

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

CARVERTON TIE-IN SITE PLAN

WEST WYOMING BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

APRIL 2021
 REVISED MARCH 2022

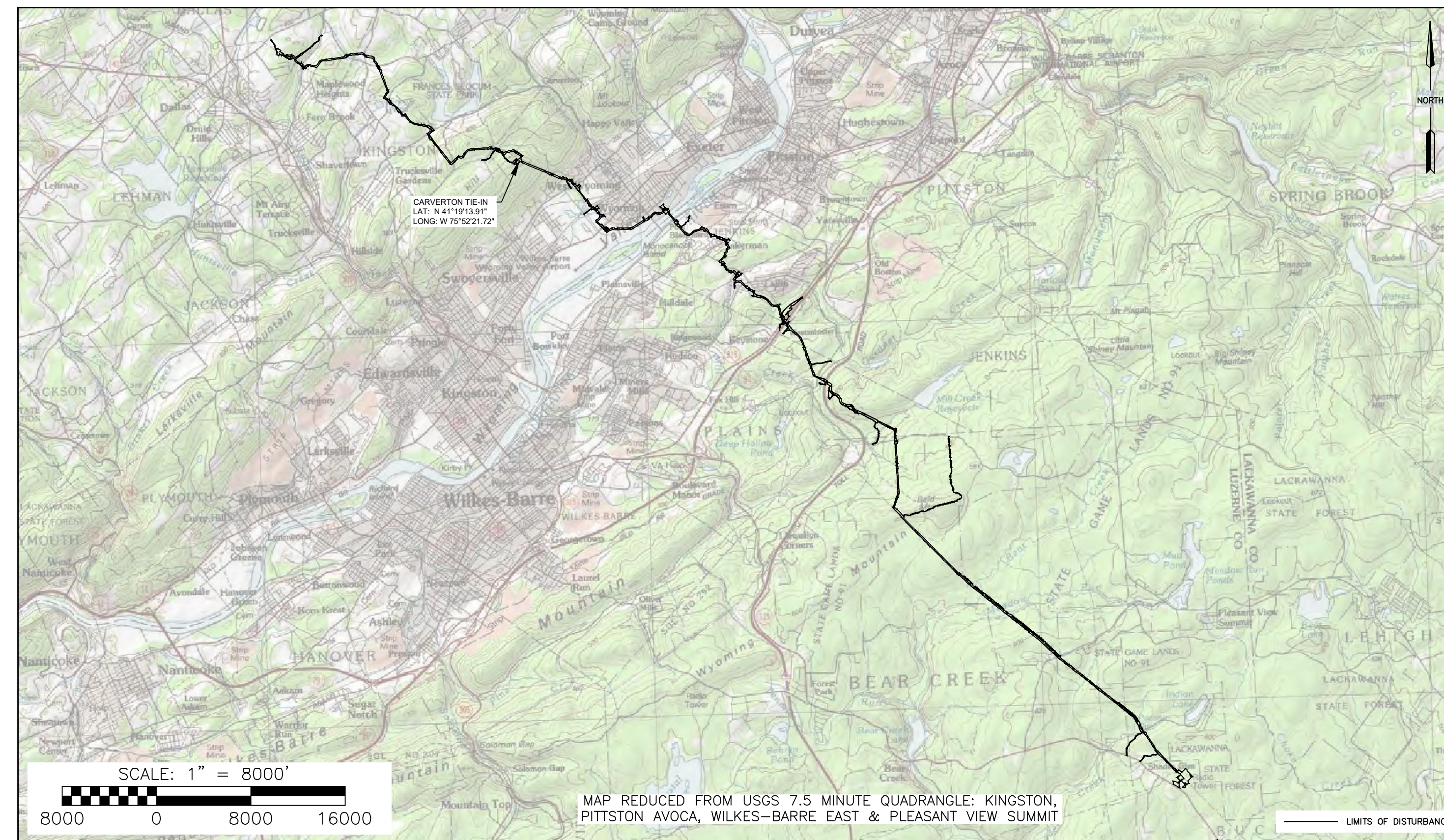
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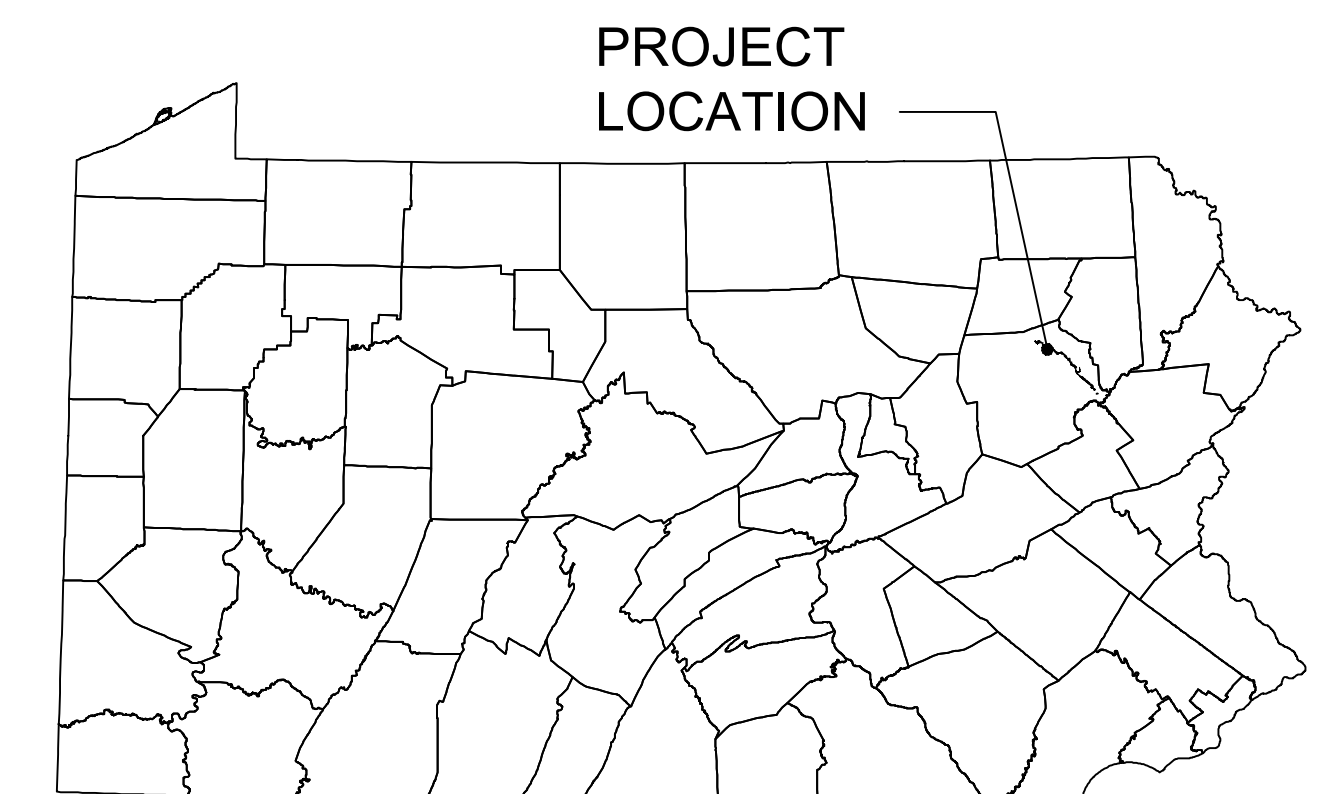
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LOCATION MAP



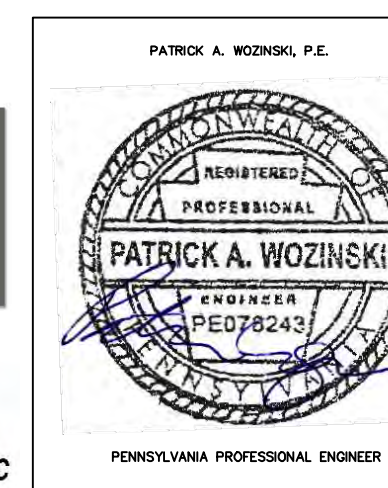
VICINITY MAP
 N.T.S.

