

SUNOCO PIPELINE L.P.

Pennsylvania Pipeline Project

Cumulative Impacts Analysis

**Joint Permit Application for a
Pennsylvania Water Obstruction & Encroachment Permit and a
U.S. Army Corps of Engineers Section 404 Permit Application**

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TETRA TECH

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ABBREVIATIONS AND ACRONYMS

ABACT	antidegradation best available combination of technologies
BMPs	best management practices
CIA	cumulative impacts analysis
CIAA	Cumulative Impacts Assessment Area
Department	Pennsylvania Department of Environmental Protection
E&S	Erosion and Sedimentation
EIA	U.S. Energy Information Administration
ESCGP	Erosion and Sedimentation Control General Permit
EV	Exceptional value
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
ME1	Mariner East 1
NGL	natural gas liquid
NWP	Nationwide Permit
Pa. Code	Pennsylvania Code
PASPGP	Pennsylvania State Programmatic General Permit
PFO	palustrine forested
PPC Plan	Preparedness, Prevention, and Contingency Plan
PPP	Pennsylvania Pipeline Project
Project	Pennsylvania Pipeline Project
P.S.	Pennsylvania Statute
ROW	right-of-way
SPLP	Sunoco Pipeline L.P.
USACE	U.S. Army Corps of Engineers
U.S.C.A.	United States Code Annotated

1.0 INTRODUCTION

Sunoco Pipeline L.P. (SPLP) proposes to construct and operate the Pennsylvania Pipeline Project (Project or PPP) that would expand existing pipeline systems to provide natural gas liquid (NGL) transportation. The Project involves the installation of two parallel pipelines within an approximately 306.8-mile, 50-foot-wide right-of-way (ROW) from Houston, Washington County, Pennsylvania to SPLP's Marcus Hook facility in Delaware County, Pennsylvania with the purpose of interconnecting with existing SPLP Mariner East pipelines. A 20-inch diameter pipeline will be installed within the ROW from Houston to Marcus Hook (306.8 miles) and a second, 16-inch diameter pipeline, will also be installed in the same ROW. The second line is proposed to be installed from SPLP's Delmont Station, Westmoreland County, Pennsylvania to the Marcus Hook facility, paralleling the initial line for approximately 255.8 miles. Over 80 percent of the new ROW will be co-located with existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system.

As presented in the Alternatives Analysis (Attachment 11, Enclosure F, Part 3), during initial and detailed planning, pipeline routing, and aboveground facility siting of the proposed Project, SPLP was prudent in siting the ROW to avoid and minimize impacts to wetlands and waterbodies to the extent practicable for the entire Project. However, because this is a linear project, complete avoidance of all wetlands and waterbodies was not possible or practicable (see Section 4.0 of the Alternatives Analysis). As a result of this wetland avoidance and minimization effort, the Project will disturb approximately 36.7 acres of wetlands during construction, and will result in a limited palustrine forested (PFO) wetland cover type conversion of 0.405 acre across 19 wetlands falling within 12 counties. This minor PFO wetland cover type conversion will be mitigated. As demonstrated in the Project-wide Project Impact analysis (Attachment 11, Enclosure F, Part 2), with the implementation of the Project and best management practices as proposed, pre-construction wetland function and values will be restored and impacts to remaining wetlands will be minor and temporary.

SPLP has filed Chapter 105 Water Obstruction & Encroachment Permit applications (Chapter 105 applications) with the Pennsylvania Department of Environmental Protection (Department) requesting permits to construct and maintain various water obstructions and encroachments associated with the Project, including crossings of wetlands and interrelated wetland areas (inclusive of adjacent streams). In compliance with the Department's regulations, SPLP has assessed the potential cumulative impacts associated with Project crossings of wetlands and interrelated wetland areas.

This cumulative impacts analysis (CIA) has been prepared to comply with the requirements of 25 Pennsylvania Code (Pa. Code) §§ 105.14(b)(14) and 105.15 to evaluate the cumulative impact of the Project and other potential or existing projects, and if numerous piecemeal changes may result in a major impairment of the wetland resources, in consideration of interrelated wetland areas, affected by the Project. This CIA also has been prepared to comply with the requirements of §§

105.18a(a)(6) and 105.18a(b)(6) to evaluate if the effect of the Project when considered in combination with the impacts of other potential or existing projects, including consideration of interrelated wetland areas (inclusive of adjacent streams), may result in the impairment of the Commonwealth's exceptional value (EV) wetland resources or a major impairment of the Commonwealth's other wetland resources, respectively.

Accordingly, this CIA prepared for the Project addresses the cumulative impact of the Project, other potential or existing SPLP projects, and other potential or existing third-party projects within the Cumulative Impact Assessment Area (CIAA) of the Project (see Section 3.5 for a discussion of the CIAA). As part of this analysis, the numerous wetland impacts associated with all the Chapter 105 applications related to this Project have been evaluated to determine if the impacts may result in the impairment of the Commonwealth's EV wetland resources or a major impairment of the Commonwealth's other wetland resources.

This assessment first provides a general project description for the proposed development activities, including the Project impacts to wetlands and interrelated wetland areas (inclusive of adjacent streams) within Section 2.0. The methodology for preparing this cumulative impact analysis is discussed in Section 3.0. Section 4.0 describes the cumulative actions included in this assessment. Section 5.0 summarizes the cumulative impacts for this entire Project and other potential or existing SPLP projects and other projects within the CIAA. Lastly, Section 6.0 provides a list of references used in the preparation of this assessment.

2.0 PROJECT DESCRIPTION

The Project includes two new, 20-inch and 16-inch diameter pipelines installed within or adjacent to 306.8 miles of existing or new ROW corridors. The majority of the new ROW will be co-located adjacent to existing utility corridors, including approximately 230 miles of pipeline that will be co-located in the existing SPLP Mariner East pipeline system that is currently used for the transportation of NGLs. The SPLP Mariner East pipeline system includes an existing SPLP 8-inch pipeline and an existing SPLP 12-inch pipeline. The following provides the details of the proposed pipeline facilities:

- Pipeline 1: Houston, Pennsylvania to Marcus Hook, Pennsylvania – This is an incremental expansion of the capacities of SPLP to transport NGLs to the Marcus Hook facility. This Phase of the Project will include a 20-inch diameter steel pipeline, pump stations, and valve settings. The route of the pipeline is either inside or adjacent to the existing SPLP pipeline corridor for a majority of its length and is approximately 306.8 miles long (Table 2-1).
- Pipeline 2: Delmont, Pennsylvania to Marcus Hook, Pennsylvania – The pipeline route for the second 16-inch pipeline will include 255.8 miles of pipeline that will parallel Pipeline 1 (Table 2-1).

Table 2-1. Pennsylvania Pipeline Project Pipeline Facilities

Type of Facility	Description	State	Pipeline 1 Length (miles)	Pipeline 2 Length (miles)	Pipeline 1 (limit of disturbance acres)	Pipeline 2 (limit of disturbance acres)	County
Pipeline	Installation of a 20-inch new butane/propane line from Houston PA to Marcus Hook, PA and a 16-inch new ethane line in parallel from Delmont, PA to Marcus Hook, PA	PA	19.1	0.0	189	0	Washington
			9.0	0.0	97	0	Allegheny
			38.3	15.4	374	157	Westmoreland
			19.4	19.4	202	202	Indiana
			23.5	23.5	241	241	Cambria
			23.5	23.5	227	227	Blair
			26.9	26.9	264	264	Huntingdon
			3.0	3.0	33	33	Juniata
			10.8	10.8	117	117	Perry
			32.0	32.0	304	304	Cumberland
			6.3	6.3	68	68	York
			12.0	12.0	117	117	Dauphin
			19.8	19.8	216	216	Lebanon
			6.9	6.9	71	71	Lancaster
			21.2	21.2	230	230	Berks
23.6	23.6	165	165	Chester			
11.5	11.5	93	93	Delaware			
	Project Total		306.8	255.8	3,008	2,505	

Additional facilities consisting of aboveground facilities and support sites are also included as part of the Project. Complete Project descriptions can be found within the county-specific Chapter 105 applications filed with the Department in Attachment 9.

The proposed Project Pipeline Facilities are included within the county-specific Chapter 105 applications filed with the Department, including, but not necessarily limited to, the county-specific Erosion and Sedimentation (E&S) Plans (Attachment 12) and the following items in Attachment 11 (Environmental Assessment),:

- EAF Form
- Tables – Wetland & Stream Fee and Impact Tables
- Enclosure A – Aquatic Resource Report and Supplementals
- Enclosure B – Land Use Maps
- Enclosure C – Description of Aquatic Resources and Wetlands Functions and Values Assessment
- Enclosure D – Project Impacts
- Enclosure E – Comprehensive Environmental Evaluation
 - Part 1 – Comprehensive Evaluation of Compliance
 - Part 2 – Resource Identification and Project Impacts
 - Part 3 – Alternatives Analysis (Trenchless Construction Feasibility Analysis attached)
 - Part 4 – Impact Avoidance, Minimization, and Mitigation Procedures
 - Part 5 – Antidegradation Analysis
 - Part 6 – Cumulative Impacts Assessment
- Enclosure F – Compensatory Mitigation Plan

Detailed description of wetland and interrelated wetland area (stream) impacts within each of the 17 counties are presented in the county-specific Chapter 105 applications filed with the Department.

3.0 METHODOLOGY

This CIA has been prepared to comply with the requirements of 25 Pa. Code §§ 105.14(b)(14) and 105.15 to evaluate the cumulative impact of the Project and other potential or existing projects, and if numerous piecemeal changes may result in a major impairment of the wetland resources, in consideration of interrelated wetland areas (inclusive of adjacent streams), affected by the Project. This CIA also has been prepared to comply with the requirements of §§ 105.18a(a)(6) and 105.18a(b)(6) to evaluate if the effect of the Project when considered in combination with the impacts of other potential or existing projects, including consideration of interrelated wetland areas (inclusive of adjacent streams), may result in the impairment of the Commonwealth's EV wetland resources or a major impairment of the Commonwealth's other wetland resources, respectively.

3.1 WETLAND DEFINITIONS

As defined in 25 Pa. Code § 105.1, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs and similar areas.

As defined in 25 Pa. Code § 105.17, wetlands are a valuable public natural resource and include two categories of wetlands, *Exceptional value wetlands* and *Other wetlands*. Exceptional value (EV) wetlands are wetlands that exhibit one or more of the following characteristics:

- Wetlands which serve as habitat for fauna or flora listed as “threatened” or “endangered” under the Endangered Species Act of 1973 (7 United States Code Annotated [U.S.C.A.] § 136; 16 U.S.C.A. §§ 4601-9, 460k-1, 668dd, 715i, 715a, 1362, 1371, 1372, 1402 and 1531—1543), the Wild Resource Conservation Act (32 Pennsylvania Statute [P.S.] §§ 5301—5314), 30 Pa. Code (relating to the Fish and Boat Code) or 34 Pa. Code (relating to the Game and Wildlife Code).
- Wetlands that are hydrologically connected to or located within ½-mile of wetlands identified under subparagraph (i) and that maintain the habitat of the threatened or endangered species within the wetland identified in the bullet above.
- Wetlands that are located in or along the floodplain of the reach of a wild trout stream or waters listed as exceptional value under Chapter 93 (relating to water quality standards) and the floodplain of streams tributary thereto, or wetlands within the corridor of a watercourse or body of water that has been designated as a National wild or scenic river in accordance with the Wild and Scenic Rivers Act of 1968 (16 U.S.C.A. § § 1271—1287) or designated as wild or scenic under the Pennsylvania Scenic Rivers Act (32 P.S. § § 820.21—820.29).
- Wetlands located along an existing public or private drinking water supply, including both surface water and groundwater sources, that maintain the quality or quantity of the drinking water supply.

- Wetlands located in areas designated by the Department as “natural” or “wild” areas within State forest or park lands, wetlands located in areas designated as Federal wilderness areas under the Wilderness Act (16 U.S.C.A. § § 1131—1136) or the Federal Eastern Wilderness Act of 1975 (16 U.S.C.A. § 1132) or wetlands located in areas designated as National natural landmarks by the Secretary of the Interior under the Historic Sites Act of 1935 (16 U.S.C.A. § § 461—467).

Other wetlands are defined as wetlands not categorized as EV wetlands.

3.2 WETLAND FUNCTIONS

Wetland functions that have been analyzed are defined within 25 Pa. Code § 105.1 and consist of the following:

- Serving natural biological functions, including food chain production; general habitat; and nesting, spawning, rearing and resting sites for aquatic or land species.
- Providing areas for study of the environment or as sanctuaries or refuges.
- Maintaining natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, natural water filtration processes, current patterns or other environmental characteristics.
- Shielding other areas from wave action, erosion or storm damage.
- Serving as a storage area for storm and flood waters.
- Providing a groundwater discharge area that maintains minimum baseflows.
- Serving as a prime natural recharge area where surface water and groundwater are directly interconnected.
- Preventing pollution.
- Providing recreation.

3.3 INTERRELATED WETLAND AREA

Impacts resulting from construction and operation from the Project and other ongoing and future projects in the vicinity of the Project, when considered cumulatively, could result in potentially greater cumulative impacts to specific wetlands and the interrelated wetland area, which includes adjacent streams. This analysis considers impacts to wetlands based on the previously-listed functions. In addition, as a conservative approach, an analysis of streams crossed by the Project and other ongoing and future projects in the vicinity of the Project has been included within this assessment to address the interrelated wetland areas, regardless of whether streams are adjacent to affected wetlands.

3.4 IMPAIRMENT AND MAJOR IMPAIRMENT

The terms “impairment” and “major impairment” are not defined in Chapter 105; however, because wetlands are subject to the Department’s antidegradation requirements set forth at 25 Pa. Code § Chapter 93, the Department must protect the level of water quality necessary to protect the current uses pursuant to 25 Pa. Code § 93.4a(b).1. Moreover, any wetlands that are impaired must be replaced in accordance with 25 Pa. Code § 105.20a, as pursuant to 25 Pa. Code § 105.18a(b)(7). For the purposes of this assessment, “impairment” and “major impairment” are defined as the long term loss of water quality necessary to protect the current uses where replacement of those impaired wetlands cannot be attained.

3.5 CUMULATIVE IMPACT ASSESSMENT AREA

Per the requirements of 25 Pa. Code §§ 105.14(b)(14), 105.15, 105.18a(a)(6), and 105.18a(b)(6), and supplemental direction received from the Department, the CIAA for this analysis is defined as the ROW utilized by the Project that is the subject of this CIA. Additionally, consideration of impacts to wetlands and interrelated wetland areas (inclusive of adjacent streams) included the use of detailed in-field data located within the 200-foot-wide survey corridor of analysis for the Project.

3.6 OTHER POTENTIAL OR EXISTING PROJECTS

Other potential or existing projects to be undertaken by SPLP or others, which are located in the CIAA and have occurred within the past five years have been included within this CIA (see Section 4.0). Actions greater than five years in the past are considered to be contributing to the existing environmental conditions, and thus have already been included in the estimation of potential environmental impacts. The following provides the methodology used to identify other potential or existing SPLP projects and other projects within the CIAA.

Other SPLP Projects

SPLP conducted an internal review of project records and identified a total of eight (8) other potential or existing projects located within the CIAA and that have occurred within the past five years. Locations of these projects, including the limits of disturbance, were mapped according to available GIS shapefiles and/or latitude and longitude data provided in ArcMap 10.3.

The Project permitting incorporates infrastructure to support known and reasonably foreseeable future product supply and delivery pipeline interconnections. These include product supply interconnections at the Houston (Washington County) and Delmont (Westmoreland County) aboveground pump station sites. These also include product delivery interconnections at valve sites incorporated into the proposed Project at the Sinclair Road Valve (previously referred to as the Schaefferstown Tie-In, Heidelberg Township, Lebanon County), Montello (previously referred

to as the Montello Tie-In, Spring Township, Berks County), Vinco Terminal-RT 271 Block Valve (Jackson Township, Cambria County), and Twin Oaks Pump Station (Delaware County). Based on review of the location, nature, and extent of these pipeline interconnections, SPLP does not anticipate that any of these known and reasonably foreseeable future product supply and delivery pipeline interconnections will be located within wetlands or interrelated wetland areas.

FERC Jurisdictional Pipeline Projects

An initial list of pipeline projects was extracted from the U.S. Energy Information Administration (EIA) website (EIA 2016). Additionally, an initial list of pending and approved Federal Energy Regulatory Commission (FERC)-jurisdictional interstate natural gas pipeline projects was extracted from the FERC website (FERC 2016). Projects were narrowed down by date, state, and authority. Projects were further narrowed down to include: 1) projects occurring within the past five years or future or present projects; and 2) projects occurring in Pennsylvania and within the Project affected counties. The resultant list of projects were then searched by docket number using FERC's eLibrary to review Resource Reports, project descriptions, location maps, and alignments sheets to determine the project's location. Projects were georeferenced and workspaces and pipelines were digitized using ArcMap to determine if projects were within the CIAA. If projects were within the CIAA they were evaluated for further cumulative impacts. As a result of this effort, SPLP identified a total of six (6) other potential or existing FERC-jurisdictional interstate natural gas pipeline projects located within the CIAA and that have occurred within the past five years.

Additional Other Projects

SPLP conducted an internal review of project records to identify additional other potential or existing projects located within the CIAA and that have occurred within the past five years. This internal review included consultation with SPLP pipeline and facility operations personnel to identify third-party projects known to have been located adjacent to or have encroached upon the existing SPLP 8-inch pipeline or SPLP 12-inch pipeline ROWs. Additionally, SPLP conducted a review of Pennsylvania Dig Safe, or One Call, records to identify reported third-party activities that potentially have been located adjacent to or have encroached upon the existing SPLP 8-inch pipeline or SPLP 12-inch pipeline ROWs. Available information for these records, such as third-party entity, activity description, and location data, were then reviewed in greater detail to refine the list to those projects located within the CIAA and that have occurred within the past five years. Projects were georeferenced and workspaces and pipelines were digitized using ArcMap to confirm the list of projects within the CIAA. If projects were within the CIAA they were evaluated for further cumulative impacts. As a result of this effort, SPLP identified a total of 14 additional other potential or existing projects located within the CIAA and that have occurred within the past five years.

3.7 CO-LOCATION (OVERLAP) IMPACT AVOIDANCE AND MINIMIZATION

In order to gain a better understanding of the benefits of SPLP's efforts to co-locate the Project with its existing pipeline ROWs and maintained areas on reducing the areal extent of new impacts to wetlands and streams, an analysis of the overlap of the proposed permanent ROW with existing ROWs and maintained areas was performed. In general, the Project is co-located with the existing SPLP 8-inch pipeline or SPLP 12-inch pipeline for the majority of its length from its Delmont facility to the Twin Oak facility, but the area maintained along the existing SPLP 8-inch pipeline varies from 40 to 50 feet-wide. There are some areas of the Project proposed pipeline route that required deviation from the existing SPLP 8-inch pipeline. In particular, approximately 70 percent of the Project proposed pipeline route in Blair and Delaware counties is not co-located with SPLP owned and operated ROWs. These deviations were necessary due to constructability constraints and avoidance of other environmental, cultural resource, and community concerns as described in the Alternatives Analysis (Attachment 11, Enclosure F, Part 3). In Washington, Westmoreland, and Allegheny counties, the Project proposed pipeline route is co-located with SPLP's existing ME1 12-inch pipeline for 51 miles between SPLP's Houston and Delmont facilities, and a 50-foot-wide permanent easement has been established for this segment of the Project proposed pipeline route.

