline. Transco finds this developer practice to be prudent and consistent with established energy industry practice and similar to the expectations discussed in Special Report 281, *Transmission Pipelines and Land Use, A Risk-Informed Approach*, Transportation Research Board 2004, which further references API Recommended Practice 1162, API 2003.

DOWNTOWN

LIST OF BUILDINGS WITHIN 25' OF PROPOSED PIPELINE CENTERLINE

NO.	MILEPOST	DISTANCE TO CENTERLINE OF PROPOSED PIPELINE	TYPE OF STRUCTURE
1	1715.40	21'	GARAGE/SHED
2	1716.72	0'	SHED
3	1716.79	20'	HOUSE
4	1716.90	22"	HOUSE
5	1716.94	23'	HOUSE
6	1717.09	18'	HOUSE
7	1717.12	23'	SHED
8	1717.12	0'	SHED
9	1717.13	14'	SHED
10	1718.18	19'	HOUSE
11	1718.25	19'	SHED
12	1718.25	22'	SHED
13	1718.68	15'	HOUSE
14	1718.80	13'	HOUSE
15	1718.93	16'	HOUSE
16	1719.00	18'	HOUSE
17	1719.10	18'	HOUSE
18	1719.21	16'	HOUSE
19	1719.50	25'	APARTMENTS (3 BLDG'S)
20	1719.77	11'	SHED
21	1719.78	13'	BUSINESS
22	1720.04	11'	HOUSE
23	1720.40	20'	HOUSE

WIND GAP

LIST OF BUILDINGS WITHIN 25' OF PROPOSED PIPELINE CENTERLINE

NO.	MILEPOST	DISTANCE TO CENTERLINE OF PROPOSED PIPELINE	TYPE OF STRUCTURE
1	37.99	0'	BARN/SHED
2	37.99	22'	SHED
3	38.71	23'	HOUSE
4	38.77	24'	HOUSE

CONYNGHAM			
LIST OF BUILDINGS WITHIN 25' OF PROPOSED PIPELINE CENTERLINE			
NO.	MILEPOST	DISTANCE TO CENTERLINE OF PROPOSED PIPELINE	TYPE OF STRUCTURE
1	27.94	25'	HOUSE
MOUNTAIN VIEW			
LIST OF BUILDINGS WITHIN 25' OF PROPOSED PIPELINE CENTERLINE			
NO.	MILEPOST	DISTANCE TO CENTERLINE OF PROPOSED PIPELINE	TYPE OF STRUCTURE
1	1783.44	0'	BARN/SHED

In addition to Transco's ongoing efforts with respect to damage prevention under 192.614, Damage Prevention Program, and 192.616, Public Awareness, Transco believes that acquisition of an additional 20 feet of permanent easement is consistent with DOT's expectations under 192.935 and will reduce the risk of a pipeline failure and help mitigate the consequences of a pipeline failure if it occurs in this high consequence area. More specifically, the additional 20 feet of permanent easement will contribute to the following goals for public safety and the public convenience:

- A. Place a greater distance between existing pipelines and 1) potential new building construction activity, 2) landscaping and hardscaping activity, 3) homeowner self performed and contractor performed utility construction and maintenance, 4) outbuilding construction, and 5) any other unplanned digging activity in close proximity to the pipelines which may occur without notice to Transco. This increase in separation reduces the risk of third party damage to the existing and proposed pipelines, decreasing the potential for threats to the pipeline integrity and the subsequent need for remediation of the pipeline. This reduction in threat potential reduces the probability of pipeline failure and reduces the maintenance cost for rehabilitating pipeline segments by reducing their frequency. Such cost reductions may be passed through to Transco customers in subsequent rate cases and may therefore be a general benefit to the public.
- B. The above mentioned activities that are separated from the Transco pipelines by the acquisition of an additional 20 feet of easement are particularly important because they often do not achieve the degree of importance in a homeowner's mind that would cause the homeowner to: 1) initiate a call to the one call system, 2) act according to the best practices described in the publication "*Common Ground Alliance (CGA) Best Practices Version 4.0*," and 3) adhere to the information delivered under Transco's Damage Prevention (192.614) and Public Awareness Programs (192.616). In particular, Transco believes its pipelines are vulnerable to homeowners failing to embrace the following best practices which appear in CGA Best Practices Version 4.0.

CGA Practice Statement 2.6: Follow All Applicable Codes, Statutes and Facility Owner/operator Standards

Practice Statement: When planning and designing the installation of new or replacements of existing underground facilities, the designer follows all federal, state/provincial and local guidelines, codes, statutes and other facility owner/operator standards.

Practice Description: The designer of a facility project typically considers only national industry codes, regulations and practices applicable to that particular facility, and not of adjacent facilities. Regulations, codes, standards and other design documents generally specify depth of cover, and horizontal and vertical clearances between adjacent facilities. However, they are not always prescriptive and can be subject to interpretation by the designer. In addition, certain codes allow exceptions to the prescribed minimum clearances, contingent upon approval between the affected facility owners/operators. The designer also has to consider the protection and temporary support of adjacent facilities, and any interference to existing cathodic protection and grounding systems. Consequently, the designer has to provide specifications on safety measures to be taken and procedures for emergency notification and repairs in the case of any damage to an adjacent facility. Designers are aware of proposed and revised standards and codes that may affect the project. – End CGA Practice Description –

The designer in this case is the homeowner or his contractor. As noted previously, there are no prescriptive measures by local governments for developers or home owners to follow with respect to setbacks from transmission pipelines. Transco must rely solely on the homeowner or contractor understanding and adhering to Transco's Damage Prevention Program as presented in public outreach. Unfortunately, landowners are often known to not exercise this level of diligence when planning backyard improvements or performing emergency fixes to residential utilities. If such improvements are extensive, a homeowner may engage a local contractor that may be more tuned into the best practices described by CGA and the Transco Damage Prevention Program. However, Transco believes the requested 20 feet of additional easement is prudent and consistent with industry standards in residential and commercial areas and for work performed by novice homeowners as well as experienced contractors.

Transco has no authority to limit developer's decisions to build up to the easement edge, no matter how close the easement line is to the pipelines. Therefore, the FERC should consider the issue of opportunity when evaluating Transco's current request for additional easement. The Sentinel Project is an opportunity for Transco and the FERC to recognize that development along the Downingtown Replacement has been extensive, that local governments have not imposed setbacks from pipelines, and that prudent measures can now be taken under this current project to increase the degree of safety by increasing the separation between Transco pipelines and ongoing development. The opportunity to acquire additional easement under FERC authority is currently available during this project application approval process and may not be available once the approval process has concluded. Failure to acquire additional easement during this process would submit the pipelines in this high consequence area to additional development and to changes in existing developments that are currently very close to existing pipelines.

As part of its Integrity Management Program, Transco is committed to maintaining a prudent separation distance between developments and its pipelines. Therefore, Transco respectfully

requests that FERC approve the requested 20 feet of additional easement along the
Downingtown Replacement.

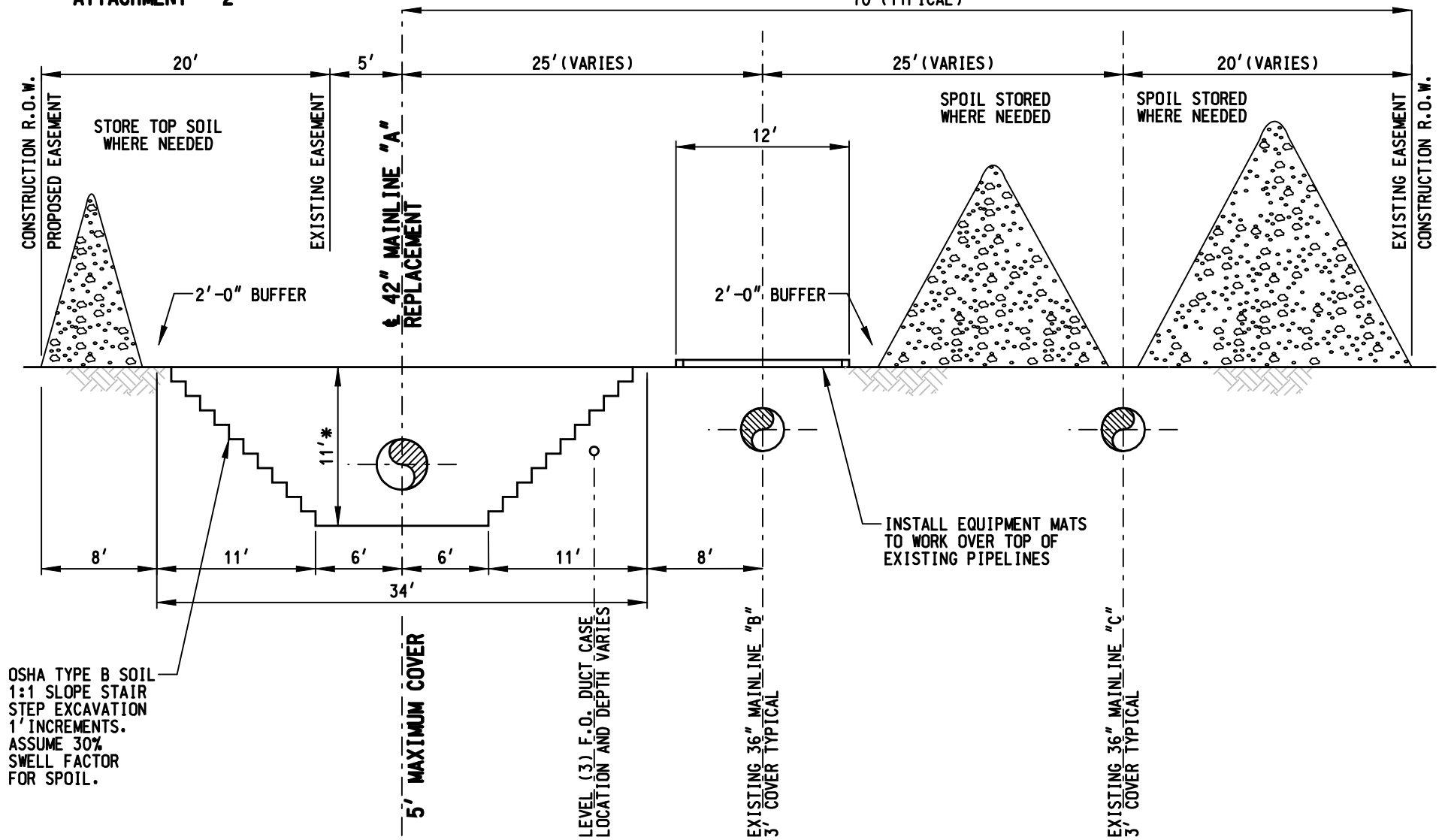
Response prepared by:

Charles Cline
Project Manager, Williams Gas Pipeline - Transco
(713) 215-2705

Attachment 2 -
Typical Anomaly Dig Site, Open Excavation Method for 30% Swell Soil

ATTACHMENT - 2

70' (TYPICAL)



OSHA TYPE B SOIL
1:1 SLOPE STAIR
STEP EXCAVATION
1' INCREMENTS.
ASSUME 30%
SWELL FACTOR
FOR SPOIL.

