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

REGIONAL ENERGY ACCESS EXPANSION PROJECT
COMPRESSOR STATION 200

EAST WHITELAND TOWNSHIP, CHESTER COUNTY, PENNSYLVANIA

APRIL 2021

PROJECT OWNER/APPLICANT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
2800 POST OAK BLVD, LEVEL 11
HOUSTON, TX 77056
PH: (713) 215-3427

PLAN PREPARER / ENGINEER

WHM CONSULTING, LLC
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BAI GROUP, LLC.
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PROJECT INFORMATION

ESCGP-3 PERMIT BOUNDARY: 20.28 Ac.

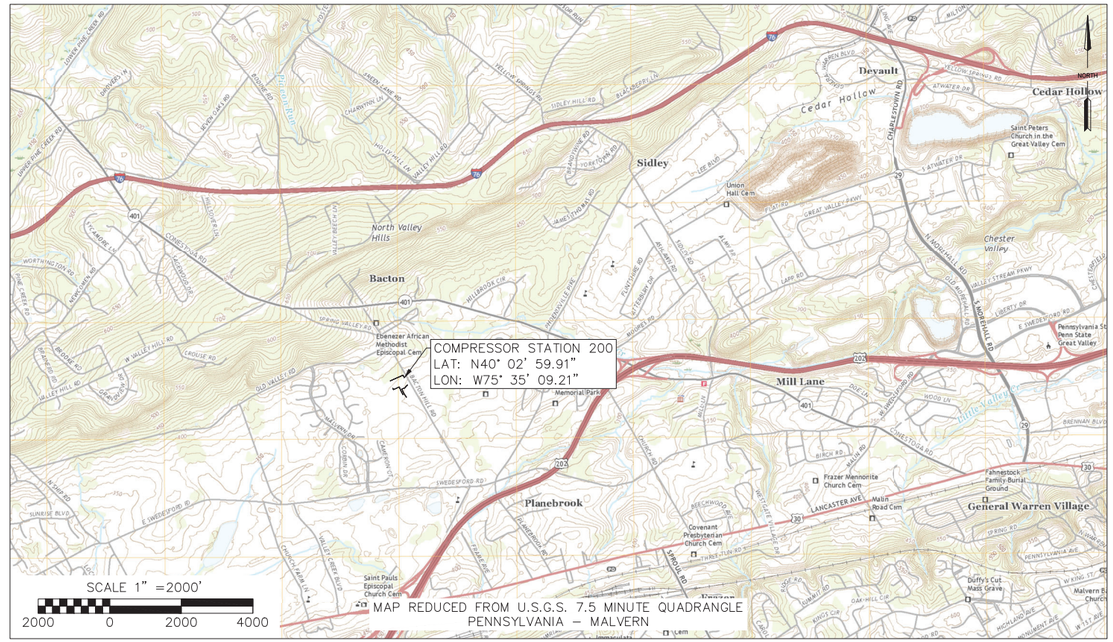
LIMIT OF DISTURBANCE: 3.16 Ac.

PROJECT DESCRIPTION

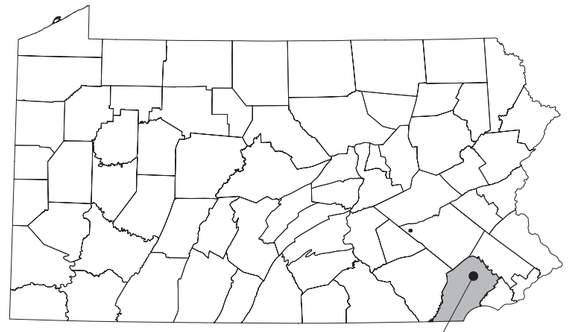
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC (TRANSCO), INDIRECTLY OWNED BY THE WILLIAMS COMPANIES, INC. (WILLIAMS) IS SEEKING AUTHORIZATION FROM THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) UNDER SECTION 7(C) OF THE NATURAL GAS ACT AND PART 157 OF THE COMMISSIONS REGULATIONS, TO CONSTRUCT, OWN, OPERATE, AND MAINTAIN THE PROPOSED PROJECT FACILITIES ASSOCIATED WITH THE REGIONAL ENERGY ACCESS EXPANSION PROJECT (PROJECT). THE PROJECT IS AN EXPANSION OF TRANSCO'S EXISTING NATURAL GAS TRANSMISSION SYSTEM THAT WILL ENABLE TRANSCO TO PROVIDE AN INCREMENTAL 829,400 DEKATHERMS PER DAY (DTH/D) OF YEAR-ROUND FIRM TRANSPORTATION CAPACITY FROM THE MARCELLUS SHALE PRODUCTION AREA IN NORTHEASTERN PENNSYLVANIA (PA) TO MULTIPLE DELIVERY POINTS ALONG TRANSCO'S LEIDY LINE IN PA, TRANSCO'S MAINLINE AT THE STATION 210 ZONE 6 POOLING POINT IN MERCER COUNTY, NEW JERSEY (NJ) AND MULTIPLE DELIVERY POINTS IN TRANSCO'S ZONE 6 IN NJ, PA, AND MARYLAND (MD).

THE EXISTING COMPRESSOR STATION 200 COMPONENT OF THE PROJECT IS LOCATED IN EAST WHITELAND TOWNSHIP, CHESTER COUNTY. PROPOSED ARE COMPRESSOR STATION MODIFICATIONS TO CONNECT THE EXISTING TRANSCO MAINLINE A INTO SUCTION TO SUPPORT SOUTH FLOW.

THIS POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) PLAN HAS BEEN DEVELOPED FOR THE COMPRESSOR STATION 200 SITE. THE PCSM PLAN SHALL BE DESIGNED AND IMPLEMENTED TO BE CONSISTENT WITH THE PCSM PLAN UNDER 25 PA. CODE § 102.8 (RELATING TO PCSM REQUIREMENTS). THE WORK AND DISTURBED AREAS ARE LOCATED WITHIN TRANSCO PROPERTY, EXISTING EASEMENTS OR LEGALLY OBTAINED WORKSPACE. THE LIMIT OF DISTURBANCE (LOD) FOR THE COMPRESSOR STATION 200 SITE WILL BE APPROXIMATELY 3.16 ACRES. SUBJECT TO FERC'S CERTIFICATION OF THE PROJECT AND RECEIPT OF THE NECESSARY PERMITS AND AUTHORIZATIONS, TRANSCO ANTICIPATES CONSTRUCTION OF THE PROJECT TO START IN THIRD QUARTER 2022 TO MEET A PROPOSED IN-SERVICE DATE OF DECEMBER 1, 2023.



