

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

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

LENOX TOWNSHIP

SUSQUEHANNA COUNTY

BMP DETAIL SUMMARY

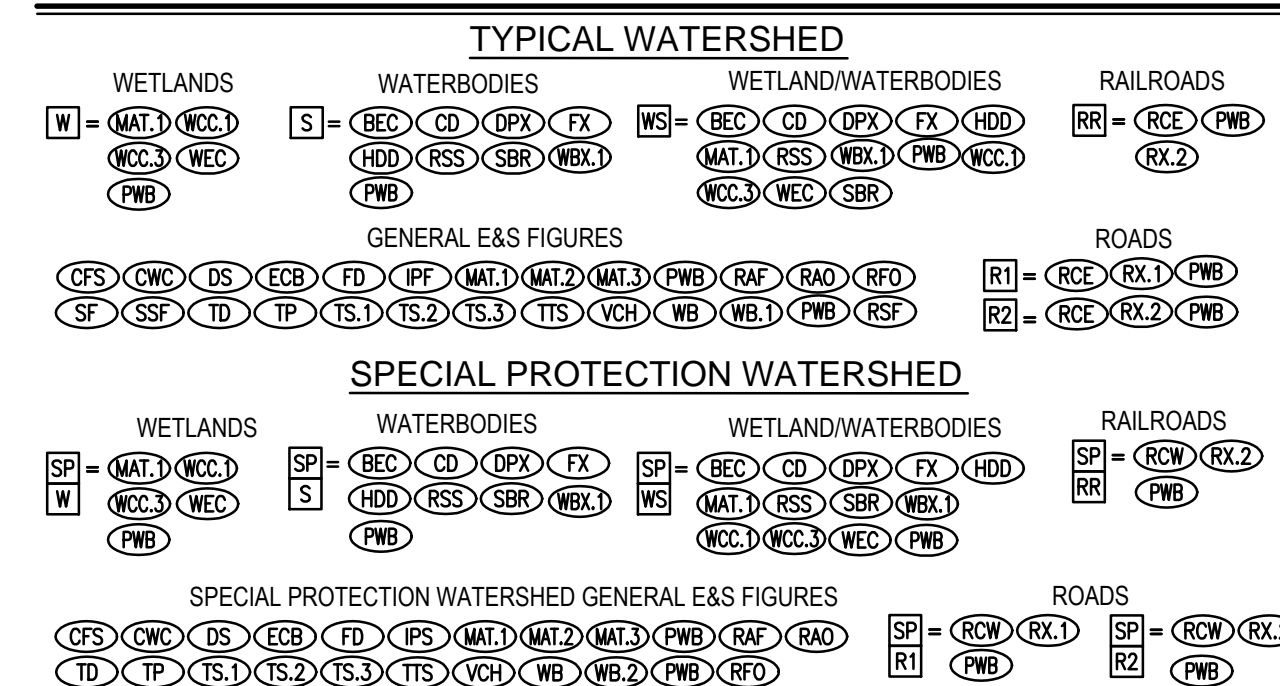
FIGURE	FIGURE TITLE	SHEET NO.	
ARF	ABACT ROCK FILTER	1	
BBD	BROAD-BASED DIP		
BEC	BRIDGE EQUIPMENT CROSSING		
CD	COFFERDAM STREAM CROSSING		
CDM	CHECK DAM	2	
CFS	COMPOST FILTER SOCK		
CS	CLEANOUT STAKE		
CST	COMPOST SOCK SEDIMENT TRAP		
CWC	CLEAN WATER CROSSING	3	
DPX	DAM AND PUMP STREAM CROSSING		
DS	HYDROSTATIC DEWATERING STRUCTURE		
ECB	EROSION CONTROL BLANKET		
FD	FILTER SOCK DIVERSION		
FEN	CONSTRUCTION FENCE		
FX	FLUME STREAM CROSSING		
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	6	
RAP	RIP RAP GRADATION		
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		
RX.1	TRENCHED ROAD CROSSING		7
RX.2	BORED ROAD/RAILROAD CROSSING		
SBR	STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET		
SF	STANDARD SILT FENCE (18" HIGH)		
SSF	SUPER SILT FENCE (33" HIGH)	8	
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	11	
WCC.1	WETLAND INSTALLATION PROCEDURE		
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

DRAWING NUMBER	SHEET NO.	DRAWING NAME
24-1601-70-28-A/1683_3-BMP	1-1	COVER SHEET
ASR-BMP-GN	1-3	GENERAL NOTES
ASR-BMP	1-11	BEST MANAGEMENT PRACTICES STANDARD CONSTRUCTION DETAILS
24-1600-70-28-A/1683_3-BMP-SU-TB	1-3	QUANTITY, CROSSING, AND ACIDIC SOIL TABLES

E&S DETAIL GROUP LEGEND FOR PIPELINE CROSSINGS



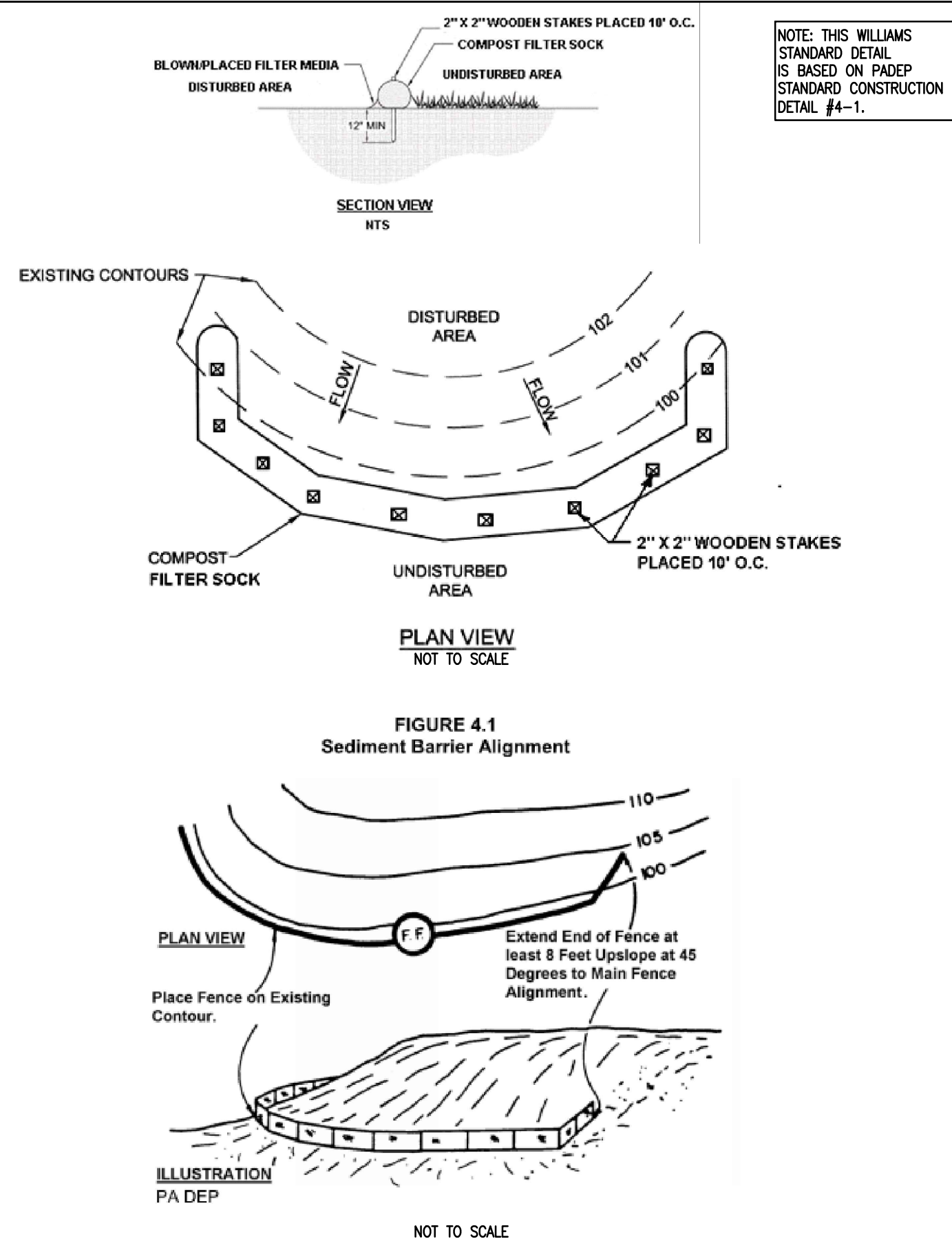
DETAILS IN THIS LEGEND ARE NOT COMPREHENSIVE AND ONLY REFER TO BMPs RELATED TO PIPELINE CROSSINGS. ADDITIONAL BMPs ARE PROVIDED FOR ACCESS ROADS.
E&S DETAIL GROUP LEGEND IS ALSO PROVIDED ON THE PIPELINE E&S PLANS. LEGEND IS SHOWN HERE FOR COORDINATION PURPOSES.



REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/26/2015	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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT PROPOSED 30" CENTRAL PENN LINE NORTH PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET SUSQUEHANNA COUNTY, PENNSYLVANIA			
COVER SHEET			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	CONSTRUCTION	SCALE:	
DRAWING NUMBER:	24-1601-70-28-A/1683_3-BMP	SHEET:	1
REVISION:		OF:	1





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

FIGURE 4.1 Sediment Barrier Alignment

NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				

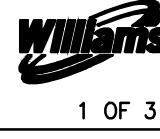


TABLE 4.1 COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

Material Type	3 mil HDPE	5 mil HDPE	8 mil HDPE	Multi-Filament Polypropylene (MFPP)	Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12", 18"	12", 18", 24"	12", 18", 24", 32"	12", 18", 24", 32"	12", 18", 24", 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	3/8"
Tensile Strength		26 psi	26 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	6 months	6 months	1 year	2 years

Two-ply systems: HDPE biaxial net, Continuously wound, Fusion-welded junctures, 3/4" X 3/4" Max. aperture size. Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch), 3/16" Max. aperture size.

