

*Atlantic Sunrise Project – PA DEP Chapter 105 Joint Permit Application
Transcontinental Gas Pipe Line Company, LLC
Schuylkill County*

APPENDIX P -1
RESOURCE-SPECIFIC AVOIDANCE AND MINIMIZATION
MEASURES

Revised April 2017

**Attachment P-1, Appendix P-1
Resource-Specific Avoidance and Minimization Measures
Schuylkill County**

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)	Cowardin Classification	Limits of Disturbance (LOD) Adjustments	Field Routing Adjustments within 600-foot Wide Corridor*
Wetland	N/A	W-T48-7001	65.02	EV	N/A	N/A	PEM	The LOD for W-T48-7001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.
Stream	UNT to Mill Creek (WW-T34-7001)	WW-T34-7001	65.01	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T34-7001.	The pipeline was routed at this location to provide a perpendicular crossing of stream WW-T34-7001.
Pond	WB-T35-7001	WB-T35-7001	65.34	None	N/A	None	PUB	LOD has been reduced to 75' to minimize impacts to WB-T35-7001.	The pipeline was routed at this location to cross the narrowest portion of the waterbody possible. Additional route adjustments north or south were constrained by residences on both sides of the route.
Wetland	N/A	W-T35-7001	65.35	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T35-7001.	The pipeline was routed at this location to provide a perpendicular crossing of the wetland. Additional route adjustments north or south were constrained by residences on both sides of the route.
Stream	Mill Creek (WW-T35-7002)	WW-T35-7002	65.40	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T35-7002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T35-7002.
Stream	UNT to Mill Creek (WW-T34-7002)	WW-T34-7002	65.54	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T34-7002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T34-7002.
Wetland	N/A	W-T34-7002	65.55	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T34-7002.	The pipeline was routed at this location to provide a perpendicular crossing of the wetland. Avoidance of wetland W-T35-7002 was not feasible due to the linear nature of the wetland, extending south beyond the routing corridor. A route adjustment north was not feasible due to a residence located in the northern portion of the corridor.
Wetland	N/A	W-T34-8001/ W-T34-8001-1	M-0301 0.06	None	N/A	N/A	PFO	LOD reduced to 90' to minimize impacts to W-T34-8001. Further LOD reduction was not possible due to the adjacent stream and road crossing, as well as steep terrain immediately west of the wetland crossing. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed at this location to cross the narrowest section of the wetland, and along the wetland margin.
Stream	UNT to Swatara Creek (WW-T34-8001)	WW-T34-8001	M-0301 0.07	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T34-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T34-8001.
Stream	UNT to Swatara Creek (WW-T34-8001A)	WW-T34-8001A	M-0301 0.08	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T34-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T34-8001A.
Stream	UNT to Swatara Creek (WW-T31-7001)	WW-T31-7001	M-0468 0.02	CWF, MF	Perennial	None	R3	LOD has been reduced to 80' to minimize impacts to WW-T31-7001.	The pipeline was field routed in this area to cross stream WW-T31-7001 and riparian wetland W-T31-7001 at a perpendicular angle and near the northern extent of the system. A realignment to move the pipeline further north and avoid the system entirely was considered, but determined infeasible due to the proximity of a residence north of the current alignment.
Wetland	N/A	W-T31-7001	M-0468 0.02	None	N/A	N/A	PEM	LOD has been reduced to 80' to minimize impacts to W-T31-7001.	The pipeline was field routed in this area to cross stream WW-T31-7001 and riparian wetland W-T31-7001 at a perpendicular angle and near the northern extent of the system. A realignment to move the pipeline further north and avoid the system entirely was considered, but determined infeasible due to the proximity of a residence north of the current alignment.
Wetland	N/A	W-T18-7005A	67.59	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T18-7005A.	The pipeline was routed in this location to avoid impacting stream WW-T18-7004 to the northwest, cross the narrowest point of wetland W-T18-7005A, and minimize tree clearing to the northwest.
Wetland	N/A	W-T21-7001	67.91	None	N/A	N/A	PSS	This wetland encroaches within the eastern portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T21-7001.	The pipeline was routed in this location to cross the margin of the wetland. Shifting the route further west to completely avoid the wetland was constrained by steep slopes and a residence west of the route.
Stream	UNT to Swatara Creek (WW-T18-7007C)	WW-T18-7007C	68.36	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T18-7007C.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007C.
Stream	UNT to Swatara Creek (WW-T18-7007A)	WW-T18-7007A	68.38	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T18-7007A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007A.
Stream	UNT to Swatara Creek (WW-T18-7007)	WW-T18-7007	68.38	CWF, MF	Perennial	None	R3	LOD has been reduced to 90' to minimize impacts to WW-T18-7007.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T18-7007.
Stream	UNT to Swatara Creek (WW-T21-7001)	WW-T21-7001	69.01	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T21-7001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T21-7001. Other routing considerations in this area included avoidance of residences and side slope construction.