LOCATION MAP



VICINITY MAP
N.T.S.

SHEET INDEX	
SHEET NUMBER	DRAWING TITLE
1 OF 6	COVER
2 OF 6	EXISTING SITE CONDITIONS
3 OF 6	PCSM SITE PLAN
4 OF 6	NOTES
5-6 OF 6	DETAILS

RECEIVING WATERS		
NAME	DESIGNATED USE	EXISTING USE
VALLEY CREEK (EAST)	EV, MF	N/A
VALLEY CREEK (WEST)	CWF, MF	N/A

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.

KEVIN CLARK, P.E.
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
KEVIN C. CLARK
ENGINEER 041201-E
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS					
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK. APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT - COMPRESSOR STATON 200
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
COVER
EAST WHITELAND TWP., CHESTER COUNTY, PENNSYLVANIA

DRAWN BY: DRV	DATE: 03/31/21	ISSUED FOR BID:	SCALE:
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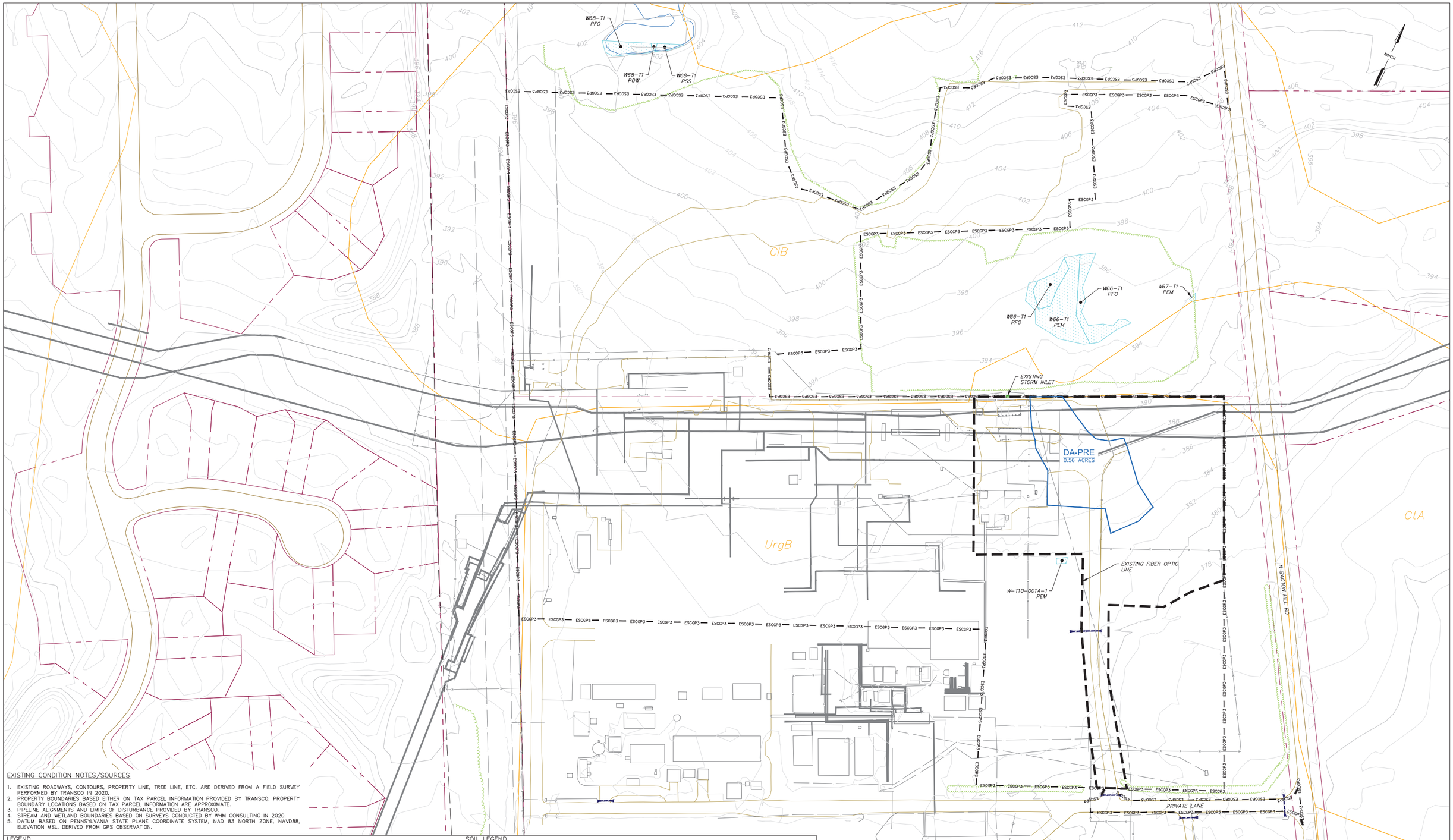
WO: 1232813	RID: 304	DRAWING NUMBER: 26-1000-70-28-D	SHEET 1 OF 6



EXISTING CONDITION NOTES/SOURCES

1. EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO IN 2020.
2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO. 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 WHM CONSULTING IN 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD88, ELEVATION MSL, DERIVED FROM GPS OBSERVATION.