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:
- 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.)
 - 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.
 - TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
 - 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.
 - 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.
 - BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
 - 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.
 - 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	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				

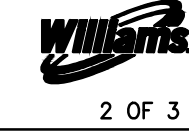
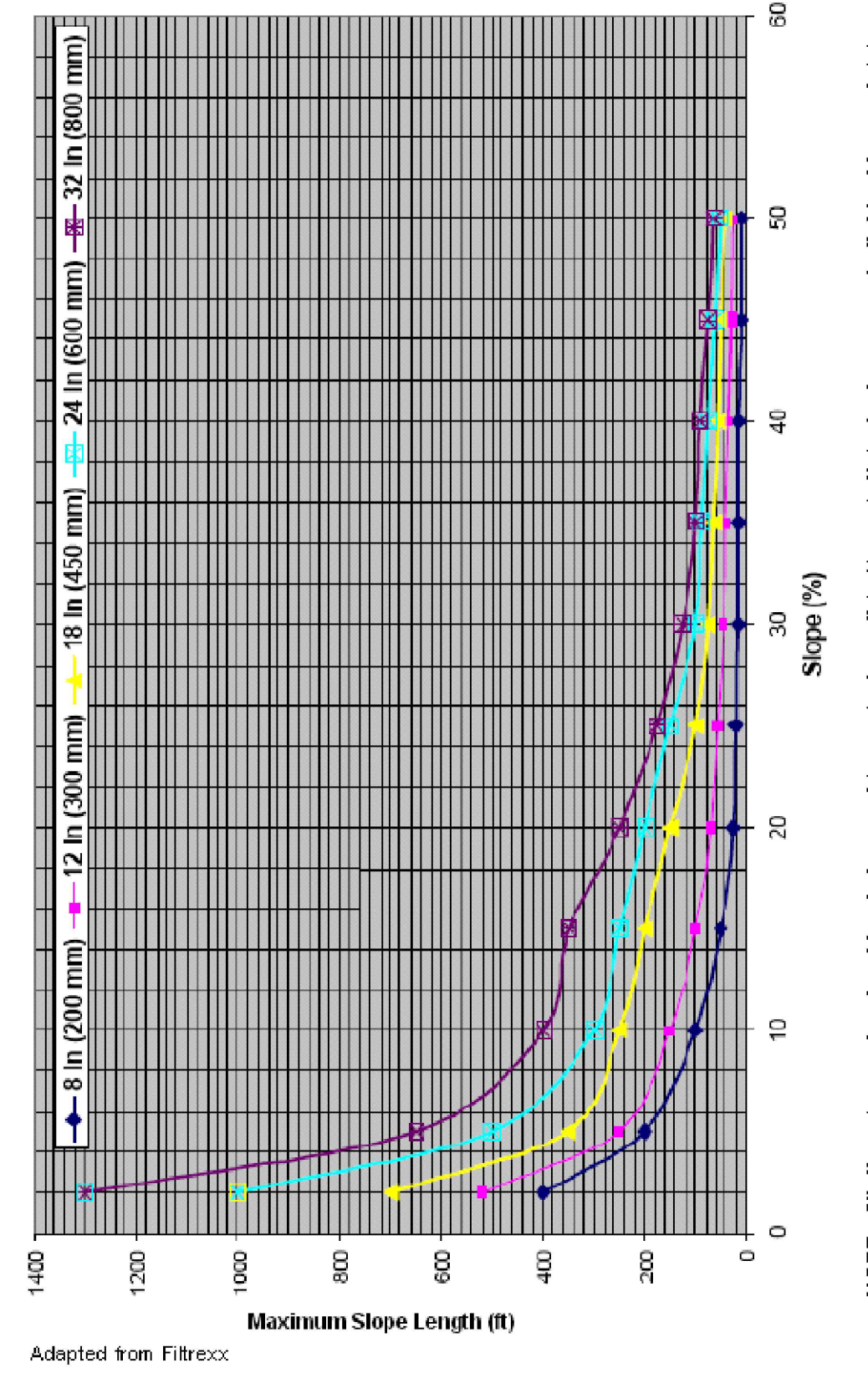
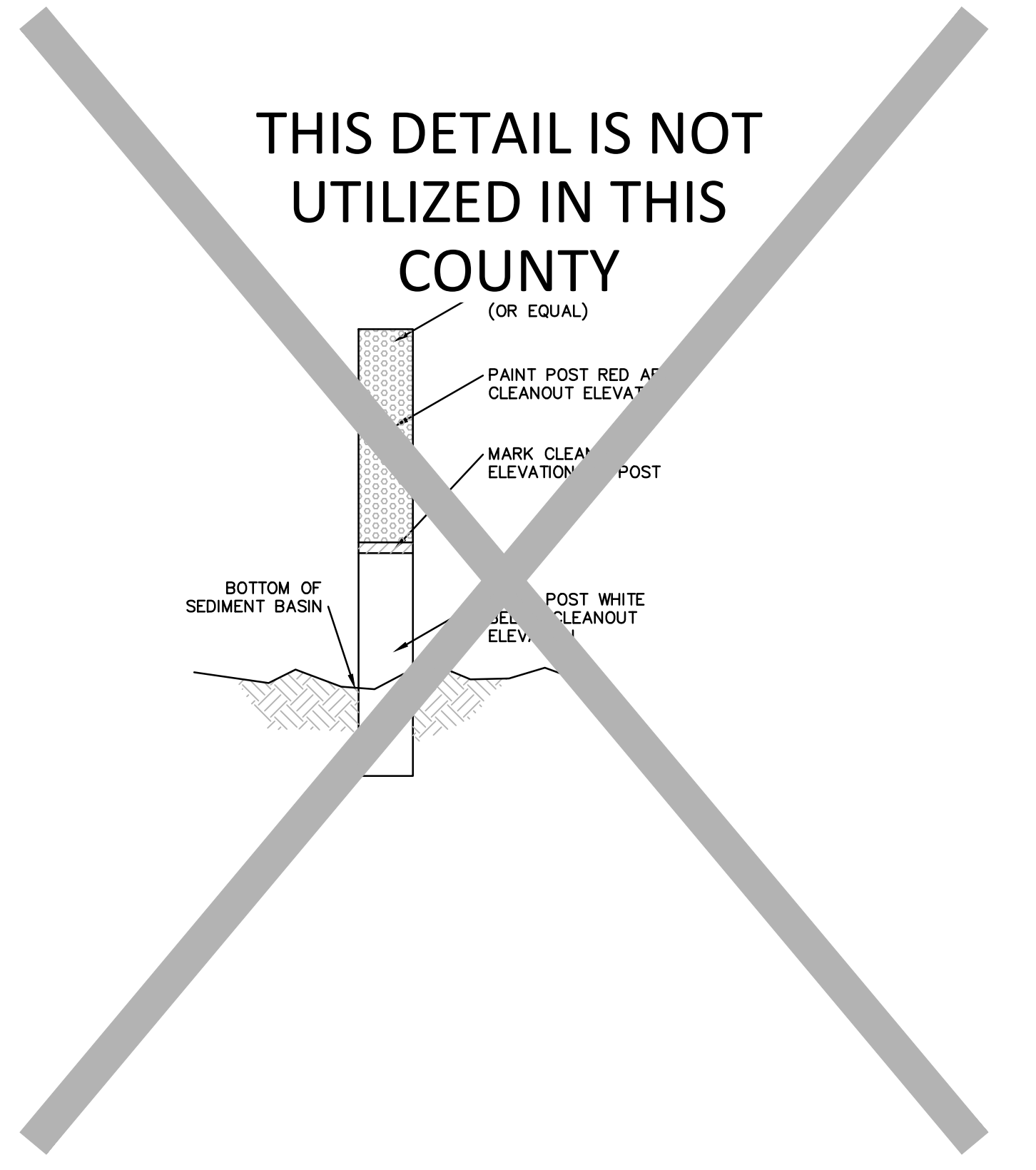


FIGURE 4.2 MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



NOTE: 8" diameter socks should only be used to control small (< 1/4 acre) disturbed areas on individual house lots.

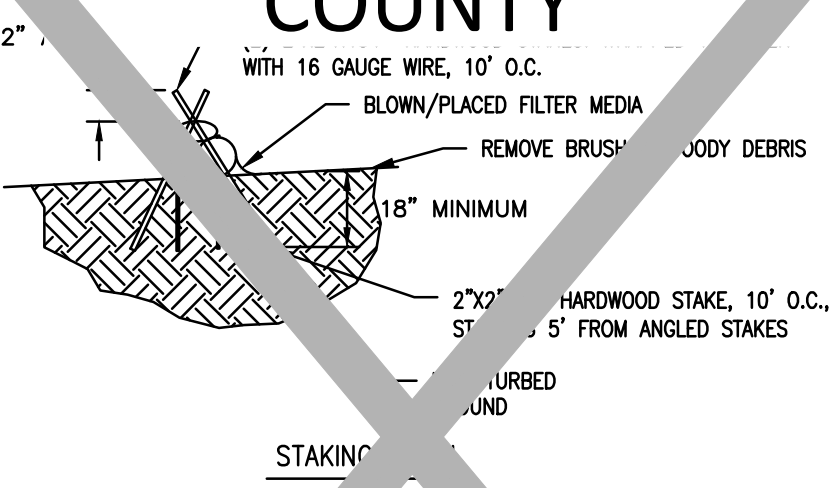
NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CFS) COMPOST FILTER SOCK				



NO.	DATE	BY	REVISION DESCRIPTION	NO.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CS) CLEANOUT STAKE				



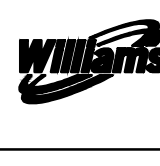
THIS DETAIL IS NOT UTILIZED IN THIS COUNTY



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

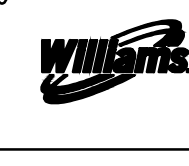
- NOTES:
- SEE COMPOST FILTER SOCK (CFS) DETAIL FOR MORE INFORMATION. SOCK MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2.
 - COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP, EXTENDING 1 TO 3 FEET UPSLOPE OF THE SUMP.
 - THE MAXIMUM TRIBUTARY DRAINAGE AREA SHALL BE 0.5 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH" NO SPILLWAY IS REQUIRED.
 - COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SOCKS.
 - PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.
 - DESIGN NOTES:
 - COMPOST SOCK SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2,000 CUBIC FEET OF STORAGE CAPACITY PER 12" FREEBOARD FOR EACH AC TRIBUTARY TO THE TRAP.
 - MINIMUM BASE WIDTH IS EQUIVALENT TO THE HEIGHT.
 - SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
 - SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS, AS INDICATED TO THE LEFT.
 - 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	NO.	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