For this co-location overlap analysis, it was conservatively assumed that the Delmont to Twin Oaks pipeline segment is maintained at 40 feet-wide by SPLP operations. This is primarily due to the nature of the easement agreements. In general, SPLP's existing 8-inch pipeline has been maintained at a width necessary for operations and maintenance and ranges from 40 to 50 feet. For the segment of the Project proposed pipeline route co-located with the ME1 12-inch pipeline, a 50-foot-wide maintained area was used for this analysis based on recently established ROW easements with legally defined limits. Using geographic information system (GIS) analysis, these existing ROWs and maintained areas were compared to workspaces proposed for the Project, and the acreage of overlap reported for wetlands and the linear footage overlap reported for stream crossings (Table 3-1).

Project wide, of the approximately 36.7 acres of wetlands affected by implementation of the Project proposed pipeline route, approximately 9.7 acres (26.4 percent) is estimated to be located within existing maintained areas. Project wide, of the approximately 53,131 linear feet of streams affected by implementation of the Project proposed pipeline route, approximately 12,932 linear feet (24.3 percent) is estimated to be located within existing maintained areas. Table 3-1 provides a breakdown by county of the co-location overlap of wetlands and streams affected by the Project.

Table 3-1. Co-Location Overlap of Wetlands and Streams Affected by the Proposed Pipeline Route

County	Wetlands		Streams	
	Total Proposed PPP Impact (acres)	Total Overlap with Other SPLP Maintained Areas (acres)	Total Proposed PPP Impact (linear feet)	Total Overlap with Other SPLP Maintained Areas (linear feet)
Washington	0.4	0.3	2,686	1,767
Allegheny	2.2	0.4	1,540	1,237
Westmoreland	3.2	0.1	7,558	3,394
Indiana	4.8	1.9	4,614	301
Cambria	3.7	1.4	6,200	1,437
Blair	5.6	1.0	2,284	59
Huntingdon	1.8	0.4	7,135	903
Juniata	1.3	<0.1	2,204	347
Perry	3.5	1.1	1,761	227
Cumberland	1.4	0.1	5,326	1,244
York	0.3	0.0	1,540	269
Dauphin	1.6	0.4	2,271	189
Lebanon	1.2	0.4	2,112	718
Lancaster	1.2	0.4	779	142
Berks	0.6	0.2	2,606	348
Chester	3.5	1.2	1,147	266
Delaware	0.4	0.2	1,368	83
TOTALS	36.7	9.7	53,131	12,932

3.8 AFFECTED AQUATIC RESOURCES

Based on the USACE-Baltimore District’s Public Notice for the Project published on August 1, 2016 (USACE 2016a), all but two of the crossings of aquatic resources (i.e., wetlands and streams) associated with the proposed Project are being reviewed for authorization under the Pennsylvania State Programmatic General Permit (PASPGP) Program (i.e., PASPGP-5) by the USACE-Baltimore, Philadelphia, and Pittsburgh Districts. As discussed in greater detail in the Project-wide Project Impacts analysis (Attachment 11, Enclosure F, Part 2), the terms and conditions for USACE’s permit are established at the national level to authorize most activities that have no more than minimal individual and cumulative adverse environmental effects (USACE 2016b).

4.0 CUMULATIVE ACTIONS

Per the requirements of 25 Pa. Code §§ 105.14(b)(14), 105.15, 105.18a(a)(6), and 105.18a(b)(6), and supplemental direction received from the Department, the evaluation focused on this Project and other potential or existing SPLP projects and other projects within the CIAA. Based on the methodology described in Section 3.6, a total of 28 actions were identified as potential or existing SPLP projects and other projects to be considered in the CIA for the Project. Table 4-1 provides a brief description of these actions, identifies the locations of the actions relative to the Project, and characterizes the timeframe for these actions (e.g., past, present, and future). Figure A-1 (Appendix A) shows the location of these potential or existing projects within with the CIAA.

Table 4-1. Projects Evaluated for Potential Cumulative Impacts

Project	Primary Elements	Location of Overlap (County)	Status ^a -Past -Present -Future
SPLP Projects^b			
SPLP Ohio Pipeline Project	Phased construction and operation of approximately 70 miles of two parallel pipelines from Scio, Harrison County, Ohio to Houston, Washington County, PA.	Washington	Present
SPLP Houston Tank Farm	Construction of the SPLP Houston Tank Farm. The Houston Tank Farm will be a storage facility used for the storage of propane and butane in separate 50,000-barrel and 30,000-barrel pressurized spheres. The modification of the SPLP Houston Tank Farm will include grading that would require the filling of an isolated 0.114-acre wetland. The new grading will result in 18,685 square feet (0.429 acres) of new earth disturbance.	Washington	Present
SPLP Mariner East 1 (ME1) – Houston to Delmont	Construction and operation of approximately 49.5-mile-long, 12-inch-diameter pipeline, 12 new Pump Stations. Rehabilitation of approximately 4,500 linear feet of the existing 8-inch-diameter pipeline by replacement at 95 locations and approximately 225 repairs as well work at 6 existing Pump Stations. Several new valve stations will also be required to facilitate isolation of the pipeline.	Allegheny, Washington and Westmoreland	Past, 2014
SPLP – ME1 Stations	The construction of 15 pump stations along the 8-inch SPLP pipeline running from Westmoreland County, PA to Marcus Hook, PA. The pump stations are used to increase the volume of NGL products	Westmoreland, Indiana, Cambria, Blair, Huntingdon,	Past, 2015

Project	Primary Elements	Location of Overlap (County)	Status ^a -Past -Present -Future
	transported using the repurposed 8-inch SPLP pipeline. Pump Stations consist of a gravel pad with a Power Distribution Center Enclosure, Pump Enclosure, and an enclosed combustion unit. No impacts to streams or wetlands occurred during this project.	Juniata, Perry, Cumberland, Dauphin, Lebanon, Lancaster, Berks, Chester, Delaware	
SPLP 8-inch Repair Project	Rehabilitation of the existing 8-inch-diameter pipeline. Over 1250 anomalies, 30 exposures, 1182 repair areas (disturbed areas), and 25 unique exposure repair areas along approximately 246-mile-long pipeline.	Westmoreland, Indiana, Cambria, Blair, Huntingdon, Juniata, Perry, Cumberland, York, Dauphin, Lebanon, Lancaster, Berks, Chester, Delaware	Past, 2015
SPLP 12-inch Valley Road Repair	Isolated repair of the existing 12-inch-diameter pipeline immediately adjacent to Valley Road. Repair consisted of pipeline trench excavation, installation of a Plidco repair collar around the pipe, and site restoration. Project did not affect a wetland or waterbody.	Chester	Past, 2014
SPLP 12-inch Repair Project	Rehabilitation of the existing 12-inch-diameter pipeline, including 202 maintenance repair locations, 29 of which require environmental permits. Fourteen (14) additional locations of exposure repair projects outstanding from the ME1 repair project and or locations identified by the SPLP. Sixteen (16) of these items involve direct impacts to the PPP ROW.	Berks, Chester, Delaware, Philadelphia	Present, Future 2016-2017
SPLP Darlington Road HDD	The Project consists of an approximately 300 ft. horizontal directional drill under a wetland to install a 4 inch conduit and electrical line.	Delaware	Future, 2017
Federal Energy Regulatory Commission (FERC) Jurisdictional Projects^c			
Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project (Docket No. CP15-138-000)	Construction and operation of approximately 183.7 miles of new natural gas pipeline. Construction and operation of a Greenfield natural gas pipeline in Pennsylvania (57.4 miles of 30-inch-diameter and 126.3 miles of 42-inch-diameter pipeline); 11.5 miles of new pipeline looping in Pennsylvania (2.9 miles of 36-inch-diameter and 8.6 miles of 42-inch-diameter pipeline); 2.5 miles of 30-inch-diameter pipeline replacements in, Virginia; and associated equipment and facilities in Pennsylvania and Maryland. Enhancement of wetlands at Hibred Farms Mitigation Site.	Lancaster and Lebanon	Future, 2016

Project	Primary Elements	Location of Overlap (County)	Status ^a -Past -Present -Future
Dominion Transmission, Inc. (Docket No. PF09-15) Appalachian Gateway Project (Docket No. CP10-448)	Construction and operation of a 54.2 mile, 24-inch-diameter pipeline in Greene, Washington, Allegheny, and Westmoreland counties, and Metering and Regulation Station in Westmoreland County.	Washington, Allegheny, and Westmoreland	Past, 2011
Columbia Gas Transmission, LLC (Docket No. PF13-7) East Side Expansion Project (Docket No. CP14-17)	Construction of two natural gas looping pipelines and related facilities. The Line 1278 Loop consists of approximately 9.5 miles of 26-inch diameter pipeline in Chester County.	Chester	Past, 2015
Dominion Transmission, Inc. Supply Header Project (Docket No. CP15-555)	Construction and operation of 37.5 miles of a natural gas pipeline loop in Pennsylvania and West Virginia and modify four existing compressor stations including the J.B. Tonkin Compressor Station in Westmoreland County, PA. Pipeline Loop TL-636 will include approximately 3.9 miles of underground 30-inch-diameter pipeline looping of Dominion's existing LN-25 pipeline from the J.B. Tonkin Compressor Station.	Westmoreland	Present
Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project (Docket No. CP15-95)	Replace 35 miles of aging high pressure bare steel pipeline on Line 1570.	Washington, Allegheny	Present
Equitrans Expansion Project, Docket No. (Docket No. CP16-13)	Construction of 7.87 miles of pipeline (at multiple separate location), a new compressor station, an interconnect with the proposed Mountain Valley Pipeline, and ancillary facilities. 4.26 mile, 20-inch-diameter pipeline will be constructed in Allegheny and Washington counties.	Washington, Allegheny	Future, 2017
Other Projects^d			
Bird Run Temporary Waterline Project	Install temporary above ground water line for Range Resources	Washington	Present, 2016
Washington Road New Pipeline and Receiver Pad Project	Install rain garden, road and receiver pad	Washington	Present, 2016
Washington Road New Pipeline /Facility Project	New natural gas pipeline installation	Washington	Present, 2016
One Call Serial/Ticket Number 20162072493	Install cathodic protection on gas lines	Washington	Present, 2016

Project	Primary Elements	Location of Overlap (County)	Status^a -Past -Present -Future
State Route 30 Gas Pipelines and Waterline Project	Pipeline and waterlines	Washington	Present, 2016
Sugar Run Road Pipeline Installation Project	Installation of new pipeline for Rice Energy	Washington	Present, 2016
90 Cooper Rd. Well Pad Expansion	Well pad expansion	Washington	Past, 2015
Main Street Gas Distribution Line Install Project	Install new natural gas distribution line within roadway.	Westmoreland	Present, 2016
Church Street Fatur Well Pad Project	Well pad expansion	Westmoreland	Present, 2016
One Call Serial/Ticket Number 20162371407	New gas pipeline installation	Westmoreland	Present, 2016
One Call Serial/Ticket Number 20162383392	Pipeline maintenance	Indiana	Present, 2016
One Call Serial/Ticket Number 201605240001 /Gillen Lane Gas Line Installation Project	Natural gas service line	Cambria	Present, 2016
PA Turnpike New Gas Installation Project	New gas line	Cumberland	Present, 2016
Pennsylvania DOT Street Road, West Chester Pike	Road milling and paving	Chester	Present, 2016

^a Past projects are those where construction has occurred within the past 5 years from the date of filing administratively complete JPA. Present projects are recently completed or under construction as of September 2016. Future projects are expected to be under construction in the same timeframe as and crossed by the Project.

^b Identified projects through a review of permits submitted to the Department, land use agreements and PA One Call notifications.

^c FERC-jurisdictional projects were accessed through the FERC website (FERC 2016) and EIA website (EIA 2016).

^d Other Projects were identified by SPLP through a review of land use agreements and PA One Call notifications.

5.0 CUMULATIVE IMPACTS

Cumulative impacts are estimated by aggregating the impacts of the Project with the impacts of other potential or existing projects. Per Department direction, the analysis of cumulative impacts is presented on both a statewide and county-specific basis. A summary of the wetland and interrelated wetland area (inclusive of adjacent streams) impacts within the CIAA are included within Table 5-1 and Table 5-2, respectively.

Table B-1 (Appendix B) presents a detailed compilation of the potential cumulative impacts to wetlands associated with the Project (inclusive of station and appurtenant facilities) and other projects in the CIAA. Table B-2 (Appendix B) presents a detailed compilation of the potential cumulative impacts to streams, which represent interrelated wetland areas, associated with the Project (inclusive of station and appurtenant facilities) and other projects in the CIAA. These tables summarize the impacts of the Project on wetlands and streams within the CIAA; summarize the impacts for each individual other potential or existing actions on wetlands and streams within the CIAA; and, present the total aggregate (e.g., cumulative) impacts on wetlands and streams within the CIAA. The narrative discussion of the cumulative impacts below is intended to supplement the detailed information presented in Tables B-1 and B-2.

5.1 PROPOSED PROJECT IMPACTS

As presented in the Alternatives Analysis (Attachment 11, Enclosure F, Part 3), during initial and detailed planning, pipeline routing, and aboveground facility siting of the proposed Project, SPLP was prudent in siting the ROW to avoid and minimize impacts to wetlands and waterbodies to the extent practicable for the entire Project. However, because this is a linear project, complete avoidance of all wetlands and waterbodies was not possible or practicable (see Section 4.0 of the Alternatives Analysis).

As shown in Table 5-1, as a result of SPLP's wetland avoidance and minimization effort, the Project will cross a total of 561 wetlands resulting in a disturbance of approximately 36.7 acres of wetlands during construction, and will result in a limited PFO wetland cover type conversion of 0.405 acre across 19 wetlands. As shown in Table 5-2, the Project will disturb approximately 53,131 linear feet of waterbodies during construction. Excluding floodway only crossings, the proposed Project will cross a total of 884 streams, including 397 perennial streams and 488 intermittent/ephemeral streams, resulting in an aggregate disturbance of approximately 12.9 acres during construction along the 306.8-mile-long corridor. As demonstrated in the Project-wide Resource Identification and Project Impact analysis (Attachment 11, Enclosure F, Part 2) and the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4), with the proper installation and maintenance of the Project's best management practices, impacts to wetlands and streams will be minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects. The following summarizes Project-wide best management practices and analysis of impacts to wetlands and streams.

The Project will result in temporary disturbance of stream and wetland resources during construction. In general, during construction of the new pipelines, the width of the construction ROW would typically be 75 feet, including a 50-foot-wide post-construction permanent ROW and 25-foot-wide temporary workspace. However, to avoid and minimize impacts to stream and wetland resources, SPLP has reduced the construction ROW to 50 feet, extending 10 feet landward from the top of each stream bank. The crossing of all streams located within the Project ROW will use temporary equipment bridge installation and dry crossing trenching methods as outlined and described within the E&S Plan (Attachment 12) and the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure E, Part 4). SPLP will utilize timber mats to facilitate the crossing of wetlands with vehicles, equipment, and haul trucks. Other avoidance/minimization measures that SPLP will implement to reduce stream/wetland impacts include limiting the land disturbance to the excavated trench lines, and temporary minor grading of the stream banks at the travel lane crossing, as required; leaving roots/stumps in place, to the extent possible, so that the roots stabilize the soils (minimize erosion), and re-establishment of native vegetation is facilitated; limiting the time/duration of in-stream construction (typically less than 2 days); implementing the horizontal directional drill (HDD) crossing method where possible, and implementing a dry construction method for all stream crossings not bored or drilled; designing all crossings such that the pipelines will be a minimum of 4 feet and 5 feet under wetlands and streams, respectively, as compared to the Department's 3 foot depth requirement; and, implementing erosion and sediment control measures for all land disturbances.

SPLP will implement construction methods and soil erosion and sediment control measures in accordance with the Department's E&S Manual to maintain flow/hydrology, protect sources/headwaters, minimize soil mixing and compaction, and minimize direct and secondary impacts to on-site and offsite resources. SPLP will conduct all activities in accordance with their Chapter 102 Permit requirements and will implement erosion and sediment control best management practices (BMPs), including appropriate antidegradation best available combination of technologies (ABACT) measures for HQ/EV stream resources. Enclosure E, Part 4 of this Attachment (Impact Avoidance, Minimization, and Mitigation Procedures) provides a detailed description of the stream crossing construction methods as well as a discussion of potential impacts to streams, including the impact avoidance and minimization measures SPLP has and/or will implement.

To maintain water quality in the stream and wetland resources crossed by the Project or downgradient (potential secondary impacts) of the construction ROW, SPLP will implement pollution prevention procedures outlined in the Project's E&S Plan and supporting documents (Attachment 12) for protection of both surface and groundwater quality during Project construction. Specifically, SPLP will implement their Preparedness, Prevention, and Contingency Plan (PPC Plan) (Attachment 12, Tab 12A) and Inadvertent Return Assessment, Preparedness, Prevention and Contingency Plan (Inadvertent Return Plan) (Attachment 12, Tab 12C). The PPC Plan is designed to address spill prevention, countermeasures, and response in general. The

Inadvertent Return Plan outlines the preconstruction activities that will be implemented to ensure competent geological features are included in the HDD profile, the measures to prevent potential impacts, and the measures to be implemented if an impact were to occur. In addition, SPLP has prepared a Void Mitigation Plan for Karst Terrain and Underground Mining (Attachment 2, Tab 12D) that assesses potential impacts as well as avoidance and mitigation measures during open-cut and drilling procedures. The primary purpose of these plans is to prevent and address potential spills of materials/fluids during construction. Implementation of these plans will further protect and maintain the surface water resources and contain/control any potential spills/returns such that there are no anticipated adverse long-term impacts to the water resources and their designated/existing uses.

All wetlands affected by construction will be restored as wetlands. Although many wetland impacts are avoided and minimized, some functions and values would be temporarily affected by construction of the Project. However, most wetlands extend beyond the Project boundaries and would continue to provide functions and values during construction as the impact area relative to the size of the wetland is minor. In general, the wetlands impacted by the Project provide functions and values at varying levels. Scrub-shrub wetlands will be replanted onsite to mitigate the temporal impacts to functions and values. The permanent ROW conversion of 0.405 acre of PFO wetland to palustrine emergent wetland would not result in a significant change in the functions and values of the wetlands impacted by the Project: some functions/values may be slightly reduced (wildlife habitat), some will not be altered (groundwater discharge), and others may be increased due the establishment of a thick herbaceous ground layer (sediment retention and nutrient removal). There will be a temporal loss of the previously-listed wetland functions during construction and near-term post-construction until the wetlands are restored to jurisdictional wetlands. No permanent fill in wetlands is proposed; consequently, no loss of wetland area would result from construction or operation of the proposed Project.

Construction of the proposed Project will not affect natural drainage patterns. There are no stream relocations, enclosures, or channel deepening/dredging activities proposed in conjunction with the pipeline crossing. Upon completion of construction in wetlands, all topsoil disturbed during construction will be replaced to original horizons, and wetland contours and stream grades will be restored. This will restore the drainage patterns to pre-construction conditions and will promote re-establishment of wetland hydrology and hydrophytic vegetation. SPLP will implement the stream and wetland construction and restoration procedures presented in the Impact Avoidance, Minimization, and Mitigation Procedures (Attachment 11, Enclosure F, Part 4) and Project-specific E&S Plan (Attachment 12), which will prevent changes to the natural drainage patterns of streams and wetlands crossed.