*FUTURE PIPELINE MAINTENANCE
REQUIRES A MINIMUM OF 2'
EXCAVATED BELOW PIPE. 11'
POTENTIAL EXCAVATION DEPTH.
DEPICTING 30% SOIL SWELL FACTOR.

TYPICAL CROSS SECTION
SCALE: 1"=10'

DRAWING NO.		REFERENCE TITLE		TRANSCONTINENTAL GAS PIPE LINE CORPORATION SENTINEL EXPANSION PROJECT DOWNTOWN 42" MAINLINE "A" REPLACEMENT TYPICAL ANOMALY DIG CHESTER COUNTY, PENNSYLVANIA						
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.	DRAWN BY: HC	DATE: 01/02/2008	ISSUED FOR BID:	SCALE: AS SHOWN
1	6/26/2008	AF	ADDED SHEET 4 OF 4. TYPICAL ANOMALY DIG	1039534	CZB		CHECKED BY: ALH	DATE: 6/26/2008	ISSUED FOR CONSTRUCTION:	
							APPROVED BY:	DATE:	DRAWING NUMBER: 26-26-70/1718.82	
							WO: 1039534		9:48:02 AM 6/26/2008	
									K:\RP17186\Mapping\Cross Section\Downtown_XSEC-1f-ALT.dgn	
									SHEET 4 OF 4	

Attachment 3 –
Resource Report 3 - Vegetation and Wildlife, Section 3.3 - Upland Vegetation

3.3. UPLAND VEGETATION

This section provides a detailed description of the upland vegetation cover types that are found along the proposed project. Wetland vegetation cover types are discussed in Resource Report 2.

3.3.1. Existing Vegetation Resources

The Pennsylvania portion of the proposed project lies on the border of two ecosystem provinces with different climates and vegetation. The Appalachian Highlands (68,100 square miles) within the Central Appalachian Broadleaf Forest-Coniferous Forest-Meadow Province lies to the north, and the New England lowlands (147,300 square miles) within the Laurentian Mixed Forest Province lies to the south. The Central Appalachian Broadleaf Forest is described as temperate, with distinct summer and winter seasons. Precipitation averages in this ecosystem are the highest in the eastern United States. The climate in the Laurentian Mixed Forest is generally cooler, with more moderate average precipitation levels. The vegetative cover types in the Pennsylvania portion of the project include agricultural, upland forest, wetland, open, and a small area of developed lands (Bailey, 1998).

The New Jersey portion of the proposed Project lies within the mid-Atlantic coastal plain, entirely within the Eastern Broadleaf Forest (Oceanic) Province of the Eastern United States, an area of approximately 104,500 square miles (Bailey, 1998). The area is described as humid temperate, with warm summers and cool winters. Rainfall occurs year-round, increasing significantly in the summer months, when evapotranspiration and moisture demands are high. The vegetative cover types in the Project area include agricultural, forest, open, and developed lands (Bailey, 1998).

3.3.1.1 Upland Forests

Surveys showed the forest land crossed by the Project in Pennsylvania to include mainly mixed hardwood habitat dominated by tulip poplar (*Liriodendron tulipifera*), American beech (*Fagus grandifolia*), red and sugar maples (*Acer rubrum* and *A. saccharum*), northern red and white oaks (*Quercus rubra* and *Q. alba*), American hornbeam (*Carpus caroliniana* – Wind Gap Loop), and shagbark hickory (*Carya ovata*) in certain locations. Understory species typically included poison ivy (*Toxicodendron radicans*), blackberry (*Rubus hispidus*), common greenbrier (*Smilax rotundifolia*), Japanese barberry (*Berberis thunbergii* – Wind Gap Loop) and some multiflora rose (*Rosa multiflora*) (ENSR 2006a, Appendix 3E).

In New Jersey, forested areas along the survey corridors and access roads for the Mountain View Loop consisted predominantly of mixed hardwood/pine forested habitat, dominated by white pine (*Pinus strobus*), eastern red cedar (*Juniperus virginiana*), white oak, red oak, flowering dogwood (*Cornus florida*), and red maple. Understory species consisted of poison ivy, multiflora rose, and common greenbrier (ENSR 2006b, Appendix 3E). A small portion of upland forest was also present along the Turnpike Loop. This area was dominated by sweetgum (*Liquidambar styraciflua*), catalpa (*Catalpa speciosa*), oaks, black cherry (*Prunus serotina*), hickories, and red maples. Understory species consisted of poison ivy, arrowwood (*Viburnum dentatum*), and Japanese honeysuckle (*Lonicera japonica*).

3.3.1.2 Agricultural and Open Lands

Agricultural areas were present along all the Downingtown Replacement, and Wind Gap and Conyngham Loops in Pennsylvania. The agricultural areas were predominantly cultivated crop fields or pastures. In New Jersey, agricultural areas were found only along the Mountain View Loop and also consisted of corn fields and pasturelands.

Open lands in Pennsylvania generally follow agricultural fields or recreational areas (e.g., golf course). Open lands in New Jersey were identified along the Turnpike Loop. These areas generally classified as low-quality due to the anthropogenic disturbance within the vicinity of the Turnpike Loop. Open land in these areas was dominated by groundsel (*Senecio* sp.), bayberry (*Myrica* sp.), cottonwood (*Populus deltoides*), panic grass (*Panicum* sp.), goldenrod (*Solidago* sp.), mugwort (*Artemesia* sp.), common reed (*Phragmites australis*), and winged sumac (*Rhus copallinum*).

3.3.1.3 Maintained Right-of-Ways

In Pennsylvania, other types of vegetation found consistently along the existing right-of-ways included various perennial grass species (Gramineae spp.), common plantain (*Plantago major*), goldenrod (*Solidago* spp.), white clover (*Trifolium repens*), common strawberry (*Fragaria virginiana*), and garlic mustard (*Alliaria petiolata*) (ENSR 2006a). In New Jersey, various perennial grass species, common plantain (*Plantago major*), English plantain (*Plantago lanceolata*), common greenbrier, red clover (*Trifolium pretense*), foxtail bristlegrass (*Setaria italica*), and blackberry (*Rubus hispidus*) were found consistently. Dominant vegetation in New Jersey along the edges of the existing mowed right-of-way (ROW) included gray birch (*Betula populifolia*) and eastern red cedar (*Juniperus virginiana*) in the overstory and dense greenbrier and poison ivy in the understory (ENSR 2006b).

3.3.2. Construction and Operation Impacts and Mitigation

Project-related impacts (acres) to agricultural, forested, open, residential, and commercial/industrial land use cover types are summarized in Table 8.2-1 in Resource Report 8. Construction of the proposed Project will require clearing and grading, which will disturb vegetation within the project footprint. Both short- and long-term impacts to vegetation are expected to result from construction and operation of the pipeline. For example, impacts on vegetation would result from the clearing of existing upland forest and other vegetation cover types within the pipeline construction corridor, including temporary extra workspaces. These impacts could include, but may not be limited to, loss of canopy cover, loss of individual plants (only significant if unique e.g. one-of-a-kind or specimen tree), potential for recruitment into disturbed area by aggressive and/or invasive plant species, long recovery time for forested areas, and temporary loss of wildlife habitat.

In order to minimize the impacts on vegetation from pipeline construction, Transco has co-located the proposed facilities with existing pipeline and utility rights-of-way to the maximum extent possible and has minimized, to the extent feasible, temporary extra workspaces within forested and forested wetland areas.

3.3.2.1 Right-of-Way Restoration

Following construction, disturbed areas will be stabilized and reseeded in accordance with the seeding recommendations of the local soil conservation district, landowner, or land managing agency. Within permanent, fenced aboveground facilities, such as valve stations, the ground will be surfaced with gravel. Trees and other woody vegetation will be allowed to re-establish naturally within the temporary pipeline construction right-of-way and extra workspaces. Where the pipeline crosses National Park Service (NPS) and PGC lands in Pennsylvania, and Green Acres properties in New Jersey, Transco will actively replant areas in order to replace mature trees and shrubs within temporary workspaces impacted by construction. Additional information regarding the proposed restoration plans is provided below, including Tables 3.3.2-2 and 3.3.2-3.

Additionally, Transco will implement restoration measures pursuant to Transco's project-specific Plan. Transco's Plan will request a variance from VII.A.5 of FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (FERC 2003a) to annually maintain the entire

permanent pipeline ROW in an herbaceous state to facilitate periodic corrosion, leak surveys, minimize encroachment upon the pipeline ROW, and ensure safe operation of the pipeline.

3.3.2.2 Issue-Specific Construction and Operation Impacts, Restoration, and Mitigation

Invasive and Exotic Plant Species

Certain stakeholder comments indicated concern regarding noxious weeds. Noxious weeds are defined as non-indigenous, invasive plant species. Such plants are monitored under the federal noxious weed program (U.S. Department of Agriculture, Animal and Plant Health Inspection Service). Invasive exotic plant species, including some found on USDA noxious weed lists, have been documented within the Project corridors in Pennsylvania and New Jersey.

State and federal agencies have expressed concern regarding invasive plant species relative to wetlands and waterbody crossings and restoration following construction through these resources. These concerns will be addressed during the state and federal wetland permit process within mitigation plans for each of the Loops/Replacement, and instructions for construction contractors specified within county-approved soil erosion and sediment control (SESC) plans.

