

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

**APPENDIX P -1**

**RESOURCE-SPECIFIC AVOIDANCE AND MINIMIZATION  
MEASURES**

*Revised May 2017*

**Attachment P-1, Appendix P-1  
Resource-Specific Avoidance and Minimization Measures  
Lancaster 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*   |
|-----------------------------------|-----------------------------------|---------------------------|----------------|---|--|---|-------------------------|---|--|
| Stream                            | UNT to Fishing Creek              | WW-T10-001A               | 0.24           | HQ-CWF, MF  | Perennial  | None  | R3                      | The LOD was modified to eliminate impacts to WW-T10-001A.   | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | UNT to Fishing Creek (WW-T10-001) | WW-T10-001                | 0.25           | HQ-CWF, MF  | Perennial  | Wild Trout Waters   | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T10-001.  | The pipeline was routed in this location to avoid stream WW-T10-001A (with LOD reduction) and wetland W-T10-001, cross stream WW-T10-001 at a perpendicular angle, and minimize clearing of the riparian forest buffer of the stream.  |
| Wetland                           | W-T31-001B                        | W-T31-001B                | M-0147<br>0.57 | EV  | N/A  | N/A   | PSS                     | The LOD was modified to eliminate impacts to W-T31-001B.  | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | Muddy Run (WW-T10-003)            | WW-T10-003                | M-0147 0.59    | TSF, MF   | Perennial  | Approved Trout Waters   | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T10-003.  | This wetland and stream system (WW-T10-003, WW-T10-003A, W-T10-003C) is associated with a documented bog turtle population. The crossing of this system was field routed to occur in an area previously disturbed by existing powerline ROWs, thereby reducing habitat fragmentation and construction in previously unimpacted areas. The proposed route also avoids bog turtle core habitat patches, including an occupied habitat patch northeast of the route. Based on approximately two years of radio telemetry tracking within this habitat patch, bog turtles have not moved to within 570 feet of the LOD. Finally, several nearby tributaries and wetland areas are also avoided by utilizing this crossing area. These include- Streams WW-T30-001, WW-T30-001A and wetlands W-T31-001A and W-T31-001B. Complete avoidance of this wetland system was not possible because it extends a significant distance along Muddy Run. |
| Stream                            | UNT to Muddy Run (WW-T10-003A)    | WW-T10-003A               | M-0147 0.59    | TSF, MF   | Ephemeral  | Approved Trout Waters   | R6                      | LOD has been reduced to 75' to minimize impacts to WW-T10-003A.   | Refer to the notes for WW-T10-003 for a discussion of routing considerations at this location.   |
| Wetland                           | N/A                               | W-T10-003C                | M-0147 0.60    | EV  | N/A  | N/A   | PFO                     | LOD has been reduced to 75' to minimize impacts to W-T10-003C.  | Refer to the notes for WW-T10-003 for a discussion of routing considerations at this location.   |
| Stream                            | Tucquan Creek (WW-T10-004)        | WW-T10-004                | M-0184<br>0.85 | HQ-CWF, MF  | Perennial  | Wild Trout Waters   | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T10-004.  | The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T10-004, and to avoid a bridged/culverted area of the stream.  |
| Wetland                           | N/A                               | W-T62-001A/<br>W-T62-001C | M-0354<br>0.00 | EV  | N/A  | N/A   | PEM, PFO                | LOD has been reduced to 75' to minimize impacts to W-T62-001.   | The pipeline was routed in this location to provide a perpendicular crossing of wetland W-T62-001. In addition, a PI was shifted farther north during field routing in order to execute a turn outside of the system.  |
| Stream                            | UNT to Trout Run (WW-T62-001)     | WW-T62-001                | 5.34           | HQ-CWF, MF  | Intermittent                                     | Class A Wild Trout  | N/A                     | LOD has been reduced to 75' to minimize impacts to WW-T62-001.  | The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T62-001. In addition, a PI was shifted farther north during field routing in order to execute a turn outside of the system.  |
| Wetland                           | N/A                               | W-T10-101A<br>W-T10-101C  | 7.11           | None  | N/A  | N/A   | PEM, PFO                | LOD reduced to 90' to minimize impacts to W-T10-101. Further LOD reduction was not possible due to adjacent stream and roadcrossings, and steep topography on both sides of the wetland. The additional workspace will be used for equipment crossing and spoil storage to accommodate a safe and efficient crossing. | The pipeline was routed in this location to collocate with a transmission line ROW, thereby reducing forest clearing and habitat fragmentation. This alignment also allows stream WW-T10-100 to be crossed at a perpendicular angle, wetland W-T10-101 to be crossed along its eastern margin, and W-T10-100 to be avoided entirely. Other route alignments in this area to avoid this wetland are constrained by steep slopes, road and trail crossings, and residential areas to the east and west of the current alignment.   |