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Stream	UNT to Swatara Creek (WW-T21-7002)	WW-T21-7002	69.09	CWF, MF	Intermittent	None	R4	LOD has been reduced to 90' to minimize impacts to WW-T21-7002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T21-7002. Other routing considerations in this area included avoidance of residences and side slope construction.
Stream	Lorberr Creek (WW-T31-8001)	WW-T31-8001	M-0181 0.14	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T31-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T31-8001.
Stream	UNT to Lorberr Creek (WW-T31-8001A)	WW-T31-8001A	M-0181 0.16	CWF, MF	Ephemeral	Wild Trout Waters (under review)	R6	LOD has been reduced to 90' to minimize impacts to WW-T31-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T31-8001A.
Wetland	N/A	W-T62-8001	M-0181 0.18	EV	N/A	N/A	PEM	The LOD for W-T62-8001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.
Pond	WB-T32-8002	WB-T32-8002	M-0198 0.13	None	N/A	None	PUB	Full ROW width is needed at this location due to surrounding steep terrain and approaching PI.	The pipeline was routed at this location to avoid crossing the pond with the trench line..
Wetland	N/A	W-T24-8005	M-0198 0.23	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T24-8005.	The pipeline was routed at this location to cross the narrowest section of the wetland, and to provide a perpendicular crossing.
Stream	UNT to Lower Rausch Creek (WW-T43-8002)	WW-T43-8002	M-0198 0.26	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T43-8002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T43-8002.
Stream	UNT to Lower Rausch Creek (WW-T43-8001)	WW-T43-8001	M-0198 0.28	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T43-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T43-8001.
Pond	WB-T32-8001	WB-T32-8001	M-0198 0.50	None	N/A	None	PUB	LOD has been modified to eliminate impacts to this feature.	This feature is no longer impacted based on LOD reductions.
Stream	UNT to Lower Rausch Creek (WW-T24-8003)	WW-T24-8003	72.67	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T24-8003.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8003.
Stream	Lower Rausch Creek (WW-T24-8002)	WW-T24-8002	73.45	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T24-8002.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8002.
Stream	UNT to Lower Rausch Creek (WW-T24-8001)	WW-T24-8001	73.54	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T24-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8001.
Wetland	N/A	W-T24-8004	73.55	EV	N/A	N/A	PEM	This wetland encroaches within the northern portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T24-8004.	The pipeline was routed in this location to provide a perpendicular crossing of stream W-T24-8001.
Stream	UNT to Lower Rausch Creek (WW-T95-8001)	WW-T95-8001	73.55	CWF, MF	Intermittent	Wild Trout Waters (under review)	R4	LOD has been reduced to 90' to minimize impacts to WW-T24-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T24-8001.
Stream	UNT to Lower Rausch Creek (WW-T95-8001A)	WW-T95-8001A	73.56	CWF, MF	Ephemeral	Wild Trout Waters (under review)	R6	LOD has been reduced to 90' to minimize impacts to WW-T95-8001A.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T95-8001A.
Wetland	N/A	W-T24-8003	73.59	EV	N/A	N/A	PEM	The LOD for W-T24-8003 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.
Wetland	N/A	W-T24-8002	74.05	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T24-8002.	The pipeline was routed in this location to provide a perpendicular crossing of wetland W-T24-8002.
Wetland	N/A	W-T20-8006	74.15	None	N/A	N/A	PFO	W-T20-8006 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, LOD reduction at this location to minimize impacts is not possible due to the adjacent railroad crossing and approaching PI.	The pipeline was routed in this location to cross the margin of the wetland with workspace only.
Wetland	N/A	W-T20-8007	74.16	None	N/A	N/A	PFO	W-T20-8007 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, LOD reduction at this location to minimize impacts is not possible due to the adjacent railroad crossing and approaching PI.	The pipeline was routed in this location to cross the margin of the wetland with workspace only.