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1 OF 5	COVER SHEET
2 OF 5	EXISTING CONDITIONS PLAN
3 OF 5	PROPOSED CONDITIONS PLAN
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RECEIVING WATERS			
NAME	DESIGNATED USE	EXISTING USE	PFBC CLASSIFICATION
TRIBUTARY 28363 TO ABRAHAMS CREEK	CWF	N/A	NATURALLY REPRODUCING TROUT

Call before you dig.
 1-800-242-1776 or **811**

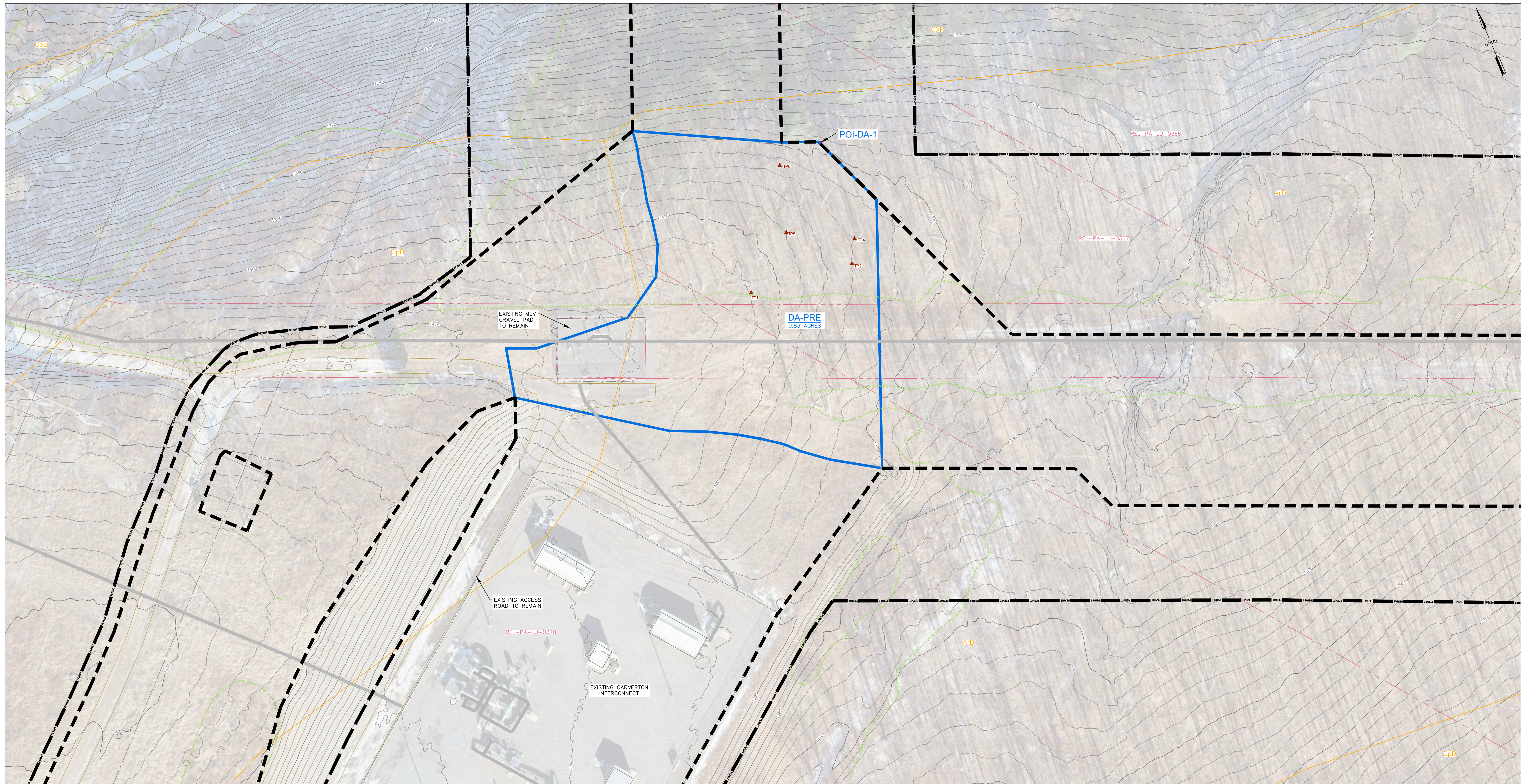
PENNSYLVANIA ACT 287 (1974) AS AMENDED BY
 PENNSYLVANIA LESS THAN THREE (3) WORKING
 DAYS AND NO MORE THAN (10) WORKING DAYS
 NOTICE TO UTILITIES BEFORE YOU EXCAVATE,
 DRILL, BLAST OR DEMOLISH.



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NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
1	06/29/21	RHM	REVISED PER PADEP COMMENTS			
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 CARVERTON TIE-IN
 POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
COVER SHEET
 WEST WYOMING BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

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LEGEND

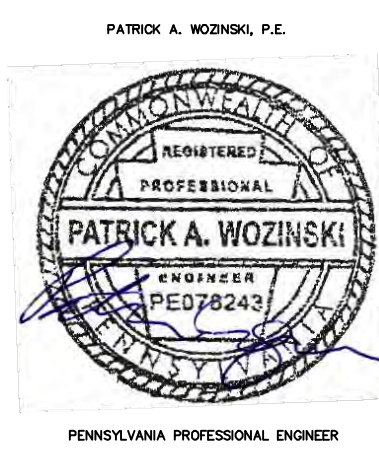
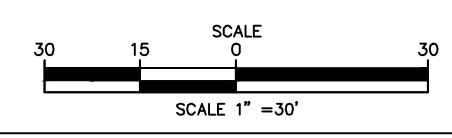
	PROPERTY LINE		EXISTING FOREIGN PIPELINES
	EXISTING RIGHT-OF-WAY		EXISTING UTILITY POLE / TOWER
	ESCP PERMIT BOUNDARY		EXISTING VALVE
	LIMITS OF DISTURBANCE		EXISTING CULVERT
	EXISTING FENCE		EXISTING ELECTRIC LINE
	EXISTING STONE ROW		EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING STRUCTURE		EXISTING GAS LINE
	EXISTING EDGE OF ROAD		EXISTING WATER LINE
	EXISTING GRADE MAJOR CONTOURS (10' C.I.)		EXISTING SANITARY LINE
	EXISTING GRADE MINOR CONTOURS (2' C.I.)		EXISTING SANITARY LINE
	EXISTING WATERBAR AND OUTLET STRUCTURE		EXISTING STORM SEWER
	APPROX. ENVIRONMENTAL STUDY LIMITS		EXISTING TELEPHONE LINE
	DELINEATED WETLAND		EXISTING FIBER OPTIC LINE
	DELINEATED WATERWAY / STREAM (TOP OF BANK)		EXISTING UNDERGROUND CABLE LINE
	STREAM FLOW DIRECTION		EXISTING STORM INLET
	RIPIARIAN BUFFER		EXISTING SANITARY MANHOLE
	50'/FEMA FLOODWAY		EXISTING COMMUNICATION/ELECTRIC MANHOLE
	FEMA 100-YEAR FLOODPLAIN		EXISTING FIRE HYDRANT
	SOIL BOUNDARY / TYPE		EXISTING POWER POLE
	EXISTING TREELINE / TREE/SHRUB		EXISTING WELL
	EXISTING LEIDY / TGPL PIPELINES		PRE-CONSTRUCTION DRAINAGE AREA
			TEST PIT/INFILTRATION TEST LOCATION

SOIL LEGEND

- ArD AIRLOFT-ROCK OUTCROP COMPLEX, 8 TO 25 PERCENT SLOPES
- OpB OQUAGA AND LORDSTOWN EXTREMELY STONY SILT LOAMS, 3 TO 8 PERCENT SLOPES
- OpD OQUAGA AND LORDSTOWN EXTREMELY STONY SILT LOAMS, 8 TO 25 PERCENT SLOPES
- OpF OQUAGA AND LORDSTOWN EXTREMELY STONY SILT LOAMS, STEEP