In addition, the NPS has requested that the Restoration and Revegetation Plan for crossing NPS-administered land include a plan for addressing invasive plant species. As a result, Transco will implement an Invasive Species Monitoring Plan (discussed under Appalachian Trail Section below) in areas where invasive species comprise greater than 35% of the plant community. Transco conducted invasive plant surveys along the five loops during the peak growing season in July/August 2007 to identify specific areas where invasive plants were present and/or were a dominant component of the plant community. Results of those surveys were summarized in a report that will be provided to state agencies as part of the permitting process and to FERC prior to construction with the Implementation Plan .

Mature Trees

Tree removal is a major concern of many residents and stakeholders, particularly along the Downingtown Replacement, Wind Gap Loop, and Mountain View Loop. The proposed Project crosses the NPS Appalachian National Scenic Trail, State Gamelands 168, and several streams designated as coldwater fisheries. Further details for each Loop are discussed below. Issues related to stormwater drainage and infiltration that may be affected by tree removal are addressed in Resource Report 2.

3.3.2.3 Downingtown Replacement

As presented in Resource Report 8 (Table 8.2-1), the total acreage of tree clearing along the Downingtown Replacement is 4.68 acres, though only 0.74 acres will be removed permanently. Transco will attempt to limit tree removal in areas where mature stands exist outside of the existing right-of-way. Prior to construction, the approved limits of disturbance will be staked. If mature trees are present on the edge of the construction right-of-way and can be maintained while still providing a safe construction work area, Transco will mark these trees, and they will not be cleared. As part of Transco's wetland and riparian mitigation effort (discussed further in Resource Report 2), an approximately three to four acre area will be planted within the Stroud Preserve, which is managed by the Natural Lands Trust.

3.3.2.4 Exton Park, West Whiteland Township

West Whiteland Township has expressed concern over mature tree removal within Exton Park along the Downingtown Replacement. Although the facilities and infrastructure for this park are still in the planning and development stages, the land is designated parkland. Transco understands the Township's concern with impacts to mature trees within Exton Park and will attempt to minimize impacts to mature trees. Transco will minimize tree removal in Exton Park by replacing the existing Mainline A. The existing ROW corridor crosses predominantly agricultural lands through Exton Park, with the exception of the forested areas noted below. No extra workspaces are proposed within forested areas. If Transco were to deviate significantly from the existing ROW and install the pipeline in an entirely new alignment, the permanent easement would be 50 feet wide, and would result in greater permanent impacts to forested areas than the proposed alignment, which requires no additional permanent easement along Mainline "A". Consequently, Transco's preferred alignment minimizes impacts to forested areas within Exton Park.

Based on Transco's review of the Exton Park Master Plan Executive Summary and map (West Whiteland Township, undated), and Transco's aerial photography associated with the Downingtown Replacement alignment (FERC Mapping Supplement 4A), Transco estimates that approximately 1.34 acres of forested area will be temporarily removed during construction (Table 3.3.2-1). There will be no permanent impacts to forest within Exton Park as a result of the Downingtown Replacement.

Table 3.3.2-1				
Areas of Forested Clearing within Exton Park along Downingtown Replacement				
Forested Area Mileposts	General Location	Crossing Length (feet)	Width of Clearing (feet)	Acreage of Clearing
<i>Temporary Construction Corridor and/or Extra Workspace</i>				
1721.20-1721.33	East of Ship Road	686.4	50	0.79
1721.59-1721.68	East of Church Farm Road	475.2	50	0.55
Total Acreage of Temporary Forest Clearing				1.34

Within Exton Park, the proposed pipeline construction right-of-way will be located within and immediately adjacent to the north side of Transco’s existing pipeline right-of-way, which contains three pipelines and a fiber-optic line. By completing a same-ditch replacement of Mainline “A”, Transco will minimize impacts to vegetation and natural resources, and will not alter the existing land use (utility corridor). Where impacts to trees are unavoidable, and the trees are located within the temporary construction easement, the trees will be allowed to re-establish after construction is complete.

Exton Park currently contains a proposed 96-acre spray irrigation area that may be kept in an herbaceous state for continued agricultural use (hay or livestock feed), as well as additional areas for many new permanent aboveground facilities and improvements, such as parking lots (West Whiteland Township, Undated). Construction of the Downingtown Replacement will not result in permanent impacts to areas already maintained in an herbaceous state.

In response to the request by West Whiteland Township, Transco has proposed topsoil segregation along the entire crossing length of Exton Park. Transco would perform topsoil segregation over the proposed trench line to promote quick reestablishment of herbaceous vegetation and minimize loss or disruption of soil productivity. However, the topsoil segregation will require an additional 36 feet of workspace be added to the temporary construction right-of-way to allow for separation of the stockpiles of topsoil and subsoil. Consequently, an additional 1.67 acres (36 feet x 2019 feet) of temporary extra workspace would be required along the construction right-of-way in Exton Park to accommodate topsoil segregation. This technique also would slow construction somewhat to allow adequate time for careful removal and segregation of the topsoil before trenching. Discussion related to impact minimization techniques that would be used for stormwater and soils related to topsoil segregation is

provided in Resource Report 2 and Resource Report 7, respectively. Further discussion of The Exton Park Master Plan with respect to land use issues is provided in Resource Report 8.

3.3.2.5 State Game Lands

The proposed Wind Gap Loop crosses state-owned land managed by the PGC. The three parcels crossed are part of Pennsylvania State Game Lands 168 in Bushkill Township, Northampton County (MP 39.83 to MP 40.36). Three existing Transco pipelines cross these parcels, installed under Transco’s original license agreement dated March 11, 1971, and amended August 5, 1991, for the installation of Mainline “C”. An additional amendment to the original license is required for the installation of the proposed Wind Gap Loop (Mainline “D”). The amendment would widen the existing right-of-way by 15 feet for approximately 2788 feet across the three tracts, resulting in a total 0.96 acres of additional permanent right-of-way. Details regarding the status of the application for a license amendment from PGC are provided in Resource Report 8.

Restoration

Transco engaged in several discussions and meetings with PGC to develop an acceptable restoration plan (Transco 2006, Transco 2007, Appendix 3C). Based on Transco’s consultations with PGC, the following post-construction restoration methods will be implemented for all disturbed areas on PGC Gamelands 168 property: 1) lime and fertilize soil according to soil test recommendations and 2) plant with the seed mixtures shown in Table 3.3.2-2 (PGC 2007a).

Table 3.3.2-2 Recommended Planting Mixes and Densities for Restoration of State Game Land		
Herbaceous Cover – Within Permanent Maintained ROW		
<u>Scientific Name</u>	<u>Common Name</u>	<u>Seeding Rate (lbs/acre)</u>
<i>Trifolium incarnatum</i>	Crimson clover	20
<i>Lotus corniculatus</i>	Birdsfoot trefoil	12
<i>Trifolium repens</i>	Ladino clover	5
<i>Chasmanthium sp.</i>	Oats	50
Forested Seedlings – Outside of Permanent Maintained ROW		
<u>Scientific Name</u>	<u>Common Name</u>	<u>Percent Cover*</u>
<i>Nyssa sylvatica</i>	Black gum	5
<i>Pinus rigida</i>	Pitch pine	5
<i>Pinus strobus</i>	White pine	10
<i>Quercus illicifolia</i>	Scrub oak	4
<i>Quercus prinus</i>	Chestnut oak	33
<i>Quercus rubra</i>	Red oak	33

<i>Sassafras albidum</i>	Sassafras	10
* Note: Based on density of 800 seedlings per acre. Seedlings should be 3 to 5 years old.		

Transco will develop a landscape plan that shows the locations of proposed plantings and areas to be reseeded and reforested in accordance with the PGC's recommended plantings listed in Table 3.3.2-2. That information will be incorporated into the final SESC Plan that will be submitted to the Northeast Region PADEP for approval. PGC has agreed to take responsibility for success of the restoration provided that Transco agrees to the proposed compensatory mitigation that was discussed in a meeting on September 13, 2007 (PGC, 2007d, Appendix 3C), the details of which are discussed in further detail below.

Habitat Replacement Compensation

Regardless of the proposed restoration measures, based on a meeting between Transco and PGC on April 11, 2007 (PGC 2007c, Appendix 3C), the PGC had perceived that the Project will result in adverse impacts on forest and habitat and would like to see some form of compensatory mitigation. In May 2007, the PGC requested data from Transco regarding the number, species, and size of trees that are going to be removed as part of the proposed Wind Gap Loop portion of the Project. Transco conducted a tree inventory in June 2007 and a report was submitted to PGC in July 2007 (PGC 2007b, Appendix 3C). These data were used by PGC to make a financial assessment of the value of natural resource damages. Negotiations regarding the appropriate compensatory mitigation were discussed during a meeting in September 2007 (PGC 2007d) and are summarized below.

PGC specified that Transco must mitigate for impacts to habitat by replacing the habitat either via cash contribution or purchase of a suitable parcel. The PGC calculated the value according to the following: \$1,432 per acre x 3.86 acres x 10 years = \$55,229. The PGC explained that the \$1,432/acre is derived from mining reclamation and restoration activities involving significant grading and site restoration. According to the PGC, the monetary donation shall be placed in an escrow account and used for land acquisition to offset habitat losses stemming from the Project.

In addition, the PGC also requested erosion repair, stockpiling of trees greater than 6 inches in diameter at breast height (dbh) for a timber sale, creation of brush piles of trees and shrubs less than six inches dbh for microhabitat creation, minimization of wood chipping, and

construction timing restrictions related to hunting seasons. These details are discussed in further detail in Resource Report 8.

3.3.2.6 Appalachian Trail Crossing

Transco has consulted with the NPS and representatives of the Appalachian Mountain Club (AMC) and Appalachian Trail Conservancy (ATC) regarding the proposed pipeline crossing the Appalachian Trail (AT) along the Wind Gap Loop. Transco received approval from the NPS, AMC, and ATC for the proposed AT Crossing Plan (Appendix 8B) in February 2007. Appendix 1D of Resource Report 1 contains a summary of the consultations and Appendices 3C and 8A contain copies of correspondence.

