

**Attachment P-1
Resource-Specific Avoidance and Minimization Measures
Susquehanna 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)	Wetland (Cowardin Classification)	Limits of Disturbance (LOD) Adjustments (Supporting Information for Technical Deficiencies #25 and #28)	Field Routing Adjustments within 600-foot Wide Corridor (Supporting Information for Technical Deficiency #13) [†]
Stream	UNT to Willow Brook	WW-T30-21001	51.4	CWF, 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 seep-fed PFOs ~300' upstream and northwest 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.
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.
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.
Stream	UNT to Willow Brook	WW-T12-21004A	51.7	CWF, 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.
Stream	UNT to Willow Brook (WW-T12-21004)	WW-T12-21004	51.7	CWF, 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.
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.
Stream	Willow Brook	WW-T12-21001	52.4	CWF, 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.

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Wetland	N/A	W-T70-21001A-1 / W-T70-21001A-2	52.9		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.
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.
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.
Stream	Utley Brook	WW-T50-21001	53.4	CWF, 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-51-21003-1; W-T51-21003-2; and W-T51-21003-2. The original crossing also avoids stream WW-T50-21001A entirely.
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.
Wetland	N/A	W-T64-21001-1	53.7	None	N/A	N/A	PEM	LOD has been reduced to 75' to minimize impacts to W-T64-21001-1.	This crossing was field routed to keep PI'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.
Stream	Millard Creek	WW-T50-21002	54.1	CWF, 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.

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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-T50-21003. By routing the pipeline through this wetland, the above streams are crossed at perpendicular angles, W-T50-21003 is crossed at its narrowest portion at the edge of the wetland, and WW-T50-21003A and W-T50-21001 are avoided entirely.
Stream	UNT to Millard Creek	WW-T50-21003	54.1	CWF, 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.
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.
Stream	UNT to Millard Creek	WW-T50-21003A	54.1	CWF, 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.
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.
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.
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.

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Stream	UNT to Millard Creek	WW-T12-21007	55.1	CWF, 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.
Stream	UNT to Millard Creek	WW-T12-21007A	55.1	CWF, 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.
Wetland	N/A	W-T12-21009A / W-T12-21009A-1 / W-T12-21009A-2	55.4	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 PI'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.
Wetland	N/A	W-T12-21009B	MOC-0061 0.05	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 PI's outside of the wetland boundary and to cross this feature at a roughly perpendicular angle. 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.
Wetland	N/A	W-T12-21009C	MOC-0061 0.06	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 PI's outside of the wetland boundary and to cross this feature at a roughly perpendicular angle. 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.

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Stream	UNT to Tower Branch	WW-T92-21002	MOC-0061 0.07	CWF, 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. 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.
Stream	UNT to Tower Branch	WW-T12-21009A	MOC-0061 0.09	CWF, MF	Perennial	Wild Trout Waters	R3	LOD has been reduced to 75' to minimize impacts to WW-T12-21009A.	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. 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.
Wetland	N/A	W-T48-21002A	M-0062 0.19	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 PI's outside of the wetland boundary and to cross at a perpendicular angle at the narrowest portion of the wetland. This wetland crossing is ~250' in width. By routing the pipeline in this general area, much larger wetland systems that completely surround the area are avoided. Crossing this wetland also allows tree clearing to be reduced by utilizing an upland pasture south of the wetland.
Wetland	W-T48-21002C	W-T48-21002C	M-0062 0.22	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 PI's outside of the wetland boundary and to cross at a perpendicular angle at the narrowest portion of the wetland. This wetland crossing is ~250' in width. By routing the pipeline in this general area, much larger wetland systems that completely surround the area are avoided. Crossing this wetland also allows tree clearing to be reduced by utilizing an upland pasture south of the wetland.

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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.
Stream	UNT to Tower Branch	WW-T48-21001A	56.8	CWF, 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.
Stream	Tower Branch	WW-T48-21001	56.8	CWF, 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.
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.
Stream	UNT to Tower Branch	WW-T17-21001	57.2	CWF, 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.

Notes:

[†]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.