EXISTING CONDITION NOTES/SOURCES

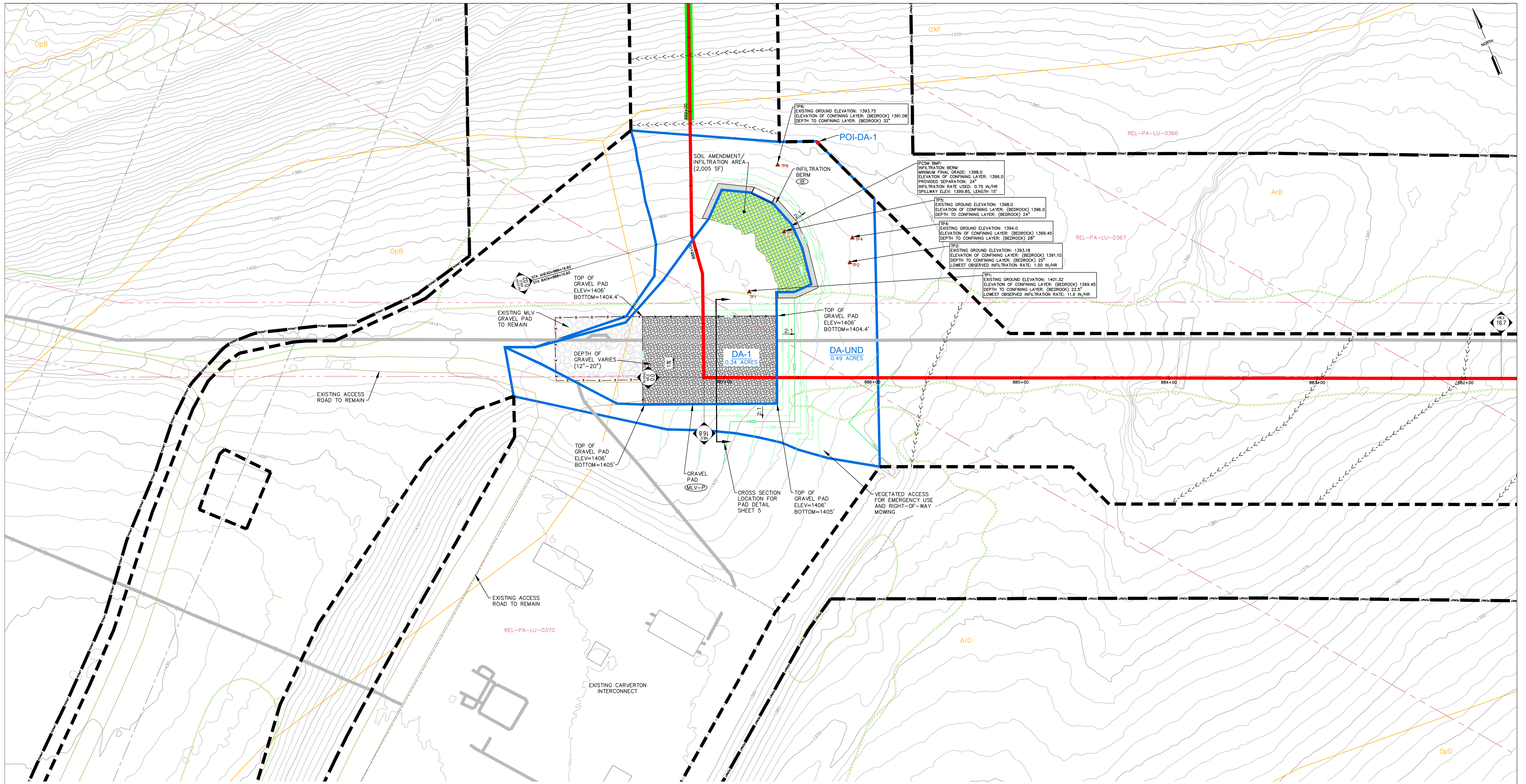
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2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO OR A COMBINATION OF DEED REFERENCE AND FIELD LOCATED EVIDENCE. PROPERTY BOUNDARY LOCATIONS BASED ON TAX PARCEL INFORMATION ARE APPROXIMATE.
3. PIPELINE ALIGNMENTS AND LIMITS OF DISTURBANCE PROVIDED BY TRANSCO.
4. STREAM AND WETLAND BOUNDARIES BASED ON SURVEYS CONDUCTED BY WWM CONSULTING FROM MARCH 2020 TO OCTOBER 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD83 ELEVATION MSL, DERIVED FROM GPS OBSERVATION.



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W.O. 123278	RID: 305		



LEGEND

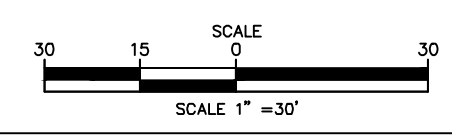
---	PROPERTY LINE	--->--->---	PROPOSED WATERBAR AND OUTLET STRUCTURE
---	EXISTING RIGHT-OF-WAY	--->--->---	PROPOSED CHANNEL AND DIVERSION CHANNEL
---	ESCP PERMIT BOUNDARY	---	PROPOSED FENCE
---	LIMITS OF DISTURBANCE	---	PROPOSED GRAVEL
---	EXISTING FENCE	---	PROPOSED GRADE MAJOR CONTOURS (10' C.I.)
---	EXISTING STONE ROW	---	PROPOSED GRADE MINOR CONTOURS (2' C.I.)
---	EXISTING STRUCTURE	---	POST-CONSTRUCTION DRAINAGE AREA
---	EXISTING EDGE OF ROAD	---	INFILTRATION AREA
---	EXISTING GRADE MAJOR CONTOURS (10' C.I.)	---	TEST PIT/INFILTRATION TEST LOCATION
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---	EXISTING WELL	---	
---	PROPOSED CONSTRUCTION FENCE	---	
---	PROPOSED PIPELINE	---	
---	PROPOSED PIPELINE GROUNDBED	---	
---	GEHAZARD ALONG PIPELINE	---	

SOIL LEGEND

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RESOLUTION TO SOIL LIMITATIONS

TRANSCO PROPOSES THE FOLLOWING RESOLUTIONS TO COMPENSATE FOR SOIL LIMITATIONS SUMMARIZED IN TABLE 3 BELOW:

1. TO OFFSET THE CAVING OF CUTBANKS, TRENCHING OPERATIONS WILL BE CONDUCTED IN ACCORDANCE WITH THE OSHA TECHNICAL MANUAL FOR TRENCHING.
2. PREVENTATIVE COATINGS SHALL BE USED TO PREVENT CORROSION OF CONCRETE AND/ OR STEEL.
3. WHEN BEDROCK IS ENCOUNTERED IT WILL BE REMOVED BY MECHANICAL METHODS OR BLASTING. BLASTING WILL CONFORM WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS. THIS IS NOT ANTICIPATED.
4. PRECAUTIONS WILL BE TAKEN TO PREVENT SLOPE FAILURE WHEN WORKING WITHIN LOW STRENGTH SOILS BY FLATTENING CUT / FILL SLOPES, NOT OVERLOADING, MAINTAINING LATERAL SUPPORT, AND PREVENTING SATURATION OF SOILS. USE OF THESE SOILS WILL BE AVOIDED FOR ROADWAY CONSTRUCTION.
5. FOR SOILS PRONE TO FLOODING, SLOW PERCOLATION, PONDING WETNESS, HAVE A SEASONAL HIGH WATER TABLE, OR ARE HYDRIC, EXCAVATIONS IN SOILS THAT HAVE THESE CHARACTERISTICS WILL LIKELY ENCOUNTER WATER, DEWATER WITH APPROPRIATE MEANS SUCH AS PUMP WATER FILTER BAGS, SEDIMENT TRAPS, ETC.
6. SOILS THAT HAVE THE POTENTIAL TO SWELL, SHRINK, OR HEAVE DUE TO FROST ACTION MAY CAUSE DAMAGE TO ROADWAYS OR PADS WHERE FOUNDATIONS ARE CRITICAL REMOVAL AND REPLACEMENT OF SOILS WITH SUITABLE MATERIAL MAY BE REQUIRED.
7. IN SOILS THAT ARE A POOR SOURCE OF TOPSOIL, DROUGHTY OR PRONE TO WETNESS, SOIL TESTING IS ENCOURAGED TO DETERMINE THE APPROPRIATE APPLICATIONS OF SOIL AMENDMENTS TO PROMOTE GROWTH. SOILS ONSITE THAT ARE FAIR SOURCES OF TOPSOIL, WILL BE IDENTIFIED, STRIPPED AND STOCKPILED FOR USE DURING RESTORATION.
8. FOR THOSE SOILS THAT ARE EASILY ERODIBLE, PROVIDE PROTECTIVE LINING, SEEDING AND MULCHING, EROSION CONTROL BLANKETS (ROLLS OR HYDRAULICALLY APPLIED), TRACKING SLOPES, UPSTREAM DIVERSIONS, WATERBARS, ETC., TO MINIMIZE EROSION OF THE SOILS.

