TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 30" CENTRAL PENN LINE NORTH

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

JACKSON AND SUGARLOAF TOWNSHIPS

COLUMBIA COUNTY

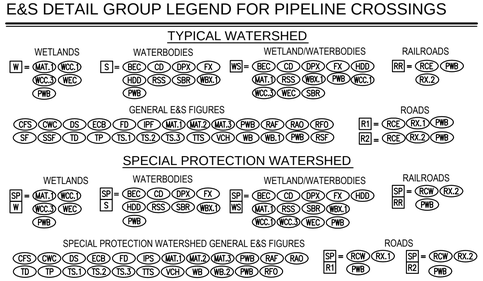
BMP DETAIL SUMMARY

FIGURE	FIGURE TITLE	SHEET NO.
ARF	ABACT ROCK FILTER	1
~~BBD~~	~~BROAD-BASED DIP~~	
BEC	BRIDGE EQUIPMENT CROSSING	
CD	COFFERDAM STREAM CROSSING	
~~CDM~~	~~CHECK DAM~~	
CFS	COMPOST FILTER SOCK	2
~~CS~~	~~CLEANOUT STAKE~~	
~~CST~~	~~COMPOST SOCK SEDIMENT TRAP~~	
CWC	CLEAN WATER CROSSING (TEMPORARY LEVEL SPREADER)	
DPX	DAM AND PUMP STREAM CROSSING	3
DS	HYDROSTATIC DEWATERING STRUCTURE	
ECB	EROSION CONTROL BLANKET	
FD	FILTER SOCK DIVERSION	
FEN	CONSTRUCTION FENCE	
FX	FLUME STREAM CROSSING	4
HDD	HORIZONTAL DIRECTIONAL DRILL	
~~IPF~~	~~FILTER BAG INLET PROTECTION - TYPE M~~	
~~IPS~~	~~STONE AND CONCRETE INLET PROTECTION - TYPE M~~	
MAT.1	TIMBER MATTING CONSTRUCTION	5
MAT.2	TIMBER MATTING WITH FILL OVER EXISTING PIPELINES	
MAT.3	TIMBER MATTING AIR BRIDGE	
PWB	PUMP WATER FILTER BAG	
RAO	RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION	
~~RAP~~	~~RIP RAP GRADATION~~	6
RCE	ROCK CONSTRUCTION ENTRANCE	
RCW	ROCK CONSTRUCTION ENTRANCE WITH WASH RACK	
RFO	ROCK FILTER OUTLET	
RSF	REINFORCED SILT FENCE (30" HIGH)	
RSS	RIP RAP STREAM BANK STABILIZATION	7
RX.1	TRENCHED ROAD CROSSING	
RX.2	BORED ROAD/RAILROAD CROSSING	
SBR	STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET	
SF	STANDARD SILT FENCE (18" HIGH)	8
SSF	SUPER SILT FENCE (33" HIGH)	
TD	TRENCH DEWATERING	
TP	TRENCH PLUG INSTALLATION	
~~TRV~~	~~TRASH RACK AND ANTI-VORTEX DEVICE~~	
TS.1	TOPSOIL SEGREGATION (1)	9
TS.2	TOPSOIL SEGREGATION (2)	
TS.3	TOPSOIL SEGREGATION (3)	
TTS	SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE	
VCH	VEGETATED CHANNEL	10
WB	WATERBAR	
WB.1	WATERBAR LAYOUT DETAIL	
WB.2	COMPOST FILTER SOCK AND SUMP (PADEP APPROVED ALTERNATE DETAIL) AT WATERBAR DISCHARGE	
WBX.1	BORED WATERBODY CROSSING	
WCC.1	WETLAND INSTALLATION PROCEDURE	11
WCC.3	"INUNDATED WETLAND" INSTALLATION PROCEDURE	
~~WD~~	~~WATER DEFLECTOR~~	
WEC	WETLAND EQUIPMENT CROSSING	

DETAILS THAT ARE NOT UTILIZED IN THIS COUNTY ARE STRUCK THROUGH IN THIS TABLE. THESE DETAILS ARE ALSO CROSSED OUT WITH A NOTE THAT READS "DETAILS ARE NOT UTILIZED IN THIS COUNTY" ON THEIR RESPECTIVE SHEET.

DRAWING INDEX

E&S DETAIL GROUP LEGEND FOR PIPELINE CROSSINGS



DETAILS IN THIS LEGEND ARE NOT COMPREHENSIVE AND ONLY REFER TO BMPS RELATED TO PIPELINE CROSSINGS. ADDITIONAL BMPS ARE PROVIDED FOR ACCESS ROADS.

E&S DETAIL GROUP LEGEND IS ALSO PROVIDED ON THE PIPELINE E&S PLANS. LEGEND IS SHOWN HERE FOR COORDINATION PURPOSES.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL Engineer PE062357 SUZANNE MARIE KING

SUZANNE KING REG NO. PE 082757

BLE Corporate ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*AJB*
3	*April 2017*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #2*	*W0572385*	*JLK*	*AJB*

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PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
COLUMBIA COUNTY, PENNSYLVANIA

Williams GAS PIPELINE

COVER SHEET

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 3
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: 24-1601-70-28-A/1683_3-BMP-CV	SHEET 1 OF 1
WO:					

Drawn By & Date/Time: tdelo Apr 27, 2017 - 8:16am
Drawing Location & Name: G:\JOBS\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(01)_CV-01.dwg

STANDARD EROSION & SEDIMENTATION CONTROL PLAN NOTES

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
14. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM LIMIT OF DISTURBANCE TO PUBLIC ROADS WITHOUT PASSING OVER A ROCK CONSTRUCTION ENTRANCE.
15. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
16. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
18. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
19. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
20. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
22. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
23. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
26. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS, DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
27. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
28. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
29. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
30. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
31. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
32. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
33. CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS.
34. ALL SWALES SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.
35. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE SWALE SHALL BE IMMEDIATELY BACKFILLED AND THE SWALE RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE SWALE SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.
36. SWALES HAVING RIPRAP, RENO MATTRESS, OR GABION LININGS MUST BE SUFFICIENTLY OVER-EXCAVATED SO THAT THE DESIGN DIMENSIONS WILL BE PROVIDED AFTER PLACEMENT OF THE PROTECTIVE LINING.
37. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS.
38. SEDIMENT BASINS SHALL BE PROTECTED FROM UNAUTHORIZED ACTS BY THIRD PARTIES.
39. ANY DAMAGE THAT OCCURS IN WHOLE OR IN PART AS A RESULT OF BASIN OR TRAP DISCHARGE SHALL BE IMMEDIATELY REPAIRED BY THE PERMITTEE IN A PERMANENT MANNER SATISFACTORY TO THE MUNICIPALITY, LOCAL CONSERVATION DISTRICT, AND THE OWNER OF THE DAMAGED PROPERTY.
40. UPON REQUEST, THE APPLICANT OR HIS CONTRACTOR SHALL PROVIDE AN AS-BUILT (RECORD DRAWING) FOR ANY SEDIMENT BASIN OR TRAP TO THE MUNICIPAL INSPECTOR, LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
41. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER, WITHIN 100' OF A STREAM OR WETLAND IN A HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, WITHIN 50' OF A STREAM OR WETLAND IN A NON-HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.
42. FILL MATERIAL FOR EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN MAXIMUM 9 INCH LAYERED LIFTS AT 95% DENSITY.
43. IN AREAS OF TOPSOIL SEGREGATION THE TOPSOIL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO THE RESTORATION OF THE TOPSOIL. AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILLOUT SLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.

GENERAL EROSION & SEDIMENT CONTROL NOTES

1. INSPECT SNOW PLACEMENT AREAS DURING THE THAW CYCLE. INSTALL EROSION & SEDIMENT CONTROL BMPS DURING QUICK THAWS AND WHEN SNOW MELT RUNOFF IS CONCENTRATED OR IS CAUSING EROSION.
2. DISCHARGING SEDIMENT LADEN WATER WHICH WILL CAUSE OR CONTRIBUTE TO THE DEGRADATION OF A BENEFICIAL USE OF A WATER OF THE STATE FROM THE CONSTRUCTION SITE, A DEWATERING SITE, OR SEDIMENT BASIN/TRAP INTO ANY WATER BODY OR STORM DRAIN WITHOUT FILTRATION OR EQUIVALENT TREATMENT IS PROHIBITED.
3. DISCHARGES ORIGINATING FROM OFF-SITE SOURCES, WHICH FLOW THROUGH OR ACROSS THE AREAS DISTURBED BY CONSTRUCTION, SHALL BE DIVERTED AROUND THE ACTIVE CONSTRUCTION AREA WHENEVER POSSIBLE.
4. STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED OUTSIDE THE 100-YR FLOOD ZONE. HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM SURFACE WATER BODIES.
5. ALL EXCAVATED MATERIALS THAT WILL NOT BE USED ON THE SITE CANNOT BE STORED IN THE FLOODPLAIN AND MUST BE HAULED TO A DISPOSAL SITE LOCATED OUTSIDE OF THE FLOODPLAIN.
6. CONSTRUCTION STAGING AREAS SHALL BE LOCATED A MINIMUM OF 50 FEET AWAY FROM THE EDGE OF A WETLAND.
7. MEASURES SHALL BE TAKEN TO PREVENT TRENCHES FROM DRAINING A WETLAND OR CHANGING ITS HYDROLOGY.
8. IT IS DESIRED THAT THE AMOUNT AND DURATION OF OPEN TRENCH BE MINIMIZED DURING THE PROJECT.
9. IF TOPSOIL PILES ARE EXPOSED FOR GREATER THAN 4 DAYS, THEY SHALL BE SEEDED WITH AN ANNUAL SEED MIXTURE AND MULCHED WITH STRAW.
10. NO EROSION CONTROL BLANKET SHALL BE INSTALLED IN AGRICULTURAL AREAS EXCEPT AS REQUIRED TO CONSTRUCT THE TEMPORARY FLUME CROSSINGS.
11. HYDRAULICALLY APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF EROSION CONTROL BLANKETS WITH PRIOR APPROVAL FROM THE COUNTY CONSERVATION DISTRICT.
12. LOCATION AND SPACING OF THE WATERBARS ARE SHOWN ON THE PLAN. WATERBARS MAY BE ADJUSTED IN THE FIELD DUE TO ACTUAL SITE CONDITIONS. HOWEVER INSTALLATION AND SPACING MUST CONFORM TO THE DETAILS PROVIDED AND APPROVAL MUST BE OBTAINED FROM THE LOCAL CONSERVATION DISTRICT OR PA DEP.
13. SEDIMENT REMOVED FROM PUBLIC ROADS OR BMPS WILL BE REUSED ON SITE OR DISPOSED OF AT A SITE WITH AN EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR DEP.
14. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SOIL EROSION AND SEDIMENT CONTROL NARRATIVE AND ENVIRONMENTAL CONSTRUCTION PLAN.
15. CONTRACTOR SHALL MINIMIZE THE TOTAL AREA OF DISTURBANCE.
16. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&S PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED E&S, OR AN ACCEPTABLE BMP WHICH TEMPORARILY MINIMIZES ACCELERATED E&S. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS WITHIN THE ROW. THE ON-SITE ENVIRONMENTAL INSPECTOR WILL LOG ACTIVITY WITHIN THE PROJECT LIMITS OF DISTURBANCE AND NOTIFY THE CONTRACTOR OF AREAS REQUIRING TEMPORARY STABILIZATION.
17. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BMPS TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL COUNTY CONSERVATION DISTRICT AND/OR PADEP.
18. MAINTAIN TEMPORARY SOIL STOCKPILES.
19. NO EARTH DISTURBANCE ACTIVITIES WITHIN 50 FEET OF STREAM SWALES WILL BE PERFORMED UNTIL MATERIALS NEEDED TO COMPLETE THE CROSSING ARE AT THE NEAREST AVAILABLE LOCATION.
20. THE CONTRACTOR IS REQUIRED TO PROVIDE CONTINUOUS MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES WITHIN DISTURBED AREAS.
21. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE LONGER THAN 4 DAYS IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL SUCH INACTIVE DISTURBED AREAS.
22. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
23. FOLLOW THE CONSTRUCTION/EROSION CONTROL IMPLEMENTATION PLAN AS OUTLINED ON THE DRAWINGS.
24. THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH PROJECT OWNER STANDARDS, THE PADEP REGULATIONS, AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.
25. SCHEDULE WORK TO BE PERFORMED IN A MANNER THAT MINIMIZES THE LENGTH OF TIME THAT BARE SOIL WILL BE EXPOSED TO THE ELEMENTS.
26. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THIS SEQUENCE. EACH STAGE SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. IMPLEMENT EROSION CONTROL MEASURES AS SPECIFIED; HOWEVER, THE CONTRACTOR MAY INSERT ADDITIONAL CONSTRUCTION PHASES IN ORDER TO EXPEDITE HIS WORK WHILE MAINTAINING THE SAME LEVEL OF PROTECTION.ANY DEVIATION FROM THE FOLLOWING SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL COUNTY CONSERVATION DISTRICT. CONSTRUCTION MUST BE IN ACCORDANCE WITH THE SEQUENCE OF BMP INSTALLATION INDICATED ON SITE SPECIFIC DETAIL SHEETS. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE LOCAL COUNTY CONSERVATION DISTRICT OR PADEP.
29. THE FLOODWAY/FLOODPLAIN LINE SHOWN ON THE PLANS WAS DEVELOPED FROM AVAILABLE FEMA FLOODWAY MAPPING, FEMA FLOODPLAIN MAPPING, AND THE PA CHAPTER 105 FLOODWAY DEFINITION.
30. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OR DEP AND BE FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.
31. ALL COMPOST FILTER SOCK SHOWN AT ROAD CROSSINGS IS INTENDED FOR USE DURING RESTORATION ACTIVITIES.

EXISTING CONDITIONS NOTES

1. EXISTING TOPOGRAPHY IS BASED UPON THE FOLLOWING:
   A. PHOTOGRAMMETRIC SURVEY PROVIDED BY AEROMETRIC/QUANTUM AERIAL, BASED UPON DIGITAL AERIAL IMAGERY ACQUIRED MARCH THROUGH NOVEMBER OF 2012 AND APRIL OF 2013, AND COMPILED TO NATIONAL MAP ACCURACY STANDARDS FOR SCALE 1"=100' AND 2' CONTOUR INTERVAL.
   B. SUPPLEMENTAL FIELD SURVEY DATA PROVIDED BY WILLIAMS SURVEY FOR AREAS WITHIN THE PROPOSED ACCESS ROADS CORRIDORS AND PROPOSED FACILITIES.
2. NORTH ARROW AND COORDINATES ARE BASED UPON UNIVERSAL TRANSVERSE MERCATOR WITH NORTH AMERICAN DATUM OF 1983, ZONE 18, U.S. FOOT, CENTRAL MERIDIAN 75° WEST (UTM83-18F).
3. ELEVATIONS ARE BASED UPON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. WETLAND AND WATERBODY DELINEATIONS ARE BASED ON ENVIRONMENTAL SURVEY DATA PROVIDED BY E&E AND ARE LIMITED TO THE AREAS WITHIN OR IN CLOSE PROXIMITY TO THE ACCESS ROADS CORRIDORS, PROPOSED FACILITIES, AND PIPELINES.
5. APPROXIMATE PROPERTY LINES ARE BASED UPON DIGITAL MAPPING PROVIDED BY WILLIAMS SURVEY AND ARE DEPICTED FOR GENERAL INFORMATION ONLY.
6. LAND OWNER IDENTIFICATION IS BASED ON INFORMATION PROVIDED BY WILLIAMS SURVEY AND IS FOR GENERAL INFORMATION ONLY.
7. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY WILLIAMS AND ITS ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS DEPICTED ON THIS PLAN.

THERMAL IMPACT ANALYSIS

IN ORDER TO AVOID THERMAL IMPACTS, THE LIMIT OF DISTURBANCE WITHIN THE PIPELINE RIGHT-OF-WAY HAS BEEN MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE. ADDITIONALLY, ALL DISTURBED AREA WILL BE RESTORED TO AN EXISTING, VEGETATIVE CONDITION FOLLOWING CONSTRUCTION.

THE FOLLOWING PROVISIONS RELATED TO THERMAL IMPACTS BY ACCESS ROADS ARE INCLUDED IN THE E&SC ACCESS ROAD PLANS:

- THE MINIMUM PERMANENT CHANGES IN LAND COVER, NECESSARY TO CONSTRUCT THE REQUIRED FACILITIES ARE BEING PROPOSED.
- RUNOFF FROM THE PERMANENT IMPERVIOUS AREA WILL BE COLLECTED AS PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT / SITE RESTORATION (PCSM/SR) PLAN AND ROUTED TO PCSM/SR BMPs. IN ADDITION, IMPERVIOUS AREAS WILL BE GRAVEL INSTEAD OF ASPHALT WHEREVER PRACTICAL.
- THE REMOVAL OF VEGETATION, ESPECIALLY TREE COVER, WILL BE LIMITED TO ONLY THAT NECESSARY FOR CONSTRUCTION.
- THE IMPACTS TO EXISTING RIPARIAN CORRIDORS WILL BE LIMITED TO ONLY THAT NECESSARY FOR CONSTRUCTION.
- THE AMOUNT OF IMPERVIOUS SURFACES WILL BE LIMITED TO ONLY THAT NECESSARY TO SUPPORT THE CONSTRUCTION OF THE PIPELINE AND/OR OPERATION OF THE PIPELINE.
- ALL DISTURBED AREAS WILL BE RESTORED TO AN EXISTING, VEGETATIVE CONDITION FOLLOWING CONSTRUCTION AND IN ACCORDANCE WITH CHAPTER 102 AND ESCGP-2 PERMIT REQUIREMENTS FOR LINEAR OIL AND GAS PROJECTS.

NOTICES TO CONTRACTOR

1. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
3. WATERBARS IN AGRICULTURAL/FARM FIELDS ARE TEMPORARY AND SHALL BE REMOVED AND RESTABILIZED UPON ESTABLISHMENT OF A UNIFORM 70 PERCENT PERMANENT VEGETATIVE COVER WITHIN THE UPSLOPE TRIBUTARY DRAINAGE AREA PER PA CHAPTER 102.22.
4. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE COORDINATED WITH THE AGENCY HAVING JURISDICTION.
5. FURNISH & INSTALL SWALES WHENEVER CONCENTRATED FLOWS HAVE THE POTENTIAL TO RUN ONTO OR THROUGH THE CONSTRUCTION AREA. DIRECT THE SWALE DISCHARGE TO A RIP RAP ENERGY DISSIPATER AND VEGETATED AREA.
6. THE CONTRACTORS SHALL BE ADDED AS CO-PERMITEES TO THE ESCGP-2 PERMIT.

RECEIVING WATERCOURSE - CHAPTER 93 DESIGNATION

REFER TO THE PIPELINE AND ACCESS ROAD PLANS FOR THE LOCATION, NAME AND CHAPTER 93 WATERCOURSE DESIGNATIONS. A SUMMARY TABLE OF THE WATERBODIES CROSSED BY THE PIPELINE AND CHAPTER 93 DESIGNATIONS ARE PROVIDED IN THE COUNTY-SPECIFIC TABLES INCLUDED AT THE END OF THIS PLAN SET.

RECYCLING AND DISPOSAL METHODS

THE RESTORATION OF THE PIPELINE RIGHT-OF-WAY WILL REQUIRE THE REMOVAL OF THE TEMPORARY MATERIALS. THE TEMPORARY MATERIALS INCLUDE, BUT MAY NOT BE LIMITED TO, STONE SURFACES AND ASSOCIATED GEOTEXTILES. THE CONTRACTORS ARE REQUIRED TO DISPOSE OF THE MATERIALS AT SUITABLE DISPOSALS OR RECYCLING SITES AND IN COMPLIANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

CONTRACTORS ARE REQUIRED TO INVENTORY AND MANAGE THEIR CONSTRUCTION SITE MATERIALS. THE GOAL IS TO BE AWARE OF THE MATERIALS ON-SITE, ENSURE THEY ARE PROPERLY MAINTAINED, USED, AND DISPOSED OF, AND TO MAKE SURE THE MATERIALS ARE NOT EXPOSED TO STORMWATER.

MATERIALS COVERED

THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON-SITE DURING CONSTRUCTION (NOTE: THIS LIST IS NOT AN ALL-INCLUSIVE LIST AND THE MATERIALS MANAGEMENT PLAN CAN BE MODIFIED TO ADDRESS ADDITIONAL MATERIALS USED ON-SITE):

- ACIDS
- DETERGENTS
- FERTILIZERS (NITROGEN/PHOSPHORUS)
- HYDROSEEDING MIXTURES
- PETROLEUM BASED PRODUCTS
- SANITARY WASTES
- SOIL STABILIZATION ADDITIVES
- SOLDER
- SOLVENTS
- OTHER (LIST HERE): _____

THESE MATERIALS MUST BE STORED AS APPROPRIATE AND SHALL NOT CONTACT STORM OR NON-STORMWATER DISCHARGES. CONTRACTOR SHALL PROVIDE A WEATHER PROOF CONTAINER TO STORE CHEMICALS OR ERODIBLE SUBSTANCES THAT MUST BE KEPT ON THE SITE. CONTRACTOR IS RESPONSIBLE FOR READING, MAINTAINING, AND MAKING EMPLOYEES AND SUBCONTRACTORS AWARE OF MATERIAL SAFETY DATA SHEETS (MSDSs).

MATERIAL MANAGEMENT PRACTICES

THE FOLLOWING ARE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORMWATER RUNOFF.