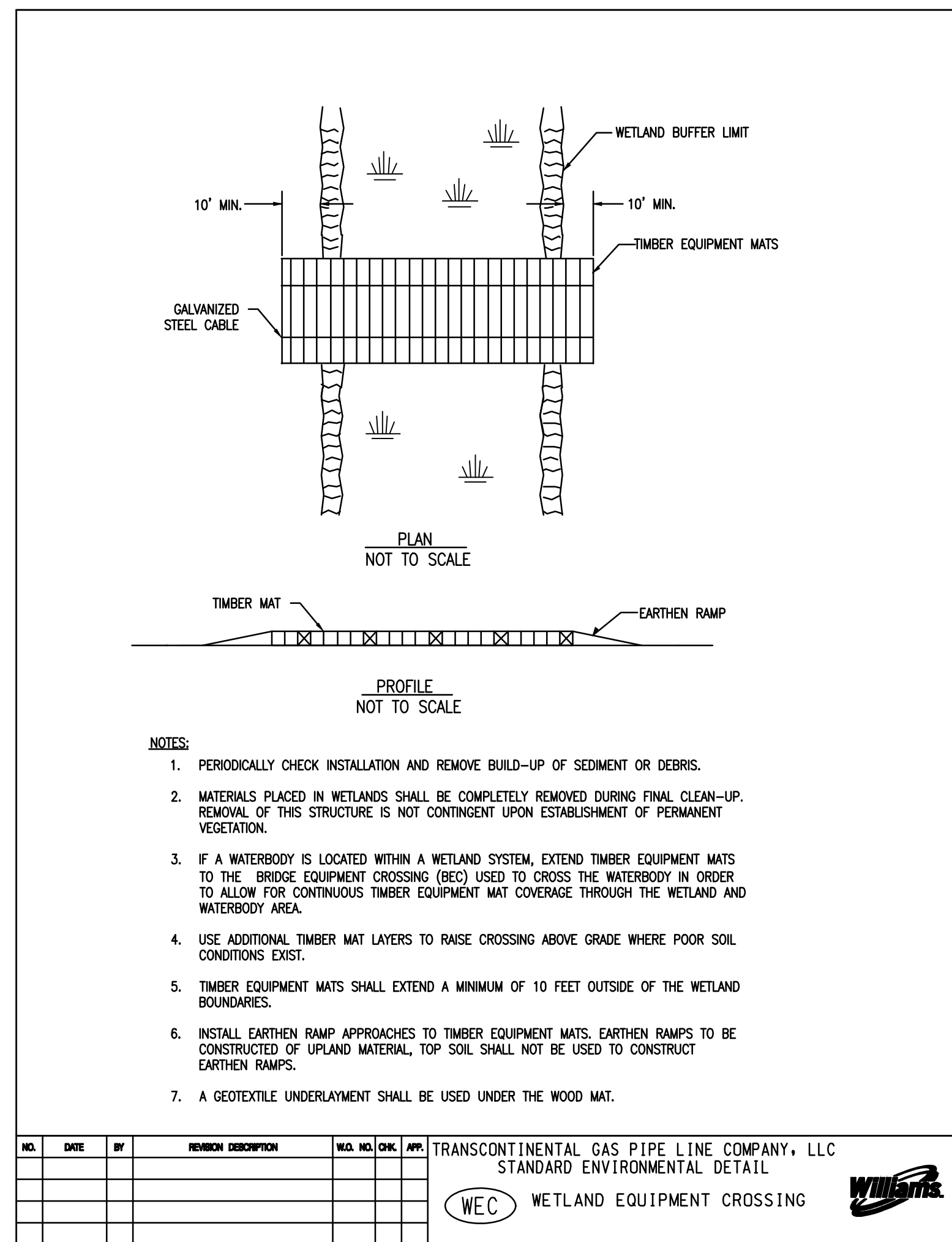
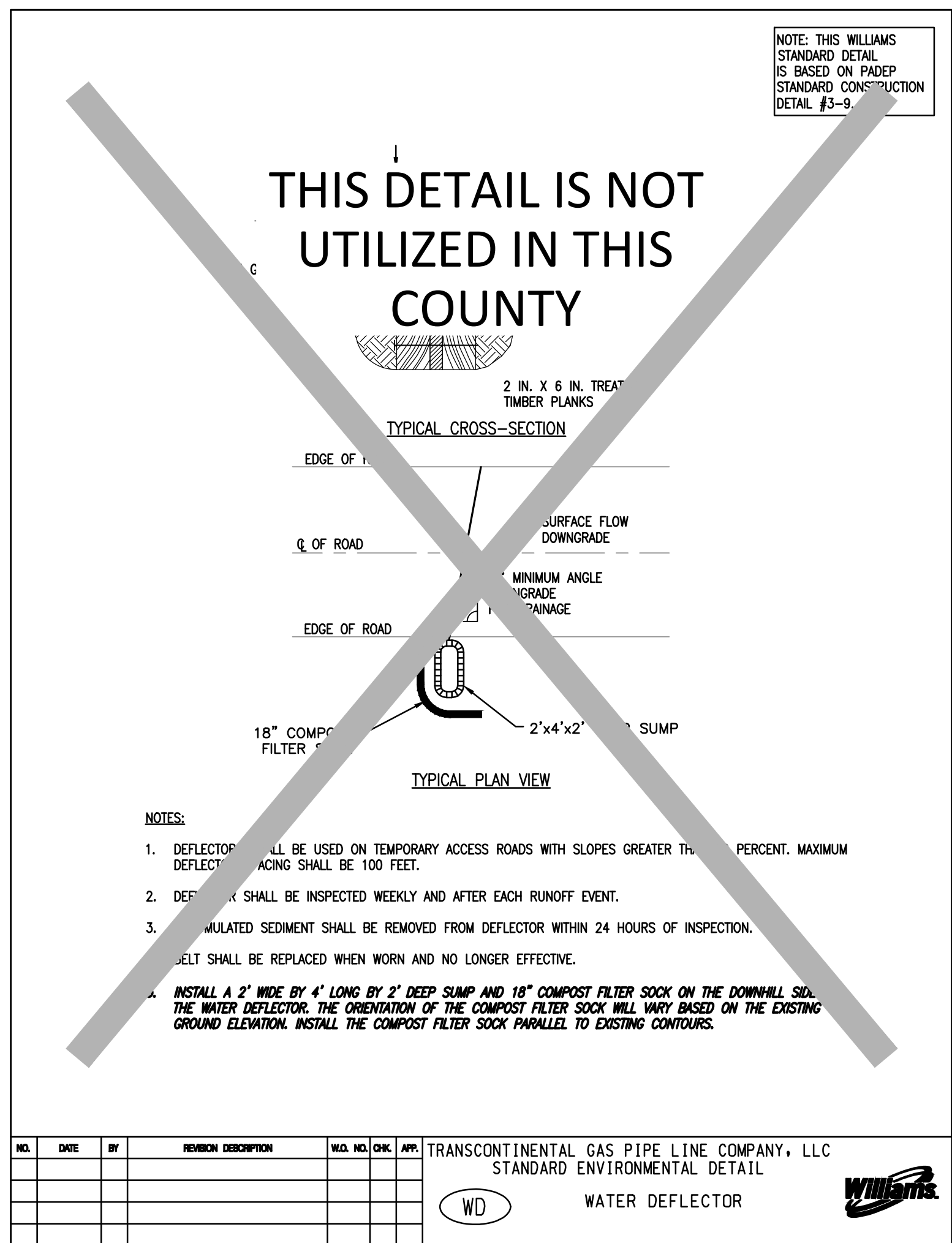
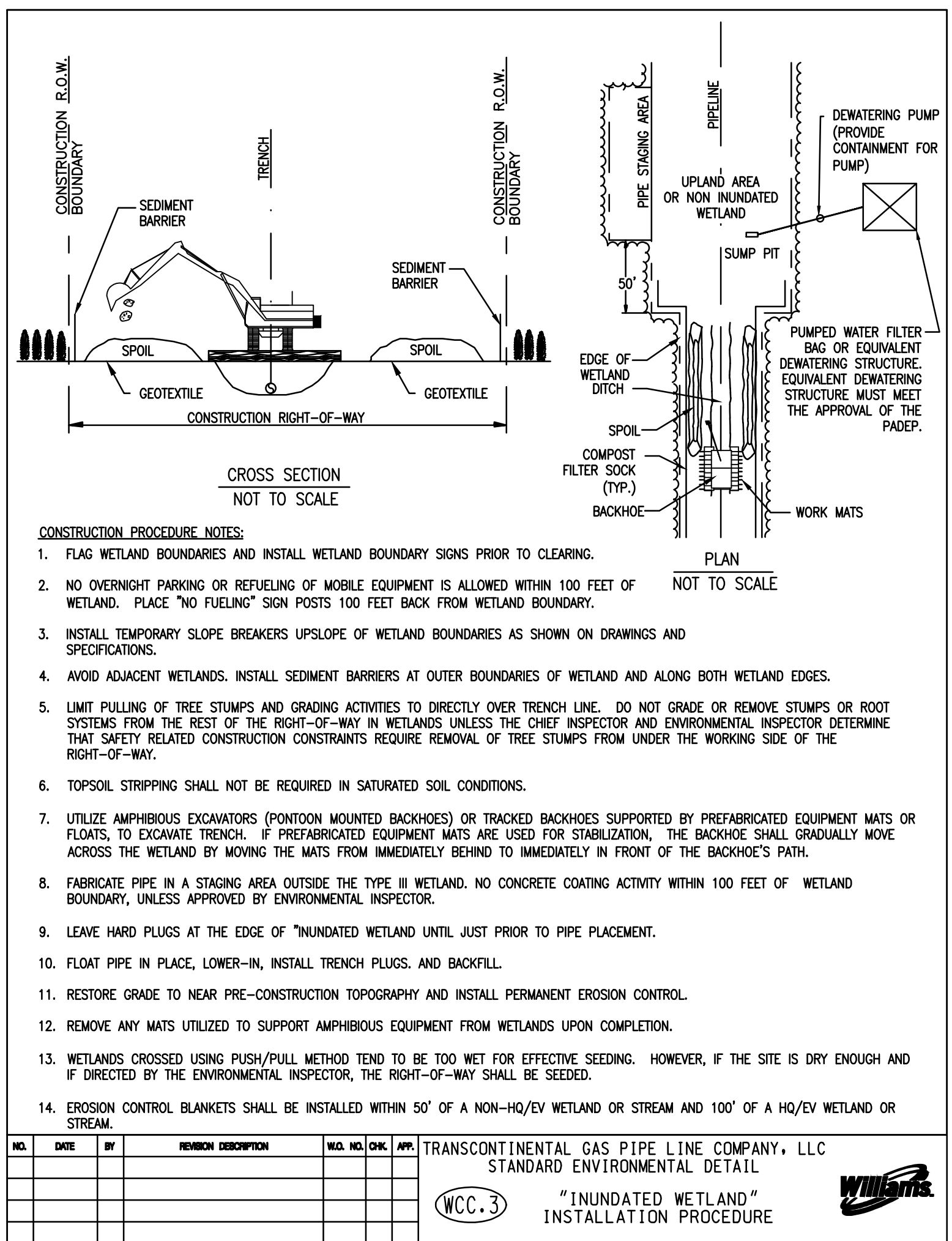
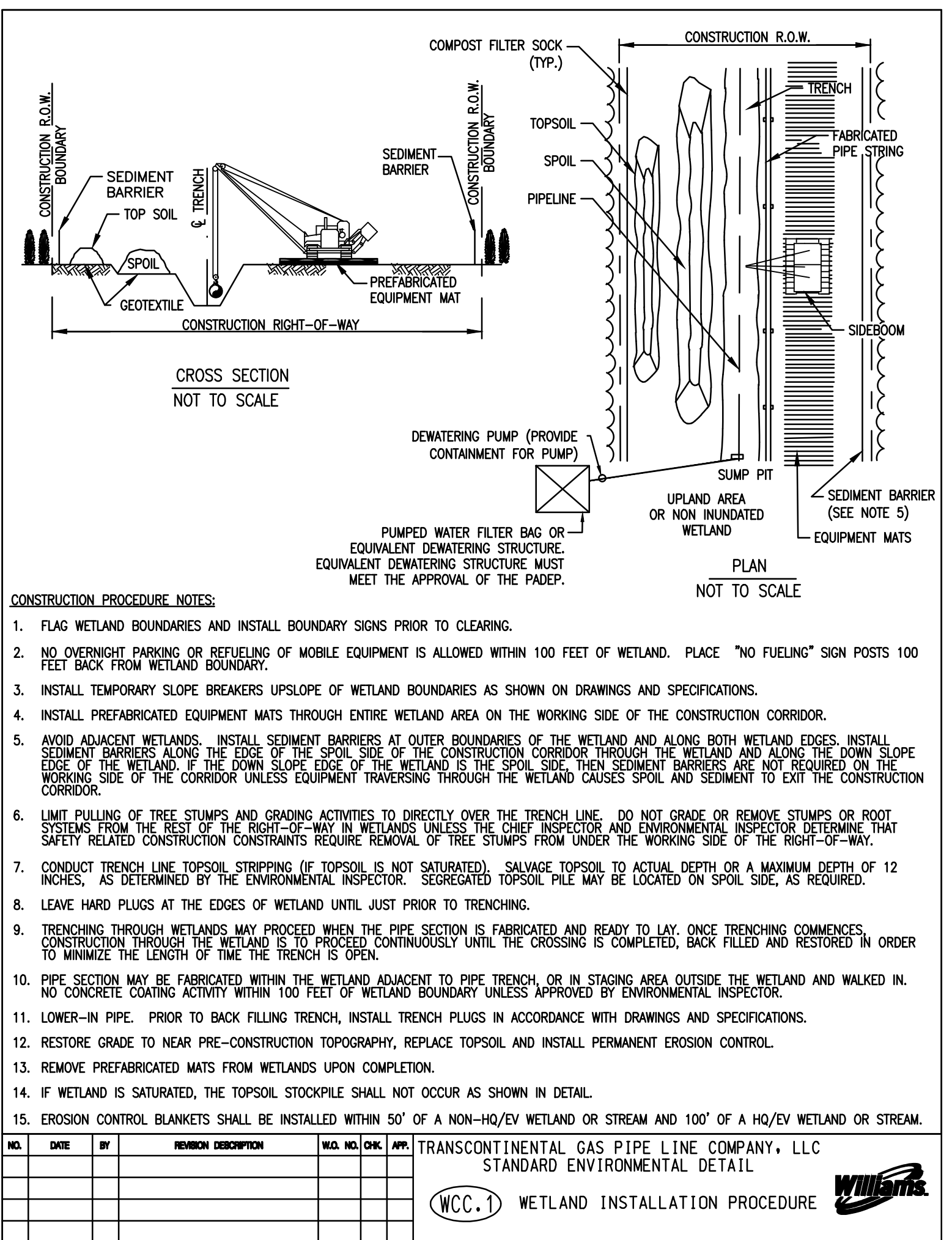
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			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(CWC) CLEAN WATER CROSSING				