Table 2 – Soils mapping units within the LOD

Soil Mapping Unit	Soil Series
ArD	Arnot-Rock outcrop complex, 8 to 25 percent slopes
OpB	Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes

Table 3 – Limitations of Pennsylvania Soils Pertaining to Earth Disturbance Projects (Erosion and Sediment Control Best Management Practice (BMP) Manual – Technical Guidance Number 363-3134-008/Page 401)

SOIL NAME	SOIL WITH SLOPE CLASS	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	HYDRIC / HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
Arnot-Rock	ArD	X	C	X	X			X	X	X	X	X	X	X	X	X	X
Oquaga	Op B	X	C	X	X		X	X					X				

CHARACTERISTICS OF EARTH DISTURBANCE ACTIVITY, INCLUDING PAST, PRESENT AND PROPOSED LAND USE PROPOSED ALTERATIONS TO THE AREA

TRANSCO WILL BE INSTALLING VARIOUS TIE-IN AND MAINLINE VALVE (MLV) FACILITIES ALONG THE REL PIPELINE AS A MEANS OF CONTROLLING GAS FLOWS. WORK AND DISTURBED AREAS ARE LOCATED WITHIN TRANSCO PROPERTY, EXISTING EASEMENTS, OR LEGALLY OBTAINED TEMPORARY WORKSPACE. USING DATA TAKEN FROM GOOGLE EARTH AND MULTI-RESOLUTION LAND CHARACTERISTICS (MRLC) CONSORTIUM WEBSITE (HTTPS://WWW.MRLC.GOV/WEBSITE), IT APPEARS THAT THE REGIONAL REL PIPELINE SITE HAS BEEN AN EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY FOR THE PAST 20 YEARS AND WILL CONTINUE TO BE AN EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY ONCE THE PROJECT IS COMPLETE. BASED ON THE SURROUNDING LAND CHARACTERISTICS, LAND USE PRIOR TO ROW CONSTRUCTION WITHIN THE PAST 50 YEARS LIKELY WOULD HAVE BEEN WOODLAND. EARTH DISTURBANCE ACTIVITIES AT EACH FACILITY WILL INCLUDE GRADING TO CREATE LEVEL GRAVEL PAD AREAS, INSTALLATION OF PCSM BMP'S, AND CONSTRUCTION OF GRAVEL ACCESS ROADS. DISTURBED AREAS WITHIN THE TEMPORARY WORKSPACES WILL BE RESTORED TO THE ORIGINAL CONTOURS. THE CONTRACTOR WILL CONSTRUCT STORMWATER BMP'S TO MITIGATE THE INCREASE IN VOLUME AND PEAK RATES ASSOCIATED WITH CONSTRUCTION. THE PROPOSED BMP'S ARE DESIGNED TO EVAPORATE AND/OR INFILTRATE THE NET INCREASE IN VOLUME BETWEEN THE PRE- AND POST-DEVELOPMENT 2-YEAR RAIN EVENTS.

BMP DESCRIPTION NARRATIVE

THE CARVERTON TIE-IN IS A RECEIPT INTERCONNECT PROPOSED IN WEST WYOMING BOROUG, LUZERNE COUNTY AT MILEPOST 16.8. PROPOSED IS THE INSTALLATION OF NEW TIE-IN PIPING INTO THE PROPOSED REL PIPELINE, VALVES, AND ABOVEGROUND TIE-IN PIPING FOR AN ANNUAR METER. THE FACILITY WILL INCLUDE A 55 FT X 50 FT GRAVEL PAD, AND AN INFILTRATION BERM PCSM BMP.

THE GRAVEL VALVE PAD WILL FEATURE A SLOPING SUBGRADE TO DIRECT STORMWATER TO THE INFILTRATION BERM. THE 2' HIGH INFILTRATION BERM WILL MITIGATE THE NET INCREASE IN STORMWATER RUNOFF VOLUME FOR THE 2-YEAR, 24-HOUR PRE-POST STORM EVENT BY INFILTRATION AND EVAPOTRANSPIRATION. FURTHER, THE BERM WILL MITIGATE PEAK RATE INCREASES FOR THE 2-, 10, 50, AND 100-YEAR, 24-HOUR STORM EVENTS.

BMP INSTALLATION SEQUENCE

THE PCSM BMP'S SHOULD BE INSTALLED IN A MANNER DESIGNED TO:

1. PROTECT BMP AREAS ASSOCIATED WITH INFILTRATION FROM COMPACTION PRIOR TO AND DURING INSTALLATION.
2. MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
3. **VALVE YARD PAD***
 - a. AS THE VALVE YARD PAD REACHES FINAL GRADE, ENSURE THE SUBGRADE ELEVATIONS DIRECT STORMWATER RUNOFF TO THE INFILTRATION BERM.
 - b. COMPACT THE SUBGRADE FILL TO LIMIT INFILTRATION IN THE PAD AREA. PROPER COMPACTION IS NECESSARY AS THE ENTIRE VALVE YARD PAD IS A FILL CONSTRUCTION.
 - c. PLACE AGGREGATE FINAL COVER TO ACHIEVE FINAL GRADE ON VALVE YARD PAD.
4. **INFILTRATION BERM AND SOIL AMENDMENT***
 - a. COMPLETE SITE GRADING AND STABILIZE WITHIN THE LIMIT OF DISTURBANCE EXCEPT WHERE INFILTRATION BERM WILL BE CONSTRUCTED; MAKE EVERY EFFORT TO MINIMIZE BERM FOOTPRINT AND NECESSARY ZONE OF DISTURBANCE (INCLUDING BOTH REMOVAL OF EXISTING VEGETATION AND DISTURBANCE OF EMPTY SOIL) IN ORDER TO MAXIMIZE INFILTRATION.
 - b. LIGHTLY SCARIFY THE SOIL IN THE AREA OF THE PROPOSED BERM BEFORE DELIVERING SOIL TO SITE.
 - c. UTILIZE SUITABLE FILL MATERIAL TO MAKE UP THE MAJOR PORTION OF THE BERM. SOIL SHOULD BE ADDED IN 8-INCH LIFTS AND COMPACTED AFTER EACH ADDITION ACCORDING TO DESIGN SPECIFICATIONS. THE SLOPE AND SHAPE OF THE BERM SHOULD BE GRADED OUT AS SOIL IS ADDED.
 - d. PROTECT THE SURFACE PONDING AREA AT THE BASE OF THE BERM FROM COMPACTION. IF COMPACTION OF THIS AREA DOES OCCUR, SCARIFY SOIL TO A DEPTH OF AT LEAST 8 INCHES.
 - e. BEGIN INSTALLATION OF SOIL AMENDMENT/ CONSTRUCTED FILTER AREA.
 - ALL CONSTRUCTION SHOULD BE COMPLETED AND STABILIZED BEFORE BEGINNING SOIL RESTORATION.
 - SOIL AMENDMENT SHOULD ONLY BE PERFORMED WHEN THE SOIL CONDITIONS ARE DRY AND SHOULD ONLY USE A SOLID SHANK RIPPER, NOT A DISK OR PLOW DUE TO THEIR INEFFECTIVENESS.
 - TILL SOIL BY DIGGING, SCRAPING, AND MIXING OF SOIL TO CIRCULATE AIR INTO THE SOIL MANTLE IN VARIOUS LAYERS. IF COMPACTION OCCURS DOWN TO 20 INCHES BELOW GRADE, RIPPING OF SOIL IS LIKELY NEEDED.
 - COMPOST MIXTURE WILL BE SUITABLE MATERIAL TO INCREASE WATER HOLDING AND RETENTION CAPACITY AT THE RATIO OF 2:1 (SOIL:COMPOST). MIXTURE WILL BE A 1:1:1 COMBINATION OF TOPSOIL, SAND, AND COMPOST. TOPSOIL SHALL HAVE MINIMUM ORGANIC CONTENT OF 5%.
 - SOIL AMENDMENT AND RESTORATION SHOULD NOT TAKE PLACE WITHIN THE DRIP LINE OF TREES OR TREE LINE TO AVOID DAMAGING ROOT SYSTEM. SOIL AMENDMENT AND RESTORATION SHOULD NOT TAKE PLACE OVER UTILITY INSTALLATIONS WITHIN 30 INCHES OF THE SURFACE OR WHERE TRENCHING OR DRAINAGE LINES ARE INSTALLED. SOIL AMENDMENT SHALL NOT BE COMPLETED WHERE COMPACTION IS REQUIRED.
 - SPREAD 6 INCHES OF APPROVED COMPOST MIXTURE ON SOIL.
 - TILL ADDED SOIL INTO EXISTING SOIL WITH A SOLI-SHANK RIPPER THAT IS SET TO A DEPTH OF 12 INCHES.
 - ADD AN ADDITIONAL 18 INCHES OF APPROVED COMPOST MIXTURE TO BRING AREA UP TO GRADE.
 - PLANT BERM AND SOIL AMENDMENT/CONSTRUCTED FILTER WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED. AFTER PLANTING/SEEDING TO 12-18 INCHES OF COMPOST BLANKET TO THE SOIL AMENDMENT/CONSTRUCTED FILTER AREA IN AREAS NOT PROTECTED BY GRASS OR OTHER PLANT.
 - f. MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.

g. COMPLETE FINAL GRADING OF THE BERM AFTER THE TOP LAYER OF SOIL IS ADDED. TAMP SOIL DOWN LIGHTLY AND SMOOTH SIDES OF THE BERM. THE CREST AND BASE OF THE BERM SHOULD BE AT LEVEL GRADE.

h. PLANT BERM WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED.

i. MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.