1. GOOD HOUSEKEEPING PRACTICES

THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SIT

PIPELINE BMP INSTALLATION SEQUENCE

1. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, ENVIRONMENTAL INSPECTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
2. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
3. HOLD PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL INSPECTORS, LOCAL COUNTY CONSERVATION DISTRICT (CCD), PADEP, AND DESIGN ENGINEER.
4. LOCATE STAGING AREAS AND ACCESS POINTS INCLUDING CONSTRUCTION ENTRANCES. FIELD LOCATE THE LOD.
5. LOCATE, STAKE AND/OR INSTALL ORANGE CONSTRUCTION FENCE AROUND SPECIAL AREAS OF CONCERN (I.E. WETLANDS, STREAMS, CULTURAL RESOURCES...)
6. PERFORM NON-MECHANIZED TREE CUTTING WHERE REQUIRED.
7. INSTALL CONSTRUCTION ENTRANCES.
8. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OR DEP AND BE FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.
9. REMOVE BRUSH, INCLUDING STUMPS, ONLY IN AREAS NECESSARY TO EFFECTIVELY INSTALL PERIMETER SEDIMENT BARRIERS, UPSLOPE TEMPORARY FILTER SOCK DIVERSIONS AND TEMPORARY DIVERSION SWALES. LEVEL SIDE CUTS REQUIRED TO GRANT ACCESS FOR VEHICLES AND WORKERS TO SAFELY PERFORM THE INSTALLATION OF SEDIMENT BARRIERS AS SHOWN ON THE E&SC PLANS.
10. INSTALL PERIMETER CONTROLS (SEDIMENT BARRIERS). ACCESS REQUIREMENTS FOR PERIMETER CONTROLS ALONG PRIVATE DRIVES WITHIN THE LOD SHALL BE IN ACCORDANCE WITH THE LANDOWNER AGREEMENTS.
11. INSTALL PERMANENT AND TEMPORARY ACCESS ROADS AND ASSOCIATED BMPS (VEGETATED ROADSIDE DITCHES, DITCH RELIEF CULVERTS, AND RIPRAP OUTLET PROTECTION), SEE ACCESS ROAD SEQUENCE OF CONSTRUCTION FOR SPECIFIC CONSTRUCTION STEPS ASSOCIATED WITH ROAD CONSTRUCTION (PROVIDED IN SECTION 2 OF THE ESCGP-2 NOI).
12. THE COMPLIANCE MANAGER SHALL PROVIDE PADEP AT LEAST THREE DAYS' NOTICE PRIOR TO BULK EARTH DISTURBANCE AND UPON COMPLETED INSTALLATION OF PERIMETER EROSION CONTROLS.
13. HAVE SURVEY CREWS LOCATE AND RE-STAKE AS NEEDED, IF ANY STAKES ARE DAMAGED, IN ALL SPECIAL AREAS OF CONCERN (I.E., WETLANDS, STREAMS, ETC.)
14. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY WHERE THE CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&SC PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED E&SC, OR AN ACCEPTABLE E&SC BMP WHICH TEMPORARILY MINIMIZES ACCELERATED E&SC. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS WITHIN THE ROW.
15. PROCEED WITH MAJOR CLEARING AND GRUBBING.
16. BEGIN CONSTRUCTION STAKING FOR TEMPORARY GRADING.
17. INSTALL CLEAN WATER CROSSINGS, INCLUDING LINERS, RIP RAP APRON ENERGY DISSIPATERS AND FLUME CROSSINGS
18. AS THE GRUBBING OPERATION COMMENCES, INSTALL ROCK FILTERS AND WATERBARS ALONG THE ALIGNMENT.
19. STRIP AND STOCKPILE TOPSOIL; INSTALL SEDIMENT BARRIERS AROUND STOCKPILES.
20. HAUL PIPE TO RIGHT-OF-WAY. BEND, PLACE ON SUPPORTS, ALIGN, AND WELD. INSTALL STREAM AND WETLAND CROSSING BMPS (TIMBER MATTING, TIMBER MAT BRIDGES). LAY PIPE IN DITCH. IMMEDIATELY AFTER INSTALLING CROSSING, RESTORE DISTURBED AREA AND INSTALL STREAMBANK STABILIZATION.
21. CLEAR, GRUB, AND CONSTRUCT STREAM AND WETLAND CROSSINGS IN ACCORDANCE WITH CHAPTER 105, SECTION 404, 401, AND RELATED PERMITS. INSTALL STREAM FLUMES, AND/OR DAM AND PUMP AS SPECIFIED IN CHAPTER 105 PERMIT DOCUMENTS FOR CROSSING OF STREAM AND WETLAND AREAS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, BACKFILL TRENCH, AND TEMPORARILY STABILIZE WITHIN 48 HOURS OF EXCAVATING TRENCH IN RESOURCE CROSSING LOCATIONS.
22. DIG TRENCH OUTSIDE OF RESOURCE CROSSINGS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, AND BACKFILL TRENCH WITHIN 30 DAYS OF EXCAVATING TRENCH.
23. PERFORM NON-DESTRUCTIVE TESTING (NDT) INSPECTION OF WELDS AND APPLY COATING TO WELD AREA.
24. INSTALL TRENCH PLUGS.
25. BACKFILL PIPE TRENCH, REPAIR PERMANENT WATERBARS, REMOVE TEMPORARY WATERBARS, RETURN TEMPORARILY GRADED AREAS TO PRE-DEVELOPMENT GRADE, REPAIR/INSTALL EROSION CONTROL BLANKET AS NEEDED, REPLACE TOPSOIL AND IMMEDIATELY SEED AND STABILIZE DISTURBED AREAS (SLOPES, DITCHES AND CHANNELS) AS THEY ARE RETURNED TO FINAL GRADE. REFER TO PLANTING PLANS AND RIPARIAN BUFFER PLANTINGS, AS APPLICABLE, IN THE BMP PLAN SET AND E&S NARRATIVE. ANY AREA THAT USED STONE AND/OR TIMBER MATS FOR TEMPORARY STABILIZATION AND/OR ACCESS WILL BE COMPLETELY REMOVED, SOIL WILL BE DE-COMPACTED BY USING TRACKED EQUIPMENT MAKING MULTIPLE PASSES OVER AREA. RE-ESTABLISH PRECONSTRUCTION CONTOURS, AND REPLACE TOPSOIL TO A MINIMUM OF 4-8 INCHES DEEP AND SEED AND MULCH AREAS. VEHICULAR TRAFFIC SHOULD BE RESTRICTED FROM AREAS TO PREVENT SOIL COMPACTION.
26. TRANSCO WILL COMPLETE UPLAND FINAL GRADING, TOPSOIL REPLACEMENT, INSTALLATION OF PERMANENT E&S MEASURES WITHIN 20 DAYS AFTER BACKFILLING THE TRENCH IN ALL AREAS EXCEPT RESIDENTIAL AREAS, WHICH WILL BE COMPLETED WITHIN 10 DAYS.
27. PERFORM HYDROSTATIC PRESSURE TEST OF PIPELINE.
28. DEWATER PIPELINE UTILIZING APPROPRIATE BMPS, COMPLETE FINAL TIE-INS, AND DRY PIPELINE.
29. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. WHEN CONTROLS ARE TO BE REMOVED IN AGRICULTURAL NON-SENSITIVE AREAS (STREAMS/WETLANDS), AGRICULTURAL LANDOWNERS SHALL MAINTAIN AGRICULTURAL BMPs PER PADEP REGULATIONS.
30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE PERMITTEE AND/OR OPERATORS SHALL CONTACT THE LOCAL CCD AND/OR PADEP FOR AN INSPECTION PRIOR TO THE REMOVAL OF THE E&SC BMPS. REMOVAL OF TEMPORARY WETLAND AND STREAM CROSSINGS, TEMPORARY BMPS INCLUDING SEDIMENT BARRIERS, TEMPORARY FILTER SOCK DIVERSION SWALES, TEMPORARY CLEAN WATER DIVERSION SWALES (AND ASSOCIATED GRADING), CLEAN WATER CROSSING OUTFALL PROTECTION AND LEVEL SPREADERS, ROCK FILTERS, AND TEMPORARY WATERBARS ALONG THE ALIGNMENT.
31. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 100 FEET OF A HQ/EV SURFACE WATER AND WITHIN 50 FEET OF NON-HQ/EV SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
32. COMPLETE SITE RESTORATION AND STABILIZATION, INCLUDING SOIL AERATION, SOIL TREATMENT, SEED APPLICATION AND MULCHING IN AREAS DISTURBED BY E&SC BMP REMOVAL. INSTALL RIPARIAN BUFFER PLANTINGS PER THE RIPARIAN BUFFER PLANTING PLANS.
33. REMOVE AND PROPERLY DISPOSE OF/RECYCLE E&SC BMPS. REMOVE STAKES AND ORANGE CONSTRUCTION FENCE. REPAIR AND PERMANENTLY STABILIZE AREAS DISTURBED DURING E&SC BMP REMOVAL.

MAINTENANCE PROGRAM

THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES. REFER TO BMP DETAILS FOR SPECIFIC OPERATION AND MAINTENANCE REQUIREMENTS.

1. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED ONCE EVERY SEVEN DAYS AND AFTER EACH RUNOFF EVENT. A WRITTEN REPORT MUST ALSO BE COMPLETED DOCUMENTING EACH INSPECTION AND, IF NECESSARY, ANY REPAIR, REPLACEMENT OR MAINTENANCE ACTIVITY.
2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR ADDITIONAL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF THE INSPECTION REPORT.
3. BUILT UP SEDIMENT WILL BE REMOVED FROM PERIMETER BMPS WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE BMP.
4. PERIMETER BMPS WILL BE INSPECTED FOR DEPTH OF SEDIMENT, DAMAGE, ETC., TO ENSURE THE MEASURE IS IN PROPER WORKING ORDER, AND THAT ANY POSTS/WOOD STAKES ARE SECURELY IN THE GROUND.
5. TEMPORARY SEDIMENT TRAPS, IF PRESENT, WILL BE INSPECTED FOR DEPTH OF SEDIMENT, AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES THE DESIGN CLEANOUT DEPTH.
6. TEMPORARY AND PERMANENT SEEDING, AND OTHER STABILIZATION MEASURES, WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
7. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS ESCP.
8. THE INSPECTOR WILL IMPLEMENT INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS THAT ARE USED ON THE SITE IN GOOD WORKING ORDER. THE INSPECTOR WILL ALSO BE TRAINED IN THE COMPLETION OF, INITIATION OF ACTIONS REQUIRED BY, AND THE FILING OF THE INSPECTION FORMS.
9. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORMWATER.

A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN(S) WILL BE AVAILABLE ON THE SITE AT ALL TIMES.

ONCE ANY EROSION CONTROL MEASURES ARE INSTALLED, THE MAINTENANCE AND INSPECTION PROCEDURES ABOVE SHALL BEGIN. THE CONTRACTOR SHOULD BE AWARE THAT THE INSPECTION FORMS BECOME AN INTEGRAL PART OF THE ESCP AND SHALL BE MADE READILY AVAILABLE TO THE GOVERNMENT INSPECTION OFFICIALS, THE PROJECT OWNER'S ENGINEER, AND THE PROJECT OWNER FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE.

INSPECTORS SHOULD BE KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS AND POSSESS THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORMWATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORMWATER DISCHARGES FROM THE CONSTRUCTION SITE. THEY SHOULD ALSO HAVE READ AND UNDERSTOOD ALL PORTIONS OF THIS ESCP, INCLUDING THE ESCGP-2.

THE INDIVIDUAL(S) RESPONSIBLE FOR POST-STORM AND STORM EVENT BMP INSPECTIONS, AND THE QUALIFIED PERSON(S) ASSIGNED RESPONSIBILITY TO ENSURE FULL COMPLIANCE WITH THE PERMIT AND IMPLEMENTATION OF ALL ELEMENTS OF THE ESCP, INCLUDING THE PREPARATION OF THE ANNUAL COMPLIANCE EVALUATION AND THE ELIMINATION OF ALL UNAUTHORIZED DISCHARGES ARE:
NAME: _____

PHONE NUMBER: _____ EMERGENCY PHONE #: _____

COMPANY: _____

RESPONSIBILITIES: _____

NAME: _____

PHONE NUMBER: _____ EMERGENCY PHONE #: _____

COMPANY: _____

RESPONSIBILITIES: _____

TEMPORARY AND PERMANENT STABILIZATION

1. TEMPORARY STABILIZATION

   TEMPORARY SEEDING WITH STRAW MULCH COVER FOR INTERIM STABILIZATION IS A TYPE OF BMP THAT CAN USUALLY BE PROVIDED WHERE THE EARTH DISTURBANCE ACTIVITY TEMPORARILY CEASES (I.E. 4 DAYS OR MORE) UNLESS DIRECTED BY THE PROJECT OWNER, PADEP, OR CONSERVATION DISTRICT.

   THE INSTALLATION OF AN EROSION CONTROL BLANKET OR APPLICATION OF STRAW MULCH UPON SEEDED CAN BE UTILIZED TO PROTECT THE SEEDBED UNTIL VEGETATION IS ESTABLISHED.

2. PERMANENT STABILIZATION

   UPON COMPLETION OF ANY EARTH DISTURBANCE ACTIVITY, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.

   EROSION & SEDIMENTATION CONTROLS SHALL BE LEFT IN PLACE UNTIL SUCH TIME AS THE DISTURBED AREAS HAVE PERMANENT STABILIZATION. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.

   WHEN EROSION & SEDIMENTATION CONTROLS ARE TO BE REMOVED IN AGRICULTURAL NON-SENSITIVE AREAS (STREAMS/WETLANDS), AGRICULTURAL LANDOWNERS SHALL MAINTAIN AGRICULTURAL BMPS PER PADEP REGULATIONS.

3. STABILIZATION DURING NON-GROWING SEASONS

   WHEN UTILITY CONSTRUCTION MUST BE DONE AND IS COMPLETED DURING A NON-GROWING SEASON, INTERIM STABILIZATION BMPS MUST BE IMPLEMENTED AND ADEQUATELY MAINTAINED. THE APPLICATION OF STRAW MULCH AT THE RATE OF 3.0 TONS PER ACRE IS REQUIRED. THE BMPS SHOULD BE INSPECTED WEEKLY (UNLESS SNOW COVERED) AND AFTER EACH RUNOFF EVENT TO IDENTIFY AREAS THAT BECOME BARE.

   BARE AREAS SHOULD BE COVERED WITH A PROPERLY INSTALLED EROSION CONTROL BLANKET. ALL TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROLS MUST BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.

4. WHERE REQUIRED, STRAW MULCH MUST BE APPLIED AT A MINIMUM OF 3.0 TONS PER ACRE.
5. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT FINELY CHOPPED OR BROKEN.
6. PRIOR TO ANY SEEDING, LIME, OR FERTILIZATION APPLICATION, A SOIL TEST SHALL BE PERFORMED TO DETERMINE THE pH FACTOR. ADDITIONAL LIME AND FERTILIZER MAY BE REQUIRED. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND AREAS.
7. LIME, FERTILIZE, SEED, AND MULCH DISTURBED AREAS PER THE EROSION AND SEDIMENT CONTROL PLANS. IN AREAS OF STEEP SLOPES OR OBVIOUS AREAS WHERE POTENTIAL EROSION MAY OCCUR, AND EROSION CONTROL MAT OR FLEXIBLE GROWTH MEDIUM (FGM) SHALL BE USED. FGM SHALL BE APPLIED PER MANUFACTURER SPECIFICATIONS. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND OR STREAM AREAS.
8. WATERBARS WITHIN AGRICULTURAL OR RESIDENTIAL AREAS SHALL BE USED AS TEMPORARY FEATURES. WATERBARS MAY BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA IS AT LEAST 70% STABILIZED WITH PERENNIAL VEGETATION AS PER PA CHAPTER 102.22.

PIPELINE WORK SEQUENCE IN WETLANDS

FOR WORK IN WETLANDS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. INSTALL ORANGE FLAGGING AROUND PERIMETER OF WETLAND AND SEDIMENT BARRIERS ALONG THE ***LIMITS OF DISTURBANCE***.
2. LOCATE STAGING AREAS AT LEAST 50 FEET FROM THE EDGE OF THE WETLAND.
3. INSTALL SEDIMENT BARRIERS DOWN SLOPE OF THESE AREAS.
4. INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
5. MATS, PADS, OR SIMILAR DEVICES SHALL BE USED DURING THE CROSSINGS OF WETLANDS. ORIGINAL GRADES THROUGH WETLANDS MUST BE RESTORED AFTER TRENCHING AND BACKFILLING. ANY EXCESS FILL MATERIALS MUST BE REMOVED FROM THE WETLAND AND NOT SPREAD ON-SITE.
6. SOIL EXCAVATED FROM WETLAND AREAS SHALL BE CAREFULLY REMOVED WITH THE ROOTS INTACT. THIS SOIL SHOULD BE PLACED IN A SEPARATE STOCKPILE TO BE REUSED DURING THE WETLAND SURFACE RESTITUTION.
7. DEWATER WORK AREA; WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT TRAP OR A FILTER BAG.
8. INSTALL PIPE.
9. INSTALL TRENCH PLUGS IN WETLAND AREAS PER THE E&S PLAN TO PREVENT THE TRENCH FROM DRAINING THE WETLAND OR CHANGING ITS MICROHYDROLOGY.
10. BACKFILL PIPE TRENCH. BACKFILL THE TOP 12-INCHES OF THE EXCAVATED TRENCH WITH THE STOCKPILED WETLAND SOIL TO MATCH ORIGINAL SURFACE GRADES.
11. COMPACT BACKFILL AND GRADE THE SURFACE OF THE TRENCH AREA TO ALLOW FOR POSITIVE DRAINAGE TO SOIL E&SCS AND TO PREPARE DISTURBED AREAS FOR PERMANENT TRENCH RESTORATION.
12. MAINTAIN ALL E&SC DEVICES UNTIL SITE WORK IS COMPLETE AND A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED.
13. REMOVE ALL SOIL AND E&SC MEASURES UPON ESTABLISHMENT OF A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER OVER THE DISTURBED AREA REGRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL E&SCS.

PIPELINE WORK SEQUENCE AT STREAM CROSSINGS

FOR STREAM CROSSINGS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. AFTER INSTALLATION OF SEDIMENTATION BMPS, INSTALL BYPASS HOSE, PUMP, OR COFFERDAM AS DESCRIBED IN STREAM CROSSING DETAILS AROUND THE WORK AREA.
2. DEWATER WORK AREA. WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT FILTER BAG. WHERE POSSIBLE, EXCAVATION SHALL BE FROM THE TOP OF THE STREAM BANK.
3. STABILIZE CHANNEL EXCAVATION AND STREAM BANKS PRIOR TO REDIRECTING STREAM FLOW WITHIN 24 HOURS OF CROSSING BEING DONE FOR ALL STREAMS SMALLER THAN 10 FEET AND 48 HOURS FOR STREAMS LARGER THAN 10 FEET WIDE.
4. REMOVE BYPASS HOSE, PUMP, AND TEMPORARY DAM AS NEEDED.

ACCESS ROAD BMP INSTALLATION SEQUENCE

REFER TO SPECIFIC ACCESS ROAD CONSTRUCTION SEQUENCE NOTES INCLUDED IN THE ACCESS ROAD E&S PLAN SETS UNDER SEPARATE COVER.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN

THE FOLLOWING ACID PRODUCING SOILS CONTROL PLAN WAS DEVELOPED TO IDENTIFY BMPS AND PROCEDURES FOR MINIMIZING THE POTENTIAL FOR POLLUTION ASSOCIATED WITH THE DISTURBANCE OF THE AREAS WITHIN THE PROPOSED RIGHT-OF-WAY THAT CONTAIN ACID-PRODUCING SOILS WITH A pH LESS THAN 4.0.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN:

1. CONTRACTOR SHALL LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID-PRODUCING SOILS ARE ENCOUNTERED. LOCATIONS WHERE ACIDIC SOILS ARE ANTICIPATED TO BE PRESENT ALONG THE PIPELINE CORRIDOR ARE PROVIDED IN THE COUNTY-SPECIFIC TABLE INCLUDED AT THE END OF THIS PLAN SET.
2. CONTRACTOR SHALL SEPARATELY STORE TOPSOIL STRIPPED FROM THE SITE AWAY FROM TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOILS AND BEDROCK.S.
3. CONTRACTOR SHALL STOCKPILE HIGH ACID-PRODUCING SOILS AND BEDROCK MATERIAL ON LEVEL GROUND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THESE MATERIALS HAVE A HIGH CLAY CONTENT.
4. CONTRACTOR SHALL COVER TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOIL AND BEDROCK MATERIAL TO BE EXPOSED MORE THAN 7 DAYS WITH PROPERLY ANCHORED, HEAVY-GRATE SHEETS OF POLYETHYLENE, WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF THREE TO SIX INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. IN ADDITION, THE CONTRACTOR SHALL INSTALL SILT FENCE AT THE TOE OF THE STOCKPILE SLOPE TO CONTAIN MOVEMENT OF MATERIAL. CONTRACTOR SHALL NOT APPLY TOPSOIL TO THE HIGH ACID-PRODUCING SOIL OR BEDROCK STOCKPILES TO PREVENT TOPSOIL CONTAMINATION.
5. CONTRACTOR SHALL ULTIMATELY DISPOSE OF HIGH ACID-PRODUCING SOILS OR BEDROCK WITH A pH OF FOUR OR LESS, OR CONTAINING IRON SULFIDE (INCLUDING BORROW FROM CUTS) BY PLACING THE MATERIAL COMBINED WITH LIMESTONE AT THE RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERING THE MIXTURE WITH A MINIMUM OF 12 INCHES OF SETTLED SOILS WITH A PH OF FIVE OR MORE EXCEPT AS FOLLOWS:
   A. IN THE AREAS WHERE TREES OF SHRUBS ARE TO BE PLANTED, THE CONTRACTOR SHALL COVER THE LIMESTONE/SOIL MIXTURE WITH A MINIMUM OF 24 INCHES OF SOILS WITH A PH OF FIVE OR MORE.
   B. CONTRACTOR SHALL NOT LOCATE ANY DISPOSAL AREA WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES, AND OTHER SURFACE WATERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. AT THE END OF EACH DAY, CONTRACTOR SHALL CLEAN ALL EQUIPMENT USED TO HANDLE HIGH ACID-PRODUCING SOILS OR BEDROCK TO PREVENT SPREADING OF HIGH-ACID MATERIALS TO OTHER PARTS OF THE PROPOSED RIGHT-OF-WAY, INTO STREAMS, OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED CORROSION.
7. CONTRACTOR SHALL PROVIDE AND INSTALL NON-VEGETATIVE EROSION CONTROLS (STONE TRACKING PADS, STRATEGICALLY-PLACE LIMESTONE CHECK DAMS, SILT FENCES, WOOD CHIPS) TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF OF THE PROPOSED RIGHT-OF-WAY.
8. FOLLOWING THE BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOILS AND BEDROCK, TOP SOILING, AND SEEDING OF THE PROPOSED RIGHT-OF-WAY, TRANSCO SHALL MONITOR THE SITE FOR APPROXIMATELY SIX TO 12 MONTHS TO ASSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH-ACID SOIL OR BEDROCK PROBLEMS EMERGE. CONTRACTOR SHALL CORRECT ANY PROBLEMS THAT ARE DISCOVERED WITHIN THIS TIME PERIOD.
9. IF PROBLEMS OCCUR WHERE HIGH ACID-PRODUCING SOILS OR BEDROCK HAVE BEEN PLACED OR BURIED, THE APPLICANT SHALL MONITOR THESE AREAS FOR AT LEAST TWO YEARS TO ASSURE THERE IS NO MIGRATION OF POTENTIAL ACID LEACHATE.

AGRIGULTURAL EROSION & SEDIMENT CONTROL NOTES

1. PER PA CHAPTER 102 REGULATIONS, ALL FARMS ARE REQUIRED TO DEVELOP AND IMPLEMENT A WRITTEN PLAN TO REDUCE EROSION WHEN PLOWING AND TILLING (INCLUDES NO-TILL CROPPING).
2. AREAS WITHIN 100-FT OF A STREAM MUST MAINTAIN A MINIMUM OF 25% PLANT COVER OR CROP RESIDUE.
3. ADDITIONAL BMP'S MAY BE NEEDED TO MINIMIZE ACCELERATED EROSION AND SEDIMENTATION FOR FIELDS WITH LESS THAN 25% PLANT COVER OR CROP RESIDUE COVER AND WITHIN 100-FT OF A RIVER OR PERENNIAL OR INTERMITTENT STREAM.

RIPARIAN BUFFER REPLANTING NOTES

1. PIPELINE CONSTRUCTION AREAS THAT ENCROACH THE RIPARIAN BUFFER SHALL BE SEEDED WITH THE RIPARIAN BUFFER MIX ERNMX-178 AS SHOWN ON SHEET 3 OF 3 OF THIS PLAN SET AND PLANTED WITH SHRUBS PER THE "RIPARIAN AREA IMPACT ASSESSMENT AND RESTORATION PLAN" INCLUDED THE EROSION AND SEDIMENT CONTROL PLAN NARRATIVE FOR EACH COUNTY (UNDER SEPARATE COVER).

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — Engineer — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL, LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
Williams GAS PIPELINE
GENERAL NOTES

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 3
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP-GN	SHEET 2 OF 3
WO:					

Drawn By & Date/Time: tdelo Apr 27, 2017 - 11:18am
Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(02)_NOTES-02-03.dwg

RIP RAP GRADATION, FILTER BLANKET, & MAXIMUM VELOCITIES

Riprap Gradation, Filter Blanket Requirements, Maximum Velocities

Class, Size NO. / Rock Size (inches)	R-8	R-7	R-6	R-5	R-4	R-3
Percent Passing (Square Openings)						
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15					
12		0-15	15-50		100	
9				15-50		
6			0-15		15-50	100
4				0-15		
3					0-15	15-50
2						0-15
Nominal Placement Thickness (inches)	63	45	36	27	18	9
Filter Stone[1]	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
V_{max} (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), Table C

ADAPTED FROM PENNDOT PUB. 408, SECTION 703.2 (c), TABLE C.

1. THIS IS A GENERAL STANDARD. SOIL CONDITIONS AT EACH SITE SHOULD BE ANALYZED TO DETERMINE ACTUAL FILTER SIZE. A SUITABLE WOVEN OR NON-WOVEN GEOTEXTILE UNDERLAYMENT, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR THE FILTER STONE FOR GRADIENTS < 10%.