Within National Park Service land, specifically within the vicinity of the AT, the proposed pipeline fits within the current dimensions of the existing maintained ROW. There will be no permanent tree removal associated with the Project in this area. The NPS, AMC, and ATC have recommended restoration methods for the crossing of NPS land that include active restoration of herbaceous cover and active reforestation (i.e., replanting trees) of any existing forested areas that will be cleared for construction within the temporary construction ROW. The NPS-recommended planting mixes are listed in Tables 3.3.2-3 and 3.3.2-4 below.

Transco submitted a draft restoration plan to the NPS on July 6, 2007 (Appendix 3D). The restoration plan is based on a previously-approved plan developed by Columbia Pipeline for the Line 1278 Replacement Project completed in Northampton and Pike Counties, Pennsylvania. The plan consists of the following components:

- Temporary erosion control and site stabilization BMPs;
- Site restoration measures;
- Revegetation plan;
- Long-term maintenance and monitoring plan;
- Success criteria; and
- Invasive plant control protocol.

The upland seed mixes proposed in Transco's restoration plan were approved previously for Columbia's project.

The NPS submitted the proposed restoration plan to the ATC and the AMC for comment. Transco addressed comments from the three groups in the final version, which is provided in Appendix 3D. Proposed planting details are provided in Table 3.3.2-3 and Table 3.3.2-4 below.

**Table 3.3.2-3
Recommended Seed Mix and Densities for Revegetation of National Park Service Land**

Product	Species / Type ¹		Rate Per Acre
	Scientific Name	Common Name	
Primary Seed Mix ^{2,3,4}	<i>Sorghastrum nutans</i>	Indian Grass	3 lbs. ⁵
	<i>Andropogon gerardii</i>	Big Bluestem, Niagara cultivar	4 lbs. ⁵
	<i>Schizachyrium scoparium</i>	Little Bluestem, PA ecotype	5 lbs. ⁵
	<i>Panicum virgatum</i>	Switchgrass, Shelter variety	4 lbs. ⁵
	<i>Dichanthelium clandestinum</i>	Deertongue, Northeast variety	2 lbs. ⁵
	<i>Elymus villosus</i>	Silky Wild Rye, PA ecotype	10 lbs. ^{5,7}
	<i>Lolium sp.</i>	Companion Seed Annual Wild Rye	5 lbs. ⁵
Fertilizer	--	None	NA
Crushed Limestone	--	None	NA
Mulch ^{3,6} or netting/trackifier	--	Weed-free straw or other biodegradable product	0.5 to 3 tons ³
Netting, straw blankets and/or tackifier	--	Biodegradable product	As recommended on 2.5:1 slopes or steeper

¹ Seed is available from local sources.

² Native grass seed will be planted with a no-till seed drill, or at a minimum will be lightly disked or scratched prior to broadcasting the seed. After planting, the soil surface will be lightly compacted to ensure good soil-to-seed contact.

³ On slopes steeper than 2.5:1 add manufacturer's recommended amounts of biodegradable hydroseeding mulch, staw blankets/netting, and/or tackifier. For areas with an adequate natural vegetative (grassy) filter strip between the project site and any pond, wetland, or waterway, mulch at a rate of 0.5 ton/acre. For all other areas, mulch at a rate of 3.0 ton/acre. As specified in the PA Erosion & Sedimentation Control Program Manual, the minimum width of the filter strip shall be W (ft) = 2.

⁴ NPS Approved Seed Mix (March 5, 2007).

⁵ Contractor will use only certified weed-free straw and mulch for erosion control.

⁶ Certified pure live seed (tons/acre) within 12 months of application

⁷ To provide initial vegetative cover and stabilization. The annual rye grass seed may be broadcast

Table 3.3.2-4 Recommended Planting Stock for Revegetation of National Park Service Land				
Scientific Name	Common Name	Size	Spacing	Total Plants
Tree Stratum				
<i>Acer rubrum</i>	Red Maple	3 - 4 Feet	10 feet on center	25
<i>Betula lenta</i>	Sweet birch	3 - 4 Feet	10 feet on center	29
<i>Quercus alba</i>	White oak	3 - 4 Feet	10 feet on center	25
<i>Quercus rubra</i>	Red oak	3-4 Feet	10 feet on center	26
<i>Quercus montana</i>	Chestnut oak	3 - 4 Feet	10 feet on center	26
<i>Sassafras albidum</i>	Sassafras	3 - 4 Feet	10 feet on center	25
Shrub Stratum				
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	18 inches	5 feet on center	12
<i>Vaccinium corymbosum</i>	Highbush Blueberry	18 inches	5 feet on center	15
<i>Viburnum prunifolium</i>	Blackhaw Viburnum	18 inches	5 feet on center	19
Notes: * For planning purposes. Actual planting distribution will be randomized as outlined in the response to the NPS and the AMC's request.				

Transco will follow the measures described below to aid in prevention of the spread of invasive species as a result of construction of the Wind Gap Loop, particularly within the AT area:

- Prior to the start of construction all equipment that will be used along the pipeline spread will be cleaned at the contractor yard before being brought to the ROW. This will ensure that no invasive species from foreign locations are introduced onto the ROW via construction equipment.
- During ROW clearing and site grading, construction equipment will be cleaned and inspected before leaving the exit locations of areas of extensive infestation. Extensive infestation areas are considered any area along the ROW where an invasive plant species has dominated the native vegetation or cover over 50% of the area. Water or air-pressure washing equipment should be used to ensure that all plant material is removed from construction vehicles and equipment prior to moving to a new area along the pipeline route.
- Vehicle tires and undercarriages will be checked thoroughly before leaving infested areas. Mud will be washed off and weeds, soil, seeds and vegetation material removed

from vehicles and equipment. Cleaning will not be conducted in areas that have not yet been infested with the exotic species.

- After installation of the pipeline the ROW grade and drainage will be returned to its pre-construction condition. The area will be planted with herbaceous and forest species as detailed in the NPS Property Revegetation Plan (Appendix 3D). If infestation in previously unaffected areas occurs after revegetation due to construction, Transco will first use mechanical methods of removal for this species as invasive plant species can often be controlled through frequent mowing which promotes the growth of native species.
- If chemical methods of removal (herbicides) are deemed necessary to control invasive species Transco will obtain pre-approval of any herbicides to be used from the NPS.
- All documentation of specific products, quantities applied and estimated number of acres treated will be provided to the NPS by December 31 of any monitoring year.
- As part of the restoration monitoring event, Transco will conduct annual vegetation monitoring during the peak of the growing season (i.e., July/August) for a period of three years, unless two consecutive monitoring events document stabilization or decline of invasive species below pre-construction conditions (35 percent total cover).
- During the annual vegetation monitoring event, Transco will implement invasive species control measures if invasive species are documented at a cover density exceeding pre-construction conditions (35 percent total cover), Transco will first attempt to control these species through mechanical methods, as frequent mowing promotes the growth of native species. If chemical methods are deemed necessary, Transco will coordinate with the NPS prior to implementing chemical controls.
- Following a control event, an additional monitoring event will then be conducted to monitor success of the invasive species control measures. If the populations of invasive species do not appear to be stabilizing or declining after the third monitoring season, control and monitoring events will be implemented for two additional years (for a total of five years).
- Data on percent cover of invasive species will be collected in the field during each annual monitoring event and summarized in tabular form to allow for continued comparison of the desired vegetation.

- Transco will prepare an annual report that will be submitted to the NPS in November of each year while monitoring and control events are ongoing. The report will document the results of the maintenance, monitoring and control events conducted in a given year, and activities proposed for the upcoming year. Tabular data will be shared with NPS as available following each monitoring event, if requested by NPS. Upon achieving the success criteria, or completion of five years of monitoring and control, Transco will file a final close-out report with NPS. The Restoration Plan will be amended to reflect these reporting requirements.

Transco will implement a post-construction monitoring plan to ensure that non-native, exotic, invasive plant species are not introduced into areas where they do not currently exist. Transco will develop a plan to control invasive species if the total cover of invasives exceeds pre-construction conditions (35 percent). If invasives do become abundant (greater than 35% cover) post-construction within an area not previously infested, Transco will develop a plan to control the invasives that are specific to those present within the construction area. Post-construction monitoring protocols are described in the AT Restoration Plan (Appendix 3D).

Attachment 4 -
Resource Report 7 - Soils, Section 7.3 - General Impact and Mitigation

7.3. GENERAL IMPACTS AND MITIGATION

7.3.1. Pipeline Facilities

Pipeline construction activities that have the potential to adversely affect soils and revegetation potential include clearing and grading along the right-of-way, trenching, backfilling, and restoration. Potential soil impacts include loss of soil due to water or wind erosion, especially on steep slopes or fine sandy soils; reduction of soil quality by mixing topsoil with subsoil or by bringing excess rocks to the surface; soil compaction due to traffic by heavy equipment; or disruption of surface and subsurface drainage systems. In addition, the presence of certain atypical soil conditions (e.g., highly acid soils) along the pipeline route could result in poor revegetation of the right-of-way, especially if these soils are highly disturbed. Methods to control and reduce impacts to soils and revegetation potential from construction activities are described in the following sections.

7.3.1.1. Rutting Potential and Compaction

Soil compaction and rutting are commonly encountered in finer grained soils (i.e., soils containing silt or clay) with a high moisture content. Hydric soils, organic soils, and poorly drained non-hydric soils may also be susceptible to rutting. These disturbances typically alter surface hydrology by diverting drainage or by preventing the infiltration of surface water, thereby preventing the transport of water and necessary dissolved nutrients to root structures.

Soils with the potential for rutting/compaction were identified along the five proposed loops (Tables 7.2.1.1-1, 7.2.1.2-1, 7.2.1.3-1, 7.2.1.4-1, and 7.2.1.5-1). Rutting potential is categorized by the NRCS as Severe (S), Moderate (M), and Slight (SL) and may vary based upon soil moisture content. Soils categorized with a severe rutting potential were identified across 36 percent of the proposed Project area, including 6 percent of Downtown Replacement soils; 10 percent of the Conyngham Loop soils; 40 percent of the Wind Gap Loop soils; 100 percent of the Mountain View Loop soils; and 41 percent of the Turnpike Loop soils. As previously stated, movement along the ROW by heavy equipment could result in soil compaction and/or rutting. Transco will follow recommendations as specified in accordance with the FERC Plan and coordination with landowners to mitigate for soil compaction if needed. The SESC Plans contain mitigation measures found within the Project-specific Plan to effectively minimize impacts to agricultural land along the Project. Particular attention to areas identified as having soils that are vulnerable to these types of impacts. In general, rutting and compaction of soils will be avoided or minimized through the use of timber mats, as deemed

necessary during construction. Other methods may be used as conditions dictate. Additional details regarding the proposed wetland construction crossing techniques are identified in the SESC Plans.