REVISIONS							
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.	
0	08/26/2015	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	
4	AUG 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #3	W0572385	JLK	SMK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	CONSTRUCTION	ISSUED FOR:	CONSTRUCTION
DRAWING NUMBER:	ASR-BMP	REVISION:	4
SHEET:	2	OF:	11





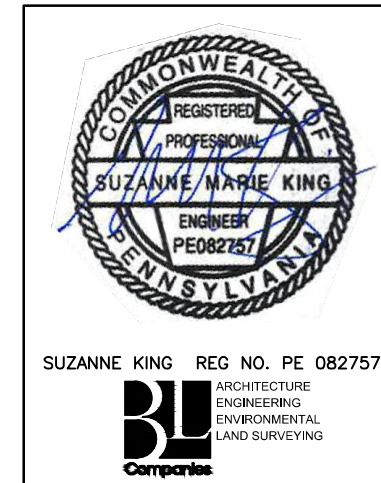
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			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WCC-1) WETLAND INSTALLATION PROCEDURE				

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WCC-3) "INUNDATED WETLAND" INSTALLATION PROCEDURE				

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WD) WATER DEFLECTOR				

NO.	DATE	BY	REVISION DESCRIPTION	W.D.	NO.	CHK.	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC STANDARD ENVIRONMENTAL DETAIL				
			(WEC) WETLAND EQUIPMENT CROSSING				

Drawn By & Date/Time: CScanzello Jul 27, 2017 - 4:34pm
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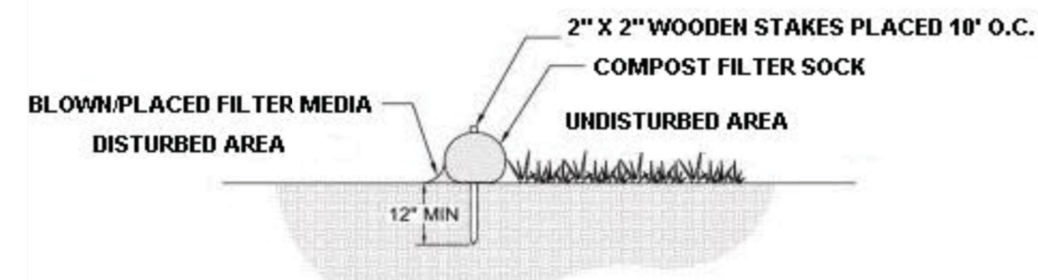
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL		W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1		W0572385	JLK	SMK
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2		W0572385	JLK	SMK
4	AUG 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #3		W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC				ATLANTIC SUNRISE PROJECT			
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET				BEST MANAGEMENT PRACTICES DETAILS			
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:		SCALE:	
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:	4
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER:	ASR-BMP	SHEET	11
W.D.:						OF	11



TABLE 1: SEDIMENT BARRIER SUMMARY

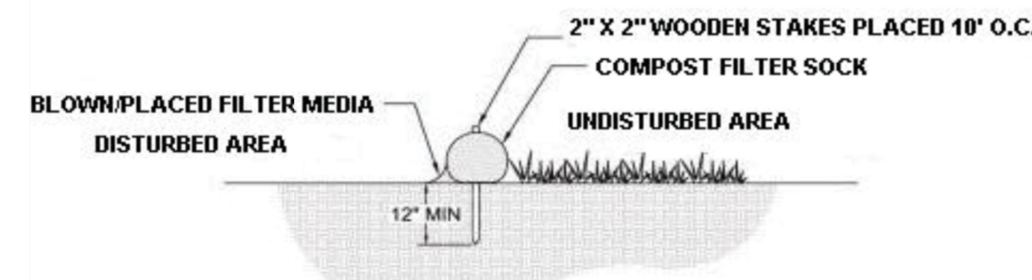
E&S WORKSHEET #1
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: LENOX TOWNSHIP, SUSQUEHANNA COUNTY
 PREPARED BY: ESS DATE: 03/25/2017
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
50	12	2670+50	to 2674+00		5	102
	24	2674+00	to 2675+00		9	107
	12	2675+25	to 2676+75		6	84
	24	2677+00	to 2677+75		14	87
	12	2677+75	to 2684+00		4	203
	12	2679+25	to 2679+50		4	83
	12	2679+50	to 2679+50	Road	4	83
	12	2685+75	to 2686+25	Road	2	82
	24	2686+50	to 2687+50		8	172
	12	2687+75	to 2693+00	Road	7	98
51	12	2688+00	to 2693+00		9	77
	12	2693+25	to 2694+50		6	140
	24	2694+50	to 2702+50		15	151
	12	2702+50	to 2711+25		8	120
	12	2711+50	to 2714+50	Stream	23	14
	24	2712+00	to 2716+00		14	134
	12	2718+00	to 2718+75	Wetland	9	89
	24	2718+75	to 2728+75		16	153
	24	2728+00	to 2729+50	Stream	26	103
	24	2729+50	to 2734+00		13	204
	18	2734+00	to 2744+75		13	200
52	24	2744+75	to 2749+75		13	85
	12	2750+00	to 2753+00		5	204
	24	2754+00	to 2758+00		22	84
	32	2758+25	to 2763+75	Wetland	20	224
	24	2763+75	to 2764+50		31	93
	12	2764+75	to 2765+50	Stream	3	25
	12	2765+25	to 2766+75		14	60
	12	2766+75	to 2768+25	Road	12	15
	24	2767+25	to 2780+25		9	150
	12	2780+50	to 2780+50	Road	17	23
	24	2781+25	to 2787+00		11	132
	18	2787+50	to 2794+50		3	328
53	24	2794+50	to 2803+50		7	126
	24	2794+75	to 2795+00	Wetland	7	378
	24	2795+25	to 2796+00	Wetland	7	378
	12	2803+50	to 2812+00		7	103
	24	2812+25	to 2814+25		10	113