LIMING AND FERTILIZER RATES

Soil Amendment	Permanent Seeding Application Rate: Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	Notes
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-10-20 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

PA DEP TABLE 11.2

1. NO LIME AND/OR FERTILIZER MAY BE APPLIED IN WETLANDS.

SLOPE SEED MIX

Common Name	Scientific Name	# PLS/ acre	PLS/ sq ft	% of Mix
Big Bluestem	*Andropogon gerardii*	2	6	10
Little Bluestem	*Schizachyrium scoparium*	1	6	10
Switchgrass	*Panicum virgatum*	1.3	12	20
Timothy	*Phleum prantense*	0.4	12	20
Virginia Wildrye	*Elymus virginicus*	4.4	7.5	13
Deertongue	*Dichanthelium clandestinum*	0.7	6	10
Blackeyed Susan	*Rudbeckia hirta*	0.1	3	5
White Clover	*Trifolium repens*	0.2	3	5
Oxeye Sunflower	*Heliopsis helianthoides*	0.6	1.5	3
Partridge Pea	*Chamaecrista fasciculata*	1.1	1.5	3
Purple Coneflower	*Echinacea purpurea*	0.6	1.5	3
Total	--	12.3	60	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

ROW SEED MIX

Common Name	Scientific Name	# PLS/ acre[1]	PLS/sq ft	% of Mix
Red Top	Agrostis gigantea	0.1	12.0	20
Timothy	Phleum prantense	0.4	12.0	20
Tall Fescue	Festuca arundinacea	1.7	9.0	15
Annual Rygrass	Lolium perenne multiflorum	1.7	9.0	15
Italian Ryegrass	Festulium	1.7	9.0	15
Alsike Clover	Trifolium hybridum	0.2	3.0	5
White Clover	Trifolium repens	0.2	3.0	5
Ladino White Clover	Trifolium repens latum	0.2	3.0	5
Total	--	6.2	60.0	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

COVER CROP SEED MIXES

Common Name	Crop Type	# PLS/ acre	PLS/ sq ft	% of Mix
Warm Season				
Pearl Millett	Grass	6.9	12.6	70
Sunn Hemp	Legume	10.5	3.6	20
Nitro Radishes	Brassicas	3.1	1.8	10
Total	--	20.5	18	100
Cool Season				
Annual ryegrass	Grass	8	35.1	65
Red Clover	Legume	3.2	13.5	25
Nitro Radishes	Brassicas	9.4	5.4	10
Total	--	20.6	54	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

TEMPORARY SEED MIXTURE

TEMPORARY SEEDING SHALL CONSIST OF ANNUAL RYEGRASS (100 PERCENT BY WEIGHT), OR EQUIVALENT, AND SHALL BE PLACED AT THE RATE OF 5 POUNDS PER 1,000 SQUARE YARDS. TEMPORARY SEEDING SHALL BE APPLIED TO THOSE AREAS THAT ARE A POTENTIAL EROSION PROBLEM DURING CONSTRUCTION AND TO THOSE AREAS EXPOSED FOR LONGER THAN 20 CALENDAR DAYS. IF CONDITIONS DO NOT PERMIT TEMPORARY SEEDING, MULCHING SHALL BE EMPLOYED. ADDITIONALLY, NITROGEN FERTILIZER (50-50-50) @ ONE (1) TON PER ACRE, AGRICULTURAL LIME @ ONE (1) TON PER ACRE, AND STRAW MULCH @ THREE (3) TONS PER ACRE. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.

SPECIES TYPE AND SEASON OF PLANTING

Species Type and Season of Planting	
Cover Crops[1]	
Cool Season - Spring	March 1 to June 1
Warm Season	June 1 to August 15
Cool Season - Fall	August 15 - October 15
Permanent Crop[2]	
Spring	April 20 to June 15
Late Fall (dormant)	October 10 - March 1

NOTES:

1. SEEDING DATES FOR COVER CROPS ARE BASED ON DATES REFERENCED BY CLARK, ____.

2. SEEDING DATES FOR PERMANENT CROPS ARE BASED ON DATES REFERENCED BY LANDSHOOT, 1997 AND DELONG AND BRITTINGHAM, 2002.

SEED AFTER OCTOBER 10 WHEN GROUND TEMPERATURES AT A DEPTH OF 4 INCHES ARE 45 F OR LOWER AND COOLER AIR TEMPERATURES ARE FORECASTED.

DORMANT SEEDING CAN OCCUR UNTIL SOIL IS FROZEN AND ADEQUATE PENETRATION OF THE DRILL SEEDER DOES NOT OCCUR.

FACW MEADOW MIX ERNMX-122

Seeding Rate	20 lb per acre, or 1/2 lb per 1,000 sq ft
Mix Type	Wet Meadow & Wetland Sites
31.0%	Fox Sedge, PA Ecotype (Carex vulpinoidea, PA Ecotype)
20.0%	Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
14.0%	Lurid (Shallow) Sedge, PA Ecotype (Carex lurida, PA Ecotype)
5.0%	Green Bulrush, PA Ecotype (Scirpus atrovirens, PA Ecotype)
4.0%	Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
3.5%	Wood Reedgrass, PA Ecotype (Cinna arundinacea, PA Ecotype)
3.0%	Soft Rush (Juncus effusus)
3.0%	Blunt Broom Sedge, PA Ecotype (Carex scoparia, PA Ecotype)
3.0%	Hop Sedge, PA Ecotype (Carex lupulina, PA Ecotype)
2.0%	Sensitive Fern (Onoclea sensibilis)
2.0%	Oxeye Sunflower, PA Ecotype (Heliopsis helianthoides, PA Ecotype)
1.0%	Rattlesnake Grass, PA Ecotype (Glyceria canadensis, PA Ecotype)
1.0%	Woolgrass, PA Ecotype (Scirpus cyperinus, PA Ecotype)
1.0%	Swamp Milkweed, PA Ecotype (Asclepias incarnata, PA Ecotype)
1.0%	New England Aster, PA Ecotype (Aster novae-angliae (Symphyotrichum n.), PA Ecotype)
1.0%	Flat Topped White Aster, PA Ecotype (Aster umbellatus (Doellingeria umbellata), PA Ecotype)
0.5%	Joe Pye Weed, PA Ecotype (Eupatorium fistulosum, PA Ecotype)
0.5%	Boneset, PA Ecotype (Eupatorium perfoliatum, PA Ecotype)
0.5%	Ditch Stonecrop, PA Ecotype (Penthorum sedoides, PA Ecotype)
0.5%	Narrowleaf Blue Eyed Grass (Sisyrinchium angustifolium)
0.5%	Seedbox, PA Ecotype (Ludwigia alternifolia, PA Ecotype)
0.5%	Great Blue Lobelia, PA Ecotype (Lobelia siphilitica, PA Ecotype)
0.5%	Mud Plantain (Water Plantain), PA Ecotype (Alisma subcordatum (A. plantago-aquatica), PA Ecotype)
0.5%	Square Stemmed Monkeyflower, PA Ecotype (Mimulus ringens, PA Ecotype)
0.4%	Bladder (Star) Sedge, PA Ecotype (Carex intumescens, PA Ecotype)
0.1%	Slender Mountainmint (Pycnanthemum tenuifolium)

RIPARIAN BUFFER MIX ERNMX-178

Seeding Rate	20 lb per acre with a cover crop at 30 lb per acre (dry sites - grain oats, Jan 1-Aug 1)
Mix Type	Riparian Sites
20.0%	Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
16.0%	Indiangrass, PA Ecotype (Sorghastrum nutans, PA Ecotype)
15.0%	Deertongue, 'Tioga' (Panicum clandestinum (Dichanthelium c.), 'Tioga')
12.5%	Big Bluestem, 'Niagara' (Andropogon gerardii, 'Niagara')
8.0%	Switchgrass, 'Carthage', NC Ecotype (Panicum virgatum, 'Carthage', NC Ecotype)
5.0%	Partridge Pea, PA Ecotype (Chamaecrista fasciculata (Cassia f.), PA Ecotype)
4.0%	Autumn Bentgrass, PA Ecotype (Agrostis perennans, PA Ecotype)
4.0%	Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
3.0%	Blackeyed Susan, Coastal Plain NC Ecotype (Rudbeckia hirta, Coastal Plain NC Ecotype)
3.0%	Oxeye Sunflower, PA Ecotype (Heliopsis helianthoides, PA Ecotype)
2.3%	New England Aster, PA Ecotype (Aster novae-angliae (Symphyotrichum n.), PA Ecotype)
2.0%	Soft Rush (Juncus effusus)
1.0%	Boneset, PA Ecotype (Eupatorium perfoliatum, PA Ecotype)
1.0%	Joe Pye Weed, PA Ecotype (Eupatorium fistulosum, PA Ecotype)
1.0%	Blue False Indigo, Southern WV Ecotype (Baptisia australis, Southern WV Ecotype)
1.0%	New York Ironweed, PA Ecotype (Vernonia noveboracensis, PA Ecotype)
0.5%	Great Blue Lobelia, PA Ecotype (Lobelia siphilitica, PA Ecotype)
0.5%	Wild Bergamot, PA Ecotype (Monarda fistulosa, PA Ecotype)
0.2%	Grassleaf Goldenrod, PA Ecotype (Euthamia graminifolia (Solidago g.), PA Ecotype)

PERMANENT SEED MIXTURES COOL & WARM SEASON GRASSES

HAYFIELDS

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Orchardgrass	Dactylis glomerata	4.0	60.0	40
Timothy	Phleum pratense	2.0	60.0	40
Ladino White Clover	Trifolium repens latum	0.8	15.0	10
Red Clover	Trifolium pratense	2.4	15.0	10
Total	--	9.2	150.0	100

PASTURES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	*Phleum pratense*	0.5	15.0	25%
Perennial Ryegrass	*Lolium perenne*	2.3	12.0	20%
Red Top	*Agrostis gigantea*	0.1	9.0	15%
Italian Ryegrass	*Festulolium*	1.7	9.0	15%
Alsike Clover	*Trifolium hybridum*	0.6	9.0	15%
Ladino White Clover	*Trifolium repens latum*	0.3	6.0	10%
Total	--	5.5	60.0	100%

SLOPING/FORESTED LAND

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Sideoats Grama	*Bouteloua curtipendula*	1.4	6.0	10%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Switchgrass	*Panicum virgatum*	1.3	12.0	20%
Timothy	*Phleum pratense*	0.4	12.0	20%
Virginia Wildrye	*Elymus virginicus*	4.24	7.2	12%
Deertongue	*Dichanthelium clandestinum*	0.7	6.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	2.4	4%
White Clover	*Trifolium repens*	0.1	2.4	4%
Oxeye Sunflower	*Heliopsis helianthoides*	0.8	1.8	3%
Partridge Pea	*Chamaecrista fasciculata*	1.7	2.4	4%
Purple Coneflower	*Echinacea purpurea*	0.7	1.8	3%
Total	--	12.3	60.0	100%

DROUGHT/ROCKY SITES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Little Bluestem	*Schizachyrium scoparium*	1.5	9.0	15%
Timothy	*Phleum pratense*	0.3	9.0	15%
Prairie Junegrass	*Koeleria macrantha*	0.1	6.0	10%
Deertongue	*Dichanthelium clandestinum*	1.0	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.7	12.0	20%
Virginia Wildrye	*Elymus virginicus*	3.5	6.0	10%
Partridge Pea	*Chamaecrista fasciculata*	2.1	3.0	5%
Ladino White Clover	*Trifolium repens latum*	0.2	3.0	5%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.6	3.0	5%
Total	--	12.0	60.0	100%

NON-AGRICULTURAL MEADOWS

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Virginia Wildrye	*Elymus virginicus*	5.3	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.5	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Deertongue	*Dichanthelium clandestinum*	1.0	9.0	15%
Partridge Pea	*Chamaecrista fasciculata*	4.2	6.0	10%
Oxeye Sunflower	*Heliopsis helianthoides*	1.3	3.0	5%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	1.2	6.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	3.0	5%
Butterfly Milkweed	*Asclepias tuberosa*	5.2	6.0	10%
Total	--	21.8	60.0	100%

NATIVE NON-NATIVE FOOD PLOT MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	*Phleum pratense*	0.4	12.0	20%
Upland Bent Grass	*Agrostis perennans*	0.1	9.0	15%
Virginia Wildrye	*Elymus virginicus*	5.3	9.0	15%
White Clover	*Trifolium repens*	0.5	9.0	15%
Ladino White Clover	*Trifolium repens latum*	0.7	12.0	20%
Crimson Clover	*Trifolium incarnatum*	3.5	9.0	15%
Total	--	10.4	60.0	100%

POLLINATOR MIX (TO BE ADDED TO ANY MIX UPON LANDOWNER REQUEST)

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Butterfly Milkweed	*Asclepias tuberosa*	2.6	3.0	15%
Purple Coneflower	*Echinacea purpurea*	1.1	3.0	15%
Dense Blazing Star	*Liatris spicata*	0.7	2.0	10%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.4	2.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	3.0	15%
Oxeye Sunflower	*Heliopsis*	1.3	3.0	15%
Wild Bergamot	*Monarda fistulosa*	0.1	2.0	10%
Hoary Mountainmint	*Pycnanthemum*	0.0	2.0	10%
Total	--	6.3	20.0	100%

BRASSICA MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Bonar (Rape)	*Brassica napus*	2.7	6.6	33%
Turnip	*Brassica rapa*	12.9	6.6	33%
Nitro Radish	*Raphanus*	11.8	6.8	34%
Total	--	27.4	20.0	100%

MULCH

1. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN TABLE 11.6
2. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL – ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ON THE CONTOUR. CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
3. POLYMERIC AND GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND ON WINDY DAYS. A 24-HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45°F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
4. SYNTHETIC BINDERS, OR CHEMICAL BINDERS, MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
5. MULCH ON SLOPES 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
7. HYDRAULICALLY APPLIED BLANKETS CAN BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. THEY MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIVERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. SHOULD NOT BE USED IN AREAS OF CONCENTRATED FLOW (E.G. SWALES).
8. NO MULCH MAY BE APPLIED IN WETLANDS.

TABLE 11.6

MULCH APPLICATION RATES

MULCH TYPE	APPLICATION RATE (MIN.): PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	NOTES
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
WOOD CHIPS	4-6 TONS	185-275 LB.	1,650-2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDRO- MULCH	1 TON	47 LB.	415 LB.	SEE LIMITATIONS ABOVE
HYDRAULICALLY APPLIED BLANKETS	3,000 LB.	N/A	N/A	SLOPES UP TO 3H:1V
	4,000 LB.	N/A	N/A	SLOPES STEEPER THAN 3H:1V

OPERATIONS AND MAINTENANCE PROGRAM PERMANENT STORMWATER FACILITIES

THE PERMIT APPLICANT SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF PERMANENT STORMWATER FACILITIES LOCATED ON THE SUBJECT PROPERTIES. PERMANENT MAINTENANCE OF THE STORM SYSTEM AFTER ACCEPTANCE WILL PRIMARILY CONSIST OF ROUTINE CLEANING OF ACCUMULATED SEDIMENT AND DEBRIS BY FACILITY STAFF OR PRIVATE CONTRACTORS. THE SPECIFIC MAINTENANCE STEPS AND SCHEDULE ARE LISTED BELOW:

1. *VEGETATED SWALES*
   ALL SWALES MUST BE KEPT FREE OF OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. SWALES SHALL BE KEPT MOWED AND/OR FREE OF ALL WEEDY, BRUSHY OR WOODY GROWTH. ANY UNDERGROUND UTILITIES RUNNING ACROSS/THROUGH THE SWALE(S) SHALL BE IMMEDIATELY BACKFILLED AND THE SWALE(S) REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. ANY DISTURBANCE TO THE SWALES SHALL BE IMMEDIATELY REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. REFER TO THE ADJACENT TABLE FOR THE OPERATION AND MAINTENANCE PROCEDURES FOR THE VEGETATED SWALES.
2. *MAINLINE VALVE SITES*
   ALL VALVE SITES MUST BE KEPT FREE OF OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. ANY DISTURBANCE TO THE VALVE SITE SHALL BE IMMEDIATELY REPAIRED AND STABILIZED. COMPACTION OF THE VALVE SITE BOTTOM SHALL BE PREVENTED.
3. *ANNUAL CERTIFICATION OF MAINTENANCE PROCEDURES*
   THE OWNER SHALL MAINTAIN A CHECKLIST WHENEVER THE PERMANENT FACILITES ARE INSPECTED AND CLEANED. AN ANNUAL LIST OF INSPECTIONS AND MAJOR CLEANING OPERATIONS AND REPAIRS (REPAIR CHECK DAMS, REPLACE AGGREGATE, ETC.) SHALL BE MAINTAINED. THE COUNTY CONSERVATION DISTRICT(S) OR ENFORCEMENT OFFICIALS SHALL HAVE ACCESS TO THOSE RECORDS.
4. *ESCGP-2*
   COMPLIANCE WITH ESCGP-2 REQUIREMENTS AND RECORD KEEPING FOR PERMANENT STORMWATER DISCHARGE AND MAINTENANCE AND OTHER APPLICABLE ESCGP-2 AND DEP REQUIREMENTS REGARDING DISCHARGES.
5. *PROTECT SENSITIVE/SPECIAL VALUE FEATURES*
   PROTECTED AREAS SHALL REMAIN UNDISTURBED AFTER CONSTRUCTION ACTIVITIES CEASE. PROTECTED AREAS SHALL RECEIVE A BIANNUAL HEALTH INSPECTION. DEAD OR DYING VEGETATION SHALL BE IMMEDIATELY REPLACED WITH SUITABLE SPECIES. RESEED BARE AREAS AND INSTALL APPROPRIATE EROSION CONTROLS WHEN SOIL IS EXPOSED. ORANGE CONSTRUCTION FENCE WILL BE USED TO PROTECT SPECIAL VALUE/SENSITIVE AREAS DURING CONSTRUCTION.
6. *MINIMIZE SOIL COMPACTION*
   PROTECTED AREAS – RESTRICT VEHICLE ACCESS, DO NOT CLEAR VEGETATION. AVOID EARTH DISTURBANCE. CONDUCT BIANNUAL HEALTH INSPECTIONS AND IMMEDIATELY REPLACE DEAD OR DYING VEGETATION WITH SUITABLE SPECIES. RESEED BARE AREAS AND APPLY APPROPRIATE EROSION CONTROL WHERE SOIL IS EXPOSED. MINIMUM DISTURBANCE AREAS – RESTRICT VEHICLE ACCESS.

VEGETATED SWALE	
OPERATION & MAINTENANCE PROCEDURES	
ACTIVITY	*SCHEDULE*
PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT. RESEED BARE AREAS; ROTOTILL OR CULTIVATE THE SURFACE OF THE SAND/SOIL BED OF DRY SWALES IF THE SWALE DOES NOT DRAW DOWN WITHIN 48 HOURS. WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDES WHEN NECESSARY. REMOVE SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE SWALE ONCE IT HAS ACCUMULATED TO 25% OF THE ORIGINAL DESIGN VOLUME, OR ONCE IT HAS COVERED VEGETATION.	*AS NEEDED*
INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, DAMAGE TO ROCK FILTERS, AND SEDIMENT AND DEBRIS ACCUMULATION. INSPECT GRASS ALONG SIDE SLOPES FOR EROSION, RILLS, OR GULLIES, & CORRECT. MOW AND TRIM VEGETATION TO ENSURE SAFETY, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION. INSPECT FOR POOLS OF STANDING WATER; DEWATER & DISCHARGE TO AN APPROVED LOCATION, RESTORE TO DESIGN GRADE. INSPECT FOR UNIFORMITY IN CROSS-SECTION & LONGITUDINAL SLOPE, CORRECT AS NEEDED. INSPECT SWALE INLET AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.	*ANNUAL*
INSPECT SWALE IMMEDIATELY AFTER SPRING MELT. REMOVE RESIDUALS AND REPLACE DAMAGED VEGETATION. IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING &/OR SOIL AERATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE & MOISTURE CAPACITY & TO REDUCE THE IMPACT OF DEICING AGENTS. USE NONTOXIC, ORGANIC DEICING AGENTS. PLANT SALT TOLERANT VEGETATION IN SWALES.	*WINTER*

TOPSOIL APPLICATION

GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM – 2 INCHES ON FILL OUTSLOPES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS UNLESS SUCH DEPRESSIONS ARE PART OF THE PCSM PLAN.

TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING.

TABLE 11.1
Cubic Yards of Topsoil Required for Application to Various Depths

Depth (in)	Per 1,000 Square Feet	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806
7	21.7	940
8	24.8	1,074

Adapted from VA DSWC

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL SUZANNE MARIE KING ENGINEER PE082757

SUZANNE KING REG NO. PE 082757

BLC Companies ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

Williams GAS PIPELINE

GENERAL NOTES

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: J
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP-GN	SHEET 3 OF 3
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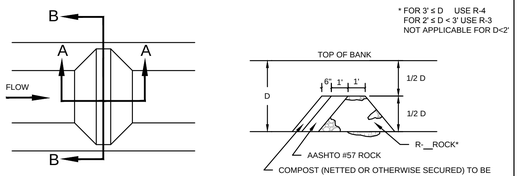
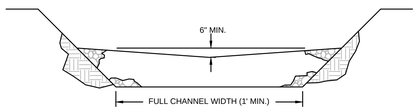
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-14.





SECTION B-B

ROCK FILTER NO.	LOCATION	D (FT.)	RIPRAP SIZE
ALL	ACCESS ROADS AS NECESSARY	2	R-3

NOTES:

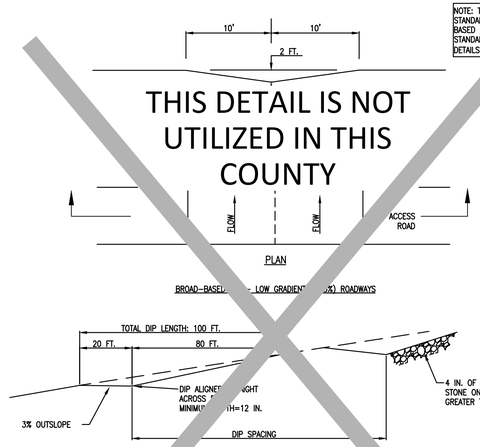
1. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTER.
2. IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, INSTALLER SHALL REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.
3. IN SPECIAL PROTECTION WATERSHEDS, HQ OR EV, THE ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT) ROCK FILTER WITH THE 6" LAYER OF COMPOST ANCHORED ON TOP OF THE UPSLOPE SIDE OF THE AASHTO #57 STONE SHALL BE USED. IN NON-SPECIAL PROTECTION WATERSHEDS, THE COMPOST LAYER MAY BE OMITTED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
ARF ABACT ROCK FILTER

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAILS #3-6 & #3-7.