LEGEND

- ESCGP-3 PERMIT BOUNDARY
- LIMITS OF DISTURBANCE
- DELINEATED WETLAND
- MrB2 SOIL BOUNDARY / TYPE
- EXISTING TREELINE / TREE/SHRUB
- PROPERTY LINE
- EXISTING LEDIY / TGPL PIPELINES
- EXISTING FOREIGN PIPELINES
- EXISTING UTILITY POLE / TOWER
- EXISTING VALVE
- EXISTING CULVERT
- EXISTING ELECTRIC LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING SANITARY LINE
- EXISTING STORM SEWER
- EXISTING TELEPHONE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING UNDERGROUND CABLE LINE
- EXISTING STORM INLET
- EXISTING SANITARY MANHOLE
- EXISTING COMMUNICATION/ELECTRIC MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING EASEMENT
- EXISTING RIGHT-OF-WAY
- EXISTING FENCE
- EXISTING STRUCTURE
- EXISTING EDGE OF GRAVEL ROAD
- 1250 EXISTING GRADE MAJOR CONTOURS (10' C.I.)
- 1244 EXISTING GRADE MINOR CONTOURS (2' C.I.)
- TP-2 TEST PIT LOCATION

SOIL LEGEND

CtA	CONESTOGA SILT LOAM, 0 TO 3 PERCENT SLOPES
UrgB	URBAN LAND-CONESTOGA COMPLEX, 0 TO 8 PERCENT SLOPES

SCALE
70 35 0 70
SCALE 1" = 70'

BA GROUP

WHM consulting, INC.
designs, permits, resolutions

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REGIONAL ENERGY ACCESS EXPANSION PROJECT - COMPRESSOR STATON 200
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

EXISTING CONDITIONS PLAN

EAST WHITELAND TWP., CHESTER COUNTY, PENNSYLVANIA

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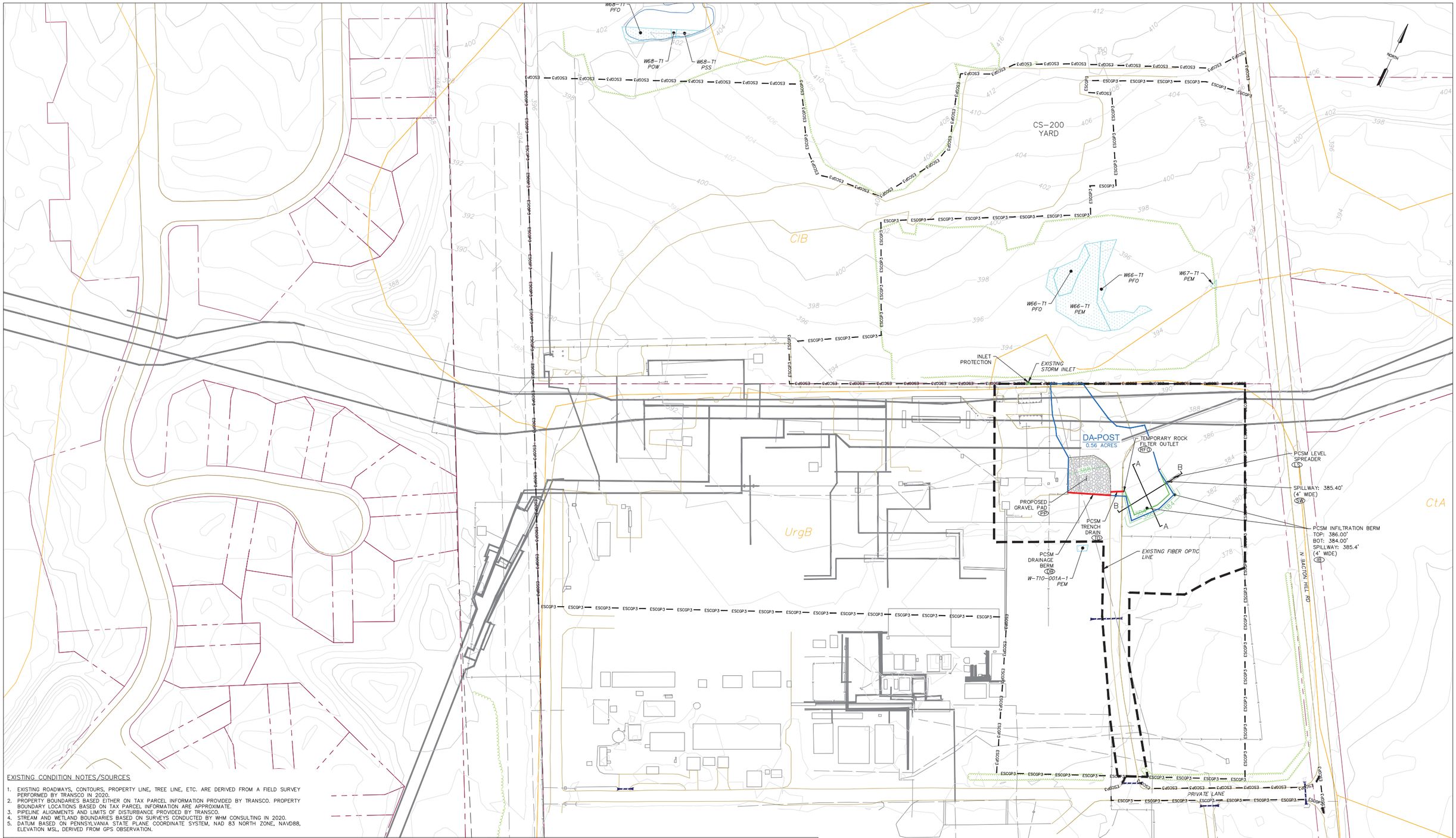

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- PROPOSED FENCE
- EXISTING STRUCTURE
- EXISTING EDGE OF ROAD
- PROPOSED GRAVEL
- EXISTING GRADE MAJOR CONTOURS (10' C.I.)
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- PROPOSED GRADE MAJOR CONTOURS (10' C.I.)
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POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

EAST WHITELAND TWP., CHESTER COUNTY, PENNSYLVANIA

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RESOLUTION TO SOIL LIMITATIONS

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

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 LIMITS OF DISTURBANCE

SOIL MAPPING UNIT	SOIL SERIES
CtA	CONESTOGA SILT LOAM, 0 TO 3 PERCENT SLOPES
UrgB	URBAN LAND–CONESTOGA COMPLEX, 0 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
CONESTOGA	CtA, UrgB	X	C/S						X	X	X		X		X		