5. ALL TEMPORARY E&S BMP'S WILL BE REMOVED FOLLOWING SITE STABILIZATION. OTHER EROSION AND SEDIMENT CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL THE SITE IS FULLY STABILIZED.

6. ALL INSTALLED BMP'S WILL BE MONITORED UNTIL FINAL SITE STABILIZATION IS ACHIEVED.*

7. LONG TERM OPERATION AND MAINTENANCE GUIDELINES DISCUSSED SHALL BE FOLLOWED.

PORTIONS OF THE BMP INSTALLATION SEQUENCE DENOTED WITH AN ASTERISK () ABOVE ARE CRITICAL STAGES AS DISCUSSED ON THIS SHEET.

SEEDING AND MULCHING:

THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ESTABLISHMENT OF TEMPORARY COVER MUST TAKE PLACE WITHIN 4 DAYS OF CESSATION OF WORK. TEMPORARY EROSION AND SEDIMENTATION CONTROL BMP'S CAN BE REMOVED WHEN THE SITE MEETS FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT HARD COVER SUCH AS PAVEMENT OR BUILDINGS HAS STABILIZED THE SURFACE. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE. NO HAY OR STRAW MULCH SHALL BE PLACED ON WATERBODY BANKS. AT A MINIMUM, ALL WATERBODY BANKS SHALL BE COVERED WITH EROSION CONTROL BLANKET. IN ADDITION, ONLY STRAW MULCH SHALL BE USED IN AREAS ADJACENT TO WETLANDS.

TEMPORARY REVEGETATION

AFTER GRADING AND EXCAVATION IS COMPLETED WITHIN AN AREA, VEGETATION WILL BE SOWN PROMPTLY AFTER CEASING EARTHWORK IN THOSE AREAS. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL WILL BE APPLIED TO NEWLY SEEDDED AREAS TO PROTECT AGAINST EROSION UNTIL THE VEGETATION IS ESTABLISHED. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE. EROSION CONTROL BLANKET SHALL BE USED ON STREAM BANKS. NO HAY OR STRAW MULCH OR BLANKET SHALL BE UTILIZED IN WETLAND AREAS.

PERMANENT SEEDING AND MULCHING

TOPSOIL WILL BE REPLACED PRIOR TO STABILIZATION. DISTURBED AREAS SHALL BE SEEDDED WITH A MIXTURE AS OUTLINED IN THE DETAILS PAGES OF THE EROSION AND SEDIMENT CONTROL PLAN SET. APPLY LIME AND FERTILIZER IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS OR AS OUTLINED IN THE BELOW TABLE. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE.

**TABLE 11.2
Soil Amendment Application Rate Equivalents**

Soil Amendment	Permanent Seeding Application Rate			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-20-20 fertilizer	1,000 lb.	25 lb.	210 lb.	Or as per soil test; may not be required in agricultural fields
Temporary Seeding Application Rate				
Agricultural lime	1 ton	40 lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 fertilizer	500 lb.	12.5 lb.	100 lb.	Typically not required for topsoil stockpiles

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"

NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

**TABLE 11.4
Recommended Seed Mixtures**

Mixture Number	Species	Seeding Rate-Pure Live Seed*	
		Most Sites	Adverse Sites
1 [†]	Spring oats (spring), or Annual ryegrass (spring or fall), or Winter wheat (fall), or Winter rye (fall)	64 10 90 56	96 15 120 112
	Fine fescue, or Kentucky bluegrass, plus Redtop, or Perennial ryegrass	35 25 3 15	40 30 3 20
	Birdsfoot trefoil, plus Tall fescue	6 30	10 35
11	Deertongue, plus Birdsfoot trefoil	15 6	20 10
	Switchgrass, or big bluestem, plus Birdsfoot trefoil	15 15 6	20 30 10
13	Orchardgrass, plus Smooth bromegrass, plus Birdsfoot trefoil	20 25 6	30 35 10

PENN STATE, "EROSION CONTROL AND CONSERVATION PLANTINGS ON NONCROPLAND"

1. PLS IS THE PRODUCT OF THE PERCENTAGE OF PURE SEED TIMES PERCENT GERMINATION DIVIDED BY 100. FOR EXAMPLE, TO SECURE THE ACTUAL PLANTING RATE FOR SWITCHGRASS, DIVIDE 12 POUNDS PLS SHOWN ON THE SEED TAG. THUS, IF THE PLS CONTENT OF A GIVEN SEED LOT IS 35% DIVIDE 12 PLS BY 0.35 TO OBTAIN 34.3 POUNDS OF SEED REQUIRED TO PLANT ONE ACRE. ALL MIXTURES IN THIS TABLE ARE SHOWN IN TERMS OF PLS.
2. IF HIGH-QUALITY SEED IS USED, FOR MOST SITES SEED SPRING OATS AT A RATE OF 2 BUSHELS PER ACRE, WINTER WHEAT AT 11.5 BUSHELS PER ACRE, AND WINTER RYE AT 1 BUSHEL PER ACRE. IF GERMINATION IS BELOW 90% INCREASE THESE SUGGESTED SEEDING RATES BY 0.5 BUSHEL PER ACRE.
3. THIS MIXTURE IS SUITABLE FOR FREQUENT MOWING. DO NOT CUT SHORTER THAN 4 INCHES.
4. KEEP SEEDING RATE TO THAT RECOMMENDED IN TABLE. THESE SPECIES HAVE MANY SEEDS PER POUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH AS WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.
5. DO NOT MOW SHORTER THAN 9 TO 10 INCHES.

**TABLE 11.5
Recommended Seed Mixtures for Stabilizing Disturbed Areas**

Site Condition	Nurse Crop	Seed Mixture (Select one mixture)
Slopes and Banks (not mowed) Well-graded	1 plus	12 ¹
Slopes and Banks (mowed) Well-graded	1 plus	2, or 13
Slopes and Banks (grazed/hay) Well-graded	1 plus	12 ¹
Gullies and Eroded Areas Well-graded	1 plus	2, or 13
Erosion Control Facilities (BMPs) Soil waterways, spillways, frequent water flow areas Drainage ditches Shallow, less than 3 foot deep Deep, not mowed Pond banks, dikes, levees, dams, diversion channels, And occasional water flow areas	1 plus 1 plus 1 plus	2, 2, 1 plus
Mowed areas Non-mowed areas For hay or silage on diversion channels and occasional water flow areas	1 plus 1 plus	2
Highways ² Non-mowed areas	1 plus	13
Areas mowed several times per year	1 plus	2, 3, or 10
Utility Right-of-way Well-graded	1 plus	12 ¹
Well-graded areas for grazing/hay	1 plus	2, 13
Effluent Disposal Areas	1 plus	3 or 4
Sanitary Landfills	1 plus	11 ¹ , or 12 ¹
Surface mines Spoils, mine wastes, fly ash slag, settling basin Residues and other severely disturbed areas (lime to soil test) Severely disturbed areas for grazing/hay	1 plus 1 plus	11 ¹ , or 12 ¹ 13

Penn State, "Erosion Control and Conservation Plantings on Noncropland"

1. For seed mixtures 11 and 12, only use spring oats or weeping lovegrass (included in mix) as nurse crop.
2. Contact the Pennsylvania Department of Transportation district roadside specialist for specific suggestions on treatment techniques and management practices.

STEEP SLOPE MIX OPTION

APPLICATION RATE – 60LBS/ACRE OR 1.5LBS/1000sqft OF ERNMX-181

NATIVE STEEP SLOPE MIX WITH ANNUAL RYEGRASS (ERNMX-181)

PERCENT	SCIENTIFIC NAME	COMMON NAME
31.10	SORGHASTRUM NUTANS	INDIANGRASS
20.00	LOLIUM MULTIFLORUM	ANNUAL RYEGRASS
14.00	ANDROPOGON GERADII	BIG BLUESTEM
10.00	ELYMUS VIRGINICUS	VIRGINIA WILDRYE
7.00	ELYMUS CANADENSIS	CANADA WILDRYE
4.00	AGROSTIS PERENNANS	AUTUMN BENTGRASS
3.00	PANICUM CLANDESTINUM	DEERTONGUE
1.50	ECHINACEA PURPUREA	PURPLE CONEFLOWER
1.30	CHAMAECRISTA FASCICULATA	PARTRIDGE PEA
1.20	HELIOPSIS HELIANTHOIDES	OXEYE SUNFLOWER
1.00	COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS
1.00	RUDBECKIA HIRTA	BLACKEYED SUSAN
0.30	MONARDA FISTULOSA	WILD BERGAMONT
0.20	ASCLEPIAS SYRIACA	COMMON MILKWEED
0.20	SOLIDAGO RUROSA	WRINKLELEAF GOLDENROD
0.10	ASTER LATIFLORUS	CALICO ASTER
0.10	ASTER PILOSUS	HEATH ASTER

- * OR EQUIVALENT MIXTURE
- ** SIMILAR MIXES WITH COVER CROP OF OATS (ERNST 181-1) OR GRAIN RYE (ERNST 181-2) OR EQUIVALENT SHOULD BE SUBSTITUTED.