In addition, as documented in the Project Description (Attachment 9), SPLP has conducted extensive analysis and regulatory agency consultation to avoid, minimize, and mitigate potential impacts to protected species of wildlife. Specifically, SPLP has consulted with the Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Game Commission, and

Pennsylvania Fish and Boat Commission, as well as the United States Fish and Wildlife Service with respect to the identification, presence, impact assessment, and specific mitigation measures to be implemented for threatened and endangered species for the Project. These measures have been reviewed and approved by the regulatory agencies with appropriate jurisdiction and are located within the Pennsylvania Natural Diversity Inventory submissions and correspondence (Attachment 6).

For example, SPLP has specific plans in place to address bog turtle, northeastern bulrush, and several other protected species that describe the measures it will employ to avoid interference with such species, and if necessary, to mitigate any impact attributable to the Project. Although no meaningful long term impact is anticipated with respect to migratory birds, SPLP has an approved “Project Migratory Bird Conservation Plan.” That plan as well as all other mitigation plans are located in Attachment 6, Tab 6B.

5.2 OTHER PROJECT IMPACTS

Other SPLP Projects

SPLP’s eight (8) other projects are past (have been constructed and placed in service), present (currently under construction), or proposed for construction in the near future (2016-2017). Each SPLP other project has been designed, permitted, and constructed or is proposed to be constructed in compliance with federal (USACE) and state (PADEP) wetlands and waters regulatory permits, as applicable. These disturbances will result in no loss of wetlands, with the exception of the modification of the SPLP Houston Tank Farm which will require the filling of an isolated 0.114-acre wetland. By definition, with the implementation of these projects in compliance with SPLP’s best management practices and federal and state permit conditions, the remaining impacts to wetlands and streams are minor and temporary, and will result in no more than minimal individual and cumulative adverse environmental effects.

Additionally, each SPLP other project has been (past and current) or will be (future) subjected to protected wildlife species impact analysis pursuant to its own regulatory submissions. To the extent impacts have been identified with respect to these projects, the regulatory approvals specify the necessary steps SPLP must undertake to avoid, minimize, or mitigate any such impact. Implementation of these projects in compliance with SPLP’s best management practices and federal and state permit conditions are anticipated to result in no significant or undue adverse effect on protected wildlife species.

FERC Jurisdictional Pipeline Projects

The six (6) other FERC-jurisdictional interstate natural gas pipeline projects are past (have been constructed and placed in service), present (currently under construction), or proposed for construction in the near future (2016-2017). The FERC has Federal jurisdiction to authorize the

construction and operation of interstate natural gas pipelines via a Certificate of Public Convenience and Necessity (Certificate) pursuant to Section 7(c) of the Natural Gas Act (15 U.S.C. 717). Pursuant to its Federal jurisdiction, the FERC conducts an intensive regulatory review and approval process that includes compliance with the National Environmental Policy Act (NEPA), and associated public review and comment on NEPA documents. As part of its regulatory program, the FERC reviews; authorizes; inspects construction and post-construction restoration activities; and requires and reviews applicant's post-construction monitoring reports related to wetlands and waterbodies affected by interstate natural gas pipeline projects nationwide. As a standard condition of its Certificate authorizations, the FERC requires natural gas pipeline companies to implement its *Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures), which comprise nationwide best management practices for pipeline construction, restoration, and maintenance activities in wetlands and waterbodies.

Additionally, FERC other projects are not exempt from, and are required to be designed, permitted, and constructed in compliance with, federal (USACE) and state (PADEP) wetlands and waters regulatory permits, as applicable. Based on review of FERC procedural docket information, these FERC other projects will result in no loss of wetlands and no PFO wetland cover type conversion within the CIAA. Although the Transcontinental Gas Pipeline Company, LLC's proposed Atlantic Sunrise Project reports a total PFO wetland cover type conversion of 0.1542 acre to be mitigated via its proposed Hibred Farms Mitigation Site in Lancaster County, this conversion is not located within the CIAA for the Project. By definition, with the implementation of these projects in compliance with industry-standard and FERC-required best management practices and federal and state permit conditions, impacts to wetlands and streams are minor and temporary, and will result in no more than minimal individual and cumulative adverse environmental effects.

Each FERC other project has been (past and current) or will be (future) subjected to protected wildlife species impact analysis pursuant to its own regulatory submissions. To the extent impacts have been identified with respect to these projects, the regulatory approvals specify the necessary steps the applicant must undertake to avoid, minimize, or mitigate any such impact. Implementation of these projects in compliance with the applicant's best management practices and federal and state permit conditions are anticipated to result in no significant or undue adverse effect on protected wildlife species.

Additional Other Projects

The 14 additional other projects are past (recently constructed in 2015) or present (under construction or completion in 2016). Cumulatively, these projects comprise temporary aboveground or underground water lines, underground natural gas pipelines and associated facilities, oil and gas well pads and associated infrastructure, and existing roadway milling and paving activities. Each of these projects encompasses a relatively limited areal extent of ground disturbance, and involved no wetland or stream disturbance, immediately adjacent to or overlapping the Project ROW. Accordingly, no quantitative wetland and stream impacts occurred

in the CIAA or are presented in Table B-1 and Table B-2, respectively. As a result, these projects are not considered to contribute to potential cumulative impacts to wetlands or interrelated wetland areas within the CIAA.

5.3 CUMULATIVE IMPACTS ON WETLANDS

As shown in Table 5-1, the Project will disturb approximately 36.7 acres of wetlands during construction. When added to the wetland impacts from all other projects in the CIAA (approximately 10.4 acres of wetlands; see Table 5-1 and Table B-1), a maximum of 47.1 acres of wetlands could be impacted. However, that maximum impact assumes no overlap of wetland impacts. In reality, as Table 5-1 shows, approximately 5.2 percent of wetland impacts would overlap, resulting in a cumulative areal extent of wetland disturbance of approximately 45.2 acres.

Based on these results, implementation of the Project and other potential or existing SPLP projects and other projects evaluated within the CIAA will result in the cumulative areal extent of wetland disturbance of approximately 45.2 acres. These disturbances will result in no loss of wetlands, with the exception of the modification of the SPLP Houston Tank Farm which will require the filling of an isolated 0.114-acre wetland. Additionally, these disturbances will result in limited PFO wetland cover type conversion of 0.405 acre across 19 wetlands associated with the Project. With the implementation of each potential or existing project in compliance with best management practices and permit conditions, all of the remaining disturbances to wetlands are (existing projects) or are anticipated to be (potential projects) minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

Furthermore, as described in this CIA, the overlapping impacts with respect to wetlands (5.2%) and streams (12.7%) would not be expected to enhance Project impacts identified herein on protected wildlife species associated with PADEP-regulated resources, as the applicable SPLP mitigation plans require restoration and protection regardless of whether other projects pre-exist or are developed contemporaneously.

Table 5-1. Summary of Potential Cumulative Impacts to Wetlands from the Proposed Project and Other Projects in the CIAA

County	Wetlands Impacts Summary			
	Total Proposed Project Impact (acres)	Total Other Projects Impact within CIAA (acres)	Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)
Allegheny	0.4	0.4	0.3	0.5
Berks	2.2	0.3	0.1	2.4
Blair	3.2	0.4	0.0	3.6
Cambria	4.8	0.6	0.2	5.2
Chester	3.7	1.2	0.0	4.9
Cumberland	5.6	0.5	0.1	6.1
Dauphin	1.8	0.0	0.0	1.9
Delaware	1.3	0.0	<0.1	1.3
Huntingdon	3.5	0.9	0.2	4.3
Indiana	1.4	0.3	0.0	1.7
Juniata	0.3	<0.1	<0.1	0.3
Lancaster	1.6	0.2	0.0	1.8
Lebanon	1.2	0.1	0.0	1.3
Perry	1.2	0.3	0.0	1.5
Washington	0.6	0.6	0.2	0.9
Westmoreland	3.5	4.1	0.6	7.1
York	0.4	0.2	0.0	0.6
TOTALS	36.7	10.4	1.9	45.2
Notes: All individual and aggregate acreage values are rounded to the nearest hundredth of an acre, such that county subtotals and the Project-Wide total may not necessarily equal the sum of the individual rounded values presented.				

5.4 CONSIDERATION OF INTERRELATED WETLAND AREAS (INCLUSIVE OF ADJACENT STREAMS)

As shown in Table 5-2, the Project will disturb approximately 53,131 linear feet of waterbodies during construction. When added to the waterbody impacts from all other projects in the CIAA (approximately 18,540 linear feet of waterbodies; see Table 5-2 and Table B-2), a maximum of 71,671 linear feet of waterbodies could be impacted. However, that maximum impact assumes no overlap of waterbody impacts. In reality, as Table 5-2 shows, approximately 12.7 percent of waterbody impacts would overlap, resulting in a cumulative waterbody disturbance of approximately 64,892 linear feet.

Table 5-2. Summary of Potential Cumulative Impacts to Streams from the Proposed Project and Other Projects in the CIAA

County	Stream Impacts Summary			
	Total Proposed Project Impact (linear feet)	Total Other Projects Impact within CIAA (linear feet)	Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)
Allegheny	1,540	2,772	1,238	3,074
Berks	2,606	536	105	3,037
Blair	2,284	30	0	2,314
Cambria	6,200	73	209	6,064
Chester	1,147	353	79	1,421
Cumberland	5,326	138	102	5,362
Dauphin	2,271	104	27	2,348
Delaware	1,368	13	0	1,381
Huntingdon	7,135	303	86	7,352
Indiana	4,614	57	18	4,653
Juniata	2,204	18	37	2,185
Lancaster	779	40	0	819
Lebanon	2,112	290	114	2,288
Perry	1,761	208	28	1,941
Washington	2,686	2,553	1,770	3,469
Westmoreland	7,558	11,027	2,930	15,655
York	1,540	25	36	1,529
TOTALS	53,131	18,540	6,779	64,892
Notes: All individual and aggregate acreage values are rounded to the nearest hundredth of an acre, such that county subtotals and the Project-Wide total may not necessarily equal the sum of the individual rounded values presented.				

Based on these results, implementation of the Project and other potential or existing SPLP projects and other projects evaluated within the CIAA will result in the cumulative waterbody disturbance of approximately 64,892 linear feet. These disturbances will result in no loss of waters. With the implementation of each potential or existing project in compliance with best management practices and permit conditions, all of the remaining disturbances to streams are (existing projects) or are anticipated to be (potential projects) minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

6.0 CONCLUSION

As a result of SPLP's wetland impact avoidance and minimization effort, the Project will disturb approximately 36.7 acres of wetlands during construction, and with mitigation will result in a limited PFO wetland cover type conversion of 0.405 acre across 19 wetlands. In consideration of interrelated wetland areas, the Project also will disturb approximately 53,131 linear feet of waterbodies during construction.

The USACE-Baltimore District's Public Notice for the Project states that all but two of the crossings of aquatic resource associated with the proposed Project are being reviewed for authorization under the PASPGP-5 by the USACE-Baltimore, Philadelphia, and Pittsburgh Districts. The terms and conditions for USACE's permit are established at the national level to authorize most activities that have no more than minimal individual and cumulative adverse environmental effects. With the implementation of the Project and associated best management practices as proposed, impacts to wetlands and interrelated wetland areas (inclusive of adjacent streams) will be minor and temporary.

Based on the results of this CIA, implementation of the Project and other potential or existing SPLP projects and other projects evaluated within the CIAA will result in the cumulative areal extent of wetland disturbance of approximately 45.2 acres, and the cumulative waterbody disturbance of approximately 64,892 linear feet. These disturbances will result in no loss of wetlands or waters, with the exception of the modification of the SPLP Houston Tank Farm which will require the filling of an isolated 0.114-acre wetland. Additionally, within the CIAA, these disturbances will result in limited PFO wetland cover type conversion of 0.405 acre across 19 wetlands associated with the Project. With the implementation of each potential or existing project in compliance with best management practices and permit conditions, all of the remaining disturbances to wetlands and streams are (existing projects) or are anticipated to be (potential projects) minor and temporary, and result in no more than minimal individual and cumulative adverse environmental effects.

Based on these aggregate (i.e., cumulative) impacts of the Project and other potential or existing SPLP projects and other projects evaluated within the CIAA, the numerous wetland impacts associated with all the Chapter 105 applications related to this Project, in consideration of interrelated wetland areas (inclusive of adjacent streams), will not result in the impairment of the Commonwealth's EV wetland resources or a major impairment of the Commonwealth's other wetland resources.

7.0 REFERENCES

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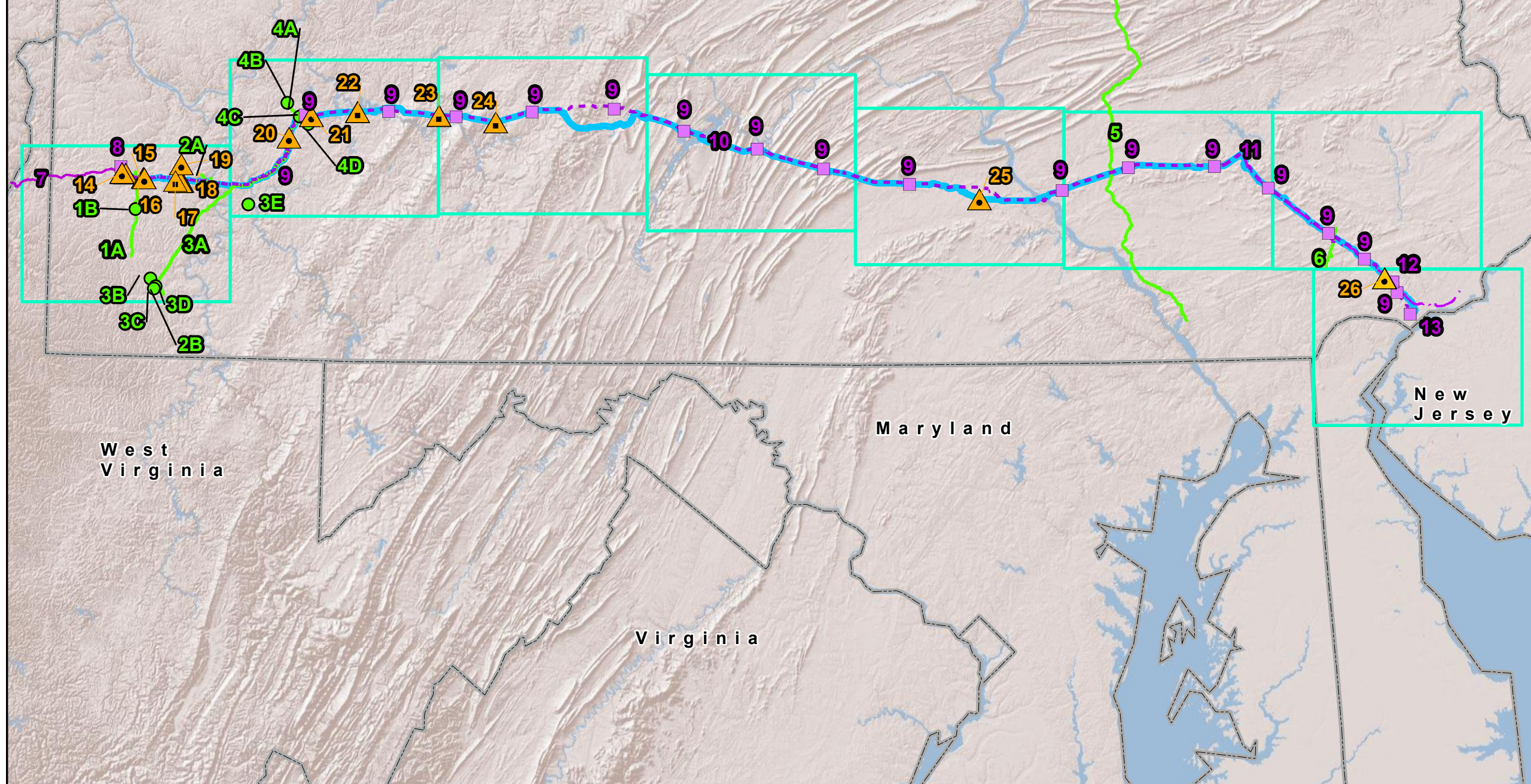
Appendix A

Cumulative Impacts Figures

Figure A-1. Cumulative Impacts Analysis Map

FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project - Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kenneil Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 - Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD
Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road - West Chester Pike Milling



Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- FERC Jurisdictional Projects
- Other Projects
- Major Road
- County Boundary
- State Boudary

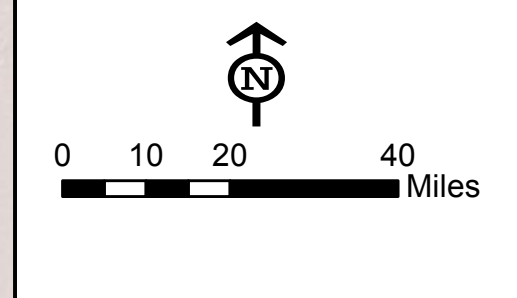
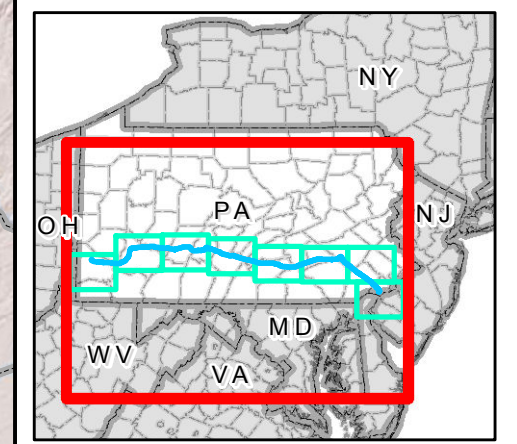