7.3.1.2. Erosion

Erosion is a continuing natural process that can be accelerated by human disturbance. Factors that influence the degree of erosion include soil texture, structure, length and percent of slope, vegetative cover, and rainfall or wind intensity. Soils most susceptible to water erosion are typified by bare or sparse vegetative cover, non-cohesive soil particles, low infiltration rates, and/or moderate to steep slopes. Susceptibility to wind erosion can be affected by these factors as well but is less affected by slope angles. Clearing, grading, and equipment movement can accelerate the erosion process and, without adequate protection, can result in erosion of soils into water bodies and wetlands. In addition, soil fertility and revegetation can be adversely affected by the erosion.

The NRCS lists wind and water as the main agents of erosion. Highly erodible soils along the proposed pipeline loops were identified, based on NRCS designations of highly erodible land (HEL), potentially highly erodible land (PHEL), and not highly erodible land (NHEL). PHEL consists of soils that may be highly erodible, based on the slope class of the mapping unit, but cannot be identified as highly erodible without field determinations of the length of the slope class that is crossed. For example, a soil map unit may have a slope class of 2 to 5 percent; if most of the map unit crossed actually has a slope of 2 percent, the soils would most likely not be highly erodible. However, if most of the map unit being crossed had actual slopes of 5 percent, the soils would most likely be considered highly erodible.

Of the five proposed loops, four contain soils that are classified by NRCS as HEL. The Downingtown Replacement will cross 6 percent HEL; the Conyngham Loop will cross 38 percent HEL; the Wind Gap Loop will cross 15 percent HEL; the Mountain View Loop will cross 2 percent HEL; and the Turnpike Loop will not cross any HEL.

Wind erodibility also was assessed, based on wind erodibility group (WEG) designations. A WEG is a grouping of soils that have similar surface-soil properties, including texture, organic matter content, and aggregate stability, that affect their resistance to soil blowing. Soils in WEG 1 and 2 are particularly susceptible to wind erosion and include sandy-textured soils with poor cohesion. Chester County, Pennsylvania, is the only county that contains complete WEG data, and based on these data, 100 percent of the soil series crossed

by the Downingtown Replacement in Chester County, Pennsylvania, are greater than a WEG 2, indicating that they are susceptible to erosion. Since Chester County, Pennsylvania is currently the only county with complete WEG data, a percentage of wind erodible lands across the Project was not calculated.

To minimize or avoid potential impacts due to soil erosion and sedimentation, Transco will utilize erosion and sedimentation control devices at locations identified in its SESC Plans, as deemed necessary during construction. Temporary erosion controls, including interceptor diversions and sediment filter devices (e.g., hay bales and silt fences) will be installed immediately following initial ground disturbance. As required, temporary trench breakers will be installed immediately following ditch excavation. Jute netting may be used on steep slopes to prevent erosion during restoration efforts. Temporary erosion control devices will be inspected on a regular basis and after each rainfall event of 0.5 inch, or greater, to ensure proper functioning.

Implementation of proper topsoil segregation will help ensure post-construction revegetation success, thereby minimizing the potential for long-term erosion due to lack of vegetative cover. In soils with more than 12 inches of topsoil, topsoil will be segregated to a depth of at least 12 inches. In soils with less than 12 inches of topsoil, the entire topsoil layer will be segregated. In addition, restoration and revegetation will follow the SESC Plans. Table 7.3.1.3-1 lists by MP the segments of the proposed project where topsoil segregation is planned.

MP Begin	MP End	Segregation Type ^{b/, c/}
Downingtown Loop		
1715.04	1715.65	TS1
1715.85	1715.92	TS1
1716.08	1716.15	TS1
1716.15	1717.65	TS1
1717.75	1717.76	TSW
1717.76	1718.89	TS1
1718.89	1718.91	TSW
1718.91	1719.26	TS1
1719.40	1719.70	TS1
1720.01	1720.16	TS1
1720.16	1720.18	TSW
1720.18	1720.42	TS1
1720.42	1720.60	TS2
1720.60	1720.61	TSW
1720.61	1720.62	TS2
1720.62	1720.62	TSW
1720.62	1720.67	TS2
1720.67	1720.69	TSW
1720.69	1720.90	TS2
1720.90	1720.92	TSW

Table 7.3.1.3-1 Topsoil Segregation by Milepost Segment along the Sentinel Expansion Project ^{a/}		
MP Begin	MP End	Segregation Type ^{b/, c/}
1720.92	1721.78	TS2
1721.78	1722.16	TS1
Conyngham Loop		
26.22	26.48	TS1
27.02	27.48	TS1
Wind Gap Loop		
36.99	37.13	TS1
37.13	37.18	TSW
37.45	37.45	TS1
37.47	37.67	TS1
37.66	37.83	TS1
38.08	38.28	TS1
38.31	38.38	TSW
38.42	38.54	TSW
38.74	38.77	TSW
38.86	38.86	TSW
Mountain View Loop		
1782.97	1783.33	TS2
1783.33	1783.35	TSW
1783.35	1783.40	TS2
1783.40	1783.47	TS2
1783.81	1784.03	TS2
1784.03	1784.43	TS2
1784.43	1784.45	TSW
1784.71	1784.73	TSW
1784.77	1784.86	TSW
1784.99	1785.03	TSW
1785.03	1785.17	TS2
1785.56	1785.60	TSW
1785.71	1786.04	TSW
1786.04	1786.12	TS2
1786.12	1786.18	TSW
1786.38	1786.39	TSW
1786.65	1786.66	TSW
1782.97	1783.33	TS2
1783.33	1783.35	TSW
Turnpike Loop		
1808.64	1808.95	TSW
^{a/} From the November 2007 Soil Erosion and Sediment Control Plan for the Sentinel Project and Appendix 1B ^{b/} TS1-Strip topsoil from the trench line and subsoil storage areas. Prevent topsoil and subsoil from mixing. TS2- Strip topsoil from the entire certificated construction work corridor and all associated EWS locations. TSW-Segregate the top 1 foot of topsoil from the trench line, except in areas where standing water or saturated soils are present. ^{c/} Depth of segregation to 12 inches below ground surface unless otherwise noted.		

During construction, the effectiveness of temporary erosion control devices will be monitored by Transco's Environmental Inspector(s). The effectiveness of revegetation and permanent erosion control devices will be monitored by Transco operating personnel during the long-term operation and maintenance of the pipeline system. Erosion control devices will be maintained until the right-of-way is re-vegetated successfully. Following successful revegetation of construction areas, temporary erosion control devices will be removed. Details of the SESC Plan, including revegetation and temporary erosion control devices, are included under

Appendix 7A of this report. Transco's Plan and Procedures can be found in Appendix 1C of Resource Report 1.

7.3.1.3. Acid-Producing and Low pH Soils

Acid (low pH) soil formation generally depends on specific conditions of climate, topography, vegetation, parent material, and time for soil formation (FAO, AGL, 2000). Due to internal variations in the bedrock and parent materials from which the soils form, acidic soils are heterogeneous and frequently occur in isolated areas or pockets. In Pennsylvania, none of the geologic units and subsequent soil types crossed by the Downingtown Replacement, Conyngham, or Wind Gap Loops contains significantly low pH minerals (Pennsylvania Bureau of Topographic and Geologic Survey, 2005); for further discussion, see Resource Report 6.

In New Jersey, neither the Mountain View nor Turnpike Loops cross geologic units (i.e., Coastal Plain geologic formations, such as Raritan, Magothy, Merchantville, Woodbury Clay, Englishtown Sand, Marshalltown, Navesink, Red Bank Sand, and Kirkwood; see Resource Report 6 for further discussions) identified by the New Jersey Geological Survey as containing acid-producing minerals (NJAC 7:13-3.7 and 7:13-4.1(j) 6, 2007). Nevertheless, the Mountain View Loop does intersect two soil units with low-pH soils (the Rowland series for 0.22 mile and the Royce series for 0.46 mile). Low pH soils may present affect revegetation potential but are not necessarily considered acid-producing soils. Transco will seed and add pH modifiers in accordance with approved SESC Plans for the Project. Post construction monitoring will be conducted in accordance the procedures described in the Project-specific Plan, provided in Appendix 7A.

In addition to naturally occurring low pH soils, a second form of acidic soils are "acid-producing soils." Acid-producing soils are defined as those that contain geologic deposits of iron sulfide minerals (pyrite or marcasite), which, when exposed to oxygen from the air or from surface waters, oxidize to produce sulfuric acid. Acid-producing soils prior to excavation generally have a pH of 4.0 or higher. After excavation/exposure to oxygen, these soils generally have a pH of 3.0 or lower (NJDEP, 2006). Approximately 0.26 mile of the Turnpike Loop crosses acid-producing soils, classified as Transquaking soils, which become acidic when drained and exposed to oxygen. These acid-producing soils will need proper disposal and permitting and the soils are identified and discussed on the SESC plan. Transco will comply with the approved SESC Plans for the Turnpike Loop for handling these soils.

7.3.1.4. Revegetation

Soils classified with a poor revegetation potential includes those soils that are highly acidic, soils with slopes greater than 8 percent, and soils with greater than 15 percent coarse fragments (rocks and stones) in the surface layer. Highly acidic soils create an unfavorable environment for establishment of many plant species. Steep slopes that are either poorly vegetated or exhibit no vegetative cover are susceptible to erosion by surface water flow and wind. Stony soils can reduce the efficiency and productivity of a soil by reducing infiltration (reducing moisture content and nutrient transport) and by potentially increasing surface water runoff.

About 47 percent of the soils crossed by the proposed Project have been classified as having poor revegetation potential. More specifically, the percentages of each loop classified with a poor revegetation potential are as follows: 25 percent of the Downingtown Replacement; 77 percent of the Conyngham Loop; 71 percent of the Wind Gap Loop; 56 percent of the Mountain View Loop; and 19 percent of the Turnpike Loop.