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

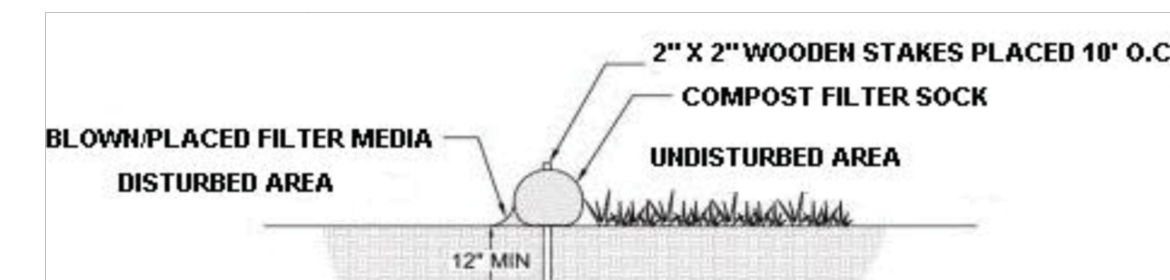
E&S WORKSHEET #1
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: LENOX TOWNSHIP, SUSQUEHANNA COUNTY
 PREPARED BY: ESS DATE: 03/25/2017
 CHECKED BY: AJB DATE: 04/03/2017



MILEPOST NO.	Dia. In.	LOCATION			SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
		BEGIN STA.	END STA.	TYPE		
53	24	2814+25	to 2815+25	Wetland	10	114
	24	2815+25	to 2818+00		12	88
	24	2818+00	to 2819+00		21	143
	12	2819+00	to 2819+75	Stream	14	24
	12	2819+75	to 2822+00		14	25
	18	2820+00	to 2822+75	Road	17	110
	12	2822+75	to 2822+75	Road	9	19
	24	2823+25	to 2823+25	Road	5	470
	24	2823+25	to 2830+00		5	440
	24	2830+00	to 2837+50		4	142
	12	2837+00	to 2837+75	Wetland	3	211
	12	2838+00	to 2838+75		2	258
	24	2839+50	to 2841+75		7	168
	12	2842+50	to 2844+25		10	61
	24	2844+25	to 2844+50	Road	15	15
54 M-0067	24	2844+50	to 2856+75	MOC-0067/Wetland/Stream	27	89
	12	2857+00	to 2858+75	Wetland/Stream	10	110
	24	2858+50	to 2870+75		8	161
	12	2870+75	to 2871+75	Wetland	5	176
	12	2871+75	to 2878+25		7	150
	12	2878+25	to 2891+25		2	100
	12	2891+25	to 2891+50	Road	8	30
	12	2891+50	to 2892+50	Road	5	187
	12	2891+50	to 2898+00		5	212
55	24	2898+00	to 2909+00		25	105
	12	2909+00	to 2910+25	Wetland/Stream	16	45
	12	2910+25	to 2911+25		17	40
	24	2915+75	to 2919+75		8	181
	12	2920+00	to 2921+50		7	120
	12	2921+75	to 2923+00		6	142
	12	2923+00	to 2928+25	Wetland	5	89
	24	2928+25	to 293800		3	120
M-0061	24	2928+25	to 2940		10	87
	18	2942+50	to 2942+50	Wetland/Stream	5	286
	24	2939+75	to 2939+75		18	82
	18	2939+75	to 2942+50		15	116
	12	2942+50	to 2942+50	Road	17	12
	12	2942+75	to 2943+00	Road	15	63

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

E&S WORKSHEET #1
 PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
 LOCATION: LENOX TOWNSHIP, SUSQUEHANNA 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		
55	18	2943+00	to 2946+25		14	122
M-0062	32	2946+25	to 9+25		9	352
56	24	2947+75	to 2952+50	Wetland	7	375
	18	2964+00	to 2965+25		16	175
	12	2967+50	to 2969+50		11	65
	24	2969+50	to 2971+50		15	74
	18	2971+50	to 2973+25		19	116
	24	2975+50	to 2990+75		13	113
	12	2990+75	to 2997+25	Wetland/Stream	7	114
	24	2994+75	to 2996+75		7	153
	24	2997+00	to 2998+75		7	150
	12	2999+00	to 3000+50	Wetland/Stream	5	110
	24	3000+50	to 3007+50		7	138
57	18	3007+75	to 3011+25		13	192
	12	3011+50	to 3011+50	Road	17	22
	12	3011+75	to 3011+75	Road	14	17
	12	3011+75	to 3013+00		15	90
	24	3013+00	to 3017+75		15	136
	12	3017+50	to 3018+00	Stream	12	22
	24	3018+00	to 3018+50		11	251

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

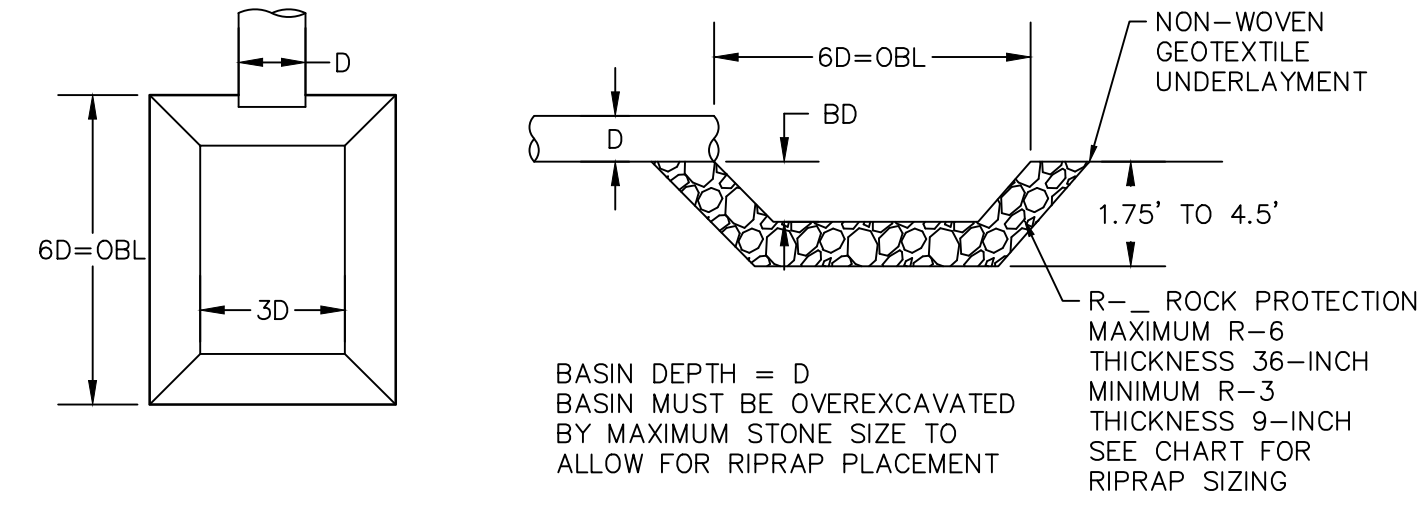
TABLE 6: LOCATIONS OF ACID SOILS ALONG CPLN PIPELINE IN SUSQUEHANNA COUNTY

MP Begin	MP End	County	Map Unit Symbol	pH	MP Begin	MP End	County	Map Unit Symbol	pH
50.59	50.66	Susquehanna	LkR2	5.50	54.13	54.16	Susquehanna	MgD	5.50
50.66	50.80	Susquehanna	LoB	5.50	54.16	54.42	Susquehanna	VxB	6.00
50.80	50.84	Susquehanna	LxD	5.40	54.42	54.45	Susquehanna	MgD	5.50
50.84	50.92	Susquehanna	WxD	5.50	54.45	54.64	Susquehanna	VfB	5.50
50.92	51.01	Susquehanna	WfC2	5.30	54.64	54.71	Susquehanna	MfB2	5.80
51.01	51.05	Susquehanna	MfC2	5.30	54.71	54.81	Susquehanna	VfB2	5.40
51.05	51.11	Susquehanna	WfD2	5.30	54.81	54.99	Susquehanna	LoB	5.50
51.11	51.30	Susquehanna	MfC2	5.30	54.99	55.03	Susquehanna	LxD	5.40
51.30	51.37	Susquehanna	MfB2	5.30	55.03	55.08	Susquehanna	LoB	5.50
51.37	51.44	Susquehanna	WfD	5.50	55.08	55.1	Susquehanna	LxD	5.40
51.44	51.48	Susquehanna	LxD	5.40	55.1	55.13	Susquehanna	MgD	5.50
51.48	51.52	Susquehanna	MfC2	5.50	55.13	55.17	Susquehanna	VfB	5.50
51.52	51.65	Susquehanna	MfC2	5.20	55.17	55.3	Susquehanna	MfB2	5.80
51.65	51.67	Susquehanna	MfC2	5.50	55.3	55.47	Susquehanna	VfB2	5.60
51.67	51.75	Susquehanna	WfD2	5.30	M-0061.0.00	M-0061.0.02	Susquehanna	VfB2	5.60
51.75	51.97	Susquehanna	MfC2	5.30	M-0061.0.02	M-0061.0.05	Susquehanna	VfC	6.00
51.97	52.00	Susquehanna	WfC2	5.30	M-0061.0.05	M-0061.0.09	Susquehanna	MfB	5.50
52.00	52.02	Susquehanna	MfC2	5.30	M-0061.0.09	M-0061.0.15	Susquehanna	VfB	5.50
52.02	52.20	Susquehanna	WfC2	5.30	M-0061.0.15	M-0061.0.16	Susquehanna	WfC2	5.30
52.20	52.26	Susquehanna	WfD2	5.20	55.63	55.86	Susquehanna	WfC2	5.30
52.26	52.34	Susquehanna	VfD2	5.90	M-0062.0	M-0062.0.02	Susquehanna	WfC2	5.30
52.34	52.37	Susquehanna	Bc	4.80	M-0062.0.02	M-0062.0.07	Susquehanna	WfC2	4.90
52.37	52.48	Susquehanna	MfC2	5.30	M-0062.0.07	M-0062.0.12	Susquehanna	WfB2	5.30
52.48	52.74	Susquehanna	MfC2	5.50	M-0062.0.12	M-0062.0.17	Susquehanna	WfC2	4.90
52.74	52.84	Susquehanna	MfB2	5.80	M-0062.0.17	M-0062.0.20	Susquehanna	MfB2	5.20
52.84	52.99	Susquehanna	VfB2	5.60	M-0062.0.20	M-0062.0.26	Susquehanna	WfC2	5.30
52.99	53.06	Susquehanna	WfB2	5.30	56.1	56.11	Susquehanna	WfC2	5.30
53.06	53.08	Susquehanna	LfC2	5.40	56.11	56.19	Susquehanna	LfB	6.80
53.08	53.14	Susquehanna	MfB2	5.80	56.19	56.21	Susquehanna	VfB	5.50
53.14	53.26	Susquehanna	MfC2	5.50	56.21	56.3	Susquehanna	MfB2	5.30
53.26	53.39	Susquehanna	VfC2	5.50	56.3	56.35	Susquehanna	LfD	5.40
53.39	53.44	Susquehanna	WfB	5.80	56.35	56.45	Susquehanna	MfB	5.80
53.44	53.52	Susquehanna	LfC2	5.40	56.45	56.47	Susquehanna	MfB2	5.80
53.52	53.69	Susquehanna	WfB2	5.30	56.47	56.51	Susquehanna	VfB	5.50
53.69	53.70	Susquehanna	LfC2	5.40	56.51	56.58	Susquehanna	VfB	6.00
53.70	53.78	Susquehanna	WfB2	5.30	56.58	56.64	Susquehanna	MfC2	5.50
53.78	53.79	Susquehanna	WfB	5.50	56.64	56.77	Susquehanna	VfB	6.00
53.79	53.81	Susquehanna	WfB2	5.30	56.77	56.85	Susquehanna	WfB	5.80
53.81	53.83	Susquehanna	LfB2	5.50	56.85	56.94	Susquehanna	MfC2	5.50
53.83	53.87	Susquehanna	LfC2	5.40	56.94	57.06	Susquehanna	MfC2	5.50
53.87	53.89	Susquehanna	MfC2	5.50	57.06	57.14	Susquehanna	MfB2	5.30
53.89	53.90	Susquehanna	VfC2	5.50	57.14	57.17	Susquehanna	WfB2	5.30
M-0067.0.00	M-0067.0.15	Susquehanna	VfC2	5.50	57.17	57.21	Susquehanna	WfB2	5.30
54.05	54.07	Susquehanna	VfC2	5.50	57.21	57.28	Susquehanna	MfB2	5.30
54.07	54.13	Susquehanna	MfB	5.50	M-0119.0.01	M-0119.0.01	Susquehanna	MfB2	5.30