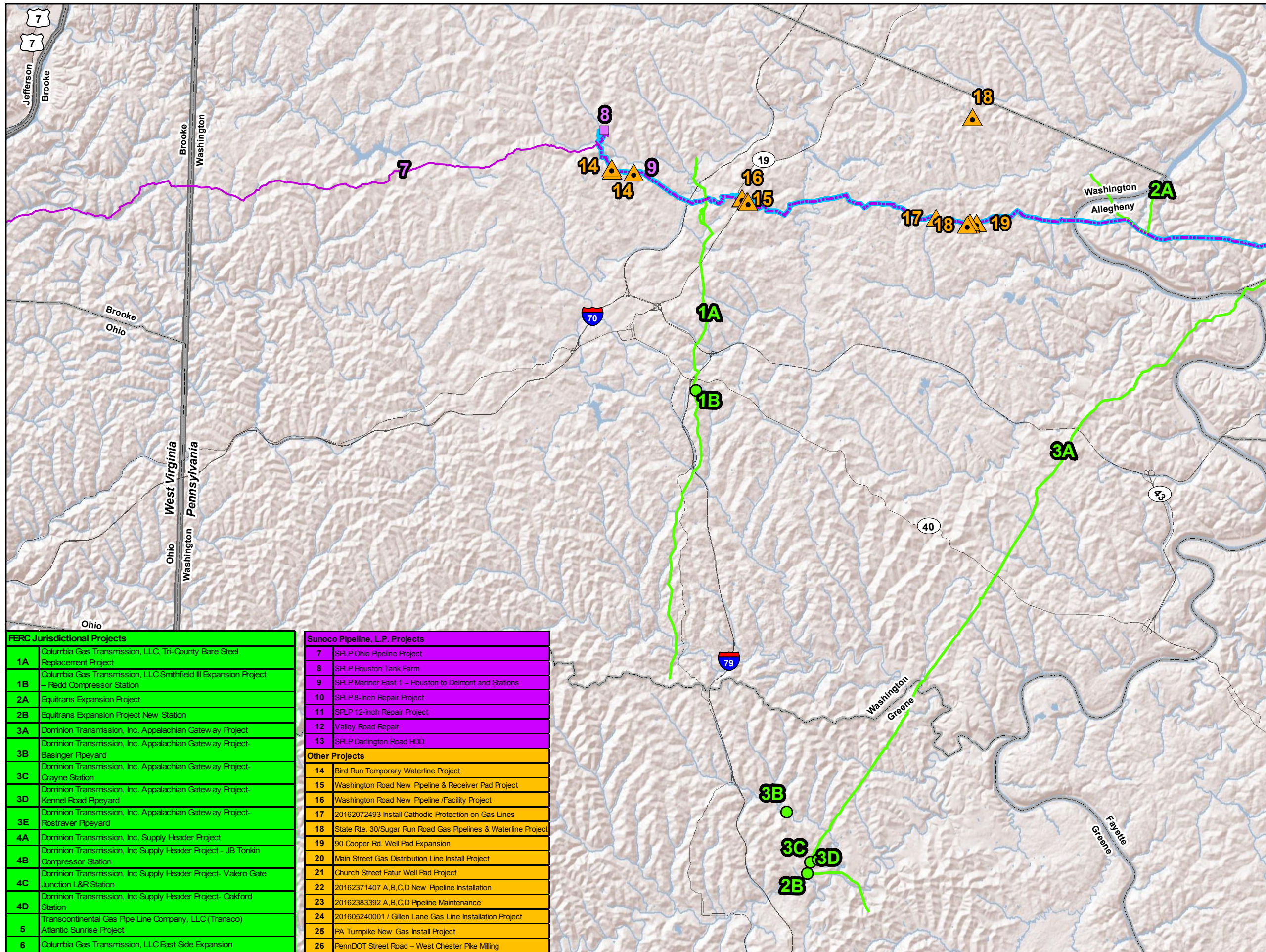
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet Key

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

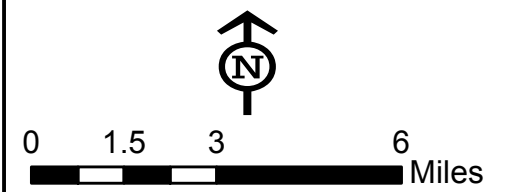
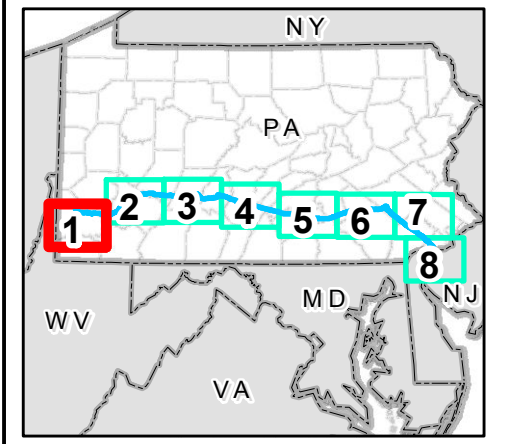
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- ▲ Other Projects
- Major Road
- ▭ County Boundary
- ▭ State Boundary



FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 – Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD
Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 1 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

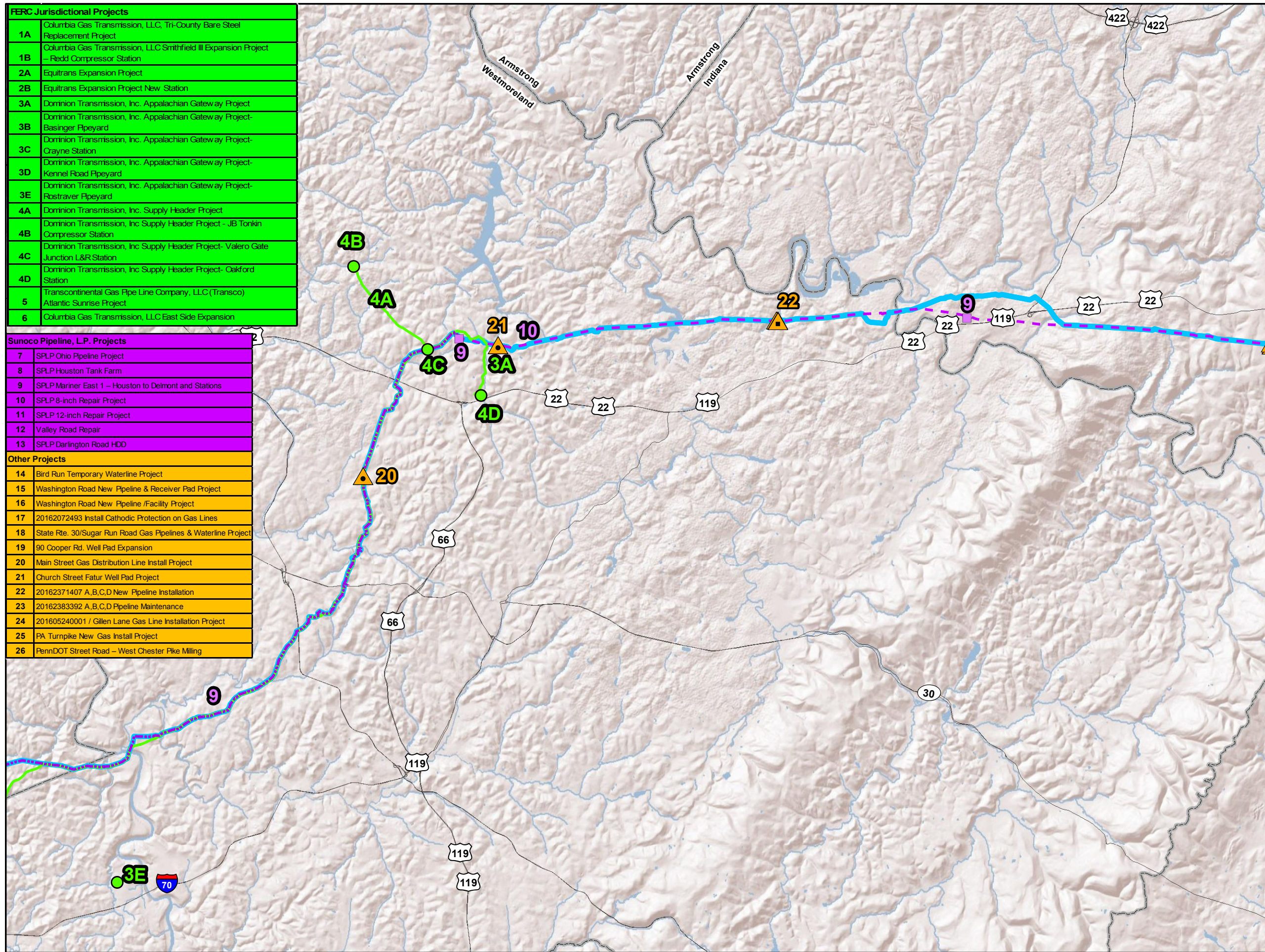
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project - Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 - Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD

Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road - West Chester Pike Milling



Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- FERC Jurisdictional Projects
- Other Projects
- Major Road
- County Boundary
- State Boudary

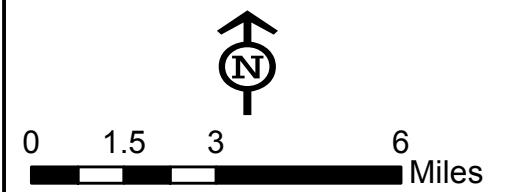
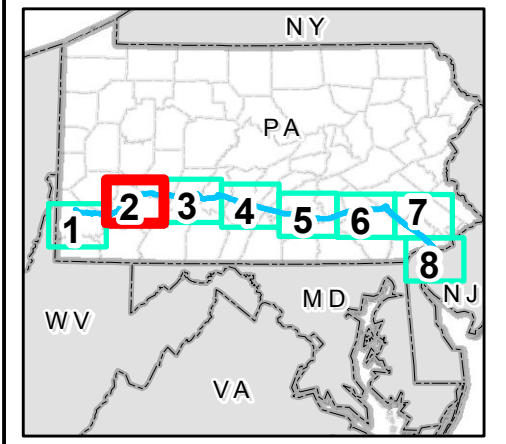


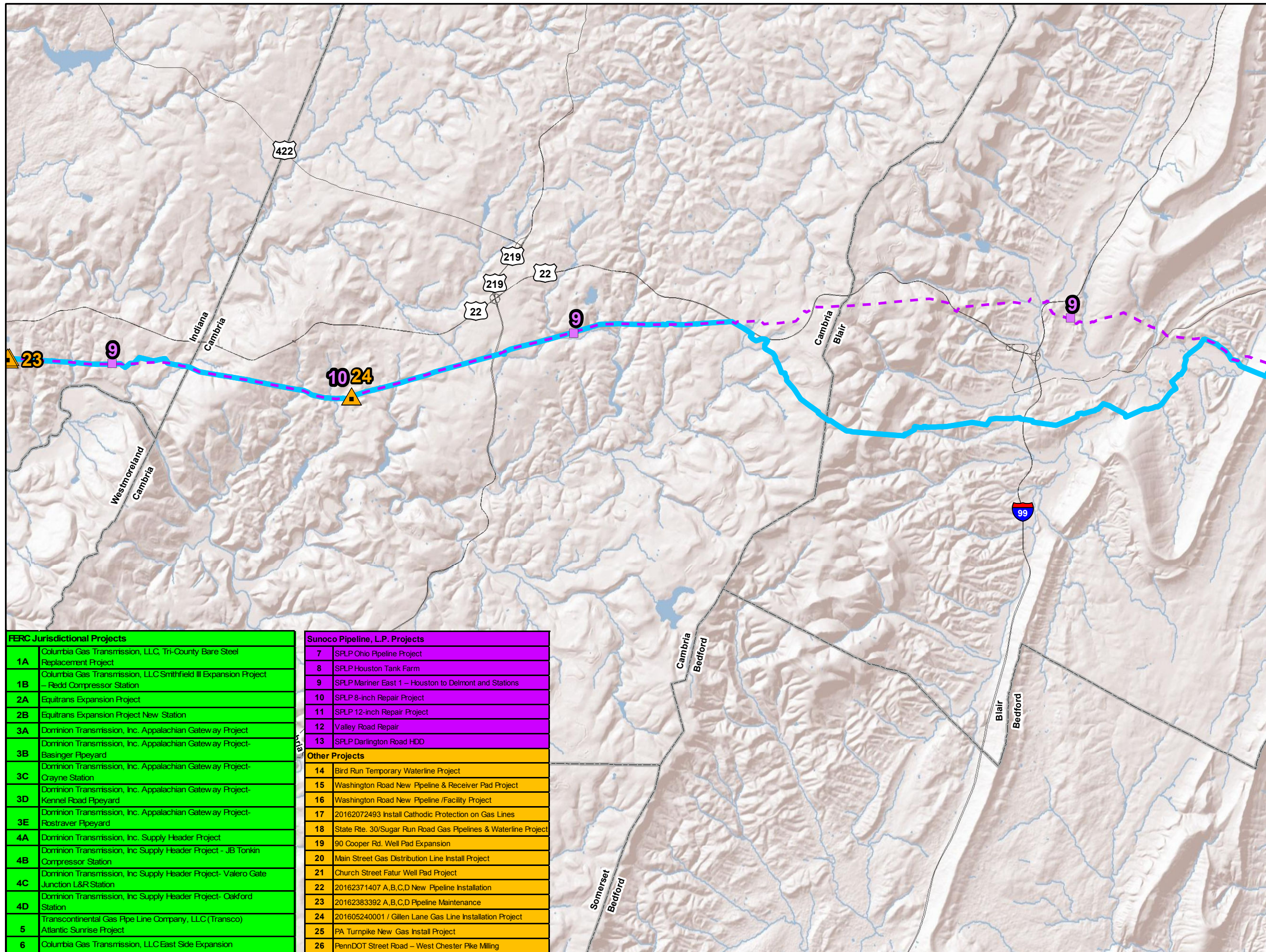
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 2 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

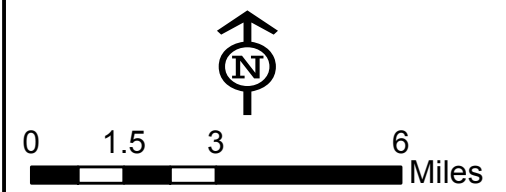
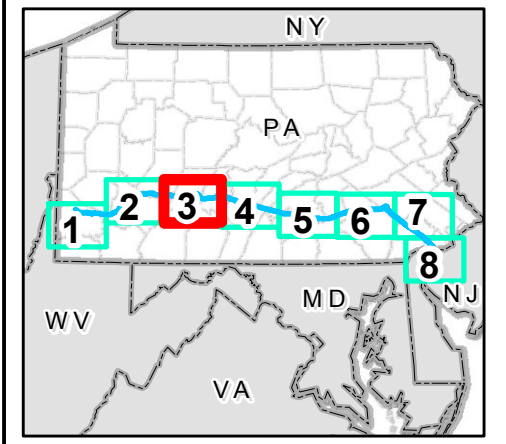
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- ▲ Other Projects
- Major Road
- ▭ County Boundary
- ▭ State Boundary



FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 – Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD
Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

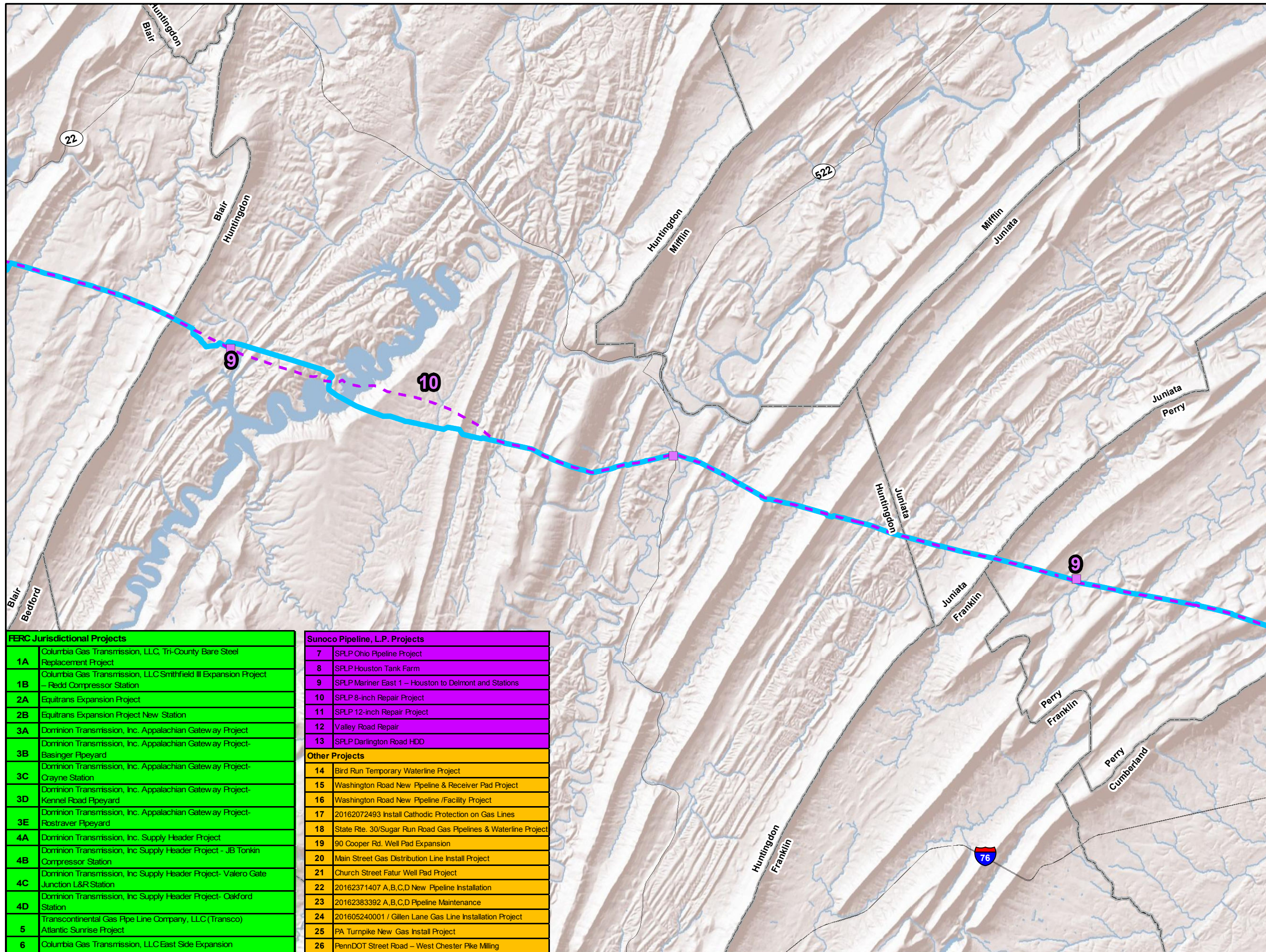
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 3 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
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1	10/14/16	MC	Additional projects		MS
2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

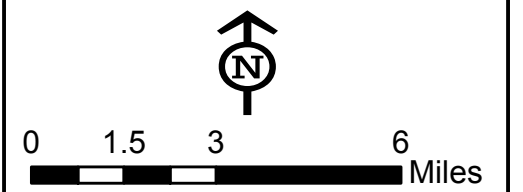
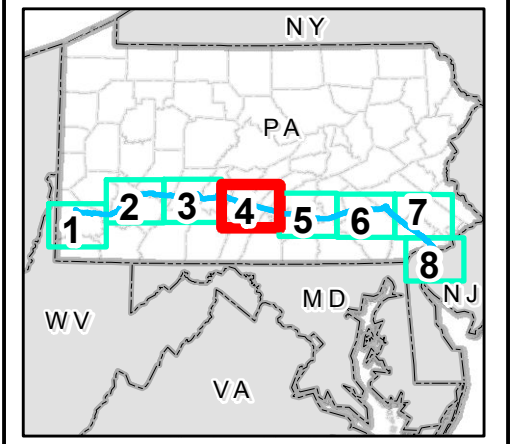
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- FERC Jurisdictional Projects
- ▲ Other Projects
- Major Road
- County Boundary
- ▭ State Boundary



FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield II Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 – Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD
Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