| Stream                            | UNT to Climbers Run (WW-T10-100)  | WW-T10-100                | 7.15           | CWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T10-100.  | The pipeline was routed in this location to collocate with a transmission line ROW, thereby reducing forest clearing and habitat fragmentation. This alignment also allows stream WW-T10-100 to be crossed at a perpendicular angle, wetland W-T10-101 to be crossed along its eastern margin, and W-T10-100 to be avoided entirely. Other route alignments in this area to avoid this wetland are constrained by steep slopes, road and trail crossings, and residential areas to the east and west of the current alignment.   |
| Wetland                           | N/A                               | W-T10-100                 | 7.15           | None  | N/A  | N/A   | PFO                     | The LOD was modified to eliminate impacts to W-T10-100.   | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | Climbers Run (WW-T20-002)         | WW-T20-002                | 7.47           | CWF, MF   | Perennial  | None  | R3                      | <b>LOD has been reduced to 90' to minimize impacts to WW-T20-002.</b>   | The pipeline was routed in this location to follow the edge of an agricultural field and minimize impacts to the riparian forest buffer of this stream, as well as to provide a perpendicular crossing of the stream.  |
| Wetland                           | N/A                               | W-T20-002                 | 7.47           | None  | N/A  | N/A   | PSS                     | The LOD was modified to eliminate impacts to W-T20-002.   | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | UNT to Pequea Creek (WW-T31-002A) | WW-T31-002A               | 8              | WWF, MF   | Ephemeral  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T31-002A.   | The pipeline was routed in this location to avoid paralleling the floodplain and riparian corridor of Pequea creek by remaining east of the floodplain. The crossing location and orientation of streams WW-T31-002A and WW-T31-002 was constrained by the need to avoid side slope construction in a forested area. Nevertheless, both streams are crossed at roughly perpendicular angles and a meandering portion of stream WW-T31-002 in the western portion of the routing corridor is avoided.   |

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Lancaster County**

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|-----------------------------------|---|--------------------|--------------------|---|--|---|-------------------------|--|--|
| Stream                            | UNT to Pequea Creek (WW-T31-002)            | WW-T31-002         | 8                  | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T31-002.   | The pipeline was routed in this location to avoid paralleling the floodplain and riparian corridor of Pequea creek by remaining east of the floodplain. The crossing location and orientation of streams WW-T31-002A and WW-T31-002 was constrained by the need to avoid side slope construction in a forested area. Nevertheless, both streams are crossed at roughly perpendicular angles and a meandering portion of stream WW-T31-002 in the western portion of the routing corridor is avoided. |
| Stream                            | UNT to Pequea Creek (WW-T65-001)            | WW-T65-001         | 8.11               | WWF, MF   | Perennial  | None  | N/A                     | The full LOD is needed at this crossing due to the adjacent steep slopes and PI's.   | The pipeline was routed in this location to cross the the narrowest portion of the riparian forest buffer at a perpendicular angle.  |
| Stream                            | Pequea Creek (WW-T31-003)                   | WW-T31-003         | 8.2                | WWF, MF   | Perennial  | None  | R3                      | The full LOD is needed at this crossing due to a steep and rocky slope west of the stream, adjacent open cut road crossing, and the feature being a navigable water requiring Aids To Navigation (ATON). | The pipeline was routed in this location to allow a PI and ATWS for the stream crossing to be located in agricultural fields on either side of the stream, limiting impacts to the riparian forest buffer.   |
| <b>Stream</b>                     | <b>UNT to Pequea Creek (WW-T81-1001)</b>    | <b>WW-T81-1001</b> | <b>M-0405 0.43</b> | <b>WWF, MF</b>                                    | <b>Ephemeral</b>                                 | <b>None</b>   | <b>R6</b>               | <b>LOD has been reduced to 90' to minimize impacts to WW-T81-1001.</b>   | <b>The pipeline was routed in this location to cross WW-T81-1001 at a perpendicular angle.</b>   |