CHARACTERIZATIONS OF EARTH DISTURBANCE ACTIVITIES, INCLUDING PAST, PRESENT AND PROPOSED LAND USES

THE LIMIT OF DISTURBANCE (LOD) FOR COMPRESSOR STATION 200 WILL BE APPROXIMATELY 3.16 ACRES. THE COMPRESSOR STATION 200 WILL INVOLVE THE INSTALLATION A GRAVEL PAD, PROPOSED BMPS AND OTHER COMPRESSOR STATION MODIFICATIONS. TRANSCO WILL USE AND IMPLEMENT THE PRACTICES, MEASURES, AND DETAILS TO CONTROL SOIL EROSION AND OFF–SITE SEDIMENTATION DURING CONSTRUCTION. USING DATA TAKEN FROM GOOGLE EARTH AND MULTI–RESOLUTION LAND CHARACTERISTICS (MRLC) CONSORTIUM WEBSITE (HTTPS://WWW.MRLC.GOV/VIEWER/), IT APPEARS THAT LAND USE FOR THE PAST FEW DECADES HAS BEEN UTILIZED AS A COMPRESSOR STATION SITE. THE CONTRACTOR WILL CONSTRUCT STORMWATER BMPS TO MITIGATE THE INCREASE IN VOLUME AND PEAK RATES ASSOCIATED WITH CONSTRUCTION. THE PROPOSED BMPS ARE DESIGNED TO STORE THE NET INCREASE IN VOLUME BETWEEN THE PRE– AND POST–DEVELOPMENT 2–YEAR RAIN EVENTS.

BMP DESCRIPTION NARRATIVE

A DRAINAGE BERM, TRENCH DRAIN, AND AN INFILTRATION BERM WILL BE INSTALLED ACROSS THE DEVELOPED AREA TO CONVEY THE NET INCREASE IN VOLUME BETWEEN THE PRE– AND POST–DEVELOPMENT 2–YEAR STORM EVENTS AND MITIGATE THE INCREASE (PRE–POST DEVELOPMENT) IN PEAK RUNOFF FOR THE 1–, 2–, 10–, 25–, 50–, AND 100–YEAR STORM EVENTS. A DRAINAGE BERM AND TRENCH DRAIN WILL BE CONSTRUCTED TO DIRECT THE MAJORITY OF RUNOFF FROM THE DEVELOPED AREA TO THE INFILTRATION BERM. ALL BMP DESIGN CALCULATIONS AND DRAWINGS ARE PROVIDED IN ATTACHMENT 4 AND PCSM PLAN SET.

COMPRESSOR STATION 200 SEQUENCE OF PCSM BMP INSTALLATION

THE PCSM BMPS 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 DIVERSION BERM.
   b. COMPACT THE SUBGRADE FILL TO LIMIT INFILTRATION IN THE PAD AREA.
   c. PLACE AGGREGATE FINAL COVER TO ACHIEVE FINAL GRADE ON VALVE YARD PAD.
4. DRAINAGE BERM WITH U–DRAIN
   a. CONSTRUCT DRAINAGE BERM AND U/TRENCH DRAIN SHOWN IN THE PLAN. INSTALL OUTLET PROTECTION AS REQUIRED.
5. INFILTRATION BERM
   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 EXITING 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. BRING IN 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 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. 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.
   f. PLANT BERM WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED.
   g. MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.
6. ALL TEMPORARY E&S BMPS WILL BE REMOVED FOLLOWING SITE STABILIZATION. OTHER EROSION AND SEDIMENT CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL THE SITE IS FULLY STABILIZED.
7. ALL INSTALLED BMPS WILL BE MONITORED UNTIL FINAL SITE STABILIZATION IS ACHIEVED.
8. LONG TERM OPERATION AND MAINTENANCE GUIDELINES DISCUSSED BELOW SHALL BE FOLLOWED.

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 BMPS 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 SEEDED 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 SEEDED 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 SF	PER 1,000 SY	
AGRICULTURAL LIME	6 TONS	20 LBS.	2,480 LBS.	OR AS PER SOIL TEST; MAY NOT BE REQ. IN AGRICULTURAL FIELDS
10–20–20 FERTILIZER	1,000 LBS.	25 LBS.	210 LBS.	OR AS PER SOIL TEST; MAY NOT BE REQ. IN AGRICULTURAL FIELDS
	TEMPORARY SEEDING APPLICATION RATE			
AGRICULTURAL LIME	1 TON	4 LBS.	410 LBS.	TYP. NOT REQ. FOR TOPSOIL STOCKPILES
10–10–10 FERTILIZER	500 LBS.	12.5 LBS.	100 LBS.	TYP. NOT REQ. 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 11.3

Plant Tolerances of Soil Limitation Factors

Species	Growth Habit1	Tolerates: Wet Soil	Tolerates: Dry Site	Tolerates: Low Fertility	Tolerates: Acid Soil (Ph 5-5.5)2	Minimum Seed Specifications3: Purity (%)	Ready Germ (%)	Hard Seed (%)	Total Germ (%)	Seeds/lb (1,000s)
Deertongue	bunch	yes	yes	yes	yes	95	75		75	250
Weeping lovegrass	bunch	no	yes	yes	yes	97	75		75	1,500
Switchgrass4	bunch	yes	yes	yes	yes	(60 PLS)				390
Big bluestem	bunch	no	yes	yes	yes	(60 PLS)				150
Cool-Season Grasses										
Tall Fescue	bunch	yes	no	yes	no	95	80		80	227
Redtop	sod	yes	yes	yes	yes	92	80		80	5,000
Fine fescues	sod	no	no	yes	no	95	80		80	400
Perennial ryegrass	bunch	yes	no	no	no	95	85		85	227
Annual ryegrass	bunch	yes	no	yes	no	95	85		85	227
Kentucky bluegrass	sod	no	no	no	no	85	75		75	2,200
Reed canarygrass	sod	yes	yes	yes	no	95	70		70	520
Orchardgrass	bunch	yes	yes	yes	yes	95	80		80	654
Timothy	bunch	yes	no	yes	yes	95	80		80	1,230
Smooth bromegrass	sod	no	yes	yes	no	95	80		80	136
Legumes5										
Crownvetch	sod	no	yes	yes	no	98	40	30	65	120
Birdsfoot trefoil6	bunch	yes	no	yes	yes	98	60	20	80	400
Flatpea	sod	no	no	yes	yes	98	55	20	75	10
Serecia lespedeza	bunch	no	yes	yes	yes	98	60	20	80	335
Cereals										
Winter wheat	bunch	no	no	no	no	98	85		85	15
Winter rye	bunch	no	no	yes	yes	98	85		85	18
Spring oats	bunch	no	no	no	no	98	85		85	13
Sundangrass	bunch	no	yes	no	no	98	85		85	55
Japanese millet	bunch	yes	no	yes	yes	98	80		80	155

[1] GROWTH HABIT REFERS TO THE ABILITY OF THE SPECIES TO EITHER FORM A DENSE SOD BY VEGETATIVE MEANS (STOLONS, RHIZOMES, OR ROOTS) OR REMAIN IN A BUNCH OR SINGLE PLANT FORM. IF SEEDED HEAVILY ENOUGH, EVEN BUNCH FORMERS CAN PRODUCE A VERY DENSE STAND. THIS IS SOMETIMES CALLED A SOD, BUT NOT IN THE SENSE OF A SOD FORMED BY VEGETATIVE MEANS.