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Wetland	N/A	W-T96-9003 / W-T96-9003-1 / W-T96-9003-2	M-201 0.26	EV	N/A	N/A	PEM	LOD reduced to 90' to minimize impacts to W-T96-9003. Further LOD reduction was not possible due to the saturated nature of the wetland with unconsolidated soils. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed in this location to cross the northern margin of this large wetland complex, which extends to the north well beyond the routing corridor. Further minimization of impacts by shifting the route south was not possible due to the presence of an active railroad.
Wetland	N/A	W-T96-9004	74.71	EV	N/A	N/A	PSS	LOD has been reduced to 75' to minimize impacts to W-T96-9004.	The pipeline was routed in this location to cross the narrowest portion of the wetland.
Stream	Good Spring Creek (WW-T35-8001)	WW-T35-8001	74.74	CWF, MF	Perennial	Wild Trout Waters (under review)	R3	LOD has been reduced to 90' to minimize impacts to WW-T35-8001.	The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T35-8001.
Wetland	N/A	W-T95-9001B-2	74.82	None	N/A	N/A	PSS	This wetland encroaches within the western portion of the LOD only, and this portion of the LOD was reduced by 10' to minimize impacts to W-T95-9001B-2.	The pipeline was routed in this location to provide a perpendicular crossing of the wetland. Avoidance of this wetland was not possible as it extends for a significant distance both east and west of the routing corridor.
Wetland	N/A	W-T95-9001A/ W-T95-9001B/ W-T95-9001B-1	74.82	None	N/A	N/A	PEM, PSS	LOD reduced to 90' to minimize impacts to W-T95-9001A/W-T95-9001B/W-T95-9001B-1. Further LOD reduction was not possible due to the saturated nature of the wetland with unconsolidated soils, and adjacent stream and road crossings. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient wetland crossing.	The pipeline was routed in this location to provide a perpendicular crossing of the wetland. Avoidance of this wetland was not possible as it extends for a significant distance both east and west of the routing corridor.
Wetland	N/A	W-T20-8003A W-T20-8003A-1	M-0316 1.02	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T20-8003.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to minimize crossing distance within the wetland as much as possible.
Stream	UNT to Pine Creek (WW-T20-8001A)	WW-T20-8001A	M-0316 1.03	CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T20-8001A.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to cross stream WW-T20-8001A at a perpendicular angle.
Stream	Pine Creek (WW-T20-8001)	WW-T20-8001	76.14	CWF, MF	Perennial	Approved Trout Waters; Trout Stocked Stream; Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T20-8001.	The pipeline was routed in this location to avoid multiple stream crossings to the east of the LOD, and to cross stream WW-T20-8001 at a perpendicular angle.
Stream	UNT to Pine Creek (WW-T20-9001)	WW-T20-9001	76.54	CWF, MF	Perennial	Approved Trout Waters; Wild Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T20-9001.	The pipeline was routed in this location to cross stream WW-T20-9001 at a perpendicular angle.
Wetland	N/A	W-T16-9001	M-0170 0.01	EV	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T16-9001.	The pipeline was routed in this location to cross wetland W-T16-9001 at a perpendicular angle.
Stream	UNT to Pine Creek (WW-T16-9001)	WW-T16-9001	M-0170 0.01	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T16-9001.	The pipeline was routed in this location to cross stream WW-T16-9001 at a perpendicular angle.
Pond	WB-T10-9001	WB-T10-9001	M-0170 0.02	None	N/A	N/A	PUB	The LOD for WB-T10-9001 has been modified to eliminate impacts.	This feature is no longer impacted based on LOD reductions.
Wetland	N/A	W-T53-9001A/ W-T53-9001A-1/ W-T53-9001C	77.86/ 77.73/ 77.86	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T53-9001.	The pipeline was routed in this location to cross the narrowest portion of the wetland, primarily along its eastern margin.
Wetland	N/A	W-T16-9003A/ W-T16-9003C	77.96/ 77.95	None	N/A	N/A	PEM, PFO	LOD has been reduced to 75' to minimize impacts to W-T16-9003.	The pipeline was routed in this location to cross the narrowest portion of the wetland.
Stream	Deep Creek (WW-T16-9003)	WW-T16-9003	77.97	CWF, MF	Perennial	Approved Trout Waters; Trout Stocked Stream	R3	LOD has been reduced to 90' to minimize impacts to WW-T16-9003.	The pipeline was routed in this location to cross stream WW-T16-9003 at a perpendicular angle.
Stream	UNT to Mahantango Creek (WW-T87-9001)	WW-T87-9001	80.11	CWF, MF	Perennial	Approved Trout Waters	R3	LOD reduced to XX' to accommodate an equipment bridge crossing of the stream.	The access road was routed to cross this stream along an existing dirt/gravel road. The bridge equipment crossing will minimize stream impacts.
Wetland	N/A	W-T11-9002/ W-T11-9002-1	80.23	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T11-9002.	The pipeline was routed in this location to cross wetland W-T11-9002 at a narrow location with workspace only.
Stream	Mahantango Creek (WW-T11-9001)	WW-T11-9001	80.25	CWF, MF	Perennial	Approved Trout Waters	R3	LOD has been reduced to 90' to minimize impacts to WW-T11-9001.	The pipeline was routed in this location to cross stream WW-T11-9001 at a perpendicular angle.

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Wetland	N/A	W-T11-9001	80.28	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T11-9001.	The pipeline was routed in this location to cross the western margin of wetland W-T11-9002 at a perpendicular angle.
Stream	UNT to Little Mahantango Creek (WW-T09-9002)	WW-T09-9002	81.18	CWF, MF	Perennial	None	R3	LOD has been reduced to 75' to minimize impacts to WW-T09-9002.	The pipeline was routed in this location to cross the western margin of stream WW-T09-9002 at a perpendicular angle.
Wetland	N/A	W-T09-9002	81.18	None	N/A	N/A	PFO	LOD has been reduced to 75' to minimize impacts to W-T09-9002.	The pipeline was routed in this location to cross the western margin of wetland W-T09-9002 at a perpendicular angle.
Stream	Little Mahantango Creek (WW-T09-9001)	WW-T09-9001	MOC-0194 0.18	CWF, MF	Perennial	Approved Trout Waters	R3	LOD has been reduced to 80' to minimize impacts to WW-T09-9001.	The pipeline was routed in this location to cross stream WW-T09-9001 at a perpendicular angle, and avoid impact wetland W-T09-9001 located approximately 25 feet west of the LOD.

*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.