| Stream                            | UNT to Pequea Creek (WW-T81-001)            | WW-T81-001         | M-0405 0.57        | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 85' to minimize impacts to WW-T81-001.   | The pipeline was routed in this location to cross WW-T81-001 at a perpendicular angle, to avoid feeder stream WW-T81-001A, and to minimize impacts to wetland W-T81-001.   |
| <b>Wetland</b>                    | <b>N/A</b>                                  | <b>W-T81-001</b>   | <b>M-0405 0.58</b> | <b>None</b>                                       | <b>N/A</b>                                       | <b>N/A</b>  | <b>PEM</b>              | <b>LOD has been reduced to 75' to minimize impacts to W-T81-001.</b>   | <b>The pipeline was routed in this location to cross the western margin of the wetland and to cross stream WW-T81-001 at a perpendicular angle.</b>  |
| <b>Wetland</b>                    | <b>N/A</b>                                  | <b>W-T87-1001</b>  | <b>M-0405 1.13</b> | <b>None</b>                                       | <b>N/A</b>                                       | <b>N/A</b>  | <b>PSS</b>              | <b>LOD has been reduced to 75' to minimize impacts to W-T87-1001.</b>  | <b>The pipeline was routed in this location to only impact the southeast corner of the wetland and to entirely avoid the seep feeding the wetland.</b>   |
| <b>Stream</b>                     | <b>UNT to Pequea Creek (WW-T65-1005)</b>    | <b>WW-T65-1005</b> | <b>M-0405 1.13</b> | <b>WWF, MF</b>                                    | <b>Intermittent</b>                              | <b>None</b>   | <b>R4</b>               | <b>LOD has been reduced to 80' to minimize impacts to WW-T65-1005.</b>   | <b>The pipeline was routed in this location to cross the stream at a roughly perpendicular angle in an area where an existing powerline ROW and dirt road have already impacted the stream.</b>  |
| Stream                            | UNT to Pequea Creek (WW-T25-1001)           | WW-T25-1001        | M-0405 1.45        | WWF, MF   | Intermittent                                     | None  | N/A                     | LOD has been reduced to 85' to minimize impacts to WW-T25-1001.  | The pipeline was routed in this location to cross the the narrowest portion of the riparian forest buffer at a perpendicular angle.  |
| Stream                            | UNT to Pequea Creek (WW-T65-1002)           | WW-T65-1002        | M-0417 0.06        | WWF, MF   | Ephemeral  | None  | N/A                     | LOD has been reduced to 90' to minimize impacts to WW-T65-1002.  | The pipeline was routed in this location to avoid a braided area of the stream and a riparian wetland area (W-T70-1001) containing several seeps in the northern and southern portions of the routing corridor, respectively.  |
| Stream                            | UNT to Pequea Creek (WW-T10-1003)           | WW-T10-1003        | 10.1               | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T10-1003.  | The pipeline was routed in this location to cross the narrowest section of the riparian forest buffer and to avoid a braided area of the stream in the northern portion of the routing corridor.   |
| Stream                            | UNT to Conestoga River (WW-T35-1002)        | WW-T35-1002        | 10.88              | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T35-1002.  | The pipeline was routed in this location to follow the edge of an agricultural field and avoid impacting the riparian forest buffer, as well as to avoid impacting stream WW-T35-1002B in the southern portion of the routing corridor.  |
| Stream                            | UNT to Conestoga River (WW-T35-1002A)       | WW-T35-1002A       | 11                 | WWF, MF   | Perennial  | None  | R3                      | WW-T35-1002A is being crossed via conventional bore.   | The pipeline was routed in this location to follow the edge of an agricultural field and avoid impacting the riparian forest buffer of this stream. In addition, the proposed route allows for a safe and effective conventional bore crossing.  |
| Wetland                           | N/A   | W-T35-1001         | 11                 | None  | N/A  | N/A   | PEM                     | W-T35-1001 is being crossed via conventional bore.   | The pipeline was routed in this location to follow the edge of an agricultural field and avoid impacting the riparian forest buffer of stream WW-T35-1002A. In addition, the proposed route allows for a safe and effective conventional bore crossing.  |
| <b>Stream</b>                     | <b>UNT to Conestoga River (WW-T86-1001)</b> | <b>WW-T86-1001</b> | <b>11.12</b>       | <b>WWF, MF</b>                                    | <b>Intermittent</b>                              | <b>None</b>   | <b>R4</b>               | <b>LOD has been reduced to 75' to minimize impacts to WW-T86-1001.</b>   | <b>The pipeline was routed in this location to cross the stream at a perpendicular angle in an active pasture where the riparian corridor has been cleared and the stream is regularly impacted by horses/livestock.</b>   |

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|-----------------------------------|---------------------------------------|-------------------------------|-------------|---|--|---|-------------------------|--|--|