[2] ONCE ESTABLISHED, PLANS MAY GROW AT A SOMEWHAT LOWER pH, BUT COVER GENERALLY IS ONLY ADEQUATE AT pH 6.0 OR ABOVE.

[3] MINIMUM SEED LOTS ARE TRULY MINIMUM, AND SEED LOTS TO BE USED FOR REVEGETATION PURPOSES SHOULD EQUAL OR EXCEED THESE STANDARDS. THUS, DEERTONGUE GRASS SHOULD GERMINATE 75% OR BETTER. CROWNVETCH SHOULD HAVE AT LEAST 40% READILY GERMINABLE SEED AND 30% HARD SEED. COMMONLY, SEED LOTS ARE AVAILABLE THAT EQUAL OR EXCEED MINIMUM SPECIFICATIONS. REMEMBER THAT DISTURBED SITES ARE ADVERSE FOR PLAN ESTABLISHMENT. READY GERMINATION REFERS TO SEED THAT GERMINATES DURING THE PERIOD OF THE GERMINATION TEST AND THAT WOULD BE EXPECTED, IF CONDITIONS ARE FAVORABLE, TO GERMINATE RAPIDLY WHEN PLANTED. THE OPPOSITE OF READY GERMINATION IS DORMANT SEED, OF WHICH HARD SEED IS ONE TYPE.

[4] SWITCHGRASS SEED IS SOLD ONLY IN THE BASIS OF PLS.

[5] NEED SPECIFIC LEGUME INOCULANT. INOCULANT SUITABLE FOR GARDEN PEAS AND SWEETPEAS USUALLY IS SATISFACTORY FOR FLATPEA.

[6] BIRDSFOOT TREFOIL IS ADAPTED OVER THE ENTIRE STATE, EXCEPT IN THE EXTREME SOUTHEAST WHERE CROWN AND ROOT ROTS MAY INJURE STANDS.

TABLE 11.4

Recommended Seed Mixtures

Mixture Number	Species	Seeding Rate-Pure Live Seed[1]: Most Sites	Seeding Rate-Pure Live Seed[1]: Adverse Sites
1 [2]	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
2 [3]	Tall fescue, or Fine fescue, or Kentucky bluegrass, plus Redtop[4], or Perennial ryegrass	60 35 25 3 15	75 40 30 3 20
3	Birdsfoot trefoil, plus Tall fescue	6 30	10 35
4	Birdsfoot trefoil, plus Reed canarygrass	6 10	10 15
8	Flatpea, plus Tall fescue, plus Perennial ryegrass	20 20 20	30 30 25
9 [6]	Serecia lespedeza, plus Tall fescue, plus Redtop[4]	10 20 3	20 25 3
10	Tall fescue, plus Fine fescue	40 10	60 15
11	Deertongue, plus Birdsfoot trefoil	15 6	20 10
12 [7]	Switchgrass, or big Bluestem, plus Birdsfoot trefoil	15 15 6	20 20 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 PERCENTAGE 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 OOUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH ASX WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.
5. USE FOR HIGHWAY SLOPES AND SIMILAR SITES WHERE THE DESIRED SPECIES AFTER ESTABLISHMENT IS CROWNVETCH.
6. USE ONLY IN EXTREME SOUTHEASTERN OR EXTREME SOUTHWESTERN PENNSYLVANIA. SERECIA IESPEDEZA IS NOT WELL ADAPTED TO MOST OF PA.
7. DO NOT MOW SHORTER THAN 9 TO 10 INCHES.
8. SEE MIXTURES CONTAINING CROWN VETCH SHOULD NOT BE USED IN AREAS ADJACENT TO WETLANDS OR STREAM CHANNELS DUE TO THE NATURE OF THIS SPECIES.

PCSM CRITICAL STAGES

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

1. UPON COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO ASCERTAIN THE INFILTRATION BERM AREA HAS BEEN FLAGGED AND FENCE ERECTED TO PREVENT ACCESS TO THE AREA.
2. AT COMPLETION OF DIVERSION BERM TO ENSURE IT HAS BEEN CONSTRUCTED TO THE PROPOSED LINES AND GRADES, THE SPECIFIED LINING MATERIALS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS, AND IF APPLICABLE, VEGETATION HAS BEEN ESTABLISHED.
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 BMP IS CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
5. FOLLOWING INSTALLATION OF THE VALVE YARD PAD SUBGRADE TO ENSURE STORMWATER FLOW IS DIRECTED TO THE DIVERSION BERM.
6. FOR FINAL INSPECTION OF CONSTRUCTED BMPS.
7. 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 BMPS SHOULD BE PROPERLY MAINTAINED TO ENSURE THEIR EFFECTIVENESS. SHEET FLOW CONDITIONS AND INFILTRATION MUST BE SUSTAINED THROUGHOUT THE LIFE OF THE BMP. BMPS SHOULD BE INSPECTED FOR CLOGGING FROM SEDIMENT OF 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.