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

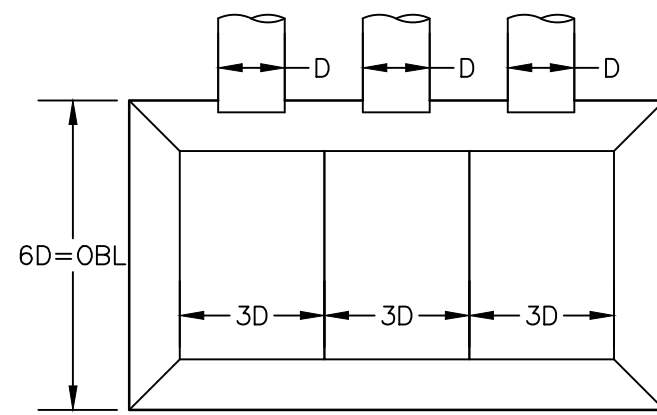
TABLE 3: WATERBODIES CROSSED BY CPLN PIPELINE IN SUSQUEHANNA COUNTY

Waterbody ID	Waterbody Name	Milepost	County	Township	Stream Type	State Water Quality Use Classification - Designated Use	State Fishery Classification	Crossing Method	Crossing Window
WW-T30-21001	UNT to Willow Brook (WW-T30-21001)	51.35	Susquehanna	Lenox	Perennial	CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T12-21004A	UNT to Willow Brook (WW-T12-21004A)	51.68	Susquehanna	Lenox	Intermittent	CWF, MF	Wild Trout Waters		



SINGLE PIPE SEDIMENT TRAP OUTLET BASIN

PIPE DIAMETER (D)	Basin Length (GD)	Basin Inside Width (3D)	Basin Depth (BD)
12"	6'	3'	1'
18"	9'	4.5'	1.5'



MULTIPLE PIPE SEDIMENT TRAP OUTLET BASIN

PIPE DIAMETER (D)	Basin Length (GD)	Basin Inside Width (3D)	Basin Depth (BD)
12"	6'	*	1'
18"	9'	*	1.5'

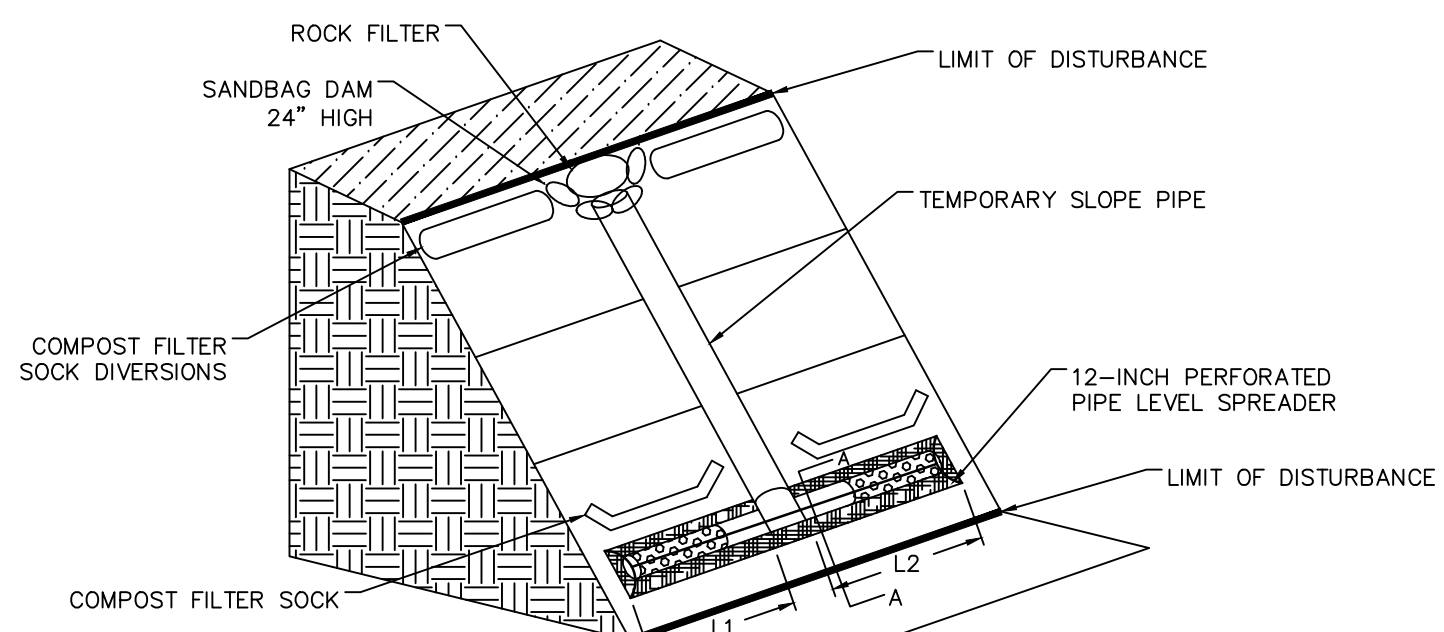
* Basin Inside Width is 3 x Diameter (FT) x # of Pipes

STANDARD CONSTRUCTION DETAIL #8-6
SEDIMENT TRAP OUTLET BASIN DETAIL
NO SCALE

NOTES:

1. ALL SEDIMENT TRAP OUTLET BASINS SHALL BE INSPECTED ON AT LEAST A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT.
2. DISPLACED RIPRAP WITHIN THE OUTLET BASIN SHALL BE REPLACED IMMEDIATELY.
3. SIDE SLOPES SHALL NOT EXCEED 1.5H:1V.
4. IF NOT ON LEVEL GROUND, AREA NEAR PIPE SHALL BE EXCAVATED TO MAKE GENERALLY LEVEL TRAP.
5. RIPRAP WILL BE REMOVED AND DISTURBED AREA TO BE RESTORED IN ACCORDANCE WITH E AND S PLAN.
6. RIPRAP WILL HAVE NON-WOVEN GEOTEXTILE UNDERLAYMENT BETWEEN THE STONE AND THE SOIL.
7. CONTRACTOR SHALL USE SEDIMENT TRAP OUTLET BASIN WHEN FIELD CONDITIONS PREVENT THE EFFECTIVENESS OF THE LEVEL SPREADER.
8. DESIGN AND CALCULATIONS PROVIDED BY STV ENERGY SERVICES, INC.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC STANDARD ENVIRONMENTAL DETAIL			
			CWC CLEAN WATER CROSSING (OUTLET BASIN DETAIL STANDARD CONSTRUCTION DETAIL #8-6)			