| Wetland                           | N/A                                   | W-T86-1001                    | 11.13       | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T86-1001.   | The pipeline was routed in this location to cross the riparian wetland at a perpendicular angle in an active pasture where the riparian corridor has been cleared and the stream is regularly impacted by horses/livestock.  |
| Stream                            | UNT to Conestoga River (WW-T84-1001)  | WW-T84-1001                   | 11.17       | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced as much as practicable to minimize impacts to this stream that is not crossed by the pipeline centerline.                                 | The pipeline was routed in this location to avoid steep side slopes immediately to the north.  |
| Stream                            | UNT to Conestoga River (WW-T85-1002)  | WW-T85-1002                   | 12.13       | WWF, MF   | Intermittent                                     | None  | R4                      | This unnamed tributary to the Conestoga River is being crossed via HDD.  | The workspace for the Conestoga River HDD was developed to minimize tree clearing as much as possible.   |
| Stream                            | Conestoga River (WW-T20-1001)         | WW-T20-1001                   | 12.32       | WWF, MF   | Perennial  | None  | R3                      | The Conestoga River is being crossed via HDD.  | The workspace for the Conestoga River HDD was developed to minimize tree clearing as much as possible.   |
| Stream                            | UNT to Conestoga River (WW-T36-1001A) | WW-T36-1001A                  | 12.4        | WWF, MF   | Perennial  | None  | R3                      | This unnamed tributary to the Conestoga River is being crossed via HDD.  | The workspace for the Conestoga River HDD was developed to minimize tree clearing as much as possible.   |
| Stream                            | UNT to Witmer Run (WW-T49-1001)       | WW-T49-1001                   | M-0248 0.16 | WWF, MF   | Perennial  | None  | N/A                     | The full LOD is needed at this crossing due to steep slopes and an adjacent open cut road crossing.  | The pipeline was routed in this location to cross the stream at a perpendicular angle, and to avoid additional small tributaries in the northern portion of the routing corridor.  |
| Stream                            | UNT to Witmers Run (WW-T36-1002A)     | WW-T36-1002A                  | M-0248 0.34 | WWF, MF   | Perennial  | None  | R3                      | The LOD was reduced to 90' to minimize impacts to WW-T36-1002A.  | The alignment in this area was shifted 150' southwest and upslope to avoid impacts to several other wetlands and streams. The current crossing of WW-T36-1002A occurs in the upper reaches of the stream where it is entirely ephemeral. By executing the realignment in this area, wetlands W-T36-1001, W-T36-1001-1 and streams WW-T36-1002, WW-T36-1002B, and WW-T42-1005 are avoided entirely. |
| Wetland                           | N/A                                   | W-T36-1002                    | M-0434 0.05 | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T36-1002.   | The pipeline was routed in this location to avoid a much larger wetland (W-T36-1003) approximately 500 feet to the west, and to cross the wetland at its narrowest section near its southwest margin.  |
| Stream                            | UNT to Witmers Run                    | WW-T93-1001                   | 13.62       | WWF, MF   | Intermittent                                     | None  | R4                      | The LOD was modified to eliminate impacts to WW-T93-1001.  | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | UNT to Witmers Run (WW-T92-1002)      | WW-T92-1002                   | M-0434 0.10 | WWF, MF   | Ephemeral  | None  | R6                      | LOD has been reduced to 90' to minimize impacts to WW-T92-1002.  | The pipeline was routed in this location to avoid crossing stream WW-T92-1002 with the trenchline, and to keep the stream outside of the permanent ROW.  |
| Wetland                           | N/A                                   | W-T36-1003                    | 13.72       | None  | N/A  | N/A   | PEM, PFO                | The LOD was modified to eliminate impacts to W-T36-1003.   | This feature is no longer impacted based on LOD reductions.  |
| Stream                            | UNT to Witmers Run (WW-T36-1004)      | WW-T36-1004                   | M-0434 0.16 | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T36-1004.  | The pipeline was routed in this location to avoid wetland W-T36-1003 immediately to the south, and to avoid crossing braided portions of this stream in the northern and southern portions of the routing corridor.  |
| Stream                            | UNT to Witmer Run (WW-T92-1003)       | WW-T92-1003                   | M-0434 0.25 | WWF, MF   | Ephemeral  | None  | N/A                     | LOD has been reduced to 90' to minimize impacts to WW-T92-1003.  | The pipeline was routed in this location to provide a perpendicular crossing of stream WW-T92-1003.  |