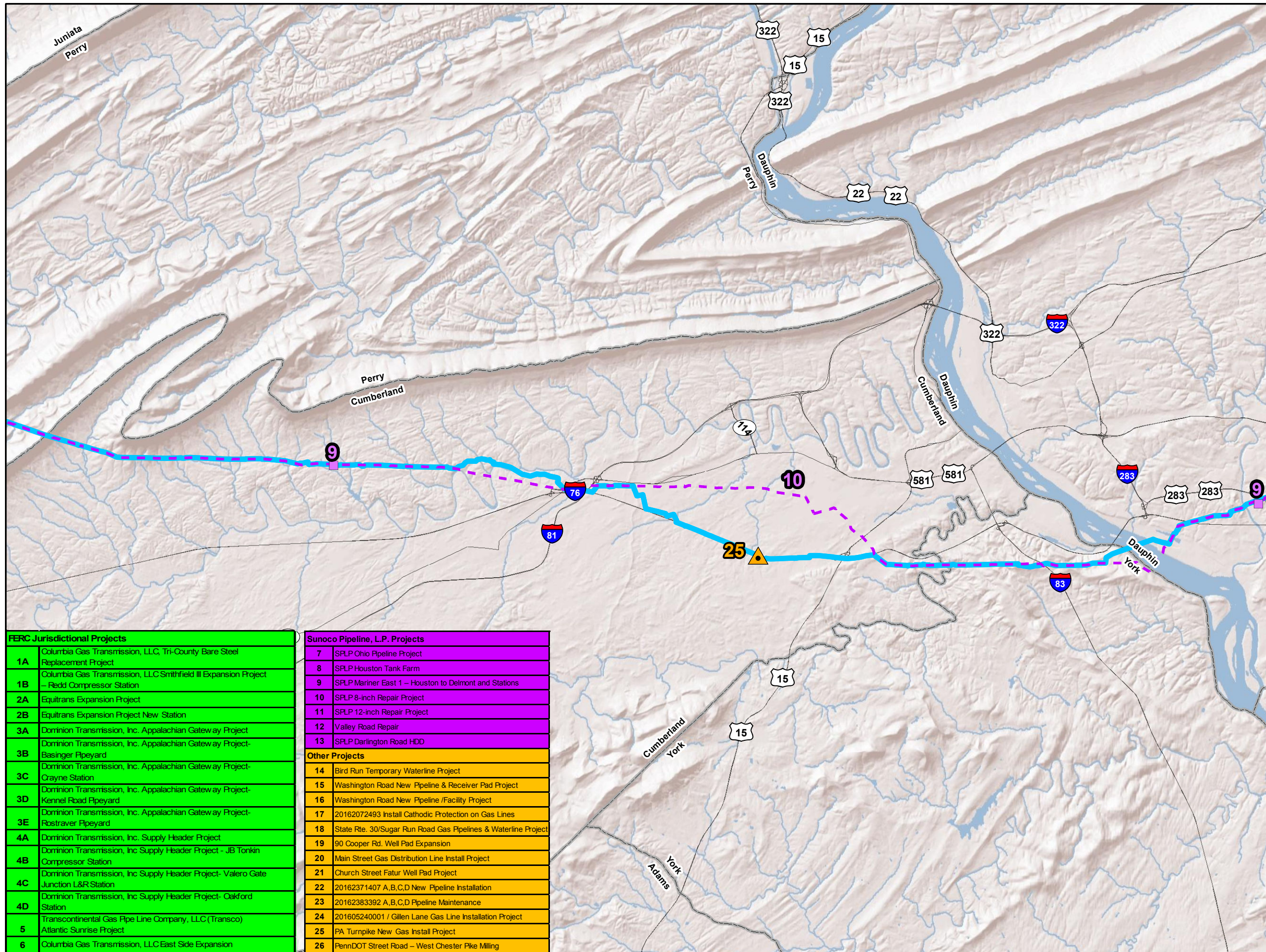
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 4 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
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2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

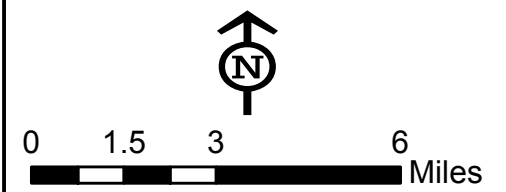
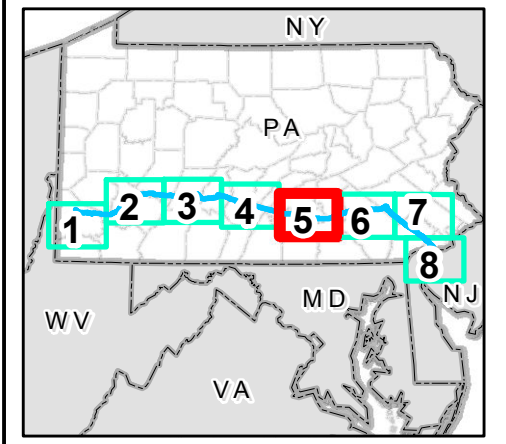
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- ▲ Other Projects
- Major Road
- ▭ County Boundary
- ▭ State Boundary



FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Pipeyard
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Pipeyard
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 – Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD
Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
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22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

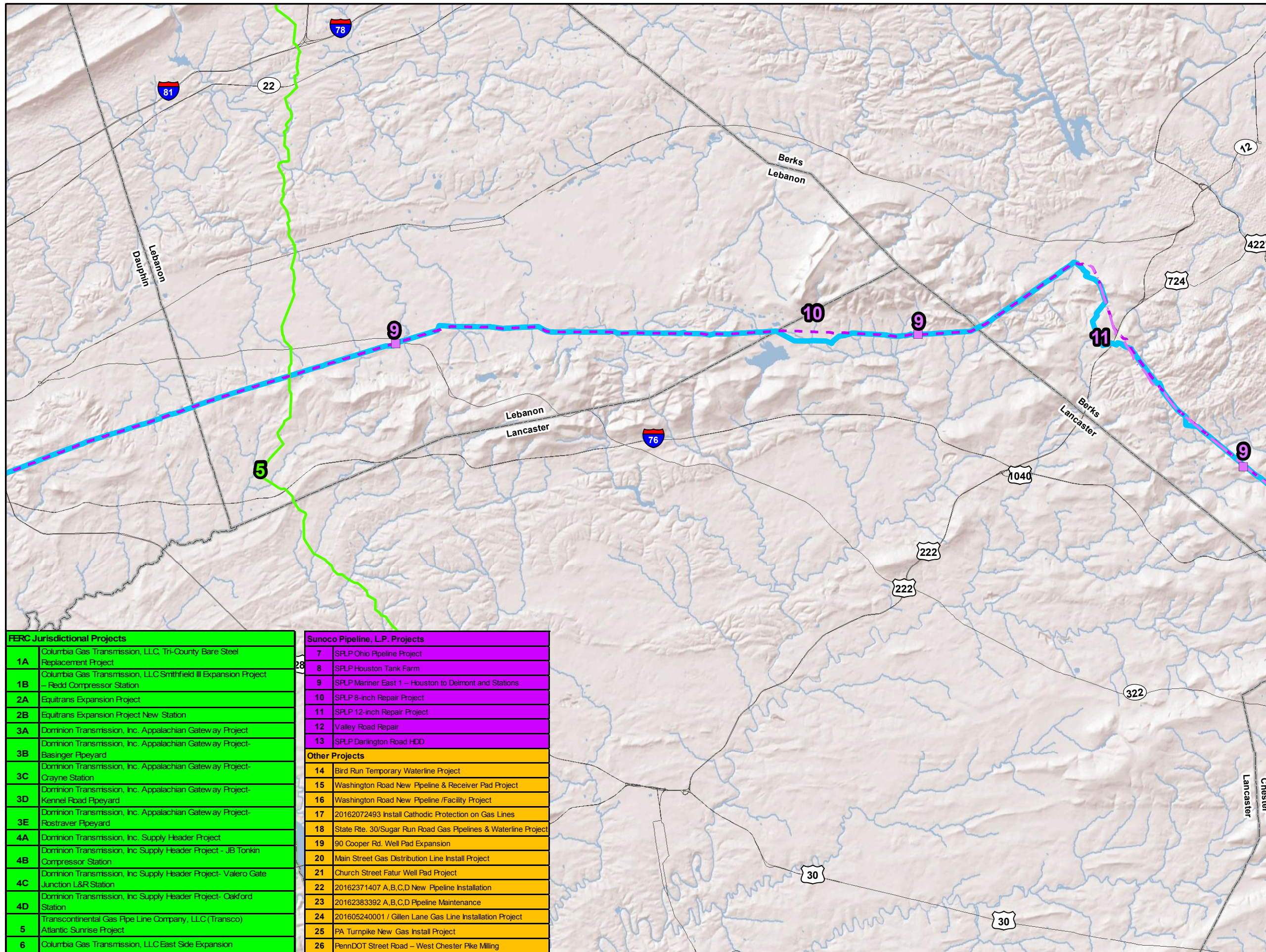
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 5 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
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4	11/15/16	MC	text edits		DB

Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- Other Projects
- Major Road
- County Boundary
- State Boundary

0 1.5 3 6 Miles

FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield III Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Pipeyard
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
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7	SPLP Ohio Pipeline Project
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21	Church Street Fatur Well Pad Project
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24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 6 of 8

Prepared By: TETRA TECH Date: 11/28/2016

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
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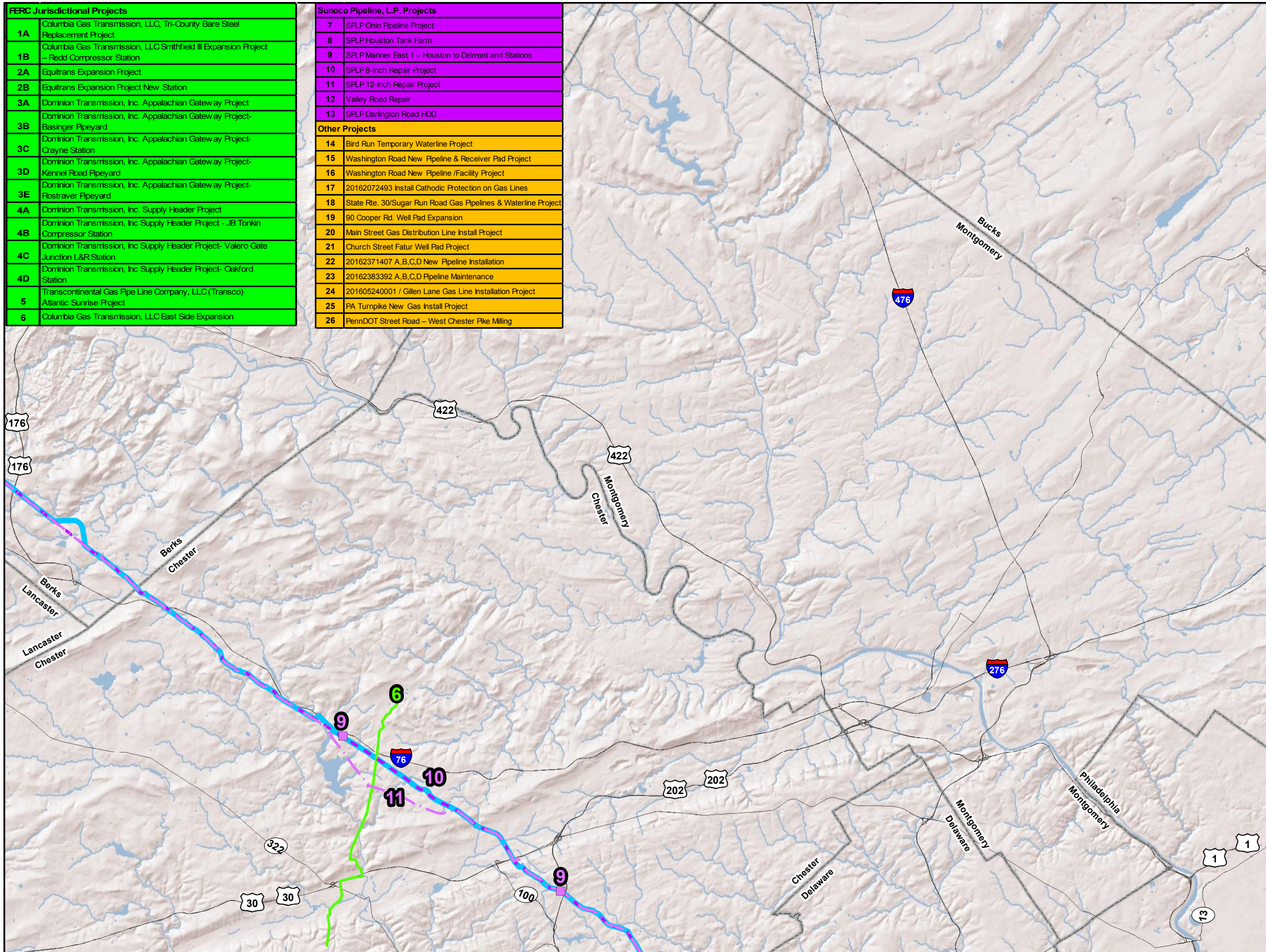
Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.

Coordinate System: NAD 83 Stateplane, PA South, Feet

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FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
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19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
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24	201605240001 / Gillen Lane Gas Line Installation Project
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26	PennDOT Street Road - West Chester Pke Milling



Legend

- PPP Centerline
- Sunoco Pipeline, L.P. Projects
- Sunoco Pipeline, L.P. Projects
- FERC Jurisdictional Projects
- FERC Jurisdictional Projects
- Other Projects
- Major Road
- County Boundary
- State Boudary

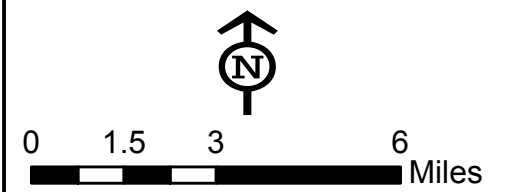
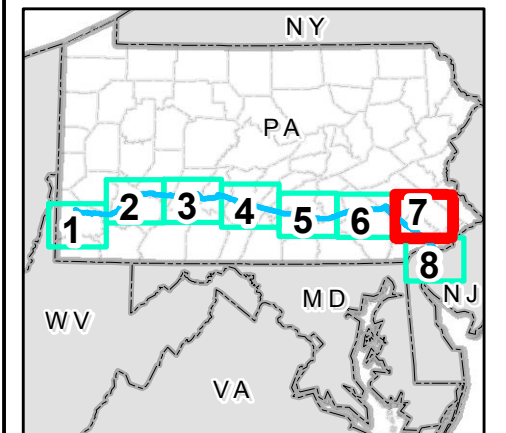


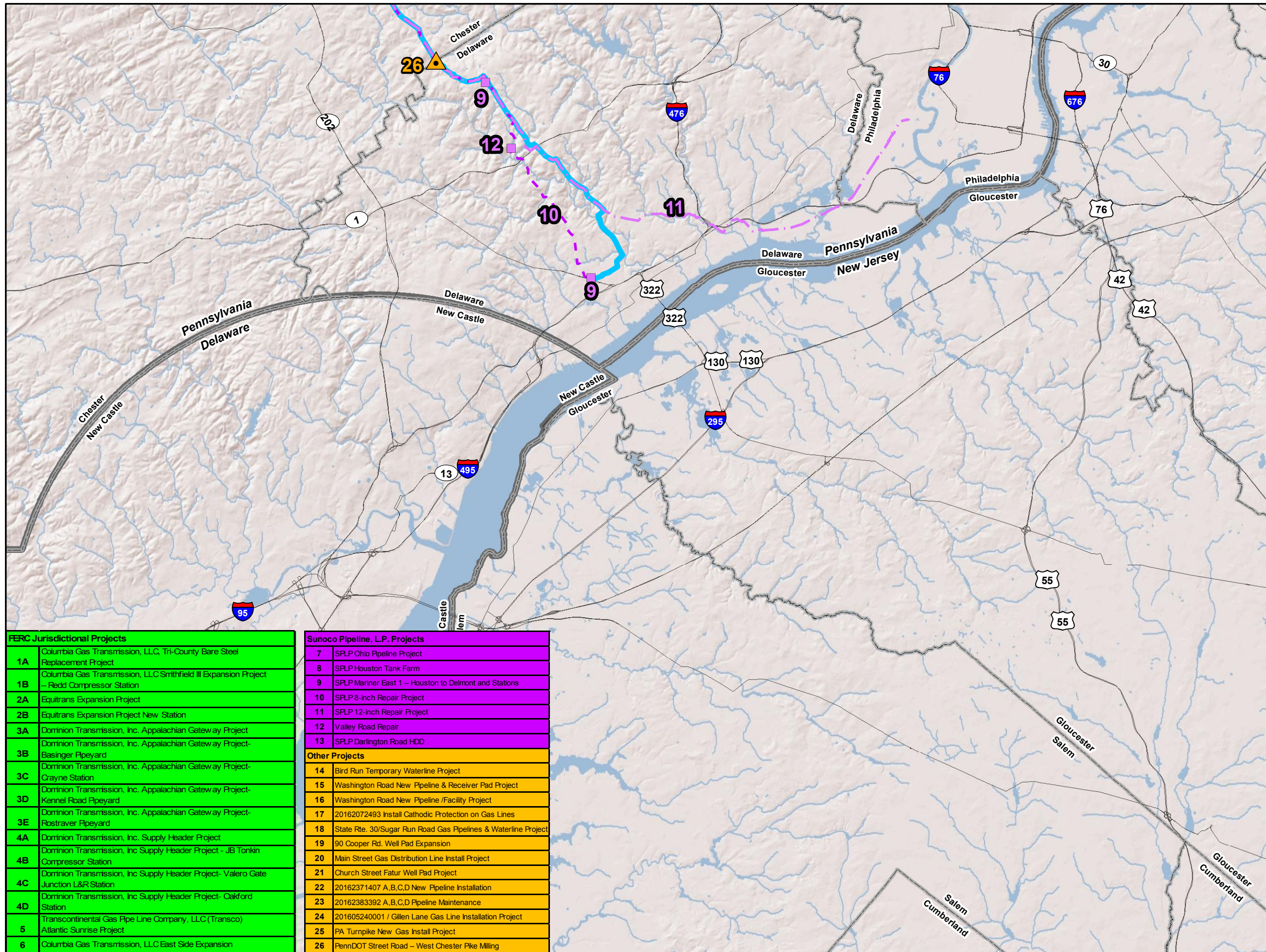
Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 7 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
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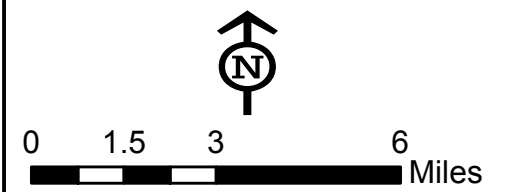
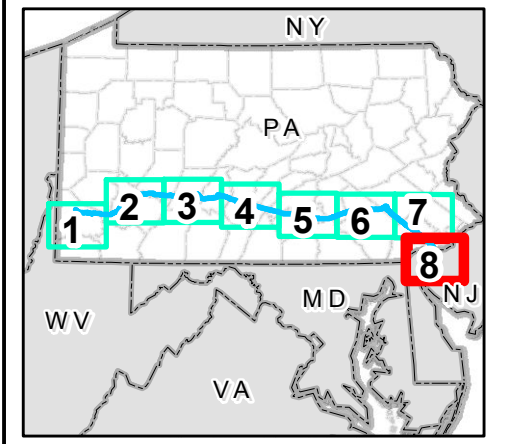
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Coordinate System: NAD 83 Stateplane, PA South, Feet

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Legend

- PPP Centerline
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- ▲ Other Projects
- Major Road
- ▭ County Boundary
- ▭ State Boundary