Successful restoration and revegetation is important for maintaining agricultural productivity and for protecting the underlying soil from potential damage. In accordance with the SESC Plans Transco will apply soil amendments in areas with poor revegetation potential in order to create a favorable environment for the re-establishment of vegetation.

Transco has consulted with the NRCS and local soil conservation districts to obtain recommendations for seed mixtures to be used during ROW restoration. Concurrence has been received from Luzerne County, Pennsylvania and Somerset County, New Jersey for the SESC Plans (Appendix 7C). Responses are pending from additional conservation districts affected by the Project and from the Pennsylvania Department of Environmental Protection (PADEP); review of the SESC Plan will continue through the permitting process.

7.3.1.5. Stony/Rocky Soils

Introducing stones or rocks to surface soil layers can reduce soil moisture-holding capacity, resulting in a reduction of soil productivity. Additionally, some agricultural equipment may be damaged by contact with large rocks and stones.

Data obtained from the SSURGO database indicate that approximately 73 percent of the soils crossed by the Project contain stones larger than three inches in diameter within 60 inches of the soil surface. More specifically, the percentages of each loop in which stones larger than 3 inches in diameter are expected to occur within 60 inches of the soil surface are as follows: 77

percent of the Downingtown Replacement; 100 percent of the Conyngham Loop; 91 percent of the Wind Gap Loop (the remaining 9 percent of the soils crossed do not have data in the database regarding stony/rocky soils depths); 56 percent of the Mountain View Loop; and 0 percent of the Turnpike Loop. Because of the presence of this coarse material along the proposed Project, the potential to introduce subsurface stone and rock into surface soils during construction could be significant. However, the soils along each of the pipeline loops, with the exception of Turnpike Loop, already contain significant quantities of stone and gravel in the surface layers. In accordance with Transco's Plan, Transco will remove any excess stone and rock from surface soils along the construction right-of-way, so that rock contents in soils on the right-of-way will be no higher than similar soils in adjacent off-right-of-way locations.

7.3.1.6. Hydric Soils

In total, 44 percent of the soils crossed by the entire Project are hydric. Hydric soils are defined as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register, 1994). Soils that are artificially drained or protected from flooding (e.g., by levees) are still considered hydric if the soil in its undisturbed state would meet the definition of a hydric soil. Generally, hydric soils are those soils that are poorly and very poorly drained. Thirty-eight percent of the soils crossed by the Downingtown Replacement are hydric. Sixty-four percent of the soils crossed by the Conyngham Loop are hydric. Fifty-two percent of the soils crossed by the Wind Gap Loop are hydric. Fifty-two percent of the soils crossed by the Mountain View Loop are hydric. Twenty-two percent of the soils crossed by the Turnpike Loop are hydric. Construction through soils classified as hydric will be conducted according to Transco's Plan and Procedures.

7.3.1.7. Soil Contamination

Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils. The effects of contamination typically are minor, because of the low frequency and volumes of spills and leaks. As part of the Implementation Plan prior to construction, Transco's contractor will adhere to a Spill Plan utilizing the template provided that will specify cleanup procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or other hazardous materials (collectively to be called hazardous materials hereinafter). Should a spill occur, Transco and its contractors will use the Spill Plan to contain accidental spills of any material that may contaminate soils and to ensure

that inadvertent spills of hazardous materials are cleaned up and disposed of in an appropriate manner.

Transco completed an environmental database review through Environmental First Search (First Search) of Wyckoff, New Jersey. The purpose of the review was to identify sites of potential environmental concern within or adjacent to the Project corridor. The search area extended from the Project centerline a total distance of 0.25 mile. A summary of those sites affecting groundwater is presented in Table 2.2.4-1 in Resource Report 2. Transco also conducted a search of the various Federal and state databases as recommended by the New Jersey Department of Environmental Protection (NJDEP) and PADEP. Table 7.3.1.7-1 provides a summary of impacted soils with 0.25-mile of the Project. It should be noted that the data includes a percentage of error in site proximity measurement. Additional file reviews were conducted for all of the sites under the Pennsylvania Right-To-Know Act and/or the New Jersey Open Public Records Act (OPRA) to determine if environmental concerns exist and to verify, to the extent possible, proximity to the Project.

**Table 7.3.1.7-1
Soil Contamination Sites for the Sentinel Expansion Project**

Site Name	Site Address	Database ^a	Distance from site (miles)	Notes Based on Review of Data ^c
Downingtown Replacement				
Connelly Property	350 North Pottstown Pike, West Whiteland, PA	LUST	0.08 NW	ID 0797-2093. Diesel fuel leak, no additional information provided. No file at PADEP.
Clover Croft Farm Market	Route 113, Lionville, PA	LUST	0.13 NW	ID 1151626. Unleaded gasoline leak, no additional data provided regarding the nature of the leak. No file at PADEP.
Conyngham Loop				
No Sites Identified with soil contamination.				
Wind Gap Loop				
No Sites Identified with soil contamination.				
Mountain View Loop				
Foothill Acres Nursing Home	39 E. Mountain Road, Hillsborough, NJ	State Spills	0.13 NE	ID 262834 - 550 gallon gasoline UST had leaked into the soil. No Further Action letter issued 5/29/2007.
Turnpike Loop				
Transco	3200 South Wood Avenue, Linden, NJ	ERNS	0.04 NE	8/22/91 – Unknown oil seeping from buried pipeline. ID 228648. 30 by 15 ft area of soil affected.
		State Spills	0.04 NE	Historical Mercury and PCB discharge identified during Site Investigation. ID 96-10-23-1403-54
		State Spills	0.04 NE	20 foot by 20 foot stain of # 2 fuel oil on ground surface. ID 91-8-22-1225-59
		VCP	0.04 NE	VCP executed on 10/29/2001. PCBs, Mercury, and PAH contamination exists at the site. ID 96-10-23-1403-54.
(Unknown)	Mile Marker 97.2 off Sno Road, NJTP, Linden, NJ	State Spills	0.05 NE	5/19/1993 - Petroleum contaminated soil uncovered by consultant. Emergency response personnel contained the release. ID 93-5-19-1150-44.
Cytec	3401 Tremley Point Road, Linden, NJ	State Spills	0.05 SE	Oil like substance identified within excavation. ID 91-10-23-0925-47.
		LUST, State Spills	0.05 SE	Fuel oil contaminated soil identified. ID 90-1-1607-56. No Further Action letter issued October 7, 1992.
		State Sites	0.05 SE	Sites with known source(s) of contamination. ID NJD002173144.
		State Sites	0.05 SE	Sites with known source(s) of contamination. ID NJD981178049.
		State Sites	0.05 SE	Sites with known on site source(s) of contamination. ID 023280.
Mobil Oil	South Wood Avenue, Linden, NJ	ERNS	0.18 SE	Four separate emergency response events in 1990. UST overflow spilling 200 gallons of oily water (release contained, groundwater not impacted), UST overflow spilling 500 gallons of oily water (vacuum truck used to contain release), UST overflow spilling 60 gallons of gasoline (sorbents used to contain), and AST open valve spilling 30 gallons of gasoline spill (vehicle release - containerized with solvents). IDs 172256, 172255, 181295, and 168291.
				Unknown volume of gasoline perking out of ground near loading rack. Discharge to ground and Marshes Creek. ID 91-3-29-1129-32.
				Unknown volume of gasoline perking out of ground near loading rack. Discharge to ground. ID 91-3-25-0845-04. Recovery system being installed.
				2 million gallon bulk tank had three holes. Investigation under way.
				200 gallons of gasoline and oil in water spilled. ID 90-07-17-1335
				Unknown volume of toluene spilled on ground. ID 90-02-08-1417.
Unknown volume of #2 fuel oil spilled. ID 90-01-12-1425.				
(none of the incidents are likely to affect the Project based on response by Mobil)				

Notes:

^a Database IDs:

Brownfields	State Database of Sites Contained in the NJ VCP and Sites Listed on the NJ Brownfields Site List
ERNS	Database of Emergency Response Actions
FED	Federal IC/EC, Brownfield Management System
LUST	State Database of Leaking Underground Storage Tanks
NPL	Confirmed and Proposed Superfund Sites on the National Priorities List
RCRA GEN	Facilities that Generate or Transport Hazardous Waste or Meet other RCRA Requirements
State Sites	Database of Known Contaminated Sites in New Jersey
State Spills	Database of New Jersey Emergency Response Actions and Spill Releases
UST	State Database of Underground Storage Tanks UST/AST
VCP	State Database of Sites in Voluntary Cleanup Program
PCBs	Polychlorinated Biphenyls
PAHs	Polycyclic Aromatic Hydrocarbons

^a Non GC = Non-Geocoded

^b Notes Based on Review of Data – Summary of site specific information obtained from First Search and available agency files

Downingtown Replacement

Two sites which have adversely affected the soil were identified within 0.25 mile of the proposed Downingtown Replacement. These sites were identified in the Leaking Underground Storage Tank (LUST) database. A brief description of each potential hazard including proposed action plans is provided below.

The first site, the Connelly Property, is approximately 422 feet (0.08 mile) northwest of the proposed Downingtown Replacement and is a residential property registered with the LUST database. The grade, as calculated from the Downingtown, Pennsylvania 7.5 Minute, USGS Topographic Quadrangle is approximately 5 percent and slopes to the southwest towards the Project ROW. Based on the grade and slope direction, the proposed pipeline may intersect contaminated soil. Transco will use its BMPs (see SESC Plans) and if contaminated soils or water are encountered the Unanticipated Discovery of Contamination Plan (see Resource Report 7, Appendix 7B) will be implemented. Transco requested a File Review with the PADEP to determine the status of the site with regard to groundwater contamination. PADEP indicated it has no files for this site (PADEP, 2007; Appendix 2A)

The second site identified as a potential soil hazard is the Clover Croft Farm Market located approximately 686 feet northwest of the intersection of the proposed loop and Route 113 near Lionville, Pennsylvania. The site is a commercial property and is registered with the LUST database. The grade, as calculated from the Downingtown, Pennsylvania 7.5 Minute, USGS Topographic Quadrangle is approximately 10 percent and slopes to the northwest, away from the proposed pipeline. Therefore, it is unlikely that any impacts from the leaking UST will impact the proposed Project. Transco will use its Unanticipated Discovery of Contamination Plan (see Resource Report 7, Appendix 7B) and BMPs will be implemented if contaminated

soils or water are encountered. Transco requested a File Review with the PADEP to determine the status of the site with regard to groundwater contamination. PADEP indicated it has no files for this site (PADEP, 2007, Appendix 2A).