| Stream                            | UNT to Witmers Run (WW-T36-1006)      | WW-T36-1006                   | 13.88       | WWF, MF   | Intermittent                                     | None  | R4                      | LOD has been reduced to 90' to minimize impacts to WW-T36-1006.  | The pipeline was routed in this location to avoid the riparian forest buffer, and to provide a perpendicular crossing of the stream.   |
| Wetland                           | N/A                                   | W-T36-1004                    | M-0206 0.05 | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T36-1004.   | The pipeline was routed in this location to cross this manmade ditch at a roughly perpendicular angle with the road crossing.  |
| Wetland                           | N/A                                   | W-T36-1004-1/<br>W-T36-1004-2 | M-0206 0.05 | None  | 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-T36-1004-1 and 2. | The pipeline was routed in this location to cross the southern margin of the wetland only. Residential areas and roads south of the current alignment prevent further relocation to the south and complete avoidance of this wetland.  |
| Wetland                           | N/A                                   | W-T36-1005                    | M-0188 0.22 | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T36-1005.   | The pipeline was routed in this location to cross the western margin of the wetland only. Residences to the west of the current alignment prevent further relocation to the west and complete avoidance of this wetland.   |
| Stream                            | Indian Run (WW-T36-1007)              | WW-T36-1007                   | 14.64       | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T36-1007.  | The pipeline was routed in this location to avoid meandering sections of the stream in the eastern and western portions of the routing corridor.   |
| Stream                            | UNT to Indian Run (WW-T20-1005)       | WW-T20-1005                   | 15.33       | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T20-1005.  | The pipeline was routed in this location to avoid meandering sections of the stream in the eastern and western portions of the routing corridor, and to avoid impacting streams WW-T20-1005B and WW-T53-1001A in the eastern portion of the routing corridor.  |
| Stream                            | Witmers Run (WW-T24-1001)             | WW-T24-1001                   | 17.01       | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T24-1001.  | The pipeline was routed in this location to parallel an existing electric transmission line ROW and to cross the stream at a perpendicular angle.  |
| Stream                            | Stamans Run (WW-T11-2001)             | WW-T11-2001                   | 18.1        | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T11-2001.  | The pipeline was routed in this location to provide a perpendicular crossing of the stream.  |

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|-----------------------------------|--|---------------------------|-------------------------------|---|--|---|-------------------------|---|--|
| Stream                            | UNT to Stamans Run (WW-T11-2002)                 | WW-T11-2002               | 18.85                         | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T11-2002.   | The pipeline was routed in this location to parallel an existing electric transmission line ROW and to cross the stream at an approximate perpendicular angle.   |
| Wetland                           | W-T32-2004                                       | W-T32-2004                | M-0389<br>0.11                | None  | N/A  | N/A   | PFO                     | 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-T32-2004.               | The pipeline was routed in this location to avoid a much larger wetland (W-T10-2002) approximately 400' west of the current alignment. The proposed alignment also provides an improved crossing of the adjacent railroad and allows for a perpendicular crossing of Stickler Run (WW-T24-2001). |
| Stream                            | Strickler Run (WW-T24-2001)                      | WW-T24-2001               | M-0389<br>0.14                | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T24-2001.   | The pipeline was routed in this location to avoid a much larger wetland (W-T10-2002) approximately 400' west of the current alignment, and to cross this stream at a perpendicular angle.  |
| Stream                            | UNT to Strickler Run (WW-T10-2005)               | WW-T10-2005               | 20.81                         | WWF, MF   | Perennial  | None  | R3                      | <b><i>This unnamed tributary to Strickler Run will be crossed via a conventional bore.</i></b>  | <b><i>The pipeline was routed in this location to allow for a safe and effective conventional bore crossing.</i></b>   |