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY



BROAD-BASED DIP – HIGH GRADIENT (5% – 10%) ROADWAYS

NOTES:

1. BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN ON THE PLAN DRAWINGS.
2. DIPS SHALL BE ORIENTED SO AS TO DISCHARGE TO THE LOW SIDE OF THE ROADWAY.
3. DIPS SHALL BE INSPECTED DAILY. DAMAGED OR NON-FUNCTIONING DIPS SHALL BE REPAIRED BY THE END OF THE WORKDAY.
4. MAXIMUM SPACING OF BROAD-BASED DIPS SHALL BE AS SHOWN IN TABLE 3.2.
5. ***INSTALL A 2' WIDE BY 4' LONG BY 2' DEEP SUMP AND 18" COMPOST FILTER SOCK ON THE DOWNHILL SIDE OF THE BROAD BASED DIP. THE ORIENTATION OF THE COMPOST FILTER SOCK WILL VARY BASED ON EXISTING GROUND ELEVATIONS. INSTALL THE COMPOST PARALLEL TO EXISTING CONTOURS.***

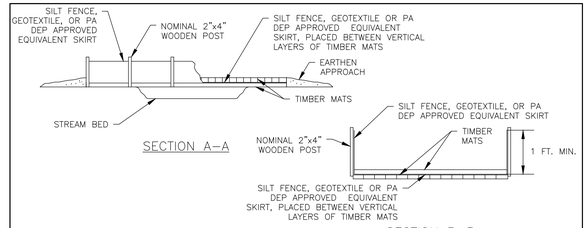
TABLE 3.2 – MAXIMUM SPACING OF BROAD-BASED DIPS

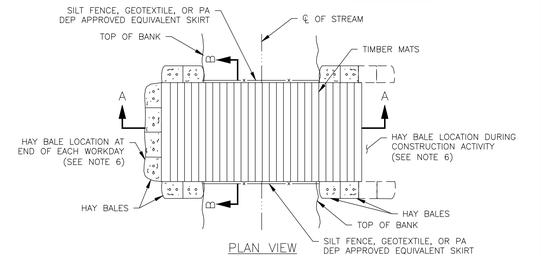
PERCENT SLOPE	SPACING BETWEEN BROAD-BASED DIPS (FT)
<2	300
3	235
4	200
5	180
6	165
7	150
8	150
9	145
10	140

USDA FOREST SERVICE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
BBD BROAD-BASED DIP





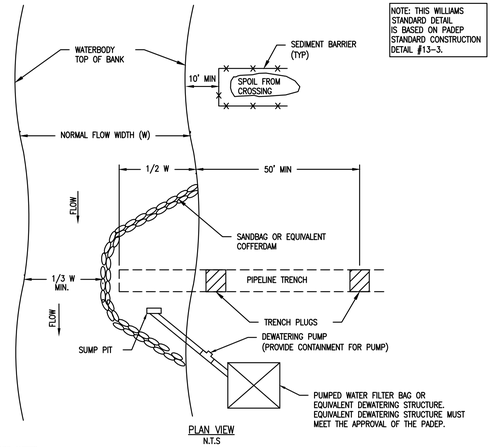
NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED FOR SMALL STREAM CROSSINGS LESS THAN 25 FEET IN WIDTH IN COMBINATION WITH A PROPER STREAM BANK CONFIGURATION.
2. BRIDGE SHALL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE FOR CROSSING.
3. BRIDGE TO REMAIN IN PLACE UNTIL THE COMPLETION OF FINAL RESTORATION.
4. A SKIRT FORMED OF SILT FENCE, GEOTEXTILE FABRIC OR PA DEP APPROVED EQUIVALENT SHALL BE PLACED ON THE SIDES AND BOTTOM OF THE BRIDGE TO TRAP SEDIMENT AS NECESSARY.
5. INDIVIDUAL MATS SHALL BE ANCHORED AND BUTTED TIGHTLY TO MINIMIZE THE INTRODUCTION OF SEDIMENT TO THE WATERBODY.
6. HAY BALES OR 12" COMPOST FILTER SOCK SHALL BE PLACED AT THE ENDS OF THE EQUIPMENT BRIDGE AT THE END OF EACH WORK DAY TO PREVENT EROSION BUT WILL BE REMOVED DURING CONSTRUCTION ACTIVITY.
7. THE TIMBER BRIDGE SHALL EXTEND AT LEAST FIVE FEET BEYOND TOP OF BANK ON BOTH SIDES OF STREAM.
8. THE CONTRACTOR SHALL MINIMIZE OR PREVENT ANY EARTH DISTURBANCE AT OR NEAR THE TOP OF BANK ON BOTH SIDES OF STREAM.
9. THE FILTER SOCK SHALL BE INSTALLED UP TO AND ABUT AGAINST THE TIMBER BRIDGE.
10. IN SLOPED AREAS THAT LEAD TO THE APPROACHES TO THE TIMBER BRIDGE, THE POTENTIAL FOR STORMWATER TO RUNOFF ONTO THE BRIDGE SURFACE SHALL BE MINIMIZED OR ELIMINATED BY INSTALLING BROAD BASED DIPS, INTERCEPTOR DIKES, OR WATERBARS IMMEDIATELY BEFORE AND AFTER THE TIMBER BRIDGE. FOR EXTENDED PERIODS WHEN WORK HAS CEASED OR BEEN DELAYED DURING RAIN EVENTS, FILTER SOCK OR SAND BAGS SHALL BE TEMPORARILY INSTALLED TO DEFLECT SURFACE RUNOFF AWAY FROM ENTERING THE BRIDGE SURFACE, THE STREAM CHANNEL OR THE WETLAND.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
BEC BRIDGE EQUIPMENT CROSSING (TIMBER MAT BRIDGE)

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-3.



PADEP STANDARD NOTES:

1. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AN PIPE IS READY FOR INSTALLATION.
2. TRENCH PLUG SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE WATERBODY CHANNEL.
3. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
4. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF WATERBODY BANK.
5. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE WATERBODY CROSSING AREA.
6. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR WATERBODIES OR 48 HOURS OF INITIAL DISTURBANCE FOR INTERMEDIATE WATERBODIES UNLESS OTHERWISE AUTHORIZED.
7. ***ALL STREAM CROSSINGS WILL BE PERFORMED DURING LOW FLOW CONDITIONS WITH OVERSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.***

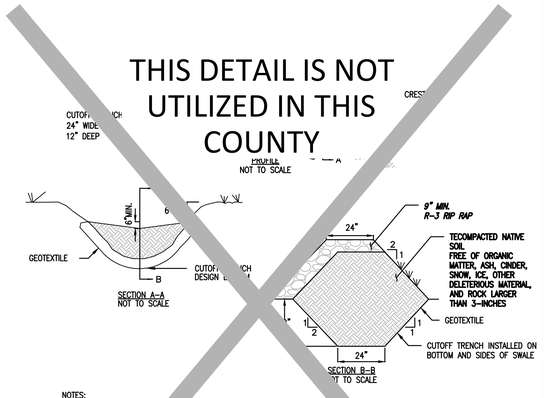
WILLIAMS STANDARD NOTES:

1. APPROPRIATE WATERBODY BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
2. THE WATERBODY CROSSING WILL GENERALLY BE COMPLETED IN 2 STAGES. THE DETAIL DEPICTS STAGE 1. STAGE 2 WILL GENERALLY BE COMPLETED USING THE SAME CONFIGURATION FROM THE OPPOSITE BANK.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CD COFFERDAM STREAM CROSSING

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY



NOTES:

1. CHECK DAMS ARE APPLICABLE FOR SMALL DITCHES AND SWALES AND ARE NOT TO BE USED IN LIVE FLOWING STREAMS.
2. CHECK DAMS SHALL BE INSTALLED SUCH THAT COMPLETE COVERAGE OF THE LOWER WIDTH OF THE DITCH OR SWALE IS ACHIEVED.
3. SEDIMENT SHALL BE REMOVED WHEN IT ACCUMULATES TO A DEPTH OF ONE-HALF THE ORIGINAL DAM HEIGHT.
4. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE UPSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
5. INSTALL A CUTOFF TRENCH A MINIMUM OF 12 INCHES INTO THE SWALE BOTTOM AND SIDES TO PREVENT FLOWING AROUND THE DAM.

ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

7. ***THE HEIGHT OF CHECK DAMS IN SWALES ALONG ACCESS ROADS IS EQUAL TO THE DEPTH OF SWALE MINUS 6 INCHES. THE DEPTH OF SWALE IS SHOWN ON THE "SOIL EROSION CONTROL PLAN" IN THE "EROSION CONTROL AND LAYOUT PLANS FOR ACCESS ROADS" AND THE AND THE "POST CONSTRUCTION STORMWATER PLAN" IN THE "POST CONSTRUCTION STORMWATER PLAN FOR PERMANENT ACCESS ROADS" UNDER SEPARATE COVERS.***

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CDM CHECK DAM

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER
PE082757

SUZANNE KING, REG. NO. PE 082757
BLE Companies
ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	AJB
3	03/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	AJB
4	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	AJB
5	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	WO572385	JLK	AJB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 5
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 1 OF 11
W.O:					

Drawn By & Date/Time: tdelo Apr 27, 2017 - 9:03am
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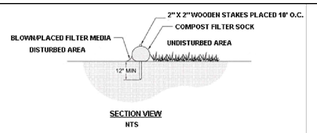
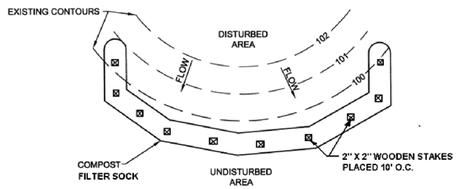


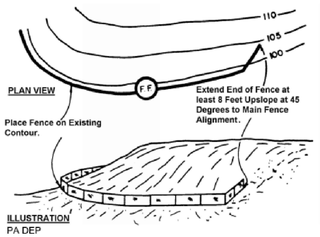
SECTION VIEW
NTS

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-1.



PLAN VIEW
NOT TO SCALE

FIGURE 4.1
Sediment Barrier Alignment



NOT TO SCALE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CFS COMPOST FILTER SOCK
1 OF 3

TABLE 4.1
COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18" 24"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		25 psi	25 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting	HDPE biaxial net Continuously wound Fusion-welded junctures 3/4" X 3/4" Max. aperture size				
Outer Filtration Mesh	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch) 3/16" Max. aperture size				
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

TABLE 4.2
COMPOST STANDARDS

ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 – 8.5
MOISTURE CONTENT	30% – 60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/CM) MAXIMUM

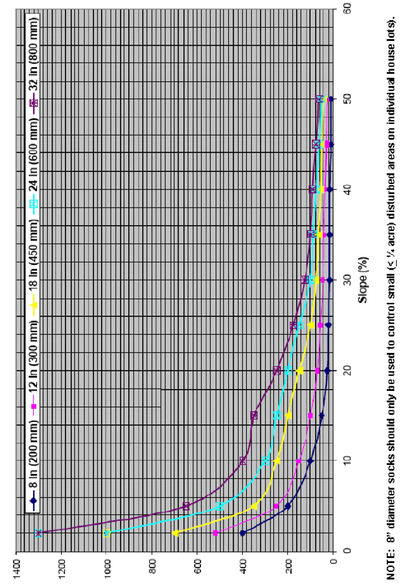
NOTES:

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2. (SEE SHEET 2 OF 3 OF THIS DETAIL.)
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE 4.2. (SEE SHEET 3 OF 3 OF THIS DETAIL). STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
8. SOCKS SHALL BE INSTALLED PARALLEL TO THE CONTOURS, TYPICALLY. IN AREAS WHERE THE SLOPE OF THE CATCHMENT AREA IS LESS THAN FIVE PERCENT, THE SOCKS MAY BE INSTALLED AS NECESSARY TO MINIMIZE THE NUMBER OF SEPARATE SOCK SEGMENTS ALONG THE EDGE OF DISTURBANCE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CFS COMPOST FILTER SOCK
2 OF 3

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



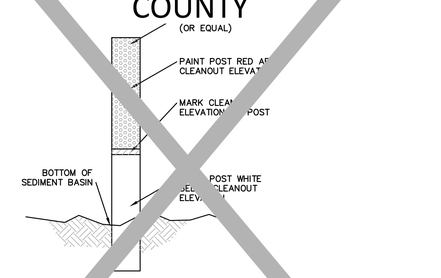
Adapted from Filtrexx

NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lot(s).

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CFS COMPOST FILTER SOCK
3 OF 3

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY

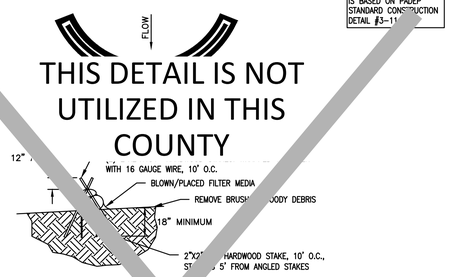


NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CS CLEANOUT STAKE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-11.

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY



STAKING

NOTES:

1. SEE COMPOST FILTER SOCK (CFS) DETAIL FOR MORE INF TION. SOCK MATERIA L MEET THE STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2.
2. COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXC THREE SOCKS IN HEIGHT AND SHA STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER S ADDITIONAL STORAGE MAY BE PROVIDE MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE S ALONG THE LOWER SIDE OF THE TRAP.
3. THE MAXIMUM TRIBUTARY DRAINAGE AR 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THR " NO SPILLWAY IS REQUIRED.
4. COMPOST SOCK SEDIMENT TRAPS S SE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SED SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF TH KS.
5. PHOTODEGRADABLE AND BIO DABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.
6. DESIGN NOTES:
   A. COMPOST SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2,000 CUBIC FEET OF STORAGE CAPACITY 12" FREEBOARD FOR EACH AC UBUTARY TO THE TRAP.
   B. MIN ASE WIDTH IS EQUIVALENT TO THE HEIGHT.
   C. ENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
   D. OCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYE INDICATED TO THE LEFT.
   E. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CST COMPOST SOCK SEDIMENT TRAP

REFER TO THE QUANTITY, CROSSING AND ACIDIC SOIL TABLES FOR DETAIL AND DESIGN

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
STANDARD ENVIRONMENTAL DETAIL
CWC CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER PE082757

SUZANNE KING REG NO. PE 082757
BLE Corporation
ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	WO572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
BEST MANAGEMENT PRACTICES DETAILS
Williams GAS PIPELINE

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CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	J
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	2
WO:				OF	11

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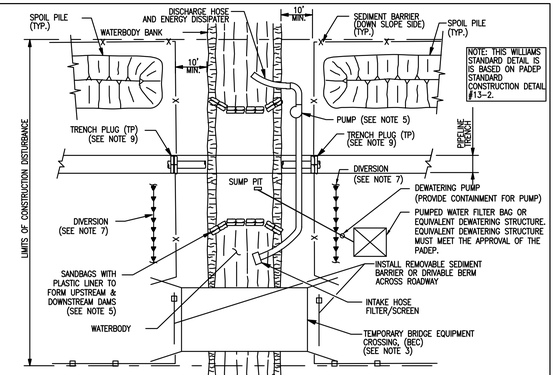


WILLIAMS STANDARD NOTES:

1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
2. HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.
3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING (BEC).
4. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
5. IMPLEMENTATION OF THE DAM-AND-PUMP CROSSING METHOD MUST MEET THE FOLLOWING PERFORMANCE CRITERIA:
   (A) USE SUFFICIENT PUMPS, INCLUDING ON-SITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOWS.
   (B) CONSTRUCT DAMS WITH MATERIALS THAT PREVENT SEDIMENT AND OTHER POLLUTANTS FROM ENTERING THE WATERBODY (E.G., SANDBAGS OR CLEAN GRAVEL WITH PLASTIC LINER).
   (C) SCREEN PUMP INTAKES;
   (D) PREVENT STREAMBED SCOUR AT PUMP DISCHARGE.
   (E) MONITOR THE DAM AND PUMPS TO ENSURE PROPER OPERATION THROUGHOUT THE WATERBODY CROSSING.
6. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
7. INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY.
8. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.
9. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
10. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.
11. PUMP INTAKE SHALL BE MAINTAINED TO A SUFFICIENT DISTANCE FROM BOTTOM TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM.
12. DO NOT EXCAVATE A SUMP FOR THE PUMP INTAKE.
13. TYPICAL PIPELINE BURIAL DEPTH SHALL PROVIDE 5' OF COVER. HOWEVER, IN AREAS OF CONSOLIDATED ROCK, COVER CAN BE REDUCED TO 2' MINIMUM.
14. ***ALL STREAM CROSSINGS WILL BE PERFORMED DURING LOW FLOW CONDITIONS WITH OVERSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.***

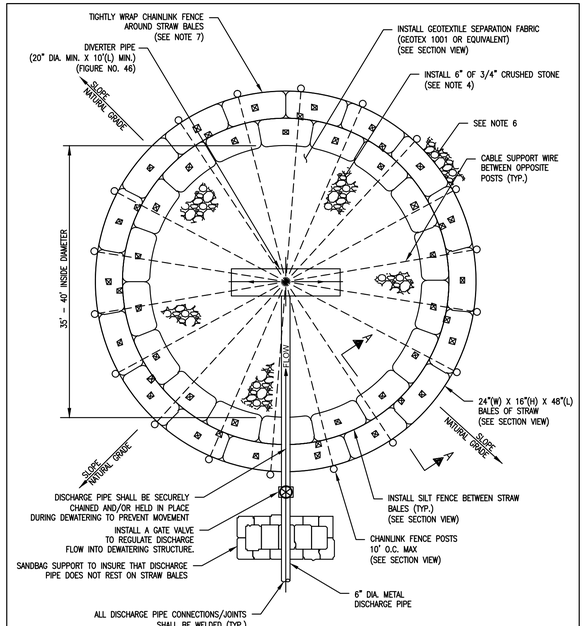
SUPPLEMENTAL PADEP NOTES:

1. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
2. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
3. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DPX — DAM AND PUMP STREAM CROSSING



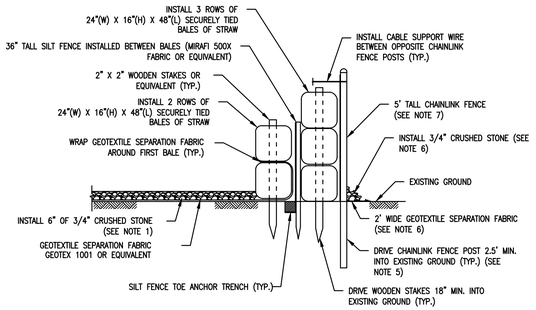
PLAN VIEW
SCALE: N.T.S.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DS — HYDROSTATIC DEWATERING STRUCTURE

1 OF 2



SECTION A-A
SCALE: N.T.S.

NOTES:

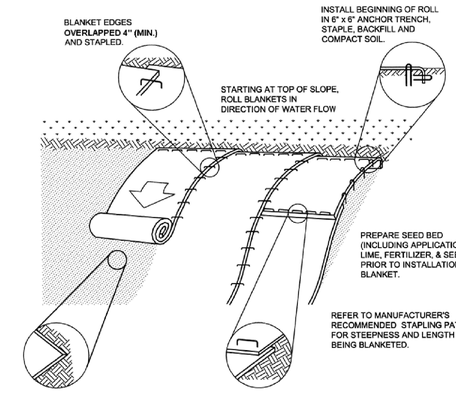
1. STRUCTURE SHALL BE PLACED ON A LEVEL WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM STRUCTURE AND WORK AREAS AND MINIMIZE EROSION OF THE SURROUNDING AREA TO THE EXTENT PRACTICABLE.
2. AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL EROSION AND SEDIMENTATION CONTROL DEVICES (E.G. RIPRAP CHECK DAMS, COMPOST FILTER SOCKS, ETC.) MAY BE REQUIRED TO BE INSTALLED DOWNSTREAM OF THE STRUCTURE IF EROSION BECOMES APPARENT DURING DEWATERING.
3. FLOW RATES AND VOLUMES THROUGH DISCHARGE AND DIVERTER PIPES SHALL BE SUCH THAT THE STRUCTURE WILL NOT OVERFLOW OR CAUSE EROSION. A MINIMUM FREEBOARD OF 3" MEASURED FROM THE TOP OF THE THIRD ROW OF STRAW BALES TO THE WATER SURFACE ELEVATION SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL DEWATERING STRUCTURES WILL BE ADDED AS NECESSARY TO FACILITATE DEWATERING OF THE PIPELINE AT THE APPROVED RATES.
4. THE 3/4" CRUSHED STONE INSTALLED WITHIN THE BASIN SHALL BE WASHED TO REMOVE ALL DIRT/FINE PARTICLES PRIOR TO INSTALLATION.
5. THE CHAINLINK FENCE POSTS SHALL BE DRIVEN A MINIMUM OF 2.5 FT. INTO STABLE, EXISTING GROUND. THE CONTRACTOR MAY BE REQUIRED TO INSTALL THE POLES DEEPER IF STABLE SUBSOILS ARE NOT ACHIEVED WITHIN 2.5 FT.
6. AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL GEOTEXTILE SEPARATION FABRIC AND 3/4" CRUSHED STONE MAY BE REQUIRED TO BE INSTALLED AROUND THE OUTSIDE EDGE OF THE DEWATERING STRUCTURE.
7. CHAINLINK FENCE SHALL INSTALLED TIGHTLY AGAINST THE STRAW BALES AND SECURELY FASTENED TOGETHER AT ALL JOINTS WITH CABLE TENSION WIRE AND STRETCHER BARS.
8. THE ENVIRONMENTAL INSPECTOR SHALL HAVE THE AUTHORITY TO MODIFY THE DESIGN AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION DOWNSTREAM OF THE STRUCTURE.
9. STRAW BALES SHALL BE STACKED SUCH THAT THE JOINTS ARE STAGGERED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DS — HYDROSTATIC DEWATERING STRUCTURE

2 OF 2



NOT TO SCALE

NOTES:

1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
2. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
5. STAPLING OF THE BLANKET SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
7. BIODEGRADABLE STAPLES SHALL BE USED.

WILLIAMS SUPPLEMENTAL NOTES:

1. CONTRACTOR SHALL USE SINGLE MAT STRAW FOR SLOPES FLATTER THAN 3:1.
2. HYDRAULIC APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF ECB.

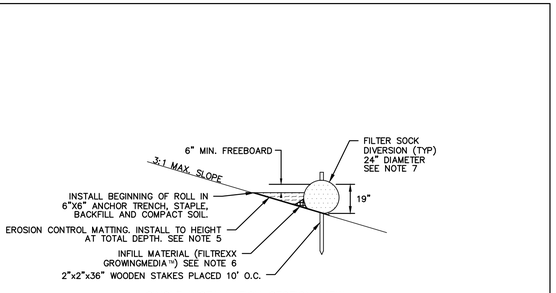
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #11-1.

ADAPTED FROM PADEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

ECB — EROSION CONTROL BLANKET



SINGLE INSTALLATION SECTION VIEW
N.T.S.

NOTES:

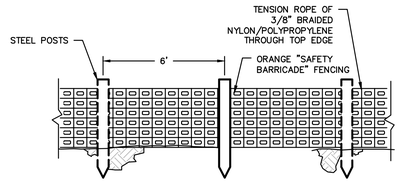
1. REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE FILTER SOCK DIVERSION WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE FILTER SOCK DIVERSION. SEDIMENT SHALL ALSO BE REMOVED DURING INSTALLATION OF FINAL STABILIZATION MEASURES (E.G. EROSION CONTROL MATTING, SEEDING, MULCHING, ETC.) TO LIMIT POTENTIAL DISTURBANCE FROM CONSTRUCTION EQUIPMENT WHILE VEGETATION IS ESTABLISHING.
2. SLOPES GREATER THAN 5% MAY REQUIRE ADDITIONAL STABILIZATION PRACTICES AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
3. THE FILTER SOCK DIVERSION SHALL BE FILLED WITH FILTREXX GROWINGMEDIA™ OR APPROVED EQUAL AND SEEDED AT THE TIME OF INSTALLATION. SOIL OR AND MAY BE ADDED TO THE GROWINGMEDIA™ TO ADD WIGHT AND BALLAST TO THE RUNOFF DIVERSION.
4. IF UNDERMINING IS OBSERVED CONTRACTOR SHALL PROVIDE AND MAINTAIN GROWING MEDIA PACKING AT TOE OF FILTER SOCK DIVERSION.
5. EROSION CONTROL MATTING INSTALLED UNDER AND ADJACENT TO THE FILTER SOCK DIVERSION FOR ACCESS ROADS SHALL BE NORTH AMERICAN GREEN C-125™ OR APPROVED EQUIVALENT AND SEEDED AT THE TIME OF INSTALLATION. REFER TO TABLE 2: TEMPORARY CLEAN WATER DIVERSION OF THIS PLAN SET FOR THE REQUIRED NORTH AMERICAN GREEN (OR APPROVED EQUIVALENT) LINING ASSOCIATED WITH THE PIPELINE FILTER SOCK DIVERSIONS. REFER TO THE EROSION CONTROL BLANKET DETAIL (ECB) ON PAGE 3 FOR PROPER INSTALLATION OF EROSION CONTROL MATTING.
6. INFILL MATERIAL (FILTREXX GROWINGMEDIA™ OR APPROVED EQUAL) SHALL BE MODIFIED TO REDUCE PERMEABILITY AND PROMOTE VEGETATIVE GROWTH IN ACCORDANCE WITH BMP REQUIREMENTS. THE GROWINGMEDIA™ SHALL BE DISPERSED ON SITE OR THE FILTER SOCK DIVERSION SHALL BE REMOVED ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
7. MAXIMUM EFFECTIVE HEIGHT OF A 24" FILTER SOCK IS 19", THEREFORE TOTAL DEPTH IS ALSO 19". EFFECTIVE HEIGHT MINUS FREEBOARD (6") SHOULD NOT EXCEED 13".
8. EROSION CONTROL MATTING SHOULD NOT EXTEND UPHILL PAST THE LIMIT OF DISTURBANCE.