FERC Jurisdictional Projects	
1A	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement Project
1B	Columbia Gas Transmission, LLC Smithfield II Expansion Project – Redd Compressor Station
2A	Equitrans Expansion Project
2B	Equitrans Expansion Project New Station
3A	Dominion Transmission, Inc. Appalachian Gateway Project
3B	Dominion Transmission, Inc. Appalachian Gateway Project-Basinger Ppeward
3C	Dominion Transmission, Inc. Appalachian Gateway Project-Crayne Station
3D	Dominion Transmission, Inc. Appalachian Gateway Project-Kennel Road Ppeward
3E	Dominion Transmission, Inc. Appalachian Gateway Project-Rostraver Ppeward
4A	Dominion Transmission, Inc. Supply Header Project
4B	Dominion Transmission, Inc Supply Header Project - JB Tonkin Compressor Station
4C	Dominion Transmission, Inc Supply Header Project- Valero Gate Junction L&R Station
4D	Dominion Transmission, Inc Supply Header Project- Oakford Station
5	Transcontinental Gas Pipe Line Company, LLC (Transco) Atlantic Sunrise Project
6	Columbia Gas Transmission, LLC East Side Expansion

Sunoco Pipeline, L.P. Projects	
7	SPLP Ohio Pipeline Project
8	SPLP Houston Tank Farm
9	SPLP Mariner East 1 – Houston to Delmont and Stations
10	SPLP 8-inch Repair Project
11	SPLP 12-inch Repair Project
12	Valley Road Repair
13	SPLP Darlington Road HDD

Other Projects	
14	Bird Run Temporary Waterline Project
15	Washington Road New Pipeline & Receiver Pad Project
16	Washington Road New Pipeline /Facility Project
17	20162072493 Install Cathodic Protection on Gas Lines
18	State Rte. 30/Sugar Run Road Gas Pipelines & Waterline Project
19	90 Cooper Rd. Well Pad Expansion
20	Main Street Gas Distribution Line Install Project
21	Church Street Fatur Well Pad Project
22	20162371407 A,B,C,D New Pipeline Installation
23	20162383392 A,B,C,D Pipeline Maintenance
24	201605240001 / Gillen Lane Gas Line Installation Project
25	PA Turnpike New Gas Install Project
26	PennDOT Street Road – West Chester Pike Milling

Figure A-1: Cumulative Actions Map for the Sunoco Pennsylvania Pipeline Project
Sheet 8 of 8

Prepared By: **TETRA TECH** Date: **11/28/2016**

REVISIONS					
No.	Date	BY	DESCRIPTION	PROJ. ID	APPR.
0	10/11/16	MC	PPP & other projects		MS
1	10/14/16	MC	Additional projects		MS
2	10/19/16	MC	Additional projects		MS
3	11/7/16	MC	Updates edits		DB
4	11/15/16	MC	text edits		DB

Base Map: ESRI ArcGIS Online
Municipal Boundary; ESRI data, Aquatic Data; TT, 2015.
Coordinate System: NAD 83 Stateplane, PA South, Feet

NOR-G:\GIS_FILES\PPP\GIS\MXD\DATA_SHEETS_111016-1.MXD 11/28/2016 MC

Appendix B

Cumulative Impacts Tables

Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland

PPP Wetland ID	Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland (acres)																Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14-17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)	Equitrans Expansion Project (CP16-13)		
A6	0.030				0.015												0.011	0.034
A7																		0.000
A8					0.006													0.006
A9	0.059																	0.059
AM2	0.052																	0.052
B10	0.133																	0.133
B11	0.069				0.004												0.010	0.063
B12	0.001																	0.001
B13	0.032																	0.032
B14	0.024																	0.024
B15	0.162																	0.162
B16	0.007																	0.007
B17																		0.000
B18	0.010																	0.010
B19	0.479				0.013												0.020	0.472
B20																		0.000
B21	0.109				0.017													0.126
B22	0.290																0.015	0.275
B23																		0.000
B24	0.057																	0.057
B25																		0.000
B26					0.001													0.001
B27	0.059				0.007												0.000	0.066
B28	0.027																	0.027
B29	0.180				0.023												0.013	0.190
B30																		0.000
B31	0.005				0.005												0.003	0.007
B32	0.081																	0.081
B33	0.019																	0.019
B34																		0.000
B36					0.025													0.025
B37																		0.000
B39																		0.000
B40	0.047																	0.047
B41																		0.000
B42	0.112																	0.112
B43	0.023				0.042												0.017	0.048

PPP Wetland ID	Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland (acres)																Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP1417)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)	Equitrans Expansion Project (CP1613)		
B44	0.008																	0.008
B45																		0.000
B46																		0.000
B47																		0.000
B48	0.035																	0.035
B49	0.018																	0.018
B5	0.195																	0.195
B51					0.012													0.012
B52																		0.000
B53																		0.000
B54																		0.000
B55	0.012																	0.012
B56	0.003																	0.003
B57	0.036				0.027												0.008	0.055
B58	0.025																	0.025
B59	0.066																	0.066
B60	0.028																	0.028
B61	0.197																	0.197
B62																		0.000
B63																		0.000
B64	0.092																	0.092
B65																		0.000
B66	0.031																	0.031
B67																		0.000
B68																		0.000
B69																		0.000
B7	0.064																	0.064
B70																		0.000
B71	0.021																	0.021
B72	0.058																	0.058
B74	0.556																	0.556
B75																		0.000
B76	0.059																	0.059
B8																		0.000
B9																		0.000
BA1																		0.000
BA10	0.017																0.004	0.013

PPP Wetland ID	Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland (acres)															Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14-17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
M13	0.014																	0.014
M14																		0.000
M15	0.069				0.012												0.002	0.079
M16																		0.000
M17	0.102																	0.102
M18																		0.000
M2	0.010																	0.010
M22																		0.000
M23	0.020				0.008												0.002	0.026
M24	0.020																	0.020
M25																		0.000
M26	0.001																	0.001
M28																		0.000
M29	0.008																	0.008
M3	0.019																	0.019
M35																		0.000
M4					0.042													0.042
M49	0.022																	0.022
M5																		0.000
M50																		0.000
M55	0.125																	0.125
M56	0.022																	0.022
M57	0.014																	0.014
M59	0.074																	0.074
M6	0.013																	0.013
M60	0.056																	0.056
M61	0.119																	0.119
M62																		0.000
M63																		0.000
M64																		0.000
M65																		0.000
M67	0.043																	0.043
M68																		0.000
M69	0.052				0.003												0.002	0.053
M7	0.045																	0.045
M70																		0.000
M71	0.075																0.023	0.052

PPP Wetland ID	Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland (acres)																Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14-17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)	Equitrans Expansion Project (CP16-13)		
W139	0.014																	0.014
W14	0.014	0.014															0.011	0.017
W140	0.026																	0.026
W146																		0.000
W14e	0.005																	0.005
W15g																		0.000
W177	0.165				0.011													0.176
W19d	0.011																	0.011
W2		0.003																0.003
W202																		0.000
W204	0.012																	0.012
W22d	0.005				0.006													0.011
W25e	0.308																	0.308
W26e	0.149				0.008													0.157
W27e																		0.000
W300					0.009													0.009
W301	0.020				0.004												0.004	0.020
W302	0.058																0.011	0.047
W32d																		0.000
W332	0.024				0.014													0.038
W333	0.006				0.009													0.015
W338	0.004				0.011													0.015
W339					0.008													0.008
W33d	0.016																	0.016
W35	0.242																	0.242
W36d	0.013																	0.013
W37	0.071	0.114															0.071	0.114
W38		0.000																0.000
W3c	0.010																	0.010
W42	0.039	0.051															0.030	0.060
W43	0.027	0.086															0.001	0.112
W44	0.001	0.028															0.001	0.028
W46-1	0.066	0.097															0.054	0.109
W48	0.043	0.078									0.046						0.034	0.133
W48A																		0.000
W49	0.091	1.210									0.094						0.079	1.316
W5	0.013	0.054															0.013	0.054

PPP Wetland ID	Table B-1. Potential Cumulative Impacts for the Proposed Pipeline Route by Wetland (acres)															Overlap of Wetland Impacts (acres)	Total Cumulative Impact (acres)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP1417)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)		
Y5																	0.000
Y6	0.011																0.011
Y7	0.265																0.265
Y8																	0.000
Y9	0.011																0.011
TOTAL	36.667	3.222			5.566					0.911	0.661					1.856	45.171

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S11		96																96
S12	51	76															41	86
S121		4															0	4
S122		4									75						0	79
S123		0									0						0	0
S124	188	20									0						188	20
S125	58	4									0						53	9
S126	185	200									0						161	224
S127	52	78									0						41	89
S128	18	18									0						1	35
S129		113									0						0	113
S13	66	98									0						52	112
S130		9									0						0	9
S131	56	5									0						0	61
S132	1	1									0						0	2
S133		0									0						0	0
S134	50	75									0						40	85
S136		16									0						0	16
S137	67	93									0						55	105
S138	62	110									0						53	119
S139	68	115									0						54	129
S14	51	77									0						34	93
S140	76	76									0						50	101
S142		6									0						4	2
S143	63	125									0						51	137
S147	51	76									0					81	41	167
S149	25	4									0						17	12
S15		0									0						0	0
S150		7									0						0	7
S151	103	103									0						71	135
S152	169	193									0						151	211
S153	42	31									0						30	42
S154	53	80									0						42	90
S155		110									0						0	110
S156	78	126									0						52	152
S157	53	4									0						42	15
S158	51	256									0						40	267
S159	51	78									0						36	92
S16		26									0						0	26
S160	64	127									0						64	127

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S161	53	78									0						42	89
S162	61	88									0						48	101
S163		33									0						0	33
S164	50	75									0						40	85
S165	51	77									0						40	87
S166	52	168									59						42	237
S167	97	140									107						75	269
S168	52	67									27						40	105
S169	52	78									45						42	132
S170	51	77									21						41	108
S171	53	95									44						43	149
S172	185	228									239						179	473
S173	58	125									85						42	226
S174		0									0						0	0
S175	74	93									43						63	146
S176	52	78									41						39	131
S177	61	89									63						47	167
S178	4	14									0						0	18
S179	107	136									64						62	244
S18	51	8									0						41	18
S180	126	169									103						106	291
S181	59	94									57						49	161
S182	40	75									99						0	214
S184		11									70						0	81
S185		0									6						0	6
S186	20	78									62						11	149
S188	58	86									76						44	177
S189	131	211			13						0						95	260
S19	88	96									0						41	144
S190	262	397									71						148	582
S191	62	98									64						52	173
S192	54	81									67						46	156
S193	35	0									137						35	137
S194	50	75									66						41	150
S195	3	76									0						3	76
S196	55	88									0						40	103
S197	50	77									63						38	152
S198		84									82						0	166
S199		4									44						0	48
S2	56	67									0						42	81

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S236	52	78									34						41	122
S238A		0									0						0	0
S24	50	81									0						40	91
S25	57	82									0						40	99
S250		0									0						0	0
S260	95	0									0						83	12
S269	36	0									0						0	36
S27		5									0						0	5
S279		0									0						0	0
S28	52	4									0						52	5
S280		0									0						0	0
S281		0									0						0	0
S29		4									0						0	4
S2a																		0
S3	94	135									0						84	144
S31	53	79									0						43	89
S4	50	75									0						38	87
S6	58	86									0						45	99
S7		4									0						0	4
S8	30	115									0						30	115
S-A1	54	0			2						0						12	45
S-A10	75	0									0						0	75
S-A11		0									0						0	0
S-A12	29	0									0						0	29
S-A13	97	0									0						0	97
S-A14	117	0									0						0	117
S-A15	50	0									0						0	50
S-A16	52	0			18						0						16	53
S-A17	53	0									0						18	35
S-A18		0			200						0						0	200
S-A19	53	0									0						0	53
S-A20		0									0						0	0
S-A21	50	0									0						0	50
S-A22		0									0						0	0
S-A23	69	0									0						0	69
S-A24	52	0									0						0	52
S-A25	27	0									0						0	27
S-A26		0									0						0	0
S-A27	56	0			22						0						0	78
S-A28	51	0									0						0	51

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-A2A	208	0			0						0						53	155
S-A2B	159	0			1						0						0	160
S-A3	235	0									0						0	235
S-A31a																		0
S-A32		0									0						0	0
S-A33		0									0						0	0
S-A34	51	0			40						0						14	77
S-A34a		0									0						0	0
S-A35		0									0						0	0
S-A36	63	0									0						0	63
S-A37	51	0									0						0	51
S-A38	62	0									0						0	62
S-A39	51	0									0						0	51
S-A4		0			2						0						0	2
S-A41																		0
S-A42	62	0									0						0	62
S-A43	65	0									0						0	65
S-A44		0									0						0	0
S-A45	6	0									0						0	6
S-A46	51	0									0						0	51
S-A47	328	0									0						0	328
S-A48		0									0						0	0
S-A49	88	0									0						0	88
S-A5	39	0			20						0						0	59
S-A50		0									0						0	0
S-A51		0									0						0	0
S-A52		0			67						0						0	67
S-A54		0			120						0						0	120
S-A57		0			0						0						0	0
S-A58		0			160						0						0	160
S-A59		0			0						0						0	0
S-A5a	49	0			6						0						0	55
S-A6	82	0									0						15	67
S-A60		0									0						0	0
S-A61		0									0						0	0
S-A62																		0
S-A63																		0
S-A64																		0
S-A65		0									0						0	0
S-A66		0									0						0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)		
S-A68		0									0					0	0
S-A7		0			15						0					0	15
S-A70	63	0			0						0					0	63
S-A71	73	0			30						0					16	87
S-A72		0			0						0					0	0
S-A73	46	0			0						0					0	46
S-A74		0			90						0					0	90
S-A75		0			40						0					0	40
S-A76	48	0			0						0					0	48
S-A77		0			0						0					0	0
S-A78		0			0						0					0	0
S-A79		0			0						0					0	0
S-A80		0			0						0					0	0
S-A81		0			0						0					0	0
S-A82		0			0						0					0	0
S-A83		0			0						0					0	0
S-A85	54	0			0						0					0	54
S-A87	25	0			3						0					0	28
S-A88																	0
S-A9	57	0			0						0					0	57
S-AM2		0			0						0	1				0	1
S-B1																	0
S-B10		0			0						0	0				0	0
S-B11	51	0			0						0	0				0	51
S-B12	75	0			0						0	0				0	75
S-B13		0			0						0	0				0	0
S-B14	76	0			0						0	0				0	76
S-B15	52	0			0						0	0				0	52
S-B16	55	0			0						0	0				0	55
S-B17		0			0						0	0				0	0
S-B18	61	0			0						0	0				15	47
S-B19	1	0			0						0	0				0	1
S-B20																	0
S-B21		0			0						0	0				0	0
S-B22	69	0			0						0	0				18	51
S-B23		0			0						0	0				0	0
S-B24		0			0						0	0				0	0
S-B25		0			0						0	0				0	0
S-B26		0			0						0	0				0	0
S-B27	4	0			0						0	0				0	4

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-B28	63	0			0						0	0					0	63
S-B29	76	0			30						0	0					19	87
S-B30	106	0			0						0	0					0	106
S-B31	50	0			19						0	0					2	68
S-B32	57	0			0						0	0					0	57
S-B33	71	0			0						0	0					0	71
S-B34		0			40						0	0					0	40
S-B35		0			0						0	0					0	0
S-B36	29	0			0						0	0					0	29
S-B37	289	0			0						0	0					0	289
S-B38	54	0			0						0	0					0	54
S-B39		0			0						0	0					0	0
S-B40		0			0						0	0					0	0
S-B41		0			0						0	0					0	0
S-B42	51	0			0						0	0					0	51
S-B43	110	0			0						0	0					0	110
S-B45	53	0			0						0	0					0	53
S-B46	100	0			0						0	0					0	100
S-B47	73	0			0						0	0					0	73
S-B48		0			0						0	0					0	0
S-B49	58	0			0						0	0					0	58
S-B50	55	0			0						0	0					0	55
S-B51		0			3						0	0					0	3
S-B52		0			2						0	0					0	2
S-B53		0			4						0	0					0	4
S-B54		0			4						0	0					0	4
S-B55		0			0						0	0					0	0
S-B56		0			0						0	0					0	0
S-B57																		0
S-B59		0			0						0	0					0	0
S-B60	51	0			24						0	0					12	63
S-B61		0			0						0	0					0	0
S-B62		0			0						0	0					0	0
S-B62A		0			0						0	0					0	0
S-B63		0			0						0	0					0	0
S-B64		0			0						0	0					0	0
S-B65		0			0						0	0					0	0
S-B66	98	0			0						0	0					0	98
S-B67		0			0						0	0					0	0
S-B68		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-BB39	20	0			0						0	0					0	20
S-BB40	67	0			0						0	0					0	67
S-BB42	37	0			0						0	0					0	37
S-BB43		0			0						0	0					0	0
S-BB44	51	0			0						0	0					0	51
S-BB47	64	0			0						0	0					0	64
S-BB48		0			0						0	0					0	0
S-BB49A		0			0						0	0					0	0
S-BB49B	51	0			0						0	0					0	51
S-BB5	81	0			0						0	0					0	81
S-BB53		0			0						0	0					0	0
S-BB54	93	0			0						0	0					0	93
S-BB56		0			0						0	0					0	0
S-BB57																		0
S-BB58																		0
S-BB60	20	0			0						0	0					0	20
S-BB61	22	0			0						0	0					0	22
S-BB64																		0
S-BB66																		0
S-BB67	29	0			0						0	0					0	29
S-BB68	23	0			0						0	0					0	23
S-BB69	20	0			0						0	0					0	20
S-BB7																		0
S-BB70																		0
S-BB71																		0
S-BB72	20	0			0						0	0					0	20
S-BB73																		0
S-BB74	26	0			0						0	0					0	26
S-BB75	20	0			0						0	0					0	20
S-BB76	21	0			0						0	0					0	21
S-BB77																		0
S-BB78	20	0			0						0	0					0	20
S-BB79	1	0			0						0	0					0	1
S-BB80																		0
S-BB83	18	0			0						0	0					0	18
S-BB84	23	0			0						0	0					0	23
S-BB88		0			0						0	0					0	0
S-BB89		0			0						0	0					0	0
S-BB90		0			0						0	0					0	0
S-BB91		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-BB92		0			0						0	0					0	0
S-BB95		0			0						0	0					0	0
S-BB96	88	0			0						0	0					0	88
S-BB97		0			0						0	0					0	0
S-BB98		0			0						0	0					0	0
S-C1	107	0			1						0	0					18	90
S-C10		0			0						0	0					0	0
S-C100		0			0						0	0					0	0
S-C101	52	0			0						0	0					0	52
S-C102	11	0			0						0	0					0	11
S-C103	57	0			0						0	0					1	56
S-C104	52	0			0						0	0					0	52
S-C105		0			0						0	0					0	0
S-C106		0			0						0	0					0	0
S-C107	51	0			0						0	0					0	51
S-C108	109	0			0						0	0					0	109
S-C109		0			0						0	0					0	0
S-C11	76	0			0						0	0					0	76
S-C13																		0
S-C15		0			0						0	0					0	0
S-C16	57	0			0						0	0					0	57
S-C17		0			0						0	0					0	0
S-C18																		0
S-C19																		0
S-C2		0			0						0	0					0	0
S-C20																		0
S-C21																		0
S-C22		0			0						0	0					0	0
S-C23		0			0						0	0					0	0
S-C24		0			0						0	0					0	0
S-C25		0			0						0	0					0	0
S-C26		0			0						0	0					0	0
S-C3																		0
S-C30	50	0			0						0	0					0	50
S-C31	51	0			0						0	0					0	51
S-C32	58	0			28						0	0					0	86
S-C33	50	0			0						0	0					0	50
S-C35		0			0						0	0					0	0
S-C36		0			0						0	0					0	0
S-C37	51	0			0						0	0					0	51