LAWN AND TURFGRASS MIX OPTION

APPLICATION RATE – 75-150LBS/ACRE OR 3-5LBS/1000SQFT OF ERNMX-113

COMMERCIAL CONSERVATION MIX (ERNMX-181)

PERCENT	SCIENTIFIC NAME	COMMON NAME
25.00	FESTUCA RUBRA	CREeping RED FESCUE
25.00	LOLIUM MULTIFLORUM	ANNUAL RYEGRASS
25.00	LOLIUM PERENNE	"BLACKSTONE" PERENNIAL RYEGRASS
25.00	LOLIUM PERENNE	"CONFETTI III" PERENNIAL RYEGRASS

* OR EQUIVALENT MIXTURE, FOR USE IN HIGH-TRAFFIC AREAS IN LAWN/TURFGRASS SETTINGS

THERMAL IMPACTS

DUE TO THE OVERALL NATURE OF THE PROJECT, THERMAL IMPACTS TO SURFACE WATERS ARE NOT ANTICIPATED. THE PRIMARY MEANS TO ADDRESS THERMAL IMPACTS ON THIS PROJECT IS TO LIMIT THE SIZE AND DURATION OF EXPOSED EARTH.

STORMWATER RUNOFF ASSOCIATED WITH THE INSTALLATION OF THE CARVERTON TIE-IN WILL BE ROUTED THROUGH THE STORMWATER BMP'S DESIGNED TO RETAIN AND INFILTRATE THE FIRST SURGE OF WATER FROM THE SITE. THE FIRST SURGE OF WATER WILL BE THE WARMEST WATER FOR THE DURATION OF THE STORM EVENT AND WILL QUICKLY COOL AS THE STORM EVENT PROGRESSES. THE BMP'S ARE DESIGNED TO CAPTURE AND INFILTRATE THIS WARMEST SURGE OF STORMWATER. BASED ON ROUTING CALCULATIONS, STORMWATER IS NOT DISCHARGED FROM THE BMP'S FOR THE FIRST 12 HOURS DURING A 100-YEAR/24-HOUR STORM EVENT. THE RETENTION PERIOD IS LONGER FOR LESS INTENSE STORMS. THEREFORE, THROUGH THESE MEASURES, THERE IS NO SIGNIFICANT THERMAL IMPACT TO THE RECEIVING WATERS ANTICIPATED.

ANTI-DEGRADATION REQUIREMENTS

WATERSHED IS NOT HIGH QUALITY. ANTI-DEGRADATION REQUIREMENTS ARE NOT NEEDED.

RIPARIAN BUFFERS

THE CONSTRUCTION OF THE CARVERTON TIE-IN DOES NOT IMPACT ANY RIPARIAN AREAS.

NON-STRUCTURAL AND STRUCTURAL WATER QUALITY BMP DESCRIPTION

1. LIMIT OF DISTURBANCE WILL BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE BY DISTURBING ONLY THOSE AREAS NECESSARY TO COMPLETE THE PROPOSED EARTHWORK AND BMP INSTALLATIONS.
2. IF PRESENT, SENSITIVE FEATURES SUCH AS WETLANDS AND RIPARIAN BUFFERS WILL BE PROTECTED TO THE MAXIMUM EXTENT POSSIBLE. THESE AREAS WILL BE CLEARLY Delineated IN THE FIELD AND PROTECTED PRIOR TO ANY CONSTRUCTION ACTIVITIES TAKING PLACE. EXISTING VEGETATION IS NOT TO BE REMOVED FROM THE PROTECTED AREA AND THE AREAS SHALL NOT BE SUBJECT TO GRADING OR MOVEMENT OF EXISTING SOILS. ANY PROTECTED AREAS THAT HAVE BEEN DISTURBED/COMPACTED DURING CONSTRUCTION WILL BE RESTORED USING SOIL AMENDMENT AND RESTORATION.
3. DISTURBED AREAS THAT ARE NOT PROPOSED TO BE IMPERVIOUS WILL BE REVEGETATED AS PER THE SEEDING AND MULCHING NOTES PROVIDED IN PCSM PLAN NOTES.
4. THE INFILTRATION BERM WILL ACT AS A WATER QUALITY BMP.
5. WHEREVER POSSIBLE, EXISTING NATURAL DRAINAGE PATTERNS WILL BE UTILIZED TO DIVERT FLOW TO THE PROPOSED INFILTRATION BERM.

THE PCSM PLAN SHALL BE PREPARED BY A PERSON TRAINED AND EXPERIENCED IN EROSION CONTROL METHODS AND TECHNIQUES

THESE PLANS AND NARRATIVE WERE PREPARED BY PATRICK WOZINSKI, PE (BAI GROUP, LLC) OF STATE COLLEGE, PA IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION STORMWATER BMP MANUAL, DECEMBER, 2006. THE PLAN PREPARER'S RESUME IS PROVIDED IN THE PERMIT APPLICATION.

PCSM CRITICAL STAGES

CRITICAL POINTS REQUIRING VISITS BY THE LICENSED PROFESSIONAL OR DELEGATE ARE AS FOLLOWS:

1. AT THE BEGINNING OF CONSTRUCTION TO ASCERTAIN THE INFILTRATION BERM AREA HAS BEEN FLAGGED AND FENCE ERECTED TO PREVENT ACCESS TO THE AREA.
2. FOLLOWING INSTALLATION OF THE VALVE YARD PAD SUBGRADE TO ENSURE STORMWATER FLOW IS DIRECTED TO THE INFILTRATION BERM.
3. AT THE BEGINNING OF CONSTRUCTION OF THE INFILTRATION BERM TO ENSURE THE INFILTRATION AREA HAS NOT BEEN COMPACTED BY CONSTRUCTION ACTIVITIES.
4. DURING CONSTRUCTION OF THE INFILTRATION BERM THE LICENSED PROFESSIONAL WILL OBSERVE THAT THE BERM IS CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
5. FOR FINAL INSPECTION OF CONSTRUCTED BMP'S.
6. AT THE ESTABLISHMENT OF HARD SURFACE STABILIZATION OR 70% VEGETATION COVERS TO ALLOW REMOVAL OF E&S CONTROLS.

LONG TERM OPERATION AND MAINTENANCE SCHEDULE

ALL BMP'S SHOULD BE PROPERLY MAINTAINED TO ENSURE THEIR EFFECTIVENESS. SHEET FLOW CONDITIONS AND INFILTRATION MUST BE SUSTAINED THROUGHOUT THE LIFE OF THE BMP. INSPECT BMP'S FOR CLOGGING FROM SEDIMENT OR DEBRIS, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, AND FLOW CHANNELIZATION. INSPECTIONS SHOULD BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN TWICE PER YEAR THEREAFTER. INSPECTIONS SHOULD ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1 INCH DURING THE ESTABLISHMENT PERIOD.

OPERATION AND MAINTENANCE GUIDELINES SHOULD BE PROVIDED TO ALL FACILITY OWNERS AND TENANTS. SEDIMENT AND DEBRIS SHOULD BE ROUTINELY REMOVED UPON OBSERVATION. IF EROSION IS OBSERVED, MEASURES SHOULD BE TAKEN TO IMPROVE DISPERSION METHOD TO ADDRESS THE SOURCE OF EROSION.

GRASS COVER SHOULD BE MOWED WITH LOW GROUND PRESSURE EQUIPMENT ANNUALLY TO CONTROL NOXIOUS WEEDS. MOWING SHOULD BE DONE ONLY WHEN THE SOIL IS DRY IN ORDER TO PREVENT TRACKING DAMAGE TO VEGETATION, SOIL COMPACTION, AND FLOW CONCENTRATIONS. IF VEGETATIVE COVER IS NOT FULLY ESTABLISHED WITHIN THE DESIGNATED TIME, IT SHOULD BE REPLACED WITH AN ALTERNATIVE SPECIES. UNWANTED OR INVASIVE GROWTH SHOULD BE REMOVED ON AN ANNUAL BASIS.

VEGETATED AREAS WILL BE INSPECTED WEEKLY AND AFTER RUNOFF EVENTS UNTIL PERMANENT VEGETATION IS ACHIEVED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY, AND DENSITY SHOULD BE PERFORMED AT LEAST TWICE PER YEAR, DURING BOTH THE GROWING AND NON-GROWING SEASON. VEGETATIVE COVER SHOULD BE SUSTAINED AT 85% AND REESTABLISHED IF DAMAGE GREATER THAN 50% IS OBSERVED.