CHANNEL LININGS SHOULD BE INSPECTED FOR SIGNS OF EROSION OR DISLODGING, AS APPLICABLE. CHANNELS SHOULD BE INSPECTED FOR DEBRIS, OVERGROWN VEGETATION, AND OTHER BLOCKAGES. CATCH BASINS AND INLETS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS AND CLEANED AS NEEDED. VEGETATION ALONG THE SURFACE OF THE INFILTRATION BASIN SHOULD BE MAINTAINED IN GOOD CONDITIONS. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON AN INFILTRATION BERM AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS. INSPECT THE BASIN AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS WITHIN 72 HOURS. WET POND SHOULD BE INSPECTED AT LEAST 4 TIMES PER YEAR AND AFTER MAJOR STORMS (> 2 INCHES PER 24 HOURS) OR RAPID ICE BREAKUP. THE POND DRAIN SHOULD BE INSPECTED AND TESTED 4 TIMES PER YEAR.

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 THE DISPERSION METHOD TO ADDRESS THE SOURCE OF EROSION. SEDIMENT SHOULD BE REMOVED WHEN THE BMP IS THOROUGHLY DRY. TRASH AND DEBRIS REMOVED FROM THE SITE SHOULD BE DEPOSITED ONLY AT SUITABLE DISPOSAL/RECYCLING SITES AND MUST COMPLY WITH APPLICABLE LOCAL, STATE, AND FEDERAL WASTE REGULATIONS. GRASS COVER SHOULD BE MOWED WITH LOW GROUND PRESSURE EQUIPMENT AS NEEDED 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 BMPS WILL BE REPAIRED AS SOON AS POSSIBLE UPON DISCOVERY. REPAIRS WILL BE MADE TO RESTORE DAMAGED BMPS TO THE ORIGINAL DESIGN CONDITION.

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.DEPWEB.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 SUBJECTED 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".

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

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 PAD 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 BMPS ARE DESIGNED TO CAPTURE AND INFILTRATE THIS WARMEST SURGE OF STORMWATER. BASED ON ROUTING CALCULATIONS, STORMWATER IS NOT DISCHARGED FROM THE BMPS 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.

ANTIDEGRADATION REQUIREMENTS

A HYDRAULIC ANALYSIS WAS CONDUCTED TO DETERMINE THE LOCATION OF COMPRESSOR STATION 200 ALONG TRANSCO'S EXISTING PIPELINE SYSTEM. THE DEFINED HYDRAULIC RANGE FOR COMPRESSOR STATION 200 IS PRIMARILY LOCATED WITHIN EXCEPTIONAL VALUE (EV) OR HIGH–QUALITY (HQ) WATERSHEDS. TRANSCO USED VARIOUS CRITERIA TO EVALUATE PARCELS SUITABLE FOR A COMPRESSOR STATION WITHIN THE HYDRAULIC RANGE REQUIRED TO MEET THE PURPOSE AND NEED OF THE PROJECT. THE CRITERIA FOR PARCEL EVALUATION INCLUDED BUT WAS NOT LIMITED TO EXISTING CONDITIONS, RESOURCE IMPACTS, WORKSPACE, AND REASONABLE AVAILABILITY. BASED ON THE LOCATION SELECTED FOR COMPRESSOR STATION 200, IMPACTS TO EV AND HQ WATERSHEDS ARE UNAVOIDABLE. TRANSCO DETERMINED THAT THERE ARE NO COST–EFFECTIVE AND ENVIRONMENTAL SOUND VIABLE NON–DISCHARGE ALTERNATIVES FOR THE PROJECT.

EARTH DISTURBANCE WILL BE MINIMIZED TO THE EXTENT PRACTICAL AND WILL BE PHASED OR SEQUENCED TO ONLY DISTURBED PORTIONS THAT ARE NECESSARY FOR THE SPECIFIC SCOPE OF WORK. WHERE POSSIBLE, THE LOD WAS DECREASED TO AVOID ADDITIONAL DISTURBANCE TO THE EXTENT PRACTICAL.

ANTI–DEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT) STANDARDS HAVE BEEN PROPOSED FOR COMPRESSOR STATION 200 BECAUSE THERE ARE NO VIABLE NON–DISCHARGE ALTERNATIVES. THE EROSION AND SEDIMENT CONTROL PLAN PREPARED FOR THE PROJECT OUTLINES A MORE STRINGENT DESIGN AND E&S BMPS THAT MEET ABACT STANDARDS.

THE COMPRESSOR STATION 200 IS LOCATED IN EV WATERSHEDS AND CONSTRUCTION ACTIVITIES IN THESE AREAS WILL RESULT IN INCREASED DISCHARGE OF STORMWATER TO SURFACE WATERS WHICH WILL BE MITIGATED BY THE IMPLEMENTATION OF POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BMP'S. PROPOSED PCSM BMPS ARE DESIGNED WITH STORMWATER VOLUME REDUCTION AND WATER QUALITY TREATMENT MAXIMIZED TO THE EXTENT PRACTICABLE WITHIN THE SITE CONSTRAINTS TO MAINTAIN AND PROTECT EXISTING WATER QUALITY AND EXISTING AND DESIGNATED USES.

RIPARIAN BUFFERS

TEMPORARY WORKSPACE ASSOCIATED WITH COMPRESSOR STATION 200 IS NOT LOCATED WITHIN A RIPARIAN BUFFER.

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 BY KEVIN C. CLARK, 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).

NON–STRUCTURAL AND STRUCTURAL WATER QUALITY BMP DESCRIPTION

LIMIT OF DISTURBANCE WILL BE REDUCED TO THE MAXIMUM EXTENT POSSIBLE BY DISTURBING ONLY THOSE AREAS NECESSARY TO COMPLETE THE PROPOSED EARTHWORK AND BMP INSTALLATIONS.

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. DISTURBED AREAS THAT ARE NOT PROPOSED TO BE IMPERVIOUS WILL BE REVEGETATED AS PER THE SEEDING AND MULCHING NOTES PROVIDED IN PCSM PLAN NOTES.

BAI GROUP

WHM consulting, INC. designs, permits, resolutions

KEVIN CLARK, P.E.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
KEVIN C. CLARK
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041211-E

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

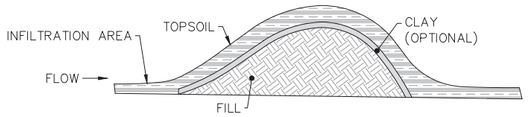
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT -
COMPRESSOR STATON 200
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

NOTES

EAST WHITELAND TWP., CHESTER COUNTY, PENNSYLVANIA

Williams.