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-C38		0			0						0	0					0	0
S-C39		0			0						0	0					0	0
S-C4																		0
S-C40		0			0						0	0					0	0
S-C41		0			0						0	0					0	0
S-C42		0			0						0	0					0	0
S-C43	50	0			0						0	0					0	50
S-C44	50	0			0						0	0					0	50
S-C45		0			0						0	0					0	0
S-C46		0			0						0	0					0	0
S-C47	104	0			0						0	0					0	104
S-C48	290	0			0						0	0					0	290
S-C52	51	0			0						0	0					0	51
S-C54		0			0						0	0					0	0
S-C55	86	0			0						0	0					0	86
S-C56	87	0			0						0	0					0	87
S-C57		0			0						0	0					0	0
S-C58	53	0			0						0	0					0	53
S-C59		0			0						0	0					0	0
S-C60		0			0						0	0					0	0
S-C61	61	0			89						0	0					0	150
S-C62		0			0						0	0					0	0
S-C63		0			0						0	0					0	0
S-C64	60	0			24						0	0					48	36
S-C65																		0
S-C66	43	0			0						0	0					0	43
S-C67		0			0						0	0					0	0
S-C68		0			0						0	0					0	0
S-C69		0			0						0	0					0	0
S-C7	54	0			0						0	0					0	54
S-C72	79	0			1						0	0					0	80
S-C73	50	0			2						0	0					0	52
S-C74		0			0						0	0					0	0
S-C78		0			7						0	0					0	7
S-C8		0			0						0	0					0	0
S-C85		0			0						0	0					0	0
S-C86		0			4						0	0					0	4
S-C87		0			0						0	73					0	73
S-C89		0			0						0	0					0	0
S-C9		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)		
S-C90		0			0						0	36				0	36
S-C91		0			0						0	0				0	0
S-C92		0			0						0	0				0	0
S-C93	94	0			2						0	0				0	96
S-C94	72	0			8						0	0				0	80
S-C96	71	0			0						0	0				0	71
S-C97		0			0						0	0				0	0
S-C98		0			0						0	0				0	0
S-C99		0			0						0	0				0	0
S-CC1	60	0			0						0	0				0	60
S-CC10	29	0			0						0	0				0	29
S-CC12		0			0						0	0				0	0
S-CC13	57	0			0						0	0				0	57
S-CC15		0			0						0	0				0	0
S-CC16																	0
S-CC17																	0
S-CC18		0			0						0	0				0	0
S-CC19		0			0						0	0				0	0
S-CC2		0			0						0	0				0	0
S-CC20		0			0						0	0				0	0
S-CC21		0			0						0	0				0	0
S-CC22		0			0						0	0				0	0
S-CC3		0			0						0	0				0	0
S-CC4	51	0			0						0	0				0	51
S-CC5	90	0			0						0	0				0	90
S-CC6	82	0			0						0	0				0	82
S-CC7	137	0			0						0	0				0	137
S-CC8	32	0			0						0	0				0	32
S-CJ1	166	0			0						0	0				0	166
S-CJ2		0			0						0	0				0	0
S-CJ2	30																30
S-CJ3																	0
S-CJ4	28	0			0						0	0				0	28
S-CJ5	21																21
S-CS1	211	0			0						237	0				173	275
S-CS2		0			0						9	0				0	9
S-CS3	16	0			0						0	0				0	16
S-CS6		0			0						0	0				0	0
S-DQ1																	0
S-DQ2	51	0			0						0	0				22	29

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)		
S-DQ4																	0
S-DQ5																	0
S-H1		0			0						0	0					0
S-H10		0			0						0	0					0
S-H11		0			0						0	0					0
S-H12		0			0						0	0					0
S-H13	53	0			10						0	0					20
S-H14		0			0						0	0					0
S-H15	1	0			0						0	0					1
S-H16	56	0			0						0	0					0
S-H17	58	0			0						0	0					0
S-H18	59	0			6						0	0					0
S-H19		0			0						0	0					0
S-H2		0			0						0	0					0
S-H20		0			0						0	0					0
S-H21	77	0			0						0	0					11
S-H22	194	0			0						0	0					0
S-H23	81	0			5						0	0					15
S-H27	54	0			0						0	0					0
S-H28	51	0			0						0	0					0
S-H29	52	0			0						0	0					0
S-H3		0			0						0	0					0
S-H30		0			0						0	0					0
S-H31																	0
S-H32																	0
S-H33		0			0						0	0					0
S-H34	112	0			0						0	0					0
S-H35	51	0			0						0	0					0
S-H36	36	0			0						0	0					0
S-H37		0			0						0	0					0
S-H38		0			0						0	0					0
S-H39	160	0			0						0	0					0
S-H4		0			0						0	0					0
S-H40	9	0			0						0	0					0
S-H41		0			0						0	0					0
S-H42		0			0						0	0					0
S-H43		0			0						0	0					0
S-H44	41	0			0						0	0					0
S-H47		0			0						0	0					0
S-H48		0			0						0	0					0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-H5		0			0						0	0					0	0
S-H52	77	0			1						0	0					0	78
S-H53		0			1						0	0					0	1
S-H54		0			1						0	0					0	1
S-H56	70	0			0						0	0					0	70
S-H57																		0
S-H58	461	0			0						0	0					0	461
S-H59	123	0			0						0	0					0	123
S-H6		0			0						0	0					0	0
S-H60	20	0			0						0	0					0	20
S-H61	23	0			8						0	0					23	8
S-H62	13	0			0						0	0					13	0
S-H63	61	0			0						0	0					0	61
S-H64		0			0						0	0					0	0
S-H65	130	0			0						0	0					0	130
S-H66	75	0			0						0	0					0	75
S-H67	40	0			0						0	0					0	40
S-H68		0			0						0	0					0	0
S-H69	84	0			0						0	0					0	84
S-H7	155	0			0						0	0					0	155
S-H70	4	0			0						0	0					0	4
S-H71	62	0			0						0	0					0	62
S-H8																		0
S-H9	74	0			45						0	0					0	119
S-I1	14	0			0						0	0					0	14
S-I17		0			0						0	0					0	0
S-I18		0			0						0	0					0	0
S-I19		0			0						0	0					0	0
S-I2	154	0			0						0	0					0	154
S-I20		0			0						0	0					0	0
S-I25	30	0			17						0	0					0	47
S-I26		0			0						0	0					0	0
S-I27	50	0			0						0	0					0	50
S-I28	51	0			0						0	0					0	51
S-I3		0			0						0	0					0	0
S-I31	106	0			0						0	0					0	106
S-I32	50	0			0						0	0					0	50
S-I33	68	0			0						0	0					0	68
S-I34		0			0						0	0					0	0
S-I35		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-I36		0			0						0	0					0	0
S-I38		0			0						0	0					0	0
S-I39																		0
S-I4																		0
S-I40		0			0						0	0					0	0
S-I41	51	0			0						0	0					0	51
S-I42		0			0						0	0					0	0
S-I43	84	0			0						0	0					0	84
S-I46		0			0						0	0					0	0
S-I47		0			0						0	0					0	0
S-I48		0			0						0	0					0	0
S-I49		0			0						0	0					0	0
S-I5	54	0			0						0	0					0	54
S-I50	57	0			0						0	0					0	57
S-I53		0			0						0	0					0	0
S-I54		0			0						0	0					0	0
S-I55	53	0			0						0	0					0	53
S-I56	51	0			0						0	0					0	51
S-I57	61	0			0						0	0					0	61
S-I58	70	0			0						0	0					0	70
S-I59	236	0			9						0	0					36	208
S-I6	51	0			0						0	0					0	51
S-I60		0			0						0	0					0	0
S-I63	59	0			0						0	0					0	59
S-I64	60	0			0						0	0					0	60
S-I65	96	0			0						0	0					0	96
S-I66	111	0			0						0	0					43	68
S-I67	75	0			0						0	0					0	75
S-I68		0			0						0	0					0	0
S-I69	98	0			0						0	0					0	98
S-I7																		0
S-I70		0			0						0	0					0	0
S-I71		0			0						0	0					0	0
S-I72	90	0			43						0	0					13	120
S-I73	206	0			66						0	0					10	262
S-I74	54	0			0						0	0					0	54
S-I75	585	0			0						0	0					0	585
S-I76	14	0			0						0	0					0	14
S-I77		0			0						0	0					0	0
S-I78	54	0			0						0	0					0	54

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-I79	53	0			0						0	0					0	53
S-I80	53	0			0						0	0					0	53
S-I81	58	0			0						0	0					0	58
S-I82		0			0						0	0					0	0
S-I83	61	0			0						0	0					0	61
S-I84	66	0			0						0	0					0	66
S-I85	22	0			0						0	0					0	22
S-I86		0			0						0	0					0	0
S-I87	55	0			0						0	0					0	55
S-I88		0			0						0	0					0	0
S-I89		0			0						0	0					0	0
S-I90	51	0			0						0	0					0	51
S-J10	6	0			0						0	0					0	6
S-J11		0			0						0	0					0	0
S-J12		0			0						0	0					0	0
S-J13	65	0			0						0	0					0	65
S-J14	66	0			0						0	0					0	66
S-J15		0			0						0	0					0	0
S-J17																		0
S-J18		0			0						0	0					0	0
S-J19	199	0			0						0	0					0	199
S-J20	57	0			0						0	0					0	57
S-J21	20	0			0						0	0					0	20
S-J22		0			0						0	0					0	0
S-J24	57	0			0						0	0					0	57
S-J25	38	0			0						0	0					0	38
S-J27	121	0			0						0	0					0	121
S-J28		0			0						0	0					0	0
S-J29	56	0			0						0	0					0	56
S-J30		0			0						0	0					0	0
S-J31	24	0			0						0	0					0	24
S-J32		0			0						0	0					0	0
S-J33																		0
S-J34	22	0			0						0	0					0	22
S-J35		0			0						0	0					0	0
S-J36		0			2						0	0					0	2
S-J37A		0			1						0	0					0	1
S-J37B		0			2						0	0					0	2
S-J4		0			0						0	0					0	0
S-J41		0			5						0	0					0	5

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-J42	57	0			0						0	0					0	57
S-J43	83	0			0						0	0					0	83
S-J44	146	0			0						0	0					0	146
S-J45		0			0						0	0					0	0
S-J50		0			0						0	0					0	0
S-J51		0			0						0	0					0	0
S-J52		0			0						0	0					0	0
S-J53		0			0						0	0					0	0
S-J54		0			0						0	0					0	0
S-J55		0			0						0	0					0	0
S-J56		0			0						0	0					0	0
S-J57	60	0			0						0	0					0	60
S-J58		0			0						0	0					0	0
S-J59	10	0			30						0	0					0	40
S-J6		0			0						0	0					0	0
S-J60	32	0			0						0	0					0	32
S-J61	34	0			0						0	0					0	34
S-J62	80	0			43						0	0					0	123
S-J62a	34																	34
S-J63	41	0			0						0	0					0	41
S-J64	30	0			0						0	0					10	20
S-J65	39	0			0						0	0					0	39
S-J67		0			0						0	0					0	0
S-J68	41	0			0						0	0					0	41
S-J69	84	0			0						0	0					0	84
S-J7	51	0			0						0	0					0	51
S-J70	73	0			0						0	0					0	73
S-J71		0			0						0	0					0	0
S-J72	2	0			0						0	0					0	2
S-J74	88	0			43						0	0					0	131
S-J75	64	0			0						0	0					0	64
S-J76	62	0			0						0	0					0	62
S-J9	52	0			0						0	0					0	52
S-JH2	56	0			0						0	0					0	56
S-JH4	53	0			0						0	0					0	53
S-JJ1	68	0			0						0	0					55	13
S-JJ2		0			0						0	0					0	0
S-K1	65	0			1						0	0					0	66
S-K10	51	0			0						0	0					0	51
S-K11	52	0			0						0	0					0	52

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-K12	52	0			8						0	0					0	60
S-K13	63	0			0						0	0					0	63
S-K14	105	0			0						0	0					0	105
S-K15																		0
S-K16	54	0			0						0	0					0	54
S-K17		0			0						0	0					0	0
S-K18		0			0						0	0					0	0
S-K19		0			0						0	0					0	0
S-K2	95	0			0						0	0					0	95
S-K23		0			0						0	0					0	0
S-K25		0			0						0	0					0	0
S-K26		0			0						0	0					0	0
S-K27	94	0			0						0	0					0	94
S-K28		0			0						0	0					0	0
S-K29	9	0			0						0	0					0	9
S-K3	60	0			0						0	0					0	60
S-K30	58	0			0						0	0					0	58
S-K31	51	0			0						0	0					0	51
S-K32		0			0						0	0					0	0
S-K33		0			0						0	0					0	0
S-K34		0			0						0	0					0	0
S-K35		0			0						0	0					0	0
S-K4	176	0			0						0	0					0	176
S-K44	50	0			0						0	0					0	50
S-K45		0			0						0	0					0	0
S-K48	36	0			11						0	0					6	41
S-K49		0			0						0	0					0	0
S-K5	55	0			0						0	0					0	55
S-K50	62	0			0						0	0					0	62
S-K51	24	0			0						0	0					0	24
S-K52	31	0			0						0	0					0	31
S-K53		0			15						0	0					0	15
S-K54		0			0						0	0					0	0
S-K55	139	0			0						0	0					0	139
S-K56	65	0			0						0	0					0	65
S-K57	94	0			0						0	0					0	94
S-K58	84	0			0						0	0					0	84
S-K59	54	0			0						0	0					0	54
S-K6	114	0			0						0	0					0	114
S-K60		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-K61	77	0			0						0	0					0	77
S-K62	37	0			0						0	0					0	37
S-K63	94	0			0						0	0					37	57
S-K64		0			0						0	0					0	0
S-K65	371	0			0						0	0					0	371
S-K66		0			0						0	0					0	0
S-K67	57	0			0						0	0					0	57
S-K68		0			0						0	0					0	0
S-K69	302	0			0						0	0					0	302
S-K7	72	0			0						0	0					0	72
S-K70	54	0			0						0	0					0	54
S-K71																		0
S-K72	78	0			0						0	0					0	78
S-K73	57	0			0						0	0					0	57
S-K74		0			18						0	0					0	18
S-K75		0			0						0	0					0	0
S-K76	51	0			0						0	0					0	51
S-K77		0			0						0	0					0	0
S-K8	50	0			0						0	0					0	50
S-K80	59	0			0						0	0					0	59
S-K81		0			0						0	0					0	0
S-K82	136	0			0						0	0					0	136
S-K83	54	0			0						0	0					0	54
S-K84	23	0			0						0	0					0	23
S-K85	76	0			0						0	0					0	76
S-K86		0			0						0	0					0	0
S-K87	51	0			0						0	0					0	51
S-K88	51	0			0						0	0					0	51
S-K89	322	0			0						0	0					30	292
S-K90	85	0			0						0	0					0	85
S-K91	22	0			0						0	0					0	22
S-K92																		0
S-K93	42	0			0						0	0					0	42
S-K94	20	0			0						0	0					0	20
S-K95	103	0			0						0	0					0	103
S-K96	103	0			0						0	0					0	103
S-KP1	51	0			0						0	0					0	51
S-KP2																		0
S-KP3	158	0			0						0	0					0	158
S-L1	33	0			48						0	0					0	81

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-L10		0			0						0	0					0	0
S-L11		0			0						0	0					0	0
S-L12	447	0			0						0	0					0	447
S-L13	56	0			0						0	0					0	56
S-L14	58	0			3						0	0					0	61
S-L15	153	0			0						0	0					0	153
S-L16	192	0			8						0	0					0	200
S-L17																		0
S-L18	63	0			24						0	0					0	87
S-L19	103	0			0						0	0					0	103
S-L2		0			0						0	0					0	0
S-L20		0			0						0	0					0	0
S-L21	43	0			0						0	0					0	43
S-L22	59	0			64						0	0					9	114
S-L23	50	0			0						0	0					0	50
S-L24	52	0			0						0	0					2	50
S-L25		0			0						0	0					0	0
S-L26	50	0			0						0	0					0	50
S-L27	65	0			0						0	0					0	65
S-L28		0			0						0	0					0	0
S-L29		0			0						0	0					0	0
S-L3	174	0			2						0	0					0	176
S-L30	51	0			0						0	0					0	51
S-L31	60	0			0						0	0					0	60
S-L32		0			0						0	0					0	0
S-L33	79	0			0						0	0					0	79
S-L34		0			0						0	0					0	0
S-L35	124	0			0						0	0					0	124
S-L36		0			0						0	0					0	0
S-L37		0			0						0	0					0	0
S-L38	50	0			0						0	0					0	50
S-L39	51	0			0						0	0					0	51
S-L4	79	0			0						0	0					0	79
S-L40	57	0			0						0	0					0	57
S-L41	117	0			0						0	0					0	117
S-L42	58	0			0						0	0					0	58
S-L43		0			0						0	0					0	0
S-L44		0			0						0	0					0	0
S-L45		0			0						0	0					0	0
S-L46		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-L47	80	0			0						0	0					0	80
S-L48		0			0						0	0					0	0
S-L49		0			0						0	0					0	0
S-L5		0			0						0	0					0	0
S-L50		0			0						0	0					0	0
S-L51	67	0			0						0	0					0	67
S-L52	110	0			0						0	0					0	110
S-L53	73	0			0						0	0					0	73
S-L57	58	0			40						0	0					0	98
S-L58	54	0			14						0	0					0	68
S-L59		0			8						0	0					0	8
S-L6	25	0			0						0	0					0	25
S-L63		0			64						0	0					0	64
S-L67		0			0						0	0					0	0
S-L68	55	0			0						0	0					0	55
S-L69	118	0			0						0	0					0	118
S-L7		0			0						0	0					0	0
S-L70																		0
S-L72	143	0			0						0	0					0	143
S-L74	65	0			0						0	0					0	65
S-L75		0			0						0	0					0	0
S-L76		0			0						0	0					0	0
S-L77		0			0						0	0					0	0
S-L8	54	0			0						0	0					0	54
S-L80	27	0			0						0	0					0	27
S-L83	144	0			0						0	0					0	144
S-L84	59	0			0						0	0					0	59
S-L9	81	0			0						0	0					0	81
S-L90	31	0			0						0	0					0	31
S-L91		0			0						0	0					0	0
S-L92	24	0			0						0	0					0	24
S-L94	128	0			0						0	0					0	128
S-L96	105	0			0						0	0					0	105
S-L97	23	0			0						0	0					0	23
S-L98	51	0			0						0	0					0	51
S-M1	60	0			20						0	0					17	63
S-M10		0			0						0	0					0	0
S-M100	83	0			0						0	0					14	69
S-M101		0			0						0	0					0	0
S-M102	64	0			0						0	0					0	64