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

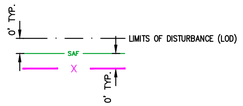
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FD — FILTER SOCK DIVERSION

1 OF 1



PROFILE VIEW
N.T.S



ALL SEDIMENT BARRIER AND SAFETY FENCE SHALL BE ON THE LIMITS OF DISTURBANCE

PLAN VIEW
N.T.S

NOTES:

1. INSTALL CONSTRUCTION FENCING ALONG THE LOD, AS NECESSARY, AND AROUND AREAS TO BE PROTECTED, SUCH AS WETLANDS AND TREES.

LEGEND

SAF — ORANGE "SAFETY BARRICADE" FENCING

X — SEDIMENT BARRIER

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FEN — CONSTRUCTION FENCE

1 OF 1

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

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CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	3
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	3
WO:				OF	11

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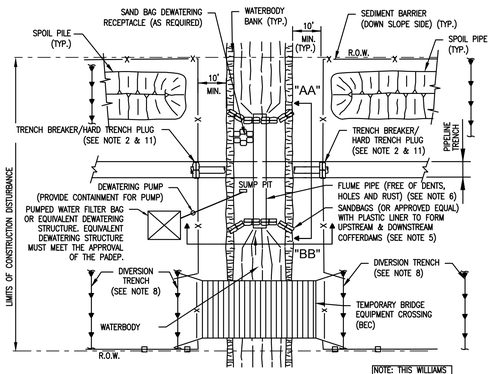


PLAN
SCALE: N.T.S.

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-1.

NOTES:

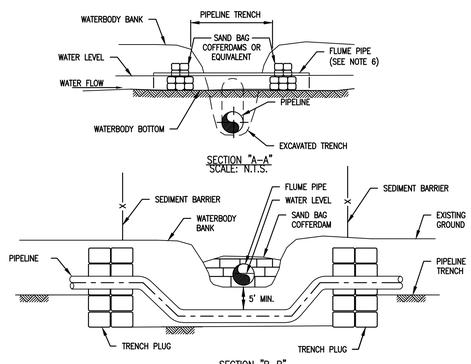
1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
2. HARD TRENCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE THE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.
3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, THE CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING.
4. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM THE WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
5. FLUME CROSSING METHOD REQUIREMENTS INCLUDE:
   (A) INSTALL FLUME PIPE(S) AFTER BLASTING (IF NECESSARY), BUT BEFORE ANY TRENCHING.
   (B) USE SAND BAG OR SAND BAG AND PLASTIC SHEETING DIVERSION STRUCTURES OR EQUIVALENT TO DEVELOP AN EFFECTIVE SEAL AND TO DIVERT WATERBODY FLOW THROUGH THE FLUME PIPE (SOME MINOR MODIFICATIONS TO THE WATERBODY BOTTOM MAY BE REQUIRED TO ACHIEVE AN EFFECTIVE SEAL).
   (C) PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION AND WATERBODY CHANNEL BED SCOUR.
   (D) DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPE LAYING, OR BACKFILLING ACTIVITIES, OR INITIAL STREAM BED RESTORATION EFFORTS.
   (E) REMOVE ALL FLUME PIPES AND DAMS THAT ARE NOT ALSO PART OF THE EQUIPMENT BRIDGE AS SOON AS FINAL CLEANUP OF THE STREAM BED AND BANK IS COMPLETE.
6. THE FLUME PIPE MUST BE SIZED TO ADEQUATELY CONVEY MAXIMUM ANTICIPATED FLOW RATES AT THE TIME OF THE CROSSING WITHOUT FLOODING THE TRENCH, WHILE MAINTAINING ADEQUATE FLOW RATES TO PROTECT AQUATIC LIFE AND PREVENT THE INTERRUPTION OF EXISTING DOWNSTREAM USES.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FX — FLUME STREAM CROSSING

1 OF 2



SECTION "A-A"
SCALE: N.T.S.

SECTION "B-B"
SCALE: N.T.S.

7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
8. INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY AND AT 50' FROM WATERBODY BANKS.
9. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT FOR PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY UNLESS OTHERWISE APPROVED BY THE ENVIRONMENTAL INSPECTOR.
10. WATER ACCUMULATING IN THE WORK SPACE SHALL BE PUMPED TO A FILTER BAG PRIOR TO DISCHARGE TO A WATERBODY.
11. INSTALL TRENCH BREAKERS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
12. EXCEPT FOR BLASTING AND OTHER ROCK BREAKING MEASURES, THE CONTRACTOR SHALL COMPLETE IN WATERBODY CONSTRUCTION ACTIVITIES (INCLUDING TRENCHING, PIPE INSTALLATION, BACKFILL, AND RESTORATION OF THE WATERBODY CHANNEL CONTOURS) WITHIN 24 HOURS. WATERBODY BANKS AND UNCONSOLIDATED WATERBODY CHANNELS MAY REQUIRE ADDITIONAL RESTORATION AFTER THIS PERIOD.
13. TYPICAL PIPELINE BURIAL DEPTH SHALL PROVIDE 5' OF COVER. HOWEVER, IN AREAS OF CONSOLIDATED ROCK, COVER CAN BE REDUCED TO 2' MINIMUM.
14. ***ALL STREAM CROSSINGS WILL BE PERFORMED DURING LOW FLOW CONDITIONS WITH OVERSIGHT FROM AN ENVIRONMENTAL INSPECTOR. STORM EVENT WEATHER FORECASTS WILL BE MONITORED PRIOR TO AND DURING THE STREAM CROSSING.***

SUPPLEMENTAL PADEP NOTES:

1. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
2. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
3. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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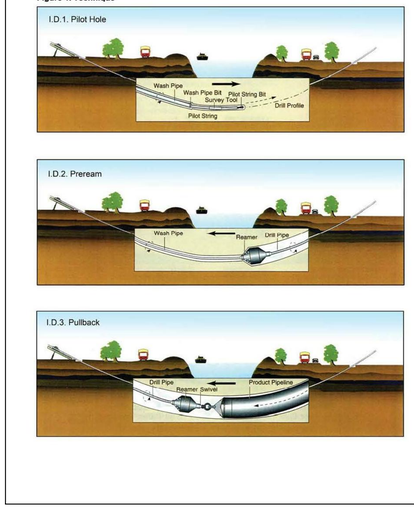
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FX — FLUME STREAM CROSSING (SECTIONS)

2 OF 2

Figure 1. Technique



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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

HDD — HORIZONTAL DIRECTIONAL DRILL

1 OF 2

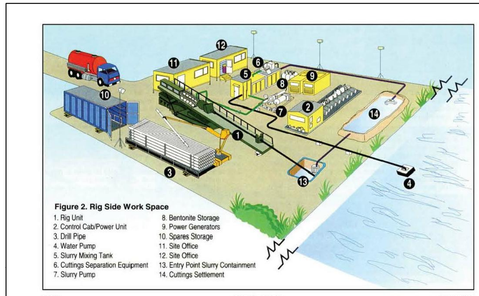


Figure 2. Rig Side Work Space

DCCM — PIPELINE DIGEST — AUGUST 1995

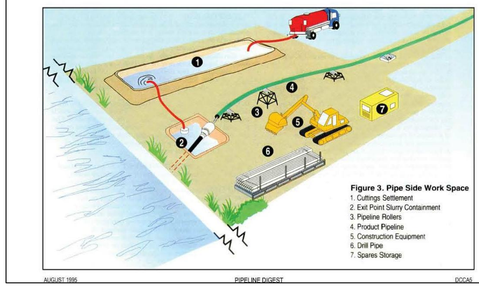


Figure 3. Pipe Side Work Space

AUGUST 1995 — PIPELINE DIGEST — DCCAS

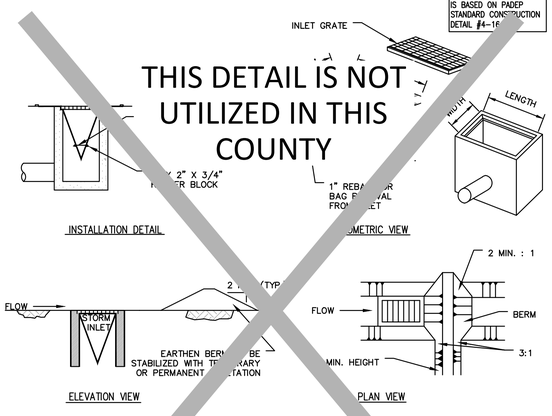
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

HDD — HORIZONTAL DIRECTIONAL DRILL

2 OF 2

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-16



NOTES:

1. MAXIMUM DRAINAGE AREA = 1 ACRE.
2. INLET PROTECTION SHALL BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMOVED PERMANENTLY.
4. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING PARTICLES NOT PASSING A NO. 40 SIEVE.
5. INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EXCAVATED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.
6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

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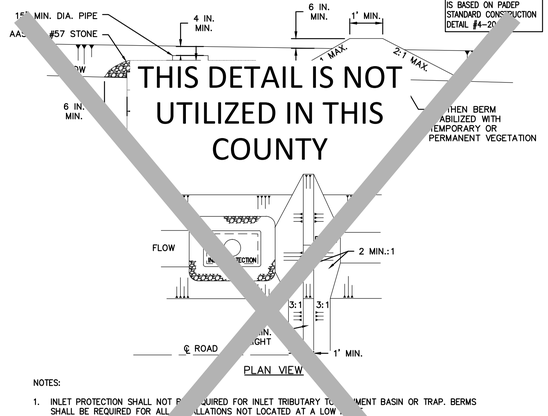
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

IPF — FILTER BAG INLET PROTECTION – TYPE M

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-20



NOTES:

1. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW POINT.
2. ROLLED EARTHEN BERM IN ROADWAY SHALL BE PROVIDED AND MAINTAINED IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR TO REMAIN PERMANENTLY.
3. STONE INLET PROTECTION AND BERM FOR A TYPE M INLET CAN BE USED IN ONE ACRE MAXIMUM DRAINAGE AREA WITH 15" OVERFLOW PIPE AND 4 IN. HEAD. A PERFORATED PLATE WELDED TO THE METAL RISER MAY NOT BE SUBSTITUTED FOR THE WIRE MESH. A SLOTTED PLATE WELDED TO THE RISER MAY BE USED IN CONJUNCTION WITH THE WIRE MESH IF CALCULATIONS ARE PROVIDED TO SHOW SUFFICIENT CAPACITY OF THE INLET TO HAVE KEPT THE PEAK RUNOFF FOR A 2-YEAR STORM EVENT FROM THE TRIBUTARY DRAINAGE AREA. TOP OF STONE SHALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADWAY IF PONDED WATER WOULD POSE A SAFETY HAZARD TO TRAFFIC. EARTHEN BERM SHALL BE ROLLED.
4. SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 IN. THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

IPS — STONE AND CONCRETE INLET PROTECTION – TYPE M

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

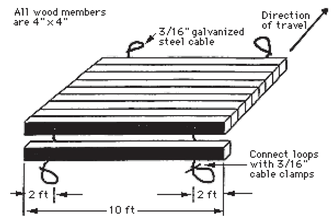
BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	3
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	4 OF 11
W.O:					

Drawn By & Date/Time: tdelo Apr 27, 2017 - 9:07am
Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(10)_CO-BMP-04.dwg

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP FIGURE 3.07.



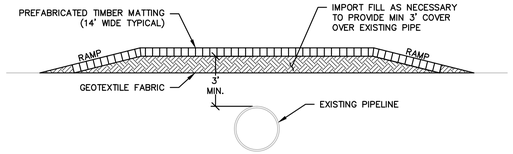
University of Minnesota FS 07009

A geotextile underlayment shall be used under the wood mat.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.1 TIMBER MATTING CONSTRUCTION



NOTES:

1. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE THE NUMBER OF EQUIPMENT MATS REQUIRED.

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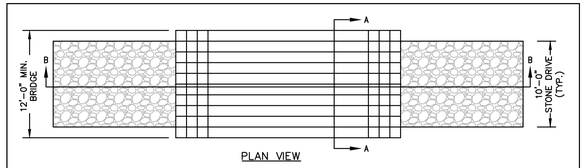
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.2 TIMBER MATTING WITH FILL OVER EXISTING PIPELINES



NOTES:

1. IF STONE USED FOR RAMP, INSTALL 1 (ONE) LAYER OF NON-WOVEN GEOTEXTILE FABRIC PRIOR TO INSTALLING THE STONE.
2. MINIMUM WIDTH OF BRIDGE IS 12'-0" WITH A 10'-0" WIDE STONE DRIVE.

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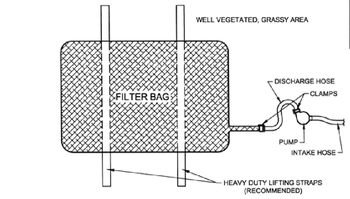
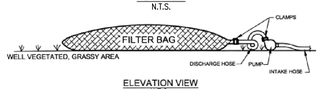
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.3 TIMBER MATTING AIR BRIDGE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-16.



PLAN VIEW
N.T.S.



ELEVATION VIEW
N.T.S.

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED 'J' TYPE. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS MAY BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS TO BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

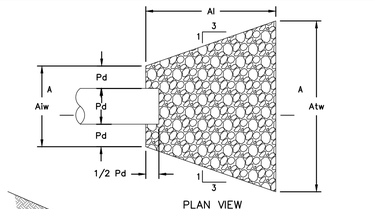
ADAPTED FROM PADEP

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

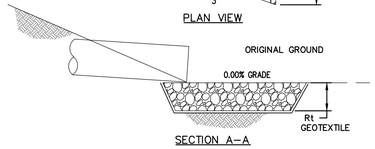
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

PWB PUMP WATER FILTER BAG

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #9-2.



PLAN VIEW



SECTION A-A

OUTLET NO.	PIPE DIA PD (IN)	RIPRAP SIZE (R-__)	RIPRAP THICK. Rt (IN)	APRON LENGTH Al (FT)	APRON INITIAL WIDTH Aiw (FT)	APRON TERMINAL WIDTH Atw (FT)
* ALL INFORMATION CAN BE FOUND ON ACCESS ROAD AND EROSION AND SEDIMENT CONTROL PLANS. REFER TO NOTES 4 AND 5 FOR DIMENSION LOCATIONS.						

NOTES:

1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN ON THE PLANS. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.
2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.
3. EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.
4. FOR APRONS ON ACCESS ROADS, THE DIMENSIONS FOR THE APRONS ARE GIVEN AS FOLLOWS: L x D x W/W
   WHERE: L = LENGTH OF APRON OR "Al" AS SHOWN IN THE PLAN VIEW ABOVE
   D = DEPTH OF RIP RAP OR "Rt" AS SHOWN IN THE SECTION ABOVE
   W/W = WIDTH OF SHORT END OF APRON/WIDTH OF LONG END OF APRON OR "Aiw"/"Atw" AS SHOWN IN THE PLAN VIEW ABOVE
5. FOR APRON ON SWALES AND FLUME CROSSINGS, THE DIMENSIONS FOR THE APRONS ARE AS FOLLOWS: DIMENSIONS LOCATED ON TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY:
   a. RIP RAP SIZE (R-__) UNDER WATERBODY
   b. APRON INITIAL WIDTH AND TERMINAL WIDTH IS TWO (2) FEET FOR FILTER SOCK DIVERSIONS AND SWALES.
   c. RIP RAP THICKNESS (Rt)
   d. APRON LENGTH (Al)

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RAO RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	WO572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	J
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	5
W.O:				OF	11

Drawn By & Date/Time: tdelo Apr 27, 2017 - 9:08am
Drawing Location & Name: G:\OBS\14\14C\14C04909\DWG\BMPs&DETAILS\PL_DN14C04909(10)_CO-BMP-05.dwg

TABLE 6.6
Riprap Gradation, Filter Blanket Requirements, Maximum Velocities
Percent Passing (Square Openings)

Rock Size (Inches)	R-8	R-7	R-6	R-5	R-4	R-3
42	100					
30						
24	15-50					
18						
15						
12						
9						
6			0-15		50	100
4				0-15		
3					0-15	15-50
2						0-15
Nominal Placement Thickness (inches)	63	4	36		18	9
Filter Stone[1]	AASHTO #1	AASHTO #1	AASHTO #	AASHTO #3	AASHTO #3	AASHTO #57
V_{max} (ft/sec)	17.0	14.5	1	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), T

1 This is a general standard. Soil conditi at each site s d be analyzed to determine actual filter size. A suitable woven or non-woven textile underlayn used according to the manufacturer's recommendations. be substituted for the stone for gradients < 10%.

TABLE 6.7
Comparison Various Gradations of Coarse gregates

AASHTO NUMBER	Total Percent Passing														
	6 ½	4"		2 ½	2"	1 ½"	1"	¾"	½"	⅜"		#8	#16	#30	#100
1		100	100	25-60		0-15		0-5							
3				100	90-100	35-70	0-15		0-5						
5						100	90-100	20-55	0-10	0-5					
57						100	90-100		25-60		0-10	0-5			
67							100	90-100		20-55	0-10	0-5			
7								100	90-100	40-70	0-15	0-5			
									100	85-100	10-30	0-10	0-5		
										100	75-100				90

nDOT Publication 408, Section 703.2(c), Table C

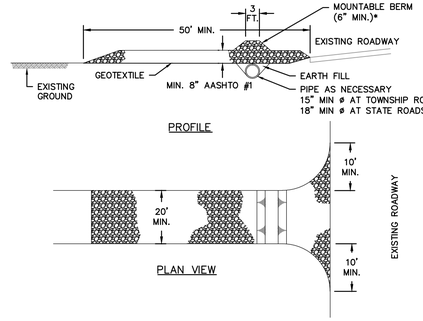
Tables 6.6 and 6.7 should be placed on the plan drawings of all sites where riprap channel linings are proposed.

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RAP — RIP RAP GRADATION

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-1.



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

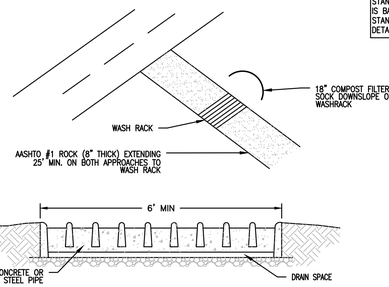
NOTES:

1. REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
2. RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
3. MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
5. RCE WITH WASH RACK, SEE DETAIL RCW, TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
6. WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RCE — ROCK CONSTRUCTION ENTRANCE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-2.



PADEP STANDARD NOTES:

1. WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.
2. WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.
3. A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

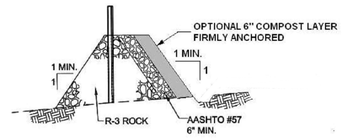
SUPPLEMENTAL NOTES:

1. RCW TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
2. WASH RACK SHALL BE INSTALLED IN COORDINATION WITH THE NOXIOUS AND INVASIVE PLANT MANAGEMENT PLAN. ALTERNATIVE WHEEL WASHING METHODS, SUCH AS PRESSURE WASHING, BRUSHING, OR USE OF COMPRESSED AIR AND/OR AN ELEVATED WASH RACK, MAY BE USED IN CERTAIN LOCATIONS DEPENDING ON THE ANTICIPATED SEDIMENT AND LOCAL VEGETATION.
3. VACUUM SWEEPING MAY BE USED TO MITIGATE THE SPREAD OF SEDIMENT BEYOND THE RCES. RCES WILL BE INSPECTED FOR SEDIMENT TRACKING ONTO PUBLIC ROADWAYS. IF SEDIMENT IS OBSERVED IN THE PUBLIC ROADWAY, THE ROADWAY SHALL BE VACUUM SWEPT UPON DISCOVERY. ANY LARGE CLUMPS OF DIRT THAT ACCUMULATE ON THE ROAD SURFACE WILL NEED TO BE HAND CLEARED BEFORE VACUUM SWEEPING. ALL VEHICLES LEAVING THE RCE SHALL BE INSPECTED FOR LARGE CLUMPS OF DEBRIS. IF DEBRIS, LARGER THAN 4" DIAMETER IS OBSERVED, IT SHALL BE MANUALLY REMOVED FROM THE VEHICLE. DIRT ROADS SHALL BE INSPECTED WEEKLY FOR RUTTING. THERE SHALL BE NO MORE THAN A MAXIMUM OF 6" OF RUTTING ON ACCESS ROADS. IF RUTTING IN EXCESS OF 6" IS OBSERVED, THE ROAD SHALL BE ROLLED AS SOON AS FEASIBLE. DUMP TRUCKS HAULING MATERIAL FROM RCES IN SPECIAL PROTECTION WATERSHEDS WILL BE COVERED WITH A TARPAULIN.
4. WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

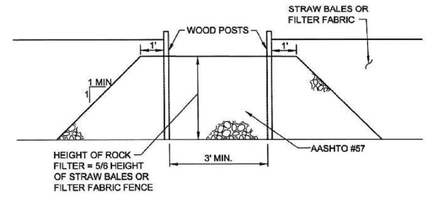
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RCW — ROCK CONSTRUCTION ENTRANCE WITH WASH RACK

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-6.



OUTLET CROSS-SECTION
N.T.S.



UP-SLOPE FACE
N.T.S.

ADAPTED FROM MARYLAND DOE

NOTES:

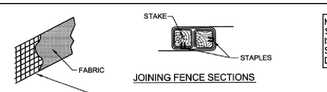
1. A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A STRAW BALE BARRIER OR FILTER FABRIC FENCE HAS OCCURRED DUE TO CONCENTRATED FLOW.
2. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

PADEP SUPPLEMENTAL NOTE:

1. ANCHORED COMPOST LAYER SHALL BE USED ON UP SLOPE FACE IN HQ AND EV WATERSHEDS.

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

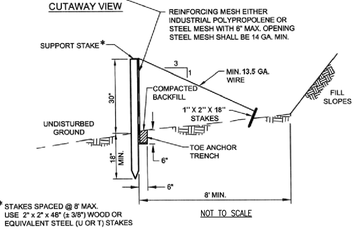
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RFO — ROCK FILTER OUTLET



JOINING FENCE SECTIONS

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-8.

CUTAWAY VIEW



* STAKES SPACED @ 8' MAX. USE 2" x 2" x 48" (± 3/8") WOOD OR EQUIVALENT STEEL (U OR T) STAKES

NOT TO SCALE

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR REINFORCED SILT FENCE:

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	500
5	250
10	150
15	100
20	70
25	55
30	45
35	40
40	35
45	30
50	25

1. FABRIC WIDTH SHALL BE 42" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES. 18" SUPPORT STAKE SHALL BE DRIVEN 12" MIN. INTO UNDISTURBED GROUND.
2. SILT FENCE SHALL BE INSTALLED AT EXISTING LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. SEDIMENT SHALL BE REMOVED WHERE ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (RFO).
5. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
6. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
7. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

ADAPTED FROM PADEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
RSF — REINFORCED SILT FENCE (30" HIGH)

SUZANNE KING REG NO. PE 082757

BLE Corporation — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
3	03/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	AJB
4	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	AJB
5	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	AJB

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	5
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	6
W.O:				OF	11

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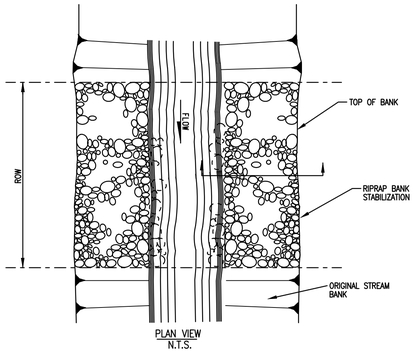
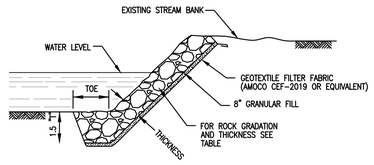


PLAN VIEW
N.T.S.