DRAWN BY: DRV	DATE: 03/31/21	ISSUED FOR BID:	SCALE:
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 4 OF 6
WO: 1232813	RID: 304		



IDEAL SUBSTRATE LAYERS FOR A BERM

INFILTRATION BERM NOTES:

AN INFILTRATION BERM IS A MOUND OF COMPACTED EARTH WITH SLOPING SIDES THAT IS USUALLY LOCATED ALONG A CONTOUR ON RELATIVELY GENTLY SLOPING SITES.

MAINTAIN A MINIMUM 2–FOOT SEPARATION TO BEDROCK AND SEASONALLY HIGH WATER TABLE, PROVIDE DISTRIBUTED INFILTRATION AREA (5:1 IMPERVIOUS AREA TO INFILTRATION AREA – MAXIMUM), SITE ON NATURAL, UNCOMPACTED SOILS WITH ACCEPTABLE CAPACITY.

BERMS SHOULD BE RELATIVELY LOW, PREFERABLE NO MORE THAN 24 INCHES IN HEIGHT.

BERMS SHALL HAVE SIDE SLOPES OF 2:1 AND ARE NOT TO BE MOWED..

THE CREST OF THE BERM SHOULD BE LOCATED NEAR ON EDGE OF THE BERM, RATHER THAN IN THE MIDDLE, TO ALLOW FOR A MORE NATURAL, ASYMMETRICALSHAPE.

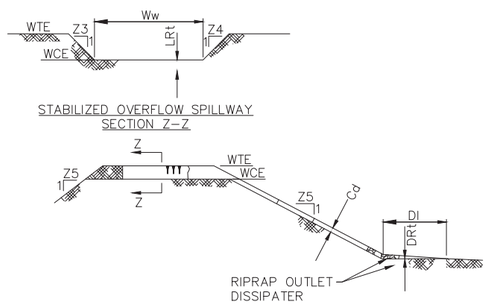
BERMS SHOULD BE VEGETATED USING SEED MIXTURE 1 PLUS 3 FROM TABLE 11.5.

INFILTRATION BERM No.	LENGTH OF BERM (ft) (L)	HEIGHT OF BERM (ft)	BOTTOM ELEV. (ft) (B.E.)	TOP OF BERM ELEV. (ft)	SHWT BELOW GROUND (in)	BEDROCK BELOW GROUND (in)	SPILLWAY ELEV. (ft)	TOP SPILLWAY WIDTH (ft)
INFILTRATION BERM 1	186.6	2.00	383.92	386.00	24	24	385.4	4

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
IB
INFILTRATION BERM



STABILIZED OVERFLOW SPILLWAY
PA DEP

BMP	WEIR					LINING		CHANNEL		DISSIPATOR				
	Z3 (ft)	Z4 (ft)	TOP ELEV. WTE (ft)	CREST ELEV. WCE (ft)	WIDTH Ww (ft)	RIPRAP SIZE (R–_)	RIPRAP THICK. LRt (in)	Z5 (ft)	DEPTH Cd (ft)	LENGTH DI (ft)	WIDTH Dw (ft)	RIPRAP SIZE (R–_)	RIPRAP THICK. DRt (in)
INFILTRATION BERM	2	2	386.00	385.40	5	N/A (SEE LEVEL SPREADER DETAIL)							

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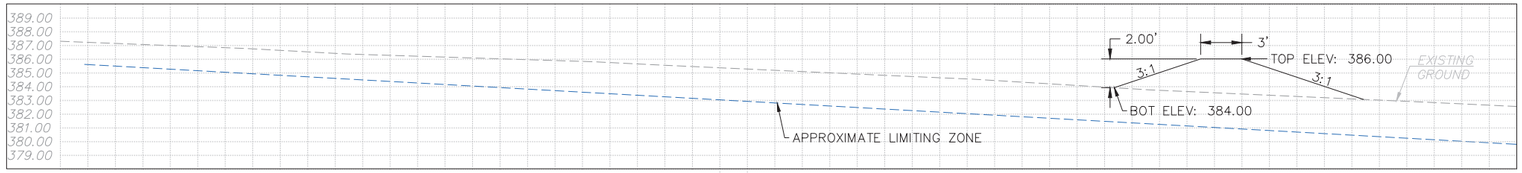
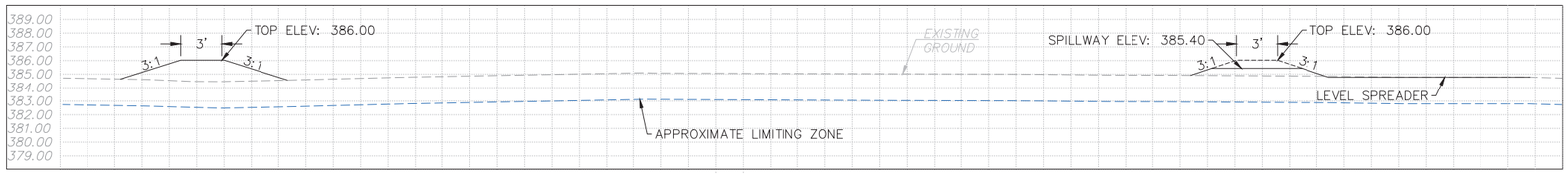
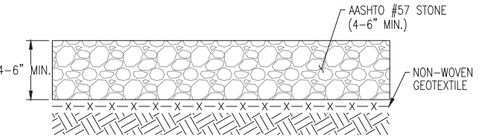
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
SW
STABILIZED OVERFLOW SPILLWAY



SECTION A–A
NOT TO SCALE



SECTION B–B
NOT TO SCALE



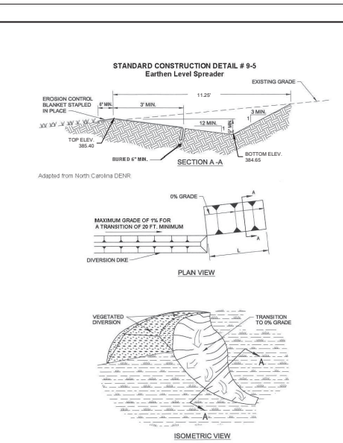
NOTES:

1. CROSS SECTION TO BE APPLIED TO DRY AREAS WITHOUT DRAINAGE CONCERNS.
2. EXISTING MATERIAL TO BE REMOVED AND STOCKPILED IN AN APPROVED LOCATION ONLY.
3. EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION & SEDIMENT POLLUTION CONTROL PLAN FOR THE PROJECT.
4. GRADING AND CROSS SLOPES VARY BY EXISTING CONDITIONS; SEE SPECIFIC DESIGN AND PROFILE FOR MORE DETAIL.
5. WITHIN EXTENTS OF GRADING FOR PERMANENT ACCESS ROADS AND VALVE SITES, COMPACT ALL SOIL FILL/BACKFILL AND COARSE AGGREGATE WITH FINES TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D–1557. CONTRACTOR SHALL UTILIZE ADEQUATELY SIZED AND CONFIGURED EQUIPMENT TO ACHIEVE SPECIFIED COMPACTION.
6. AS DIRECTED BY ENGINEER AND APPROVED BY OWNER, EXCAVATE AND STABILIZE SOFT SPOTS, UNSATISFACTORY SOILS AND AREAS OF EXCESSIVE PUMPING OR RUTTING.
7. PROOF–ROLLING OF SUBGRADE MAY BE REQUIRED TO DETERMINE PROPER COMPACTION BY OWNER.

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
PP
PROPOSED GRAVEL PAD



NOTES:

1. LEVEL SPREADER SHALL BE CONSTRUCTED AND MAINTAINED LEVEL. SMALL VARIATIONS IN HEIGHT ON THE DOWNSTREAM LIP SHALL BE LESS THAN 0.05% SLOPE ALONG THE WEIR.
2. VARIATIONS IN EXISTING GROUND ELEVATION SHALL BE LESS THAN 4 INCHES.
3. CLEAR DEBRIS (I.E. EARTH, WOOD, AND OTHER ORGANIC MATTER) LOCATED WITHIN 15 FEET DOWN SLOPE OF THE LEVEL SPREADER THAT MAY ACCUMULATE.
4. TO PRESERVE INFILTRATION CAPACITY, THE UNDERLYING SOILS SHOULD REMAIN UNDISTURBED, UNCOMPACTED, AND PROTECTED FROM HEAVY EQUIPMENT.

OPERATION & MAINTENANCE:

1. LEVEL SPREADER SHALL BE MONITORED FOR 2 YEARS ON A QUARTERLY BASIS AND SEMI–ANNUALLY THEREAFTER.
2. INSPECTIONS SHALL BE MADE FOLLOWING RAINFALL EVENTS EXCEEDING 1 INCH.
3. MONITORING INCLUDES BOTH THE LEVEL SPREADER AND THE DOWN SLOPE AREA UP TO AND INCLUDING THE RECEIVING STREAM.

LEVEL SPREADER
PERMANENT STORMWATER MEASURE
LS

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
PROJECT SPECIFIC DETAIL
LS
LEVEL SPREADER
GAS PIPELINE

BA GROUP

WHM designs, permits, resolutions | consulting, INC.

KEVIN C. CLARK, P.E.

COMMONWEALTH OF PENNSYLVANIA
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ENGINEER
044231-E

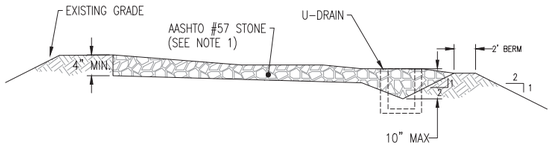
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT -
COMPRESSOR STATON 200
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN
DETAILS
EAST WHITELAND TWP., CHESTER COUNTY, PENNSYLVANIA

DRAWN BY: DRV	DATE: 03/31/21	ISSUED FOR BID:	SCALE:
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21		SHEET 5 OF 6
WO: 1232813	RID: 304	DRAWING NUMBER: 26-1000-70-28-D	



NOTES:

1. PAD MAY BE TOPPED WITH AASHTO #57 AGGREGATE TO PROVIDE A DRIVING SURFACE.

PENNSYLVANIA

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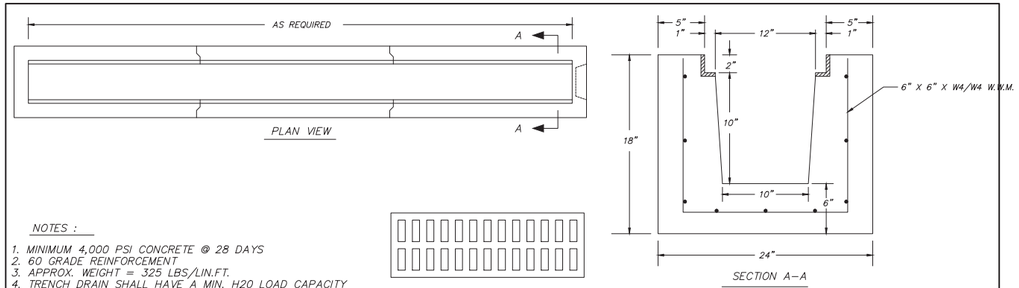
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
DB DIVERSION BERM DETAIL



NOTES :

1. MINIMUM 4,000 PSI CONCRETE @ 28 DAYS
2. 60 GRADE REINFORCEMENT
3. APPROX. WEIGHT = 325 LBS/LIN.FT.
4. TRENCH DRAIN SHALL HAVE A MIN. H20 LOAD CAPACITY

PENNSYLVANIA

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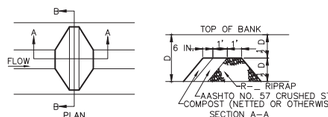
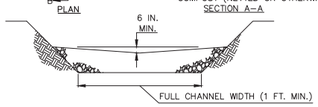
TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
TD TRENCH DRAIN





SECTION B–B

FOR D ≥ 3 FT. – USE R–4
FOR D ≥ 2 FT. TO D < 3 FT. – USE R–3
NOT APPLICABLE FOR D < 2 FT.

NOTES:

1. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTERS.
2. IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RFO ROCK FILTER OUTLET

BA GROUP

WHM consulting, INC.
designs, permits, resolutions

KEVIN CLARK, P.E.
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
KEVIN C. CLARK
ENGINEER
047211-E
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

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