| Stream                            | <b><i>UNT to Strickler Run (WW-T81-2001)</i></b> | <b><i>WW-T81-2001</i></b> | <b><i>M-0396<br/>0.18</i></b> | WWF, MF   | Intermittent                                     | None  | R4                      | <b><i>LOD has been reduced to 75' to minimize impacts to WW-T81-2001.</i></b>   | <b><i>The pipeline was routed in this location to cross the stream at a perpendicular angle downstream of several seeps and within an active pasture.</i></b>  |
| Wetland                           | N/A  | <b><i>W-T81-2001</i></b>  | <b><i>M-0484<br/>0.04</i></b> | None  | N/A  | N/A   | PEM                     | <b><i>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-T81-2001</i></b> | <b><i>The pipeline was routed in this location to cross stream WW-T81-2003 and riparian wetland W-T81-2001 at a perpendicular angle and at a location that impacts only the southern margin of the wetland.</i></b>  |
| Stream                            | <b><i>UNT to Shawnee Run (WW-T81-2003)</i></b>   | <b><i>WW-T81-2003</i></b> | <b><i>M-0484<br/>0.03</i></b> | WWF, MF   | Intermittent                                     | None  | R4                      | <b><i>LOD has been reduced to 80' to minimize impacts to WW-T81-2003.</i></b>   | <b><i>The pipeline was routed in this location to cross stream WW-T81-2003 and riparian wetland W-T81-2001 at a perpendicular angle and at a location that impacts only the southern margin of the wetland.</i></b>  |
| Wetland                           | N/A  | W-T32-2001                | 21.1<br>M-0396 -0.1           | None  | N/A  | N/A   | PEM                     | LOD reduction will be implemented if possible following field survey.   | This is a no-access area that has not been field routed to date.   |
| Stream                            | Shawnee Run (WW-T10-2004)                        | WW-T10-2004               | 22.36                         | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T10-2004.   | The pipeline was routed in this location to parallel an existing electric transmission line ROW and to cross the stream at a perpendicular angle.  |
| Stream                            | UNT to Chiques Creek (WW-T10-2002)               | WW-T10-2002               | 23.02                         | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T10-2002.   | The pipeline was routed in this location to avoid wetland W-T10-2001, pond WB-T42-2001 and seeps WB-T42-2002 and 2003.   |
| Stream                            | UNT to Chiques Creek (WW-T49-2001)               | WW-T49-2001               | <b><i>M-0475<br/>0.11</i></b> | WWF, MF   | Ephemeral  | None  | N/A                     | <b><i>LOD has been reduced to 75' to minimize impacts to WW-T49-2001.</i></b>   | <b><i>The pipeline was routed in this location to provide a perpendicular crossing of the stream.</i></b>  |
| Stream                            | Chiques Creek (WW-T42-2003)                      | WW-T42-2003               | 23.89                         | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T42-2003.   | The pipeline was routed in this location to minimize clearing of riparian forest buffer as much as possible by staying with cleared agricultural fields. Additionally, this crossing location was selected to avoid clearing a 6' DBH and a 4' DBH sycamore tree within the riparian buffer.     |
| Stream                            | UNT to Back Run (WW-T31-3003)                    | WW-T31-3003               | 30.13                         | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T31-3003.   | The pipeline was routed in this location to cross the stream at the margin of a field where the riparian corridor has been partially cleared and impacted by a road.   |
| Stream                            | Back Run (WW-T31-3004)                           | WW-T31-3004               | M-0308<br>0.06                | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 80' to minimize impacts to WW-T31-3004.   | The pipeline was routed in this location to follow the edge of an agricultural field and cross the stream at a perpendicular angle.  |
| Wetland                           | N/A  | W-T31-3003                | M-0308<br>0.07                | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 80' to minimize impacts to W-T31-3003.  | The pipeline was routed in this location to follow the edge of an agricultural field and cross the wetland at a perpendicular angle.   |
| Stream                            | UNT to Back Run (WW-T31-3009)                    | WW-T31-3009               | 30.63                         | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T31-3009.   | The pipeline was routed in this location to cross the stream at a perpendicular angle.   |
| Stream                            | UNT to Back Run (WW-T31-3008)                    | WW-T31-3008               | 31.18                         | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T31-3008.   | The pipeline was routed in this location to avoid a meandering section of the stream in northern portion of the routing corridor.  |
| Wetland                           | N/A  | W-T31-3006                | 31.18                         | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T31-3006.  | The pipeline was routed in this location to cross the wetland at a perpendicular angle. Avoidance of this stream was not possible as it extends beyond the northern and southern limits of the routing corridor.   |