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-M103		0			0						0	0					0	0
S-M104		0			0						0	0					0	0
S-M105		0			0						0	0					0	0
S-M106	66	0			0						0	0					0	66
S-M107		0			0						0	0					0	0
S-M108	9	0			0						0	0					0	9
S-M11	49	0			0						0	0					0	49
S-M12	51	0			0						0	0					0	51
S-M13	71	0			0						0	0					0	71
S-M14	71	0			0						0	0					0	71
S-M15	63	0			0						0	0					0	63
S-M16	50	0			48						0	0					4	94
S-M17	65	0			0						0	0					0	65
S-M18	309	0			0						0	0					0	309
S-M19		0			0						0	0					0	0
S-M2	216	0			0						0	0					0	216
S-M20	23	0			0						0	0					0	23
S-M21	25	0			0						0	0					0	25
S-M22		0			0						0	0					0	0
S-M28	130	0			0						0	0					0	130
S-M3	49	0			0						0	0					0	49
S-M30		0			0						0	0					0	0
S-M31		0			0						0	0					0	0
S-M32	20	0			0						0	0					0	20
S-M33		0			16						0	0					0	16
S-M34		0			0						0	0					0	0
S-M35	134	0			0						0	0					0	134
S-M38	21	0			0						0	0					0	21
S-M39		0			0						0	0					0	0
S-M4	322	0			0						0	0					24	298
S-M48	53	0			0						0	0					0	53
S-M49																		0
S-M5		0			0						0	0					0	0
S-M52	68	0			0						0	0					0	68
S-M53																		0
S-M6	83	0			25						0	0					0	108
S-M67	74	0			0						0	0					0	74
S-M68		0			0						0	0					0	0
S-M69		0			0						0	0					0	0
S-M7	71	0			0						0	0					0	71

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-M70	55	0			0						0	0					0	55
S-M71		0			0						0	0					0	0
S-M72	52	0			0						0	0					0	52
S-M73	52	0			0						0	0					0	52
S-M74	51	0			0						0	0					0	51
S-M75	9	0			0						0	0					0	9
S-M76	64	0			0						0	0					0	64
S-M77	49	0			0						0	0					0	49
S-M78	50	0			0						0	0					0	50
S-M79	16	0			0						0	0					0	16
S-M8	52	0			0						0	0					0	52
S-M80	50	0			0						0	0					0	50
S-M81		0			0						0	0					0	0
S-M82		0			0						0	0					0	0
S-M83	58	0			0						0	0					0	58
S-M84		0			0						0	0					0	0
S-M86	54	0			0						0	0					0	54
S-M87		0			0						0	0					0	0
S-M88		0			0						0	0					0	0
S-M9	53	0			0						0	0					0	53
S-M90	137	0			0						0	0					0	137
S-M91		0			0						0	0					0	0
S-M92	56	0			0						0	0					0	56
S-M94	50	0			0						0	0					0	50
S-M96		0			0						0	0					0	0
S-M97	90	0			0						0	0					0	90
S-M98	51	0			21						0	0					8	64
S-M99	135	0			57						0	0					41	150
S-N1	26	0			0						0	0					25	1
S-N10	56	0			0						0	0					0	56
S-N100	57	0			0						0	0					0	57
S-N101	56	0			0						0	0					0	56
S-N102		0			0						0	0					0	0
S-N103	28	0			0						0	0					0	28
S-N104	59	0			44						0	0					4	99
S-N105		0			0						0	0					0	0
S-N106		0			0						0	0					0	0
S-N107		0			0						0	0					0	0
S-N108	28	0			0						0	0					28	0
S-N109		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-N11		0			0						0	0					0	0
S-N110	59	0			0						0	0					43	16
S-N111		0			0						0	0					0	0
S-N112	58	0			50						0	0					4	104
S-N113	50	0			0						0	0					0	50
S-N114	52	0			0						0	0					0	52
S-N115																		0
S-N116		0			0						0	0					0	0
S-N117	62	0			0						0	0					0	62
S-N118	63	0			0						0	0					0	63
S-N119	54	0			0						0	0					0	54
S-N12		0			0						0	0					0	0
S-N120		0			0						0	0					0	0
S-N13	52	0			0						0	0					0	52
S-N14	2	0			0						0	0					0	2
S-N15		0			0						0	0					0	0
S-N16		0			0						0	0					0	0
S-N17	54	0			0						0	0					20	34
S-N18	47	0			0						0	0					0	47
S-N19		0			0						0	0					0	0
S-N2		0			0						0	0					0	0
S-N20																		0
S-N21	59	0			0						0	0					13	46
S-N22	81	0			0						0	0					0	81
S-N25	56	0			0						0	0					0	56
S-N26	51	0			0						0	0					0	51
S-N27	55	0			0						0	0					0	55
S-N28	9	0			0						0	0					0	9
S-N29	65	0			0						0	0					41	24
S-N3		0			0						0	0					0	0
S-N30	16	0			0						0	0					0	16
S-N31		0			0						0	0					0	0
S-N32		0			0						0	0					0	0
S-N33	71	0			0						0	0					0	71
S-N34	33	0			0						0	0					0	33
S-N35		0			0						0	0					0	0
S-N36		0			0						0	0					0	0
S-N37		0			0						0	0					0	0
S-N39		0			0						0	0					0	0
S-N4	17	0			0						0	0					0	17

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-N40		0			0						0	0					0	0
S-N41	24	0			0						0	0					0	24
S-N42		0			0						0	0					0	0
S-N43		0			0						0	0					0	0
S-N44	127	0			0						0	0					0	127
S-N45	31	0			0						0	0					0	31
S-N46	32	0			0						0	0					12	20
S-N47		0			0						0	0					0	0
S-N48	48	0			73						0	0					13	108
S-N49	33	0			0						0	0					0	33
S-N5		0			0						0	0					0	0
S-N50	41	0			0						0	0					0	41
S-N51	115	0			0						0	0					0	115
S-N52	71	0			0						0	0					0	71
S-N53	46	0			0						0	0					0	46
S-N54	54	0			0						0	0					24	30
S-N55		0			0						0	0					0	0
S-N56	72	0			0						0	0					21	51
S-N57		0			0						0	0					0	0
S-N58		0			0						0	0					0	0
S-N59	42	0			0						0	0					0	42
S-N6		0			0						0	0					0	0
S-N60		0			0						0	0					0	0
S-N61	47	0			0						0	0					0	47
S-N62	56	0			0						0	0					0	56
S-N63	54	0			0						0	0					0	54
S-N64	69	0			0						0	0					0	69
S-N65		0			0						0	0					0	0
S-N66		0			0						0	0					0	0
S-N67		0			0						0	0					0	0
S-N68	113	0			0						0	0					0	113
S-N69	63	0			0						0	0					0	63
S-N7		0			0						0	0					0	0
S-N70		0			0						0	0					0	0
S-N71	52	0			0						0	0					0	52
S-N72		0			0						0	0					0	0
S-N73	52	0			0						0	0					0	52
S-N74		0			0						0	0					0	0
S-N75	50	0			0						0	0					0	50
S-N76	57	0			0						0	0					3	54

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-N77	164	0			0						0	0					0	164
S-N78	56	0			0						0	0					0	56
S-N79		0			0						0	0					0	0
S-N8	5	0			0						0	0					0	5
S-N80	27	0			0						0	0					0	27
S-N81	51	0			11						0	0					0	62
S-N82		0			0						0	0					0	0
S-N83	52	0			0						0	0					0	52
S-N84	83	0			0						0	0					0	83
S-N85	9	0			0						0	0					0	9
S-N86	53	0			9						0	0					0	62
S-N87	46	0			0						0	0					0	46
S-N88	66	0			0						0	0					0	66
S-N89	239	0			0						0	0					0	239
S-N9		0			0						0	0					0	0
S-N90	82	0			12						0	0					0	94
S-N91	91	0			0						0	0					0	91
S-N92		0			0						0	0					0	0
S-N93	52	0			0						0	0					0	52
S-N96	73	0			0						0	0					0	73
S-N97		0			0						0	0					0	0
S-N98		0			0						0	0					0	0
S-N99		0			0						0	0					0	0
S-O1	50	0			0						0	0					0	50
S-O10		0			0						0	0					0	0
S-O100	118	0			26						0	0					0	144
S-O101	69	0			0						0	0					0	69
S-O102	50	0			0						0	0					0	50
S-O103		0			0						0	0					0	0
S-O104	105	0			0						0	0					0	105
S-O106	1	0			0						0	0					0	1
S-O107																		0
S-O108		0			0						0	0					0	0
S-O109	50	0			0						0	0					0	50
S-O11	131	0			0						0	0					0	131
S-O110	186	0			0						0	0					0	186
S-O111	219	0			0						0	0					0	219
S-O112	116	0			0						0	0					0	116
S-O113		0			0						0	0					0	0
S-O12	49	0			0						0	0				14	35	

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)		
S-O13	79	0			0						0	0				0	79
S-O14	13	0			0						0	0				0	13
S-O15	71	0			0						0	0				0	71
S-O16	60	0			0						0	0				0	60
S-O17	156	0			0						0	0				0	156
S-O18	84	0			0						0	0				0	84
S-O19	57	0			0						0	0				0	57
S-O2		0			0						0	0				0	0
S-O20	67	0			0						0	0				0	67
S-O21	214	0			0						0	0				14	200
S-O22		0			0						0	0				0	0
S-O23	128	0			0						0	0				0	128
S-O24	78	0			0						0	0				0	78
S-O25	82	0			0						0	0				0	82
S-O26		0			0						0	0				0	0
S-O27	61	0			0						0	0				0	61
S-O28	50	0			0						0	0				0	50
S-O29	53	0			0						0	0				0	53
S-O3		0			0						0	0				0	0
S-O30	185	0			0						0	0				0	185
S-O31	66	0			0						0	0				0	66
S-O32		0			0						0	0				0	0
S-O33	82	0			0						0	0				0	82
S-O34	57	0			0						0	0				0	57
S-O35		0			0						0	0				0	0
S-O36	51	0			0						0	0				0	51
S-O37	63	0			0						0	0				0	63
S-O38	59	0			0						0	0				0	59
S-O39		0			0						0	0				0	0
S-O4	75	0			0						0	0				0	75
S-O40	73	0			0						0	0				0	73
S-O41	75	0			0						0	0				0	75
S-O42		0			0						0	0				0	0
S-O43	19	0			0						0	0				0	19
S-O44		0			0						0	0				0	0
S-O45	52	0			0						0	0				0	52
S-O46		0			0						0	0				0	0
S-O47		0			0						0	0				0	0
S-O48	3	0			0						0	0				0	3
S-O49		0			0						0	0				0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-O5	58	0			0						0	0					0	58
S-O50	52	0			0						0	0					0	52
S-O51	51	0			0						0	0					0	51
S-O52	52	0			0						0	0					0	52
S-O53		0			0						0	0					0	0
S-O54	54	0			0						0	0					0	54
S-O55		0			0						0	0					0	0
S-O56	73	0			0						0	0					0	73
S-O57																		0
S-O58		0			0						0	0					0	0
S-O59	53	0			0						0	0					0	53
S-O6	55	0			0						0	0					0	55
S-O60	51	0			0						0	0					0	51
S-O61		0			0						0	0					0	0
S-O62		0			0						0	0					0	0
S-O63	85	0			0						0	0					0	85
S-O64	81	0			0						0	0					0	81
S-O65		0			0						0	0					0	0
S-O66	88	0			0						0	0					0	88
S-O67		0			0						0	0					0	0
S-O68		0			0						0	0					0	0
S-O69	98	0			0						0	0					0	98
S-O7	17	0			0						0	0					0	17
S-O70	65	0			0						0	0					0	65
S-O71																		0
S-O72	99	0			0						0	0					0	99
S-O73	8	0			0						0	0					0	8
S-O74	142	0			0						0	0					0	142
S-O75		0			0						0	0					0	0
S-O76	107	0			0						0	0					0	107
S-O77	37	0			0						0	0					0	37
S-O78	77	0			0						0	0					0	77
S-O79		0			0						0	0					0	0
S-O8		0			0						0	0					0	0
S-O80		0			0						0	0					0	0
S-O81		0			0						0	0					0	0
S-O82		0			0						0	0					0	0
S-O83		0			0						0	0					0	0
S-O84	51	0			0						0	0					0	51
S-O85		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-O86	60	0			0						0	0					0	60
S-O87	10	0			0						0	0					10	0
S-O88	51	0			0						0	0					0	51
S-O89		0			0						0	0					0	0
S-O9	54	0			0						0	0					11	43
S-O90	51	0			0						0	0					0	51
S-O91	53	0			0						0	0					0	53
S-O92	13	0			0						0	0					0	13
S-O93	62	0			0						0	0					0	62
S-O94	64	0			0						0	0					0	64
S-O95		0			0						0	0					0	0
S-O96	56	0			0						0	0					0	56
S-O97		0			0						0	0					0	0
S-O98		0			0						0	0					0	0
S-O99	107	0			0						0	0					5	102
S-P1	54	0			0						0	0					0	54
S-P10	287	0			47						0	0					34	300
S-P11	155	0			0						0	0					21	134
S-P12	22	0			0						0	0					0	22
S-P13	42	0			0						0	0					1	41
S-P14	52	0			0						0	0					0	52
S-P18	59	0			0						0	0					0	59
S-P19		0			0						0	0					0	0
S-P2		0			0						0	0					0	0
S-P20		0			0						0	0					0	0
S-P21		0			0						0	0					0	0
S-P22		0			0						0	0					0	0
S-P23	55	0			10						0	0					0	65
S-P24		0			0						0	0					0	0
S-P25	55	0			0						0	0					0	55
S-P26		0			0						0	0					0	0
S-P27	55	0			0						0	0					0	55
S-P28		0			0						0	0					0	0
S-P29	116	0			17						0	0					43	90
S-P3		0			0						0	0					0	0
S-P30		0			0						0	0					0	0
S-P31	124	0			0						0	0					0	124
S-P32	41	0			0						0	0					0	41
S-P33	67	0			0						0	0					12	55
S-P34	56	0			0						0	0					0	56

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-P35	77	0			0						0	0					0	77
S-P36	248	0			0						0	0					0	248
S-P39		0			0						0	0					0	0
S-P4	50	0			0						0	0					0	50
S-P41	109	0			0						0	0					0	109
S-P42	18	0			0						0	0					0	18
S-P43	72	0			0						0	0					0	72
S-P44	81	0			0						0	0					0	81
S-P45	31	0			0						0	0					0	31
S-P46	52	0			0						0	0					0	52
S-P47	51	0			0						0	0					0	51
S-P48																		0
S-P49		0			0						0	0					0	0
S-P5	61	0			0						0	0					0	61
S-P50	249	0			0						0	0					48	201
S-P51		0			0						0	0					0	0
S-P6	62	0			0						0	0					0	62
S-P7		0			0						0	0					0	0
S-P8	58	0			11						0	0					0	69
S-P9	51	0			0						0	0					2	49
S-Q10																		0
S-Q100	64	0			0						0	0					0	64
S-Q11	90	0			0						0	0					0	90
S-Q200		0			0						0	0					0	0
S-Q3	51	0			0						0	0					0	51
S-Q4	22	0			0						0	0					0	22
S-Q5	25	0			0						0	0					0	25
S-Q51	71	0			27						0	0					29	69
S-Q53	91	0			0						0	0					0	91
S-Q55		0			0						0	0					0	0
S-Q56		0			0						0	0					0	0
S-Q57	83	0			0						0	0					0	83
S-Q58	76	0			0						0	0					0	76
S-Q59	59	0			0						0	0					0	59
S-Q6		0			0						0	0					0	0
S-Q61																		0
S-Q62		0			0						0	0					0	0
S-Q63	95	0			0						0	0					0	95
S-Q64	98	0			0						0	0					0	98
S-Q65	132	0			25						0	0					11	146

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14 17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-Q66	54	0			7						0	0					0	61
S-Q67	137	0			15						0	0					0	152
S-Q68																		0
S-Q69		0			0						0	0					0	0
S-Q7	25	0			0						0	0					0	25
S-Q70	19	0			0						0	0					0	19
S-Q71	102	0			0						0	0					0	102
S-Q8	69	0			0						0	0					0	69
S-Q80		0			0						0	0					0	0
S-Q81																		0
S-Q82		0			0						0	0					0	0
S-Q83		0			0						0	0					0	0
S-Q84		0			0						0	0					0	0
S-Q85		0			0						0	0					0	0
S-Q86		0			0						0	0					0	0
S-Q89		0			0						0	0					0	0
S-Q9		0			0						0	0					0	0
S-Q90	81	0			0						0	0					0	81
S-R104	51	0			0						0	0					0	51
S-R90		0			0						0	0					0	0
S-R91		0			0						0	0					0	0
S-R92		0			0						0	0					0	0
S-R93																		0
S-R94	72	0			0						0	0					0	72
S-R95		0			0						0	0					0	0
S-R96	54	0			0						0	0					0	54
S-STV1	20	0			0						0	0					0	20
S-STV2	21	0			0						0	0					0	21
S-STV3	25	0			0						0	0					0	25
S-STV4	20	0			0						0	0					0	20
S-SZ1																		0
S-SZ2																		0
S-T1	60	0			0						0	0					0	60
S-T12		0			0						0	0					0	0
S-T2	56	0			0						0	0					0	56
S-T3	51	0			0						0	0					0	51
S-T34	98	0			0						0	0					50	48
S-T35	117	0			0						0	0					54	63
Str-3		0			0						0	0					0	0
S-X2		0			0						0	0					0	0

Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)

PPP Stream ID	Table B-2. Potential Cumulative Impacts for the Proposed Pipeline Route by Stream (linear feet)															Overlap of Stream Impacts (linear feet)	Total Cumulative Impact (linear feet)	
	PPP Proposed	SPLP Mariner East I – Houston to Delmont	SPLP – Mariner East I Stations	SPLP Ohio Pipeline Project	SPLP 8-inch Repair Project	SPLP Darlington Road HDD	SPLP 12-inch Repair Project	SPLP Houston Tank Farm	Transco’s Atlantic Sunrise Project (CP15-138)	Dominion Transmission, Inc. Northeast Expansion Project (CP11-39)	Dominion Transmission, Inc. (PF09-15) Appalachian Gateway Project (CP10-448)	Columbia Gas Transmission, LLC (PF13-7) East Side Expansion (CP14-17)	Dominion Transmission, Inc. Supply Header Project (CP15-555)	Equitrans, L.P., TP-371 Pipeline Replacement (CP15-528)	Columbia Gas Transmission, LLC, Tri-County Bare Steel Replacement (CP15-95)			Equitrans Expansion Project (CP16-13)
S-Y1		0			0						0	0					0	0
S-Y10	69	0			0						0	0					0	69
S-Y11	51	0			0						0	0					0	51
S-Y12	84	0			0						0	0					0	84
S-Y13		0			0						0	0					0	0
S-Y14	58	0			0						0	0					0	58
S-Y15	100	0			0						0	0					0	100
S-Y16	50	0			0						0	0					0	50
S-Y17	54	0			0						0	0					0	54
S-Y18	104	0			0						0	0					0	104
S-Y19	145	0			0						0	0					0	145
S-Y2		0			0						0	0					0	0
S-Y20	69	0			0						0	0					0	69
S-Y21		0			0						0	0					0	0
S-Y22	52	0			0						0	0					0	52
S-Y23	77	0			0						0	0					0	77
S-Y24																		0
S-Y3	154	0			0						0	0					0	154
S-Y4		0			0						0	0					0	0
S-Y5	28	0			0						0	0					0	28
S-Y6	179	0			0						0	0					0	179
S-Y7	13	0			0						0	0					0	13
S-Y8	56	0			0						0	0					0	56
S-Y9	39	0			0						0	0					0	39
S-Z2		0			0						47	0					0	47
Trib-1		0			0						0	0					0	0
Total	53,131	10,366			3,793						4,190	110				81	6,779	64,892