The environmental database review identified other sites of environmental concern within 0.25 mile of the proposed pipeline. However, details provided in the database search report (i.e. NFA approved, no impact to soils, etc.) eliminated them as potential concerns with respect to the Project.

Conyngham Loop

There are no known sites with potential soil contamination identified within 0.25 mile of the proposed Conyngham Loop.

Wind Gap Loop

Three sites, the Bender residential property, Silver Line Trucking, Incorporated, and Charlie's Mobil Mart occur within 0.25-mile of the Wind Gap Loop. However, they are discussed in Section 2.2.3 of Resource Report 2 as they have adversely affected groundwater near the Wind Gap Loop.

Mountain View Loop

Three sites were identified within 0.25 mile of the proposed Mountain View Loop with the potential for soil contamination. Since two of the sites, Amwell Road Groundwater Contamination site and the Belle Mead Depot, have adversely affected groundwater near the Mountain View Loop, they are discussed in Section 2.2.3 of Resource Report 2. The third site, the Foothill Acres Nursing Home, is located less than 700 feet northeast of the proposed loop and topography in the vicinity of this site is relatively flat. The Foothill Acres Nursing Home site contamination was reported to originate from a 550 gallon gasoline underground storage tank. A No Further Action letter was issued on May 29, 2007, by the NJDEP which stated that a groundwater investigation was not required for the site and that post-remedial soil sampling results were below cleanup criteria developed for the site.

Transco does not anticipate intersecting soil contamination related to these sites occurring within 0.25-mile of the Project; however, the Unanticipated Discovery of Contamination Plan will address impacted soil and/or groundwater encountered during construction.

Turnpike Loop

Seven facilities, with 24 individual incidents, were identified as potentially contributing to soil and groundwater contamination within 0.25 mile of the proposed Turnpike Loop.

Of the 1.17-mile total proposed loop, approximately 0.94 mile will be located within the ConocoPhillips Bayway Refinery, between M.P. 1808.42 (northern boundary of South Wood Avenue) and M.P. 1809.36 (termination of loop within Bayway Refinery IAOC E1 Clean Fill Area). Based on preliminary discussions with ConocoPhillips, the proposed Project will be in an area of known historical fill and operations that contain compounds of concern, outlined in Table 7.3.1.7-2 and Table 7.3.1.7-3, with concentrations above the current NJDEP clean-up criteria, or the Non-residential Direct Contact Soil Cleanup Criteria (NRDCSCC), for soil and groundwater.

During the proposed geotechnical investigations for the Project, tentatively scheduled for late 2007, environmental samples will be obtained and analyzed for the presence of compounds of concern above the current NJDEP NRDCSCC standards. The analytical information will be used to develop a job-specific waste management plan, known as a Construction Maintenance/Emergency Repair Protocol (CMERP) work plan. The CMERP work plan (protocol provided in Appendix 2B) will be developed by ExxonMobil, the principle responsible party (PRP) responsible for much of the remediation at the ConocoPhillips Bayway Refinery. According to the NJDEP Site Remediation and Waste Management Project Manager for the Bayway Refinery, under ExxonMobil's Administrative Consent Order with the State of New Jersey, construction of the Project may be deemed a remedial action by the NJDEP. Therefore, the CMERP work plan may be more comprehensive than the CMERP protocol that was first developed by ExxonMobil in the early 1990's. Transco submitted the necessary Turnpike Loop Project description to ConocoPhillips in June 2007, to initiate the CMERP process. The CMERP will be submitted to the NJDEP case manager for review by ExxonMobil, pursuant to the NJDEP Technical Requirements (NJDEP, 2005b) and Grace Period Rule. Communication with the parties involved in the CMERP process is ongoing, and Transco will submit the final CMERP to the FERC once it is approved by the NJDEP.

The CMERP will be used by Transco's contractor to develop a job specific waste management plan and a site specific Health and Safety Plan (HASP). The contractor will assess this information and provide personal protective equipment and work zone monitoring for its workers during excavation and construction activities, as site-specific conditions dictate. The contractor may be required to utilize the services of a certified industrial hygienist (CIH) to review the information provided by Transco and provide an appropriate HASP.

Based on preliminary discussions with ConocoPhillips, disturbed soils that do not exhibit strong petroleum odors or contain visible petroleum product can be reused as backfill material in accordance with the a NJDEP-approved soil reuse management plan. Soils that exhibit visual product and/or strong petroleum odors will not be reused as backfill. "Visible product" is defined as hydrocarbon that flows freely from the soil.

Although there is a low potential for contaminated soils to exist in the work area, the following contingency plan will be followed in the event contaminated soils are encountered:

- Contractor will notify a Transco representative immediately;
- Excavated and impacted soils will be placed on 6 mil plastic;
- All impacted soils will be contained so as not to cause a discharge to surface water;
- Impacted soils will be covered at the end of the work day;
- Transco will notify ConocoPhillips representatives; and
- Proper characterization and disposal will be arranged by responsible parties.

File reviews were conducted for the Bayway Refinery at the NJDEP offices to clarify the potential areas of environmental concern identified along the Turnpike Loop during the environmental database review. At the instruction of ConocoPhillips, the file review focused on two areas: the Clean Fill Area located northeast of the Turnpike Loop on Block 522 Lot 1; and, the former Sludge Operable Unit located within and west of the Turnpike Loop on Block 521 Lot 1. Both areas listed contain soil and groundwater contaminants above regulatory cleanup criteria (TRC Raviv, 2004). The following is a general summary of contaminated soils at the Refinery. Section 2.2.3 of Resource Report 2 discusses groundwater contamination at the site.

Clean Fill Area within the Bayway Refinery

The Clean Fill Area is located to the north of Piles Creek and extends northward to the northern property boundary of Block 522, Lot 1. The eastern extent of the area is defined by the New Jersey Turnpike and the western extent is defined by the existing PSE&G utility easement (Block 521, Lot 1). Within the Clean Fill Area, contaminant concentrations were detected in soil, groundwater, and sediment above NJDEP criteria. Dissolved concentrations of Volatile Organic Chemicals (VOC), Semi-Volatile Organic Chemicals (SVOC), pesticides, and metals were identified in soil samples above NJDEP Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC). No instance of free product (i.e. hydrocarbons) in the soil within the Clean Fill Area was identified during the file review. The portions of the proposed Turnpike Loop that are

located within the Clean Fill Area include an area from approximately MP 1809.00 to MP 1809.36. In addition, data collected during the file review indicates that engineering controls have been proposed for subsurface soils in order to prevent migration of the contaminants.

Soil samples were collected from the Clean Fill Area; however, collection dates could not be identified during the file review. Soil contaminant concentrations were compared to the NJDEP NRDCSCC standards. Where multiple data points exist for one compound at the same depth, data is presented as a range of concentrations.

Table 7.3.1.7-2			
Soil Analytical Results – Clean Fill Area			
Contaminant	Sample Depth (Feet bgs)	Concentration^a (ppm)	NRDCSCC^b (ppm)
Benzene	3.0 to 3.5	86	13
	4.0 to 6.0	16.8	
Ethylbenzene	3.0 to 3.5	310	1000
Xylene (Total)	3.0 to 3.5	1200	1000
Benzo(a)anthracene	4.0 to 6.0	5.9	4
Benzo(a)pyrene	0.0 to 2.0	1.1 to 2.9	0.66
	2.0 to 4.0	0.85	
	4.0 to 6.0	4.9	
	6.5 to 7.0	0.77	
Benzo(b)fluoranthene	0.0 to 2.0	5.4	4
	4.0 to 6.0	9.7	
Benzo(k)fluoranthene	0.0 to 2.0	5.4	4
Dibenzo(a,h)anthracene	0.0 to 2.0	1.2	0.66
	4.0 to 6.0	1.0	
2,4-Dimethylphenol	3.0 to 3.5	210	10
Naphthalene	3.0 to 3.5	730	4,200
Lead	0.0 to 2.0	959 to 1740	600
	2.0 to 4.0	635	

Table 7.3.1.7-2			
Soil Analytical Results – Clean Fill Area			
Contaminant	Sample Depth (Feet bgs)	Concentration^a (ppm)	NRDCSCC^b (ppm)
	3.0 to 3.5	674 to 62,600	
	4.0 to 6.0	1110 to 7570	
	6.0 to 8.0	838 to 1290	
	8.0 to 10.0	661 to 1220	
Arsenic	0.0 to 0.5	37	20
	3.0 to 3.5	27	
	4.0 to 6.0	24 to 124	
	6.5 to 7.0	26 to 36	
TPH (QAM25)	2.0 to 4.0	10,700	10,000
	3.0 to 3.5	91,100	
	6.5 to 7.0	13,000 to 14,600	
	8.0 to 10.0	12,700	
TPH (418.1)	0.0 to 4.0	16,000	10,000
	8.0 to 10.0	11,000	
Notes:			
^a Results obtained from TRC Raviv Associates, Inc. June 2004 Remediation Investigation Report (TRC Raviv,2004)			
^b Bold criteria indicate an exceedance of a specific compound.			
ppm - Parts Per Million			
bgs – Below Ground Surface			

Sludge Lagoon Operable Unit Boundary of the Bayway Refinery

Based on data obtained from the NJDEP file review, the proposed Turnpike Loop is located partially within the PSE&G right-of-way (Block 532, Lot 1). Data suggests that the 100 foot wide Sludge Lagoon Operable Unit Boundary (SLOUB) is located within the PSE&G property as well. Located immediately East of the SLOUB is the Sludge Lagoon Operable Unit

(SLOU). Neither the SLOU nor SLOUB are currently operable. Engineering controls (i.e., an earthen cap) were installed over the SLOU and the outfall ditch within the PSE&G property was filled.