SECTION
SCALE: N.T.S.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RSS — RIP RAP STREAM BANK STABILIZATION

1 OF 2

RIP RAP GRADATION TABLE
REFER TO TABLE 6.6 RIP RAP GRADATION, FILTER BLANKET REQUIREMENTS, MAXIMUM VELOCITES ON PAGE 6 OF THIS SET.
REFER TO TABLE 6.7 COMPARISON OF VARIOUS GRADATIONS OF COARSE AGGREGATES ON PAGE 6 OF THIS SET.

NOTES:

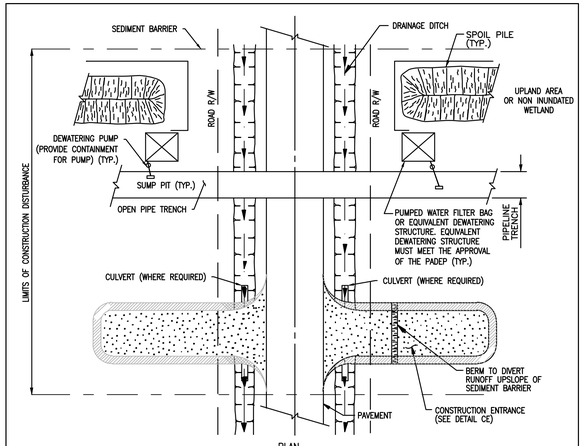
1. ROCK UTILIZED FOR RIPRAP SHALL CONSIST OF SOUND, DURABLE ROCK, INSOLUBLE IN WATER, AND RESISTANT TO WEATHERING.
2. ALL MATERIAL SHALL BE FREE OF STRUCTURAL DEFECTS, SHALE SEAMS AND ORGANIC MATTER.
3. INDIVIDUAL PIECES SHOULD BE SHARPLY ANGULAR, BLOCK SHAPED AND HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
4. NO PIECE SHALL HAVE A LENGTH EXCEEDING THREE (3) TIMES ITS WIDTH OR DEPTH.
5. EACH LOAD OF ROCK SHALL BE OF WELL-GRADED MIXTURE. A WELL-GRADED MIXTURE, AS USED HEREIN, IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE, BUT WITH A SUFFICIENT MIXTURE OF SMALLER SIZES TO FILL THE VOIDS.
6. MATERIAL SHALL MEET NSA SPECIFICATIONS – SEE TABLE ABOVE.
7. IF STREAM WIDTH IS EQUAL TO OR LESS THAN 2 TIMES THE TOE WIDTH, RIPRAP SHALL BE PLACED ACROSS THE ENTIRE STREAM WIDTH.
8. RIPRAP SHALL BE PLACED TO THE FULL COURSE THICKNESS IN ONE CONTINUOUS OPERATION. OPERATIONS WHICH CAUSE SEGREGATION OF THE MATERIALS SHALL NOT BE PERMITTED. INDIVIDUAL ROCKS MAY BE REARRANGED, AND THE VOIDS FILLED WITH HAND PLACED SMALLER ROCK IN ORDER TO ACHIEVE THE DESIRED UNIFORM ARMOR.
9. SLOPE SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING GRANULAR FILL, FILTER FABRIC, OR RIPRAP.
10. ENDS OF THE RIPRAP SHALL BE KEYED INTO A STABLE BANK. WHEN TYING INTO OTHER STRUCTURES, LARGER RIPRAP CAN BE LAID IN STEPS OR STACKED AS NEEDED TO FIT. STONES LARGER THAN THOSE DESIGNED FOR FLOW SHALL BE USED FOR THIS PURPOSE.
11. REMAINING DISTURBED AREAS SHALL BE GRADED AND PERMANENTLY SEEDED AND MULCHED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RSS — RIP RAP STREAM BANK STABILIZATION

2 OF 2



PLAN
N.T.S.

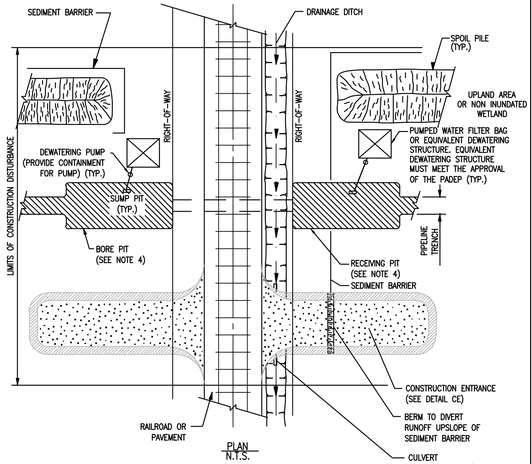
NOTES:

1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF. TEMPORARILY RELOCATE SEDIMENT BARRIERS WITHIN LIMITS OF TRENCH OPENING AS NEEDED TO INSTALL PIPE. IMMEDIATELY REPLACE BARRIERS AFTER BACKFILLING TRENCH.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. CULVERTS TO BE SIZED AND PLACED WHERE REQUIRED TO MAINTAIN WATER FLOW.
5. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
6. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE PIPE TRENCH.
7. CONTRACTOR MAY ELECT TO UTILIZE WELL-POINTS IN ORDER TO REDUCE THE WATER TABLE PRIOR TO COMMENCING EXCAVATION.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.
9. CONSTRUCTION ENTRANCE NEEDED AS SHOWN ON SPECIFIC PLAN.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RX.1 — TRENCHED ROAD CROSSING



PLAN
N.T.S.

NOTES:

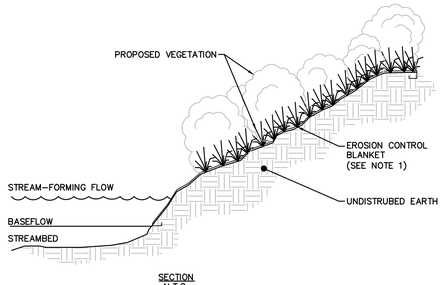
1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE CROSSING CLEAN OF DEBRIS AT ALL TIMES.
7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RX.2 — BORED ROAD/ RAILROAD CROSSING

NOTE: THIS WILLIAMS STANDARD DETAIL IS ADAPTED FROM PADEP FIGURE #15.10



SECTION
N.T.S.

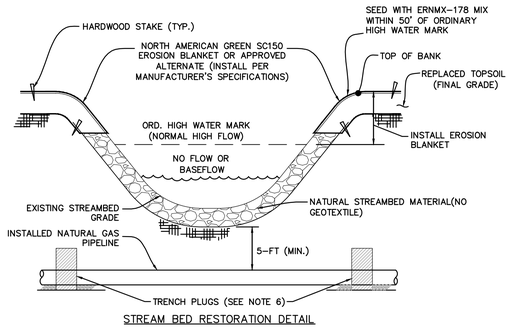
NOTES:

1. ON STREAM BANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED. REFER TO EROSION CONTROL BLANKET DETAIL (ECB) FOR INSTALLATION.
2. STREAM BANK STABILIZATION SHALL UTILIZE REINFORCEMENT BLANKET EXCEPT WHEN STABILIZATION CANNOT BE ACHIEVED IN THE FIELD, IN WHICH CASE, RIP RAP STREAM BANK STABILIZATION SHALL BE IMPLEMENTED. REFER TO THE RIP RAP STREAM BANK STABILIZATION DETAIL, RSS, IN THIS PLAN SET.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SBR — STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET



STREAM BED RESTORATION DETAIL

NOTES:

1. REMOVE EXISTING STREAMBED MATERIAL AND STOCKPILE SEPARATELY.
2. ONCE PIPELINE IS INSTALLED, REPLACE SUBSTRATE BACK IN STREAMBED AND RESTORE TO EXISTING CONDITION.
3. SEE RECOMMENDED SEED MIXTURES TABLES FOR SEED MIXES.
4. ON STREAMBANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED.
5. THE USE OF EROSION CONTROL BLANKET IS NOT ALLOWED ON STATE GAME LANDS. HYDRAULICALLY APPLIED SLOPE STABILIZATION MUST BE USED.
6. REFER TO TRENCH PLUG INSTALLATION DETAIL (TP) FOR MORE INFORMATION.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SBR — STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	J
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	7 OF 11
W.O.:					

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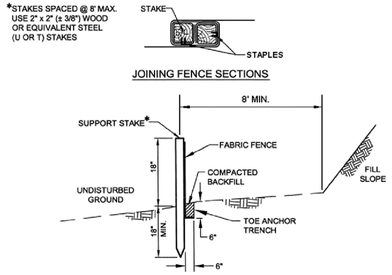


NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-7.

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR SILT FENCE

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	150
5	100
10	50
15	35
20	25
25	20
30	15
35	15
40	15
45	10
50	10

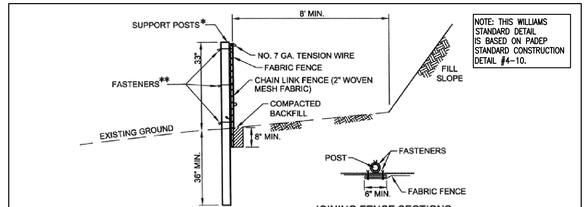
ADAPTED FROM PA DEP

1. FABRIC WIDTH SHALL BE 30" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.
2. SILT FENCE MUST BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET @RD.
5. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
6. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
7. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SF — STANDARD SILT FENCE (18" HIGH)



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-10.

*POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

**CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR SUPER SILT FENCE

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	1000
5	550
10	325
15	215
20	175
25	135
30	100
35	85
40	75
45	60
50	50

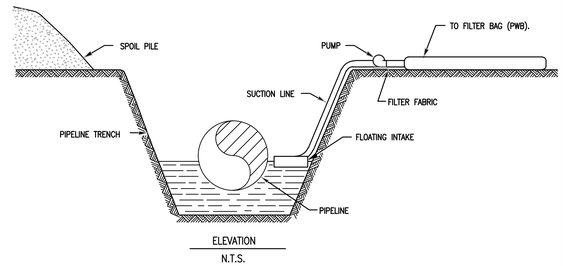
ADAPTED FROM PA DEP

1. FILTER FABRIC WIDTH SHALL BE 42" MINIMUM.
2. POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.
3. CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2¼" OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN-LINK FENCE OR ATTACHED WITH HOG RINGS AT 5' (MAX.) CENTERS.
4. SILT FENCE SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO MAIN BARRIER ALIGNMENT.
5. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
6. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
7. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
8. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SSF — SUPER SILT FENCE (33" HIGH)



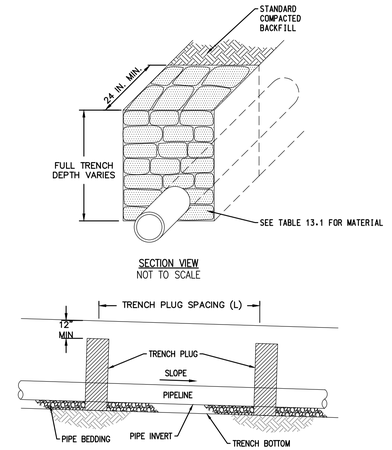
NOTES:

1. WATER PUMPED OUT OF TRENCH SHALL NOT BE DISCHARGED INTO WATERWAYS. WATER SHALL BE DISCHARGED INTO A FILTER BAG OR DEWATERING STRUCTURE.
2. PUMP SHALL BE CONTROLLED SO THAT DISCHARGE DOES NOT OVERFLOW DEWATERING STRUCTURE.
3. PUMP SUCTION HOSE MUST NOT BE ALLOWED TO COME IN CONTACT WITH TRENCH BOTTOM. PROVISIONS MUST BE MADE TO ELEVATE THE SUCTION HOSE TO AT LEAST ONE FOOT ABOVE THE BOTTOM OF THE PIPE TRENCH UNTIL BOTTOM DEWATERING IS NECESSARY.
4. DEWATERING SHALL NOT OCCUR DURING TIMES OF HEAVY RAINFALL EXCEPT AS REQUIRED TO PREVENT FLOODING OF CONSTRUCTION EQUIPMENT LOCATED IN BORE PITS AND TRENCHES.
5. PUMP WATER FILTER BAG (PWB) SHALL BE PLACED ON A WELL VEGETATED AREA AWAY FROM CONSTRUCTION SO THAT FILTERED WATER IS NOT RETURNED TO THE TRENCH.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TD — TRENCH DEWATERING



NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-4.

TABLE 13.1
MAXIMUM SPACING AND MATERIALS FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING L (FT)	TRENCH PLUG MATERIAL FOR FILLED SACKS
<5	1,000	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
5 – 15	500	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
15 – 25	300	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
25 – 35	200	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
35 – 100	100	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
>100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

*TOPSOIL MAY NOT BE USED TO FILL SACKS.

IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATER BODY CROSSINGS. FOAM TRENCH PLUGS ARE NOT TO BE USED IN WETLANDS.

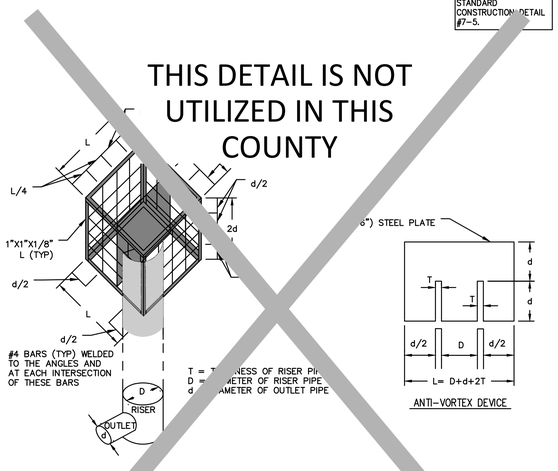
ADAPTED FROM MARYLAND DOE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TP — TRENCH PLUG INSTALLATION

NOTE: THIS DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #7-5.



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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TRV — TRASH RACK AND ANTI-VORTEX DEVICE

SUZANNE KING, REG. NO. PE 082757
BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL, AND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: J
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 8 OF 11
WO:					

Drawn By & Date/Time: tdelo Apr 27, 2017 - 9:12am
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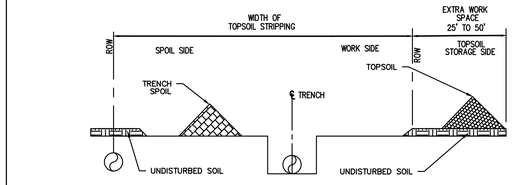
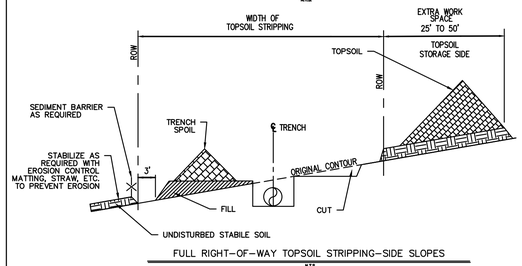


FULL RIGHT-OF-WAY TOPSOIL STRIPPING ADJACENT EXISTING PIPELINE

N.T.S.



FULL RIGHT-OF-WAY TOPSOIL STRIPPING-SIDE SLOPES

N.T.S.

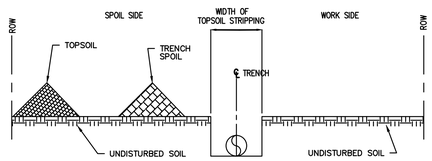
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

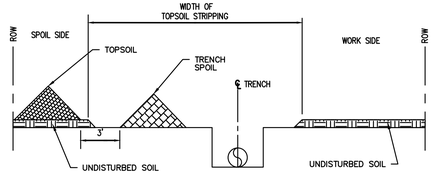
TS.1 TOPSOIL SEGREGATION (1)



DITCH LINE TOPSOIL STRIPPING

N.T.S.

ALSO USED IN NON-SATURATED WETLANDS



DITCH PLUS SPOIL SIDE SEGREGATION

N.T.S.

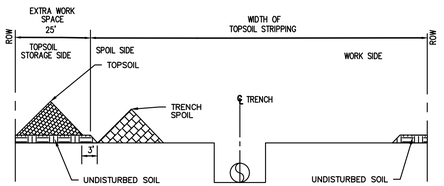
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

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

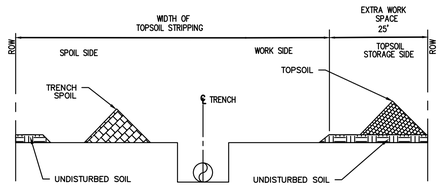
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TS.2 TOPSOIL SEGREGATION (2)



FULL RIGHT-OF-WAY TOPSOIL STRIPPING - A

N.T.S.



FULL RIGHT-OF-WAY TOPSOIL STRIPPING - B

N.T.S.

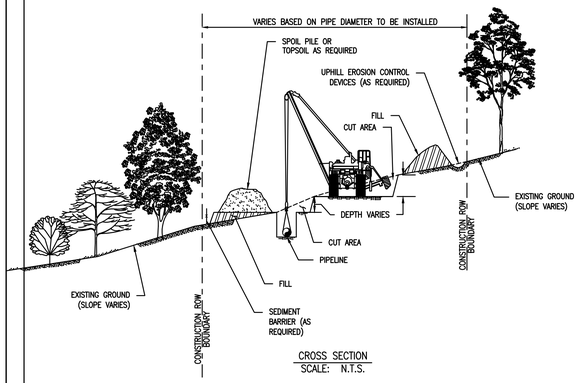
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TS.3 TOPSOIL SEGREGATION (3)



CROSS SECTION
SCALE: N.T.S.

NOTES:

1. TWO-TONE THE RIGHT-OF-WAY TO LIMIT THE NEED FOR DEEP CUTS AND ADDITIONAL RIGHT-OF-WAY ON STEEP SLOPES. THE MINIMUM WORKSPACE WIDTH ALONG STEEP SIDE SLOPES WILL VARY DEPENDING ON THE DIAMETER OF PIPE TO BE INSTALLED. ADDITIONAL TEMPORARY WORKSPACE MAY BE REQUIRED FOR WORKER SAFETY DEPENDING ON THE SEVERITY OF THE GRADE.
2. EMPLOY EROSION CONTROL MEASURES SUCH AS WATERBARS, CROSS DITCHES, TEMPORARY DRAINAGE PIPES, TEMPORARY SWALES, TEMPORARY OUTLET PROTECTION, ETC. AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION OUTSIDE OF THE CONSTRUCTION RIGHT-OF-WAY. CLEAR AND STAKE ATWS TO ALLOW FOR EXTRA SPOIL.
3. ENSURE SIDE BOOM TRACTORS ARE EQUIPPED WITH BOOM EXTENDERS AND COUNTERWEIGHTS IF REQUIRED.
4. USE BACKHOE TO ASSIST BULLDOZERS WITH REPLACING CUTS.
5. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL MEASURES AS REQUIRED.
6. REVEGETATE / SEED DISTURBED AREAS AS NOTED IN THE CONSTRUCTION DOCUMENTS OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TTS SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
Engineer
PE082757

SUZANNE KING REG NO. PE 082757

BLE Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	WO572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

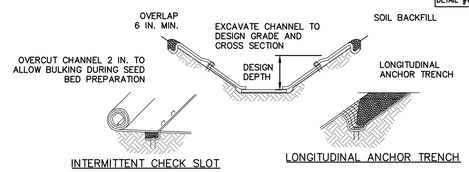
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

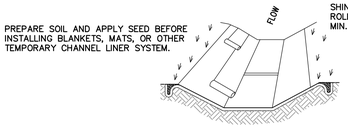
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 3
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 9 OF 11
W.O:					

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #6-1.

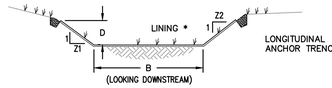


INTERMITTENT CHECK SLOT

LONGITUDINAL ANCHOR TRENCH



ISOMETRIC VIEW



CHANNEL CROSS-SECTION

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

NOTES:
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION.
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

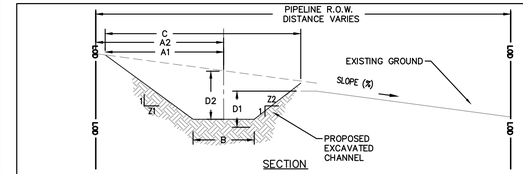
NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

REFER TO "TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY" AT THE END OF THIS PLAN SET FOR CHANNEL INFORMATION CHART FOR THE DIVERSION SWALES ALONG THE PIPELINE RIGHT OF WAY.

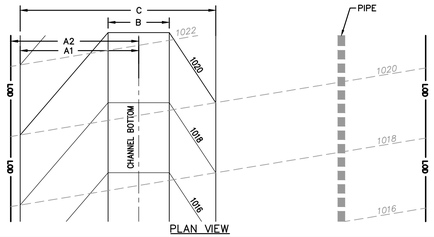
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

VCH VEGETATED CHANNEL



SECTION



PLAN VIEW

VEGETATED CHANNEL DIMENSIONS							
SLOPE ACROSS R.O.W. % (SLOPE)	CENTERLINE OF SWALE TO EDGE OF GRADING FT (A1)	CENTERLINE OF SWALE TO LOD FT (A2)	BOTTOM WIDTH OF SWALE FT (B)	TOTAL WIDTH OF SWALE AT EDGE OF GRADING FT (C)	SWALE DEPTH FT (D1)	SWALE DEPTH AT EXISTING GRADE FT (D2)	SIDE SLOPES OF SWALE (Z1 AND Z2)
0–5	6.11	7	2	11.1100	2	2.25	2:1
0–5	7.33	8	2	13.3300	2.5	2.80	2:1
0–5	8.56	9	2	15.5600	3	3.35	2:1
5–15	9.28	10	2	14.2800	2	2.75	2:1
5–15	11.14	12	2	17.1400	2.5	3.40	2:1
5–15	13	13	2	20	3	4.05	2:1
15–25	15	15	2	20	2	3.25	2:1
15–25	18	18	2	24	2.5	4.00	2:1
15–25	21	21	2	28	3	4.75	2:1
25–33	25	25	2	30	2	3.65	2:1
25–33	30	30	2	36	2.5	4.48	2:1
25–33	35	35	2	42	3	5.31	2:1

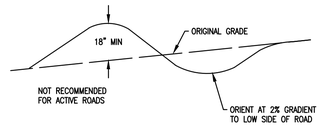
NOTES:
1. SWALES SHALL BE CONSTRUCTED AT A STANDARD DEPTH (D2) FROM CENTERLINE OF SWALE BOTTOM TO EXISTING GRADE.
2. VEGETATED CHANNEL GRADING IS FOR VEGETATED CHANNELS ALONG THE PIPELINE RIGHT OF WAY. SEE THE ACCESS ROAD E&SC AND PCSM PLANS FOR VEGETATED CHANNEL GRADING AT MLV SITES.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

VCH VEGETATED CHANNEL GRADING

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-5.



PLAN VIEW
N.T.S

PADEP STANDARD NOTES:

1. WATERBARS SHALL DISCHARGE TO A STABLE AREA.
2. WATERBARS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
3. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
4. WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

WILLIAMS STANDARD NOTES:

1. ALL WATERBARS SHOWN ON THE PLANS ARE INTENDED TO BE PERMANENT BMPS.
2. ADDITIONAL WATERBARS MAY BE INSTALLED AS APPROPRIATE DURING CONSTRUCTION.
3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO ALTERNATE SIDES OF THE ROW, WHERE POSSIBLE/PRACTICAL.
4. A 'SOFT' TRENCH PLUG MAY BE USED TO CONTROL INSTANCES WHERE A WATERBAR DISCHARGES TO THE TRENCH IN STEEP SLOPE AREAS.
5. A 'J-HOOK' OUTLET MAY BE USED AT WATERBARS TO CONTROL THE FLOW OF RUNOFF. STRAW BALES, SILT SOCKS OR SUPER SILT FENCE TRENCHED IN MAY BE USED AS 'J-HOOK' OUTLETS.
6. THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSM) FOR THE LINEAR PORTION OF THIS PROJECT IS TO RESTORE THE CONSTRUCTION RIGHT-OF-WAY TO ITS ORIGINAL CONTOURS FOLLOWING PIPELINE INSTALLATION AND RESTORATION. THE ENTIRE AREA WILL BE PERMANENTLY RE-VEGETATED OR STABILIZED WITH PERVIOUS MATERIAL. WATER BARS INSTALLED DURING CONSTRUCTION ACTIVITIES WILL REMAIN AS PERMANENT WATER BARS AND ACT AS PCSM BMPS.