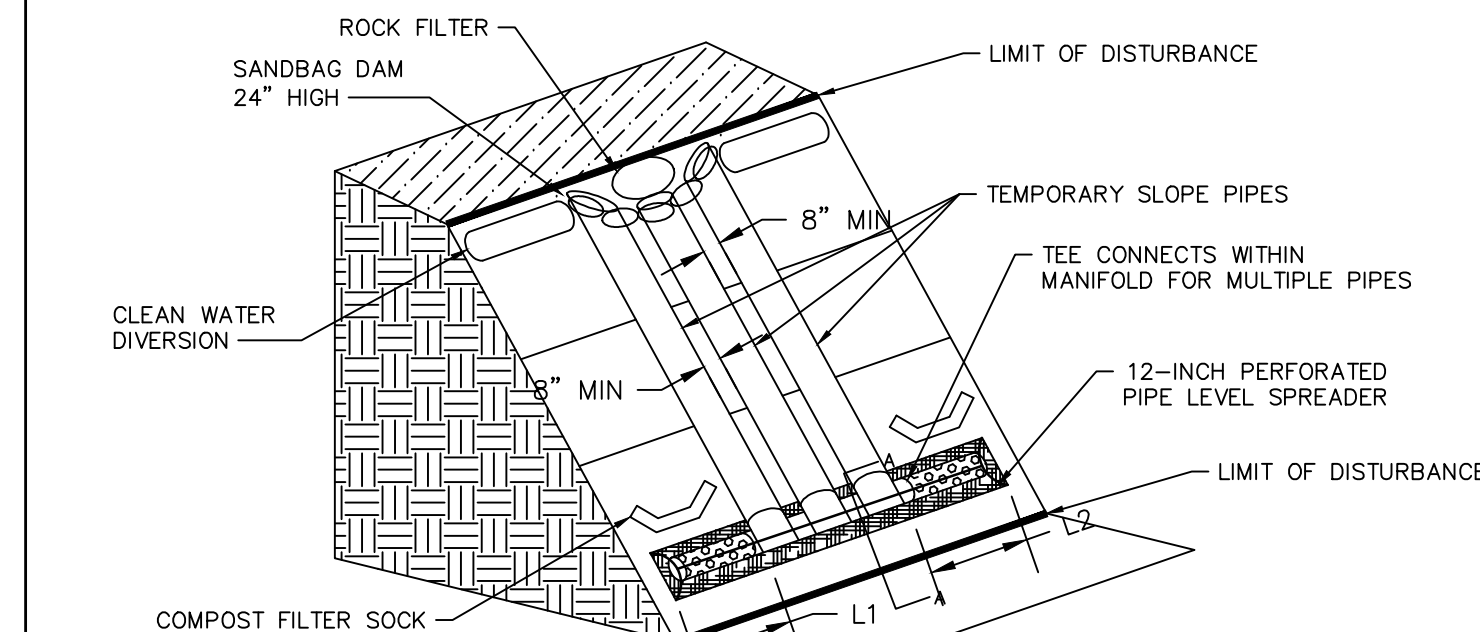


TEMPORARY SLOPE PIPE CROSSING
NO SCALE

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. THE EDGE TO EDGE DIMENSION OF THE MULTIPLE SLOPE PIPES IS CALLED OUT AS A MINIMUM AND MAY BE INCREASED TO FACILITATE INSTALLATION OF SANDBAGS, T-CONNECTIONS, AND ACCESS ACROSS THE SLOPE PIPES.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC STANDARD ENVIRONMENTAL DETAIL			
			CWC CLEAN WATER CROSSING (TEMP. LEVEL SPREADER)			



TEMPORARY MULTIPLE PIPE LEVEL SPREADER DETAIL
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. THE EDGE TO EDGE DIMENSION OF THE MULTIPLE SLOPE PIPES IS CALLED OUT AS A MINIMUM AND MAY BE INCREASED TO FACILITATE INSTALLATION OF SANDBAGS, T-CONNECTIONS, AND ACCESS ACROSS THE SLOPE PIPES.

NO.	DATE	BY	REVISION DESCRIPTION	NO.	CHK	APP.
			TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC STANDARD ENVIRONMENTAL DETAIL			
			CWC CLEAN WATER CROSSING (TEMP. MULTIPLE PIPE LEVEL SPREADER)			

Susquehanna County
Temporary Perforated Pipe Level Spreader Calculations

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 WIDTH (FT)	TERMINAL WIDTH (FT)	LENGTH (FT)	RIP RAP SIZE*** (IN)	RIP RAP THICKNESS (IN)	R.O.W. SLOPE (%)	Q (CFS)	TEMPORARY PIPE SIZE DIAMETER (IN)	# OF PIPES
50	50.04	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	1	4	12	1
50	50.05	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	2.4	12	1
50	50.06A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	2	7.2	12	2
50	50.06B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	2	2.24	12	1
50	50.07	FILTER SOCK	0	1.25	8.75	0	7	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	7	1.76	12	1
51	51.01	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	21.28	12	4
51	51.02A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	5	7.2	12	2
51	51.02B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	10	6.08	12	2
51	51.03A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	6.24	12	2
51	51.03B	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	6.08	12	2
51	51.04A	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	12	3.52	12	1
51	51.04B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	12	7.2	12	2
51	51.04C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	14	5.6	12	1
51	51.05	FILTER SOCK	0	1	8.0	0	8	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	13	0.8	12	1
51	51.06A	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	15	4.32	12	1
51	51.06B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	7.68	12	2
51	51.06C	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.08	12	2
52	52.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	7	2.4	12	1
53	53.01A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.08	12	2
53	53.01B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.72	12	2
53	53.01C	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	7.36	12	2
53	53.01D	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	8	6.56	12	2
54	54.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	5	0.64	12	1
54	54.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	10	2.24	12	1
55	55.01A	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	7	4.32	12	1
55	55.01B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	4.64	12	1
55	55.02	FILTER SOCK	0	1.6	8.7	0	5.5	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	22	2.56	12	1
56	56.01	FILTER SOCK	0	1	8.0	0	8	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	15	0.96	12	1
56	56.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	4	6.56	12	2
56	56.03	FILTER SOCK	0	1.6	9.5	0	6	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	15	4.48	12	1

* HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED

NOTE:

1. FLOWS HIGHLIGHTED YELLOW HAVE MORE THAN ONE PIPE, AND THEREFORE, THE FLOW HAS BEEN DIVIDED ACCORDINGLY.
2. "N/A" DENOTES LEVEL SPREADER DISCHARGES TO EXISTING DRAINAGE PATH.
3. DESIGN AND CALCULATIONS PROVIDED BY STV ENERGY SERVICES, INC.

TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY

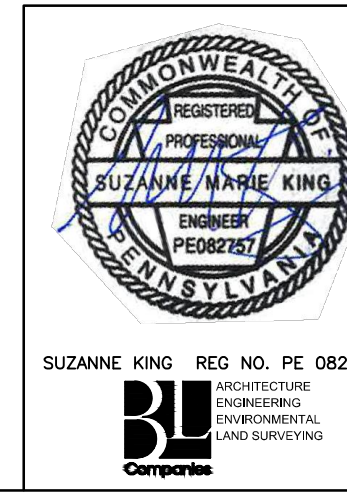
MILE POST	TEMPORARY DIVERSION SUMMARY - SUSQUEHANNA COUNTY, PENNSYLVANIA										WATERBODY**					TEMPORARY PIPE			
	DIVERSION ID	DIVERSION TYPE	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING	PERMANENT LINING	DISCHARGE TYPE	INITIAL WIDTH (FT)	TERMINAL WIDTH (FT)	LENGTH (FT)	RIP RAP SIZE*** (IN)	RIP RAP THICKNESS (IN)	R.O.W. SLOPE (%)	Q (CFS)	TEMPORARY PIPE SIZE DIAMETER (IN)	# OF PIPES
50	50.04	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	1	4	12	1
50	50.05	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	2.4	12	1
50	50.06A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	2	7.2	12	2
50	50.06B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	2	2.24	12	1
50	50.07	FILTER SOCK	0	1.25	8.75	0	7	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	7	1.76	12	1
51	51.01	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	21.28	12	4
51	51.02A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	5	7.2	12	2
51	51.02B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	10	6.08	12	2
51	51.03A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	6.24	12	2
51	51.03B	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	6	6.08	12	2
51	51.04A	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	12	3.52	12	1
51	51.04B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	12	7.2	12	2
51	51.04C	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	14	5.6	12	1
51	51.05	FILTER SOCK	0	1	8.0	0	8	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	13	0.8	12	1
51	51.06A	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	15	4.32	12	1
51	51.06B	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	7.68	12	2
51	51.06C	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.08	12	2
52	52.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	7	2.4	12	1
53	53.01A	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.08	12	2
53	53.01B	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	6.72	12	2
53	53.01C	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	9	7.36	12	2
53	53.01D	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	TEMP. PIPE	-	-	-	-	-	8	6.56		