DAMAGED BMP'S WILL BE REPAIRED AS SOON AS POSSIBLE UPON DISCOVERY. REPAIRS WILL BE MADE TO RESTORE TO BMP'S TO THE ORIGINAL DESIGN CONDITION.

TRANSCONTINENTAL GAS PIPELINE COMPANY, LLC WILL BE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF THE POST-CONSTRUCTION STORMWATER MANAGEMENT FACILITIES PROPOSED AT THE SITE

MATERIAL RECYCLING AND DISPOSAL

IF THE SITE WILL NEED TO HAVE FILL IMPORTED FROM AN OFF-SITE LOCATION, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND THE DETERMINATION OF CLEAN FILL WILL IN MOST CASES RESIDE WITH THE OPERATOR.

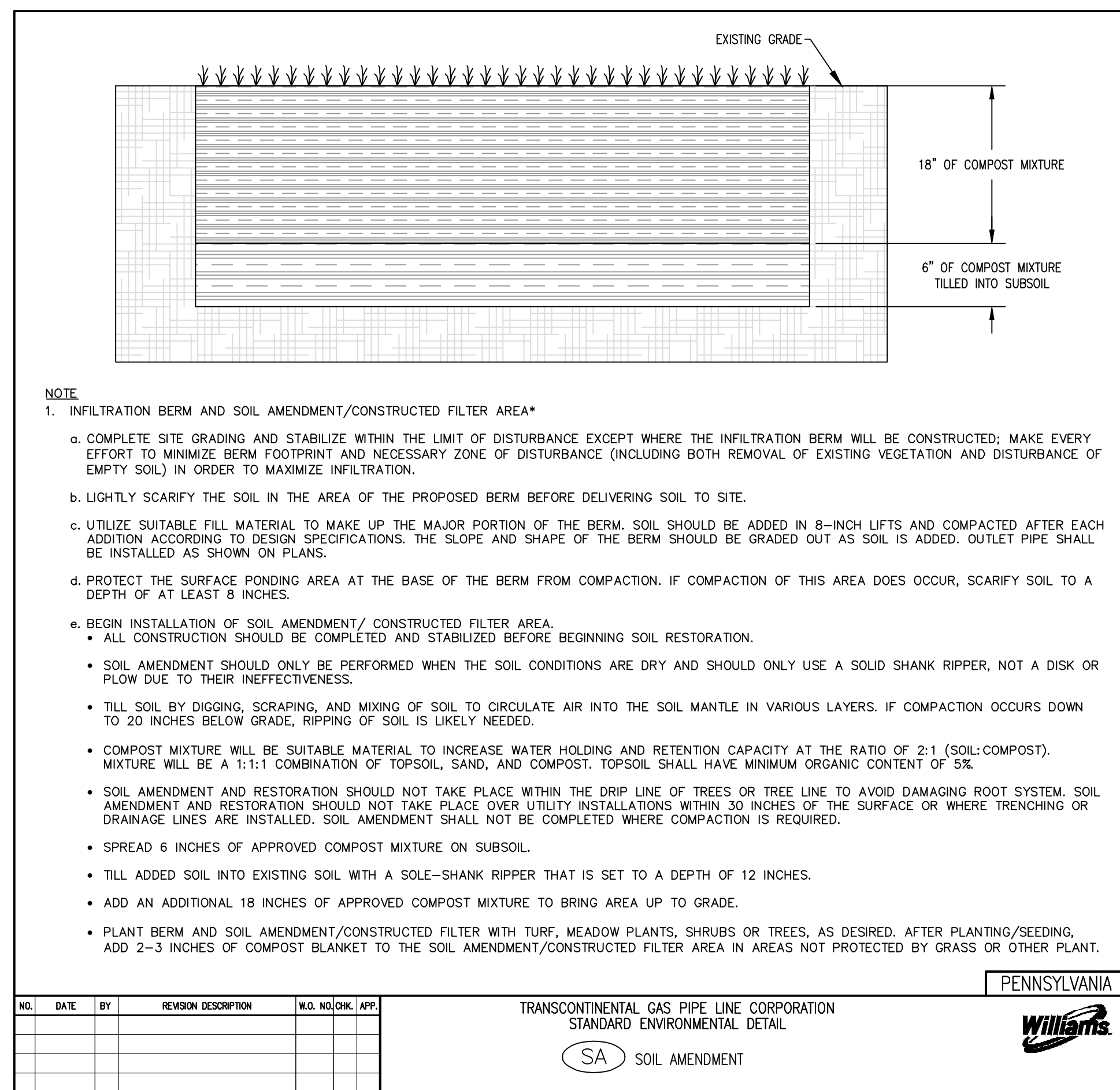
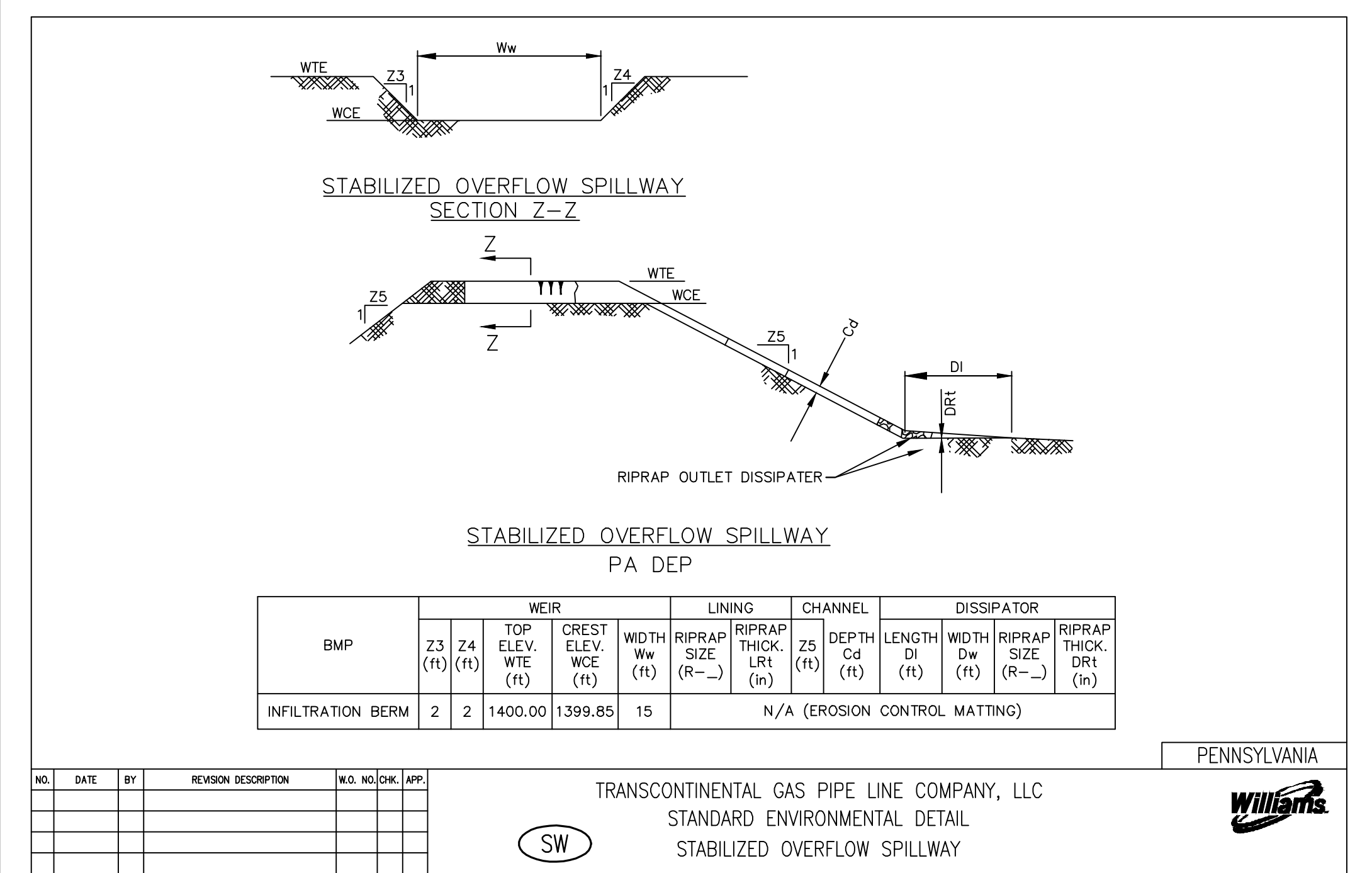
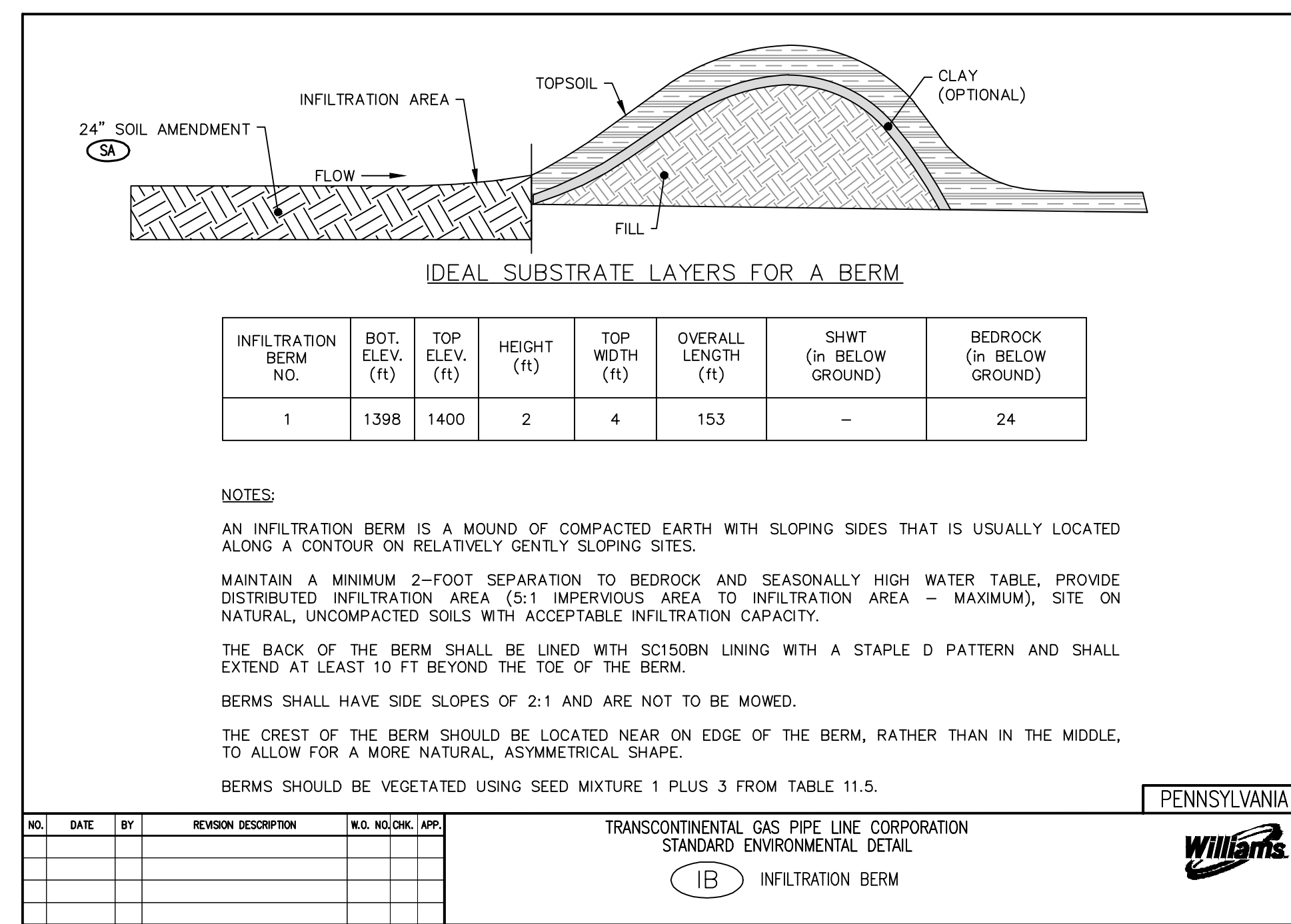
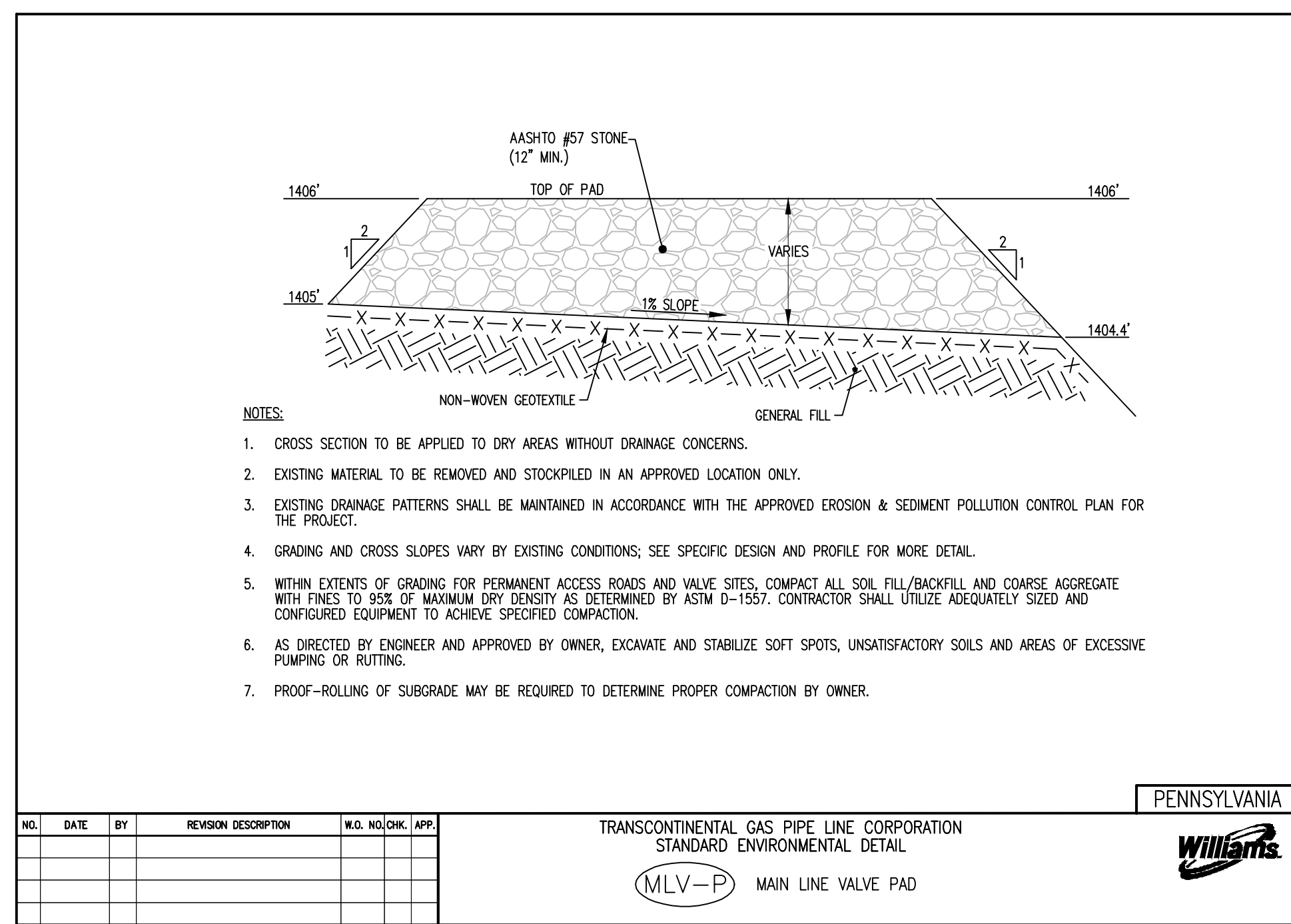
IF THE SITE WILL HAVE EXCESS FILL THAT WILL NEED TO BE EXPORTED TO AN OFF-SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS ON THE APPLICANT.

IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON SITE.

APPLICANTS AND/OR OPERATORS MUST USE ENVIRONMENTAL DUE DILIGENCE TO ENSURE THAT THE FILL MATERIAL ASSOCIATED WITH THIS PROJECT QUALIFIES AS CLEAN FILL. DEFINITIONS OF CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE ARE PROVIDED BELOW. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL", DOCUMENT NUMBER 258 2182 773. A COPY OF THIS POLICY IS AVAILABLE ONLINE AT WWW.DEFWEB.STATE.PA.US.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.)

ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECT TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".



REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	06/29/21	RHM	REVISED PER PADEP COMMENTS
2	03/01/22	RHM	RESPONSE TO PADEP TECHNICAL DEFICIENCY LETTER

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
CARVERTON TIE-IN
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
DETAILS
WEST WYOMING BOROUGH, LUZERNE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: PW	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 5 OF 5