SUPPLEMENTAL NOTE:

1. DO NOT EXCAVATE UPHILL SWALE WITHIN 10' OF CENTERLINE OF PIPE TO MAINTAIN MINIMUM 3' COVER OVER THE PIPE. SLIGHTLY MODIFY WATERBAR FLOWLINE GRADING TO PROMITE POSITIVE DRAINAGE TO LOW SIDE OF WATERBAR.
2. ALL WATERBARS ARE PERMANENT EXCEPT FOR THOSE LOCATED IN AGRICULTURAL AREAS, WETLANDS, TRANSPORATION FACILITIES, AND LAWNS. ALL WATERBARS IN THESE AREAS ARE TO BE REMOVED DURING FINAL RESTORATION.

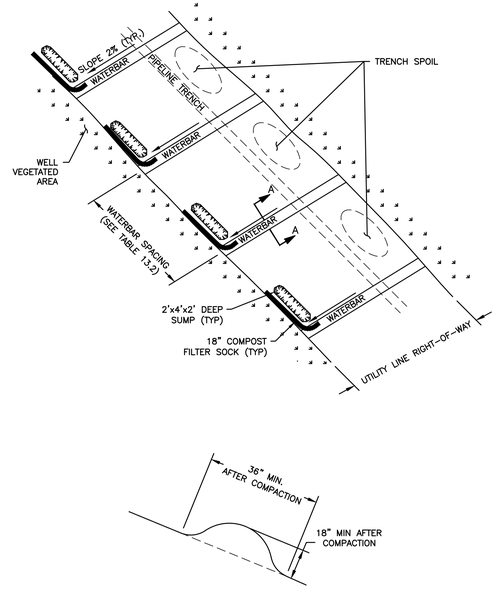
TABLE 3.1 – MAXIMUM WATERBAR SPACING

PERCENT SLOPE	SPACING (FT)
<5	200
5–15	150
>15–30	100
>30	50

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB WATERBAR

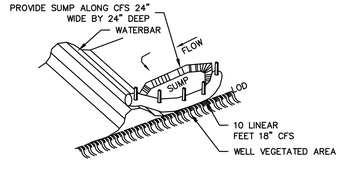


SECTION A–A

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB.1 WATERBAR LAYOUT DETAIL



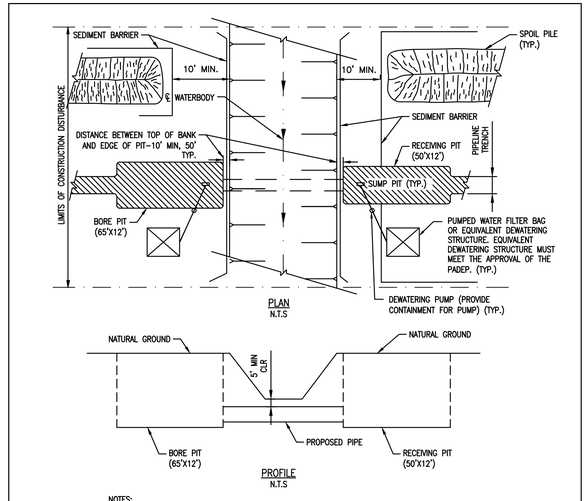
NOTES:

1. 10 LINEAR FEET OF 18 INCH COMPOST FILTER SOCK (CFS) SHALL BE INSTALLED WITH ONE END RESTING ON THE WATERBAR AS PER DETAIL CFS, ALLOWING FOR 8 FEET OF EFFECTIVE LENGTH AND A SPECIFIED FLOW THROUGH RATE OF 15 GALLONS PER MINUTE PER LINEAR FOOT. A PASS THROUGH FLOW OF 0.26 CUBIC FEET PER SECOND CAN BE ACCOMMODATED THROUGH THE FILTER SOCK. THIS FLOW RATE IS ADEQUATE FOR 20,000 SQUARE FEET OF DRAINAGE AREA FOR THE 2-YEAR, 24-HOUR STORM, 5 MINUTE TIME OF CONCENTRATION (RATIONAL METHOD).
2. CONSTRUCTION OF A 24" WIDE AND 24" DEEP SUMP AT THE DISCHARGE END OF THE WATERBAR WILL REDUCE VELOCITY AND PROVIDE A SHEET FLOW CONDITION TO THE CFS. THE SUMP SHALL BE MAINTAINED AND CLEANEDOUT WHEN IT BECOMES A MINIMUM OF 12" DEEP. THE SUMP SHALL BE FILLED AND STABILIZED WHEN THE CFS IS REMOVED AFTER SITE STABILIZATION.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN ACCORDANCE WITH WILLIAMS STANDARDS. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
5. BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB.2 COMPOST FILTER SOCK AND SUMP AT WATERBAR DISCHARGE (PADEP APPROVED ALTERNATE DETAIL)



PLAN
N.T.S

PROFILE
N.T.S

NOTES:

1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH THE ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE AREA CLEAN OF DEBRIS AT ALL TIMES.
7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WBX.1 BORED WATERBODY CROSSING

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER
PE082757

SUZANNE KING PEG NO. PE 082757
BLE Corporation
ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	WO572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	J
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	10
WO:				OF	11

Drawn By & Date/Time: tdelo Apr 27, 2017 - 9:14am
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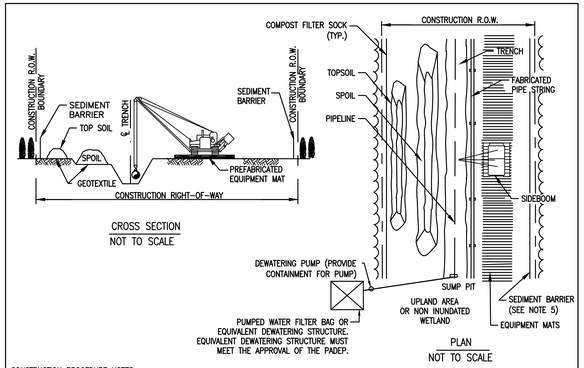


CROSS SECTION
NOT TO SCALE

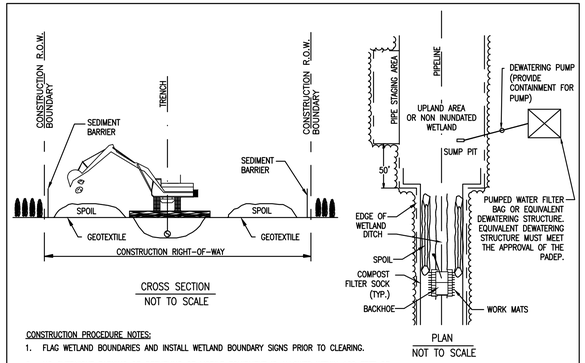
PLAN
NOT TO SCALE

CONSTRUCTION PROCEDURE NOTES:

1. FLAG WETLAND BOUNDARIES AND INSTALL BOUNDARY SIGNS PRIOR TO CLEARING.
2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
4. INSTALL PREFABRICATED EQUIPMENT MATS THROUGH ENTIRE WETLAND AREA ON THE WORKING SIDE OF THE CONSTRUCTION CORRIDOR.
5. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF THE WETLAND AND ALONG BOTH WETLAND EDGES. INSTALL SEDIMENT BARRIERS ALONG THE EDGE OF THE SPOIL SIDE OF THE CONSTRUCTION CORRIDOR THROUGH THE WETLAND AND ALONG THE DOWN SLOPE EDGE OF THE WETLAND. IF THE DOWN SLOPE EDGE OF THE WETLAND IS THE SPOIL SIDE, THEN SEDIMENT BARRIERS ARE NOT REQUIRED ON THE WORKING SIDE OF THE CORRIDOR UNLESS EQUIPMENT TRAVERSING THROUGH THE WETLAND CAUSES SPOIL AND SEDIMENT TO EXIT THE CONSTRUCTION CORRIDOR.
6. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
7. CONDUCT TRENCH LINE TOPSOIL STRIPPING (IF TOPSOIL IS NOT SATURATED). SALVAGE TOPSOIL TO ACTUAL DEPTH OR A MAXIMUM DEPTH OF 12 INCHES, AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR. SEGREGATED TOPSOIL PILE MAY BE LOCATED ON SPOIL SIDE, AS REQUIRED.
8. LEAVE HARD PLUGS AT THE EDGES OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
9. TRENCHING THROUGH WETLANDS MAY PROCEED WHEN THE PIPE SECTION IS FABRICATED AND READY TO LAY. ONCE TRENCHING COMMENCES, CONSTRUCTION THROUGH THE WETLAND IS TO PROCEED CONTINUOUSLY UNTIL THE CROSSING IS COMPLETED, BACK FILLED AND RESTORED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE TRENCH IS OPEN.
10. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND ADJACENT TO PIPE TRENCH, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
11. LOWER-IN PIPE. PRIOR TO BACK FILLING TRENCH, INSTALL TRENCH PLUGS IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
12. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.
13. REMOVE PREFABRICATED MATS FROM WETLANDS UPON COMPLETION.
14. IF WETLAND IS SATURATED, THE TOPSOIL STOCKPILE SHALL NOT OCCUR AS SHOWN IN DETAIL.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
WCC.1 WETLAND INSTALLATION PROCEDURE



CROSS SECTION
NOT TO SCALE

PLAN
NOT TO SCALE

CONSTRUCTION PROCEDURE NOTES:

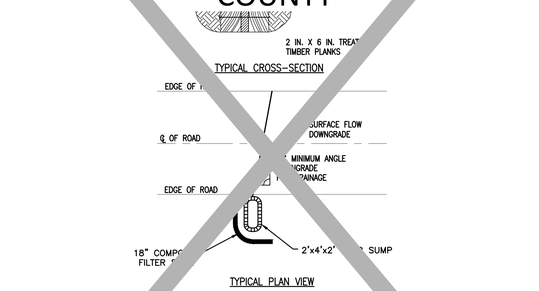
1. FLAG WETLAND BOUNDARIES AND INSTALL WETLAND BOUNDARY SIGNS PRIOR TO CLEARING.
2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
4. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF WETLAND AND ALONG BOTH WETLAND EDGES.
5. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
6. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
7. UTILIZE AMPHIBIOUS EXCAVATORS (PONTOON MOUNTED BACKHOES) OR TRACKED BACKHOES SUPPORTED BY PREFABRICATED EQUIPMENT MATS OR FLOATS, TO EXCAVATE TRENCH. IF PREFABRICATED EQUIPMENT MATS ARE USED FOR STABILIZATION, THE BACKHOE SHALL GRADUALLY MOVE ACROSS THE WETLAND BY MOVING THE MATS FROM IMMEDIATELY BEHIND TO IMMEDIATELY IN FRONT OF THE BACKHOE'S PATH.
8. FABRICATE PIPE IN A STAGING AREA OUTSIDE THE TYPE III WETLAND. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY, UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
9. LEAVE HARD PLUGS AT THE EDGE OF "INUNDATED WETLAND UNTIL JUST PRIOR TO PIPE PLACEMENT.
10. FLOAT PIPE IN PLACE, LOWER-IN, INSTALL TRENCH PLUGS. AND BACKFILL.
11. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
12. REMOVE ANY MATS UTILIZED TO SUPPORT AMPHIBIOUS EQUIPMENT FROM WETLANDS UPON COMPLETION.
13. WETLANDS CROSSED USING PUSH/PULL METHOD TEND TO BE TOO WET FOR EFFECTIVE SEEDING. HOWEVER, IF THE SITE IS DRY ENOUGH AND IF DIRECTED BY THE ENVIRONMENTAL INSPECTOR, THE RIGHT-OF-WAY SHALL BE SEEDED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
WCC.3 "INUNDATED WETLAND" INSTALLATION PROCEDURE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-9...

THIS DETAIL IS NOT UTILIZED IN THIS COUNTY

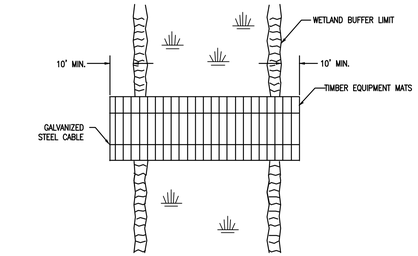


NOTES:

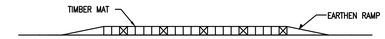
1. DEFLECTOR SHALL BE USED ON TEMPORARY ACCESS ROADS WITH SLOPES GREATER TH PERCENT. MAXIMUM DEFLECT ACING SHALL BE 100 FEET.
2. DEF SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
3. MULATED SEDIMENT SHALL BE REMOVED FROM DEFLECTOR WITHIN 24 HOURS OF INSPECTION.
4. ELT SHALL BE REPLACED WHEN WORN AND NO LONGER EFFECTIVE.
5. ***INSTALL A 2' WIDE BY 4' LONG BY 2' DEEP SUMP AND 18" COMPOST FILTER SOCK ON THE DOWNHILL SIDE OF THE WATER DEFLECTOR. THE ORIENTATION OF THE COMPOST FILTER SOCK WILL WAY BASED ON THE EXISTING GROUND ELEVATION. INSTALL THE COMPOST FILTER SOCK PARALLEL TO EXISTING CONTOURS.***

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
WD WATER DEFLECTOR



PLAN
NOT TO SCALE



PROFILE
NOT TO SCALE

NOTES:

1. PERIODICALLY CHECK INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS.
2. MATERIALS PLACED IN WETLANDS SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
3. IF A WATERBODY IS LOCATED WITHIN A WETLAND SYSTEM, EXTEND TIMBER EQUIPMENT MATS TO THE BRIDGE EQUIPMENT CROSSING (BEC) USED TO CROSS THE WATERBODY IN ORDER TO ALLOW FOR CONTINUOUS TIMBER EQUIPMENT MAT COVERAGE THROUGH THE WETLAND AND WATERBODY AREA.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. TIMBER EQUIPMENT MATS SHALL EXTEND A MINIMUM OF 10 FEET OUTSIDE OF THE WETLAND BOUNDARIES.
6. INSTALL EARTHEN RAMP APPROACHES TO TIMBER EQUIPMENT MATS. EARTHEN RAMPS TO BE CONSTRUCTED OF UPLAND MATERIAL, TOP SOIL SHALL NOT BE USED TO CONSTRUCT EARTHEN RAMPS.
7. A GEOTEXTILE UNDERLAYMENT SHALL BE USED UNDER THE WOOD MAT.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
WEC WETLAND EQUIPMENT CROSSING

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
Engineer
PE082757

SUZANNE KING REG NO. PE 082757

BLE Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	WO572385	JLK	SMK
3	*April 2017*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #2*	*WO572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

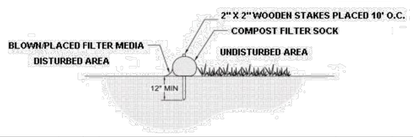
Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 3
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 11 OF 11
WO:					

TABLE 1: SEDIMENT BARRIER SUMMARY

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: JACKSON AND SUGARLOAF TOWNSHIPS, COLUMBIA COUNTY
PREPARED BY: ESS DATE: 03/25/2017
CHECKED BY: AJB DATE: 04/03/2017

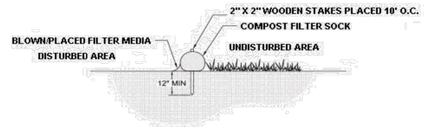


MILEPOST NO.	Dia. In.	LOCATION				SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.		END STA.	TYPE		
0	12	7+75	to	8+00	Road	2	90
	12	8+00	to	8+50		2	164
	12	8+50	to	12+00	Wetland/Stream	2	107
	24	11+75	to	19+25		6	336
	32	19+50	to	22+75		4	706
	24	23+25	to	30+50		8	318
	12	28+75	to	29+25	Wetland	4	80
	12	30+75	to	31+75	Wetland	2	125
	32	31+50	to	33+25		2	1256
	24	33+50	to	40+25		2	869
	24	41+50	to	44+75		5	442
M-0155	24	*0+00*	*to*	*2+75*		13	140
	18	*2+75*	*to*	*3+00*		13	40
	24	*4+00*	*to*	*5+50*	*Wetland/Stream*	2	56
	12	*4+75*	*to*	*5+50*		15	31
	18	*5+75*	*to*	*6+25*		8	40
1	32	*6+25*	*to*	*55+00*		14	260
	24	55+00	to	57+25		13	256
	12	57+25	to	59+25	Wetland	3	169
	12	58+75	to	60+50		2	319
	12	60+00	to	60+50	Road	4	143
	12	60+75	to	60+75	Road	4	116
	12	60+75	to	62+00	Wetland/Stream	4	109
	12	62+00	to	62+00	Road	2	350
	12	62+25	to	62+25	Road	2	350
	12	62+25	to	63+00	Wetland/Stream	2	82
	12	62+50	to	66+00		2	220
	12	65+50	to	66+25	Road	2	255
	12	65+75	to	67+75	Wetland/Stream/Road	2	209
	12	67+75	to	78+25	Stream/Road	2	131

SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: JACKSON AND SUGARLOAF TOWNSHIPS, COLUMBIA COUNTY
PREPARED BY: ESS DATE: 03/25/2017
CHECKED BY: AJB DATE: 04/03/2017

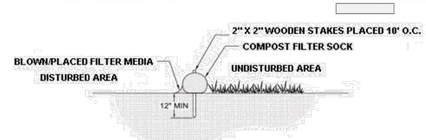


MILEPOST NO.	Dia. In.	LOCATION				SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.		END STA.	TYPE		
1	12	69+75	to	75+00		2	395
	12	74+75	to	79+75		2	197
	12	78+00	to	82+25	Road	3	83
	24	82+25	to	88+25		10	262
	18	90+00	to	90+50		8	200
	32	90+50	to	92+75		7	432
	12	92+75	to	96+75		7	179
	32	96+75	to	102+50		14	263
	12	102+75	to	104+50		17	77
	12	103+25	to	103+50	Road	9	88
	18	104+50	to	105+25	Stream	19	84
2	24	105+25	to	107+25		21	88
M-0086	12	107+25	*to*	*10+75*		7	186
	24	*10+75*	*to*	*11+50*	*Wetland/Stream*	20	170
	32	*11+50*	*to*	119+75		26	145
	12	119+50	to	119+50	Road	8	14
	12	119+75	to	123+00	Wetland/Stream	13	86
	12	129+50	to	134+25		8	115
	18	135+00	to	139+00		5	344
	12	139+00	to	139+75		4	224
	12	139+75	to	140+25	Road	3	181
	12	140+25	to	143+75		3	130
	24	144+25	to	148+75		7	303
	12	148+75	to	150+25	Road	3	141
	18	149+00	to	151+50		21	25
	18	150+25	to	154+75	Wetland/Stream	11	160
3	24	155+00	to	170+75		7	322
	12	171+75	to	172+00	Road	2	173
	18	174+75	to	178+00	Wetland/Stream	7	228
	24	177+25	to	179+00		3	761

Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: JACKSON AND SUGARLOAF TOWNSHIPS, COLUMBIA COUNTY
PREPARED BY: ESS DATE: 03/25/2017
CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION				SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.		END STA.	TYPE		
3	12	179+00	to	184+75		8	100
	32	185+00	to	191+50		6	590
	18	192+25	to	198+50		6	294
	12	195+50	to	197+50	Wetland	3	180
	12	198+50	to	201+75	Wetland/Stream	2	111
	18	201+75	to	208+25		9	236
4	18	208+50	to	212+00	Wetland	16	136
	24	212+25	to	217+25		8	209
	18	214+50	to	223+75	Wetland/Stream	11	150
	12	222+25	to	223+50	Road	2	158
	24	223+75	to	226+50		7	291
	12	224+50	to	227+75	Road	4	116
	24	227+75	to	228+75		12	217
	18	229+00	to	253+50		15	127
	12	244+75	to	248+50	Wetland/Stream	15	56
	12	250+50	to	255+50	Wetland/Stream	11	51
	18	258+50	to	263+75		4	190

SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

TABLE 3: WATERBODIES CROSSED BY CPLN PIPELINE IN COLUMBIA COUNTY

Waterbody ID	Waterbody Name	Milepost	County	Township	Stream Type	State Water Quality Use Classification - Designated Use	State Fishery Classification	Crossing Method	Crossing Window
WW-T91-15001	UNT to West Creek(WW-T91-15001)	0.21	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	N/A	January 1 through September 30
WW-T02-15002	UNT to Fishing Creek(WW-T02-15002)	0.59	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15004	UNT to Fishing Creek(WW-T02-15004)	M-0155 0.10	Columbia	Sugarloaf	Intermittent	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15006	UNT to Fishing Creek(WW-T02-15006)	1.16	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T92-150018	UNT to Fishing Creek(WW-T92-150018)	1.26	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15007	Fishing Creek(WW-T02-15007)	1.31	Columbia	Sugarloaf	Perennial	CWF, MF	Approved Trout Waters; Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15008	UNT to East Branch Fishing Creek(WW-T02-15008)	1.99	Columbia	Sugarloaf	Perennial	HQ-CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T91-15004	UNT to Coles Creek(WW-T91-15004)	M-0086 0.21	Columbia	Sugarloaf	Intermittent	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15009	UNT to Coles Creek(WW-T02-15009)	2.30	Columbia	Sugarloaf	Intermittent	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15010	Hess Hollow(WW-T02-15010)	2.87	Columbia	Sugarloaf	Perennial	HQ-CWF	Class A Wild Trout Waters;	Dam-and-Pump	April 2 through September 30
WW-T92-15001	UNT to Hess Hollow(WW-T92-15001)	2.88	Columbia	Sugarloaf	Perennial	HQ-CWF	Class A Wild Trout Waters; Wild Trout Waters	Dam-and-Pump	April 2 through September 30
WW-T02-15011	UNT to Hess Hollow(WW-T02-15011)	2.92	Columbia	Sugarloaf	Perennial	HQ-CWF	Class A Wild Trout Waters; Wild Trout Waters	Dam-and-Pump	April 2 through September 30
WW-T02-15013	UNT to Coles Creek(WW-T02-15013)	3.35	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15014	Ashelman Run(WW-T02-15014)	3.82	Columbia	Sugarloaf	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15012C	UNT to Coles Creek(WW-T02-15012C)	4.12	Columbia	Sugarloaf	Perennial	HQ-CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T02-15012	Coles Creek(WW-T02-15012)	4.13	Columbia	Sugarloaf	Perennial	HQ-CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T92-15002	UNT to Coles Creek(WW-T92-15002)	4.22	Columbia	Sugarloaf	Intermittent	HQ-CWF, MF	Wild Trout Waters	N/A	January 1 through September 30
WW-T93-15001	UNT to Marsh Run(WW-T93-15001)	4.80	Columbia	Sugarloaf	Intermittent	CWF, MF	Wild Trout Waters	N/A	January 1 through September 30
Access Roads									
~~WW-T70-12003A~~	~~UNT to Hemlock Creek(WW-T70-12003A)~~	~~AR-CO-94.1-3~~	~~Columbia~~	~~Hemlock~~	~~Perennial~~	~~CWF, MF~~	~~Wild Trout Waters~~	~~N/A~~	~~January 1 through September 30~~
~~WW-T67-13001~~	~~UNT to Green Creek(WW-T67-13001)~~	~~AR-CO-106~~	~~Columbia~~	~~Jackson~~	~~Perennial~~	~~TSF, MF~~	~~Wild Trout Waters~~	~~N/A~~	~~January 1 through September 30~~
~~WW-T17-14002~~	~~UNT to York Hollow(WW-T17-14002)~~	~~AR-CO-106-3~~	~~Columbia~~	~~Jackson~~	~~Intermittent~~	~~CWF, MF~~	~~Wild Trout Waters~~	~~N/A~~	~~January 1 through September 30~~
Water Withdrawal									
WW-T70-12006	Fishing Creek(WW-T70-12006)	M-04233.07	Columbia	Hemlock	Perennial	WWF, MF	WWCW Fisheries Streams	Water Withdrawal	June 16 through February 28
WW-T88-004	Susquehanna River(WW-T88-004)	99.63	Columbia	Catawissa	Perennial	WWF	WWCW Fisheries Streams	Water Withdrawal	June 16 through February 28