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, Trout Stocked)	Wetland (Cowardin Classification)	Limits of Disturbance (LOD) Adjustments	Field Routing Adjustments within 600-foot Wide Corridor	Stream Bank Stabilization BMP	Width of Erosion Control Blanket Required for Stream Bank Stabilization (ft)
Stream	UNT to Willow Brook (WW-T30-21001)	WW-T30-21001	51.4	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T30-21001.	This crossing was field routed for a perpendicular crossing angle and to avoid steep-fed PFOs ~300' upstream and northeast of the current route. Measures to avoid impacting this stream entirely were attempted; however, the landowner was not amenable to a western alignment shift that would have avoided this area.	SBR with SC150 fabric	50
Wetland	N/A	W-T30-21001	51.4	EV	N/A	N/A	PEM	LOD has been reduced to eliminate impacts to W-T30-21001.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T30-21002	51.5	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T30-21002.	The pipeline was field routed to impact only the western edge of this small wetland. Measures to avoid impacting this wetland entirely were attempted; however, the landowner was not amenable to a western alignment shift that would have avoided this area.	N/A	N/A
Stream	UNT to Willow Brook (WW-T12-21004A)	WW-T12-21004A	51.7	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T12-21004A.	This crossing was field routed to maintain collocation with a recently constructed foreign pipeline. Crossing the stream at this location avoids impacting a PEM wetland ~200' to the northwest.	SBR with SC150 fabric	50
Stream	UNT to Willow Brook (WW-T12-21004)	WW-T12-21004	51.7	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T12-21004.	This crossing was field routed to maintain collocation with a recently constructed foreign pipeline. Crossing the stream at this location avoids impacting a PEM wetland ~200' to the northwest.	SBR with SC150 fabric	50
Wetland	N/A	W-T12-21001A	52.3	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T12-21001A.	This crossing was field routed to maintain collocation with a recently constructed foreign pipeline.	N/A	N/A
Stream	Willow Brook (WW-T12-21001)	WW-T12-21001	52.4	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T12-21001.	This crossing was field routed to maintain collocation with a recently constructed foreign pipeline.	SBR with SC150 fabric	50
Wetland	N/A	W-T70-21001A-1 / W-T70-21001A-2	52.9	N/A	N/A	N/A	PEM	W-T70-21001A-2 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 LOD within the W-T70-21001A-1 portion of the complex has been reduced to 75' to minimize impacts.	This crossing was field routed to both maintain collocation with a powerline ROW and to entirely avoid W-T70-21001A-3, the largest wetland in this system.	N/A	N/A
Wetland	N/A	W-T51-21004 / W-T51-21004-1	53.3	None	N/A	N/A	PEM	LOD was reduced to 75' for W-T51-21004 to minimize impacts. The LOD for feature W-T51-21004-1 has been reduced to eliminate impacts.	This crossing was field routed to both maintain collocation with a powerline ROW and to entirely avoid W-T51-21004-1.	N/A	N/A
Wetland	N/A	W-T51-21004	53.3	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T51-21004.	This crossing was field routed to both maintain collocation with a powerline ROW and to entirely avoid W-T51-21004-1.	N/A	N/A
Stream	Udley Brook (WW-T50-21001)	WW-T50-21001	53.4	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T50-21001.	This crossing was not significantly changed during field routing. The original crossing angle was nearly perpendicular and the crossing location allows fringing wetlands W-T51-21003-2 and W-T51-21003-3. The original crossing also avoids stream WW-T50-21001A entirely.	SBR with SC150 fabric	50
Wetland	N/A	W-T51-21003-2	53.4	EV	N/A	N/A	PEM	LOD has been reduced to eliminate impacts to W-T51-21003-2.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T54-21001-1	53.7	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T54-21001-1.	This crossing was field routed to keep P's outside of the wetland boundary and to cross this feature at a roughly perpendicular angle. Crossing this feature at this location avoids a septic system ~300' NE, a pond 300' NW, and reduces the amount of tree clearing by crossing a woodland at its narrowest portion. This alignment also avoids W-T64-21001 entirely.	N/A	N/A
Stream	Millard Creek (WW-T50-21002)	WW-T50-21002	54.1	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 85' to minimize impacts to WW-T50-21002.	This crossing was not significantly changed during field routing. The original crossing angle was nearly perpendicular and the crossing location allows fringing wetland W-T50-21001 to be avoided entirely.	SBR with SC150 fabric	50
Wetland	N/A	W-T50-21002	54.1	EV	N/A	N/A	PFO	W-T50-21002 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.	This crossing was not significantly changed during field routing. This is the smallest wetland in this area and it is located between WW-T50-21002 and WW-T50-21001. By routing the pipeline through this wetland, the above streams are crossed at perpendicular angles. W-T50-21002 is crossed at its narrowest portion at the edge of the wetland, and WW-T50-21001A and W-T50-21001 are avoided entirely.	N/A	N/A
Stream	UNT to Millard Creek (WW-T50-21003)	WW-T50-21003	54.1	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 75' to minimize impacts to WW-T50-21003.	This crossing was not significantly changed during field routing. The original crossing angle was nearly perpendicular and the crossing location allows wetland W-T50-21003 to be crossed at its narrowest portion at the edge of the wetland.	SBR with SC150 fabric	50
Wetland	N/A	W-T50-21003	54.1	EV	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T50-21003.	This crossing was not significantly changed during field routing. The original crossing angle was nearly perpendicular and the crossing location impacts the narrowest part of this wetland along its edge.	N/A	N/A
Stream	UNT to Millard Creek (WW-T50-21003A)	WW-T50-21003A	54.1	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to eliminate impacts to WW-T50-21003A.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T12-21007C	54.4	None	N/A	N/A	PFO	LOD has been reduced to eliminate impacts to W-T12-21007C.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Wetland	N/A	W-T12-21007A	54.4	None	N/A	N/A	PEM	LOD has been reduced to 80' to minimize impacts to W-T12-21007A. Further LOD reduction to 75' was not possible due to the saturated nature of the wetland, unconsolidated soils in area, adjacent stream, and additional excavations needed for the foreign line crossing. 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.	This crossing was field routed to cross this wetland at a perpendicular angle and in a location that impacts interior uplands, reducing overall wetland impacts. This portion of the W-T12-21007 wetland system is PEM and previously disturbed by an existing foreign pipeline. Several other hydrologic features are avoided entirely by utilizing this crossing point: stream WW-T12-21006 and associated fringing wetlands W-T12-21007A-1, A-2, A-3, A-4, A-5, A-6, C, C-1 are all avoided entirely due to field routing in this area.	N/A	N/A
Wetland	N/A	W-T12-21008-1	55.1	EV	N/A	N/A	PEM	W-T12-21008-1 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. However, the portion of the LOD within this wetland was reduced by 5' to minimize impacts.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	N/A	N/A
Stream	UNT to Millard Creek (WW-T12-21007)	WW-T12-21007	55.1	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T12-21007.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	SBR with SC150 fabric	50
Stream	UNT to Millard Creek (WW-T12-21007A)	WW-T12-21007A	55.1	CFW, MF	Ephemeral	Wild Trout Waters	R6	LOD has been reduced to 85' to minimize impacts to WW-T12-21007A.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	SBR with SC150 fabric	50

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, Trout Stocked)	Wetland (Cowardin Classification)	Limits of Disturbance (LOD) Adjustments	Field Routing Adjustments within 600-foot Wide Corridor	Stream Bank Stabilization BMP	Width of Erosion Control Blanket Required for Stream Bank Stabilization (ft)
Wetland	N/A	W-T12-21008-1	55.1	EV	N/A	N/A	PEM	W-T12-21008-1 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. However, the portion of the LOD within this wetland was reduced by 5' to minimize impacts.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	N/A	N/A
Stream	UNT to Millard Creek (WW-T12-21007)	WW-T12-21007	55.1	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to 85' to minimize impacts to WW-T12-21007.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	SBR with SC150 fabric	50
Stream	UNT to Millard Creek (WW-T12-21007A)	WW-T12-21007A	55.1	CFW, MF	Ephemeral	Wild Trout Waters	R6	LOD has been reduced to 85' to minimize impacts to WW-T12-21007A.	This crossing was field routed to cross this wetland at a perpendicular angle and to avoid W-T12-21008 entirely. This crossing location also allows the pipeline to remain ~250' east of a residential area and 300' west of a much larger wetland system.	SBR with SC150 fabric	50
Wetland	N/A	W-T12-21009A / W-T12-21009A-1 / W-T12-21009A-2	55.5	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to this wetland complex.	This crossing was field routed to keep P's outside of the wetland boundary and to cross these features at a roughly perpendicular angle. The alignment avoids nearly all impacts to W-T12-21009A.	N/A	N/A
Wetland	N/A	W-T12-21009B	MOC-0061.05	EV	N/A	N/A	PSS	LOD has been reduced to 75' to minimize impacts to W-T12-21009B.	This crossing was field routed to keep P's outside of the wetland boundary and to cross this feature at a roughly perpendicular angle.	N/A	N/A
Wetland	N/A	W-T12-21009C	MOC-0061.06	EV	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T12-21009C.	This crossing was field routed to keep P's outside of the wetland boundary and to cross this feature at a roughly perpendicular angle.	N/A	N/A
Stream	UNT to Tower Branch (WW-T92-21002)	WW-T92-21002	MOC-0061.07	CFW, MF	Ephemeral	Wild Trout Waters	R6	LOD reduced to 75' to minimize impacts to WW-T92-21002.	This crossing was field routed for a roughly perpendicular crossing. Utilizing this location also reduces impacts to W-T12-21009C and avoids WW-T12-21009, W-T12-21009B-1 and W-T12-21009C-1 entirely.	SBR with SC150 fabric	50
Stream	UNT to Tower Branch (WW-T12-21009A)	WW-T12-21009A	MOC-0061.09	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T12-21009A.	W-T12-21009B, W-T12-21009C and WW-T92-21002, WW-T12-21009, WW-T12-21009A are part of a large wetland/stream/pond system. This crossing point occurs where the system is relatively narrow, ~350' in total width, compared to other areas to the north and south that could exceed 1,000' in width.	SBR with SC150 fabric	50
Wetland	N/A	W-T48-21002A	M-0062.019	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T48-21002A.	This crossing was field routed to keep P's outside of the wetland boundary and to cross at a perpendicular angle at the narrowest portion of the wetland.	N/A	N/A
Wetland	W-T48-21002C	W-T48-21002C	M-0062.022	None	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T48-21002C.	This crossing was field routed to keep P's outside of the wetland boundary and to cross at a perpendicular angle at the narrowest portion of the wetland.	N/A	N/A
Wetland	N/A	W-T48-21001	56.7	EV	N/A	N/A	PEM	W-T48-21001 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.	This crossing was not significantly changed during field routing. The original alignment avoids a majority of this wetland, crossing the wetland at a narrow point at the northern boundary.	N/A	N/A
Stream	UNT to Tower Branch (WW-T48-21001A)	WW-T48-21001A	56.8	CFW, MF	Intermittent	Wild Trout Waters	R4	LOD has been reduced to eliminate impacts to WW-T48-21001A.	This feature is no longer impacted based on LOD reductions.	N/A	N/A
Stream	Tower Branch (WW-T48-21001)	WW-T48-21001	56.8	CFW, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T48-21001.	This crossing was not significantly changed during field routing. The original alignment crosses the stream at a perpendicular angle.	SBR with SC150 fabric	50
Wetland	N/A	W-T48-21003	56.8	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T48-21003.	This crossing was not significantly changed during field routing. The original alignment crosses this wetland at a perpendicular angle and at its eastern edge.	N/A	N/A
Stream	UNT to Tower Branch (WW-T17-21001)	WW-T17-21001	57.2	CFW, MF	Ephemeral	Wild Trout Waters	R6	LOD has been reduced to 85' to minimize impacts to WW-T17-21001.	This crossing was not significantly changed during field routing. The original alignment crosses this stream at a perpendicular angle while maintaining collocation with an existing foreign pipeline.	SBR with SC150 fabric	50
Pond	Unnamed pond	WB-T87-21001	57.2	CFW, MF	N/A	None	PUB	N/A	Man-made retention pond.	N/A	N/A

Drawn By & Date/Time: CScanzello Jul 28, 2017 - 4:41 pm
 Drawing Location & Name: G:\00514\14C\14C4909\DWG\BMPs&DETAILS\PL_DNT14C4909(10)_SU-TB.dwg



REVISIONS			
NO.	DATE	BY	DESCRIPTION
0	08/26/2015	BL	ISSUED FOR PADEP SUBMITTAL
1	12/02/2015	BL	ISSUED FOR PADEP SUBMITTAL
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1
3	April 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #2
4	AUG 2017	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #3

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC			
ATLANTIC SUNRISE PROJECT			
PROPOSED 30" CENTRAL PENN LINE NORTH PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET			
SUSQUEHANNA COUNTY, PENNSYLVANIA			
QUANTITY, CROSSING AND ACIDIC SOIL TABLES			
DRAWN BY:	ELZ	DATE:	05/15/15
CHECKED BY:	JLK	DATE:	07/02/15
APPROVED BY:	SMK	DATE:	07/08/15
ISSUED FOR:	CONSTRUCTION	REVISION:	4
DRAWING NUMBER:	24-1601-70-28-A/1683_3-BMP-SU-TB SHEET 3		
SCALE:	OF 3		