Discharges of various materials occurred in the SLOUB, specifically within the outfall ditch from 1961 through 1964. As a result of these discharges and seepage from the SLOU, hydrocarbon contamination exists within the SLOUB. The removal of 24,000 cubic yards of soil was conducted in the northern portion of the PSE&G property in August 2000, August 2002, and November 2002. Excavated material was placed beneath the SLOU cap; however, contaminated soil and groundwater are still present within the SLOUB.

Throughout the various phases of Remedial Investigation, soil borings and monitoring wells have been installed and subcontractors have collected environmental samples (TRC Raviv, 2004). Within the SLOUB, contaminant concentrations were detected in soil and groundwater above NJDEP RDCSCC cleanup criteria. In addition, free product measurements were collected from groundwater monitoring wells. Concentrations of VOCs, SVOCs, pesticides and metals were identified in soil samples above NJDEP RDCSCC limits. Based on the format in which data were presented in the April 2004 Remedial Investigation Report, exceedance factors rather than actual analytical data, the data has been converted to concentrations within a media and compared against RDCSCC for the purpose of this report. Table 7.3.1.7-3 includes contaminants that were identified in soil collected from the area of the former SLOU. The investigation compared contaminant concentrations to NJDEP cleanup standards for residential soils. To better understand potential impacts of existing soil and groundwater quality with respect to the proposed Project, Transco may conduct further evaluation of existing data. The portions of the proposed Turnpike Loop that is located within the former SLOU boundary include the proposed pipeline extending from approximately MP 1808.41 to MP 1808.90 and approximately 800 linear feet of access road. Although it is not clear to the exact location of the SLOU boundary in relation to the proposed Turnpike Loop ROW, it does not appear that delineation of all contaminants has been achieved. Therefore, the possibility exists that pipeline construction activities may result in the uncovering of contaminated soil and groundwater.

Soil samples were collected from the area of the former SLOU between August 2000 and June 2003. Where multiple data points exist for one compound at the same depth, data is presented as a range of concentrations. All results are presented in parts per million (ppm).

Table 7.3.1.7-3			
Soil Analytical Results – Sludge Lagoon Operable Unit			
Compound	Sample Depth (bgs)	Concentration Range^a	RDCSCC^b

**Table 7.3.1.7-3
Soil Analytical Results – Sludge Lagoon Operable Unit**

Compound	Sample Depth (bgs)	Concentration Range^a	RDCSCC^b
2,4-Dimehtylphenol	4-6	3850	1100
4,4'-DDD	2-4	23.1	3
	4-6	17.1	
	6-8	6	
Arsenic	2-4	42	20
	4-6	42 to 106	
	6-8	34 to 72	
Barium	0-2	1050	700
	4-6	700 to 1680	
	6-8	2800 to 5110	
Benzene	2-4	3.6	3
	4-6	5.10 to 48	
	6-8	6.90 to 7.50	
Benzo(a)anthracene	0-2	3.51	0.9
	2-4	1.44 to 2.16	
	4-6	1.89 to 7.92	
Benzo(a)pyrene	6-8	1.98 to 4.50	0.66
	0-2	0.92 to 4.49	
	2-4	0.73 to 2.18	
Benzo(b)fluoranthene	4-6	1.32 to 5.61	0.9
	6-8	1.91 to 4.09	
	0-2	3.33	
Benzo(k)fluoranthene	2-4	2.07	0.9
	4-6	1.53 to 4.23	
	6-8	1.53 to 3.33	
Chlorobenzene	0-2	1.71	37
	2-4	1.71	
	4-6	1.17 to 2.61	
Chrysene	6-8	1.44 to 2.16	9
	4-6	407.00	
	6-8	77.70 to 99.90	
Copper	4-6	12.60	600
	6-8	14.40	
Dibenzo(a,h)anthracene	2-4	660.00	0.66
	6-8	660.00	
	0-2	1.12	
Indeno(1,2,3-cd)pyrenene	4-6	0.99	0.9
	6-8	0.92	
	0-2	2.88	
Lead	2-4	1.17	400
	4-6	1.89	
	6-8	1.17 to 1.89	
TPH-QAM25	0-2	640.00	NA
	2-4	1040.00	
	4-6	560 to 3720	
Vanadiu	6-8	1520 to 1720	370
	2-4	19000	
	4-6	12,000 to 35,000	
Xylenes (Total)	6-8	30,000 to 42,000	410
	2-4	518	
Xylenes (Total)	4-6	779	410

Notes:

^a Results obtained from TRC Raviv Associates, Inc. June 2004 Remediation Investigation Report (TRC Raviv,2004)

^b Bold criteria indicate an exceedance of a specific compound.

ppm - Parts Per Million

bgs – Below Ground Surface

M&R sites listed in Table 7.3.1.7-4, below have been previously identified by NJDEP, PADEP and the U.S. EPA as having contamination that has been, or continues to be managed

in accordance with Consent Agreements and clean up standards established for the contaminants also referenced in the table..

Table 7.3.1.7-4				
Summary of M&R Stations with the Potential for Soil Disturbance				
M&R Station Name	Milepost	Remedial Classification	Chemical of Concern	Site Information
Downingtown Replacement				
Downingtown		RCNS – 10/22/02	N/A	Site addressed during PADEP COA work
Conyngham Loop				
Shickshinny		RCNS – 12/20/02	N/A	Site addressed during PADEP COA work
Wind Gap Loop				
Wind Gap		RCNS – 12/20/02	N/A	Site addressed during PADEP COA work
Hamilton ^{al}	1771.00 (lateral MP 8.23)	NFA pending agency review	PCB	The M&R has been cleaned to NJDEP unrestricted use standards.
Turnpike Loop				
Linden		On-going investigation, currently under MOA	PCB, Hg, and PAH	MOA with the NJDEP covers soils impacted by PCB, mercury, and PAH above the industrial use standards. Remedial action at the facility is 90 percent completed, except for vertical delineation of a “deed restricted area”. Notice of Deed Restriction proposed for areas around TETCO interchange and Linden regulator. PCB contamination left in soils greater than the unrestricted use standard. Additional delineation and signage need to be completed prior to disturbance. Horizontal limits of soils impacts that will need to be surveyed and marked prior to construction activities. O&M plan will be amended to address potential future soil disturbances.
M&R Station Modifications				
Cloverleaf ^{al}	1802.79	NFA pending agency review	PCB	The M&R has been cleaned to NJDEP unrestricted use standards.
Erie Street ^{al}	1811.25	On-going Investigation	PCB and Mercury	Former MGP site owned and operated by customer company. Customer company involved in MOA with NJDEP. WGP also under MOA with NJDEP for WGP operational area. WGP operational area – remediation 50 percent completed. Remaining 50 percent planned for late 2007. Potential groundwater and soil contamination will remain in-place due to historical operations (non-WGP). Removal of concrete foundations will require characterization and disposal at appropriate facility. Contaminated soils and/or groundwater that may be encountered will be handled in accordance to the Unanticipated Discovery of Contamination Plan.
Paramus	1826.39 (lateral MP 0.21)	NFA pending agency review	PCB	PCB contamination was on interior surfaces of pipe due to interchange with TGT/EI Paso. Wipe sampling of any removed pipe and appurtenances ½ mile up and downstream were required. The M&R has been cleaned to NJDEP unrestricted use standards.
West Parkesburg	1703.72	RCNS – 12/02/98	N/A	Site addressed during PADEP COA work
Ivyland ^{al}	1753.39	RCNS – 10/22/02	N/A	Site addressed during PADEP COA work
Kennett Square	1711.66 (lateral MP 11.79)	RCNS – 10/22/02	N/A	Site addressed during PADEP COA work
Hockessin	1711.66 (lateral MP 15.40)	RCNS – 03/16/98	N/A	Site addressed during PADEP COA work
Wilmington ^{al}		RCNS – 11/06/02	N/A	Site addressed during PADEP COA work
Mount Laurel	1771.00 (lateral MP 36.83)	NFA pending agency review	PCB	The M&R has been cleaned to NJDEP unrestricted use standards.

Table 7.3.1.7-4				
Summary of M&R Stations with the Potential for Soil Disturbance				
M&R Station Name	Milepost	Remedial Classification	Chemical of Concern	Site Information
Notes: ^{a/} - Indicates M&R Stations where excavation will be needed. Hg - Mercury N/A – Not Applicable/Available NFA – No Further Action RCNS – Release and Covenant not to Sue (PADEP equivalency of NFA) PCB - Polychlorinated Biphenyls NJDEP – New Jersey Department of Environmental Protection PADEP – Pennsylvania Department of Environmental Protection COA – Consent Order and Agreement MOA – Memorandum of Agreement				

An unnamed site, within the NJDEP database, was identified to be located within 0.05-mile of the Project. The soils at the site were impacted by petroleum contamination and discovered during an onsite investigation. Since the release was addressed, soils were subsequently containerized by emergency response personnel, and groundwater contamination was not referenced in the available data, this site is not likely a concern with respect to the Project.

The American Cyanamid and Cytec sites have multiple reported incidents with contamination issues that affected soil and potentially groundwater. Transco attempted a file review at the NJDEP offices for the sites; however, files were not available from NJDEP for review.

The information evaluated from the database and follow-up NJDEP file reviews for the Mobil Oil site indicates that the spills at the site occurred more than 15 years ago and were addressed according to current state guidelines. Based on available data, each of the reported spills was addressed by Mobil and is not to likely to adversely affect the Project.

Areas of potential environmental concern include both soil and groundwater and require appropriate measures for handling, containing, and disposing of these materials. Contaminated soils encountered during Project activities will be handled, contained, and disposed of in the proper manner, in accordance with PADEP and NJDEP regulations. In addition, Transco has developed a Unanticipated Discovery of Contamination Plan (Appendix 7B), which will be implemented for each of the loops, with exception to the portion of the Turnpike Loop occurring within the Bayway Refinery, which will use another procedure, as described in this Section.

7.3.2. Aboveground Facilities

The soil conditions at the aboveground facilities are the same as those described in the previous sections for the corresponding mileposts. Construction at aboveground facilities will be completed according to the Transco's SESC Plans.

Transco will mitigate compaction impacts that may develop during the temporary construction periods at the aboveground facilities prior to allowing the areas to revert to their prior uses, and it is estimated no long-term impacts on the soils will occur. Soil erosion and sediment control practices will be installed at these locations in accordance with Transco's SESC Plans.