Key:
CWF = Coldwater Fishes
MF = Migratory Fishes
UNT = Unnamed Tributary

TABLE 4: WETLANDS CROSSED BY CPLN PIPELINE IN COLUMBIA COUNTY

Wetland ID	Milepost	County	Township	Wetland Classes Impacted
W-T02-15001A	0.19	Columbia	Sugarloaf	PEM
W-T02-15001C	0.21	Columbia	Sugarloaf	PFO
~~W-T02-15002~~	~~0.55~~	~~Columbia~~	~~Sugarloaf~~	~~PEM~~
W-T02-15003C	0.59	Columbia	Sugarloaf	PFO
W-T02-15003A	0.59	Columbia	Sugarloaf	PEM
W-T02-15004A	M-0155 0.08	Columbia	Sugarloaf	PEM
~~W-T02-15004C~~	~~0.93~~	~~Columbia~~	~~Sugarloaf~~	~~PFO~~
W-T02-15005	1.12	Columbia	Sugarloaf	PEM
W-T02-15006A /W-T02-15006A-1	1.17	Columbia	Sugarloaf	PEM
~~W-T02-15006A /W-T02-15006A-1~~	~~1.17~~	~~Columbia~~	~~Sugarloaf~~	~~PEM~~
W-T02-15007	1.26	Columbia	Sugarloaf	PEM
W-T02-15009C	2.29	Columbia	Sugarloaf	PFO
W-T02-15009A	2.31	Columbia	Sugarloaf	PEM
W-T02-15010C / W-T02-15010C-1 / W-T02-15010C-2	2.89	Columbia	Sugarloaf	PFO
W-T02-15010A / W-T02-15010A-1	2.90	Columbia	Sugarloaf	PEM
W-T02-15013A	3.33	Columbia	Sugarloaf	PEM
W-T02-15014C-2	3.77	Columbia	Sugarloaf	PFO
W-T02-15014A /W-T02-15014A-1 /W-T02-15014A-2	3.78	Columbia	Sugarloaf	PEM
W-T02-15015C	3.96	Columbia	Sugarloaf	PFO
W-T02-15015A	3.99	Columbia	Sugarloaf	PEM
W-T02-15012C / W-T02-15012C-2	4.15	Columbia	Sugarloaf	PFO
W-T02-15012A	4.21	Columbia	Sugarloaf	PEM
W-T02-15016C	4.66	Columbia	Sugarloaf	PFO
W-T02-15016A / W-T02-15016A-1	4.66	Columbia	Sugarloaf	PEM
~~W-T02-15016A~~	~~4.66~~	~~Columbia~~	~~Sugarloaf~~	~~PEM~~

Key:
PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-Shrub

TABLE 5: LOCATIONS OF ACID SOILS ALONG CPLN PIPELINE IN COLUMBIA COUNTY

MP Begin	MP End	County	Map Unit Symbol	pH	MP Begin	MP End	County	Map Unit Symbol	pH
0.00	0.01	Columbia	OcB2	4.80	1.70	1.86	Columbia	OcB2	4.80
0.01	0.09	Columbia	OcB2	4.80	1.86	2.01	Columbia	OcC2	4.80
0.09	0.16	Columbia	OcC2	4.80	2.01	2.07	Columbia	OcB2	4.80
0.16	0.20	Columbia	MrB	5.30	M-0086 0.00	M-0086 0.15	Columbia	OcB2	4.80
0.20	0.24	Columbia	Ln	4.80	M-0086 0.15	M-0086 0.17	Columbia	LdF	5.00
0.24	0.29	Columbia	OcD	4.80	M-0086 0.17	M-0086 0.24	Columbia	LcD	4.90
0.29	0.29	Columbia	OcB2	4.80	2.26	2.41	Columbia	LcD	4.90
0.29	0.37	Columbia	OcC2	4.80	2.41	2.44	Columbia	LcB	5.10
0.37	0.65	Columbia	OcB	4.80	2.44	2.64	Columbia	LaB2	4.90
0.65	0.81	Columbia	OcB2	4.80	2.64	2.74	Columbia	LcB	5.10
0.81	0.84	Columbia	OcC2	4.80	2.74	2.88	Columbia	LcD	4.90
0.84	0.85	Columbia	OcB2	4.80	2.88	2.96	Columbia	WhB	5.50
M-0155 0.00	M-0155 0.08	Columbia	OcB2	4.80	2.96	3.09	Columbia	LcD	4.90
M-0155 0.08	M-0155 0.15	Columbia	Ln	4.80	3.09	3.10	Columbia	LdF	5.00
M-0155 0.15	M-0155 0.16	Columbia	OcB	4.80	3.10	3.26	Columbia	LcB	5.10
1.00	1.06	Columbia	OcB	4.80	3.26	3.38	Columbia	WpD	5.30
1.06	1.09	Columbia	LdF	5.00	3.38	3.48	Columbia	Ln	4.80
1.09	1.16	Columbia	WfC2	4.90	3.48	3.67	Columbia	WnB	5.30
1.16	1.18	Columbia	Hs	6.20	3.67	3.74	Columbia	WpD	5.30
1.18	1.25	Columbia	Bd	4.80	3.74	4.09	Columbia	WnB	5.30
1.25	1.30	Columbia	Bb	5.30	4.09	4.20	Columbia	Ln	4.80
1.30	1.32	Columbia	W	Water	4.20	4.22	Columbia	WpD	5.30
1.32	1.51	Columbia	Ba	5.30	4.22	4.25	Columbia	WnB	5.30
1.51	1.59	Columbia	LdF	5.00	4.25	4.36	Columbia	WpD	5.30
1.59	1.62	Columbia	LcD	4.90	4.36	4.98	Columbia	LcD	4.90
1.62	1.70	Columbia	LdF	5.00					

NOTE: SEE THE SUPPORTING PIPELINE AND ACCESS ROAD EROSION AND SEDIMENT CONTROL NARRATIVES FOR DEFINITIONS AND DESCRIPTIONS OF THE MAP UNIT SYMBOL ABBREVIATIONS.

TABLE 6: LOCATIONS OF ACIDIC BEDROCK ALONG CPLN PIPELINE IN COLUMBIA COUNTY

Pipeline Facility/	Mile Post		Linear Distance	Bedrock Formation	Acid Potential	Karst[1]	Rock Type
	From	To					
CPL-North							
Columbia	M-0115 0.00	M-0115 0.01	0.01	Catskill Formation	Typically non-acid sulfide bearing		Sandstone, Siltstone, and Shale; conglomerate; mudstone
Columbia	0.01	0.85	0.84				
Columbia	M-0155 0.00	M-0155 0.16	0.16				
Columbia	1.00	2.07	1.07				
Columbia	M-0086 0.00	M-0086 0.24	0.24				
Columbia	2.26	4.95	2.69				
		Subtotal	**5.01**				

Note: 1) No carbonate bedrock along CPLN alignment.

SUZANNE KING REG NO. PE 082757
BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	*April 2017*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #2*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 30" CENTRAL PENN LINE NORTH
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
COLUMBIA COUNTY, PENNSYLVANIA
QUANTITY, CROSSING AND ACIDIC SOIL TABLES

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: J
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: 24-1601-70-28-A/1683_3-BMP-CO-TB	SHEET 1 OF 2
WO:					

Drawn By & Date/Time: tdelo Apr 28, 2017 – 10:02am
Drawing Location & Name: G:\JOBS\14_14C\14C4909\DWG\BMP&DETAILS\PL_DN14C4909(10)_CO-TB.dwg

TABLE 7: RESOURCE SPECIFIC AVOIDANCE AND MINIMIZATION MEASURES

Resource Type (Stream or Wetland)	Resource Name	Resource ID	MP	Chapter 93 Classification, Wetland Classification	Stream Type (Perennial, Intermittent, Ephemeral)	Stream Trout Status (Class A Wild Trout, Wild Trout, Trout Stocked)	Wetland (Cowardin Classification)	Limits of Disturbance (LOD) Adjustments (Supporting Information for Technical Deficiency #29)	Field Routing Adjustments within 600-foot Wide Corridor (Supporting Information for Technical Deficiency #15)*	Stream Bank Stabilization BMP	Width of Erosion Control Blanket Required for Stream Bank Stabilization (ft)
Wetland	N/A	W-T02-15001A/ W-T02-15001C	0.20	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15001.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Fishing Creek	WW-T91-15001	0.21	CWF, MF	Perennial	Wild Trout Waters	R3	WW-T91-15001 encroaches within the southern margin of the LOD. The LOD at this location was reduced to 75 feet to minimize impacts to the adjacent wetland W-T02-15001A. Further LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and to avoid crossing the stream channel with the pipeline.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15002	0.55	None	N/A	N/A	PEM	The LOD has been modified to eliminate impacts to W-T02-15002.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T02-15003A/ W-T02-15003C	0.59	EV	N/A	N/A	PEM, PFO	LOD has been reduced to 80' to minimize impacts to W-T02-15003. Further LOD reduction was not possible due to the adjacent stream.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Fishing Creek	WW-T02-15002	0.59	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15002.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15004A/ W-T02-15004C	M-0155 0.08	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T02- 15004. The LOD reduction also results in the elimination of impacts to the forested portion of the wetland (W-T02-15004C).	The pipeline was routed in this location to parallel an existing pipeline ROW. The route was adjusted in the field to crossover the existing pipeline in order to cross the wetland at a perpindicular angle and to avoid the forested portion of the wetland (W-T02-15004C).	N/A	50
Stream	UNT to Fishing Creek (WW-T02-15004)	WW-T02-15004	M-0155 0.10	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T02-15004.	The pipeline was routed in this location to parallel an existing pipeline ROW. The route was adjusted in the field to crossover the existing pipeline in order to cross the stream at a perpindicular angle in an area where the riparian corridor has been partially cleared by the existing pipeline.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15005	1.12	None	N/A	N/A	PEM	W-T02-15005 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed at this location to crossover the existing pipeline from the north to the south side. The crossover was necessary to align the pipeline for a perpendicular crossing of stream WW-T02-15007. Workspace requirements for the crossover make avoidance of W-T02-15005 infeasible. Additionally, the crossover location was selected to avoid impact to stream WW-T91-15003.	N/A	N/A
Stream	UNT to Fishing Creek	WW-T02-15006	1.16	CWF, MF	Perennial	Wild Trout Waters	R3	Per justification provided for wetland W-T02-15006 crossing, LOD reduction not possible at this crossing.	The pipeline was routed at this location to avoid impacts to stream WW-T91-15003 and avoid impacts to the forested portions of wetland W-T02-15006. The pipeline was also routed to maintain colocation with the existing pipeline.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15006A / W-T02-15006A-1	1.17	EV	N/A	N/A	PEM	LOD was adjusted to avoid impacting the forested portion of this wetland (W-T02-15006C). Full LOD reduction to 75' was not possible because additional workspace is needed to successfully complete the road crossing of Camp Lavigne Rd. due to the confined workspace between the road and environmental features. The additional workspace will provide storage for spoil within the wetland and will result in less impact than transporting material to a stockpile area outside the wetland.	The pipeline was routed at this location to avoid impacts to stream WW-T91-15003 and avoid impacts to the forested portions of wetland W-T02-15006. The pipeline was also routed to maintain colocation with the existing pipeline.	N/A	N/A
Stream	UNT to Fishing Creek	WW-T92-15001B	1.26	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T92-15001B.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15007	1.26	EV	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15007.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	Fishing Creek	WW-T02-15007	1.31	CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	R3	Full ROW width needed to complete a safe and efficient crossing of this large stream.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	UNT to Fishing Creek	WW-T02-15008	1.99	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15008.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15008A/ W-T02-15008B/ W-T02-15008C	2.12	None	N/A	N/A	PEM, PSS, PFO	LOD has been modified to eliminate impacts to W-T02-15008.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	UNT to Coles Creek	WW-T91-15004	M-0086 0.21	CWF, MF	Intermittent	Wild Trout Waters	R4	Full ROW width needed to accommodate adjacent PI's.	The pipeline was rerouted in this location to deviate from the existing ROW in order to avoid a documented population of northeastern bulrush, a threatened species, in wetland W-T02-15008. The pipeline crosses perpendicular to stream WW-T91-15004 on a route to resume colocation with the existing pipeline.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15009A/ W-T02- 15009C	2.26	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' for the portion of W-T02- 15009 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland encroaching on the northern end of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Coles Creek	WW-T02-15009	2.29	CWF, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 75' to minimize impacts to WW-T02-15009.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Stream	Hess Hollow	WW-T02-15010	2.87	HQ-CWF	Perennial	Class A Wild Trout Waters;	R3	LOD has been reduced to 75' to minimize impacts to WW-T02-15010.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	UNT to Hess Hollow	WW-T92-15001	2.88	HQ-CWF	Perennial	Class A Wild Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T02-15001.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T02-15010A/ W-T02-15010C	2.89	EV	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15010.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Hess Hollow	WW-T02-15011	2.92	HQ-CWF	Perennial	Class A Wild Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T02-15011.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T02-15013A	3.33	EV	N/A	N/A	PEM	W-T02-15013A does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Coles Creek	WW-T02-15013	3.35	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15013.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15014A / W-T02- 15014A-1 / W-T02- 15014A-2/ W-T02-15014C-2	3.77	EV	N/A	N/A	PEM, PFO	The majority of W-T02-15014 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland. A crossover of the existing pipeline was considered to reduce impacts, but was not adopted as this would result in greater impacts to the forested portion of the wetland.	N/A	N/A
Stream	Ashelman Run (WW-T02-15014)	WW-T02-15014	3.82	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15014.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15015A/ W-T02-15015C	3.96	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T02-15015.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland. A crossover of the existing pipeline was considered to reduce impacts, but was not adopted as this would result in greater impacts to the forested portion of the wetland.	N/A	N/A
Stream	UNT to Coles Creek	WW-T02-15012C	4.12	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15012C.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Stream	Coles Creek	WW-T02-15012	4.13	HQ-CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T02-15012.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this stream.	SBR with SC150 fabric	100
Wetland	N/A	W-T02-15012A/ W-T02-15012C / W-T02-15012C-1 / W-T02-15012C-2	4.15	EV	N/A	N/A	PEM, PFO	LOD has been reduced to 75' and 80' for the portion of W-T02-15012 that crosses the full width of the LOD. Additional LOD reduction for the portion of the wetland encroaching on the northern end of the LOD would only be possible in the adjacent upland area and would not result in additional minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland. A crossover of the existing pipeline was considered to reduce impacts, but was not adopted as this would result in greater impacts to the forested portion of the wetland. The proposed alignment also avoids impacts to stream WW-T02-15012A.	N/A	N/A
Stream	UNT to Coles Creek	WW-T92-15002	4.22	HQ-CWF, MF	Intermittent	Wild Trout Waters	R4	Full ROW width needed to complete a safe and efficient crossing of this stream and adjacent wetland.	The pipeline was routed in this location to parallel existing ROW.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15016A/ W-T02- 15016C	4.66	None	N/A	N/A	PEM, PFO	W-T02-15016 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland.	N/A	N/A
Stream	UNT to Marsh Run (WW-T93-15001)	WW-T93-15001	4.80	CWF, MF	Intermittent	Wild Trout Waters	R4	WW-T93-15001 does not extend across the full width of the LOD. An LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of stream impacts.	The pipeline was routed in this location to parallel existing ROW.	SBR with SC150 fabric	50
Wetland	N/A	W-T02-15016A-1/ W-T02-15016C	4.80	EV	N/A	N/A	PEM, PFO	W-T02-15016 does not extend across the full width of the LOD. Since the wetland width within the LOD is less than 75', the FERC Procedures do not require LOD reduction. In addition, an LOD reduction at this location would only be possible in the adjacent upland area and would not result in minimization of wetland impacts.	The pipeline was routed in this location to parallel existing ROW and provides a perpendicular crossing of this wetland. A crossover of the existing pipeline was considered to reduce impacts, but was not adopted as this would result in greater impacts to the forested portion of the wetland. The proposed alignment also avoids impacts to stream WW-T02-15015.	N/A	N/A

Note:
*The FERC Alignment Sheets provided in Attachment H-1 show field delineated streams and wetlands within the 300-foot wide environmental survey corridor, and surrounding land use features on an aerial base map.

TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY

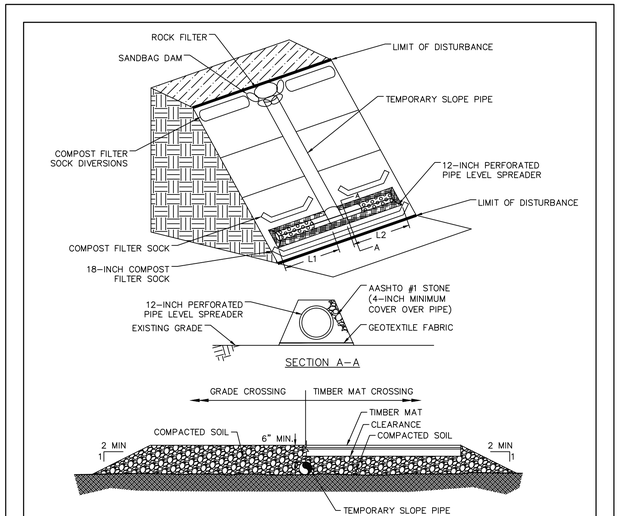
TEMPORARY DIVERSION SUMMARY - COLUMBIA COUNTY, PENNSYLVANIA																		
	DIVERSION										WATERBODY**				TEMPORARY PIPE		
MILE POST	DIVERSION ID	DIVERSION TYPE	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING	PERMANENT LINING	DISCHARGE TYPE	INITIAL AND TERMINAL WIDTH (FT)	LENGTH (FT)	RIP RAP SIZE***	RIP RAP THICKNESS (IN)	R.O.W. SLOPE (%)	Q (CFS)	# OF 12" DIAMETER PIPES
0																	
	0.01	FILTER SOCK	0	1.6	7.9	0	5	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	6	5.92	1
2																	
	2.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	1.6	1
3																	
	3.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	5	6.72	1
	3.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	9	6.24	1
4																	
	4.01	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	23	5.12	1
	4.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	20	5.76	1
	4.03A	FILTER SOCK	0	1.6	7.1	0	4.5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	4.96	1
	4.03B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	16	5.44	1
	4.03C	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	15	7.20	1
	4.04A	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	14	8.00	1
	4.04B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	4.00	1
	4.04C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	18.40	2
	4.04D	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	11	7.84	1
	4.05A	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	12	8.00	1
	4.05B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	7.52	1
	4.05C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	5.92	1
	4.05D	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	8	5.12	1
	4.06	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	7	5.76	1

*High Quality or Exceptional Value watershed
** Diversion End Treatment to Stream or Wetland
*** Sizing was determined using maximum allowable velocity outlined in Table 6.6 of the PA DEP Erosion and Sediment Pollution Control Program Manual, dated March 2012
Drainage Area > 5 acres due to valley/drainage ditch
Drainage Area > 5 acres due to wetlands

Columbia County - North
Temporary Perforated Pipe Level Spreader Calculations

MILE POST	DIVERSION ID	Q (CFS)	AVAILABLE STATIC HEAD (FT)	LEVEL SPREADER PIPE DIAMETER (IN.)	PERFORATION DIAMETER (IN.)	NUMBER OF PERFORATIONS PER ROW	ORIFICE AREA PER FOOT (IN^2/FT)	ROW SPACING (IN.)	ORIFICE COEFFICIENT (Cd)	LEVEL SPREADER CAPACITY PER FOOT OF LENGTH (CFS / FT)	REQUIRED LENGTH (FT)	NOMINAL LENGTH (FT)	OVERALL LEVEL SPREADER CAPACITY (CFS)
0													
	0.01	5.92	8	12	0.375	6	4.10	1.94	0.61	0.394	15.02	20	7.88
2													
	2.01	1.6	6	12	0.375	6	4.10	1.94	0.61	0.341	4.69	5	1.71
3													
	3.01	6.72	7	12	0.375	6	4.10	1.94	0.61	0.369	18.22	20	7.38
	3.02	6.24	9	12	0.375	6	4.10	1.94	0.61	0.418	14.92	15	6.27
4													
	4.01	5.12	25	12	0.375	6	4.10	1.94	0.61	0.697	7.35	10	6.97
	4.02	5.76	17	12	0.375	6	4.10	1.94	0.61	0.575	10.02	15	8.62
	4.03A	4.96	13	12	0.375	6	4.10	1.94	0.61	0.503	9.87	10	5.03
	4.03B	5.44	13	12	0.375	6	4.10	1.94	0.61	0.503	10.83	15	7.54
	4.03C	7.20	13	12	0.375	6	4.10	1.94	0.61	0.503	14.33	15	7.54
	4.04A	8.00	13	12	0.375	6	4.10	1.94	0.61	0.503	15.92	20	10.05
	4.04B	4.00	11	12	0.375	6	4.10	1.94	0.61	0.462	8.65	10	4.62
	4.04C	9.20	10	12	0.375	6	4.10	1.94	0.61	0.441	20.87	25	11.02
	4.04D	7.84	7	12	0.375	6	4.10	1.94	0.61	0.369	21.26	25	9.22
	4.05A	8.00	8	12	0.375	6	4.10	1.94	0.61	0.394	20.29	25	9.86
	4.05B	7.52	7	12	0.375	6	4.10	1.94	0.61	0.369	20.39	25	9.22
	4.05C	5.92	5	12	0.375	6	4.10	1.94	0.61	0.312	19.00	20	6.23
	4.05D	5.12	12	12	0.375	6	4.10	1.94	0.61	0.483	10.60	15	7.24
	4.06	5.76	9	12	0.375	6	4.10	1.94	0.61	0.418	13.78	15	6.27

NOTE:
1. FLOWS HIGHLIGHTED YELLOW HAVE MORE THAN ONE PIPE, AND THEREFORE, THE FLOW HAS BEEN DIVIDED ACCORDINGLY.
2. DESIGN AND CALCULATIONS PROVIDED BY STV ENERGY SERVICES, INC.



TEMPORARY SLOPE PIPE CROSSING
NO SCALE

NOTES:

1. LEVEL SPREADER PIPES TO BE 12-INCH JM EAGLE EAGLE CORR PE PERFORATED PIPE (OR APPROVED EQUAL) AND SHALL BE CAPPED AT BOTH ENDS.
2. LEVEL SPREADER TO BE INSTALLED PARALLEL TO CONTOURS AT LEVEL ELEVATION.
3. PERFORATED PIPE TO BE UNDERLAIN WITH GEOTEXTILE FABRIC AND COVERED WITH AASHTO NO. 1 STONE. MINIMUM STONE COVER SHALL BE 4-INCHES OVER PERFORATED PIPE.
4. ALL LEVEL SPREADER STONE WILL BE REMOVED AND DISTURBED AREA TO BE RESTORED IN ACCORDANCE WITH E&S PLAN.
5. LEVEL SPREADERS TO BE INSTALLED AT ALL TEMPORARY SLOPE PIPE DISCHARGES AT LOW POINTS OF DIVERSION BERM.
6. LEVEL SPREADERS TO BE INSPECTED WEEKLY OR AFTER MEASURABLE RAINFALL EVENT AND SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES.
7. TOTAL REQUIRED LEVER SPREADER LENGTH TO BE L1 + L2.
8. DESIGN AND CALCULATIONS PROVIDED BY STV ENERGY SERVICES, INC.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
STANDARD ENVIRONMENTAL DETAIL
CWC
CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL HEATH KEARNEY ENGINEER No. PE086042
HEATH KEARNEY REG NO. PE 086042
ENGINEER OF RECORD FOR TEMPORARY PERFORATED PIPE LEVEL SPREADER DESIGN AND CALCULATIONS

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL SUZANNE MARIE KING ENGINEER PE082757
SUZANNE KING REG NO. PE 082757
BL Companies ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 30" CENTRAL PENN LINE NORTH
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
COLUMBIA COUNTY, PENNSYLVANIA
QUANTITY, CROSSING AND ACIDIC SOIL TABLES
Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: J
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: 24-1601-70-28-A/1683_3-BMP-CO-TB	SHEET 2 OF 2
WO:					

Drawn By & Date/Time: omall May 01, 2017 - 11:00am
Drawing Location & Name: G:\JOBS\14\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(10)_CO-TB.dwg