| Stream                            | UNT to Back Run (WW-T31-3007)                    | WW-T31-3007               | 31.58                         | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T31-3007.   | The pipeline was routed in this location to cross the stream at a perpendicular angle and avoid steep slopes in the eastern portion of the routing corridor.   |

**Attachment P-1, Appendix P-1  
Resource-Specific Avoidance and Minimization Measures  
Lancaster 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*  |
|-----------------------------------|--|------------------------------|------------------------|---|--|---|-------------------------|---|---|
| Stream                            | UNT to Brubaker Run (WW-T31-3006)          | WW-T31-3006                  | 32.27                  | WWF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T31-3006.   | The pipeline was routed in this location to avoid a meandering section of the stream in the eastern portion of the routing corridor, and to cross the narrowest section of the riparian forest buffer.  |
| Wetland                           | N/A  | W-T31-3004                   | 32.27                  | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T31-3004.    | The pipeline was routed in this location to cross the narrowest section of the wetland at its western margin. Shifting the route west to avoid impacting the wetland was not implemented because this would result in additional clearing of riparian forest buffer along stream WW-T31-3006. |
| Stream                            | Brubaker Run (WW-T31-3005)                 | WW-T31-3005                  | 32.99                  | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T31-3005.   | The pipeline was routed in this location to cross a narrow section of the riparian forest buffer.   |
| Stream                            | UNT to Little Chiques Creek (WW-T31-3002A) | WW-T31-3002A/<br>WW-T31-3002 | 33.57                  | TSF, MF   | Intermittent                                     | None  | R4                      | LOD has been reduced to 90' to minimize impacts to WW-T31-3002.   | The pipeline was routed in this location to cross the narrowest portion of the riparian forest buffer.  |
| Wetland                           | W-T31-3002 / W-T31-3002-1                  | W-T31-3002 / W-T31-3002-1    | 33.63                  | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T31-3002.    | The pipeline was routed in this location to cross a portion of the utilized as pasture and highly disturbed by cattle. W-T31-3002-1 is also crossed at its narrowest location through its western margin.   |
| Stream                            | UNT to Little Chiques Creek (WW-T31-3001)  | WW-T31-3001                  | <b>M-0486<br/>0.08</b> | TSF, MF   | Ephemeral  | None  | R6                      | <b>LOD has reduced to 75' to minimize impacts to WW-T31-3001.</b> | <b>The pipeline was field routed in this area to cross this stream at a perpendicular angle. The selected crossing location also allows riparian wetland W-T31-3001 to be avoided entirely.</b>   |
| Wetland                           | N/A  | W-T31-3001                   | 34                     | None  | N/A  | N/A   | PEM                     | <b>The LOD was modified to eliminate impacts to WW-T31-3001</b>   | <b>This feature is no longer impacted based on LOD reductions.</b>  |
| Stream                            | UNT to Little Chiques Creek (WW-T24-3001A) | WW-T24-3001A                 | 34.4                   | TSF, MF   | Perennial  | Approved Trout Waters, Trout Stocked Stream                         | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T24-3001A.  | The pipeline was routed in this location to minimize clearing of the riparian forest buffer.  |
| Stream                            | Little Chiques Creek (WW-T24-3001)         | WW-T24-3001                  | 34.47                  | TSF, MF   | Perennial  | Approved Trout Waters, Trout Stocked Stream                         | R3                      | LOD has been reduced to 90' to minimize impacts to WW-T24-3001.   | The pipeline was routed in this location to cross the narrowest portion of the riparian forest buffer.  |
| Stream                            | Shells Run (WW-T30-4001)                   | WW-T30-4001                  | 36.04                  | TSF, MF   | Perennial  | None  | R3                      | LOD has been reduced to 75' to minimize impacts to WW-T30-4001.   | The pipeline was routed in this location to avoid a braided portion of the stream in the northern portion of the routing corridor.  |
| Wetland                           | N/A  | W-T30-4001                   | 36.05                  | None  | N/A  | N/A   | PEM                     | LOD has been reduced to 75' to minimize impacts to W-T30-4001.    | The pipeline was routed in this location to cross the narrowest portion of the wetland where it is used as pasture and significantly disturbed by cattle.   |

\*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.